

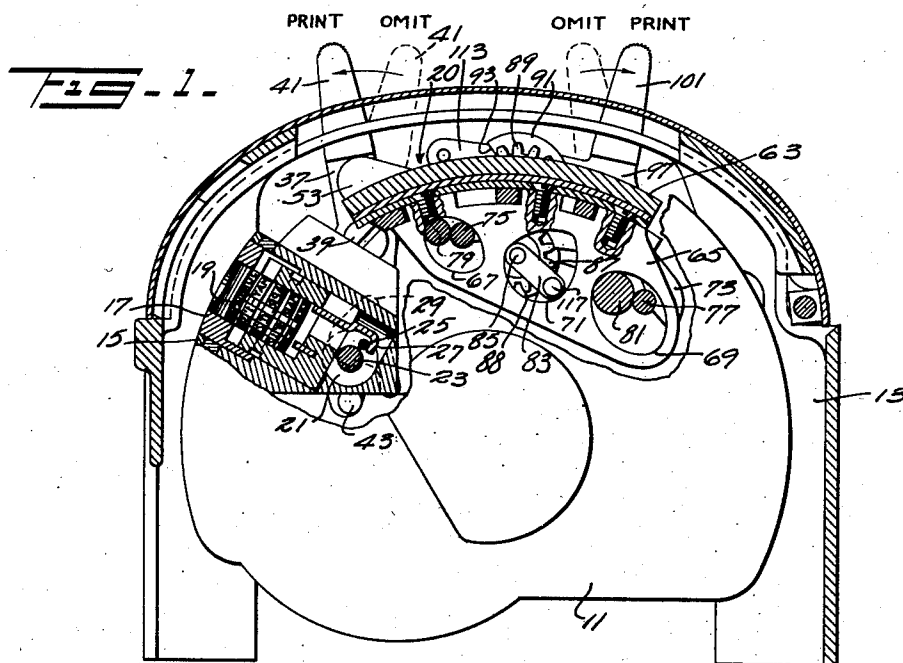
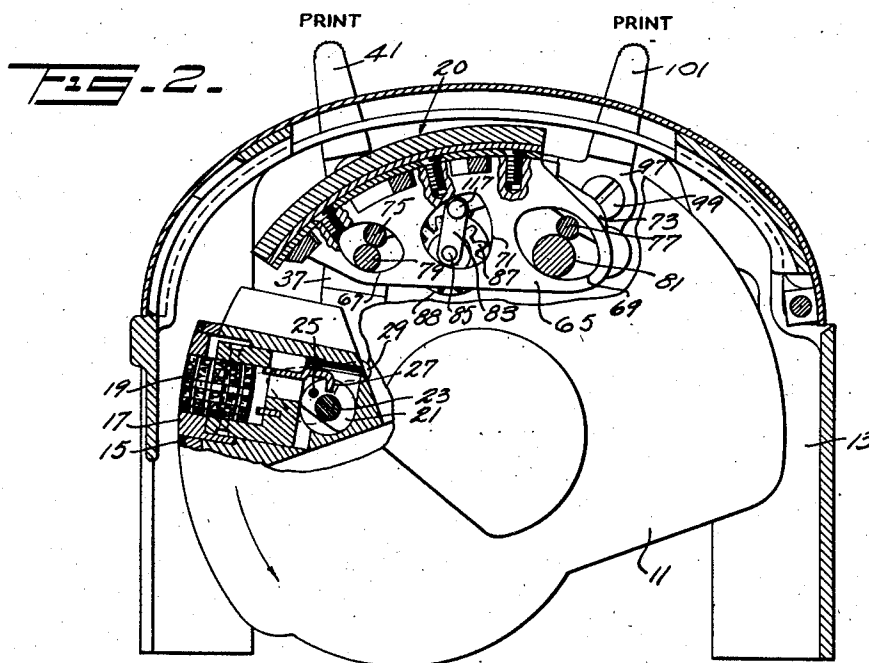
May 10, 1955

A. G. RUSSELL ET AL
PRINTING DIE CONTROL

2,707,913

Filed Nov. 28, 1951

4 Sheets-Sheet 1



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Fig. 3.

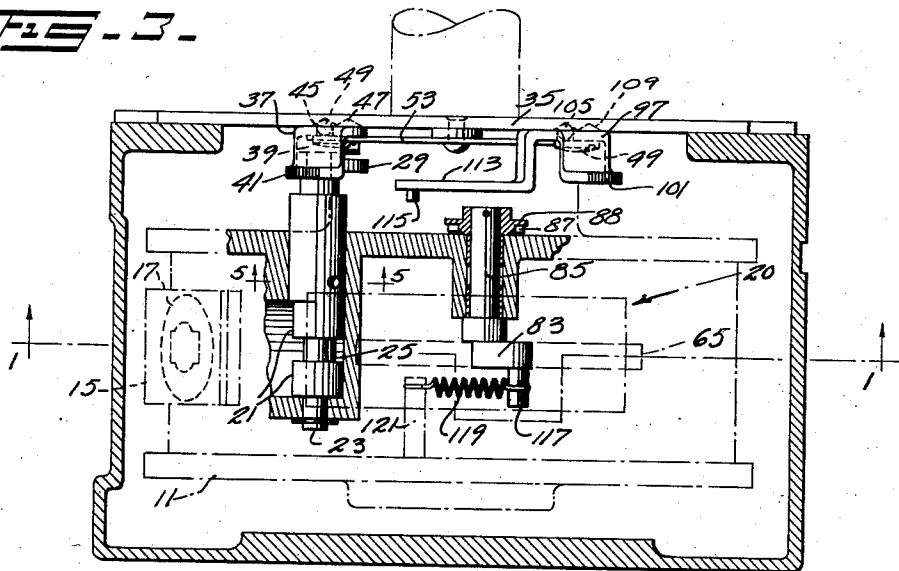


Fig. 4.

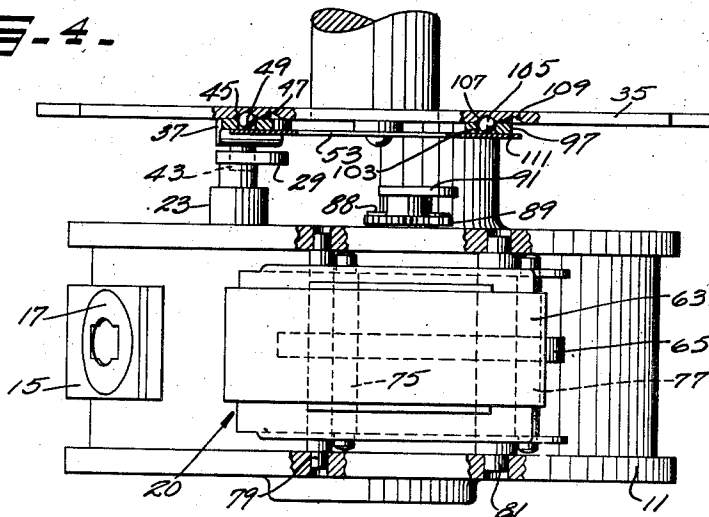
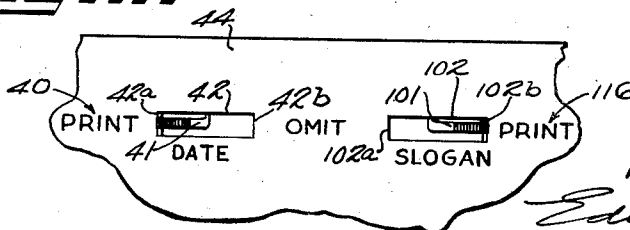


Fig. 11.



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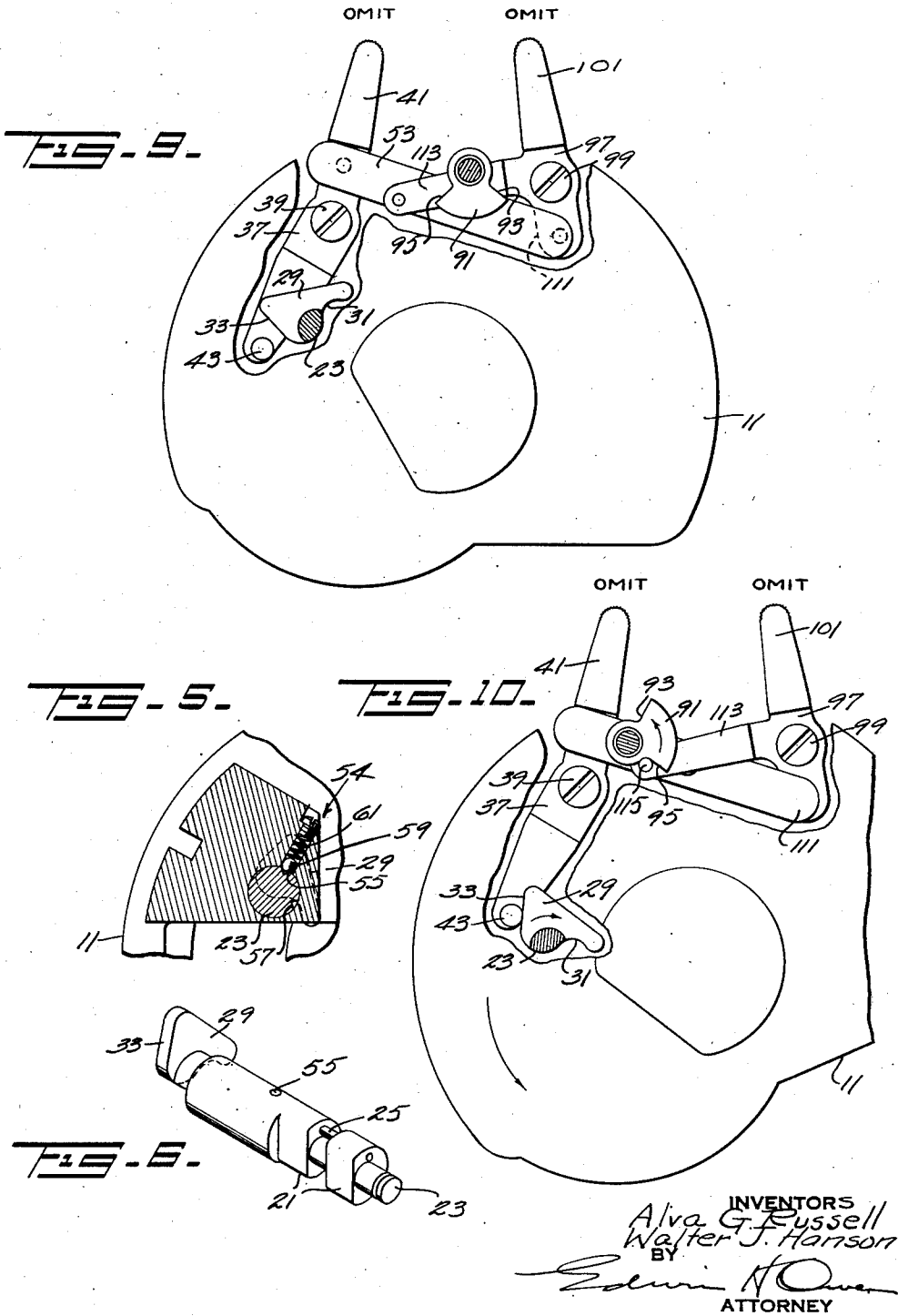
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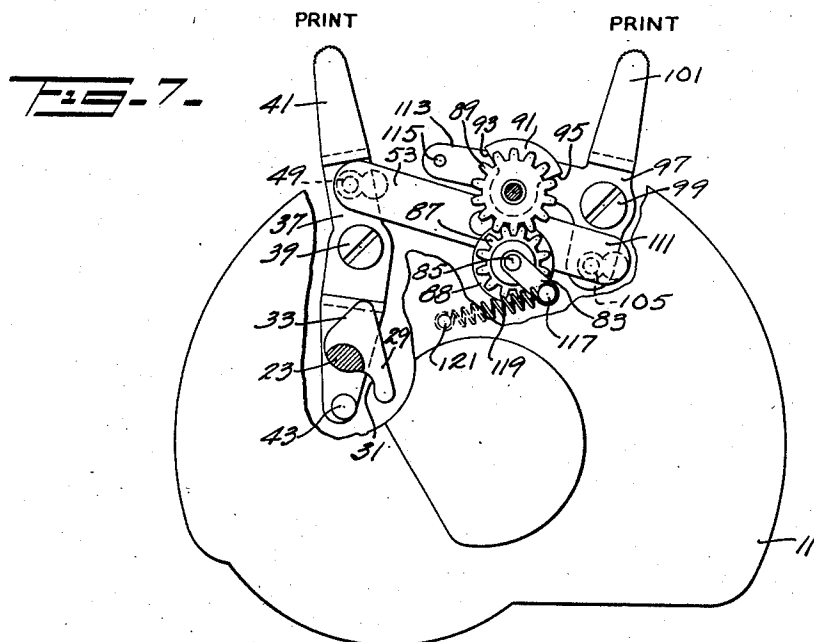
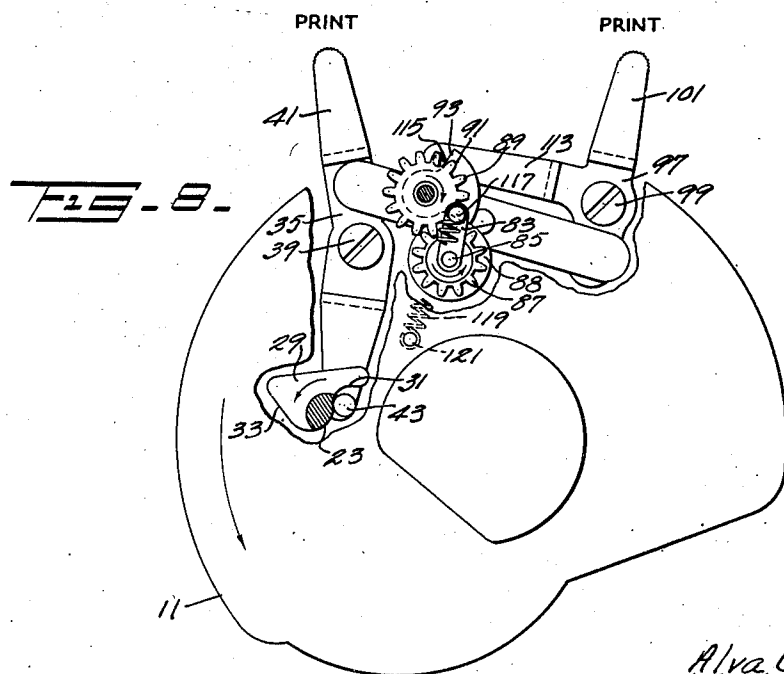
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4 Sheets-Sheet 4



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2,707,913

PRINTING DIE CONTROL

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Application November 28, 1951, Serial No. 258,622

11 Claims. (Cl. 101—91)

This invention relates to postage meters and particularly to the projection and retraction of the date and slogan printing dies thereof.

In accordance with postal regulations previously in effect various classes of mail required different printings, and heretofore means have been devised for permitting the movement of either the dater die or both the dater and town dies to non-printing position, and for returning either the town die alone or both the town and dater dies to printing position in order to meet these requirements. One example of such a device is illustrated in the patent to J. W. Ogden, No. 2,179,269, which issued November 7, 1939. Recently revised postal regulations, however, require no movement of the town die and necessitate the retraction of the dater die only.

An improved operating mechanism for town and dater dies (in which the operating mechanism for the dater die is now of particular interest) is illustrated in the application of Berthold Knauer, Serial No. 214,750, filed March 9, 1951, wherein the die operating mechanism not only projects the dater die, but also positively retracts the same when desired.

It has also been the practice in the past to provide the printing members of postage meters with dies bearing advertising matter and known as slogan dies adjacent the postage printing means, which dies could be moved from printing to non-printing position or vice versa at the will of the operator. An example of such a retractable slogan die is shown in the patent to Francis J. Rouan and Earl H. Sorgatz, No. 2,204,971, which issued June 18, 1940.

Heretofore the operating means for the adjustable dies has been directly associated and movable with the rotating printing drum of the postage meter. Thus, the manually engageable control member has normally been housed within the casing which enclosed the printing drum so that the control member would not be inadvertently engaged when the drum was rotating.

The present invention has for its object the remote controlling of the adjustable dater and slogan dies on the movable printing drum in such a manner that the manually engageable control member may be stationarily positioned on the casing where it is easily engageable. The control member will thus be conveniently located where any hindrance to reaching the same, such as is usually offered by access openings in the housing, is avoided. Furthermore, the location of the manual control member can be used to give a continuously visible indication of the positioning of the adjustable dies whether the drum is rotating or not.

A feature of the present invention is the provision of manual means for positioning a trip mechanism on a relatively stationary part of the device, together with die moving mechanism on the movable printing drum, the die moving mechanism being actuated by the trip mechanism only in response to movement of the drum.

Another feature of the invention is the provision of a relatively stationary trip mechanism disposable in a plu-

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ality of positions to engage a travelling die moving member in a plurality of different ways to accomplish a plurality of different die adjustment settings in response to the relative motion between the mechanism and the member.

Still another feature of the invention is the provision of means on the movable printing member for moving the die moving member slightly more than the movement effected by the tripping mechanism, whereby subsequent revolutions of the drum will occur without contact of the parts so long as the setting of the trip mechanism remains the same.

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.

A preferred embodiment of the invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a vertical section through the postage meter according to the present invention taken approximately on line 1—1 of Fig. 3 and illustrating the non-print position of the dater and slogan dies with the drum in stopped position, and the control levers set to cause movement of the dies to printing position at the next rotation of the drum, parts being omitted for purposes of clarity;

Fig. 2 is a section similar to Fig. 1 but showing the drum after its rotation has commenced and the dies have been partially moved to printing position;

Fig. 3 is a horizontal section through the casing of the postage meter of Fig. 1, the outline of the printing drum being shown in phantom, the die operating mechanism being shown in fragmentary section, and the control levers being shown in full;

Fig. 4 is a plan view of the printing drum and a mounting plate with parts broken away to show structural details;

Fig. 5 is a detail section taken substantially on line 5—5 of Fig. 3;

Fig. 6 is a perspective view of the dater operating shaft;

Fig. 7 is a diagrammatic view with the dies omitted illustrating the controlling parts in the Fig. 1 position;

Fig. 8 is a diagrammatic view similar to Fig. 7 but illustrating the parts in the Fig. 2 position;

Fig. 9 is a diagrammatic view similar to Figs. 7 and 8, but with the gears omitted, and illustrating the printing drum in stopping position with the control levers set for shifting the dies to non-print position at the next rotation;

Fig. 10 is a diagrammatic view similar to Fig. 9, but showing the drum after its rotation has commenced and the dies have partially moved to non-print position; and

Fig. 11 is a fragmentary plan view of the meter showing the manually operable control levers and the adjacent legend.

Referring to the drawings, a printing drum 11 is rotatably mounted in a postage meter machine frame or housing 13, and is designed to make one revolution each time an impression is required. The printing portions of the drum 11 are inked and impressed against an envelope, postage strip or other mailable matter during this operation. When the rotation has been completed the drum 11 is compelled to return to a predetermined rest position, which is that shown in Figs. 1, 7 and 9.

The printing drum carries on its surface a number of printing areas such as those provided by postal indicia die 15, town die 17, dater die 19 and slogan die 20. Of these the dater die 19 and slogan die are adjustable so as to be selectively withdrawable from printing position or projectable thereto.

Dater die projecting and retracting mechanism

The dater die 19 is mounted within the town die 17, and has a lower portion cooperable with cam means 21 on a shaft 23 which is rotatably mounted in the drum 11 (see Figs. 1, 3 and 6). The cam means 21 has two main positions. In the first position, shown in Fig. 1, the dater die 19 is retracted to non-print position by a retracting pin member 25 acting against the hook 27 forming a part of the lower portion of the dater die. This is the position required for printing third-class mail and registered mail according to the most recent postal regulations. In the second position, the cam means 21 is rotated counterclockwise 90° from the Fig. 1 position, i. e. so that the circular surface of the cam means 21 is turned to engage and project the dater die 19 to its printing position. This is the position used for printing first and fourth-class mail. The die parts and the operation of cam means 21 and retracting member 25 are shown and explained in detail in the said application, Serial Number 214,750, it being understood of course, that retraction of the town die 17 as provided for in said application is not required under the present new regulations, and the town die is arranged to be immovable for continuous printing.

The movement of shaft 23 which controls the movement of cam means 21 is controlled by a die actuator 29 mounted on the end of shaft 23 and located at the rear of the drum 11. The die actuator 29 is shaped so that its edges provide cam surfaces which will act in a manner to be hereinafter described. The curved edge 31 when acted upon, provides a projecting cam surface and the straight edge 33 a retracting cam surface.

One wall 35 of the housing 13 has mounted thereon a dater control lever 37 which rocks about the pivot screw 39. One end of the lever forms a manually operable finger piece 41 projecting to the exterior of the housing, and the other end carries a trip pin 43 which is positionable in two positions in the path of the die actuator 29 as the drum 11 rotates, to make appropriate contact with the cam edges 31 and 33 on the die actuator 29 to swing the same in response to its motion with the drum 11, and thereby to adjust the dater die 19 to its printing or non-print position.

A suitable legend 40, Fig. 11, may be placed on the housing whereby the finger piece 41 acts as an indicator identifying the position of the dater die 19, or the position which it will occupy at the next printing. Alternatively, the classes of mail for which the appropriate impression will be made at the next revolution of drum 11 may be indicated by the legend.

A detent means (Figs. 3 and 4) is provided for holding the lever 37 in either of its two positions. This means includes a pair of positioning recesses 45, 47 in the wall 35, a detent ball 49 loosely held in an opening 51 in the lever 37, and a fixed leaf spring 53 mounted on wall 35 for urging the ball 49 into either of recesses 45, 47.

Associated with the shaft 23 is another detent mechanism 54 (Fig. 5) which includes a pair of recesses 55 and 57 in the shaft 23 and a ball 59 loosely mounted in an opening in the drum 11 and urged by a spring 61 towards engagement with the shaft 23.

The positions which the finger piece 41 may occupy are indicated in Fig. 1, the position in which the dater die 19 will not print being shown in dotted lines.

Operation of the dater die control mechanism

In operating the dater die control, and assuming that the die 19 is initially retracted, the fingerpiece 41 will be moved to a stop position as provided by the end 42a of a slot 42 in a cover 44 through which the fingerpiece 41 projects. Said position defines the full line or "print" position of Fig. 1 which corresponds to the position of Fig. 7. As the drum 11 starts to rotate counterclockwise for the next printing operation, the die projecting cam surface 31 of the die actuator 29 will be carried into

contact with the tripping pin 43 and will cause counterclockwise rotation of the actuator 29 and of shaft 23 as seen in Fig. 8 to produce counterclockwise rotation of cams 21, thereby projecting the dater die 19 to printing position before it reaches the printing point at the bottom of the drum. While the die 19 is shown in printing position in Fig. 2, it will be appreciated that cam 21 and shaft 23 still have about 30° of movement before they complete their travel. Part of this will be caused by the reaction of actuator 29 engaging against pin 43, but the final increment of shaft rotation occurs after the actuator clears the pin, and is caused by the spring pressed detent ball 59 snapping itself into the recess 57. Thus on subsequent printing revolutions with the pin 43 in the position of Figs. 1 and 2, the actuator 29 will clear the pin by a slight amount and will not cause noise or wear against the same.

When it is desired to print with the date omitted, the finger piece 41 is moved to the end 42b of the slot 42 defining the "omit" or dotted line position in Fig. 1 which corresponds to the lever position shown in Figs. 9 and 10. When the printing rotation of drum 11 commences, the actuator 29 moves towards the tripping pin 43, this time engaging the same with its retracting cam surface 33. As the actuator 29 is moved past the tripping pin 43 by the counterclockwise rotation of the drum 11, it is rotated together with shaft 23 in a clockwise direction as indicated in Fig. 10. Clockwise rotation of the shaft 23 causes the retracting element 25 to strike the hook 27 on the dater die 19 and withdraw the same towards non-print position. As the die actuator 29 clears the tripping pin 43, the final increment of its movement results from the detent ball 59 snapping itself into the recess 55 so that a slight clearance exists between the surfaces of actuator 29 and pin 43 on subsequent rotations of the printing drum 11 until a change in the dater die position is again desired.

Slogan die projecting and retracting mechanism

The slogan die 20 is also movable between printing and nonprint positions as previously explained. The die structure includes a printing member 63 from which depends a central supporting and guiding web 65 having three openings therein, 67, 69 and 71. Depending from either edge of the printing member 63 are flanges 73 which carry integral horizontal bearing rods 75 and 77. The rod 75 passes through the upper portion of web opening 67 and the rod 77 through the upper portion of web opening 69. Horizontal supporting rods 79 and 81 are mounted at their ends in the sides of the drum 11 (see especially Fig. 4) and pass through the web openings 67 and 69 respectively. The rod 79 runs in contact with and acts as a support for the bearing rod 75, while rod 81 runs in contact with and acts as a support for the bearing rod 77.

A crank arm 83 is mounted to rotate with a shaft 85 about its axis and moves between the position of Fig. 1 and a position displaced approximately 180° therefrom. The arm 83 acts as a cam and rides with its ends resting against the edges of the opening 71 in the web 65 which acts as a follower. The terminal positions for the arm 83 are determined by the degree to which the rods 79 and 81 can move relative to the openings 67 and 69 respectively. When the rods are in the upper ends of the openings as in Fig. 1, the arm 83 has reached the limit of its clockwise movement. Similarly, when the rods are in the opposite ends of the openings, the arm 83 will have reached the limit of its counterclockwise movement. This oscillating movement of the arm 83 in cooperation with the guiding action of the rods 75 and 77 riding against the rods 79 and 81 causes the projection of the slogan die 20 to printing position, and its retraction therefrom.

The movement of arm 83 is effected by rotation of the shaft 85 which is rotatable in the drum 11 and carries at one side thereof a gear 87. The gear 87 meshes with

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a gear 89 also rotatably mounted on the drum radially outwardly of the gear 87 and preferably retained in place against the drum 11 by the flange 88 rigidly connected with the gear 87 which overlaps the teeth of both gears. Rigidly connected to the gear 89 for rotary movement therewith is a slogan die actuator 91 which has two active edges, namely a projecting edge 93 and a retracting edge 95.

The wall 35 of the housing 13 also has mounted thereon a slogan control lever 97 which rocks about the pivot screw 99 and has a finger piece 101 extending outwardly through a slot 102 in the cover 44. The ends 102a, 102b of the slot 102 limit the throw of the lever 97 in either direction. As best shown in Fig. 4, the lower end of the lever 97 is provided with an opening 103 which receives detent ball 105 and which snaps into one or the other of a pair of recesses 107 and 109 under the influence of a fixed leaf spring 111, the spring preferably being an integral extension of the spring 53. An arm 113 projecting approximately at right angles to the finger piece 101 carries at its free end a trip pin 115 which is positionable in two positions in the path of the die actuator 91 to swing the same in response to its motion with a drum 11, and thereby to adjust the slogan die 20 to its printing or non-print position.

A suitable legend 116 (Fig. 11) may be placed on the housing whereby the finger piece 101 acts as an indicator identifying the position of the slogan 20 which will obtain during the next revolution of the printing drum 11.

An over-center spring means is provided for moving the arm 83 to its full terminal positions, and the same includes a pin 117 on the free end of the arm, to which is connected one end of a tension spring 119. The other end of spring 119 is anchored on a suitable pin 121 fixed to the drum 11.

The positions which the finger piece 101 may occupy are indicated in Fig. 1, the position in which the slogan die 20 will print being shown in full lines, and the position in which the slogan die will not print being shown in dotted lines.

Operation of the slogan die control mechanism

In operating the slogan die control, and assuming that the die 20 is initially retracted, the finger piece 101 will be moved to the full line or "print" position of Figs. 1 and 7 against the end 102b of the slot. As the drum 11 starts to rotate counterclockwise for the next printing operation, die projecting surface 93 of slogan actuator 91 will be carried into contact with the tripping pin 115 on arm 113 of lever 97, and will cause clockwise rotation of the actuator 91 and attached gear 89. This results in simultaneous counterclockwise rotation of gear 87 and attached shaft 85 and crank arm 83 as seen in Fig. 8. The edges of the arm 83 acting on the edges of opening 71 shift the die 20 outwardly and to the left as seen in Fig. 2. In this position the die 20 has been moved only part way towards printing position, but with further counterclockwise motion of arm 83 (to a position approximately 180° from that of Fig. 1) the die 20 will lie with its printing surface at the periphery of drum 11, and be ready for printing before it reaches the lowermost or printing position.

While the actuator 91 is designed to initiate the movement of the slogan die 20, it clears the pin 115 before the movement to printing position has been entirely completed. The final movement of the arm 83 towards the left as seen in Figs. 2 and 8 comes about due to the spring 119 which starts to take effect as soon as the pin 117 has passed to the left of the axis of shaft 85, whereupon the spring snaps the arm 83 to its terminal position. Through the gears 87, 89 the actuator is also moved far enough by spring 119 so that its surface 93 will be spaced from the tripping pin 115 during subsequent rotations of the drum 11 to prevent noise and wear.

When it is desired to print with the slogan omitted, 75

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the finger piece 101 is moved to the "omit" or dotted line position in Fig. 1 which corresponds to the lever position shown in Figs. 9 and 10, against the stop 102a. When the printing rotation of the drum 11 commences, the slogan actuator 91 moves towards the tripping pin 115, this time engaging the same with its slogan retracting surface 95. As the actuator 91 is moved past the tripping pin 115 by the counterclockwise rotation of the drum 11, it is rotated, together with its gear 89 in a counterclockwise direction, as indicated in Fig. 10. This results in a clockwise rotation of gear 87, shaft 85, and arm 83 which moves the slogan die 20 away from printing position and towards its retracted, non-print position. As the slogan die actuator 91 clears the tripping pin 115 it continues its counterclockwise movement due to the pull of spring 119 which has now moved to the right hand side of the axis of shaft 85 and which moves the arm 83 back to the Fig. 1 position. Thereafter a significant clearance exists between the surfaces of actuator 91 and pin 115 on subsequent rotations of the drum 11 until a change in the slogan die position is again desired.

The tendency for movement of the levers 49 and 97 occasioned by engagement of the pins 43 and 115 thereof respectively with the actuators 29 and 91 carried by the printing drum in effecting shifting of the dies on the drum, is arranged to be directed towards the slot ends 42a-42b and 102a-102b, thereby to prevent mispositioning of the levers which could render the die-shifting mechanisms inoperative.

We claim:

1. In a device of the class described a stationary frame; a printing drum rotatably mounted on the frame; and adjustable printing die mounted on the drum and shiftable thereon between printing and non-printing positions; a manual control element movably mounted on the frame and settable in fixed positions thereon; a tripping element mounted on said frame and connected to said control element for movement thereby to a position for effecting adjustment of said die member; and means on said drum operatively connected to said die having a part positioned for contact with and movement by said tripping element during printing rotation of said drum for causing adjustment of said die.

2. In a device of the class described, a stationary frame; a printing drum rotatably mounted on the frame; an adjustable die mounted on the drum and shiftable thereon between printing and non-printing positions; a tripping member mounted on the frame and settable in printing and non-printing positions thereon; and means carried by the drum and connected with said die for actuating the same in response to engagement with and movement by said tripping member and for assuming printing and non-printing positions corresponding to those of said die, said means and tripping member being so positioned as to engage each other during drum rotation when the member and means are in non-corresponding positions to move the die to a position corresponding to the setting of the tripping member and to clear each other when the member and means are in corresponding positions.

3. In a device of the class described, a stationary frame; a printing drum rotatably mounted on the frame; an adjustable die mounted on the drum and shiftable thereon between printing and non-printing positions; a tripping member mounted on the frame and settable in printing and non-printing positions thereon; and means carried by the drum and connected with said die for actuating the same in response to engagement with said tripping member and for assuming printing and non-printing positions corresponding to those of said die, said means being so positioned as to engage said tripping member during drum rotation when the member and means are in non-corresponding positions; and means for moving said die actuating means farther than oc-

casioned by said tripping member in either direction, whereby during subsequent rotations of said drum with said tripping member and die actuating means in corresponding positions, no interference will occur therebetween.

4. In a postage meter, a frame; printing means including a member movable on the frame to effect said printing; a relatively long slogan-printing die; means engageable with the ends of said die for movably mounting it on said member between advanced printing and retracted non-printing positions; a manually settable indicating control movable on the frame between printing and non-printing positions; and cooperable means including a cam mechanism connected with an intermediate part of said die, including a movable abutment on said member to actuate the cam mechanism and including a second abutment engageable with the first abutment and connected with the control for shifting the die to correspond to the setting of the control in response to a movement of said movable member.

5. In a postage meter, a frame; printing means including a member movable on the frame to effect said printing; a relatively long slogan-printing die; means engageable with the ends of said die for movably mounting it on said member between advanced printing and retracted non-printing positions; a manually settable indicating control comprising a bell crank having one arm movable along the frame between printing and non-printing positions; and cooperable means including a cam mechanism connected with an intermediate part of said die, including a movable abutment on said member to actuate the cam mechanism and including a second abutment engageable with the first abutment and carried by the other arm of the bell crank for shifting the die to correspond to the setting of the control in response to a movement of said movable member.

6. In a postage meter, a frame; printing means including a drum rotatable on the frame to effect said printing; a pair of printing dies shiftable on said drum between advanced printing and retracted non-printing positions; a pair of manually settable indicating controls movable on the frame between printing and non-printing positions; and mechanisms connected respectively with said dies and controls for shifting the dies to correspond to the settings of the controls in response to turning of said drum, said mechanism including pairs of cooperable abutments on the frame and drum disposed at one end of the latter, one pair of said cooperable abutments being located closer to the axis of the drum than the other pair to prevent interference between the abutments.

7. In a device of the class described, a stationary frame; a printing member having a printing surface and mounted on the frame for movement to and from printing position; a printing die on the printing member adjustably movable thereon between an extended printing position and a retracted non-printing position with respect to the printing member; a die control trip element mounted on the frame and presettable in predetermined fixed positions thereon to determine the extended and retracted positions of said printing die; and a controlled element operatively connected with the movable printing die and including portions positioned for engagement by the trip element during the movement of said printing member to its printing position for adjusting said die to the position predetermined by said trip element position.

8. In a device of the class described, a stationary frame; a printing member having a printing surface and mounted on the frame for movement to and from printing and non-printing positions; a printing die on the printing member adjustably movable thereon between an extended printing position and a retracted non-printing position with respect to the printing member; a die control element mounted on the frame and presettable in fixed positions thereon to determine the extended and retracted posi-

tions of said printing die; an abutment on the frame connected to and movable by the control element and settable in either of two fixed positions according to the control element setting; and die moving means carried by the printing member and connected to said printing die, said die moving means being so positioned that during movement of said printing member to printing position, it travels a path in which it encounters said abutment and in which, whenever said die is in a position other than that corresponding to said control element setting, it is moved by said abutment to move said die to said corresponding position.

9. In a postage meter, a frame; printing means including a member movable on the frame to effect printing; a printing die shiftable on said member and settable in advanced printing and retracted non-printing positions; a manually settable indicating die control movable on the frame between printing and non-printing positions; die shifting means on said movable printing member associated with said die and including spring means for shifting said die fully to advanced or retracted position in response to a predetermined initial movement in either direction; and means connected with said control and cooperable with said die shifting means during and in response to movement of said movable printing member for moving said die shifting means an amount sufficient to cause a die movement of said predetermined initial amount in the direction corresponding to the setting of the control, when the die is in the position other than that indicated by the set control.

10. In a device of the class described a stationary frame; a printing drum rotatable on said frame about an axis fixed with respect thereto; an adjustable printing die mounted on the drum and shiftable thereon between printing and non-printing positions; a control element movably mounted on the frame and settable in fixed positions thereon for selecting the position to which the die is to be adjusted; and means on said drum operatively connected to said die and having a part positioned for contact with and movement by said control element during printing rotation of said drum for causing selective adjustment of said die.

11. In a device of the class described, a stationary frame; a printing drum rotatably mounted on the frame; an adjustable die carried by the drum and shiftable thereon between extended printing and retracted non-printing positions; a die actuator rockable on the drum and connected with said die so as to shift the same from one position to the other as determined by the direction in which said actuator is rocked, said die actuator having contact portions extendable radially either inwardly or outwardly of the path traveled by its rocking axis as the actuator is carried about by the drum during rotation, each of said directions of extension corresponding to one of the positions of said die; and a control member mounted on the frame and having an abutment disposable in the path of said contact portion as the same is carried about by said rotating drum, said control member being positionable to one side or the other of the path of said rocking axis so as to make contact with said contact portions on whichever side of the path they may be extended, whereby the actuator may be rocked by said abutment either to extend the die towards or to retract it away from printing position in response to printing drum rotation.

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