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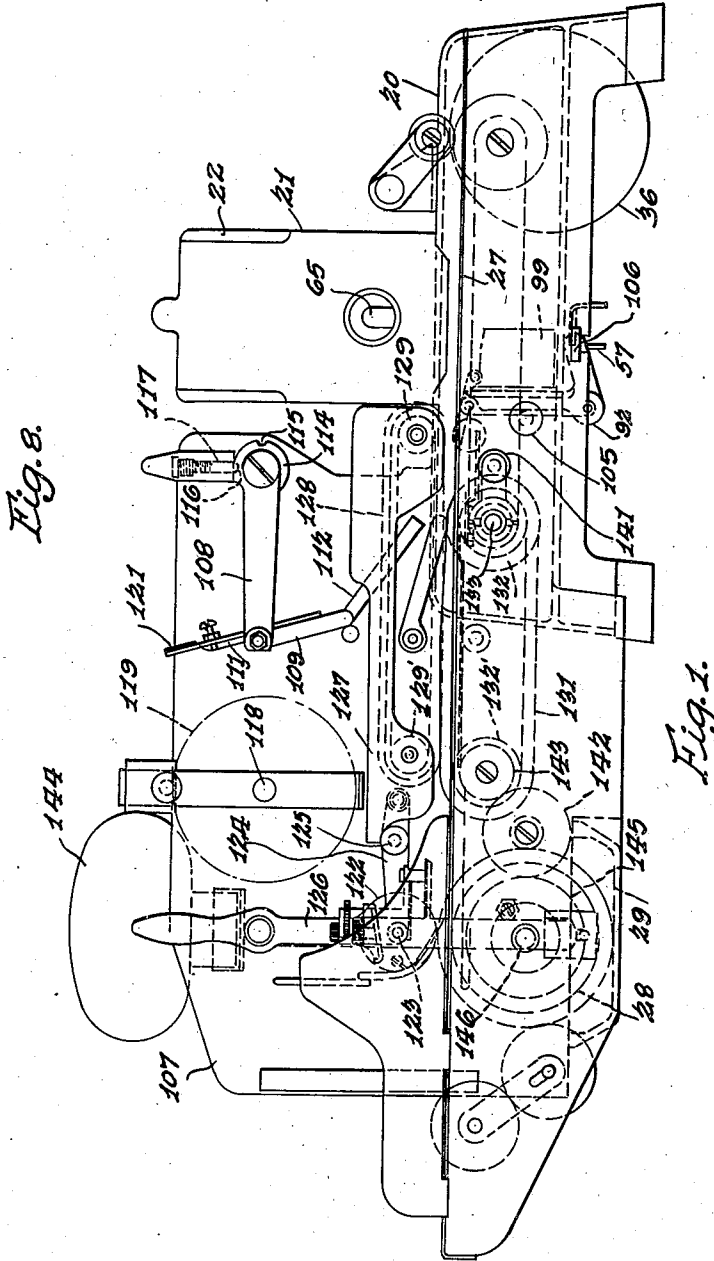
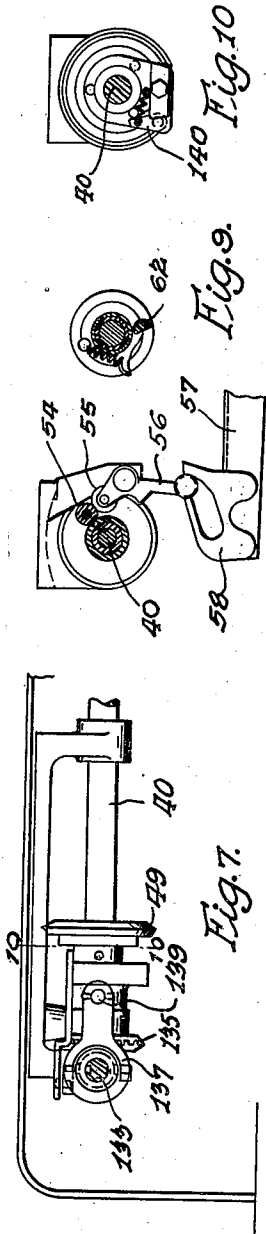
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2,104,668

POSTAGE PRINTING AND METERING MACHINE

Filed Jan. 23, 1936

3 Sheets-Sheet 1



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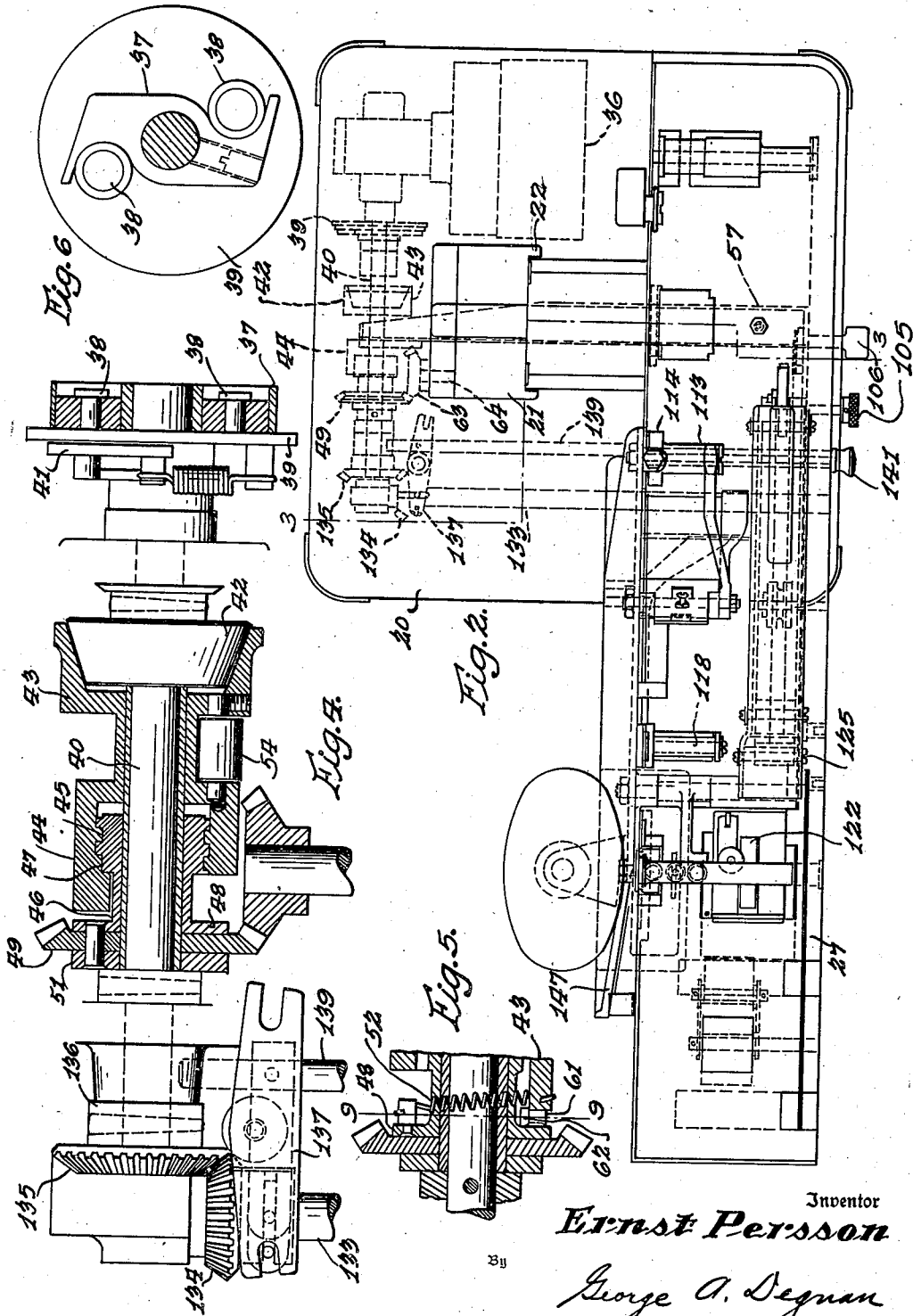
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Fig. 3.

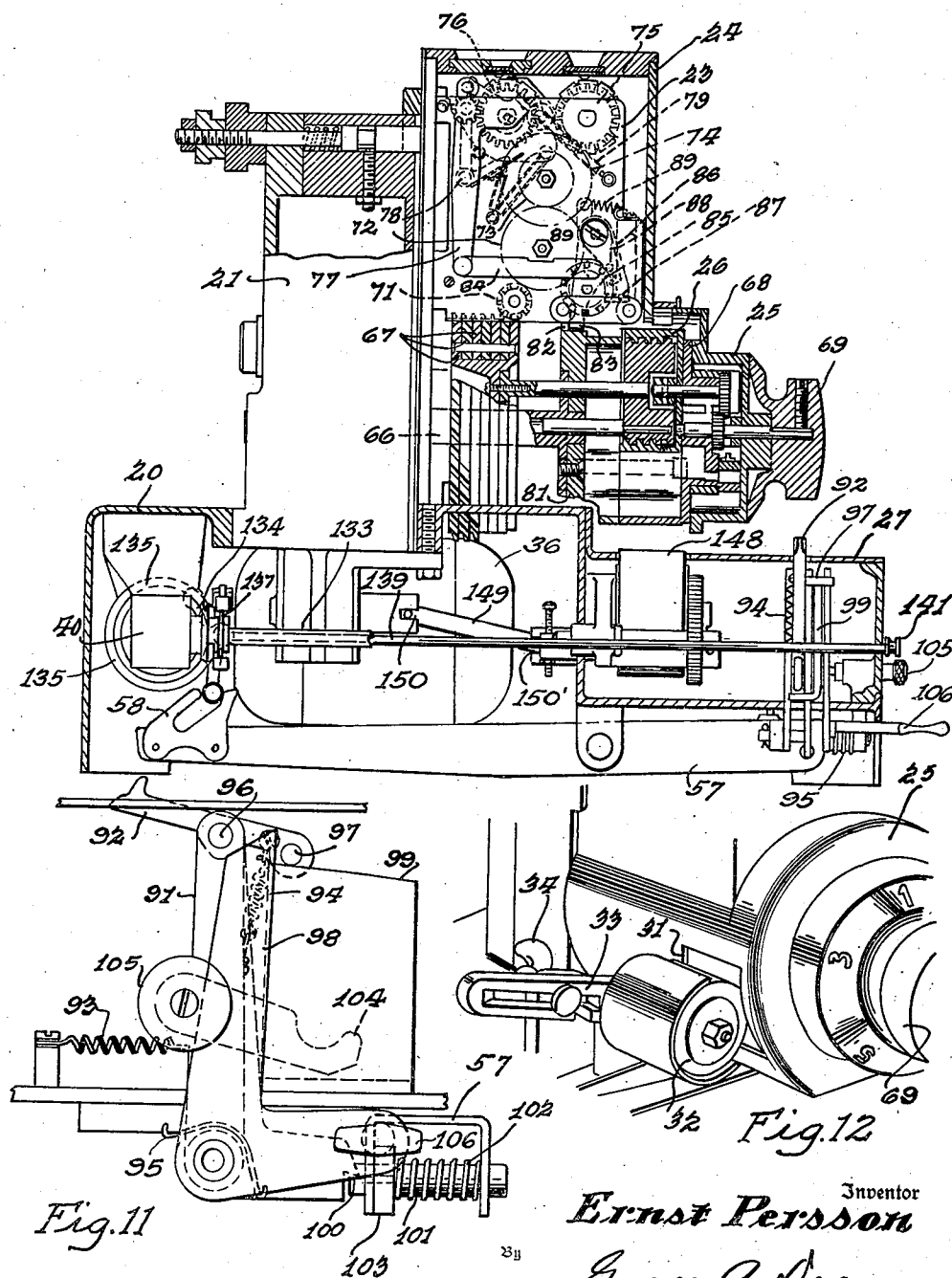


Fig. 11

Fig. 12

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UNITED STATES PATENT OFFICE

2,104,668

POSTAGE PRINTING AND METERING
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International Postal Supply Company, Brook-
lyn, N. Y., a corporation of New York

Application January 23, 1936, Serial No. 60,493

8 Claims. (Cl. 101-235)

This invention relates to postage printing and metering machines, and more particularly to a "multi-denominational" machine, in which dies of different denominations are selectively positioned to impress postage on envelopes, cards, tape, etc.

In general the invention pertains to improvements in the mechanism for rotating the printing die and the connections between the die and the metering mechanism; also it comprises improved means for operating the machine as a multi-denomination postage printer. The invention further includes improvements in the coupling between the motor and the printing die, a trip for actuating the clutch, and a parcel post attachment which permits the impression of postage indicia on a tape, the latter mechanism being so arranged on the machine as to permit its use for parcel post postage or in a raised position which will not interfere with the normal use of the machine as a printer for envelopes and similar mailing matter.

The invention first comprises a shiftable gear arrangement which, depending on the amount for which the die is set, actuates the meter through worm gears, the shiftable gears being readily assembled or disassembled to permit changing gears in accordance with the various denominations found desirable. The shiftable mechanism is made up of a number of separate worm gears easily removable for individual replacement, thus avoiding the necessity for making an entirely new multi-denominational unit.

The invention next includes a clutch mechanism which automatically stops the printing die after a single revolution, the driving motor being constantly rotatable.

A further feature of the invention is an attachment which is designed to enable the operator to print postage indicia on paper tape for attachment to parcel post packages, this attachment being readily movable into or out of position with respect to the die so that other mailing matter may be run through the machine without interference from the attachment.

Other features of the invention and its operation will be apparent when the following description is considered in connection with the appended drawings in which:—

Fig. 1 is a front view of the assembled machine with the meter removed;

Fig. 2 is a top view of the machine shown in Fig. 1;

Fig. 3 is a section taken on line 3-3 of Fig. 2, the meter being shown in cooperating relation with the driving mechanism;

Fig. 4 is a sectional view of the clutch interposed between the motor and the printing and metering mechanism;

Fig. 5 is a partial section of the clutch actuator;

Fig. 6 is an end view of the coupling between the motor and the clutch;

Fig. 7 is a fragmentary view of parts of the driving mechanism;

Fig. 8 is a fragmentary view of the trip mechanism;

Fig. 9 is a section taken on line 9-9 of Fig. 5;

Fig. 10 is a section taken on line 10-10 of Fig. 7;

Fig. 11 is an enlarged front view of the trip mechanism; and

Fig. 12 is a fragmentary perspective view of the printing mechanism.

In the drawings, the machine comprises a base 20 having an upwardly extending gear housing 21, preferably cast with the base and having flanges 22 forming a partial support for the meter 23. The meter housing 24 has formed therewith a substantially cylindrical extension 25 providing a housing for the printing die 26.

Mounted on base 20 and lying in a plane below the printing die is a feed table 27 provided with a moistening disc 28 and a water well 29, whereby, as the mail matter is fed through the machine, it is automatically sealed in addition to having postage indicia printed thereon.

An opening 31 permits inking roll 32 to be pressed against the die, as the latter rotates, and to ink the surface thereof before the indicia are printed on the mail matter. Ink roll 32 is pivoted on a slotted arm 33 which may be adjusted with respect to the die by means of a bolt and thumb nut 34 passing through frame 107.

The preferred means for driving the machine comprises motor 36 having on its shaft a coupling 37 cooperating with pins 38 on disc 39 to rotate the latter. Disc 39 is connected to shaft 40 by means of an overload clutch 41 which releases the connection between the shaft and the disc under abnormal conditions. Secured to shaft 40 is a cone 42 adapted to be engaged by cone housing 43 when the trip mechanism, to be described hereinafter, is actuated. Normally the housing is spaced from the cone.

Formed integral with housing 43 is a cylindrical enlargement 44 having interior threads 45. Housing 43 is freely rotatable on sleeve 46, the latter having a threaded enlargement 47 cooperating with the interior threads 45 on housing 43 and an end flange 48 to which are secured bevel gear 49 and disc 51. As will be seen in Fig. 5, housing 43 is connected to flange 48 by a spring 52 normally to rotate the housing with respect to the flange, the latter being stationary axially with respect to shaft 40. When housing 43 is under the influence of spring 52, it moves axially toward cone 42, due to the threaded cooperation between housing 43 and enlargement 44. Mounted on housing 43 is a stop roller 54 adapted normally to be engaged by a movable

abutment or roller 55 on stop lever 56. The stop lever is actuated by a control lever 57 having a tripping cam 58 thereon. Upon actuation of lever 57 by mechanism to be described later, spring 52 urges housing 43 in a direction which moves the housing toward the cone. Thus, when cone 42 engages housing 43, the entire unit comprising housing 43, sleeve 46, and gear 49, rotates with the motor shaft. For a single revolution of the mechanism, the control lever is raised and immediately released. The unit continues to rotate until the rollers 54 and 55 again meet, whereupon the force of spring 52 is overcome and the housing moved axially away from the cone. A shoulder 61 on the housing then engages stop piece 62 on end flange 48.

Referring to Fig. 2, it will be seen that bevel gear 49 meshes with a second bevel gear 63 on shaft 64. The latter is journaled in the rear wall of gear housing 21 and is connected by gearing (not shown) to a shaft and coupling 65 journaled in the front wall of the gear housing. Adapted to be coupled to shaft 65 is a shaft 66 in the meter housing. Keyed to shaft 66 are a plurality of worm gears 67 assembled for movement as a unit axially of the shaft, but rotatable therewith. Each of these gears is provided with a number of teeth corresponding to a particular denomination, one gear having but one tooth, the next two teeth, and the others a larger number of teeth. The printing die 26 is supported in a carrier 68 and is threaded interiorly to cooperate with the exterior threads of a setting member operated by the dial 69. By turning the dial to the position desired for printing a particular denomination, the setting mechanism, through the threads referred to, moves the proper worm into meshing relation with a worm wheel 71. This wheel in turn is connected through gears 72, 73, and 74 with the usual counting mechanism which includes ascending and descending wheels 75, 76, respectively.

Suitable locking mechanism is provided to prevent unauthorized use of the meter after a predetermined amount of postage is used. This mechanism includes a key bar similar to that shown in the patent to Mitchell and Zahn, No. 1,659,213, dated February 14, 1928, designed to cooperate with notches in the counting wheels. When the notches are in alignment, corresponding with a combination of the positions of the wheels indicating substantial exhaustion of postage, the bar falls into the notches and locks them against further rotation.

The ends of the bar are held in levers 77 at each side of the counting mechanism, these levers being pivoted at 78 and being normally urged to locking position by spring 79. Die carrier 68 is provided with a flange 81 having a notch 82 therein. Designed to enter this notch at the proper time is a finger 83 connected to one of the levers 77 by means of a link 84. The notch is so positioned on the flange that the mechanism is locked only at a time when the printing die is concealed within housing 25. Geared to gear 72 is a locking disc 85 having ten teeth on its periphery. Connected to finger 83 so as to move therewith is a lock bar 86 having a finger 87 adapted to enter one of the notches in the locking disc when finger 83 enters notch 82. A pawl 88, normally held in engagement with disc 85 by spring 89, permits rotation of the disc in one direction, but prevents reversal of the disc and, consequently the other gears forming part of the counting mechanism.

The trip mechanism for actuating the printing die is shown in Fig. 11. Pivoted to the base of the machine is a carrying arm 91 to which is pivoted a trip tongue 92. Spring 93 normally holds the arm in the position shown and spring 94 tends to maintain the tongue in raised position, that is, projecting through and above the feed table 27, as shown, to be engaged by mail matter fed to the printing die. The tongue carries pins 96 and 97 adapted to engage, respectively, bell crank lever 98 and stationary cam 99. Lever 98 is adapted to engage notch 100 in pin 101, the latter slidably mounted in the channel-shaped control lever 57, said pin being normally urged toward the bell crank by spring 102 cooperating with collar 103 on the pin. When tongue 92 is engaged by a piece of mail, the bell crank is rocked and depresses the forward end of control lever 57. Continued movement of the bell crank permits it to slide past pin 101 which moves inwardly and then is returned to normal position by spring 102. Bell crank 98 is returned to its normal position by spring 95. Cam 99 depresses tongue 92 to permit the mail to pass thereover and the tongue is then returned to its normal position. If desired, the tongue may be held in inoperative position by a holding finger 104 which is raised by turning knob 105 and in its raised position abuts pin 97 to depress the tongue. The control lever is provided with a finger piece 106 to permit operation of the machine by hand when so desired.

Attached to the machine by any suitable means is a mounting frame 107 on which are mounted a parcel post attachment and separator unit. Pivotedly mounted on the frame is a bell crank lever 108 to which is secured a tape guide plate 109 and a spring mounting plate 111. Pivoted to the lower end of the guide plate is a second guide plate 112 which is held in the relation shown in the drawings by any suitable yielding spring means. Lever 108 has formed therewith a boss 113 on the end of which is a flange 114 having two notches 115, 116, spaced substantially 90° apart. These notches cooperate with a slidable spring pressed pin 117 mounted on the frame and which holds the lever and tape guides either in elevated position, as shown, when ordinary mail matter is being run through the machine, or in a lowered position which brings the lower guide directly under the printing mechanism. In the latter position, the printer impresses postage indicia directly on the tape which is then severed and affixed to packages too bulky to pass through the machine. A stud 118 is secured on the frame to accommodate a roll of gummed tape, as indicated at 119, the tape passing into the guides and being tensioned by spring 121 thereon.

Also mounted on frame 107 is a separator unit. The separator comprises a rubber roller 122 which is held against rotation on stud 123 but which may be turned for adjustment to compensate for wear. The roller and stud are carried on an arm 124 pivoted on a stud 125 on the frame and its position adjusted by means of arm 126. Also pivoted on stud 125 is a feed belt channel 127 in which is mounted an endless feed belt 128 on rollers 129, 129'. The channel is adapted to be swung about stud 125 to move it out of feed position when necessary. Normally, belt 128 cooperates with a second feed belt 131 mounted on rollers 132, 132' journaled below the feed table surface. Roller 132 is fastened to shaft 133 on one end of which is keyed a bevel gear 134 adapted to mesh with bevel gear 135 on shaft 49. Gear 135 76

is driven by a friction piece 136 secured to shaft 40. Gear 134 is movable axially on shaft 133 and may be thrown into or out of mesh with gear 135 by means of a shift fork 137. Shift rod 139 is attached to the shift fork and extends through the front of the base, having a knob 141 on its forward end to permit shifting of the gear. To prevent reversal of shaft 40 and to position it accurately for subsequent operations after the shaft has come to rest, suitable ratchet means, indicated at 140 in Fig. 10, are employed.

Envelope sealing means are provided on the machine and include a moistening disc 28 revolving in a water well 29. Disc 28 is rotated by means of a friction wheel 142, bearing against a collar 143 on belt driving roller 132' and roller 145 on shaft 146. A suitable water container 144 is mounted on frame 107. Suitable means are provided for folding over the envelope flap after it has been moistened, a plate 147 being employed for this purpose.

An impression roll 148, driven by shaft 149, is adapted to be lifted at a predetermined time to lift mail matter firmly against the printing die. Shaft 149 is connected to shaft 64 by means of universal joints 150, 150' and is driven thereby. The impression roller thus rotates in synchronism with the printing mechanism.

The machine is so assembled that it seals and imprints postage rapidly, its parts are sealed against fraudulent use, and it is compact so as to occupy little space.

Although certain parts and combinations have been described in detail, it is to be understood that various changes may be made without modifying the operation of the machine. It is, therefore, intended that the claims be of such scope that they include such modifications.

What I claim as my invention is:

1. In a combined postage printing and registering machine, rotatable printing means, driving means therefor including a shaft, a clutch comprising a pair of axially aligned clutch elements on said shaft, one of said elements being connected to said printing means and the other element being connected to said shaft, said clutch being normally disengaged, and trip means for actuating said clutch.

2. In a combined postage printing and registering machine, rotatable printing means, driving means therefor including a shaft, clutch elements axially aligned on said shaft, one of said elements being connected to said printing means and the other element being connected to said shaft, stop means on one of said clutch elements, a trip member engaging said stop means normally to hold said clutch elements in spaced relation, other means normally urging said clutch elements into operable relation, and means for actuating said trip element to disengage said stop member and thereby operate said clutch.

3. In a combined postage printing and registering machine, rotatable printing means, driving means therefor, clutch elements interposed between said printing means and said driving means, stop means on one of said clutch elements, a trip member engaging said stop means normally to disengage said clutch elements, a drive shaft, a sleeve loosely mounted on said shaft, one of said clutch elements being secured to said shaft and the other element being loose

on said sleeve, a gear on said sleeve connected to said printing means, said sleeve and said loose element having threaded engagement, spring means connecting said sleeve and said loose element to rotate said loose element with respect to said sleeve, thereby to move the clutch elements into engaging relation, and means for actuating said trip element to operate said clutch.

4. In a combined postage printing and registering machine, rotatable printing means, driving means therefor including a shaft, clutch elements axially aligned on said shaft, one of said elements being connected to said printing means and the other element being connected to said shaft, said clutch elements being normally disengaged, stop means on one of said elements, a trip member in the path of mail matter passing to the printing means and rockable thereby, a movable abutment normally engaging said stop means to disengage said clutch elements, means actuated by said trip member for moving said abutment out of engagement with the stop member, and means for thereafter moving one of said elements axially to permit engagement of said clutch elements.

5. In a combined postage printing and registering machine as claimed in claim 4, a rockable tongue on said trip member, and cam means for moving the tongue out of the path of the mail matter after the mail matter rocks the trip member.

6. In a combined postage printing and registering machine as claimed in claim 4, a control lever for moving said abutment, and a movable member on the control lever adapted to be engaged by the trip member during a portion of the movement of the trip member and thereafter movable out of engagement with the trip member.

7. In a combined postage printing and registering machine, rotatable printing means, a base therefor, a frame mounted on said base, tape carrying means on said frame, a movable tape guiding member comprising a pair of plates, one of said plates being pivotally and yieldably secured to the other of said plates, and means adapted in one position to hold said plates in spaced relation to the printing means and in another position to hold one of said plates in contiguous relation to the printing means, whereby the tape guided thereby is in printing relation to said printing means.

8. In a combined postage printing and registering machine, rotatable printing means, a base therefor, a frame mounted on said base, tape carrying means on said frame, an arm pivoted on said frame, a tape guiding member carried by said arm and comprising a pair of plates, one of said plates being pivotally and yieldably secured to the other of said plates, and cooperating means on the frame and said arm for holding said arm in either of two positions, the arm in one position holding the tape guiding member in spaced relation to said printing means and in another position holding said member in contiguous relation to the printing means whereby the tape carried by said member may be printed.

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