Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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FIG. 1.

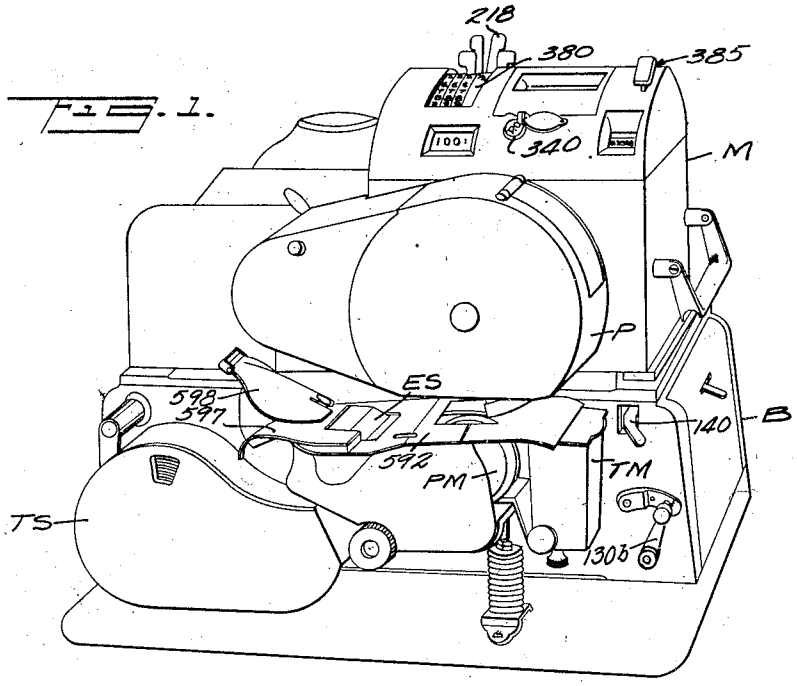
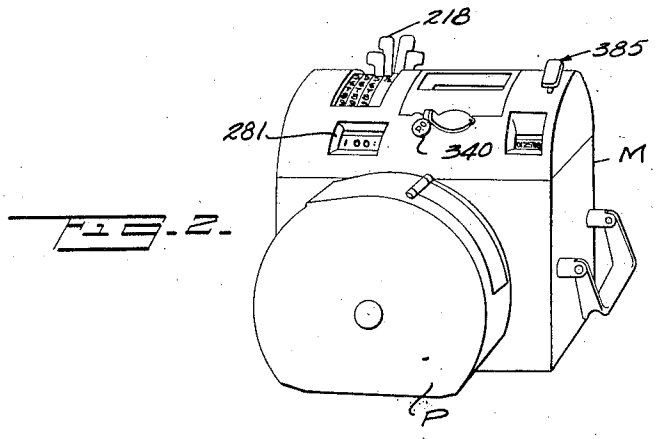


FIG. 2.



INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN,
BY
ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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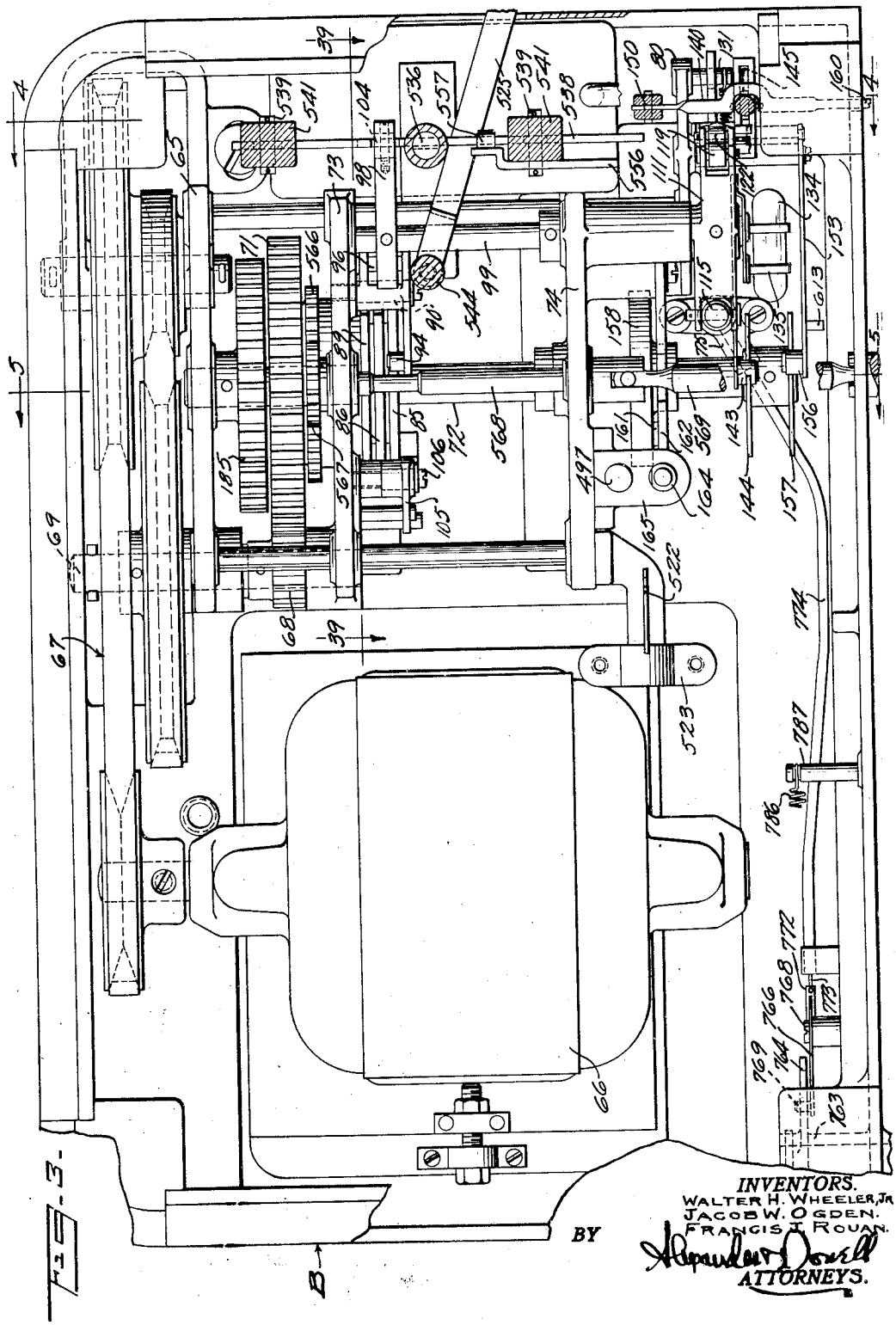


FIG. 3.

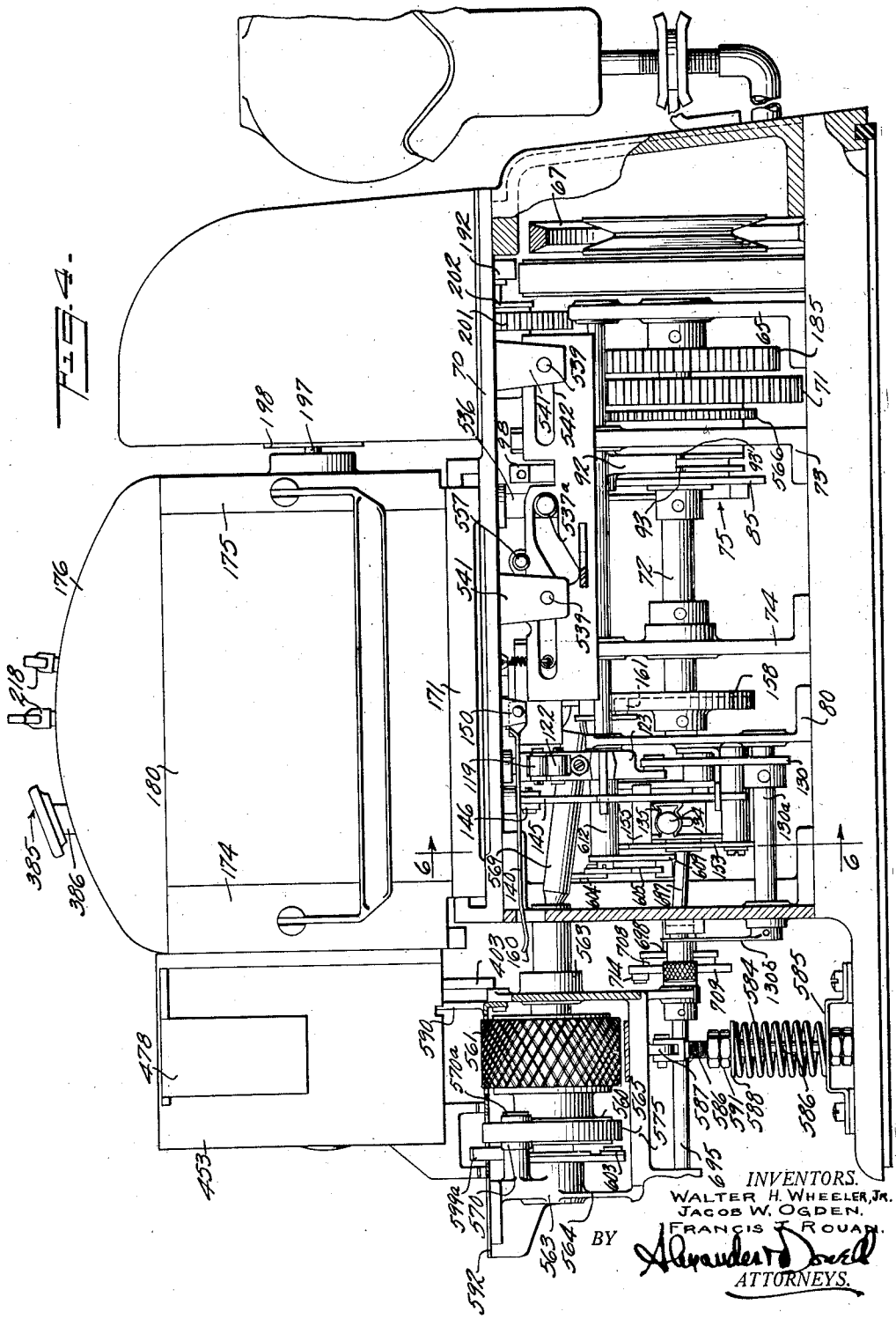
INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.
BY
Alexander Dowell
ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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FIG. 4.

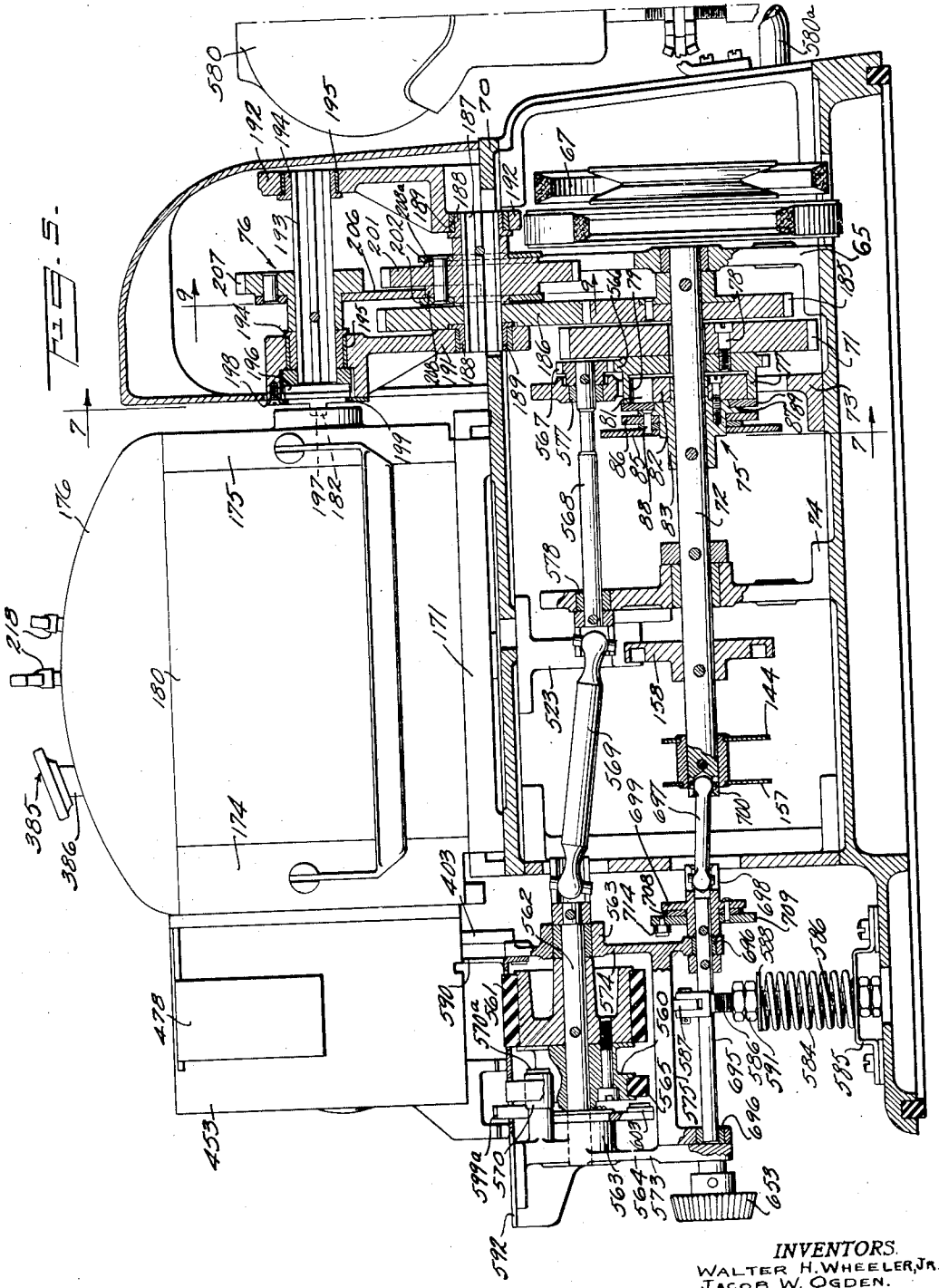


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OMNI VALUE STAMPING DEVICE

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FIG. 5.



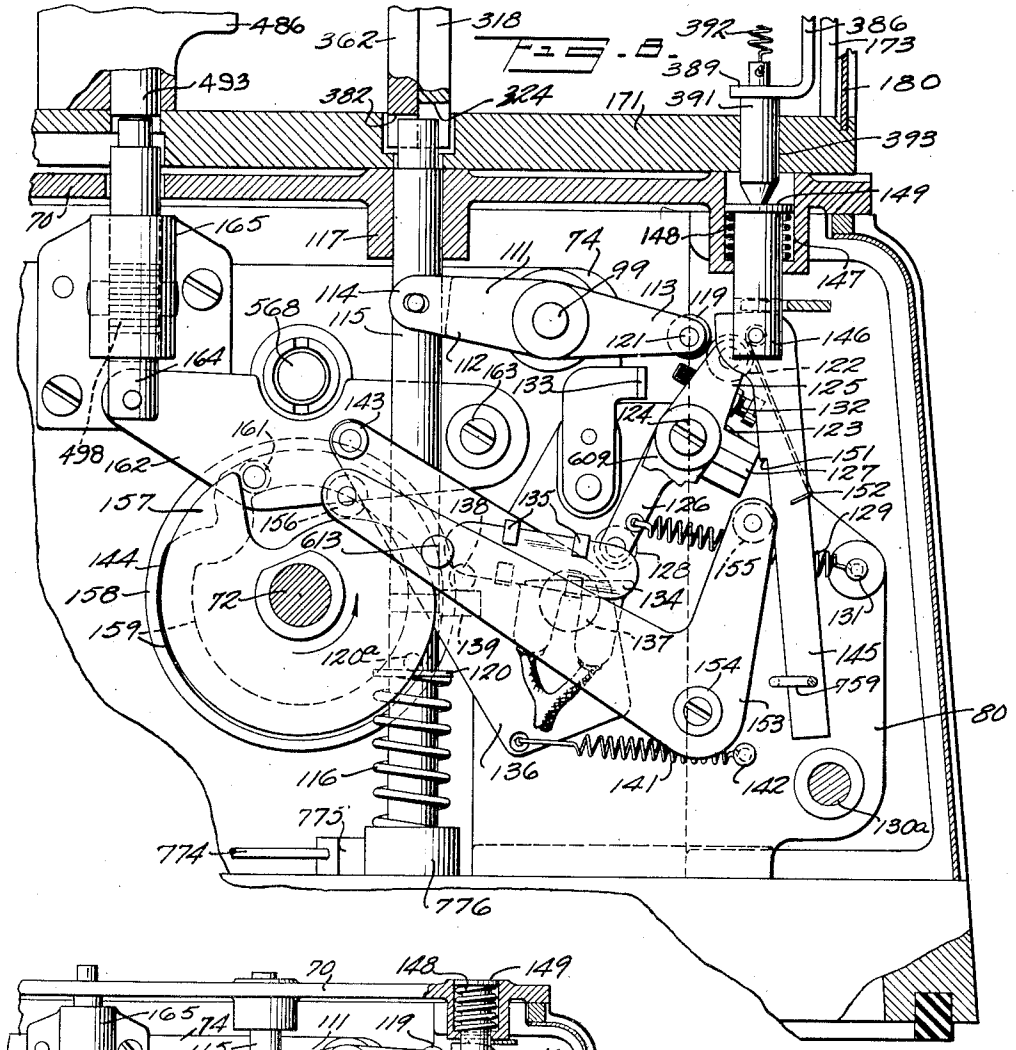
INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUSH.

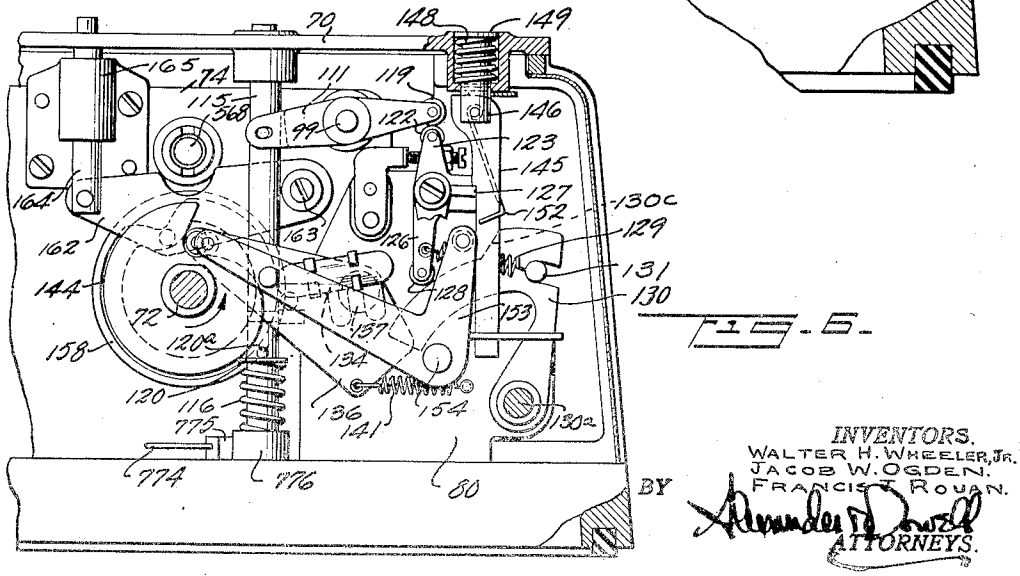
BY Alexander & Dowell
ATTORNEYS.

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INVENTORS.
WALTER H. WHEELER, JR.
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FRANCIS T. ROUAN.

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Dec. 20, 1938. W. H. WHEELER, JR., ET AL. 2,141,119

OMNI VALUE STAMPING DEVICE

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FIG. 9.

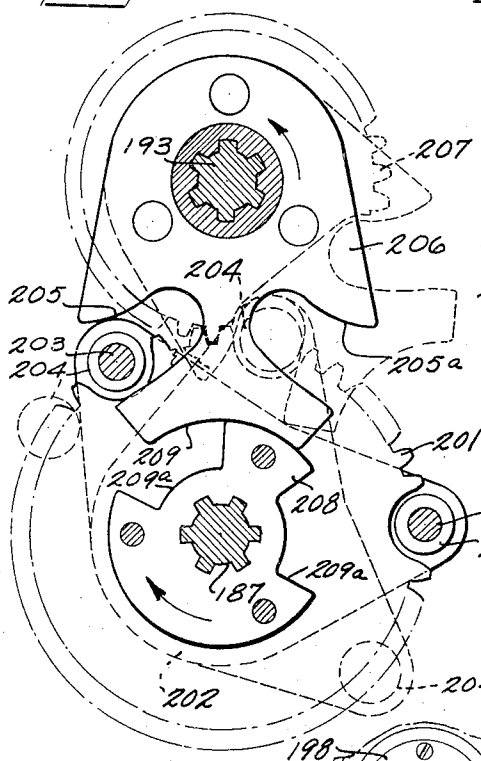
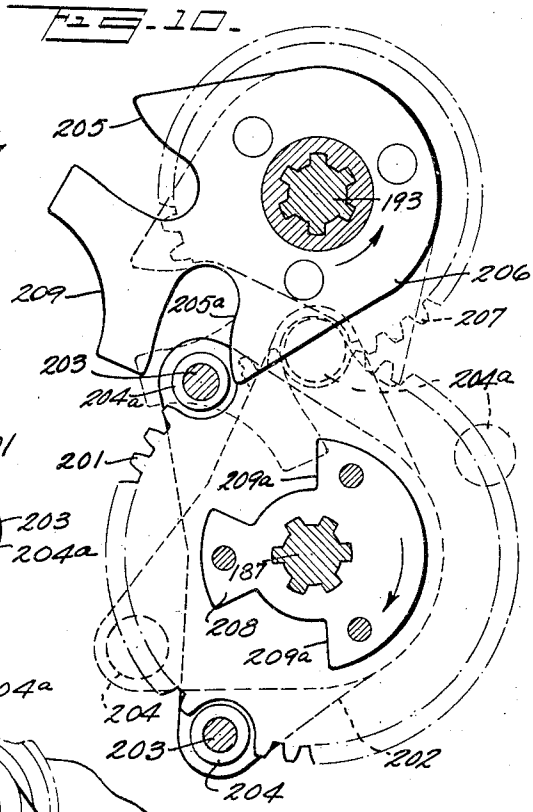


FIG. 10.



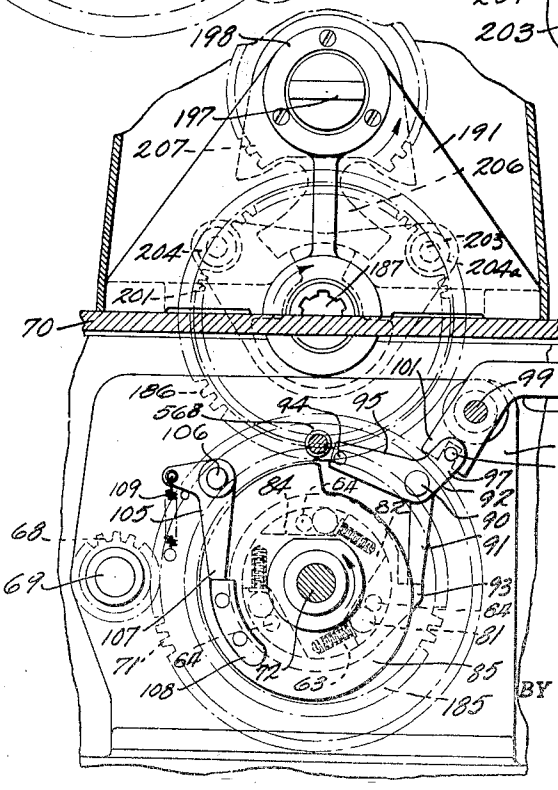


FIG. 7.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. TOUAN.
BY
ATTORNEYS.

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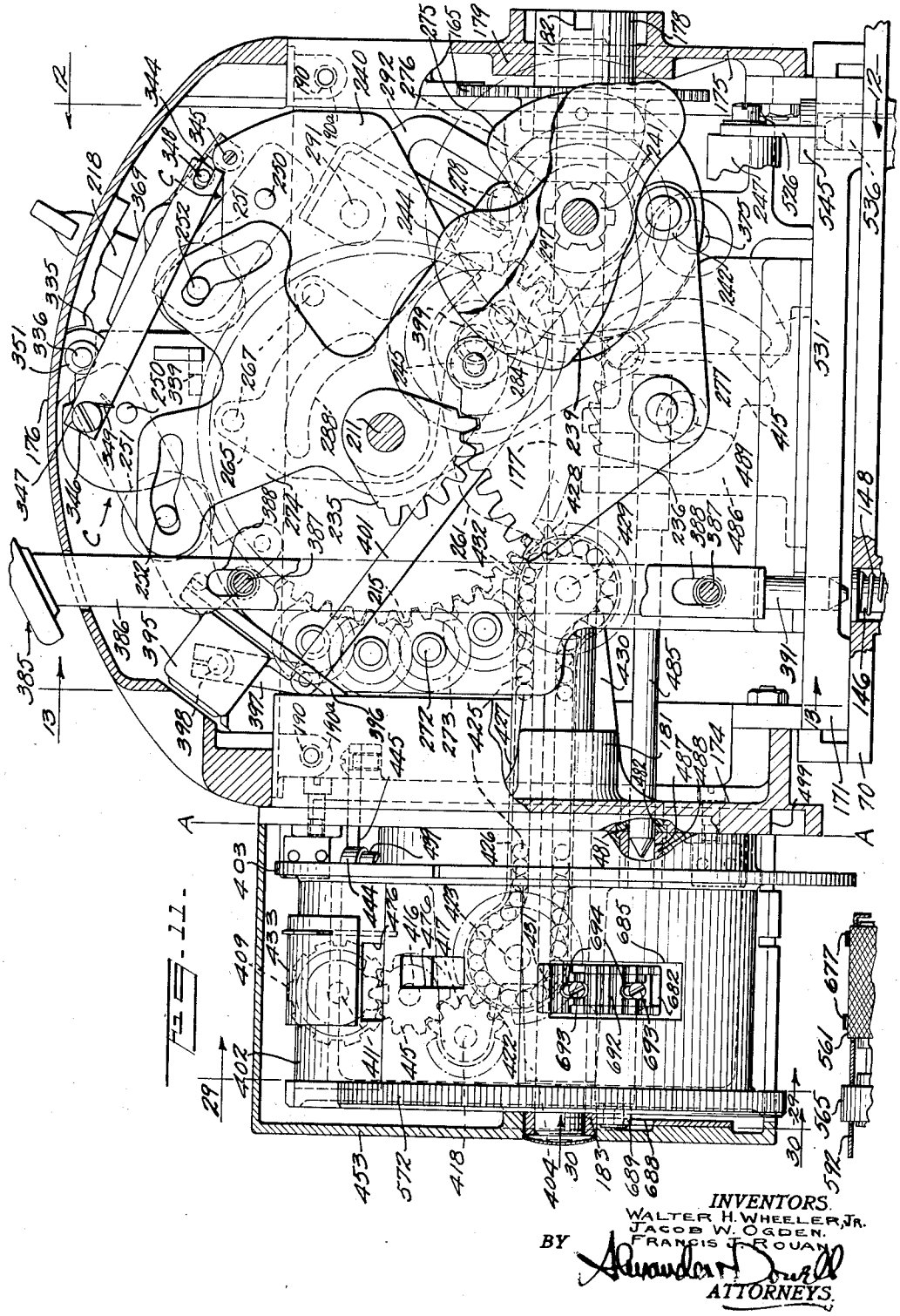


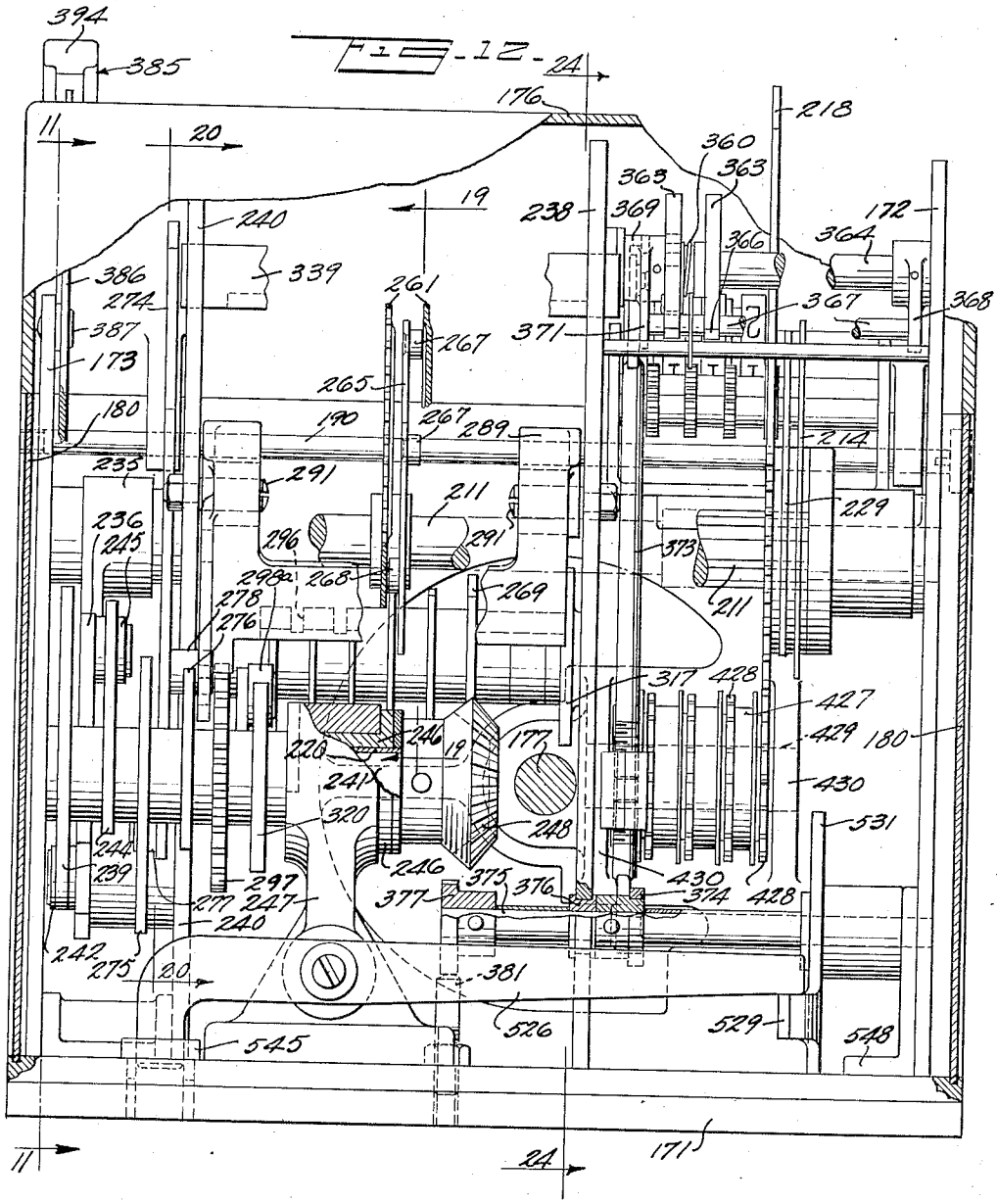
FIG. 11.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.
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Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

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INVENTORS.
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Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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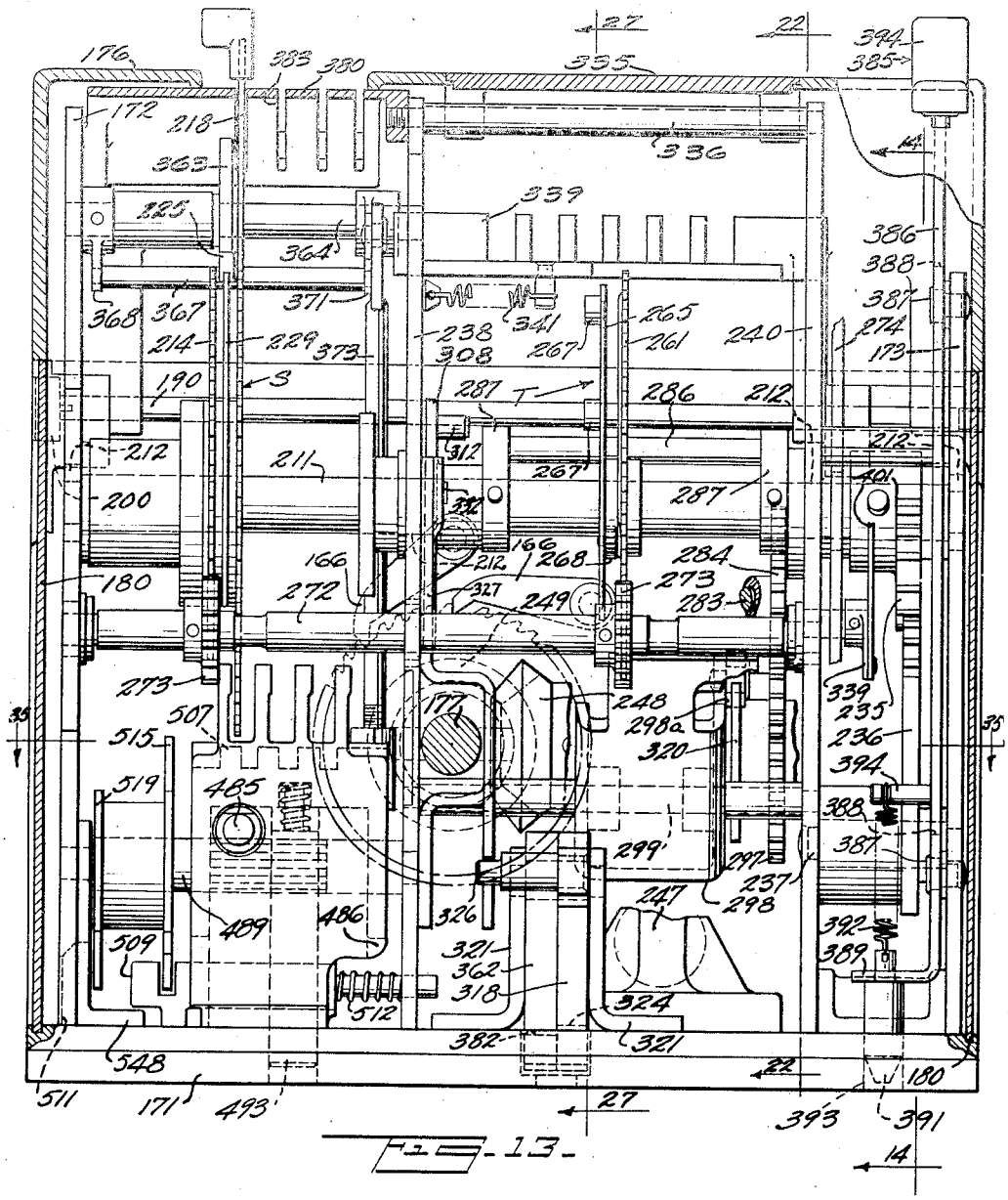


FIG. 13.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS T. ROUAN.

BY Alexander & Dowell

ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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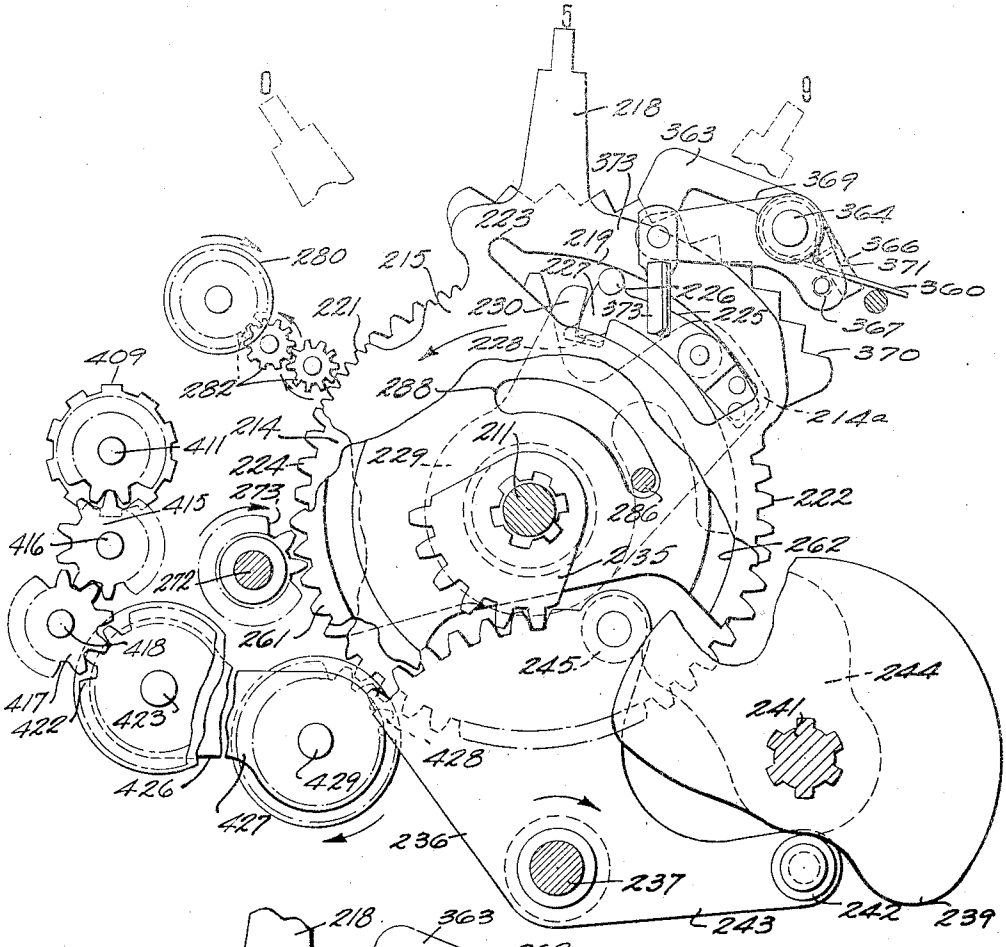


FIG. 14.

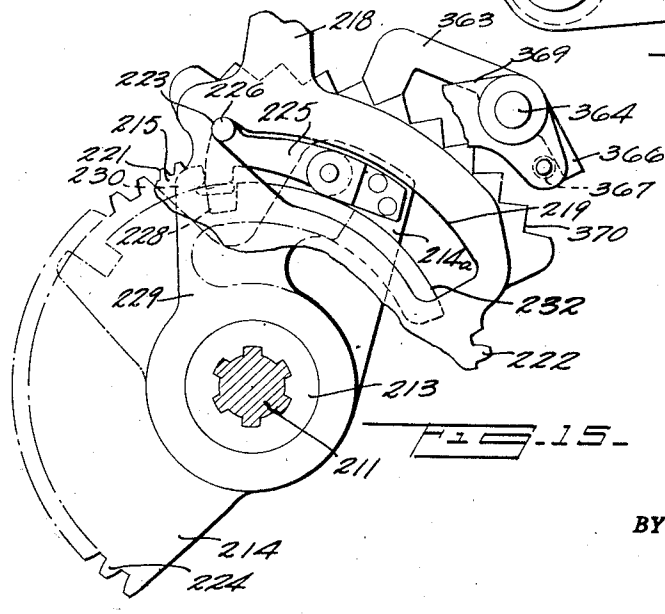


FIG. 15.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAT.

BY Alexander Dowell

ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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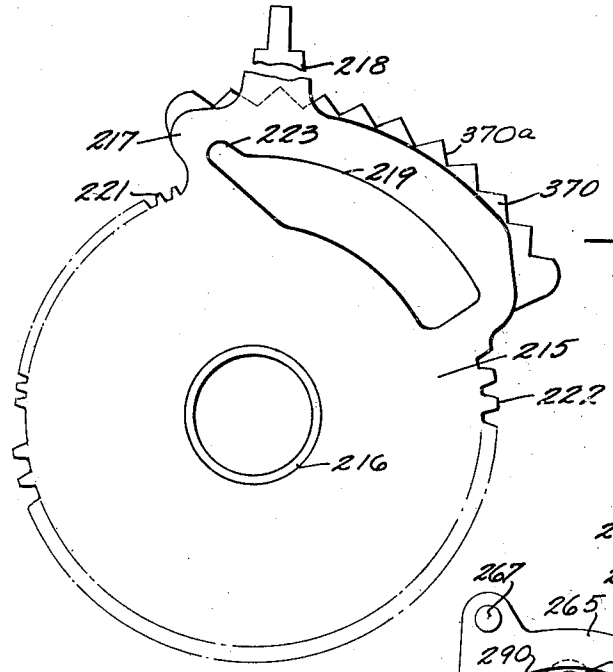


FIG. 16.

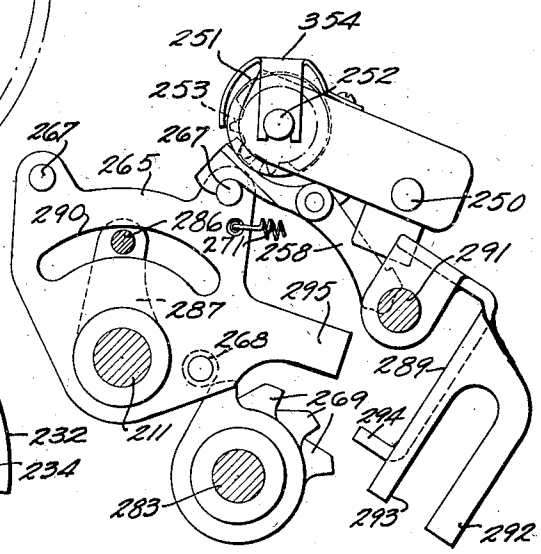


FIG. 19.

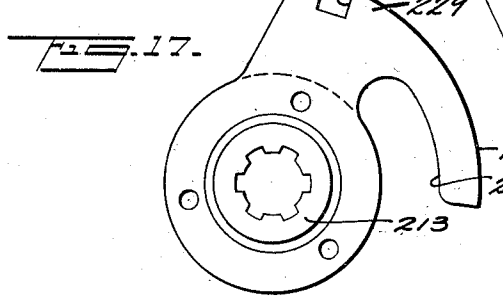


FIG. 17.

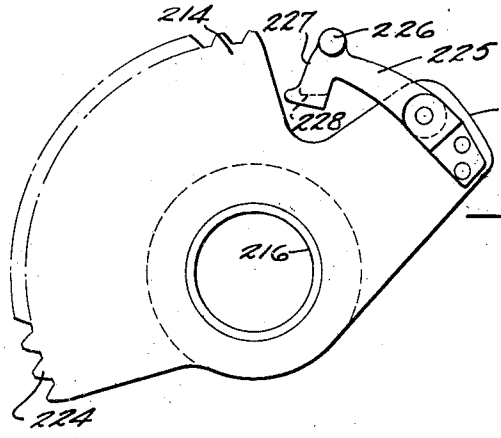


FIG. 18.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.

BY

ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

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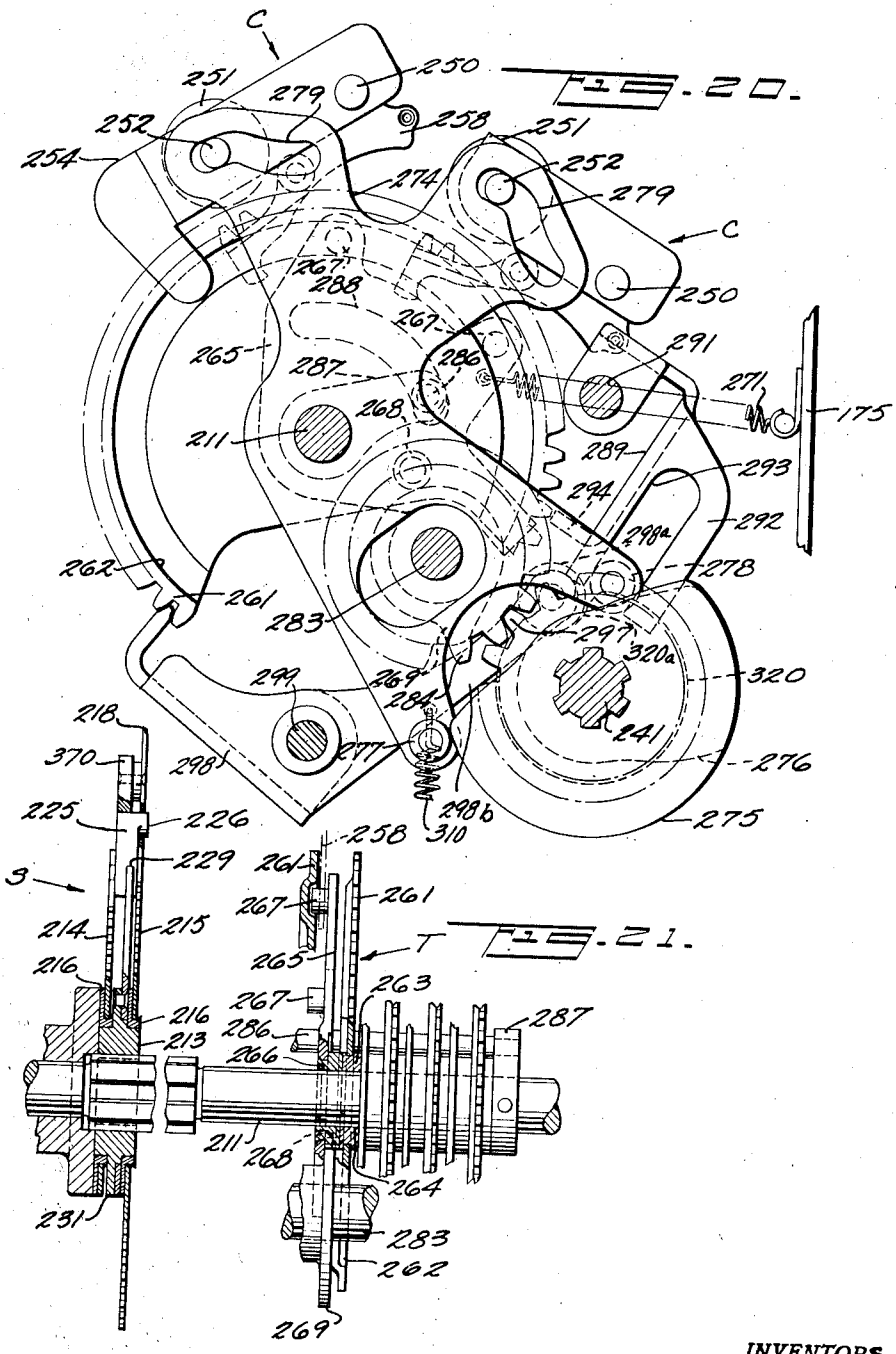


FIG. 20.

FIG. 21.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.

BY Samuel D. Darrell

ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

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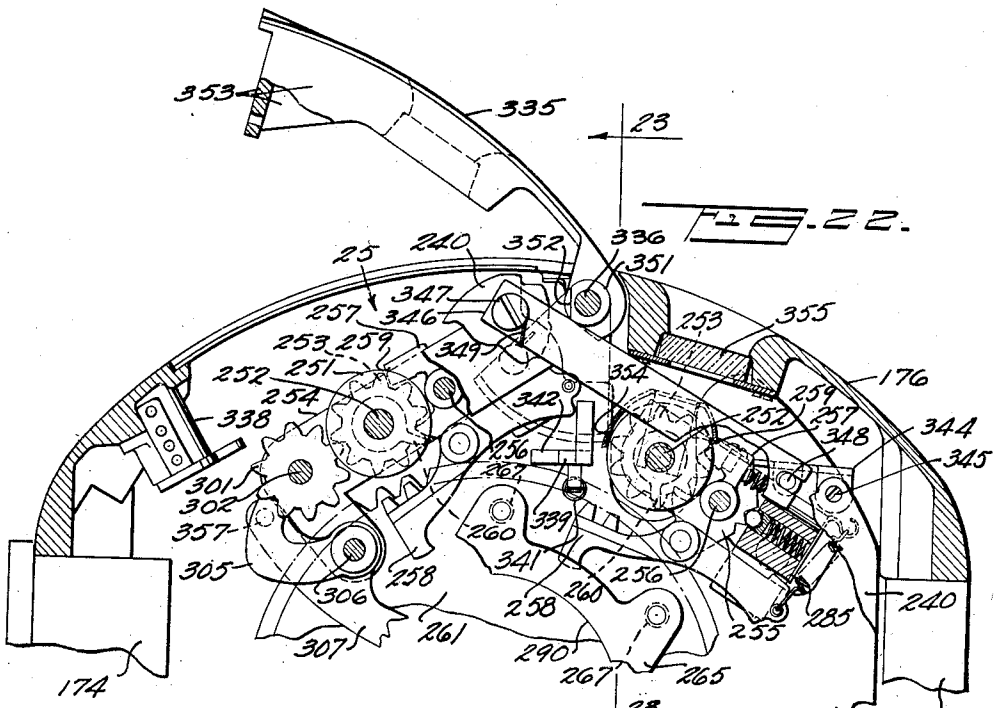


FIG. 22.

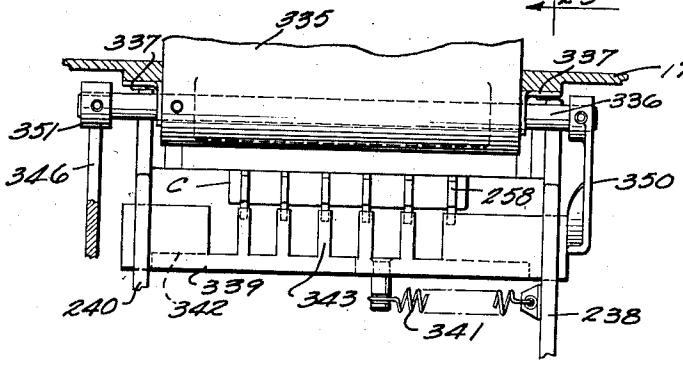


FIG. 23.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.

BY Alexander & Dowell
ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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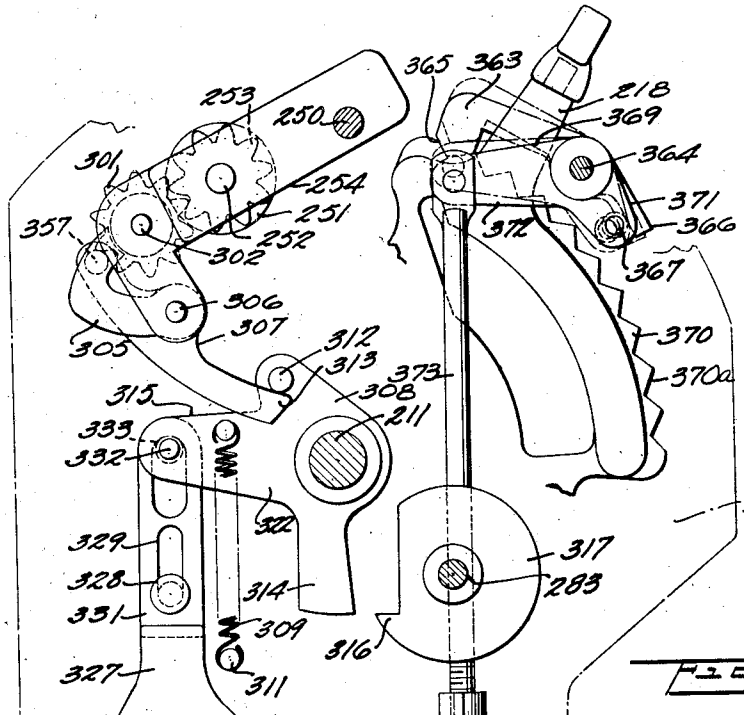
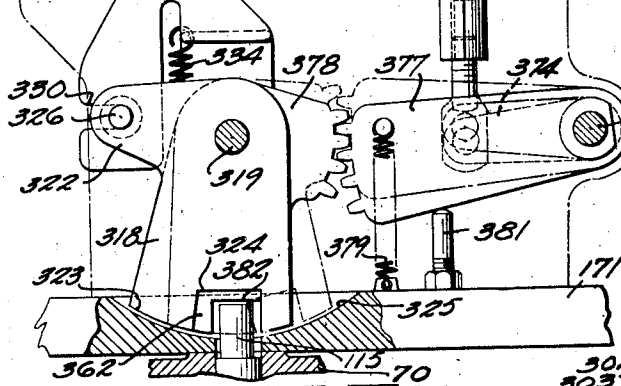


FIG. 24.



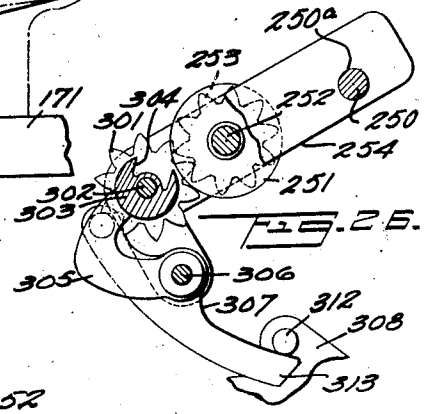


FIG. 26.

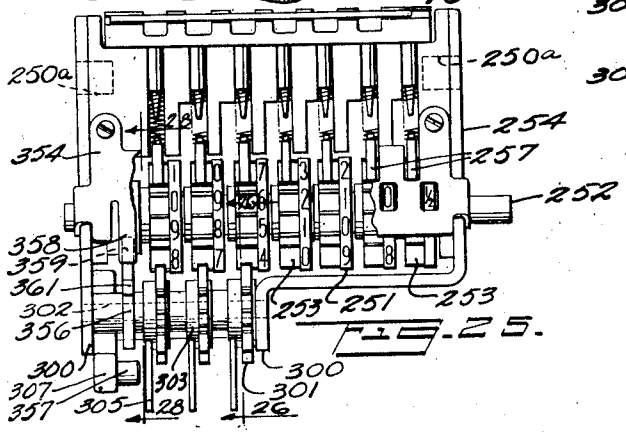


FIG. 25.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS T. ROUAN.

BY Howson & Howson

ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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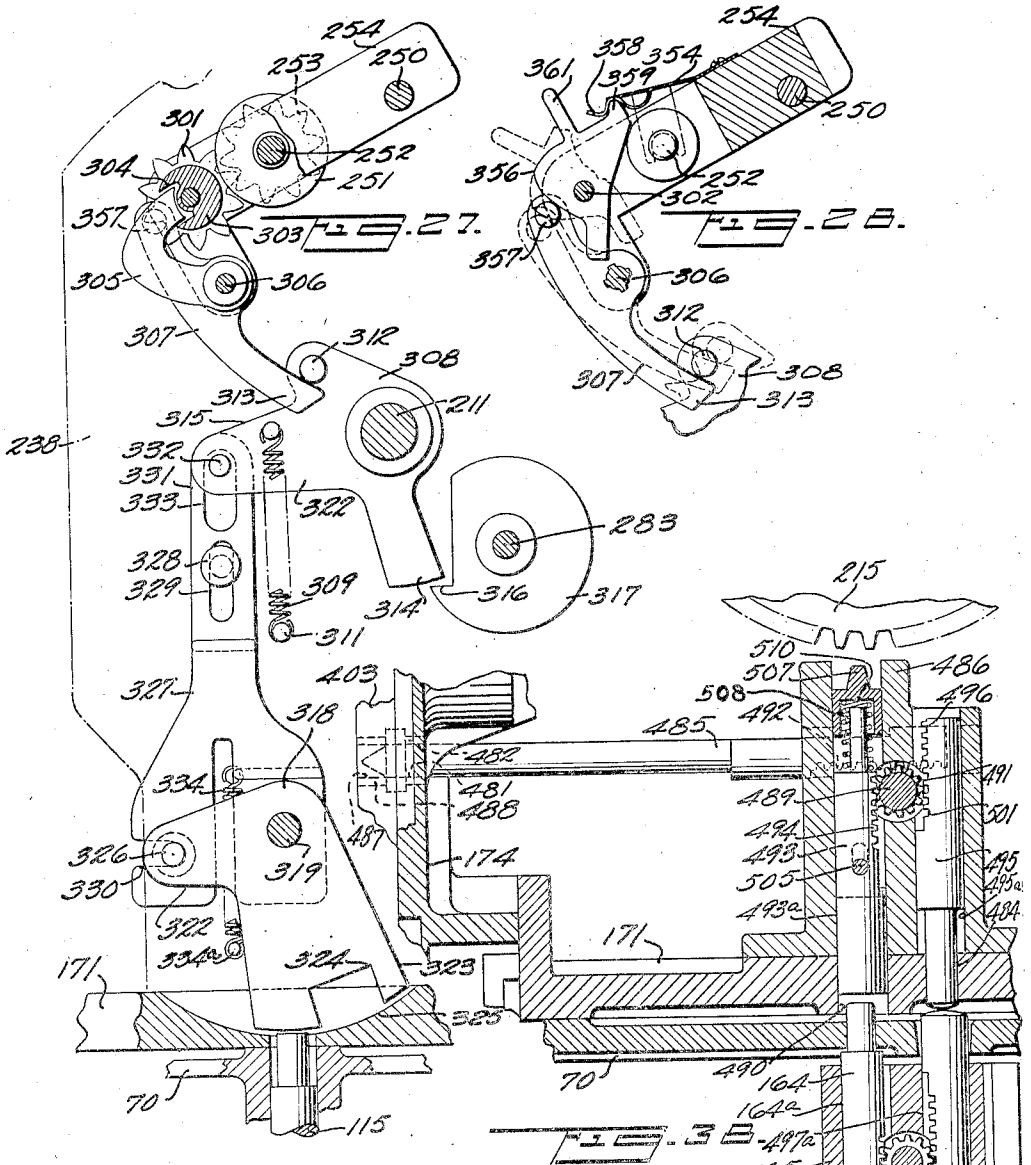


FIG. 27.

FIG. 28.

FIG. 38.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS T. ROMAN.

BY Alexander & Dowell
ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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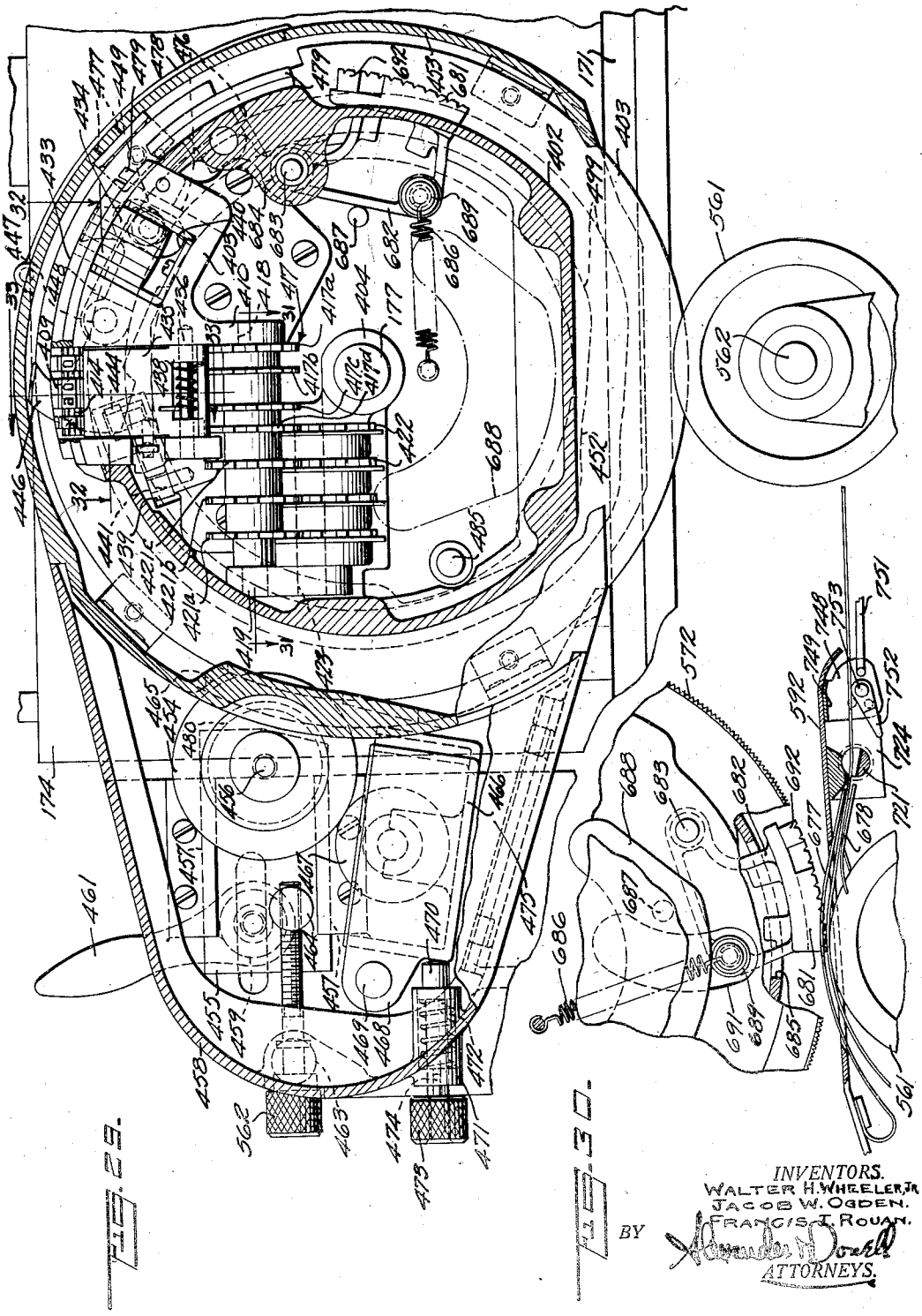


FIG. 29.

FIG. 30.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS T. ROUAN.
BY Alexander & Dowell
ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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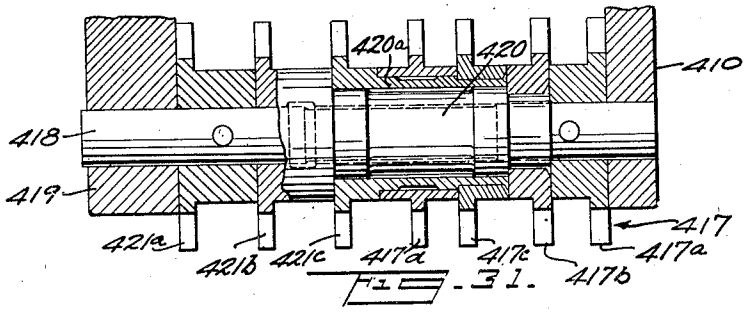


FIG. 31.

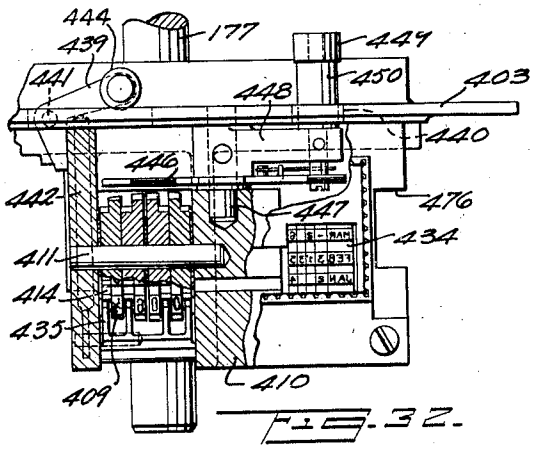


FIG. 32.

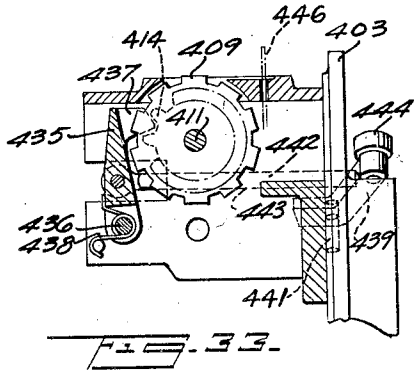


FIG. 33.

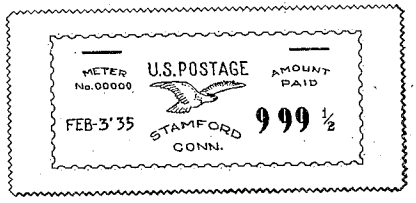


FIG. 34.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS P. QUAN.

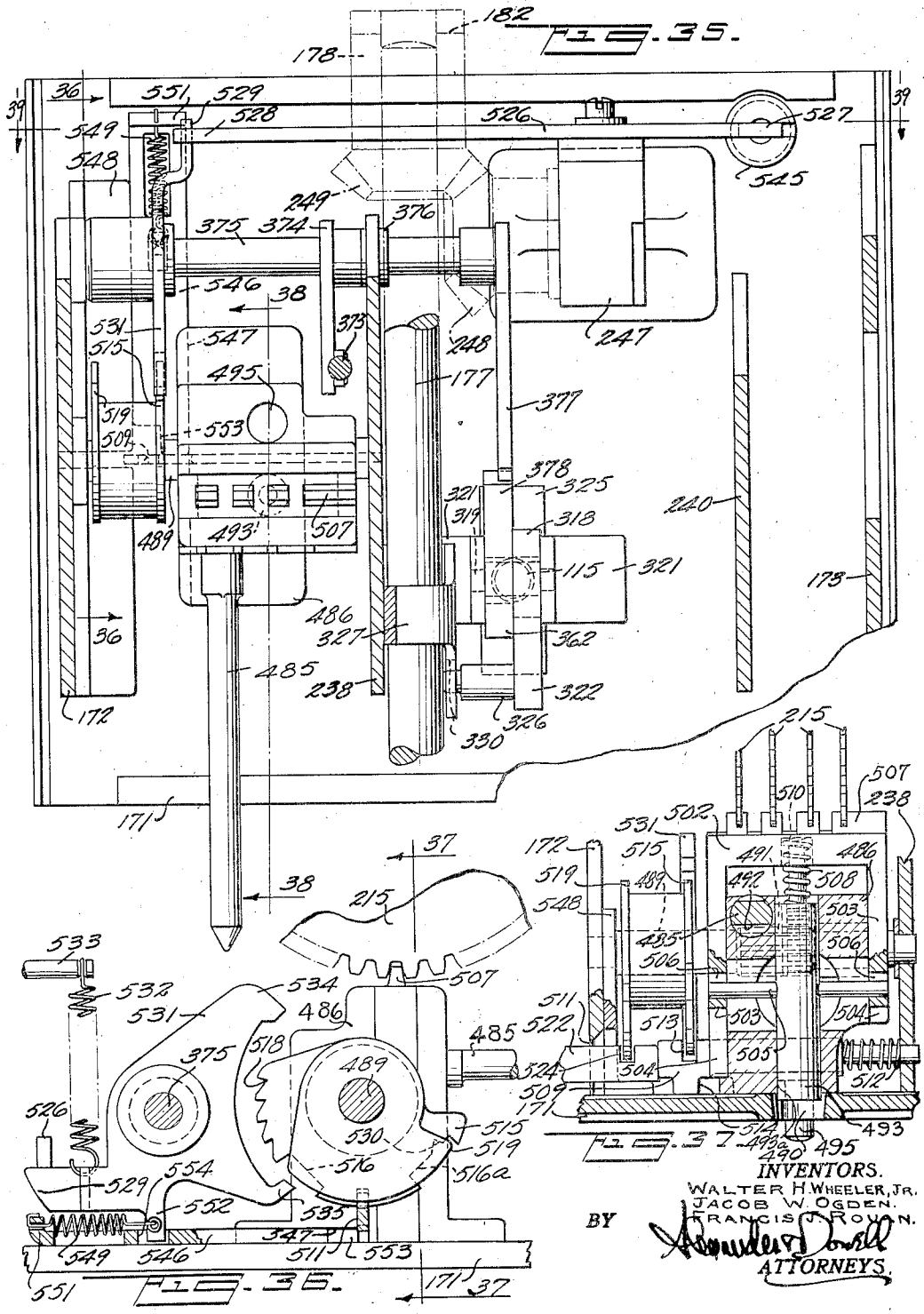
BY Wheeler & Wheeler

ATTORNEYS.

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Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

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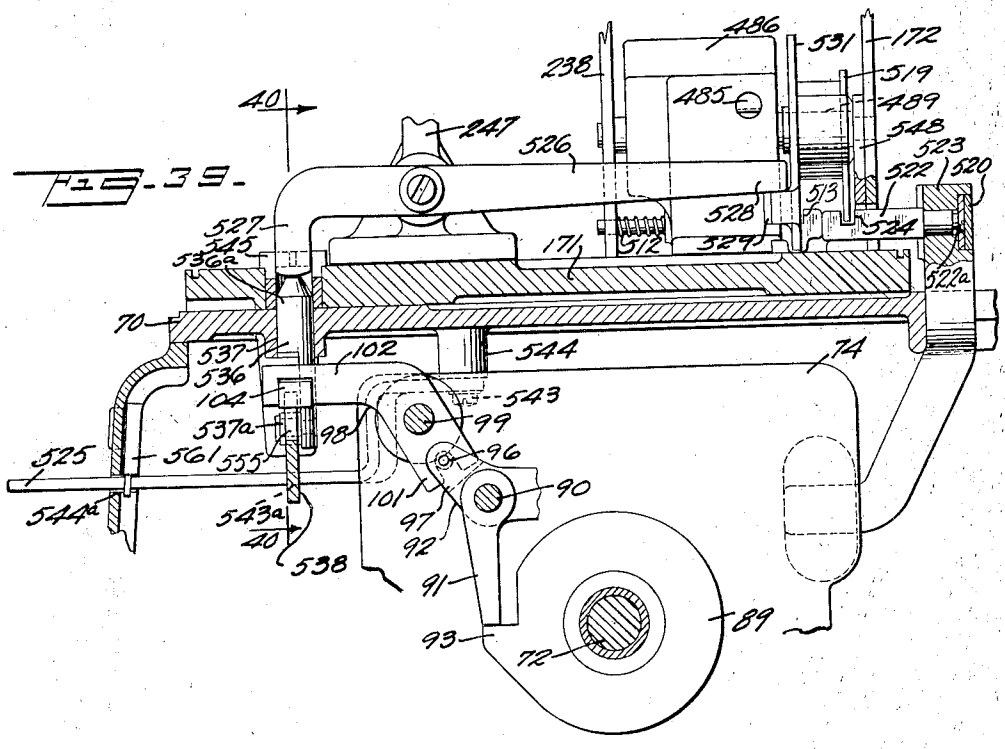


FIG-39-

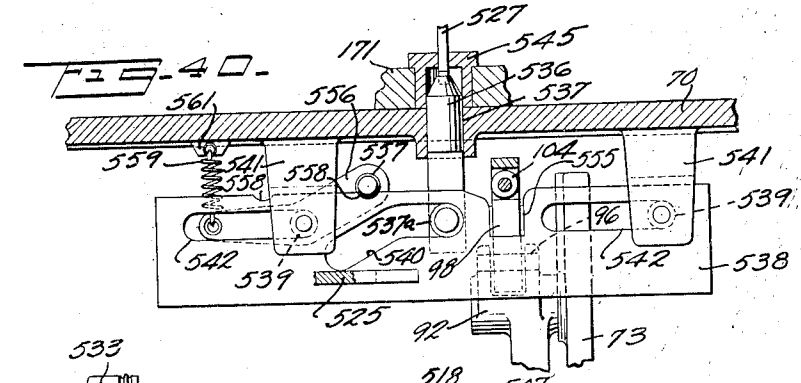


FIG-40-

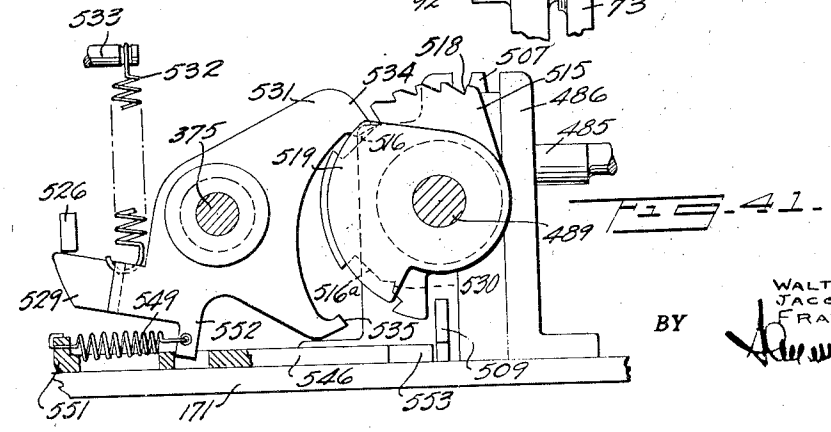


FIG-41-

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.

BY

ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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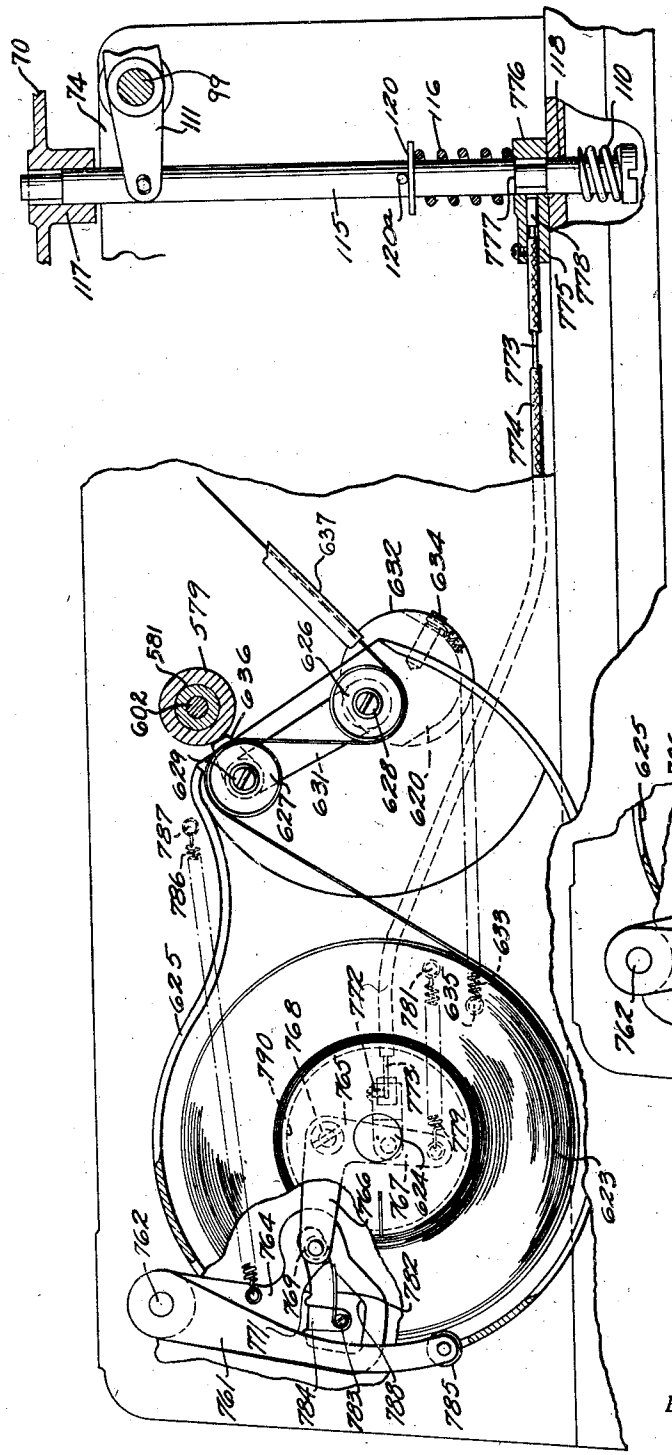


FIG. 42.

FIG. 43.

INVENTORS.
WALTER H. WHEELER, JR.,
JACOB W. OGDEN.
FRANCIS J. ROUAN.
BY Alexander & Dowell
ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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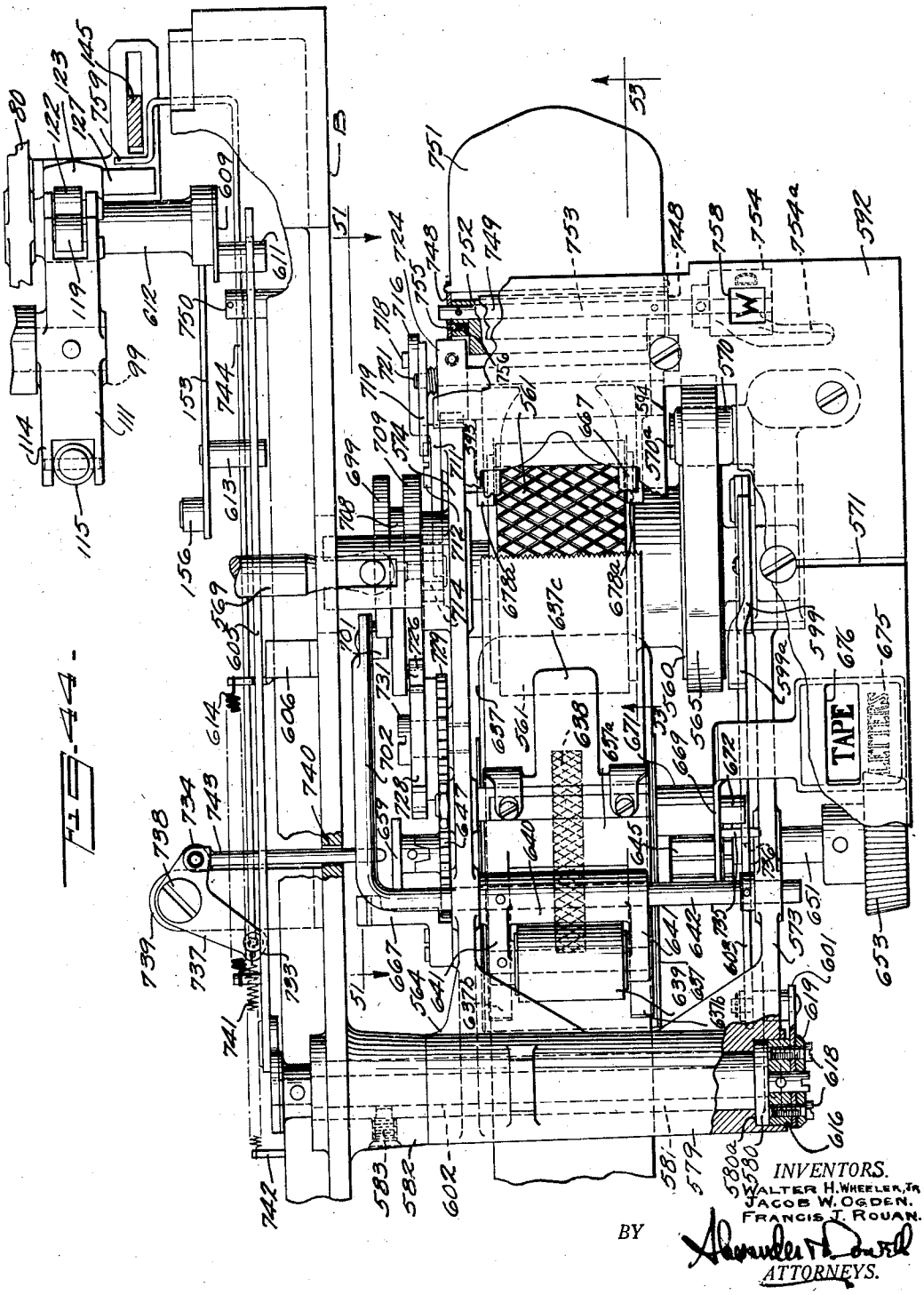


FIG. 44.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.
BY
ATTORNEYS.

Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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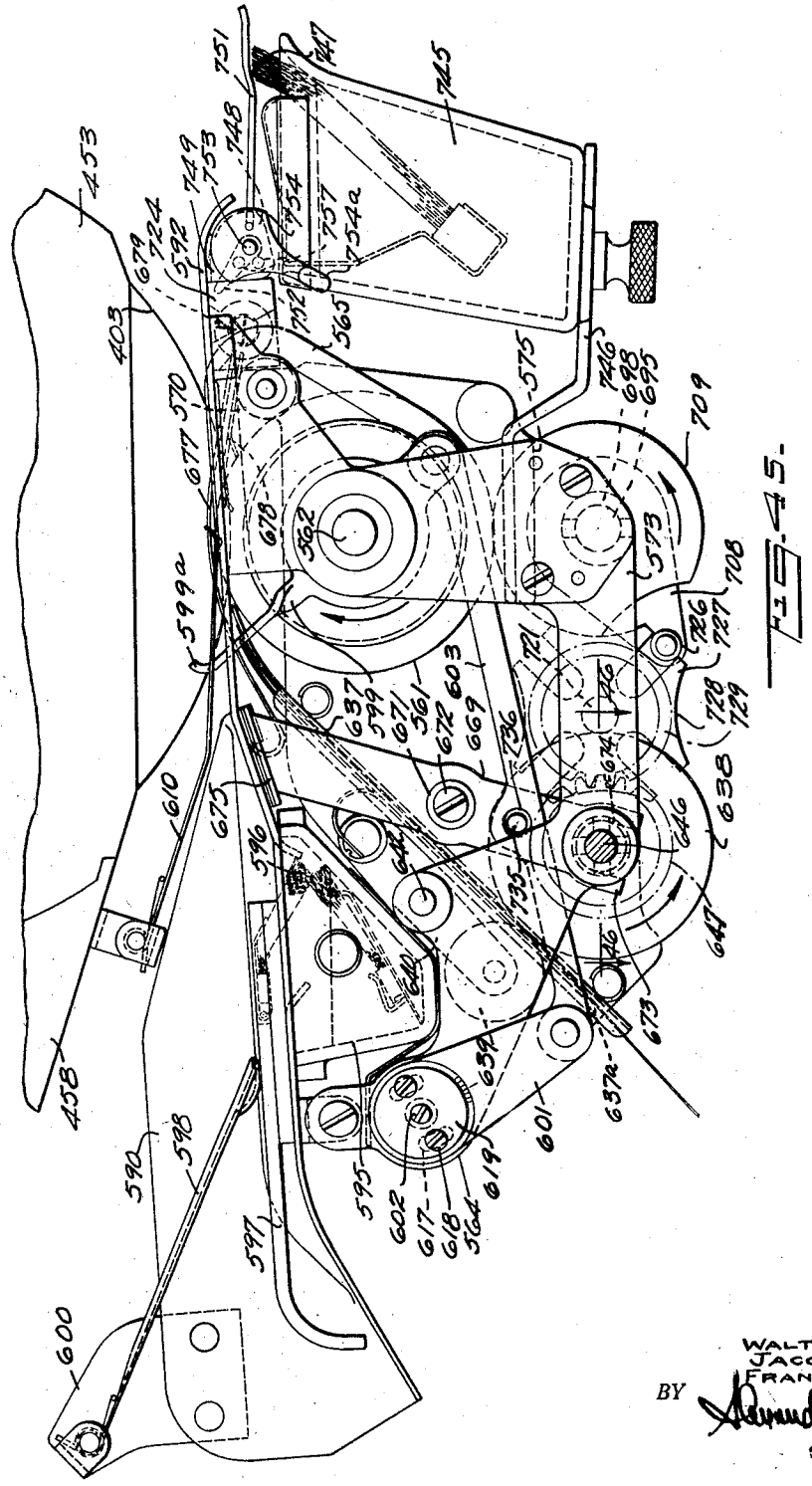


FIG. 45.

INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.
BY Bernard Powell
ATTORNEYS.

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OMNI VALUE STAMPING DEVICE

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FIG. 46.

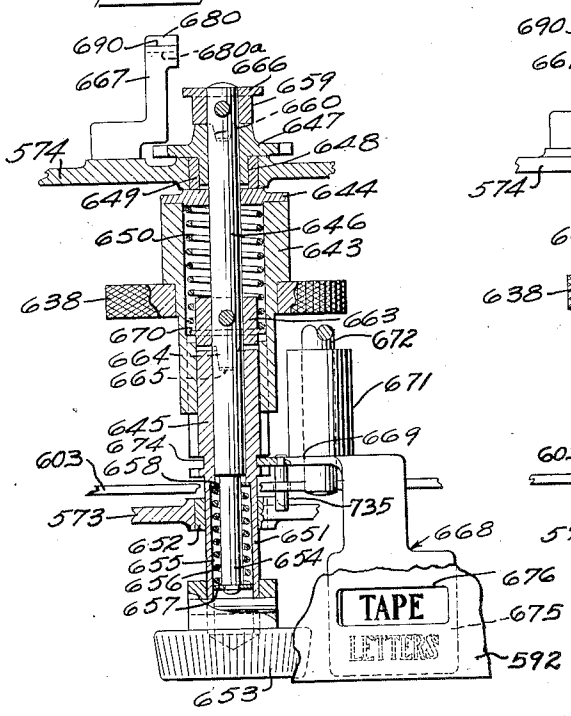


FIG. 47.

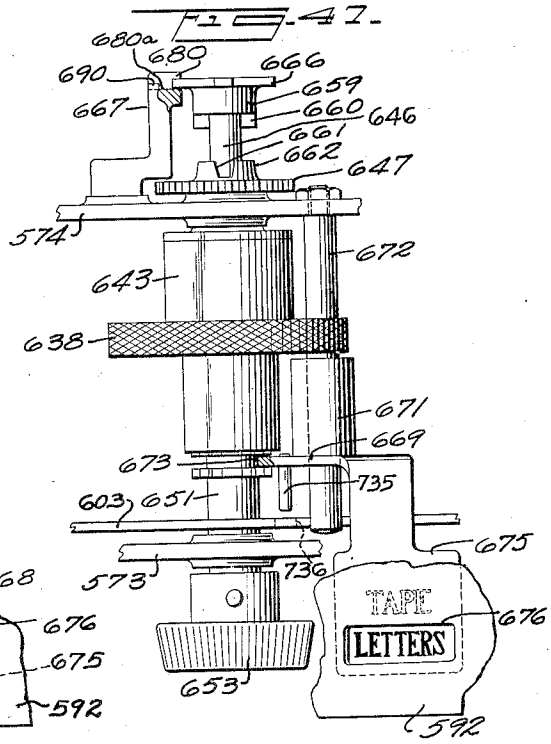


FIG. 48.

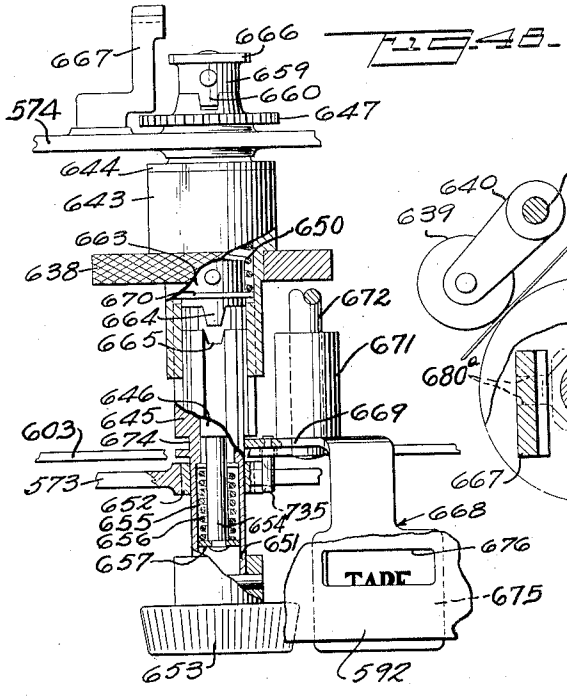
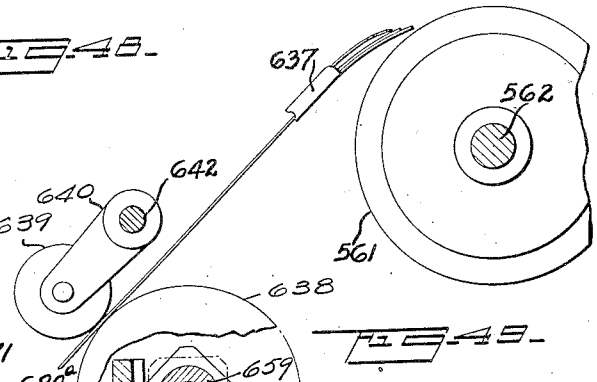


FIG. 49.



INVENTORS.
WALTER H. WHEELER, JR.
JACOB W. OGDEN.
FRANCIS J. ROUAN.

BY

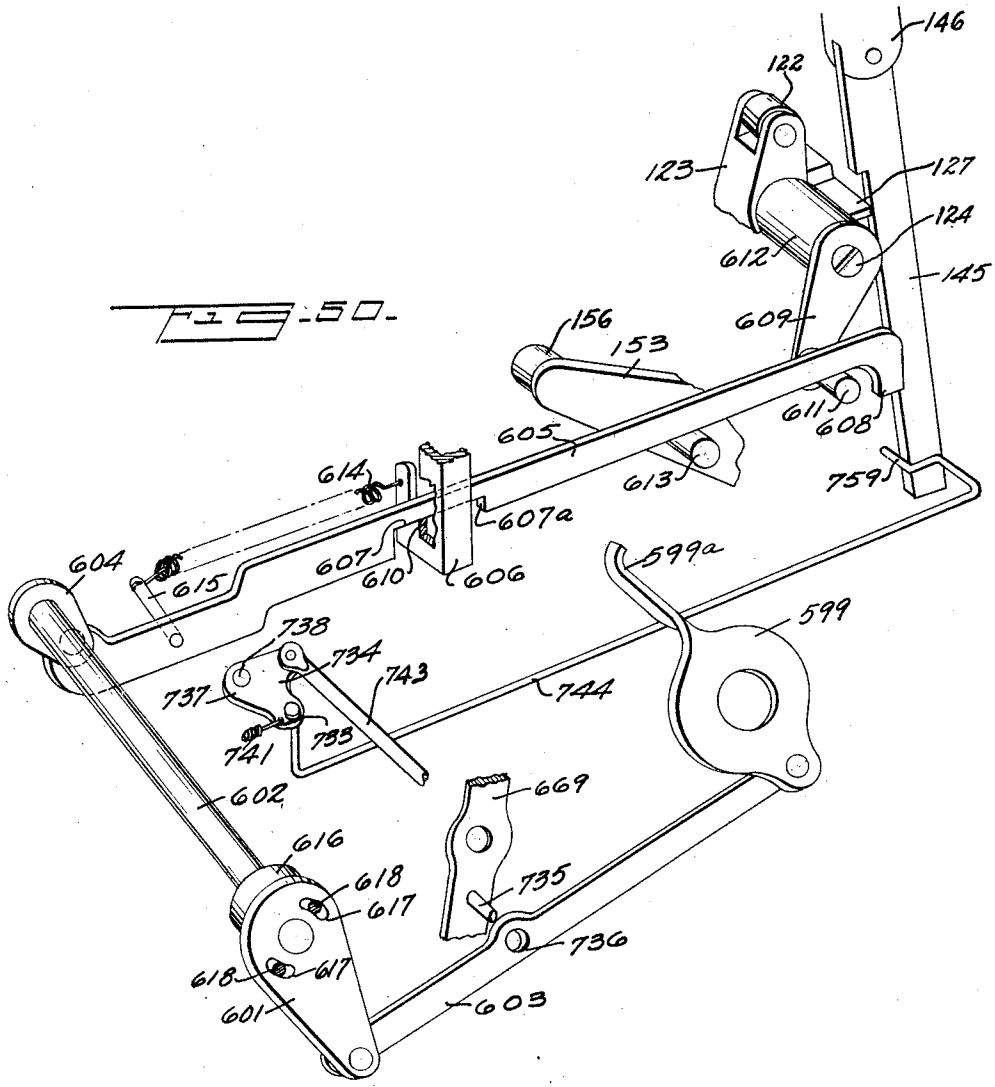
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Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

OMNI VALUE STAMPING DEVICE

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FIG. 50.



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OMNI VALUE STAMPING DEVICE

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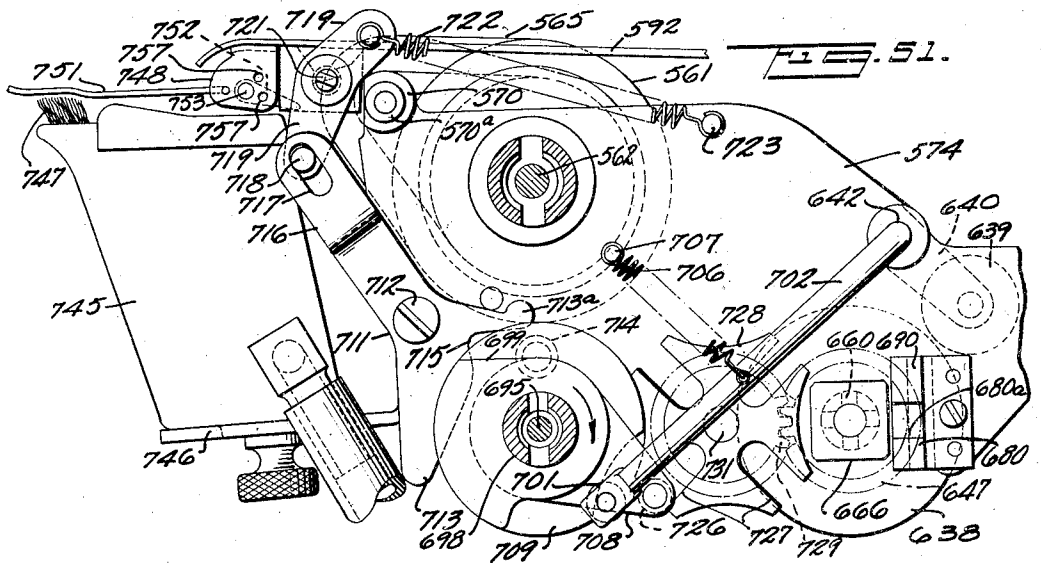


FIG. 51.

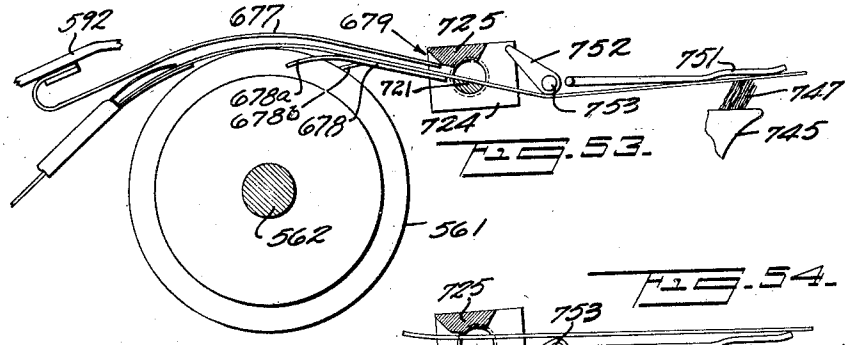


FIG. 53.

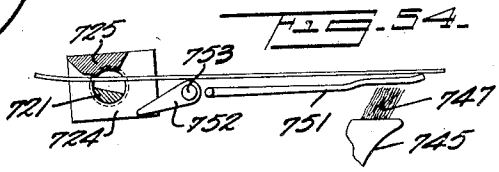


FIG. 54.

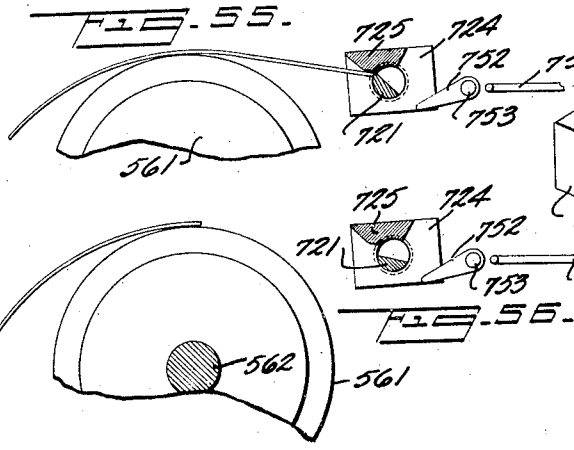


FIG. 55.

FIG. 56.

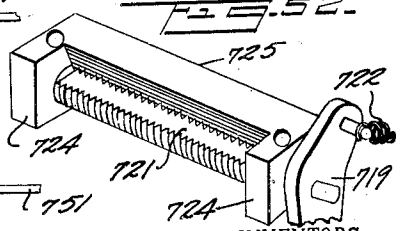


FIG. 52.

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OMNI VALUE STAMPING DEVICE

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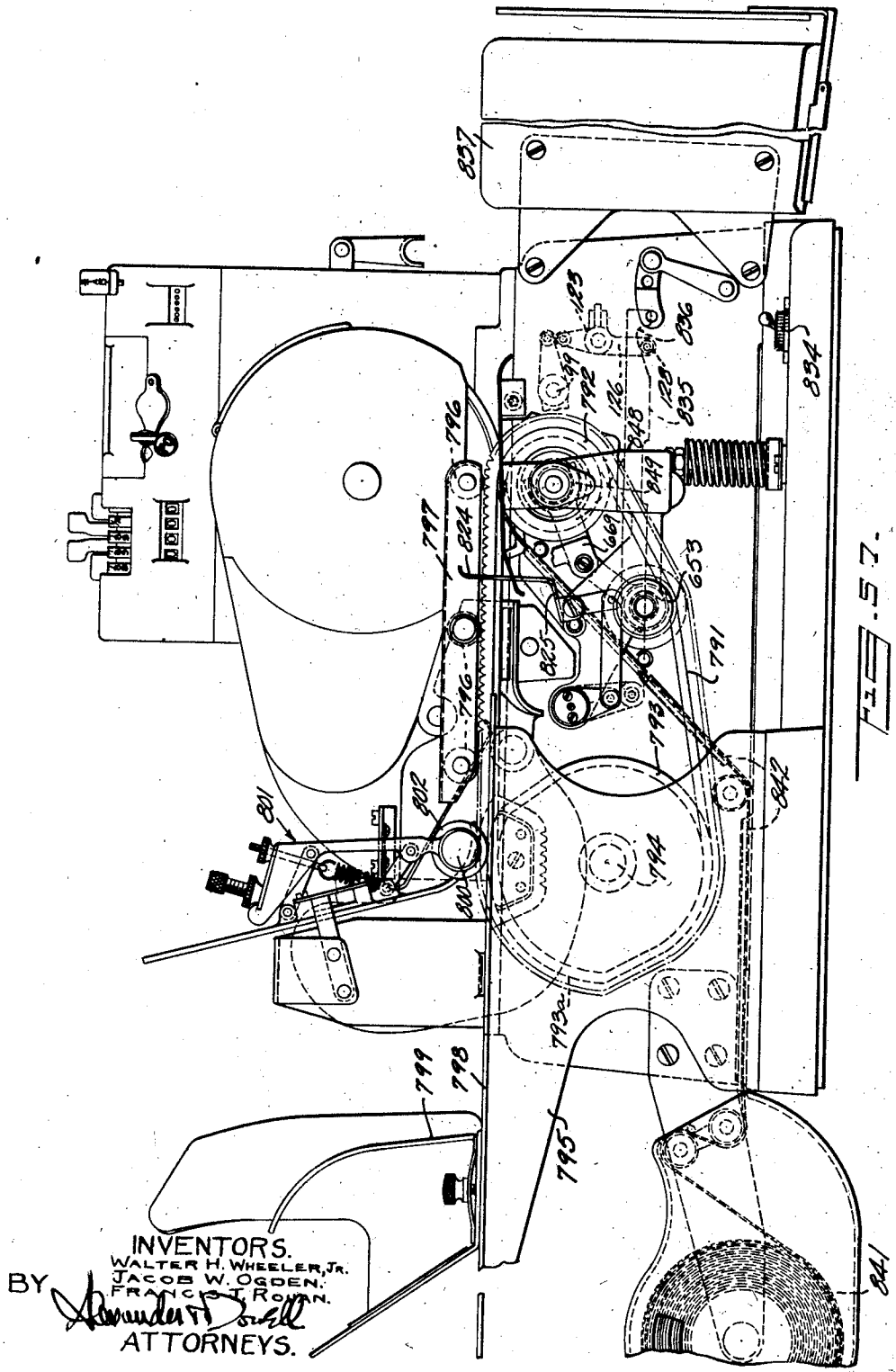


FIG. 57.

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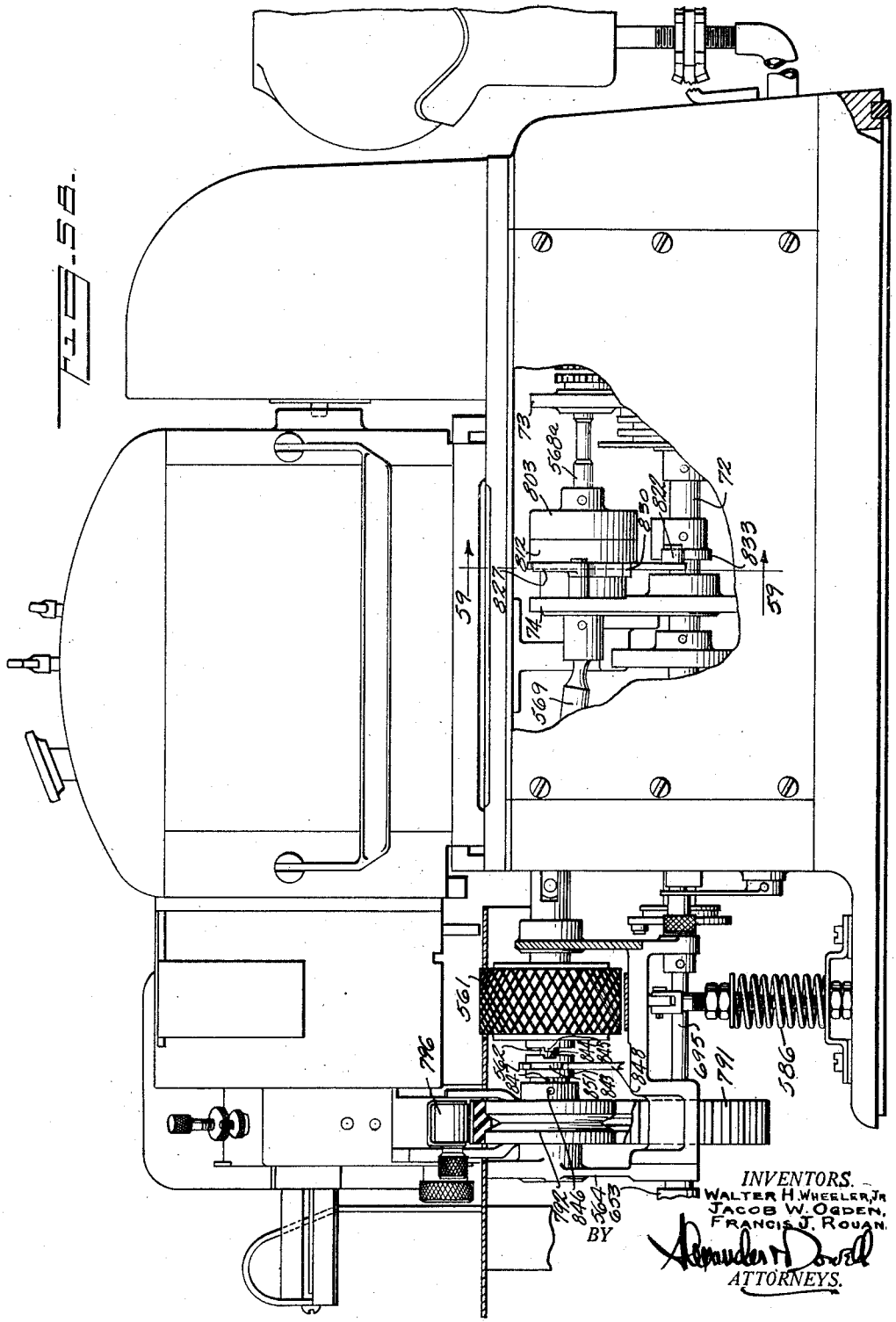
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Dec. 20, 1938. W. H. WHEELER, JR., ET AL 2,141,119

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FIG. 59.



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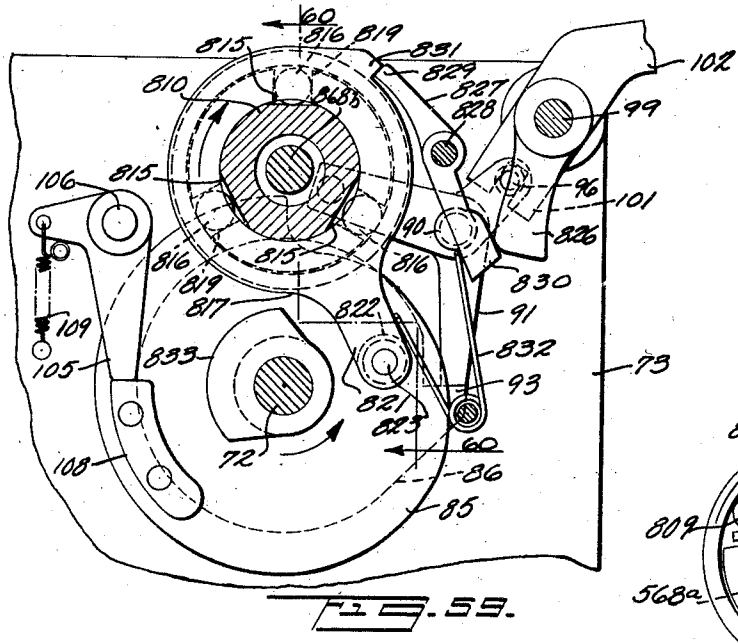


FIG. 59.

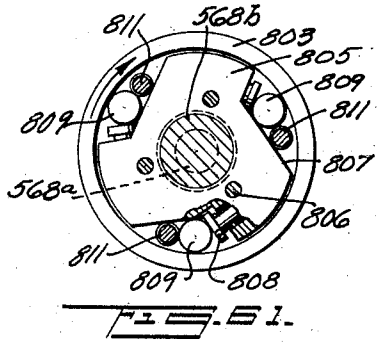


FIG. 61.

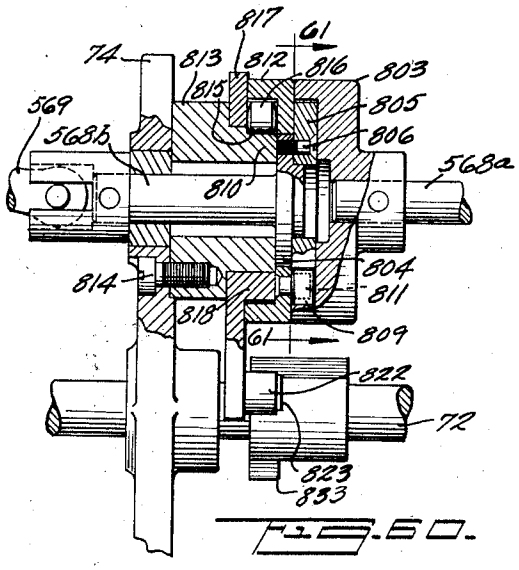


FIG. 60.

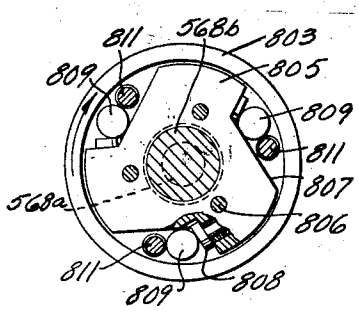


FIG. 62.

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Patented Dec. 20, 1938

2,141,119

UNITED STATES PATENT OFFICE

2,141,119

OMNI VALUE STAMPING DEVICE

Walter H. Wheeler, Jr., Stamford, Jacob W. Ogden, Springdale, and Francis J. Rouan, Stamford, Conn., assignors to Pitney-Bowes Postage Meter Co., Stamford, Conn., a corporation of Delaware

Application October 29, 1935, Serial No. 47,330

59 Claims. (Cl. 101—91)

This invention relates in general to metered mailing machines wherein means is provided to print authorized indicia directly on different classes of mail matter or on tape for use in place of postage stamps, and further is adapted for use in the printing of any other matter having omni denominational value, such as tax stamps and the like.

More specifically the invention relates to improvements in a machine of this character wherein an omni denominational value printing die is provided which is preferably controlled by means of manually settable levers and which is adapted to have the value of each printed indicia registered by means of a registering mechanism contained within a detachable meter unit.

Among the objects of the invention are the following novel features; a stamp printing unit permanently fixed to the machine and provided with a selective control whereby an imprint may be made on tape or letters as desired; an automatically actuated tape cutting device to sever said tape into stamps after printing; a moistening device including means to provide a moistened or unmoistened gummed surface as desired for said stamps; tripping means to start the machine cycle of operation and operable either manually or by the insertion of letters into the machine; means to prevent the letter tripping means from actuating the machine if set for printing on tape also to prevent the manual tripping means from actuating if the machine is set for printing on letters; means to prevent the tripping means from actuating when the tape supply is exhausted; means to prevent tripping the machine when the type wheel setting levers are not properly adjusted; means to prevent tripping the machine if the meter is not locked on the base; means for continuously tripping the machine; means to accurately align the printing drum with the setting type wheel setting elements when said drum is returned to its home position; means to provide a delay for the rotation of the drum until the drum aligner is released and to bring the drum home before the end of the operating cycle to allow the aligner to reengage the drum; means to lock the meter to the base including a structure operable in conjunction with the drum aligner means and having a plurality of points of approach from different sides of the meter, means to prevent tampering with the total counter of the registering mechanism when resetting the subtracting counter and means to prevent accidental tripping of the tens transfer mechanism while resetting the subtracting counter.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

The preferred embodiment of the invention is illustrated in the accompaning drawings, wherein, Fig. 1 represents a front perspective view of the machine in general with a meter mounted thereon;

Fig. 2 is a perspective view of the meter removed from the machine;

Fig. 3 is a plan view of the base with the cover plate removed and showing the general driving or transmission mechanism;

Fig. 4 is a side vertical sectional view of the machine taken along the line 4—4 of Fig. 3 and also includes such other parts of the machine and meter as are above the base cover and in front of the base;

Fig. 5 is a side vertical sectional view taken along the line 5—5 of Fig. 3, showing the main machine and meter driving mechanism;

Fig. 6 is a front vertical sectional view thru the base taken along the line 6—6 of Fig. 4 showing a portion of the clutch tripping mechanism;

Fig. 7 is a fragmentary front vertical section thru the base taken on the line 7—7 of Fig. 5 thru the main drive shaft and includes a portion of the intermittent drive mechanism for the meter;

Fig. 8 is an enlarged view of Fig. 6 showing the parts in a tripped position;

Fig. 9 is an enlarged vertical sectional view along the line 9—9 of Fig. 5 showing the intermittent drive with the meter drive shaft in a starting position;

Fig. 10 is a view similar to Fig. 9 showing the intermittent drive passing thru the latter part of its operating cycle;

Fig. 11 is a vertical sectional view taken just inside of the meter wall as indicated along the line 11—11 of Fig. 12 and includes a section thru the printing drum housing but with the drum shown in elevation;

Fig. 12 is a rear vertical sectional view thru the meter taken along the line 12—12 of Fig. 11 with certain parts removed and parts broken away;

Fig. 13 is a vertical sectional view similar to

Fig. 12 thru the front portion of the meter and taken along the line 13—13 of Fig. 11 also showing portions of the meter element broken away and parts removed;

Fig. 14 is a detail vertical sectional view taken thru the meter on the line 14—14 of Fig. 13 showing the selector mechanism, a portion of the counter actuating gear drive, a portion of the type wheel setting means and the driving means for the actuating shaft with the parts arranged in their normal home position, also a setting lever set in the number 5 position;

Fig. 15 is a fragmentary detail of a portion of the selector mechanism shown in Fig. 14 with the parts shown in an operating position, that is, after the actuating means has operated the device in accordance with the selected position;

Fig. 16 is a face view of a plate member which includes the selector gear, selector lever, selector cam, and a V toothed sector portion;

Fig. 17 is a detail face view of a rocker plate;

Fig. 18 is a face view of a counter drive gear with a selector actuating pawl secured thereto;

Fig. 19 is a fragmentary vertical section taken along the line 19—19 of Fig. 12 and showing the counter transfer actuating mechanism with the transfer pawl actuating member in a transfer position;

Fig. 20 is a vertical sectional view taken along the line 20—20 of Fig. 12, showing the counters, the counter shifting mechanism, and drive, in the normal home position;

Fig. 21 is a fragmentary detail view, with part in section and part in elevation, showing one unit of the selector mechanism and one unit of the counter drive mechanism and transfer mechanism in their relative position on the same drive shaft;

Fig. 22 is a vertical sectional view taken thru the cover portion of the meter on the line 22—22 of Fig. 13 and showing both the total and subtracting counters, also showing the cover door in an open position for resetting the subtracting counter;

Fig. 23 is a fragmentary vertical sectional detail view taken along the line 23—23 of Fig. 22, showing the transfer pawl locking comb in a locking position;

Fig. 24 is a vertical sectional view taken substantially on the line 24—24 of Fig. 12 showing shutter actuated locking means for controlling the tripping operation of the machine, also the subtracting counter lockout structure and a selector actuated structure connected with said shutter means;

Fig. 25 is a plan view of the subtracting counter mechanism taken in the direction of the arrow 25 on Fig. 22;

Fig. 26 is a part vertical sectional and part elevational view taken along the line 26—26 of Fig. 25 and showing the subtracting counter lockout mechanism in a normal operating position;

Fig. 27 is a view similar to Fig. 24 showing the shutter which is associated with the subtracting counter in a lockout position;

Fig. 28 is a vertical sectional view along the line 28—28 of Fig. 25 showing a cam means for releasing the locking pawl when resetting the subtracting counter;

Fig. 29 is a vertical sectional view taken along the line 29—29 of Fig. 11 with parts shown in elevation and showing the printing mechanism, tape feed shoe and printing drum inside the drum housing, also the inking mechanism adjoining the drum housing;

Fig. 30 is a fragmentary detail sectional view taken along the line 30—30 of Fig. 11 showing the tape feed shoe in a tape feeding position;

Fig. 31 is a horizontal section taken along the line 31—31 of Fig. 29 and showing a crossover method of connecting a set of intermediate gears in driving relation with the ball race setting gears and the type wheel gears;

Fig. 32 is a horizontal sectional view taken along the line 32—32 of Fig. 29 showing the type wheels, dater wheels and die protector;

Fig. 33 is a vertical sectional view taken along the line 33—33 of Fig. 29 showing a type wheel and type wheel locking comb;

Fig. 34 is a face view of a stamp with the postage indicia, amount paid and date thereon;

Fig. 35 is a plan sectional view thru the lower portion of the meter taken along the line 35—35 of Fig. 13, showing the relative positions of the base locking mechanism, drum aligner, and shutter mechanism;

Fig. 36 is a vertical sectional view taken along the line 36—36 of Fig. 35, showing parts of the locking structure in the position they would be in during an operating cycle of the machine;

Fig. 37 is a vertical sectional view taken along the line 37—37 of Fig. 36;

Fig. 38 is a vertical section taken along the line 38—38 of Fig. 35 showing the drum aligner pin in its extended position or the position at the time the machine is in the normal home position;

Fig. 39 is a vertical sectional view taken along the line 39—39 thru the base as indicated in Fig. 3 and thru the meter as indicated in Fig. 35 and showing the mechanism which is used to lock the meter to the base with said mechanism in its locked position;

Fig. 40 is a vertical sectional view taken along the line 40—40 of Fig. 39, showing the means for preventing the triping of the machine when the meter is not locked on the base;

Fig. 41 is a view similar to Fig. 36 with the parts shown in the position they will assume when the meter is removed from the machine base;

Fig. 42 is a view looking at the front of the machine base, showing the tape roll housing with the cover removed and with parts of the front wall of the base broken away to show a lockout device connected between the tape roll and a portion of the trip mechanism;

Fig. 43 is a fragmentary detail view of a portion of the mechanism of Fig. 42, shown in the position it will take when the tape roll is exhausted;

Fig. 44 is a plan view of the impression bracket with part of the letter guide plate broken away and further showing the tape letter shifting mechanism, tape cutting and tape moistening members, also a part of the trip controlling mechanism;

Fig. 45 is a front view of Fig. 44;

Fig. 46 is a horizontal sectional view taken along the line 46—46 on Fig. 45, thru the tape letter shifting device, with the parts positioned for the printing on tape;

Fig. 47 is an elevational view of Fig. 46 with the parts set in position for the printing on letters;

Fig. 48 is a view similar to Figs. 46 and 47, with the parts in position for the manual feeding of tape;

Fig. 49 is a fragmentary detail showing the tape feed roll and impression roller with the tape feed roll broken away to show a locking structure and the rear thereof;

Fig.50 is a diagrammatic perspective view showing a skeleton arrangement of the trip controlling mechanism;

Fig. 51 is a sectional view looking at the rear of the impression bracket and taken along the line 51—51 of Fig. 44;

Fig. 52 is a perspective view of the tape cutting knife;

Figs. 53, 54, 55 and 56 are fragmentary views showing the path thru which the tape travels from the impression roller to the cutting member and moistener, in which: Fig. 53 shows the tape as having passed thru the cutting member and being in a moistening position; Fig. 54 shows the tape in the same position with relation to the cutting member as in Fig. 53 but in a non-moistening position; Fig. 55 shows the tape after it is cut; and Fig. 56 shows the tape after it has been returned to a printing position on the surface of the impression roller;

Fig. 57 is a front elevational view of the machine equipped for the automatic feeding of letters;

Fig. 58 is a side elevational view of the machine shown in Fig. 57 with a part of the side wall broken away to show the position of a double clutch mechanism which is included in the automatic feed machine;

Fig. 59 is a vertical sectional view taken along the line 59—59 of Fig. 58, showing a portion of the double clutch mechanism and its relation to the clutch trip of the standard machine;

Fig. 60 is a vertical section taken along the line 60—60 of Fig. 59;

Fig. 61 is a vertical section taken along the line 61—61 of Fig. 60 showing the clutch members in a clutched position; and

Fig. 62 is a view similar to Fig. 61 showing the clutch parts in an unclutched position.

Referring to Fig. 1, the machine generally comprises a power base B, a meter or registering device M detachably mounted on said base, a printing unit P, an impression member PM, an envelope sealing device ES, a built-in tape supply and control unit TS adapted for optional use, and a tape moistener TM.

The base

As best shown in Figs. 3, 4, and 5 the driving mechanism, which is contained within the power base B, comprises a motor 66, a reduction drive 67, including a pinion 68 suitably mounted on a shaft 69, and a gear 71 meshing therewith which is freely mounted on a main drive shaft 72 and driven by said pinion 68. Said main drive shaft 72 is journaled at its rearward end in a suitable bearing in a bracket 65 and at its forward end in a bearing in a bracket 74, each of said brackets being mounted on the floor of the base. Said main drive shaft 72 is normally idle, while the gear 71 thereon which may be continuously rotated, is adapted to be connected in driving relation with the shaft by means of a clutch mechanism generally indicated at 75. Another drive mechanism, generally referred to as an intermittent drive, and indicated at 76, is also adapted to be driven by said main drive shaft 72 to provide a drive for the meter M.

The clutch mechanism includes a housing 77, best shown in Figs. 5 and 7, which is secured to the gear 71 by means of screws 78 and has a raceway 79 therein for clutch rollers 81. Associated with said housing 77 is a clutch block 82, which block has a hub portion 83 secured thereto and to the main shaft 72, and further has three wedge shaped pockets 84 to receive the clutch rollers 81, said rollers being normally urged toward the narrow portions of the slots by means of spring pressed plungers 63, Fig. 7. Fixed to the hub portion 83 is a cam disk 85, and a clutch stop disk 86, which disks are secured to a flange 87 on the hub portion by means of rivets 88. A second disk 89 is rotatably mounted on the hub portion 83 adjacent the disk 86 and has three pins 64 fixed therein which project into the path of the rollers 81, as shown in Fig. 7. Each of said clutch disks is maintained in a normal rest position by the engagement of a downwardly depending arm 91, of a clutch tripping rocker member 92, with projecting lugs 93 and 93' on each of said disks 86 and 89 respectively, as shown in Fig. 4. Said rocker member 92 is pivotally mounted on a stud 90, secured within the bracket 73, and has a roller 94 mounted at the end of one sidewardly extending arm 95 and a pin 96 on an upwardly disposed arm 97, each of which arms 95 and 97 form a part of the rocker member 92. A lever 98 is pinned to a shaft 99, suspended between the brackets 73 and 74, and has one downwardly disposed forked end 101, which is adapted to engage the pin 96, and a sidewardly disposed arm 102, having a notched portion 103, within which a roller 104 is rotatably mounted.

It will be seen from Fig. 7, that so long as the rocker member 92 is maintained in the position shown, with the downward arm 91 engaging the lugs on the clutch disks 86 and 89, the clutch will remain in a non-operating position, but that upon retracting said arm 91 from engagement with said lugs, the cam block will be released, which consequently will cause the clutch rollers 81 to move into a clutched relation with the rotating clutch housing 77 and thereby cause the main drive shaft 72 to rotate.

After said clutch is thus engaged, it is permitted to rotate thru one revolution to provide a one revolution cycle for the machine, the control of same being accomplished thru the engagement of the cam edge of the cam disk 85 with the roller 94 during the rotation of said cam member, which cam by means of its spiral like contour will raise the arm 95 of the rocker member so that, on the approach of the end of the full revolution of the cam member, the downwardly depending arm 91 of the rocker member 92 will again be in the path of the lugs on the clutch release disks 86 and 89, to provide an abutment therefor.

A device is provided to prevent rebound after the completion of a revolution which comprises a lever 105 pivotally mounted on a stud 106 in the bracket 73, and has a downwardly disposed arm 107, normally positioned in the path of an abutment pad 108 on the cam disk 85, said pad being so arranged, that on the approach of the end of the revolution of the cam disk 85, the abutment pad will first cam out the downwardly disposed arm 107, but at the end of the revolution, the arm 107 will snap back into its normal position behind said pad by the action of a spring 109. Outside of certain details of the clutch as related above, the general principles of structure are common to all roller clutch design.

The pivotally mounted lever 98 is adapted to be rocked when the shaft 99 is rocked, to thereby trip the clutch by releasing the arm 91 from engagement with the lugs on the clutch disks 86 and 89, through any one of a plurality of actuating means, each of which will be later described.

Tripping device

A tripping device, best shown in Figs. 6 and 8, which is actuated for each clutch release operation, comprises a unit which includes a lever 111 fixed to the outer end of the shaft 99 and has two oppositely disposed arms 112, 113. One arm 112 has a forked end 114, secured to a vertically slidable control rod 115, which rod is slidable within an upper bearing 117, provided on the base cover plate 70, and in a lower bearing 118 provided in the lower portion of the base, as shown in Fig. 42, and further, is normally tensioned in an upward direction by means of a heavy compression spring 116, said spring being compressed between the upper face of the collar 776 and a washer 120 which is backed by a pin 120a in the rod 115. A shock absorbing spring 110 is also provided at the lower end of the rod 115, as indicated in Fig. 42. The opposite arm 113 has a roller 119 rotatably mounted on a pin 121, supported within the forked outer end of said arm, which is adapted to normally rest upon the surface of another roller 122, rotatably supported at the upper end of a trip lever 123, as shown in Fig. 6. Said trip lever is pivotally mounted on a stud 124, projecting from a bracket 80 in the machine base and has an upwardly disposed arm 125, which supports the said roller 122, a downwardly disposed arm 126, and a sidewardly disposed lug 127. A roller 128 is also rotatably mounted at the lower end of the arm 126.

As best shown in Fig. 6, said trip lever 123 is normally urged to a substantially vertical position, by means of a spring 129 stretched between the arm 126 of the trip lever and a pin 131 on the bracket 80 and is maintained in said position by the engagement of an adjustable screw 132, in the arm 125, with an abutment lug 133 fixed to the bracket 80, the said screw being adapted to be finely adjusted to bring the roller 122 into correctly centered relation with the roller 119.

Associated with said trip lever 123 is a mercury switch 134, which is mounted within a suitable support 135, fixed to the side of a plate 136, said plate being pivotally mounted on a stud 137, secured to the bracket 80. A pin 138 secured in the plate 136, normally abuts the upper surface of a pin 139 secured within the vertically slidable rod 115, and is maintained in such position by the action of a spring 141, stretched between a portion of the plate 136 and a pin 142 in the bracket 80.

From the positions shown in Figs. 6 and 8 it will be seen that due to the engagement of the pin 138 with the pin 139, the position of the vertically slidable rod 115 will control the position of the mercury switch. For example, when the rod is in its lowered or normal position, as shown in Fig. 6, the mercury content of the mercury switch 134 is out of contact relation with the terminals of said switch, thereby maintaining an open circuit, while in Fig. 8 in which the rod 115 is shown in a raised or machine operating position, the mercury content of the mercury switch is shown completing a circuit across the terminals of said switch. When, therefore, the trip lever 123 is tripped to move the roller 122 out from beneath the roller 119 the spring loaded control rod 115 is released and the mercury switch mounting plate 136 is rocked about its pivot to the position of Fig. 8, to close the mercury switch contacts. This will thus energize the motor and actuate the reduction drive. Simultaneously with the movement of the control rod 115, the lever 111, the shaft 99 and the rocker lever 98 also on the shaft 99, will be rocked therewith, to rock the clutch tripping arm 91 out of the path of the lugs 93—93' on the clutch release disks 86 and 89, and thereby trip the clutch mechanism 75 to start the machine cycle.

As the cam disk 85 on the main shaft 72 rotates thru its revolution in the cycle, it engages the roller 94 on the arm 95, in a manner previously mentioned, to thus rock the shaft 99 in a direction which will thereby return the lever 111 to its normal position, and further return the roller 119 to its normal position over the roller 122. The cam edge of the cam disk 85 is arranged to permit the roller 119 to be raised slightly above its final resting position, to thus permit the roller 122 to actually clear same when passing therebeneath, when it is returned by the spring biased trip lever 123. Upon reaching the end of the machine cycle, the roller 94 is free of the cam 85, as best shown in Fig. 7, and the roller 119 on the lever 111 will again engage the surface of the roller 122. The vertically slidable control rod 115 is retracted by the rocking movement of the lever 111, when the shaft 99 is rocked through the returning rocking action of the lever 95.

A roller 143 rotatably mounted at the outer end of the switch mounting plate 136 is adapted to be engaged by a cam 144, fixed to the main drive shaft 72, said cam having a contour which is adapted to positively hold the switch mounting plate in a closed switch position after the control rod 115 is retracted and until the full revolution of the main drive shaft 72 is completed. After the full revolution is completed the roller 143 will drop off the end of the high point of the cam 144 through the action of the spring 141, to the position shown in Fig. 6 to thus open the mercury switch contacts.

The tripping lever 123 is adapted to be tripped by means of a pivotally mounted trigger arm 145, depending from a vertically movable plunger pin 146, which pin is slidable within a bore 147 in the base cover and is normally urged in an upward direction by means of a spring 148, compressed between the lower end of said bore and a flange 149 on said plunger. A shoulder 151 provided on said trigger arm 145, normally engages the sidewardly disposed lug 127, of the trip lever 123, and is held in this position by means of a spring 152. Upon the depression of the plunger pin 146, by means to be described later, said trigger arm 145 will rock the trip lever 123 about its pivot and automatically become disengaged from the lug 127 thereof, such as is clearly shown in Fig. 8, but will be again engaged with the said lug 127 upon the return of the plunger pin 146 to its upward position, and after the return of the tripping lever to its normal vertical position, as shown in Fig. 6.

One method of operating the trip is by means of a hand manipulated lever 140 which has one end pivotally mounted at 150, Fig. 3, to a lug projecting below the cover 70 of the machine base and the opposite free end extending outward from the front wall of the machine base to provide an operating handle 160. Intermediate the ends, the said lever 140 is adapted to rest upon the upper end of the trigger arm 145 so that when the handle 160 is depressed, the trigger arm will be moved downward to actuate the tripping device.

Said trigger arm 145 is maintained in a position away from the lug 127, until the completion

of an operating cycle by means of a bell-crank 153 pivotally mounted on a stud 154 in the bracket 80, which bell crank has a roller 155 rotatably mounted on one arm thereof and adapted to engage one edge of the trigger arm 145, and further has a second roller 156 rotatably mounted at the end of the other arm thereof which normally engages the cam edge of a cam 157, fixed to the main shaft 72. Said cam 157 is identical with and is positioned forward of the cam 144 as best shown in Fig. 3, and further is so shaped as to hold the depending trigger arm 145 in an outward position until near the end of a cycle of operation, whereupon the roller 156 will become disengaged from the cam edge to permit the spring 152 to move the depending bar forward again to its normal position.

Another cam member 158 is located on the main shaft 72, to the rear of cam 144, and has a cam groove 159 therein, within which a roller 161, rotatably mounted on a lever 162, is positioned. Said lever 162 has one end pivotally mounted on a stud 163, in the bracket 74, while its opposite end is attached to the lower end of a plunger 164, said plunger being slidably mounted within a bracket 165 and extending upward through the cover of the base, and also adapted to enter the base of the meter casing for a purpose to be later described. Referring to Fig. 6, the plunger 164 is there shown in its retracted position with the cam roller 161 engaging the low point of the cam groove 159 while in Fig. 8 the said cam roller is shown in position on the high point of the cam groove and the plunger is shown in its raised position.

It is to be noted from the foregoing that by means of the arrangement of the trigger arm 145, the bell crank 153 and cam 144, the machine will be permitted to be tripped only once during a cycle of operation, due to the trigger arm being definitely held out of tripping position by said bell crank 153 until the full revolution of the main drive shaft 72 is completed.

Means is also provided whereby the trip lever 123 may be rocked out of its normal position to allow the machine to run continuously for any desired period if desired. Said means comprises a rocker cam 130, Fig. 6, which is fixed to a rock shaft 130*a*, supported in bearings in the front wall of the machine base and the bracket 80. A manually operable handle 130*b* is fixed to said rock shaft 130*a* at the forward end thereof, to rock the rocker cam 130, and thereby move a cam portion 130*c*, into engagement with the roller 128 at the lower end of the trip lever 123, when the handle 130*b* is rocked to the left, to thus rock said trip lever to a trip position and maintain same in such position until the handle 130*b* is returned.

The meter

The meter, which is generally shown in Fig. 2 is adapted to be detachably positioned on the base cover plate 70. The frame and supporting structure which is best shown in Figs. 11, 12 and 13, generally comprises a base plate 171, end support plates 172—173, intermediate support plates 238, 240, and front and rear walls 174, 175, all of which plates and walls are secured to the base 171. A cover 176 and side plates 180—180 are further provided, which are secured together in such manner as to prevent the removal of any part within the meter after the meter is completely assembled, there being long screw rods 190—190 provided, one passing through the front wall and one through the rear wall which also engage ears 190*a* on the cover, to fix said cover 176 to the walls 174 and 175. The head portions of the rods are inserted through a counterbore as shown in Fig. 13 and are sealed by means of sealing plugs 200, thus making it impossible to gain access to the inside of the meter without breaking the seals and removing the screws 190—190, except through a counter door 335, which is also sealed, as will be hereinafter described.

As best shown in Fig. 11, a meter drive shaft 177 which drives the meter actuating mechanism, has its rearward end secured within the hub portion of a mitre drive gear 249, which hub is rotatably mounted in a bearing 179 in the rear wall 175 of the meter casing while the forward end of said shaft is rotatably supported within a bearing 183 in a printing drum housing 453 and an intermediate portion thereof is supported in a bearing 181 in the front wall 174. A ratchet gear 185 best shown in Figs. 11 and 13, is secured to the rearward end of the shaft 177 which, through the cooperation of two pawls 186—186, is adapted to limit the rotation of the shaft to one direction only. A slot 182 is also provided in the rearward end of the hub portion 178, which is to be used as a key slot when joined with the driving mechanism therefor, now to be described.

Meter drive

Said meter shaft driving mechanism is best shown in Figs. 5, 9 and 10, and comprises a gear 195, fixed to the main machine drive shaft 72, which is adapted to mesh with a gear 196, fixed to a splined shaft 197. Said shaft 197 is mounted within sleeves 188—188 which are rotatably mounted within bearings 189—189 situated at the lower ends of two brackets 191, 192. Said brackets 191, 192 are secured to the base cover plate 70 and further support another splined shaft 193 in axial alignment with the meter drive shaft 177, the ends of said shaft 193 also being mounted in sleeves 194—194, which sleeves are rotatably mounted in bearings 195, 195, within the upper ends of the brackets 191 and 192. A driving key plate 196 is fixed to the forward end of the splined shaft 193, and has a key 197 across the front face thereof, which is adapted to fit within the key slot 182 of the sleeve 178 on the meter actuating shaft 177. A ring 198 secured to the face of the bracket 191 has its inner periphery in engagement with a shoulder 199 of the key plate, to further secure said key plate in engaged driving relation with the splined shaft 193.

A Geneva drive means is provided to delay the starting of meter drive until after the main drive shaft has started and to stop the drive before the main drive shaft is stopped for a purpose to be hereinafter described. Said Geneva drive includes a gear 201 mounted on the lower splined shaft 187 which has an extended boss 208 and 208*a* at each face thereof, to the faces of which drive plates 202—202 are secured by riveting or other means such as indicated in Fig. 5. Said plates 202—202 have two outwardly extended ends joined together by means of rivet pins 203—203, Fig. 9, the centers of which are located on the pitch diameter of the gear 201. Rollers 204—204*a* are rotatably positioned over said pins 203, and upon the rotation of the gear 201 are adapted to engage one of two slots 205—205*a* in a slotted cam plate 206 positioned in alignment therewith and secured to one face

of a mutilated gear segment 207, said gear segment being mounted on the upper splined shaft 193 and being adapted to mesh with the gear 201 during a part of the revolution of the gear 201.

In Fig. 7 the Geneva drive mechanism is shown in the home position with the rollers 204 out of engagement with the slotted plate 206. Upon rotation of the main drive shaft 72, the lower splined shaft 187 will be rotated by the action of the gears 185 and 186, thus moving the drive plate 202 in a clockwise direction as viewed from Figs. 7, 9 and 10 while the teeth of the gear 201 pass by the mutilated portion of the gear 207, and upon reaching the full line position shown in Fig. 9, the roller 204 enters the slot 205. After engaging the lower wall of said slot, the cam plate 206 will begin to rotate in a counter-clockwise direction, to thus rotate the mutilated gear and upon reaching the dotted line position of Fig. 9, the teeth of the mutilated gear 207 will be brought into engagement with the gear 201, thus providing a direct gear drive between the main machine drive shaft 72 and the upper splined shaft 193 to the meter driving shaft 177. This drive continues until the roller 204*a*, opposite the roller which previously did the driving, reaches the position shown in full lines Fig. 10, in which the said roller is about to engage one wall of the slot 205*a*. The slotted cam plate 206 is then moved to the dotted line position of Fig. 10, whereupon the direct gear drive is discontinued to the mutilated portion of the gear 207 and a drive of the slotted plate and upper splined shaft will be further continued by the roller 204*a* until the said roller passes out of the slot 205*a*. It will thus be seen that there will be no rotation whatever of the upper splined shaft at the beginning of the rotation of the main shaft 72 or at the end of the revolution thereof, which condition provides a slight dwell to permit certain mechanical actions to take place within the meter and base at the beginning and end of each cycle of operation while the meter drive shaft is in a rest position, which actions will be more clearly understood after the meter mechanism and printing devices have been described.

It is also to be noted in regard to the drive of the meter drive shaft 177, that when the mutilated gear 207 is in driving relation with the gear 201, the ratio of same will cause the meter actuating shaft to be rotated at a greater speed than the drive shaft 72, and that with the particular design of the cam plate 206 with its cam slots 205—205*a* provides means whereby the drive of the shaft 177 is slow at the time of engagement of the roller 204 with the slot 205 and is gradually accelerated to bring the speed of the mutilated gear 207 up to the speed of the gear 201, also that at the end of the cycle, the rotation of the shaft 177 is gradually decelerated after the roller 204*a* moves into a driving relation with the cam slot 205*a*. This slow motion at the beginning and end of the cycle will also prevent any abrupt action in regard to the movement of the relatively large printing drum which is used with this machine.

A locking member is provided as shown in Figs. 9 and 10 to lock the plate 206 and shaft 193 against movement when the machine is in the home position, by having the upper curved surface of the boss 208 on the gear 201 engage a concave curved lower end 209 of the plate 206, when in the home position, shown in Fig. 7. Slots are also provided in the boss 208 as indicated at 209*a*—209*a* to provide clearance for the lower winged ends of the cam plate 206.

Within the meter are a number of devices which cooperate in setting up the combinations of values to be printed and the registering of said values. Said devices include selector mechanism indicated generally at S, Figs. 13 and 21, for setting up any desired value, counter devices indicated at C, Fig. 11, for registering the value set-up, and counter drive mechanism T for transferring the values set-up to said counter devices during the machine operating cycle.

At the forward end of the meter casing, or at the left end thereof as shown in Fig. 11, is a rotary printing drum 402 which is secured to the forward end of the meter drive shaft 177, and has contained therein a set of numeral type printing wheels 409 corresponding in number with the number of selector mechanisms S, and other mechanism to connect said printing wheels with the setting mechanism.

Each of these devices and mechanisms mentioned will next be described along with the operating mechanism therefore.

Selector and counter drive mechanism

As best shown in Fig. 13, a longitudinal rock shaft 211 rotatably mounted in suitable bearings 212 in the support plates 172, 173, 238 and 240 of the meter casing, supports the selector mechanism S and counter drive mechanism T.

Referring to one unit of the selector mechanism, which is best shown in Figs. 14, 15 and 21, also Figs. 16 to 18, the said mechanism includes a sleeve 213 splined to the shaft 211, which sleeve has two segmental gear members 214 and 215 freely movable thereon, each segment gear having a lining ring or bushing 216, to provide a suitable bearing therefore upon the sleeve 213. The segmental gear 215, Fig. 16, which will be hereinafter referred to as the selector gear, has an upwardly disposed extension 217 with a handle or setting lever portion 218 extending outward therefrom, also a cam slot 219 provided within said extension, and further, is provided with two sets of gear teeth, one set indicated at 221 being of small pitch and the second set indicated at 222 being of larger pitch.

The upper edge of the cam slot 219, which is the working edge thereof, is curved concentric with the axis of the rock shaft 211 throughout its length with the exception of the left end thereof which, as shown in Fig. 16 has a narrow slot 223 projecting angularly upward beyond the working edge of the cam slot 219.

As best shown in Fig. 18, the segment gear 214, which will be hereinafter referred to as the counter drive gear, has one set of gear teeth 224 thereon, and a pawl 225 pivotally mounted on an arm 214*a* extending outwardly therefrom. Said pawl has a detent 226 projecting sideward therefrom, which is adapted to engage the working edge of the cam slot 219 of the segment gear 215 as shown in Fig. 21, and is further provided with a foot 227, Fig. 18, which has a longitudinal slot 228 through the lower end thereof.

Between the adjacent faces of the selector gear 215 and counter drive gear 214, is a rocker plate 229 best shown in Figs. 17 and 21, which is secured to a flanged portion 231 of the sleeve 213 and has a concentrically curved outer edge 232 and a radial slot 233 adjacent one end thereof, with an upwardly disposed extension 230 continuing from one side of the said slot to provide

an abutment. A circumferential slot 234 is also provided below the outer curved surface of the rocker plate 229.

The selector gear 215 is adapted to be moved around the sleeve 213 by means of the setting lever 218 while the counter drive gear 214 remains in an idle position on said sleeve. By moving the setting lever 218 opposite a desired indicating numeral, on a suitable guide plate 380, Fig. 13, which will be later described, the equivalent numeral value is adapted to be set-up in one of the numeral printing wheels, through mechanism to be later described, and in a like manner each numeral of any desired value may be set-up in any of said numeral printing wheels. Means is also provided to check the amount set up by the setting levers before starting the operating cycle of the machine, which comprises a set of indicator wheels 280, Fig. 14, which wheels are conveniently mounted beneath a window 281, Fig. 2, in the meter cover 176 and are geared to the small pitch gear teeth 221 of the selector gears by means of gears 282, so as to provide the exact reading of the amount which is set-up.

In addition to setting up the desired value in the numeral printing wheels, a position is established which will control the limit of movement of the counter drive gear 214, when it is moved by the rocker plate 229 during the operating cycle of the machine. When said rocker plate 229 is moved, the foot 227 of the pawl 225, which is normally locked within the slot 233, due to the engagement of the detent 226 with the working edge of the cam 219, causes the counter drive gear 214 to be driven in unison with the rocker plate 229 until the detent 226 engages the end of the slot 223, as shown in the position illustrated in Fig. 15.

The pawl 225 upon engaging the end of said slot 223 is rocked about its pivot to disengage the foot 227 from its locked position within the slot 233 of the rocker plate 229, and thereby permits said rocker plate to continue its movement the full length of its stroke to the position indicated in dot and dash lines Fig. 15, while the counter drive gear 214 remains in the position at which it stopped. On the return movement of said rocker plate 229, the extended abutment portion 230 will strike the foot 227 of the pawl 225 and cause said pawl to be rocked about its pivot to again engage the foot 227 with the slot 233 in the rocker plate and thereby move the counter drive gear 214 to its normal position. It will thus be seen that with an equal distance of rocking movement of the shaft 211 for each cycle of the machine, the mechanism described will provide a variable distance of motion for the counter drive sector 216 in accordance with the setting of the selector handle 218.

The rock shaft 211, on which the selector gear and counter drive gear supporting sleeve 213 is splined, receives a rocking motion on each cycle of the machine operation through the action of a segmental pinion 235, Fig. 14, secured to the outer end of said shaft 211 and a segment gear 236 pivotally mounted on a stub shaft 237, supported between the intermediate support plate 240 and end plate 173. The said gear segment 236 is rocked by means of a cam 238, fixed on the outer end of a splined shaft 241, the cam surface of which cam is adapted to be engaged by a cam roller 242 rotatably mounted at the end of an arm 243, extending outwardly from the segment gear 236. A second cam 244, also fixed on the shaft 241, is adapted to engage a cam roller 245 rotatably mounted at the upper end of the segment gear 236 which thus provides a two point contact upon the cams to positively move the segment gear in a forward and return direction. As best shown in Fig. 12, the shaft 241 has one end supported in a bearing in the wall 173 while the other end is mounted within a sleeve 220, which sleeve rotates within a bushing 246 supported by a bracket 247 and secured to the meter base. Said shaft is adapted to be driven by means of a pair of mitre gears 248, 249, one gear 248 being secured to the inner end of the shaft 241, while the other gear 249 is the previously mentioned drive gear provided on the meter drive shaft 177. Upon rotation of the shaft 177 through one revolution, the shaft 241 will also be rotated through one revolution, but by means of the cams 239 and 244, the segment gear 236, and the segment pinion 235 and shaft 211, will receive a rocking motion.

As thus far described, it will be seen that by manually setting a setting lever 218 to a selected value, a position is established which controls the movements of the counter drive gears 214, when said gears are actuated through the drive of the rock shaft 211 during a machine cycle of operation.

During the manual setting operation of the said setting levers 218, the selected value is directly set-up in the numeral printing wheels in a manner which will be later described. During the machine operating cycle, the counter drive mechanism is actuated in the manner above described.

Registering mechanism

The counter or registering mechanism which is actuated by the movement of the counter drive gear 214, will now be described. Said mechanism includes the counters C, Fig. 20 which counters are of the delayed transfer type such as the type illustrated and described in a pending application Serial No. 712,241, and are best shown in Figs. 22 and 25.

Said counters generally comprise a number of numeral wheels 251 rotatably mounted on a shaft 252, each wheel having a gear 253 secured thereto, and transfer pawls 258 associated with said gears 253, all of which are supported on a suitable supporting bracket 254. The said brackets are pivotally suspended on pintles 250, between the support plates 238, 240. Said counter mechanism further includes transfer trip links 255, Fig. 22, which are pivotally mounted upon a rod 256, supported between the side walls of said bracket 254, each of which links individually and pivotally supports a transfer pawl 253 and each link also is adapted to be tripped by a counter wheel of lower denomination upon passing the transfer point to thereby pre-set an associated pawl 253 in a transferring position. When in this pre-set position, said pawl will be actuated, by mechanism to be later described, to advance an adjacent counter wheel of higher denomination one digit, during the latter part of a cycle of operation. As shown in Fig. 25, the counter wheel on the extreme right may be provided with a ½ cent denomination. The transfer mechanism associated with this wheel will be tripped to effect a transfer on each alternate operation.

A still further element of the counter structure includes detent pawls 257, Fig. 22, which are also pivotally mounted on the rod 256, each of which has a nose portion 259, normally urged under spring tension between two teeth of an

associated counter gear **253**, to thus provide a means whereby the gears **253** are always maintained in proper alignment.

There are two of said counter mechanisms, one of which is adapted to function as an ascending or total counter and one as a descending or subtracting counter. From Fig. 22, the total counter is shown at the right and the subtracting counter is shown at the left, and both counter mechanisms are arranged above a series of counter actuating segment gears **261**, which gears are associated with the counter drive gears **214** previously described.

Referring to Fig. 21, each segment gear **261** comprises a substantially flat plate structure with gear teeth on the periphery thereof and has a circumferential groove **262** depressed in one face thereof. Bushings **263**, are provided for each of said segment gears **261** and are freely mounted on the rock shaft **211**, on which the previously described setting and counter drive gears are mounted.

Adjacent each segment gear **261** is a transfer pawl actuating lever **265**, Figs. 19, 20 and 21 which also comprises a substantially flat plate, having an indented central section and a bushing **266** secured within an opening therein, with said bushing freely mounted on the shaft **211**. At the upper portion of said lever **265** two pins **267**, **267** are secured in spaced relation to each other, which project into the path of the transfer pawls **258**. A roller **268** rotatably mounted on the lower end of said lever **265** is adapted to be maintained in engagement with an associated cam **269** by the action of a spring **271**, which spring has one end anchored to the rear wall **175** of the meter casing and its other end attached to the lever **265**.

Each selector unit S has one counter actuating unit T associated therewith as shown in Fig. 13, and although only one of each of said units is shown, it will be understood that there will be one of each of said units provided for each of the four setting levers shown extending from the meter, Fig. 2.

By means of crossover shafts **272** and pinions **273**, **273** secured thereto, each of which pinions meshes with a counter drive gear **214** and a counter actuating gear **261** the movement of each counter drive gear **214** is transferred to an associated counter actuating gear **261**. Each crossover shaft is rotatably mounted in suitable bearings provided in the walls **172**, **238** and **240**.

Referring now to Fig. 20, a counter shifting cam member **274** is shown pivotally mounted on the rocker shaft **211** and is adapted to be rocked thereabout by means of two rotatable cams **275** and **276** secured to the drive shaft **241**. One cam **275** engages a roller **277**, while the other cam **276** engages a roller **278**, each of which rollers is rotatably secured to the lower end of the counter shifting member **274**. At the upper end of said member **274**, two cam slots **279** are provided. each of which is engaged by the ends of the counter shafts **252**, which project outward from each of the counter brackets **254**, **254**.

The operation of the mechanism affected to set up a value and transfer said value to a counter will now be described.

Assuming that a value of 5 has been set-up by one of the setting levers **218**, the relative position of certain of the parts, which cooperate with the setting lever to transfer the value set-up to the registering mechanism, will be in the positions shown in Figs. 14 and 20 before the cycle of machine operation is started. During the operating cycle, the rock shaft **211** will be rocked by the action of the cam actuated segment gear **236**. During this rocking action, the rocker plate **229** will be rocked forward and will carry with it the counter drive gear **214** until the foot **227** of the pawl **225** on said counter drive gear **214** is released from engagement, with the slotted portion **233** of the said rocker plate in a manner previously described. The rocker plate **229** then completes its full forward stroke and returns to the position at which the pawl **225** became disengaged, without effecting any further operation but upon the reengagement of said pawl **225** with the slotted portion **233** of the rocker plate, the counter drive gear **214** will be moved rearward to its starting position.

It is on the forward or initial stroke of the counter drive gear that the value set-up by the setting lever **218** is transferred to the counters C, therefore, before any motion is imparted to the counter actuating segment gears **261**, which gears are driven through the crossover shaft drive, the counters are rocked downward from a normally raised or inoperative position to a lowered or operative position, to move the counter gears **253** of each counter into driving relation with their associated counter actuating segment gears **261**. After the counter gears **253** are in an operative meshed relation with the segment gears **261**, the rocking movement of the rock shaft **211** will be effected, through the rocking action of the rocker segment gear **236** and pinion **235**, which rocking movement will thus move the rocker plate **229** to drive the counter drive gear **214**, and by means of the crossover drive, will actuate the counter actuating segment gear **261**. With the counter gears **253** in meshed relation with said segment gears **261**, the forward motion of said gears **261** will cause the counter gears to be rotated to thereby set-up an increased value in the total counter and a decreased value in the subtracting counter in accordance with the selected value. It will be noted that when the counters are in such a position that the direction of rotation of both counteds is the same. Therefore, to render the left hand counter as viewed in Fig. 11, a subtracting counter, the numeral values on the wheels are engraved in the reverse direction.

After the value set-up has thus been registered in both counters, the said counters are rocked upward to release the counter gears from their meshed engagement with the counter actuating segment gears **261** as soon as the shaft **211** reaches the end of its forward rocking movement. This is controlled by the contour of the cams **275** and **276** on the shaft **241**, which actuate the counter shifting cam member **274**.

Tens transfer

Each transfer pawl actuating lever **265** is independently rocked by the individual cam members **269** in a staggered order, due to the placement of said cam members in a staggered relation as shown in Fig. 19, and for the purpose of permitting one transfer from a numeral wheel of lower denomination to be completed to a wheel of higher denomination before a transfer for the adjacent numeral wheel of higher denomination is started.

Said cam members **269** are fixed to a shaft **283**, which shaft is rotatably mounted in suitable bearings in the intermediate support plates **238** and **240** of the meter, and has a gear **284** at the

outer end thereof as shown in Fig. 20. Said gear **284** meshes with a drive gear **297**, fixed to the drive shaft **241**, and since both of said gears are the same diameter, the shaft **283** will be rotated through one revolution upon each operating cycle of the machine.

Referring to Fig. 19, one cam **269** is shown as having moved its associated transfer pawl actuating member **265** forward by the engagement of one pin **267** with a transfer pawl **258**, to thereby effect a transfer.

After the roller **268** on the transfer pawl actuating members **265** pass the high points on their associated cams **269**, the said members **265** return to their normal home position under the tension of the springs **271**, while the transfer pawls **258** are rocked to their normal position by the action of springs **285**, Fig. 22, attached to the rear ends of the transfer pawls and at the end of the counter bracket **254**.

Means is also provided for the positive return of the transfer pawl actuating members **265**, if any of the springs **271** should become ineffective, which means is best shown in Figs. 13, 19 and 21 and comprises a bar **286** fixed to the outer ends of two rocker arms **287**, fixed to the rock shaft **211**. The bar **286** passes through arcuate clearance slots **290** in the transfer pawl actuating members **265**, and is adapted to be rocked to its extreme forward position before the cam surface of the first cam member **269** moves into active relation with the roller **268**, to rock the first transfer pawl actuating member **265**. After the last of the cams **269** has functioned, the bar **286** is returned by the return rocking movement of the rocker shaft **211**, and if any of the members **265** should not have been retracted by the spring **271**, the bar **286** will engage the right end of the slot **290** as viewed from Fig. 19, to thereby mechanically or positively return same.

Means is also provided to prevent accidental movement of any of the transfer pawl actuating members **265** while the counter gears are in operative engagement with the counter actuating segment gears **261**. Said means comprises a bail **289**, best shown in Figs. 12, 19 and 20, which is pivotally mounted on studs **291**, projecting inwardly from the intermediate support plates **238** and **240**, and has a wing **292** formed thereon also a cam slot **293** within said wing. The upper roller **278** on the counter shifting cam member **274** extends into said cam slot **293** in addition to being in engagement with the cam **276**. Therefore, upon moving the cam member **274** to rock the counters inward into engagement with the segment gears **261**, the movement of the roller **278**, within the cam slot **293**, will cause the bail to be rocked inward, and a projecting flanged portion **294** thereon will be moved over projecting ends or tail portions **295** of the transfer pawl actuating members **265**, to thereby block any upward movement thereof. This blocked condition continues until the counter actuating segment gears **261** complete their operation of transferring to the counters, the value which was set-up, there being slots **296** provided in the flanged portion **294**, Fig. 12, for the said segment gears **261** to pass through while rotating.

After the said segment gears **261** have completed their movement, and the counter shifting cam member **274** is again rocked to shift the counters out of operative engagement with the counter actuating segment gears **261** as previously described, the flange **294** of the bail **289** is also removed from the path of the projecting ends **295** of the transfer pawl actuating members simultaneously with the movement of the counter shifting member. Therefore, with the counter gears **253** free from engagement with the segment gears **261**, the transfer pawl actuating members **265** are now free to perform the final registering operation of having their pins **267, 267** moved into engagement with the lower hooked ends of the transfer pawls, to rock such pawls, which have no transfer to make, and to advance such pawls which have a transfer to make, as best shown in Fig. 19. After the transfer is completed and immediately before the cycle of operation is completed, a bail **298** pivotally positioned on a shaft **299**, supported between the walls **237** and **238**, Figs. 13 and 20, will be moved into engagement with the teeth of the segment gears **261** by the action of a spring **310**. Also cooperating with said bail is a cam roller **298***a*, rotatably mounted at the end of an arm **298***b* of said bail member, which is maintained in engagement with the edge of a disc cam **320** by the action of said spring **310** and is adapted to drop into a slot **320***a* in said cam disc to cause the locking action. The disc cam is fixed on the aforementioned cam shaft **241**.

Meter lockout

Means is provided for locking out the machine after a predetermined minimum reading of the subtracting counter has been reached.

As best shown in Figs. 24 to 28, said lock-out means includes three gears **301**, each of which is rotatably mounted on a shaft **302**, supported at extended ends **300** of the counter bracket **254**, and arranged in meshed relation with associated counter gears **253**. Each gear **301** has a hub **303**, and within each hub is a radial slot **304**, positioned in such manner that when the numeral wheels, which are associated with the gears **301**, reach a predetermined position, one or more locking dogs **305** will be forced into engagement with the slots **304** in the hubs **303**. Said dogs **305** are fixed on a shaft **306**, which shaft is mounted on downwardly extended portions of the ends **300** of the counter bracket and are normally urged toward the periphery of the gear hubs **303** by the action of a lever **307**, which lever is also secured to the shaft **306**.

Said lever **307** is normally held under tension by means of a spring biased locking member **308**, pivotally mounted on the rock shaft **211**, and is urged to move about its pivot by means of a spring **309**, said spring having one end secured to an anchor pin **311** on the intermediate support plate **238**, and the other end secured to an arm **315** on said locking member. A pin **312** secured within an upwardly projecting portion of the locking member **308**, engages a tail **313** extending downwardly from the lever **307**, and due to the pull of the spring **309**, will tend to rock the shaft **306** and consequently rock the dogs **305** toward the hubs **303** or into the slots **304** when all of said slots are in alignment. Further detail of the operation of the arms **305** in conjunction with the slots **304** will be found in a patent to Pitney #1,382,224.

Depending downwardly from the locking member **308** is a foot **314** which is adapted to be moved into the path of a lug **316** on a collar **317** when the said locking member **308** is rocked, at the time a machine lockout operation becomes effective such as shown in Fig. 27. The collar **317** is fixed to the shaft **283**, which rotates through one revolution upon each cycle of the machine, therefore, when the foot **314** is moved into the path

of the said lug 316, the shaft is prevented from being further rotated.

Also cooperating with the locking member 308, to further effect a machine lockout when the subtracting counters reach a predetermined value, is a shutter 318, best shown in Figs. 13, 24 and 27, which is pivotally mounted upon a pin 319, supported between two brackets 321. Said shutter has one outwardly extending arm 322 and a radial slot 324 provided in the curved lower end 323 thereof, which curved end is adapted to be moved thru an arcuate slot 325 within the base of the meter. A pin 326 projecting from the arm 322 is adapted to be maintained in engagement with a slotted portion 330 of a vertically movable member 327, said member 327 being slidably mounted on a pin 328, extending from one face of the intermediate support plate 238, and through a vertical slot 329 in an upwardly disposed arm 331 of the member 327. A pin 332, projecting outward from the arm 315 of the locking member 308, is adapted to be maintained in engagement with the upper wall of a slot 333 in the arm 331. A spring 334 having one end fixed to an anchor pin 334a in the intermediate support plate 238 and its opposite end secured to a portion of the vertically movable member 327, is adapted to urge said member 327 downward, thus causing the upper wall of the slot 333 to be urged against the pin 332. When the locking member 308 is rocked to its locking position, the pin 332 is moved downward, which thus permits the vertically slidable member 327 to be moved downward under the action of its spring 334, and when moved, will cause the arm 322 of the shutter to be rocked downward to thus rock the shutter partially about its pivot.

As best shown in Fig. 8, the shutter 318 cooperates with the vertically slidable control bar 115, the upper end of which bar is adapted to move into and out of the slot 324 upon each movement thereof after each tripping operation of the machine is effected. As long as the shutter 318 and its associated parts are in the position shown in Fig. 24, or normal machine operating position, the slot 324 will be positioned directly in the path of the upper end of the rod 115, thus permitting the free vertical movement of said rod each time the tripping mechanism is operated. When the parts are moved to a lockout position however, such as indicated in Fig. 27, the shutter 318 will have rocked about its pivot to bring a solid or an abutment portion of the lower end thereof into the path of the end of the vertically slidable rod 115, thus obstructing the movement of said rod and preventing the tripping mechanism heretofore described, from effecting a tripping operation.

As previously described, the counters are rocked into and out of an operating position with respect to the counter actuating segment gears 261. Therefore, a flexible means was devised, whereby a continuous pressure could be applied to the locking dogs 305 through the slidable engagement of the tail portion 313 of the lever 307 with the pin 312 to permit the freedom of rocking movement of the subtracting counter.

It is to be noted that it is through the movement of the vertically slidable member 327 and shutter 318 that machine lockout is normally effected but if these members 327 and 318 should fail to function the foot 314 of the member 308 will still be moved into a locked relation with the lug 316 on the collar 317, by the action of the spring 309, the said member 308 being freely rotatable due to the elongated slot 333.

When a machine has been locked out, further operation thereof will be prevented until the counter wheels of the subtracting counter are reset, which resetting operation is usually performed by an authorized person at the postoffice to whom the meter is taken.

Resetting subtracting counter

The approach to the subtracting counter is thru a normally sealed door 335 at the upper end of the meter casing best shown in Figs. 2 and 22, which door is hinged on a pin 336, rotatably supported in angle brackets 337, secured to the underside of the cover 176. Upon opening the door, after breaking the postoffice seal indicated at 340, Fig. 2, and unlocking same thru the key actuated lock 338 with a key intrusted to the postmaster, sufficient space is uncovered as will be seen in Fig. 22 to permit a person to reset the wheels 251 by means of a stylus or the like, to the value corresponding with the amount of postage it is desired to purchase.

Before a resetting operation is begun, the locking mechanism is first reset to its normal position from the position shown in Fig. 27 to the position shown in Fig. 24. This is accomplished by means of a cam piece 356, Fig. 28, pivotally mounted on the shaft 302 of the descending counter and has a cam face which is adapted to engage a pin 357 projecting from the upper end of the lever 307. Said cam piece is normally maintained in a fixed position by means of a spring finger 358 formed on the counter wheel guard member 354, which spring is adapted to engage an upwardly projecting nose 359 on the cam piece 356, to lock said cam piece in a fixed position while so engaged. When the locking mechanism becomes effective, the lever 307 will be rocked about its pivot to bring the pin 357 thereon into engagement with the cam surface of the cam piece 356, as best shown in the full line position of Fig. 28. Upon opening the door 335 to reset the subtracting counter, access is had to said cam piece, which is moved from the full line position to the dotted line position of Fig. 28 by forcing an upwardly projecting finger 361 thereon downward, to thus rock the lever 307 and consequently the dogs 305 back to their normal position shown in Fig. 26. This camming action will also return the locking member 308, the vertically movable member 327, and the shutter member 318, from their locked position shown in Fig. 27 to the normal position of Fig. 24.

After the resetting operation is completed the cam piece 356 is again returned to its normal position, or the full line position of Fig. 28, and when in this position, the dogs 305 are again urged against the hub portions 303 of the gears 301 through the action of the spring 309, as shown in Figs. 24 and 26.

Means is provided to prevent the accidental tripping of a transfer dog in the descending counter while resetting the said counter. As best shown in Figs. 22 and 23, said means comprises a horizontally slidable locking comb 339 slidably mounted within the intermediate support plates 238 and 240 as shown in Figs. 22 and 23, which locking comb is urged toward the support plate 238 by means of a spring 341, said spring having one end anchored to said plate 238 and its opposite end secured to a pin projecting from said locking comb. An internal flange 342 provides a stop for said locking comb, one end there-

of being adapted to abut the wall 238, when the door is in a closed position. Said locking comb 339 is provided with teeth 343, which teeth are normally positioned out of the path of movement of the transfer pawls 258 when the door 335 is closed, but upon opening said door, a cam member 350, secured at one end of the hinge pin 336, is adapted to engage one end of the locking comb 339 and slide same sideward to bring said teeth 343 directly into the path of movement of the transfer pawls such as shown in Fig. 23, thus providing an abutment or stop for said transfer pawls.

It will be further seen that when the door 335 is open, it will also be impossible to set any of the counter wheels of the subtracting counter beyond the transfer point in either direction, due to the fact that the transfer teeth, indicated a 260, Fig. 22, which are associated with each of the counter gears 253 and which are adapted to trip the transfer pawl supporting links 255 previously described, will upon engagement of said transfer teeth with said links 255, cause the rear end of the transfer pawls 258 to be jammed against the locking comb teeth 343 and thereby block any further movement of the said counter wheel.

Provision is also made to prevent tampering with the counter wheels of the total counter while resetting the subtracting counter as shown in Fig. 22, which comprises a flapper plate 344, pivotally mounted on pins 345, extending inward from the support plates 238 and 240, and further includes an arm 346 having one end pivotally mounted on a stud 347, and an opposite forked end in engagement with a pin 348 extending from one end of the flapper plate.

By means of a torsional spring 349 on the stud 347, the arm 346 is urged to rotate about the stud 347 in a counterclockwise direction, and through the connection of said arm with the flapper plate 344, said flapper plate normally tends to rock about its pivot in a clockwise direction. By means of a collar 351 on an extended end of the hinged pin 336, which collar is in alignment with the upper edge of the arm 346, an abutment is provided to limit the upward movement of the arm.

When the door 335 is in a closed position, a flat 352 on said collar is adapted to be engaged with the upper edge of the arm 346 to maintain the flapper in the raised position shown in Fig. 11. Upon opening the door however, the flat 352 is moved out of engagement with the arm, when the peripheral surface of the collar moves into engagement therewith, to cam the arm downward and thereby cause the inner edge of the flapper plate to be moved directly behind the rear ends of each of the detent pawls 257 as shown in Fig. 22. Since the detent pawls 257 are normally maintained in engagement with the teeth of the counter gears 253 of the ascending counter, and the edge of the flapper is in engagement with the rear of said detent pawls, all attempts to tamper with or move the gears 253 will be frustrated.

Any attempt to reach the counters through the door before it is entirely closed, is also blocked by means of a flanged extension 353 provided along the under surface of the cover 335, Fig. 22, which is adapted to conceal the door opening before the arm 346 is permitted to move upward against the flat 352 or before the cam 350 has been moved out of operative engagement with the end of locking comb 339. Windows, which are provided in both the cover 176 and door 335, through which the values registered on the counter are made visible are protected by heavy plate glass as indicated at 355.

Exact setting of selector levers

Means is provided to prevent the tripping operation of the machine, if any setting lever happens to be in any position other than the precise position required for accurately setting the printing wheels 409.

Referring to Figs. 12 and 24, the mechanism provided to accomplish this purpose comprises rocker dogs 363 one for each of the setting levers 218, which are pivotally mounted on a shaft 364 secured within the end support plate 172 and intermediate support plate 238, and each has a nose portion 365, which is adapted to engage notches 370*a* in a V toothed sector 370, formed as a part of the extension 217 of each selector gear 215. See also Fig. 16. Upon moving any of the setting levers 218 to a selected position, the dogs 363 will be rocked about their pivots by the rise and fall of the sector teeth upon passing over each tooth, and when rocked will cause a tail portion 366 to engage a rod 367, suspended between an arm 368, and one arm 371 of a bell crank 369, said arm and bell crank being fixed to the shaft 364 as best shown in Fig. 12. The bell crank 369 is thus rocked from the full line to the dot and dash position of Fig. 24 as the nose portion 365 passes over each tooth 370*a*. By means of tortional springs 360 coiled on the shaft 364, each dog is individually maintained in contact with the toothed sector 370, therefore any motion of any one of the dogs 363 will cause the bell crank 369 to be rocked, regardless of which setting lever is being actuated.

An adjustable link 373, has one end connected to the second arm 372 of the bell crank 369 and its opposite end connected to an arm 374, said latter arm being fixed to a shaft 375, having one end supported in a suitable bearing 376, Fig. 12, in the intermediate support plate 238 and the other supported in an end support plate 172. Also secured to the shaft 375 is a segment gear 377, which gear is adapted to mesh with a similar segment gear 378, Fig. 24, formed as a part of the shutter member 362. A spring 379 anchored at one end to the base of the meter casing, and having its oposite end secured to a pin projecting from the segment gear 377, draws said segment gear downward against a stop pin 381, projecting upward from the meter base.

With the parts in the full line position of Fig. 24, the upper end of the vertically slidable control rod 115 is adapted to engage the slotted end 324 of the shutter 318, also a slot 382 in the end of the shutter member 362. When the setting lever 218 is moved however, to cause a dog 363 to be rocked out of its normal position, the rocking motion of said dog will cause the tail 366 to force the rod 367 out of its normal position and thereby rock the bell crank 369. This rocking action of said bell crank will, through the link connection 373, rock the segment gear 377 and the associated gear portion 378 of the shutter member 362 to the dotted line position of Fig. 24, and thereby rock the slotted portion of the shutter member out of the path of the upper end of the vertically slidable rod 115 as indicated by the dot and dash line position of the shutter, to block the path thereof and thereby prevent operation of the tripping mechanism until the setting levers are properly set or until the dogs 363 are fully seated in the V shaped teeth 370*a* of the sector 370.

If it is desired to use a fractional or similar

denomination, as for example, the ½ cent denomination, indicated in conjunction with the right hand end setting lever, shown in Figs. 1 and 2, only two V slots 370*a* will be provided on the sector 370.

In Figs. 1, 2 and 13 the upper ends of the setting levers 218 will be seen projecting above the meter cover 176 each lever being provided with suitable finger grips 218*a* and are guided within a guide plate 380 which has suitable guide slots 383 therein for the passage of the setting levers therethrough. Said guide plate also has indicating numerals on the surface thereof which provide an indicating mark as indicated in Figs. 1 and 2 for an operator to set the levers to when setting-up a predetermined value.

Hand operated trip in meter

Also included in the portable meter casing, as best shown in Figs. 8, 11 and 13, is a trip actuating member 385, which provides another means for operating the tripping device previously described. Said member comprises a vertically positioned strap 386, Fig. 13, which is slidably mounted on the end support plate 173 by means of rivet studs 387 which are fixed within said wall 173, and have their free ends extending into elongated clearance slots 388 in the strap. The lower end of the strap 386 is turned inward at 389 to receive a plunger pin 391, which pin is fixed thereon and is slidable within a bore 393, within the base of the meter. By means of a spring 392, stretched between the upper end of the plunger pin 391 and an anchor pin 394, the plunger pin and strap 386 are normally maintained in an upward position.

Referring to Fig. 8, the plunger pin 391 is shown as having been moved downward to project through the base of the meter to depress the plunger trip pin 146 and consequently trip the tripping mechanism to set the machine in operation in a manner as previously described. The upper end of the trip actuating member 385 projects through the roof of the meter casing as shown in Figs. 1 and 2 and has a hand pad 394 secured thereto, which the operator will strike for each machine operation, when manually tripping the machine.

In Fig. 11, an operation counter 395 is shown which is adapted to register each cycle or operation of the machine and may be attached and actuated in any convenient manner. As shown, the counter is mounted on a bracket 396 and has a lever 397 secured to one end of a counter actuating shaft 398, which lever is secured in operative relation with a crank 399 on the shaft 283 by means of a link 401. On each rotation of the shaft 283 the counter will advance one count.

Printing unit

Projecting beyond the front wall 174 of the meter is the printing unit, which is best shown in Figs. 11 and 29. Said unit includes a rotary printing member or drum 402, which is carried by a supporting plate 403, said plate having a long boss 404 thereon which is pinned to the forward end of the meter drive shaft 177. On the face of said support plate is mounted a supporting block 410 which carries the various printing means.

The printing means includes a set of numeral type wheels 409, Figs. 29, 32 and 33, corresponding in number to the number of setting levers 218, and rotatably mounted on a shaft 411, which shaft is supported in suitable bearings provided in the block 410. Each type wheel also has a gear 414 secured thereto, said gears being adapted to mesh with a set of intermediate gears, generally indicated at 415, Fig. 11, and rotatably mounted on a shaft 416, which shaft is also supported within the supporting block 410. Said intermediate gears 415 are adapted to mesh with a second set of intermediate gears generally indicated at 417, Figs. 11, 29 and 31, which are mounted on a shaft 418, said shaft having one end supported in the support block 410 and the opposite end supported in an arm 419 extending outwardly from the drum supporting plate 403. Said gears 417 are further individually designated as 417*a*, 417*b*, 417*c*, and 417*d*.

Also mounted on the shaft 418 are three additional gears 421*a*, 421*b* and 421*c*, each of which is connected with an associated intermediate gear by a crossover or sleeve connection in the manner shown in Fig. 31 and in the following order: gear 421*a* is pinned to the shaft 418 as is also the gear 417*a*; gear 417*b* is fixed to a sleeve portion 420 extending from the gear 421*b*; gear 417*c* is fixed to a sleeve portion extending from the gear 421*c*, while the gear 417*d* rotates freely around the sleeve extending from the gear 421*c*. Said gear structure is arranged in this manner to provide a means for reversing the order of setting-up the printing wheels due to their being set while positioned at the top of the printing drum and printing while at the bottom of said drum.

Below the gears 421*a*, *b*, and *c*, and meshing therewith is a series of gears 422, each of which is rotatably mounted upon a shaft 423, supported within the arm 419 and a lug 424 formed on the boss 404. Said latter gears form part of ball race driving or connecting mechanism within the printing drum, which is adapted to cooperate with a similar mechanism within the meter casing to connect the setting mechanism in the meter casing with the type wheels within the drum in a manner fully described and shown in a patent to Ogden et al., No. 1,904,626.

Said ball race driving or connecting mechanism, which is duplicated for each setting lever 218, generally comprises a ball train 425, Fig. 11, mounted in a raceway 426 supported within the drum, and a raceway 427 supported within the meter casing. A set of gears 428, similar to the gears 422, is mounted on a shaft 429 supported in suitable bearings within arms 430—430 extending inwardly from the front wall of the meter casing and mesh with the selector gears 215 of the setting members, see also Fig. 12.

By means of a lug or paddle 431 on the gears 422 and a similar lug 432 on the gears 428, which are in the path of the ball train, any motion presented to the gears 428 through the movement of the selector gears 215 will thus be transmitted by the movement of the lug of the said gears 428, through the ball train to the lug 431 of the gear 422, and will thereby cause the gear 422 to receive exactly the same rotation as the gear 428. Any motion therefore, which is set-up in the gear 428 is immediately set-up in the type wheels 409 in agreement with the value set-up by means of the setting levers 218. See also Fig. 14.

With the printing mechanism supported on the support plate 403 and with said support plate carried by the meter drive shaft 177, the said printing mechanism will be rotated through one revolution about the shaft axis to effect a printing of the value set-up in the type wheels 409, and other indicia, such as that on the stamp die plate 433, and dater type wheels 434, each of

which are carried by the support plate **403**, as best shown in Fig. 29.

Upon the rotation of the printing mechanism, or what will be hereinafter referred to as the printing drum, the ball trains will be separated along the line of abutment of their faces with the support plate **403** and the front wall **174** of the meter casing as indicated by the line A—A, Fig. 11. Each of the end balls at this point of separation, which are associated with the printing drum will thus be engaged with the face of wall **174** during the full revolution of the drum, while the end balls associated with the meter casing, will be engaged with the face of the support plate **403**, thereby locking both the setting levers **218** and the printing wheels in their set positions, to prevent any further setting movement thereof until the printing drum has completed its full revolution.

To assure proper alignment of the type on the numeral type wheels **409**, an aligner member is provided as best shown in Figs. 29, 32 and 33, which comprises a comb member **435** hinged on a pin **436**, supported in the block **410**, and having teeth **437** which are adapted to engage between the teeth of the gears **414**, said comb being urged inward toward the type wheels by means of a spring **438**. The teeth of the comb are in contact with the gear teeth while the printing drum is being rotated but are withdrawn from said contact when the printing drum reaches its home position, to thus permit a change to be made in the type wheel setting if desired.

The comb releasing means, comprises a rocker lever **439** pivotally mounted on a pin **441**, projecting from the supporting structure **410**, and is adapted to engage one end of a rod **442** which rod is secured to the comb **435** and further is guided within an opening **443** in the supporting structure **410**. A roller **444**, rotatably mounted at the free end of the rocker lever **439**, normally extends outward into the path of a cam block **445**, Fig. 11, projecting outward from the front face of the meter casing wall **174**. Said cam block **445** is adapted to engage the roller **444** when the printing drum is in its home position to rock the rocker lever about its pivot and thereby force the rod **442** forward and consequently rock the comb member **435** about its hinge pin **436** to disengage the comb teeth **437** from engagement with the teeth of the type wheel gears **414**. Upon movement of the printing drum out of the home position, the roller **444** will move free of the cam block **445**, to thus permit the comb member to be urged toward the type wheels by the action of the spring **438**, and thereby engage the teeth of the comb member **435** with the teeth of the gears **414**, to align the type of the value to be printed, before reaching the printing position.

A die protecting means, of the type illustrated and described in Wheeler et al. Patent No. 1,904,638, is also carried by the supporting block **410**, and comprises a substantially U shaped member **446**, Figs. 29 and 32, fixedly mounted at its central portion on a pivot pin **447**, pivotally mounted within the supporting block **410** and the support plate **403** of the printing drum. A rocker arm **448**, has one end fixed to said pivot pin and at the free end thereof has a hub portion **450** which preferably comprises a pin having a reduced end supported within the arm **448** which also extends into a slotted opening in the U member **446**. The hub portion projects through an elongated opening **440** in the support plate **403** and has a roller **449** rotatably mounted at the end thereof, which roller through its engagement with a grooved cam **499**, is adapted to rock the U shaped member **446**, to vary the position of the projecting ends thereof with respect to the surface of the printing die. Said grooved cam **499** is preferably formed in the front face of the front wall **174** of the meter casing and by its formation is adapted to maintain the leading end of the U member raised above the surface of the printing plate as shown in Fig. 29 throughout the greater portion of the rotation of the printing drum as will be noted from that portion of the cam groove which is concentric to the axis of the drum. As the die approaches the printing position the leading end of the U member will be retracted to the printing surface of the die, due to the engagement of the roller **449** with the high point of the cam groove indicated at **452**. After passing the printing position the leading end of the U member will again be moved outward, while the opposite end is retracted to the printing surface. With at least one end of the die protector always extended beyond the printing surface, and with both ends of the die protector positioned within the printing surface of the stamp printing die, protection against the taking of fraudulent impressions is assured.

Further protection of the printing die is provided by a closure or hood **453**, which is adapted to cover all but the lower portion of the drum adjacent the printing position, and since the printing die is normally positioned with its printing face under the upper central portion of the hood **453**, when in its home position, the said die is completely concealed. The hood, is fixed on the front wall of the meter casing, and to remove same would require breaking the cover seals **200** and dismantling the entire meter before access to the screw for securing the hood could be had.

Provision is also made whereby additional dies **479** may be used if desired, such as dies which contain an advertising slogan, special permit slugs and the like, by inserting same in slotted portions of the die drum as indicated at **476—476**, Fig. 29, and securing same in any convenient manner. To permit the assembly of said dies in the die drum surface after a machine is completely assembled, openings **477** are provided in the hood **453**, through which the dies can be inserted. Said openings are further conveniently arranged to permit the daily setting of the dater printing wheels, and a hinged door **478** is provided to cover the openings.

It may appear, that with the provision of the openings **477** for the purpose stated, that said openings would provide access to the printing die, but said openings are not large enough to conveniently permit access to the printing die and further since one end of the die protector **446** previously described will have one end thereof projecting above the die surface there is ample protection against taking fraudulent impressions.

Inking unit

Cooperating with said printing mechanism is an inking device, best shown in Fig. 29, which preferably comprises an ink roller **454** rotatably mounted on a shaft **456** which is secured to a plate **455**. Said plate is slidably mounted within ways **457—457** fixed to an ink roll housing **458** which housing is fixed to the machine base. The ink roll mounting plate **455** is adapted to be adjusted along the ways **457** to vary the position of the ink roller **454** with relation to the printing die surface and is adapted to be clamped in an ad-

justed position by means of a clamping structure indicated at 459, having a handle 461 to actuate same, which extends beyond the outer wall of an ink roll housing 458.

By means of a thumb screw 562, rotatably supported in a bearing 463, in the housing 458 and having a screw connection with a lug 464 on said plate, the said plate 455 is adapted to be adjusted to bring the ink roller 454 to a desirable position with relation to the type on the printing drum.

The ink roller projects through an opening 465 in the drum hood 453 to bring the forward end of the periphery thereof into the path of the printing die surface, and is also provided with an annular slot 480 to allow the extended end of the die protector 446 to pass through.

An ink reservoir 466 has an ink spreader roller 467 rotatably mounted therein with its upper surface exposed beyond a covered surface thereof and has rearwardly extending ears 468 thereon which are pivotally mounted upon a hinge pin 469, supported in one wall of the ink roll housing. Said reservoir normally rests against an adjustable stop pin 470, which pin is slidably mounted within a bearing 471 in the housing 458, and is normally urged forward by means of a spring 472. Said stop pin is adapted to be maintained in a forward position to hold the reservoir in the position shown in Fig. 29 or may be pulled outward by means of the thumb knob 473 and by giving said knob 473 a quarter turn will cause a projection 474 on the pin 469 to engage the outer face of a boss on the ink roll housing, to thereby maintain the spreader roller in a position free from engagement with the ink roller.

A cover 475 is hinged to the lower portion of the ink roll housing a fragment of which is indicated in Fig. 29, to facilitate the removal of the ink roller 454 in an endwise direction but may be permanently fixed to the housing to thus provide a completely sealed enclosure for the space occupied by the inking device, within which entrance would only be had when the meter was removed from the machine base. The ends of the upper and lower walls of the ink roller housing, it will be noted, fit within recessed portions of the printing drum hood 453.

Drum aligner and locking means

The printing drum 402 is normally locked when in its home position, or the position shown in Fig. 29, in which position the manually controlled setting up operations are performed before a machine cycle of operation is started. In this connection, it is to be noted that since the setting of the type wheels is accomplished through the cooperation of the ball race mechanism previously described, it is important to have the ball raceways of the meter and of the printing drum in precise alignment.

This is accomplished by means of a horizontally movable drum aligner and locking pin 485 which is adapted to be moved into and out of engagement with the rotatable printing drum structure and a portion of the front wall of the meter casing in a manner now to be described.

Referring to Figs. 11, 13, and 35 to 38, said drum locking pin 485, has one end slidably supported within a bearing block 486, secured to the meter base, Fig. 38, and its opposite free end in engagement with a bore 487 of a bushing 488 in the printing drum support plate 403, also a bore 481 of a bushing 482 in the front wall of the meter casing, when the printing drum is in its home position thus bringing the bores 481 and 487 into exact alignment and consequently the ball raceways 426 and 427 in the drum and meter.

A shaft 489 rotatably mounted within the bearing block 486, Figs. 37 and 38, and having its ends supported within the support plates 172 and 238 has a long pinion 491 thereon, a portion of which meshes with a rack 492 on the bearing end of the drum locking pin 485. A vertically slidable bar 493 is mounted within a bore 493*a* in said bearing block 486 and has a rack 494 at its upper end meshing with the pinion 491, while the lower end thereof extends into an opening 490 in the meter base.

On the opposite side of the pinion 491, another vertically slidable bar 495 is also mounted within a bore 495*a* in said bearing block 486 and has a rack 496 at its upper end which also meshes with the pinion 491. The lower end of said bar 495 extends into an opening 484 in the meter base.

Below and in axial alignment with each of said bars 493 and 495, are two vertically movable plunger members 164 and 497 which are slidably mounted within bores 164*a* and 497*a* respectively in the bracket 165 within the machine base. One of said members, the plunger 164, previously described is positioned beneath the slidable bar 493, while the other plunger 497, is positioned beneath the bar 495. A pinion gear 498 is rotatably mounted within the bracket 165 and between the plunger members 164 and 497, with its teeth in mesh with a rack 499 on the plunger 164, and a rack 501 on the plunger 497.

The plunger 164 is adapted to be moved upward from the normal position shown in Fig. 6, to the raised position of Fig. 8, through the movement of the lever 162 at the start of a machine cycle of operation, as previously related, in which position it will remain until the end of the machine cycle. As previously stated the movement of the lever is controlled by the cam 158 on the main drive shaft 72 in the machine base, the groove 159 therein, coacting with the roller 161 to provide a quick rise and descent at the beginning and end of the cycle and a dwell for the remainder of the cycle of operation.

On the upward stroke of the plunger 164, it will engage the lower end of the bar 493, to force said bar upward. The rack 494 thereon will rotate the pinion 491, and said pinion, by its meshed relation with the rack 492 on the drum locking pin 485, will retract the said pin from its locked position within the printing drum to permit the drum to be rotated. The bar 495 will also be driven downward by the rotation of the pinion 491, and the plunger 497 will be moved downward by the rotation of the pinion gear 498, the movement of the latter being of no particular consequence however, while moving in a downward direction.

Simultaneous with the retraction of the drum locking pin, a selector gear anchoring device, Fig. 38, becomes effective to maintain the selector gears 215 in a definitely anchored position after the drum is free to be rotated, whereby any motion thereof is prevented such as may be caused, for example, by shock brought about by the blow of the detent 226 of the pawl 225 upon engaging the slot 223 of the sector 215, as shown in Fig. 15.

Said selector gear anchoring device comprises a yoke 502, best shown in Fig. 37 and has legs 503—503 which straddle the bearing block 486

and slide in vertical ways 504—504 in said bearing block. A horizontally disposed pin 505, which is fixed within the plunger 493, has its ends freely positioned in elongated slots 506 in the legs 503. By means of the upward movement of the vertically slidable bar 493, a compression spring 508, supported at the upper end thereof will be brought into yieldable engagement with the seat of a counterbore 510, Fig. 38, in the yoke 502 to thereby raise the yoke and yieldably move the wedge shaped teeth 507 at the upper end thereof, into engagement between certain teeth of the selector gears 215. Due to the small pressure angle of the said teeth 507, there will be no yield to the teeth when any force is applied to the sides thereof by the teeth of the selector gear 215.

After the printing drum 402 is rotated to effect a printing operation, but before the cycle of operation is completed, the cam roller 161 will be moved downward by the inward curve of the cam slot 159, Fig. 8, to thereby rock the lever 162 downward and consequently withdraw the plunger 164 from its raised position. On the said downward movement of the plunger 164, the action of the vertically slidable bars 493—495 and the plunger 497, as will be clearly seen in Fig. 38, will be the reverse of that previously described, thus withdrawing the teeth 507 of the yoke 502 from their locking engagement with the selector gears 215, and reengaging the drum locking pin 485 with the drum.

It will be observed that the release of the drum locking pin occurs at the beginning of the cycle of machine operation and that the reengagement thereof occurs at the end of the cycle. It will now also be apparent that the Geneva drive shown in Figs. 9 and 10, and previously described, was provided to allow for the time required to satisfy the drum locking and unlocking condition.

Meter lock and base lock

When the meter is removed from the machine the printing drum remains locked against rotation by means of the engagement of said locking pin 485 therewith. Through the cooperation of other locking elements, concealed within the sealed meter casing, the removal of said locking pin from its engagement with the printing drum is prevented by a person desiring to tamper with the meter, with the intention of releasing the printing drum to take fraudulent impressions. When said meter is properly mounted on the machine base however, certain elements within the base will be actuated to set the meter locking elements in an unlocked position.

While this locking mechanism is not broadly new in principle, the features thereof constitute an improved structure, whereby the pre-setting of the locking elements to an unlocking position can only be accomplished by manipulating same from a plurality of points located at different sides of the meter casing.

Referring to Figs. 11, 12 and 35 to 41 and more particularly to Figs. 35 to 37, the meter locking elements comprise a horizontally slidable locking bar 509 which is slidable within a slot 511, Fig. 36, in the lower portion of the bearing block 486. Said bar is also normally urged outward by means of a compression spring 512, and is provided with a narrow transverse slot 513 through its upper edge and a wide transverse slot 514 through its lower edge, Fig. 37.

On the outer end of the shaft 489, Figs. 36 and 37, which supports the pinion 491, two rocker segments are fixedly mounted in spaced apart relation. One segment is shown at 515 and has its working edge provided with two wide slots 516—516*a*, also a plurality of tooth shaped notches 518. The other segment is shown at 519 and preferably has a smooth working edge.

When the meter is removed from the machine base, the rocker segments 515 and 519 are normally positioned substantially as shown in Fig. 41, and when the meter is positioned on the machine base and a machine cycle of operation is in effect, the said segments will take the position shown in Fig. 36.

When the meter is being placed on the machine base, the forward end of the horizontally slidable locking bar 509 is adapted to be moved against a stationary stop or key 522, Figs. 37 and 39, fixed on the machine base, thereby causing the said locking bar 509 to be depressed inward against the pressure of the spring 512 until the upper transverse slot 513 therein is in alignment with the rocker segment 515. In said Fig. 39, the key 522 is shown as secured within the upper end of an arm 523, which arm is riveted to or may form an integral part of the bracket 74, previously described, within the machine base. It will be noted that said key 522 is sealed within the arm 523 by means of a sealing plug, indicated at 520 and further is provided with a transverse slot 524 through its upper edge, which slot will be in alignment with the rocker segment 519 when the slot 513 is in alignment with the rocking segment 515, as best shown in Fig. 37. With the meter properly mounted on the base then, the rocker segments 515 and 519 will be adapted to pass thru their respective slots 513 and 524 as shown in Figs. 36 and 37, during a machine cycle of operation.

Cooperating with the rocker segments 515 and 519 in releasing the locking structure is a manually actuated device which is adapted to be set by an operator while the meter is being locked upon the machine base. Said device is actuated through the medium of a manually controlled lever member 525, best shown in Figs. 39 and 40 and includes a rocker lever 526, Figs. 12 and 39, which is pivotally mounted on the side of the bracket 247 previously described, said lever 526 having one downwardly disposed end 527 and one sidewardly disposed arm 528. The arm 528 of the lever 526 bears against a tail portion 529 of an obstruction plate 531, which obstruction plate is pivotally mounted on the shaft 375, on which the shutter operating segment gear 377 is mounted as best shown in Figs. 12 and 35.

Said obstruction plate 531 is normally urged to swing about its pivot by means of a spring 532, Fig. 36, secured between the upper portion of the tail 529, and a pin 533, projecting from the rear meter wall 175, to thereby cause the tail 529 to be urged against the lower edge of the arm 528 of the rocker lever 526. The working edge of said obstruction plate 531 is in alignment with the working edge of the rocker segment 515, and has upper and lower lugs 534—535 respectively, projecting beyond a curved edge thereof.

When in the position shown in Fig. 36, which is the normal operating position when the meter is properly locked upon the machine base, both of the projecting lugs will be positioned beyond the periphery of the working edge of the rocker segment 515, to thereby permit said rocker segment to be rocked freely when the drum release and locking operations are effected.

To move the rocker lever **526** which controls the position of the obstruction plate **531** a vertically movable and manually controlled plunger member **536** is provided, which is also adapted to function as a meter locating means.

As best shown in Figs. 39–40 said plunger member **536** preferably comprises a pin having a head **536***a* which is slidably supported within a bearing **537**, provided in the base cover plate and has a cam roller **537***a* rotatably mounted upon a lower flat surfaced portion thereof. A horizontally movable cam plate **538**, has a cam slot **540** therein which is engaged by said cam roller **537***a* and is slidably mounted on a pair of rollers **539**. The rollers **539** are rotatably mounted between the walls of two slotted ears **541** projecting from the base cover plate **70** and project through slots **542—542** in the cam plate **538**.

The operator's lever **525** is pivotally mounted on a stud **543** provided within a boss **544** projecting below the lower surface of the base cover plate and extends through a clearance slot **543***a* in the cam plate **538**, also outward through an elongated slot **544***a* in the side wall of the machine base. Said lever **525** is so arranged, that when it is rocked sideward about its pivot, the cam plate will be moved sideward to thus cause the cam roller **537***a*, on the plunger member **536**, to be moved upward or downward as guided by the cam slot **540** in the cam plate. For example, when the lever is thrown to the operator's left, the cam plate will be moved to the position shown in Fig. 40, with the plunger member **536** raised and entered within a bushing **545** in the meter base thus locking the meter upon the machine base, while, when the lever **525** is moved to the operator's right, the cam plate will be moved to the right of the position shown in Fig. 12, to cause the cam roller **537***a* to be moved downward and thereby withdraw the plunger member from its engagement with the bushing **545** within the meter base.

While in the first mentioned position, as shown in Fig. 39, the rocker lever **526** is in the position required to place the obstruction plate **531** in the operating position shown in Fig. 36, wherein rocker segments **515** and **519** are adapted to be rotated without interference through the slots **513** and **524** of the members **509** and **522** respectively. While in the second mentioned position, or non-operating position, the meter is free for removal from the base and the obstruction plate is in an obstructive position with relation to the rocker plate **515** as shown in Fig. 41.

It is to be particularly noted that the several devices described which are required to be manipulated, and the precision with which each has to be manipulated, before the shaft **489** and segments **515**, **519** are allowed to be freely rotated, provides the meter with a lock which will be found more difficult to pick than other locking devices heretofore provided for machines of this character. To illustrate what difficulties are encountered, let us assume that a person who is familiar with the machine and is even aware of the three points of approach, namely, (1), the point of engagement with the end **527** of the rocker lever **526**, Fig. 39, (2), the point of engagement with the locking bar **509**, Figs. 37 and 39, and (3), the point of engagement with the vertically slidable bar **493** Fig. 38, attempts to pick the lock in an effort to release the drum locking pin from its locking engagement with the printing drum. Assuming further that he makes a correct first approach by inserting the desired shaped tool through the slot **511**, Fig. 37, provided in the wall **172** of the meter casing, he will have to press the end of said tool against the end of the locking bar **509** and move said bar against the pressure of the spring **512** to the precise location of Fig. 37, then carefully hold this position, so the bar **509** does not move again to relock the member **515** against either one side or the other of the slot **513**, while another tool is inserted below the downwardly disposed end **527** of the rocker lever **526**, the location of which is on a different side of the meter from that of the first point of approach. By forcing said end **527** upward, the obstruction plate **531** is rocked about its pivot to disengage the upper projection **534** from the slot **516** but if said obstruction plate is rocked too far, the lower projection **535** will enter the slot **516***a* and will relock the member **515**. It will thus be seen that the person manipulating the lock will have to hold both of the above described positions in their exact location, then will have to approach a third position to move the bar **493**, Fig. 38, upward to thereby rock the rocker segments **515** and **519** and consequently release the drum locking pin **485**.

In connection with the obstruction elements above described, there are a number of other obstruction means provided which cooperate to make the task of lock picking still more difficult, as will now be described. As best shown in Fig. 36, a bolt **546** is provided which is slidably mounted along the base of the meter between suitable guide means such as a grooved portion **547** of the block **486** and the edge of a flange **548**, and is normally urged toward the locking bar **509** by means of a spring **549**, stretched between an upturned rear end **551** of the bolt and a downwardly disposed projection **552** on the obstruction plate, said downwardly projecting end **552** also engaging a slot **554** in the bolt. The forward end of the bolt **546** has a toe portion **553** which is positioned in alignment with the lower slot **514** in the locking bar **509**, when the meter mechanism is in a non-operating or home position.

If, upon attempting to tamper with the lock with the bolt included among the other obstruction elements of the locking structure, the first approach is made from the point beneath the downturned end **527** of the rocker lever **526**, the toe **553** of the bolt will be moved into the lower slot **514** of the locking bar when the obstruction plate is rocked, thus locking said bar **509** against any movement and immediately blocking further tampering with the lock.

Another obstruction element includes the provision of several notches **518** along the periphery of the rocker segment **515**, Fig. 36, the object being to prevent rocking the said segment **515** further, after being successful in moving same a distance sufficient to allow the edge of the projection **534**, to rest on the periphery thereof if the locking bar **522** is moved inward the required distance. With the construction shown the notches **518** will offer continuous interference if the projection **534** is allowed to bear against the periphery of the segment **515**, whereas if no notches were provided the periphery of the segment should pass freely over the protrusion.

Assuming that the obstruction plate **531** and key **522** are moved to the required position to allow the segments **515** and **519** to be rotated sufficiently to bring the leading end of the segment **515** into the slot **513**, Fig. 37, and that upon entering said slot **513** the pressure of the key **522**

against the bar **509** is released, while the rotation of the segments is continued, one wall of the slot **513** in the bar **509** would bear against one face of the segment **515** then would slide into a notched portion **530** provided in the inner wall of the slot **516***a*. This would also prevent further rotation of the segment **515** in either direction until the longitudinal position of the key **522** and bar **509** are readjusted.

It will therefore be obvious from the foregoing description of the locking structure that unusual precaution has been taken for a machine of this type to discourage persons, such as an operator or mail room attendant, from tampering with the machine with the intention of taking fraudulent impressions on personal mail.

It will also be observed that the locking structure is completely concealed within the meter and is arranged so as to cooperate with certain movable members such as the meter locating member **536**, Figs. 39 and 40, and the drum aligner or locking pin **485**, Fig. 11, each of which members **536** and **485** were primarily designed for their meter locating and drum aligning qualities respectively.

It is also desired to point out that the meter cannot be removed from the machine after the drum locking pin **485** has been retracted to an unlocking position or in other words, after a machine cycle of operation has started. This is prevented by means of the plunger pin **536**, Fig. 39, which, upon the manual movement of the cam plate **538**, will move into locked engagement with the bushing **545** in the base **171** of the meter, also by means of the engagement of the segment **519** with the slot **524** in the key **522**, which key, as previously stated is fixed to the arm **522**, said arm being a permanent part of the meter base. After the locking pin **485** is retracted, by the rotation of the shaft **489**, the rocker segment **519**, Figs. 36 and 37, also on said shaft **489**, will be automatically rocked into engagement with the slot **524** in the key **522**. Therefore, the cycle of the machine operation must be completed before the rocker segment will be released from the slot and consequently before the meter can be removed from the machine base. If, however, a jam should occur in the meter after the locking pin is retracted, an authorized person, such as a repair man in the employ of the company which owns the meter, could release the meter by first removing the sealing plug **520** and a screw **522***a* therebeneath. In this way the key **522** would be withdrawn with the meter.

Referring again to the cam plate **538**, Figs. 39 and 40, a slot **555** is provided in the upper edge thereof which is adapted to be positioned directly below the roller **104** carried at the end of the lever **98** when said cam plate is shifted to its locking position by the lever **525** to thereby allow the lever to be rocked and effect a tripping operation. Also, when the cam plate **538** is shifted to an unlocked position or to the right of the position shown in Fig. 40, the roller **104** will engage the upper edge of the cam plate, thus preventing the lever **98** from moving, which consequently prevents a tripping operation from being effected.

To maintain the cam plate **538**, Fig. 40, in either a locked or unlocked position, a detent locking means is provided which comprises a detent lever **556**, pivotally mounted on one of the ears **541** projecting downward from the base cover plate as shown in Fig. 40, and having a detent roller **557** mounted at one end thereof which is adapted to engage one of two detent notches **558—558** in the upper edge of the cam plate. A spring **559** stretched between an arm on the opposite end of the detent lever **556** and a lug **561** on the base cover plate retains the roller **557** in a locked position within one of the notches **558**.

A customer's lock **561** may also be provided as best shown in Fig. 39, to prevent the accidental unlocking of or fooling with the meter when once locked on the base, said lock comprising any standard type of key operated lock.

Impression bracket

Cooperating with the printing drum **402** and its associated printing means, is an impression roller **561**, best shown in Fig. 5 which is fixed to a shaft **562**, rotatably mounted in bearings **563—563** in a bracket member which will be hereinafter referred to as an impression bracket **564**. Also adjacent said impression roller is a letter feed belt **565**, which is guided over a suitable flanged driving pulley **560** secured to the impression roller, and over an idler pulley **570** rotatably mounted on a stud **570***a* supported by the impression bracket. See also Figs. 44 and 45.

The impression roller shaft **562** is directly driven from the continuously driven gear **71**, Fig. 5, previously described, and is thus rotated independently of the clutch controlled main drive shaft **72**. The drive means comprises a drive gear **566** preferably formed integrally with the previously described clutch housing **77** and which rotates with the gear **71**, and has meshed therewith, a pinion **567** fixed to the rear end of a shaft **568**, which shaft is rotatably mounted in suitable bearings **577** and **578** provided within the brackets **73** and **74** respectively. A universal connecting shaft **569**, having suitable coupling connections with the ends of the impression roller shaft **562** and the drive shaft **568** in the manner shown in Fig. 5, is adapted to provide continuous rotation to the shaft **562** regardless of any vertical movement of the impression roller, when bulky mail or other matter is passed beneath the printing drum and impression roller. It will be noted that the upper coupling extends inside of the front wall of the base. This is purposely done to prevent rocking the impression bracket out of its normal position when the meter is removed, with the intention of having easier access to the printing die for the taking of fraudulent impressions when it is moved to a printing position. The impression bracket **564**, Figs. 44 and 45 generally comprises a frame structure having front and rear walls **573** and **574** respectively, which are joined together at one end to form a yoke portion **579** at the left end thereof as viewed from Fig. 44. Said yoke portion is pivotally mounted upon a tubular shaft **581** having a flanged outer end **580** embedded within a counterbore **580***a* in the outer end of the yoke portion, which shaft is fixed within a supporting boss **582** projecting forwardly from the front wall of the machine base, and is secured in a non-removable position therein by means of a set screw **583** provided in said boss **582**, which set screw after insertion, has its head portion twisted off and also filed flush with the periphery of the boss and painted over to conceal same.

At the right end of the impression bracket, as viewed from Fig. 45, the front and rear walls are joined by an integral strut **575**. Said strut is yieldably supported by a bumper member, as best shown in Fig. 5, which comprises a compression

spring 584 seated on a supporting bracket 585 and coiled around a screw threaded rod 586 pivotally depending from a lug 587 on the lower portion of said strut. Said spring 584 is compressed between an abutment washer 588 at its upper end, and the supporting bracket 585 at its lower end, and the compression thereof is adapted to be adjusted by means of adjusting nuts 591 positioned above the washer 588.

As best shown in Figs. 1, 44 and 45, said impression bracket has a letter guide plate 592 secured thereto and covering the upper surface thereof, which plate has openings 593 and 594 therein, through which the impression roller and letter feed belt project.

To the left of said letter guide plate 592, as viewed from Fig. 45 is an envelope flap moistening unit, which is constructed similar to the structure disclosed in a patent to F. E. Poor #1,714,620, and generally comprises a water tank 595 fed from a suitable source of supply such as the bottle reservoir 580, Fig. 5, and feed pipe 580a, and having a suitable moistening means 596 for moistening the gummed portion of the envelope flaps, also a separator plate 597 positioned above and in spaced relation to the guide plate 592 to separate the flap from the body of the envelope during the moistening process when the envelopes are drawn thereover. Above the separator plate 597 is a flapper plate 598, hinged to a suitable bracket 600 on a vertical flange 590 on the letter guide plate 592, and having its free end normally spring biased against the upper surface of the separator plate for the purpose of keeping the envelopes flat against the surface of said separator plate and aiding in opening of the flap.

When an impression is to be printed upon an envelope, the operator after having set up the desired value in the printing wheels, through the manipulation of the setting levers 218 as previously described, will pass an envelope over the moistening unit to moisten the flap. Said envelope, upon emerging from the moistener, will be next moved into engagement with a projecting finger 599a of a trip member 599, which upon being rocked will, in cooperation with other connecting means to be later described, trip the previously described trip lever 123, Fig. 8. This action will trip the clutch on the main drive shaft 72 of the machine, which will thereby start the machine cycle of operation. A spring biased plate 610 is provided as shown in Fig. 45 to lead the letters into the path of the finger 599a and thereby prevent said letters from passing over the top of the finger if not handled carefully.

At the point of tripping, the letter will rest momentarily until engaged by the printing die on the rotating printing drum, whereupon it will be partially advanced by said die while it is being printed and will be further advanced, and finally ejected from the printing position by means of a knurled flange 572, Fig. 11, on the printing drum 402 which flange cooperates with the letter feed belt 565.

Semi-automatic trip

As best shown in Figs. 44, 45 and 50, the trip member 599, which is free to rotate about the impression roller shaft 562, will operate a mechanism which will be hereinafter referred to as a semi-automatic trip. Said trip mechanism includes a lever 601 adjustably secured on a collar 616 fixed to the outer end of the shaft 602, and having the lower end thereof secured to the trip lever 599 by means of a link 603. Said shaft 602 is rotatably mounted within a bore provided in the tubular shaft 581 and has another lever 604 secured to the end opposite that on which the lever 601 is secured. A horizontally slidable bar 605 has a notch portion 607 guided within a suitable bracket 606, fixed to the inside front wall of the machine base, and has one end thereof pivotally secured to the free end of lever 604, while its opposite end, which is provided with a hooked portion 608, is arranged in tripping relation with a pin 611 projecting outward from a lever 609, said lever 609 being fixed to a boss 612 extending forwardly from and fixed to the main trip lever 123, previously described.

As viewed from Fig. 50, it will be seen that any motion imparted to the finger 599a, when engaged by a letter, will cause the member 599 to be rocked about its pivot in a clockwise direction, thereby rocking the levers 601 and 604 in a like direction, which movement causes the slidable bar 605 to be drawn toward the left until a shoulder 607a of the notched portion 607, engages a shoulder 610 on the bracket 606 during which movement the hooked end 608 thereof, will engage the pin 611 and thereby rock the lever 609 and trip lever 123 to a tripping position. Upon the engagement of the said shoulder 607a with the shoulder 610, the movement of the finger 599a of the trip lever 599 will suddenly stop to thus fix the position of the leading edge of the envelope with relation to the printing die for the proper placement of the stamp thereon, but when the printing die engages the envelope, a pin 613, projecting from one arm of the bell crank 153 previously described, will be moved upward by the rocking action of said bell crank, to thereby rock the bar 605 about its pivot and release the engagement of the shoulder 607a with the shoulder 610, also the hooked end 608 and permit the bar 605 to continue its forward movement after the finger 599a is again moved by the movement of the envelope while being further advanced by the printing die and drum flange. After the envelope passes beyond the finger 599a, the bar 605 is returned to its normal position by means of a spring 614, stretched between a pin 615 projecting from the bar 605 and a portion of the bracket 606, which spring return, also restores the trip lever 599 and associated parts to their normal positions.

Means is also provided whereby the trip finger 599 may be adjusted so as to permit placement of the stamp upon the envelope at a desired position with relation to the leading end thereof, which means comprises the provision of diametrically opposed slots 617 in the lever 601, and a disc 619, Fig. 44, on the face of said lever 601, having two screws 618 which project thru the slots 617 and engage screw threaded openings in the collar 616 on the shaft 602. It will thus be seen, that by loosening the screws 618, an adjustment may be quickly made to advance or retract the letter trip finger 599a and thereby delay or advance the tripping respectively.

The semi-automatic trip thus provides still another means for actuating the trip mechanism and while said trip is preferred as part of the machine, it may be eliminated.

Assuming that said semi-automatic trip was not provided, an envelope would be manually placed with its leading edge in alignment with a scored line 571 on the surface of the die plate 592, Fig. 44 after which a tripping operation would be performed by striking the pad 385 or the lever 140, Fig. 1.

Selectively operable tape or letter printing

As thus far described the use of the machine has been described in connection with the printing of impressions on envelopes and the like. Now the adaptation of the machine to the printing of impressions on tape and the automatic cutting of said tape after printing will be described.

The means for producing this result comprises a structure which is built in as a permanent part of the machine and which is provided with a control whereby an impression may be printed on tape or letters with the printing of each taking place upon the same impression member and further includes means whereby when a letter is being printed the tape feeding operation automatically becomes inoperative, and when tape is being printed, the normal path of letter feed is automatically blocked.

Included in the tape device, is a tape roll **623**, best shown in Fig. 42, which roll is rotatably mounted on a shaft **624**, projecting from the front wall of the base, and is suitably enclosed within a housing **625**. The tape is led over a pair of take-up rollers **626** and **627**, one roller **626** being rotatably mounted upon a shaft **628** which is pivotally mounted within a bearing on the rear wall of the housing **625**, while the other roller **627** is mounted on a stud **629**, which stud is fixed within one end of an arm **631**, the opposite end of the arm being fixed to the shaft **628**. A disc **632** or pulley is also secured to said shaft **628** at the rear end thereof and in an eccentric relation thereto, and has a spring **633** stretched between a pin **634**, projecting from a grooved periphery **620** thereof, and an anchor pin **635** in the housing. Thru the force exerted by the spring **633**, on the pulley **632**, the arm **631** is adapted to be urged in a clockwise direction about its pivot, but the movement thereof is limited, by means of a lug **636** on the arm **631** which is adapted to engage the yoke portion **579** of the impression bracket **564**.

By means of the take-up device certain difficulties are overcome, such as overcoming the inertia of the tape roll to thereby allow the printing die to print without smearing, to prevent tearing the tape if it should stick to the roll and to prevent spinning the tape roll when the tape is being withdrawn.

To accomplish these results, it was necessary to provide means whereby the tension of the roller **627** against the tape is decreased slightly in proportion to the downward movement of the arm **631** or as the pull of the tape is increased. This is provided by means of the particular method of mounting the spring **633** on the grooved eccentric disc **632**, the grooved portion of which is arranged with respect to the pivotal axis thereof in a manner which will cause the spring **633** to move closer to the pivotal axis as the disc is rotated by the tension of the tape against the take-up roller **627**.

Referring now to Figs. 44 and 45, the tape is there shown as passing between guides **637**—**637***a* with the upper end thereof terminating in a position below the path through which letters are passed. A more detailed description of these guides will be later given. Toward the lower end of the guide **637**, the tape passes between a feed roller **638**, which engages the lower side thereof, and a pressure roller **639** which engages the upper side thereof. See also Fig. 49. As best shown in Fig. 44 the pressure roller is rotatably mounted in bearings provided by two arms **641**—**641** of a yoke member **640**, which yoke member is pivotally mounted upon a spindle **642** rotatably supported within suitable bearings in the walls of the impression bracket. The rearward end of said spindle extends out from the frame and downward to provide an arm **702** for a purpose to be later described.

Referring now to Figs. 46, 47 and 48, the feed roll **638** is indicated as being fixed to a sleeve **643**, said sleeve being supported at one end on a shoulder of a disc **644**, and at the other end upon a slidable bushing **645**. The disc **644** is supported upon an axially slidable shaft **646**, said shaft also being slidably positioned within a gear **647**, which gear has a hub portion **648** rotatably mounted within a bearing **649**, said bearing being mounted within the rear wall **574** of the impression bracket. The bushing **645** is splined within a reduced end of the sleeve **643** and also has a reduced neck portion **651** which is rotatably mounted within a bearing **652**, said bearing being mounted in the front wall **573** of the impression bracket. By means of a knob **653**, fixed to the outer end of the neck **651**, of the bushing **645**, said bushing is adapted to be both rotated and moved longitudinally, and when rotated is adapted to rotate the feed roller **638** therewith.

The shaft **646** has a reduced forward end portion **654**, normally positioned within a bore **655** in the neck portion **651** of the bushing **645**, and by means of a spring **656** within the bore **655** which is compressed between a washer **657**, secured to the end of the shaft, and a washer **658**, within the inner end of the bore, said bushing **645** is urged inward toward the collar **663**.

Fixed to the rearward end of the shaft **646** is a clutch collar **659**, which has a projecting tooth portion **660** adapted to be maintained in engagement with a grooved portion **661**, Fig. 47, in the face of a hub **662** on the gear **647**. Also fixed to said shaft **646**, Fig. 48, is another clutch collar **663**, having a projecting toothed portion **664**, which is adapted to engage a grooved portion **665** in the end of bushing **645**. By means of a spring **650**, Fig. 46, within a bore in the sleeve **643** and compressed between a flange **670** on the clutch collar **663** and the inner face of the disc **644**, the clutch collar is adapted to be maintained in clutched engagement with the gear **647**.

It will thus be seen that while the parts are in the position shown in Fig. 46, with both of said clutches in engagement, any rotation of the gear **647** will cause the feed wheel **638** to rotate. The particular use of this position is to permit the feed wheel **638** to be rotated by said gear **647** during the cycle of machine operation by means of a gear **729**, Fig. 51, associated therewith, for a purpose which will be later described.

When the knob **653** is pushed all the way inward one corner of a preferably square shape flange **666** on the clutch member **659** is adapted to be moved into locked engagement with an abutment **667**, projecting rearwardly from the rear wall of the impression bracket.

As viewed from Figs. 47 and 51 it will be noted that the abutment **667** has two lugs projecting rearwardly thereof, an upper lug **690** and a lower lug **680**, with the lower lug projecting beyond the upper lug and spaced apart to provide a notch **680***a* between them. Therefore, when the knob **653** is pushed all the way inward the flange **666** will be sufficiently clear of the upper lug **690** to allow the knob to be rotated but will be limited to a quarter turn by the contact of one corner

of the flange 666 with the top of the lower lug 680, and also will be limited to rotation in a counter clockwise direction only, since the flat edge of the flange would engage the side of the lug 680 if the knob is rotated in a clockwise direction. When said flange 666 engages the top of the lug 680 and the inward pressure against the knob is released, the corner of the flange will slide into the notch 680a and therefore lock the clutch member 659 from further rotation until the knob is again pressed inward all the way.

It will thus be seen that when the knob is pressed inward, the rotation thereof will be limited to a direction which will retract the tape from the printing position indicated in Fig. 56 to the position indicated in Fig. 45, to thereby remove the tape from the path of the letters when impressions are to be made on letters. Also before the knob can be returned to the tape printing position of Fig. 48, it must first be rotated in a clockwise direction, before the flange portion 666 will clear the abutment 667, which rotation will cause the tape to be advanced again to the printing position.

When the knob is in the position of Fig. 47, the gear 647 is disconnected from driving engagement with the clutch member 659, therefore said gear can be rotated freely within its bearing 649 during a cycle of machine operation without affecting any of the tape-letter shift mechansm.

In Fig. 48 the knob 653 is shown as having been withdrawn outwardly a sufficient distance to release the bushing 645 from clutched engagement with the clutch member 663 thus allowing the feed wheel 638 to be rotated by the rotation of the knob 653 without rotating the shaft 646 or the gear 647. This condition is provided principally for the purpose of adjusting tape from a new roll, into the desired position.

An indicator plate 668 is provided for the purpose of informing the operator whether the machine is set for the feeding of tape or letters to the printing mechanism. Said indicator plate comprises an arm 669, having a sleeve 671 fixed thereto, which sleeve is slidably mounted upon a shaft 672 projecting inwardly from and secured to the rear wall of the impression bracket, as best shown in Fig. 47. A yoke 673, Fig. 45, provided at the lower end of the arm 669, is adapted to engage an annular groove 674 provided on the outer end of the bushing 645. Therefore, any longitudinal movement provided by pushing the knob 653 inwardly or outwardly, will also move the arm 669. The upper end of said arm 669 is bent outward and is provided with a head portion 675 which is adapted to move with said arm 669 directly beneath the letter guide plate 592. On the upper surface of said head 675 are printed the names Tape and Letters in such position as to permit the name Tape to be rendered visible within an opening 676 in the said letter guide plate 592, when the knob is adjusted to the position shown in Fig. 46 and rendering the name Letters visible beneath said opening 676 when the knob 653 is in the position shown in Fig. 47.

Before describing the mechanism which cooperates with the structure shown in Figs. 46 to 48 to control the tape feed after a printing and cutting operation it is desired to point out the particular conditions and positions thru which the tape passes before, during and after a printing operation.

When it is desired to print on tape and the machine is set to print on letters, the operator will first push the knob 653 all the way in and will rotate same in a clockwise direction to release the flange 666 on the clutch member 659 from engagement with the abutment 667 and by said movement which will be limited to a one quarter revolution, feed the tape the desired distance to bring the leading edge thereof up to the position shown in Fig. 56, with said leading edge extended slightly beyond the vertical center of the impression roller.

The path through which the leading end of the tape passes, can best be followed from Fig. 45. By means of upper guide fingers 677, the tape is guided over the impression roller, then slightly downward into the path of a cutting knife generally indicated at 678 which is positioned to the right of the impression roller. A lower guide is also provided as indicated at 678 on the knife side of the impression roller and is arranged to strip the tape from the impression roller and direct it into the knife.

In connection with the guiding of the tape from the tape supply to the printing position and from the printing position to the cutting position, it is desired to particularly emphasize the general characteristics of the guides provided.

Since the letters occupy a horizontal path of travel, the tape had to be brought to a printing position along an angular path. To assimilate the movement of the tape to that of letter on approaching the printing position, the guides 637—637a are spaced from the impression roller and the upper ends thereof are curved in a manner which will guide the leading end of the tape to the point where the printing die engages the impression roller. The lower guide 637 preferably comprises a flat bottom trough, while the upper guide 637a preferably has two fingers 637b at the lower end thereof and a central tongue portion 637c at the upper end thereof, the said tongue being shaped to provide sufficient tension against the tape to prevent the leading end thereof from shifting out of the die pick-up position when pressure of the pressure roller 639 is released prior to the engagement of the printing die with the tape in a manner which will be later described.

The upper guide fingers 677 preferably comprise two very light flexible strips anchored at one end to the letter guide plate 592 and have their free ends extended through the path of tape travel to the cutting knife.

The lower guide 678 has two fingers 678a—678a extending along each side of the impression roller as shown in Fig. 44 which engage the sides of the tape, and further is provided with a stripper tongue 678b which has its forward edge bent downward into close proximity with the impression rolier to function as stripper, if for any reason the gummed portion of the tape should adhere to the impression roller.

It will be noted in connection with the prevention of tape sticking, that the impression roller has been provided with a scored or defaced surface to thus decrease the possibility of the tape sticking to the roll.

Tape advancing, cutting, and retracting means

The cutting knife is of the rotatable screw type disclosed in Patent No. 1,849,443, and while the knife of said patent is manually actuated, the knife as disclosed in the present invention is provided with means for automatically actuating same after the stamp has been advanced suffi-

ciently to bring the trailing end of the printed matter beyond the cutting edge of the knife.

To adapt the machine for cutting with a device placed beyond the point of printing, it was necessary to provide for means to advance the tape to the cutting position after the printing die had completed its printing and feeding operation, also means to return the leading or severed edge of the tape back to the printing position shown in Fig. 56.

Referring first to the means for advancing the tape to a cutting position after printing, the said means comprises a tape feed shoe **681** which, as best shown in Figs. 11, 29 and 30, is provided on a rocker lever **682**, said lever being pivotally mounted on a stud **683**, projecting from a lug **684** forming a part of the printing drum **402**. The shoe **681** projects thru an opening **685** in the periphery of the drum **402**, Figs. 11 and 30 but is normally retracted to an inactive position, that is with its face considerably back of the normal path thru which the face of the printing die passes, and is maintained in such position by means of a spring **686** which urges the lever **682** against a stop pin **687** fixed within the drum **402**.

A cam surface **688** is provided along the lower portion of the inner space of the drum housing, which cam is adapted to be engaged by a cam roller **689**, rotatably mounted on a stud in the rocker lever **682**, and extending outwardly thru an opening **691** in the front face of the printing drum **402**. When the cam roller **689** reaches the outer cam surface of the cam **688**, the shoe is extended outward to the position shown in Fig. 30 and after the leading edge thereof engages the tape, the said tape is advanced proportionately to the length of the shoe. After reaching the end of its advancing movement, as in Fig. 30, the cam roller **689** will move away from the path of the cam **688** and thereby permit the rocker lever **682** to be again retracted to its normal position as in Fig. 29. The reason for moving said shoe below the surface of the printing die is to prevent the shoe from engaging the ink roll and becoming inked, which obviously would cause an imprint to be made on the tape. While the construction shown is the preferred form the shoe may be fixed to the drum and the ink roll may be moved out of the path of the shoe as it passes same.

The said shoe **681** may also be made adjustable by making same in two sections as shown in Fig. 11, in which one section **692** is adapted to slide within the body portion of the lever **682** and is adjustably secured thereto by means of screws **693** which pass thru elongated openings or slots **694** in the slidable section **692**, and engage the lever **682**. By adjusting said slidable section, the desired point of pick-up of the tape, for advancing same. can be made.

After advancing the tape to the cutting position, the next operation is to cut the tape, then retract the leading edge thereof to its starting position.

Referring now to Figs. 5 and 51 to 56, the mechanism which controls the cutting operation and that of the retracting of the tape will now be described.

A shaft **695**, Fig. 5, is rotatably mounted in suitable bearings **696—696** at the lower end of the impression bracket and is coupled with the main drive or one revolution shaft **72** by means of a universal connecting shaft **697** and suitable coupling members **698** and **700** at the end of the shaft **695** and **72** respectively. The coupling member **698**, Fig. 51, has a flanged cam portion **699** thereon, which cam, upon its rotation is adapted to engage a roller **701**, rotatably mounted at the end of the arm **702**, which arm is formed integrally with spindle **642** as previously described, in connection with the yoke member **640** shown in Fig. 44. By means of a spring **706** stretched between the arm **702** and an anchor pin **707**, the pressure roller **639** carried by the yoke **640** is normally urged against the tape at its point of engagement with the feed roller **638**. When the cam roller **701** is engaged by the cam **699** however, the arm **702** and yoke **640** are rocked to remove the pressure of the roll **639** momentarily from the tape, which occurs at the period the tape is being advanced by the printing die and feed shoe to thus permit the free movement of the tape.

Adjacent the cam **699**, and secured thereto, is an arm **708** and a disc **709** as best shown in Figs. 5 and 51. To the left of the disc **709**, Fig. 51, is a lever **711**, which is pivotally mounted on a stud **712** secured within the rear wall **574** of the impression bracket, which lever has its lower end provided with a foot portion **713** and arranged in the path of a roller **714**, which is rotatably mounted upon a stud extending from the disc **709**. Said foot portion **713** is so formed, that upon rotation of the disc **709**, the roller **714** upon engaging the lowermost portion of the foot, will rock the lever **711** in a clockwise direction as viewed from the position of Fig. 51, and after reaching a neutral position within the notch **715** of the lever, said roller **714** will, upon engagement thereof with the upper portion **713a** of the foot, rock the lever **711** in a counter-clockwise direction to the normal position of Fig. 51. An upwardly extending arm **716**, on said lever **711**, has a slot **717** therein, which slot is engaged by a pin **718** projecting outwardly from a knife actuating lever **719**. The lever **719** is fixed to one end of the rotor portion **721** of the cutting knife and further has a spring **722** attached between a sidewardly extending arm thereof and an anchor pin **723** on the rear wall **574** of the impression bracket, to normally maintain the rotor **721** in the open position shown in Fig. 53.

The knife as provided in this device comprises the rotor **721** which is rotatably mounted within two wings **724**, **724** of a stator or support **725** as best shown in Fig. 52. Both the rotor and stator are provided with threaded or serrated edge portions which thus provides a stamp, when cut, with a serrated edge as shown in Fig. 34. The knife assembly is secured to the underside of the letter guide plate **592**, Fig. 51. As the rotor is rotated from the position of Fig. 53 to the position of Fig. 55, the threaded portion or serrated edge thereof will bite thru the tape upon approaching and passing through the threaded edge of the stator member, thus severing the stamp from the tape portion.

After severing the stamp, the leading end of the tape must next be returned from the position shown in Fig. 55 to the position of Fig. 56, which is accomplished by means of a roller **726**, best shown in Fig. 51, rotatably mounted on the end of the aforementioned arm **708**, which is moved into driving engagement with a slot **727** of a Geneva drive member **728** to rotate said member through one-quarter of a revlution. The Geneva drive member **728** has a gear **729** secured to the inner face thereof, Fig. 44, and both are rotatably mounted on a stud **731**, secured within the rear wall **574** of the impression bracket and further, said gear **729** meshes with

the aforementioned gear **647** on the tape-letter shifting shaft **646**, Fig. 46. The arm **708** is driven in a clockwise direction as viewed from Fig. 51, therefore the feed wheel **638** on the shaft **646**, will be driven in a clockwise direction, which will thus cause the tape to be retracted and due to the exact movement of the Geneva drive the leading edge of the tape will always be returned to the position shown in Fig. 56.

Means to prevent operation with letters when set for tape and vice versa

Associated with the tape letter shifting means, is a means for preventing the operation of the trip finger **599a**, Fig. 50 when the machine is to be used for printing upon tape, also a further means to prevent the manual tripping of the machine when set for the feeding of letters thereto.

In regard to the first mentioned means, the device for controlling same comprises a pin **735** projecting outwardly from the arm **669**, Fig. 50, of the indicator plate **668**, which pin upon movement of the knob **653** to the position which corresponds to the tape printing position shown in Fig. 46, will engage a hole **736** in the link **603** which connects the trip lever **599** with the lever **601**. The said pin **735** having engaged the opening **736**, will thus prevent the movement of the link **603** and thereby prevent any movement of the finger **599a** if said finger should be engaged by a letter when the device is set for printing upon tape. Thus the finger **599a** will act as a fixed stop to prevent the insertion of a letter to a point where it could be engaged by the printing die.

In regard to the second named means, the structure comprises a bell crank **737** best shown in Figs. 44 and 50, which is pivotally mounted upon a stud **738** fixed in a bracket **739** extending inwardly from the front wall of the machine base. A spring **741** anchored at one end to a pin **742** on the machine frame and having its other end fixed to one arm **733** of the bell crank **737**, is adapted to normally rock the bell crank **737** about its pivot on the stud **738** to bring the forward end of a rod **743**, secured to another arm **734** of said bell crank, substantially into engagement with the inner end of shaft **646**. The said rod **743** is guided within an opening **740** in the front wall of the machine base, which opening is in axial alignment with the shaft **646**. Another rod **744** has one end secured to the arm **733** of the bell crank **737** and extends along the front inner wall of the machine base, with the opposite end thereof guided in a suitable opening within a guide pin **750** in the front wall of the base, and further has the free end thereof arranged so as to form a striker **759**, which extends directly into the path of one edge of the depending trigger arm **145**.

Upon movement of the knob **653** from the tape position shown in Fig. 46 to the letters position shown in Fig. 47, the inner end of the shaft **646** will force the rod **743** rearward to rock the bell crank **737** and thereby cause the striker portion **759** of the rod **744** to be moved toward the depending trigger arm **145** and thereby rock same out of its normally operative relation with the shoulder **127** of the trip lever **123**. Any manual tripping therefore of the trip actuating member **385**, Fig. 17, or trip lever **140**, will not cause a tripping operation to become effective, since the shoulder **151** on the depending member **145** which actually performs the tripping operation, will have been moved out of the path of the shoulder **127**.

From the foregoing description of the tape unit it will be observed that a unit has been provided which forms a permanent part of the machine and that although this unit is in a permanently fixed position on the machine, it is possible to print on either letters or tape with both impressions being taken on the same impression member and to individually control the printing on letters or tape by means of the simple movement of the manually operated knob **653**. By the movement of said knob to either of the positions shown in Figs. 46 and 47, the immediate setting of the machine for operation on tape or letters is provided as well as the setting of devices for preventing a tripping operation, when the machine is fixed to operate upon one article, and the opposite article is presented to the machine. Also, by the movement of the same knob **653** to the position shown in Fig. 48, free control of the feed wheel **638** is provided, whereby any adjustment of the position of the tape or to originally thread the tape thru the guides to its desired position within the machine, may be made.

Tape moistener

Means is also provided whereby the tape upon passing thru the cutting knife may either be moistened along the gummed surface thereof, for placing the tape in condition to be directly applied to a package or other article, or if desired, may be released after cutting without being moistened.

Said means comprises a moistening tank **745**, Fig. 45, which is supported upon a bracket **746** fixed to the strut **575** of the impression bracket, and is positioned adjacent the cutting knife. A brush **747**, which normally is submerged in a liquid, preferably water, within the tank **745**, has its upper end projecting above the surface of the tank **745**, into the path of the gummed surface of the tape.

Within downwardly extending wings **748**, Figs. 44, 45 and 51, of a bracket **749**, Figs. 45 and 51, secured to the underside of the letter guide plate **592**, a flapper plate **751** is pivotally mounted, with the free end thereof extending over the upwardly projecting portion of the brush **747** to cover same. Also pivotally mounted between the wings **748**, is a deflector member **752**, which has a shaft **753** therethrough, with one end extending outwardly to receive a deflector flipping member **754**, Fig. 45. The free edge of the deflector **752** is adapted to be moved above or below the normal path of the tape by moving a finger portion **754a**, on said flipping member **754**, to the right or left from the position shown in Fig. 45. When the finger **754a** is moved to the left, as in Fig. 45, the deflector will have its free end rocked upward above the normal path of the tape to thus direct the tape beneath the flapper plate **751** so that its gummed surface, which is on the under face of the tape, may pass over the moistening brush **747** to be moistened, as shown in Fig. 53. When the finger **754** is flipped to the right as of the position shown in Fig. 45, the free end of the deflector will be rocked downward beneath the path of the tape to thereby direct said tape over the upper surface of the flapper plate **751**, to allow the stamp, after cutting, to be removed in its non-moistened state, as shown in Fig. 54.

By means of a spring pressed detent **755**, Fig. 44, supported within a suitable bore **756** in the deflector member, which detent is adapted to en-

gage one of two openings 757—757 in the rear wing 748, as best shown in Figs. 44 and 45, the deflector member is adapted to be maintained in any one of its two positions. Also by means of indicating letters W and D inscribed upon the peripheral surface of the body of the flipper member 754, one of which indicating letters is adapted to be positioned beneath an opening 758 in the upper surface of the letter guide plate 592 upon each movement of the flipper finger 754a, the operator can immediately ascertain whether the deflector is in a position to provide for the issuing of wet stamps as indicated by W, or dry stamps, as indicated by D.

Tape roll lockout

To prevent losing a stamp when the tape becomes exhausted, by having the printing die print a stamp directly upon the impression roller, means has been provided which is automatically actuated by the continually reducing diameter of the tape roll, to cause a locking member to be moved into the path of a grooved portion of the vertically slidable control rod 115 in the machine base, to thereby lock said rod against movement if the machine should be tripped for an operation.

Referring to Figs. 3, 42 and 43, the said tape roll actuated locking device comprises the pressure arm 761 mounted upon a rock shaft 762, which shaft is pivotally mounted within a bearing 763 projecting inwardly from the front wall of the base, as best shown in Fig. 3, and has a cam plate 764 fixed to the inwardly projecting end thereof within the base. A bell crank 765 is pivotally mounted upon a stud 768, supported within a boss in the front wall of the machine base, and has one outwardly extending arm 766 with a roller 769 thereon, which roller is adapted to project within a cam slot 771, provided in the cam plate 764, while a downwardly extending arm 767 has a forked clamp member 72 secured thereto, which is adapted to grip one end of a flexible wire portion 73, slidably mounted within a sheath 774. The opposite end of the sheath 774 extends within a neck portion 775 of a collar 776, which collar is engaged by the lower end of the vertically slidable control rod 115 and is fixed to the floor of the machine base.

An annular groove 777 is provided on the said vertically slidable rod 115 at the portion thereof which is surrounded by the collar 776, and a locking pin 78 fixed to the end of the flexible wire 773, is adapted to cooperate with said annular groove 777 when a locking operation is to be effected as will be later described.

By means of a spring 79, stretched between the lower end of the arm 767 of the bell crank 765, and an anchor pin 781, the locking pin 778 will be normally urged toward the annular grooved portion 777 of the vertically slidable rod 115 but is normally maintained out of the path of the annular groove however, so long as the arm 766 of the bell crank is maintained in a raised position, thru the engagement of the roller 769 thereon with the curved surface provided by a portion of the cam slot 771, in the cam plate 764, and a spring blade 782. Said spring blade has one end resting against the lower surface of the cam slot 771 and the other end secured to a pin 783 projecting outwardly from a lug 784 on the cam plate.

A roller 785, rotatably mounted at the lower end of the pressure arm 761, normally rests against the periphery of the tape roll and is adapted to be maintained thereagainst as the diameter of the roll decreases, through the pull of a spring 786, stretched between the cam plate 764 and a pin 787 secured in the front wall of the machine base.

After the tape is exhausted the roller 769 on the bell crank arm 766 will have advanced outward over the surface of the spring blade 782 until reaching the end thereof then will suddenly drop to the position shown in Fig. 43, when the roller 785 drops into a groove 790 in the core of the tape roll. By said latter action the bell crank 765 will be caused to rock about its pivot, which rocking action will rock the lower arm 767 thereof toward the right to cause the flexible wire portion 773 to move the locking pin 778 within the annular groove portion 777 of the vertically slidable bar 115. With the locking pin in said latter position any attempt to trip the tripping mechanism will cause the upward movement of the bar 115 to be blocked by the engagement of the lower surface of the annular groove portion with the pin 778.

When a new roll of tape is mounted on the shaft 624, the arm 761 is swung outward to permit the roller 785 thereon to clear the tape roll, during which movement, the angular surface 788 of the cam slot 771 will engage the roller 769 on the bell crank arm 766, and move the said roller up past the spring blade 782 to the position shown in Fig. 44, and thereby release the pin 778 from its locking position through the rocking of the bell crank 65.

Automatic letter feed

While the machine as thus far described has been particularly related to a machine to which letters are fed by hand, the machine is also adapted for use with an automatic letter feed by incorporating the additional structure shown in Figs. 57 to 62 inclusive.

Referring to Figs. 57 and 58, the automatic feed mechanism there shown is similar to that which is shown and described in a patent to J. W. Ogden et al., No. 1,737,670. Said mechanism which will only be referred to generally in this application, includes a continuous feed belt 791 which is supported upon a drive pulley 792, fixed to the impression roller shaft 562, and upon a letter feed pulley 793, which is rotatably mounted upon a stud 794 fixed within a support member 795. Above said belt, a pressure member is provided, which generally comprises a number of idler rollers 796, supported within a suitable frame 797 and arranged in a convenient manner so as to provide a slight feeding pressure upon the letters passing between said rolls and the belt. A letter guide plate 798, fixed to the upper surface of the support 795, has a letter hopper member 799 adjustably positioned thereon which is adapted to normally support the letters in a substantially vertical position until they are stripped off by the feed belt 791. A separator device generally indicated at 801 has a plurality of fixed buffers 802 mounted on a shaft 803 at the lower end thereof which buffers are adapted to cooperate with the belt 791 at the position where they engage a raised portion 793a on the pulley 793 to allow only a single letter to pass therebetween. All of these features are accomplished in a manner fully described in the aforesaid Ogden et al. Patent No. 1,737,670.

In an automatic machine, the feeding means, which in this case is the belt 791, is continuously moving, but since the printing die 433 is normally

positioned at the upper portion of the printing drum, when said drum is in its home position, a letter upon reaching a printing position, after tripping the machine will have to be stopped momentarily to allow the printing die to move from its normal rest position around to the printing position.

This condition necessitated the provision of means whereby the impression roller shaft 562, which drives the pulley 792 and belt 791, is stopped after each tripping operation is effected. To accomplish this, a double clutch device, Fig. 60, is provided in place of the previously described impression roller driving shaft 568, Fig. 5, positioned within the machine base.

The original impression roller drive shaft 568 is divided into two parts with the double clutch device carried by each part, one of said parts being indicated as shaft 568a, while the other part is indicated as shaft 568b. The shaft 568a which is continuously driven in the manner previously described for the drive of the shaft 568, has a clutch housing 803, Fig. 60, fixed thereto which is thus continuously rotatable with the shaft. The shaft 568b which is coupled to the universal connecting shaft 569 in the manner as previously described has the remainder of the double clutch device associated therewith. A clutch block 805 is secured to a flanged portion 804 of the shaft 568b by means of screws 806, which clutch block is provided with three cam portions 807 and three spring pressed plungers 808, and further is positioned within the clutch housing 803. As shown in Fig. 61, it will be seen that each cam portion 807 will form a wedge shaped pocket with respect to the inner wall of the housing. Within each of said pockets is a roller 809 which is freely slidable therein, also a pin 811 which projects inwardly from a second clutch housing 812. Said housing 812 is adjacent to and in axial alignment with the clutch housing 803 and further is adapted to be maintained in either a freely rotatable position or a fixed position.

As thus far described it will be seen that so long as the second clutch housing 812 is maintained in a fixed position, the pins 811 are maintained in a fixed position and the rotation of the clutch housing 803 will cause the rollers 809 to jam against the fixedly positioned pins 811, to thereby force the rollers against the heads of the spring pressed plungers 808 and thus allow the clutch housing 803 to freely rotate around the clutch block 805.

When however, the second clutch housing 812 is placed in a freely rotatable position the pins 811 are moved, by the force of the spring pressed plungers 808 against the rollers 809, and the said rollers 809 are then permitted to be forced forward into the narrow portion of the pocket, so as to become jammed therein, between the face of the cam and the inner wall of the clutch housing 803. This condition will cause the continuously rotating clutch housing 803 to become clutched to the cam block 805 and thereby drive the shaft 568b and consequently the letter feed belt driving pulley 792. It will thus be seen that the position of the pins 811, will control the clutching and declutching of the rollers 809 and therefore the driving relation between the two shafts 568b and 568a. The second clutch housing 812 is rotatably mounted on the flange 804 of the shaft 568b and has associated therewith, a clutch block 813, which is fixed to the base bracket 74 by means of screws 814, and has a hub portion 810 thereon with three flats 815 equally spaced around the periphery of said hub to provide cam surfaces. Also associated with said second clutch housing are rollers 816, one provided for each of the flats 815, and a roller shifting device 817. Said roller shifting device comprises a sleeve portion 818, rotatably mounted upon the hub of said clutch block 813 and has three equally spaced radial slots 819 therein, within which the rollers 816 are positioned. Said roller shifting device further has an arm 821 extending downwardly from the sleeve portion 818, with a roller 822 rotatably mounted on a stud 823 fixed in the end of said arm.

When the arm 821 is in the position shown in Fig. 59, which is the normal position, the rollers 816 are centrally positioned on the flats 815, in which position the clutch housing 812 will be adapted to rotate freely about the flange 804 on the shaft portion 568b, thus permitting the rollers 809 of the first named clutch housing 803 to be forced forward by the action of the spring pressed plungers 808 to the position shown in Fig. 61 wherein the rollers 809 are shown wedged up into the narrow portions of the pockets to cause the clutch block 805 to be driven by the continuously rotating clutch housing 803.

When letters are being fed along the moving belt to the tripping position, the roller shifting device 817 is maintained in the position shown in Fig. 59 until the leading edge of the letter engages a trip finger 824, of a trip lever 825, positioned in the path thereof, to actuate the main trip lever 123, which causes the shaft 99, Figs. 8 and 59 to be rocked in a manner previously described.

Upon rocking said shaft 99, a rocker arm 826 fixed on said shaft 99, will strike the lower end 830 of a rocker lever 827, which lever is pivotally mounted upon a stud 828 projecting inwardly from the bracket 73 and is adapted to be rocked by the movement of the arm 826. The upper end 829 of the rocker lever 827 normally engages a lug 831 projecting outwardly from the sleeve 818 of the roller shifting device 817, and when the lever 827 is rocked about its pivot, the said end 829 is rocked out of engagement with the said lug 831. The roller shifting device 817 is thus released and is adapted to be rocked about its axis by the action of a spring member 832, which spring has one blade thereof normally engaging the arm 821 of the roller shifting device, and another blade thereof normally engaging the lower end of the rocker lever 827, in a manner which will tend to urge the lug portion 831 of the roller shifting device against the upper end 829 of the rocker lever 827. Therefore, when said lever end 829 of the rocker lever 827 is removed from the path of the lug 831 the roller shifting device will be rotated about its axis and will move a sufficient distance to cause the clutch rollers 816 to become jammed between the flats 815 on the hub 810 of the clutch block 813 and the inner surface of the clutch housing 812.

Under such conditions the clutch housing 812 will be held in a stationary position, which thus causes the pins 811 to be suddenly stopped, whereupon the rollers 809 in the rotating clutch housing 803 will be suddenly brought into engagement with each of the pins 811. This impact between the rollers and pins will cause the opposite sides of said rollers to force the spring pressed plungers 808 into their depressed positions or the position as shown in Fig. 62 which positions allow the clutch housing 803 to rotate freely while the clutch

block 805 is suddenly stopped by said impact to hold the shaft 568b in a stationary position.

The driving connection to the fed belt driving roller 792 is thus stopped momentarily to allow the printing die to move around from its home position at the upper portion of the printing drum to the position of the letter on the impression roller.

As soon as the printing die engages the letter, the arm 821 of the roller shifting device 817 is rocked back to its original position by means of a cam member 833, fixed on and rotatable with the main drive shaft 72, when said cam member engages the roller 822 on said arm 821. This action returns the clutch housing 812 to a free running position and thus allows the rollers 809 of the clutch housing 803 to become re-engaged in a clutched position between said clutch housing 803 and the clutch block 805. Said camming action also allows the end 829 of the rocker lever 827 to drop downward in front of the lug 831 to maintain the roller shifting device 817 in the position shown in Fig. 59 until another tripping action is effected. The rocker arm 826 which had rocked the end 830 of the lever 827, will have returned to its normal position or that of Fig. 59, in a manner previously described, to allow the return of the lever 827 by the action of the spring 832.

In an automatic feed machine the motor will be running continuously while the machine is in operation, therefore a direct electrical connection may be made to said motor from a manually actuated switch 834, indicated on the base in Fig. 57 or the mercury switch 134 may be rocked to a continuous contact position by means of the rocker cam 130 by throwing the handle 130b, Figs. 1 and 4 to a continuous operating position.

The mechanism which is actuated by the trip finger 824 is similar to that previously described in connection with Fig. 50, therefore the description of the mechanism shown will not be repeated other than to state that the rocking action of the finger 824 will rock the lever 825 about is pivot to cause a bar 835 to be moved sideward to bring a hooked end 836 thereof into direct contact with the roller 128 previously referred to and positioned at the lower end of the arm 126 on the main trip lever 123. The operation of the mechanism, which is effected by the rocking of the trip lever 123, upon being tripped by the movement of the bar 835, will be the same as previously described in connection with the mechanism shown in Fig. 3.

A stamp unit is also provided for the automatic machine, which comprises the same features as those previously described for the structure shown in Figs. 42 to 56 but with the tape supply 841 and tape guides 842 arranged somewhat different from that previously described.

One additional provision has been made in that a means for preventing the feeding of letters when tape printing is being effected, includes a clutch device to connect the driven impression roller 561 with the letter feed belt drive pulley 792, Figs. 57 and 58.

Said clutch device comprises a clutch sleeve 843 slidably mounted on the impression roller shaft 562, which sleeve has a key slot 844 across one face thereof which is adapted to become clutched with a key 845 on an adjacent face of the impression roller hub. On the opposite face of said clutch sleeve 843 a reduced neck portion is provided which slides with the pulley 792 and is connected in driving relation therewith by means of a pin 846 in a hub portion of said pulley engaging a slot 847 in the neck portion of said sleeve,

A clutch shifting member is provided which comprises an arm 848 extending from and secured to the tape-letter indicator arm 669, which has a forked end 849 projecting into a groove 851 in the clutch sleeve. When the control knob 653 is pulled out to the position of Fig. 46, to place the machine in condition for printing on tape, the clutch sleeve 843 will be withdrawn from its clutched relation with the driven impression roller 561, as in Fig. 58, thus discontinuing the drive to the belt feed pulley 792. When the control knob 653 is moved inward to the letter printing position of Fig. 47, the clutch sleeve will be moved inward by the forked end 849 of the arm 848 to become engaged in driving relation with the key portion of the impression roller and thereby cause the feed belt 791 to be driven. Other features of the stamp unit are the same as previously described in connection with Figs. 42 to 56.

After the printing operations are completed, the letters are ejected into a suitable receptacle indicated at 837 in Fig. 57 which may be secured to the machine base or set up in any other convenient manner.

Having described the invention, we claim:

1. In a machine of the character described and in combination with a printing member and an impression member normally adapted to print on separate pieces of matter passed therebetween, means fixedly positioned on said machine for presenting tape to said printing member and impression member to receive the printed impression, and selectively operable means whereby either said separate pieces of matter or tape may be arranged at will for passage between said printing and impression members.

2. In a machine of the character described having a printing member and an impression member associated therewith, a tape supply fixedly positioned on said machine, means whereby said tape may be advanced to said printing and impression members for printing, further means whereby letters may be advanced to said printing and impression members for printing, and selectively controlled devices arranged to prevent the advancement of tape when a letter is being advanced and to prevent the advancement of letters when tape is being advanced to said printing and impression members.

3. In a machine of the character described, a printing member and an impression member; a tape supply, means whereby tape may be advanced to a printing position between said printing and impression members, means whereby a letter may be advanced between said printing and impression members, and a manually operated selector for selectively controlling the advancement of letters or tape to be printed.

4. In a machine of the character described having a printing member normally adapted to print stamps on letters, a tape supply including a support arranged in a fixed relation to the machine, a selective control member, means controlled by said control member to permit the printing on tape, and further means controlled by said control member to permit the printing on letters.

5. In a machine of the character described having a printing member normally adapted to print stamps on letters, a tape supply including a support arranged in a fixed relation to the machine, a manually controlled member carried by said support and movable to shift the tape to a printing or non-printing position, means con-

trolled by said manually controlled member to prevent the inserting of letters when set for printing on tape, and further means controlled by said manually controlled member to prevent the feeding of tape when set for printing on letters.

6. In a machine of the character described having a printing drum and an impression roll and normally adapted for the printing of impressions on letters, a letter guide means, a tape supply including a support permanently fixed to the machine, and a manually controlled tape feed member adapted to advance the leading end of tape along the letter guide means to a printing position for printing on said tape instead of on the letters and to retract said tape to bring the leading end thereof away from the letter guide when letters are to receive the printed impression.

7. In a machine of the character described having a rotary printing member and adapted to print impressions on letters and tape, a tape supply including means to guide the tape to a printing position, and a selector means including a single manually controlled member having a rotatable motion in one direction to advance tape to a printing position when imprints are to be made on tape and a reverse motion to retract the tape when imprints are to be made on letters, and obstruction means associated with the selector means to prevent the inserting of letters when the machine is set to print on tape, and to prevent the tripping of the machine when the machine is set to print on letters.

8. In a machine of the character described having a printing drum and an impression roll normally adapted for the printing on letters, a printing die carried by said drum and adapted to cooperate with said impression roller to feed the articles passing therebetween while printing is being effected, a tape supply including a support arranged as a permanent part of the machine, a selective control means including a manually movable member associated with said support, a feed member engaging the tape and movable by said manually movable member to advance the leading end of the tape to a position where it will be engaged between the printing die and impression roller, and means simultaneously movable with said tape feed to prevent the inserting of letters when the tape is advanced.

9. The combination with a mailing machine having a rotary printing drum and impression roll, of a stamp printing unit positioned in operative relation with the printing drum and comprising a tape support, a tape feed roller manually rotatable to originally advance the tape to a position where it will be picked up and advanced by the printing die in the printing drum and the impression roller while printing is being effected, a tape cutting knife positioned in the path of the advancing tape, a feed shoe on the printing drum and cooperating with the impression roller to advance the tape to a cutting position after printing, means to automatically actuate the cutting knife when the tape reaches said latter position, and means to automatically rotate said tape feed roller in a reverse direction to retract the leading end of the tape to a pick-up position after cutting.

10. In a machine of the character described having a printing drum and an impression roll, a printing die carried by said drum and adapted to cooperate with said impression roller to feed the articles passing therebetween while printing is being effected, a tape supply having the leading end thereof in a pick-up position where it will be engaged between the printing die and impression roller to be advanced while printing, a tape cutting knife positioned adjacent the impression roller, a feed shoe associated with said printing drum and adapted to advance the tape to a cutting position after printing, and means to return the leading end of the tape to a pick-up position after the cutting operation has been completed.

11. In a machine of the character described having a power base, a meter detachably mounted upon said base and having a printing member associated therewith, means to normally lock said printing member in a non-printing position, a drive including a clutch member to actuate said printing member once for each machine cycle of operation, means to trip said clutch, and means to prevent the actuation of said clutch tripping means until said printing member locking means is placed in a lock releasing position.

12. In a machine of the character described, a rotary printing drum, a plurality of printing wheels in said drum, manually operated value set-up members positioned apart from said drum, connections between said set-up members and the printing wheels and separable upon the rotation of said drum, and positively actuated drum aligning means, whereby the connections are returned to their correctly aligned setting positions.

13. In a machine of the character described having a base and a meter detachably mounted on said base, a printing drum carried by said meter and having a plurality of numeral printing wheels therein, setting members in said meter adapted to set said numeral printing wheels to the desired numeral value which is to be printed, connecting means between said numeral wheels and setting members, drum aligning means positioned within the meter, and drum aligner actuating means within the base operable to advance and retract said aligning means to and from a drum engaging position.

14. In a machine of the character described having a base and a detachable meter mounted thereon, a printing drum carried by said meter, transmission means including a clutch to provide a one revolution cycle of machine operation, a drum aligner and locking member, means to automatically move said locking member into engagement with the drum at the end of each operating cycle and out of engagement with the drum at the beginning of each operating cycle, and further means to maintain the printing drum in an idle position while the drum aligner and locking member is being moved.

15. In a machine of the character described having a power base, a meter having a printing member associated therewith and detachably mounted on said base, a locking structure adapted to normally lock said printing member in a non-printing position when the machine is at rest, means to secure said meter to the base and means cooperating with said locking structure and meter securing means, whereby the locking structure remains non-operative until the meter securing means has functioned to secure the meter to the base.

16. In a machine of the character described having a power base, a meter detachably mounted on said base and having a printing member associated therewith normally maintained in a non-printing position when the machine is at rest, means to lock the meter in a non-removable

position upon the base while the printing cycle of operation is in progress said locking means having a sealed portion adapted, when removed by an authorized person, to provide for the removal of the meter if the said meter should become inoperative.

17. In a machine of the character described having a power base, a meter detachably mounted on said base and having a printing member associated therewith and normally maintained in a non-printing position when the machine is at rest, a removable but normally sealed locking member, and means to automatically lock said meter to said locking member during a machine cycle of operation.

18. In a machine of the character described having a power base, a meter detachably mounted on said base and having a printing member associated therewith normally maintained in a non-printing position when the machine is at rest, a locking key sealed in a fixed position to an inaccessible portion of the base, and means on said meter movable into locked engagement with said key upon starting each machine cycle of operation, whereby removal of the meter is prevented after a machine cycle of operation is started except by removal of the key.

19. In a machine of the character described having a power base, a meter having a rotary printing drum and detachably mounted on said base, means to lock the meter on the base, means to normally lock the drum in a non-printing position including a locking structure having a plurality of points of approach positioned at different sides of the meter, and means associated with said base adapted to engage said locking structure at each point of approach to thereby set the locking structure in a drum lock releasing position.

20. In a machine of the character described having a power base, a meter having a rotary printing drum and detachably mounted on said base, means to lock the meter on the base, means to normally lock the drum in a non-printing position including a locking structure having a plurality of points of approach positioned at different sides of the meter, and means positioned on said base including slidable plunger members adapted to engage said locking structure at each point of approach, manually actuated means connected with certain of said plunger members to pre-set the locking structure in a releasing position, and automatically actuated means connected with the remaining plunger members to actuate the drum locking means.

21. A detachable meter for a metered mailing machine having a printing drum thereon, means to normally lock the drum so that the printing portion thereof is in a concealed position to prevent taking fraudulent impressions therefrom when the meter is removed from the machine, said means including a locking structure having a plurality of points of approach, yieldable control members associated with said locking structure at each point of approach, and obstruction means associated with one of the control members, whereby upon manipulation, if said latter control member is moved more or less than the required amount the obstruction means will obstruct the further operation of the locking structure.

22. In a metered mailing machine, a detachable meter having a printing device associated therewith, means to attach said meter to and release same from said machine, means to normally lock the printing device so that a printing portion thereof is in a non-printing position to prevent taking fraudulent impressions therefrom when the meter is removed from the machine, said means including a locking structure associated with said meter and having a plurality of points of approach at different sides of the meter, and means associated with the machine adapted to engage said points of approach upon attaching the meter to the machine.

23. In a metered mailing machine, a detachable meter having a printing drum thereon, means to attach said meter to and release same from said machine, a locking member normally locking said drum when the machine is in its normal rest position while the meter is attached to the machine or when the meter is removed from the machine, and means automatically controlled during each cycle of machine operation, whereby said locking member is released during the cycle of operation and is engaged again at the end of the cycle of operation.

24. In a metered mailing machine, a detachable meter having a printing drum thereon, means to attach said meter to and release same from said machine, means to normally lock the drum so that the printing portion thereof is in a concealed position to prevent taking fraudulent impressions therefrom when the meter is removed from the machine, said means including a locking structure having a plurality of points of approach at different sides of the meter with each point of approach operable in a definite order, and means whereby the locking structure will become non-operative when the same is not operated in said definite order.

25. In a machine of the character described having a power base and a meter detachably mounted on said base, a printing member associated with said meter and having omni value type wheels associated therewith, setting members for setting up a desired value to be printed in said type wheels, means to trip the machine to effect a printing operation after the meter is mounted on the base, and means associated with the setting members to prevent the tripping of the machine when said setting members are not correctly set for their selected values.

26. In a machine of the character described having a power base and meter associated therewith, a printing member associated with said meter and having omni value type members mounted therein, setting members for setting up a desired value in said type members, means to trip the machine to effect a printing operation, a plunger associated with said base and with said tripping means, means including a shutter normally arranged to permit the free movement of the plunger, said shutter being connected with the setting members in a manner whereby the movement of the plunger is adapted to be obstructed while a setting member is being moved from one value to another.

27. In a meter adapted for use with a postage metering machine and having value printing numeral type wheels associated therewith, certain of said wheels having the type uniformly spaced thereon and certain type wheels having the type spaced in a varied relation to the uniformly spaced type wheels whereby the setting movement of said type wheels will not be uniform, individual setting means associated with each type wheel including a pawl and ratchet device, and means actuated by the movement of the pawl, whereby each type wheel must be correctly

set in a printing position before printing can be effected.

28. In combination with a machine of the character described having a printing drum, an impression roller, and an ink roller positioned in the path of the printing die on the printing drum; of a feed shoe on the printing drum cooperating with the impression roller to feed articles after the printing is completed, and means to retract said feed shoe below the die surface after the feeding operation is completed, then advance same again after passing the ink roller.

29. In a machine of the character described having a rotary printing member, omni value numeral type wheels associated with said printing member, manually operable setting members arranged apart from the printing member, connecting members between said setting members and type wheels adapted to be actuated to set-up a desired value in the type wheels when the rotary printing member is in its home position, means to rotate said printing member through one revolution during each machine cycle of operation and thereby separate the connecting members, an aligner pin arranged to engage said rotary printing member to align the connecting members when in a home position, and means for positively moving said aligner pin to said latter position.

30. In a machine of the character described, the combination with a rotary printing member and impression member; of guide means adapted to guide a strip of gummed tape between the printing member and impression member, and means including a stripper associated with the guide means and a defaced surface on said impression member, whereby the gummed surface of the tape is prevented from sticking to said roller.

31. In a machine of the character described having devices permanently arranged on the machine for printing on either letters or tape including the printing and cutting of tape to produce individual printed stamps, comprising a continuous tape supply, manipulative means to advance the leading end of the tape to a pick-up or printing position when it is desired to print impressions upon tape and to retract said leading end from the pick-up position when it is desired to print impressions upon letters, a rotary printing drum and impression roll adapted to print and feed the tape beyond the impression roll, cutting means positioned beyond the impression roll and operable to cut the tape after a predetermined length thereof has passed over the impression roll, and means to retract said tape to bring the free end thereof into a position where it will be adapted to be again advanced by the printing drum and impression roll during the next following printing operation.

32. In a machine of the character described having a power base, a meter detachably mounted on said base and having a printing member associated therewith, a drive including a clutch member to actuate said printing member once for each machine cycle of operation, means to trip said clutch, a locking member to lock said meter to the base, and a clutch stop including means controlled by said locking member, whereby the release of said stop may be either prevented or permitted in accordance with the position of the locking member.

33. In a machine of the class described comprising a base unit and a detachable meter unit, a printing member associated with said meter unit and having a value printing die associated therewith and normally maintained in concealed non-printing position, means to move said printing member to effect the printing of a value stamp impression upon each machine cycle of operation, a locking member normally locking the printing member in an immovable position, and a positively dri en element associated with the base unit arranged to automatically remove the locking member from its locking position and to return same during a machine cycle of operation.

34. In a metered mailing machine, a detachable meter unit, a printing drum rotatably mounted on said meter unit and having an opening therein, said meter unit further including a housing having an opening therein, a movable locking bolt supported within said meter housing and normally engaging the openings in both the printing drum and meter housing, whereby said printing drum may be locked to said meter housing, a base unit arranged to support said meter unit, and actuating means associated with said base unit, whereby the locking bolt is removed from its normally locked position during a machine cycle of operation.

35. In a machine of the character described having a power base, a meter detachably mounted on said base a rotatable printing drum carried by said meter unit and having a value printing die normally arranged in a concealed position, an impression member cooperating with said printing drum including a support secured in a non-removable position on the base unit, and means actuated upon rotation of the printing drum to lock the meter to said base during a printing cycle of operation, whereby the fraudulent taking of stamp impressions by removal of the meter or impression member after rotating the printing drum to a printing position is prevented.

36. A detachable meter for a metered mailing machine having a printing drum thereon, means to normally maintain the drum in a locked non-printing position when the meter is removed from the machine, said means including a locking structure having a plurality of points of approach, and obstruction means associated with said locking structure, whereby, upon attempting to fraudulently manipulate the locking structure to free the printing drum, any improper manipulation of the locking structure through the several points of approach will cause the obstruction means to effect a block and prevent further manipulation.

37. A detachable meter for a metered mailing machine having a printing drum thereon, means to normally lock the drum so that the printing portion thereof is in a concealed position to prevent taking fraudulent impressions therefrom when the meter is removed from the machine, said means including a locking structure having a plurality of points of approach, two points of approach of said locking members being restricted to definite limits of movement and a third point of approach being movable while the said two points of approach are maintained in their restricted positions.

38. In a machine of the class described having a power base and a detachable meter, said meter including a printing member having value printing wheels, manually actuated setting members positioned apart from the printing member and arranged to directly set the printing wheels to the desired value to be printed when the machine

is in its normal rest position, locking members associated with said setting members, a slotted shutter member connected with the locking members and a positively driven member actuated upon commencing a machine cycle of operation and engageable with the slotted shutter member to set said locking members and setting members in a locking position and thereby prevent further manipulation of the setting members.

39. In a machine of the character described having a rotary printing member and an impression member, means whereby either letters or tape are adapted to be fed between said printing and impression members, and guide members arranged to guide the tape over and beyond the impression member during a machine cycle of operation, said guide members being sufficiently flexible to permit letters to depress same and receive a proper imprint upon passing over the impression member and being sufficiently rigid to properly guide the tape.

40. In a machine of the character described having a rotary printing member and an impression member, means whereby either letters or tape are adapted to be fed between said printing and impression members, and guide members arranged to guide the tape over and beyond the impression member and including a retaining guide member arranged to support the tape at one side of the impression member, a receiving guide member, and an upper guide member cooperating with said other guide members.

41. In a machine of the character described having a rotary printing member and an impression member, means whereby either letters or tape are adapted to be fed between said printing and impression members, and guide members arranged to guide the tape over and beyond the impression member and including a retaining guide member and a receiving guide member, said latter member having one end arranged to strip the tape from the impression member.

42. In a machine of the character described having a printing member normally maintained in a rest position, a drive for said printing member, means to effect a printing operation upon moving a letter to a printing position including a trip member positioned in the path of the letter, connections between said drive and trip member, and means to interrupt the movement of the trip member after the printing cycle of operation has started to thereby correctly fix the position of the letter with respect to the printing member.

43. In a machine of the character described having a printing member normally maintained in a rest position, a drive for said printing member, means to effect a printing operation upon moving a letter to a printing position including a trip member positioned in the path of the letter, connections between said drive and trip member, means to interrupt the movement of the trip member to thereby correctly fix the position of the letter with respect to the printing member, and means to free said trip member to permit the letter to move therepast during the printing cycle of operation.

44. In a machine of the character described having a printing member normally maintained in a rest position, a drive for said printing member, means to effect a printing operation upon moving a letter to a printing position including a trip finger positioned in the path of the letter, connections between said drive and trip finger, means including a stop arranged in the path of one of said connections to interrupt the movement of the trip finger after the printing cycle of operation has started to thereby correctly fix the position of the letter with respect to the printing member, and means to later release said stopped connection during the printing cycle of operation.

45. In a machine of the character described having a printing member normally maintained in a rest position, means to effect a printing operation including a manually actuated trip having a trigger member associated therewith, spring actuated means to reset said trigger member after a tripping operation, a cam movable during each machine cycle of operation and means controlled by said cam and engaging said trigger member to prevent the resetting of said trigger member until the end of a printing cycle of operation and to thereby prevent a second tripping operation to be effected after the printing cycle of operation has started.

46. The combination with a machine having a printing member for printing stamp impressions upon individual pieces of mail matter; of a device for producing individual printed postage stamps having either a moistened or an unmoistened gummed surface from a continuous strip of gummed tape, said device comprising means to guide tape along the same path through which the mail matter passes at the printing position, means to automatically cut said tape to provide the individual stamps after printing, means to moisten the gummed surface of said stamps, and means to selectively control said moistening means, whereby the stamps may be moistened or may remain unmoistened after passing through the moistening means.

47. In a machine of the character described having a printing member and an impression member associated therewith, a tape supply fixedly positioned on said machine, means whereby said tape may be advanced to said printing and impression members for printing, further means whereby letters may be advanced to said printing and impression members for printing, means for selectively controlling the advancement of letters or tape, means controlled by the selective means to prevent the advancement of tape when a letter is being advanced, and further means controlled by the selective means to prevent the advancement of letters when tape is being advanced to said printing and impression members.

48. In a machine of the character described having a printing member and an impression member and adapted to normally print on letters; tape guiding means adjacent said printing and impression members, and selectively operable control means associated with said tape guiding means, whereby the machine is restricted for the passage of either letters or tape between the printing and impression member, while the tape guiding means remains positioned on the machine.

49. In a machine of the character described having a rotary printing member and adapted to print impressions on letters and tape, a tape supply including means to guide the tape to a printing position, and selector means including manually controlled means having motion in one direction to move the tape to a printing position for the printing of impressions on tape, and a reverse motion to remove the tape from a printing position when imprints are to be made on letters.

50. In a machine of the character described having a printing drum and an impression roll nor-

mally adapted for the printing on letters, a printing die carried by said drum and adapted to cooperate with said impression roller to feed the articles passing therebetween while printing is being effected, a tape unit arranged as a permanent part of the machine, a selective control means including a manually movable member adapted to prepare the machine for printing on either letters or tape, and a feed member engaging the tape and movable by said manually movable member to advance the leading end of the tape to a position where it will be engaged between the printing die and impression roller.

51. In a device of the class described for producing printed postage stamps from tape material, and in combination with a printing device, a tape supply, and a tape cutting device; of means to render the stamps adhesive, means for directing the tape material past the printing device to the cutting and adhesive rendering positions, and selective means for controlling the adhesive rendering means, whereby the stamps may be received in an adhesive condition ready for immediate placement upon articles to be mailed or in a non-adhesive condition.

52. In a machine of the character described having a printing drum and an impression roll, a printing die carried by said drum and adapted to cooperate with said impression roller to feed letters or tape passed therebetween while printing is being effected, a tape supply, mechanism for advancing the leading end of the tape to a printing position, cutting means whereby the printed portion of the tape may be severed from the strip of tape, means for retracting the leading end of said tape to a printing position after cutting is effected, mechanism for withdrawing the leading end of the tape from a printing position, mechanism for disabling said tape retracting means, and a unitary manual control member arranged to effect the operation of any of said several named mechanisms.

53. In a machine of the character described having a printing drum and an impression roll, a printing die carried by said drum and adapted to cooperate with said impression roller to feed letters or tape passed therebetween while printing is being effected, a tape supply, mechanism for advancing the leading end of the tape to a printing position, cutting means whereby the printed portion of the tape may be severed from the strip of tape, means for retracting the leading end of said tape to a printing position after cutting is effected, mechanism for withdrawing the leading end of the tape from a printing position, mechanism for disabling said tape retracting means, mechanism for preventing printing on tape when letters are to be printed, mechanism to prevent printing on letters when tape is to be printed, and a unitary manual control member arranged to effect the operation of said several named mechanisms.

54. In a machine of the character described having a printing drum and an impression roll, a printing die carried by said drum and adapted to cooperate with said impression roller to feed letters or tape passed therebetween while printing is being effected, a tape supply, means to guide the tape from the supply to a printing position, mechanism to feed the tape from the supply through the guide means to a starting position, mechanism for advancing the leading end of the tape from a starting position to a printing position, cutting means whereby the printed portion may be severed from the strip of tape, means for retracting the leading end of the tape to a printing position, mechanism for disabling said tape retracting means, and a unitary manual control member arranged to effect the operation of any of said several named mechanisms.

55. In a machine of the character described having a base and a detachable meter mounted thereon, a printing drum carried by said meter, transmission means including a clutch to provide a one revolution cycle of machine operation, a drum aligner and locking member, means to automatically move said locking member into engagement with the drum at the end of each operating cycle and out of engagement with the drum at the beginning of each operating cycle, and further means to maintain the printing drum in an idle position while the drum aligner and locking member is being moved, said latter means including an intermittent drive control device associated with said transmission means.

56. In a machine of the character described having a rotary printing member, omni value numberal type wheels associated with said printing member, manually operable setting members arranged apart from the printing member, connecting members between said setting members and type wheels adapted to be actuated to set-up a desired value in the type wheels when the rotary printing member is in its home position, means to rotate said printing member through one revolution during each machine cycle of operation and thereby separate the connecting members, an aligner pin arranged to engage said rotary printing member to align the connecting members when in a home position, and mechanism driven by the printing member rotating means for positively moving said aligner pin to said latter position.

57. The combination with a machine having a printing member and normally adapted to print upon individual pieces of mail matter; of a drive to actuate said printing member, cutting means including connections with said drive to automatically actuate same, means to guide tape to the printing member and cutting means, and means connected with said drive for automatically feeding said tape backward to return the leading edge thereof to a printing position after cutting is effected.

58. In a machine of the character described having a rotary printing member and an impression member, driven means to feed letters to said rotary printing member, means to advance tape to said printing member, selective means to condition the machine for the printing of impressions upon either letters or tape, and means to discontinue the drive of the letter feed means when the machine is conditioned for the printing of tape.

59. In a machine of the character described having a rotary printing member and an impression member, driven means to feed letters to said rotary printing member, means to advance tape to said printing member, selective means to condition the machine for the printing of impressions upon either letters or tape, and means to discontinue the letter feed drive means including a clutch connection with said letter feed drive means and connections with said selective means, whereby the clutch drive connection is released when the machine is conditioned for the printing of tape.

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