May 17, 1955

B. KNAUER

2,708,402

ADJUSTABLE PRINTING DIE

Filed March 9, 1951

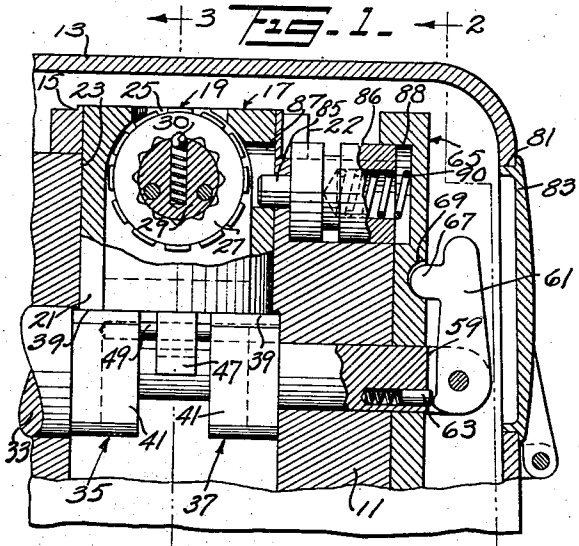


FIG. 1.

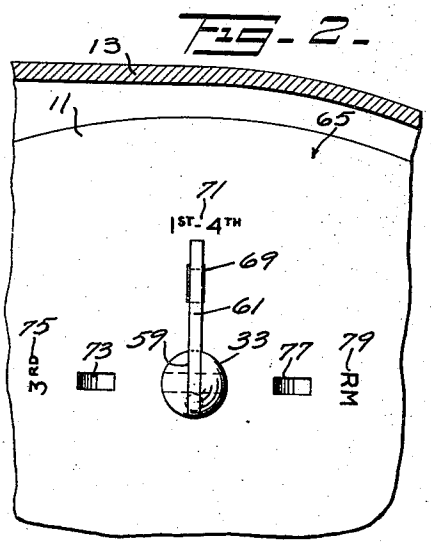


FIG. 2.

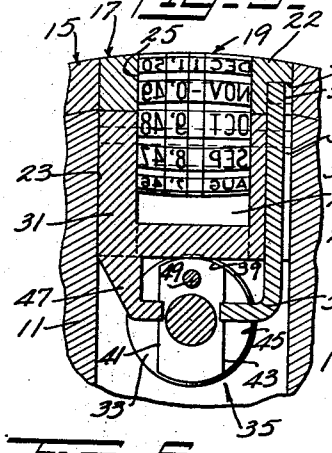


FIG. 3.

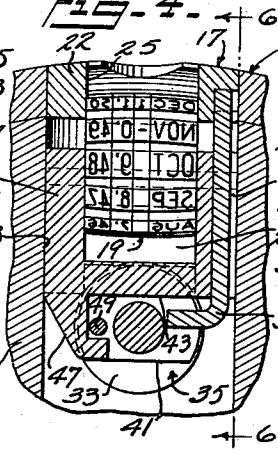


FIG. 4.

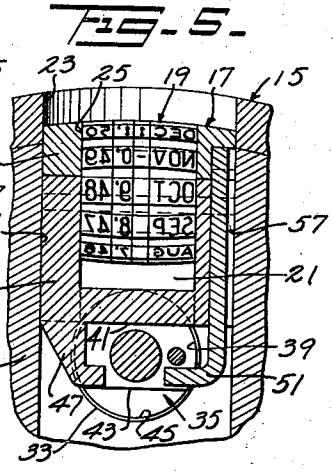


FIG. 5.

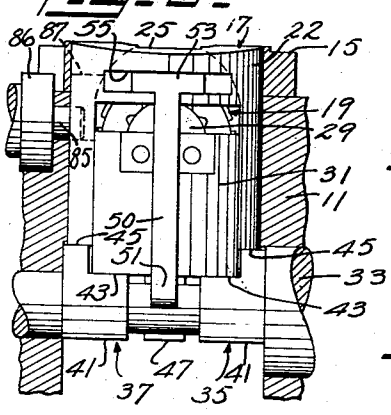


FIG. 6.

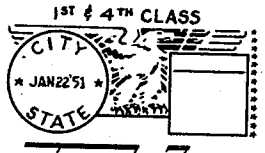


FIG. 7.



FIG. 8.



FIG. 9.

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ADJUSTABLE PRINTING DIE

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11 Claims. (Cl. 101—110)

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

In accordance with postal regulations various classes of mail require different printings, and heretofore means have been devised for permitting the movement of either the dater die or the dater and town die 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.

The present invention has for its object the positive controlling of the town and dater dies so that they may be either retracted from or returned to the printing surface as desired. The necessity for access to the printing surfaces to depress the dies, and the necessity for the separate step of manual depression of the dies to retracted position is therefore obviated.

A feature of the present invention is the provision of combined projection cam and positive withdrawal means so arranged that when the projecting cam is not in operation with respect to a particular die the withdrawal means is acting thereon, and vice versa.

Still another feature of the invention is the provision of improved controls for operating the projection cam and withdrawal means, of such nature as to firmly retain the parts in the selected position and avoid the necessity for independent or yielding detent means.

A further feature of the invention is the provision of means for positively preventing the inadvertent return of the retracted dies to printing position.

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 fragmentary vertical section on an enlarged scale through the housing and printing drum of a postage meter according to the invention, illustrating the town die and dater die both in printing position.

Fig. 2 is a section taken appxomiately on line 2—2 of Fig. 1 and showing the control lever and its positioning means.

Fig. 3 is a section taken approximately on line 3—3 of Fig. 1, but with the housing omitted.

Fig. 4 is a view similar to Fig. 3, but illustrating the town die projected to printing position and the dater die retracted.

Fig. 5 is a view similar to Figs. 3 and 4 but showing both the town and dater dies in retracted positions.

Fig. 6 is a section taken substantially on line 6—6 of Fig. 4, but showing the dies in full.

Fig. 7 is a face view of the impression made by the postage printer when set for first and fourth class mail (as indicated by the legend applied to this view) and when the parts are in the position of Figs. 1 to 3.

Fig. 8 is a fragmentary view similar to the left-hand portion of Fig. 7 and showing the impression made when the parts are set for third class mail, i. e. in the position of Figs. 4 and 6.

Fig. 9 is a fragmentary view similar to Fig. 8 and showing the impression made when the parts are set for registered mail, i. e. in the position of Fig. 5.

Referring to Fig. 1 of the drawing, a printing drum 11 is rotatably mounted within a casing 13 and is designed to make one revolution each time an impression is required. The printing portions thereof are inked and impressed against the 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.

The printing drum carries on its surface a number of printing areas such as those provided by postal indicia die 15, town die 17 and dater die 19. The town die 17 includes a depending sleeve portion 21 which is slidable in an opening 23 formed in the indicia die 15 and in the drum 11, and has type upon the upper surface of its head portion 22 for printing the postmark ring or town identification. An aperture 25 in the town die surface receives the dater die 19 and allows the same to make an impression within the town die ring. The dater die 19 is made up of a group 27 of date printing elements, preferably in the form of settable wheels mounted on a shaft 29 and maintained in set position thereon by suitable detent means 30. The shaft is supported in a yoke member or carriage 31 slidable within the sleeve portion 21 of the town die and underlying the head or indicia bearing portion 22 thereof.

For projecting the dies into printing position there is provided an operating member or shaft 33 rotatably mounted in the drum 11 and including a pair of cams 35 and 37 arranged inwardly of the drum 11 from the dies 17 and 19. The cams each include three different cam surfaces for cooperation with the bottoms of sleeve portion 21 and carriage 31. The first of these is a curved surface 39 remote from the shaft center. When surface 39 is turned towards the dies 17 and 19 they are both projected into printing position as seen in Figs. 1 and 3. A second surface of each cam is a flat surface 41 nearer the axis of shaft 33 and the same is reached by a clockwise rotation of 90 degrees from the shaft position of Fig. 3. Turning of the shaft so that flats 41 are towards the dies 17 and 19 permits both dies to assume a retracted, non-printing position, as seen in Fig. 5. Shaft rotation of 90 degrees in a counterclockwise direction, from the Fig. 3 position described above, presents a pair of compound surfaces to the dies. Here the axially innermost surfaces 43 are flats similar in height to flats 41, which permit the dater die 19 to be depressed from printing position. The axially outermost portions of the cams, however, are curved surfaces 45 similar in height to portions 39. These surfaces, at the same time compel projection of town die 17 into printing position. This situation is illustrated in detail in Figs. 4 and 6.

According to the present invention, the carriage 31 also includes a hook, drafting member, or operator 47 which may be formed as an integral projection thereof, extending downwardly and between the cam enlargements 35 and 37. A bar 49 extending parallel to the axis of shaft 33, is mounted at its ends in the enlargements 35 and 37 so as to form in effect a unitary part of the operating member or shaft 33, and is so located that when surfaces 39 engage the dies 17 and 19, the bar 49 assumes

an upward, inoperative position as shown in Fig. 3. Counterclockwise rotation of shaft 33 to the Fig. 4 position, however, causes the bar 49 to engage the operator 47 and retract the dater carriage 31 against cam surfaces 43, while town die 17 remains projected by the cam surfaces 45.

The town die 17 is provided with a T-shaped element 50 having a hooked end forming a draft member or operator 51 and a transverse head 53 which has a non-sliding fit in a transverse slot 55 in the head portion 22 of the town die 17. The operator 51 is arranged to slide lengthwise in a slot 57 in the dater carriage 31. Clockwise rotation of the shaft 33 to the Fig. 5 position causes the bar 49 to engage the operator 51 and retract the town die 17. Since the head 22 of the town die overlies the dater carriage 31, the latter is also retracted and both are drawn into non-printing position against the surfaces 41 of cams 35 and 37.

The shaft 33 extends at one end to and beyond the side surface of the drum 11. The end is slotted as indicated by reference character 59 to receive the end of a control lever 61 pivotally mounted within the slot 59. A spring-pressed plunger 63 engages the lever 61 to one side of its pivot and normally urges the body of the lever towards the face of the drum 11. The lever 61 is provided for the purpose of rotating the shaft 33 to the desired position, and when the same is vertical, with the drum 11 in its rest position, the dater and town die parts are in the position of Figs. 1 and 3. Movement of lever 61 90 degrees to the left places the parts in the position of Figs. 4 and 6, and movement 90 degrees to the right places the parts in the Fig. 5 position.

In order that the dies 17 and 19 will be firmly held in the desired position in which they are placed, each location of the lever is defined by a recess in the drum face 65 for receiving a projection 67 extending from the lever 61 towards said face 65. Recess 69 represents the first or upright position of the lever, and indicia 71 on the face 65 adjacent to the recess identifies it as being the appropriate setting for the printing of first class or fourth class mail with both dies 17 and 19 projected to printing position. Recess 73 defines the left-hand position, and has corresponding indicia 75 which identifies it as being for third class mail with the town die 17 projected and the dater die 19 retracted. Recess 77 defines the right-hand position and has adjacent thereto indicia 79 which identifies it as being the setting for registered mail with both of dies 17 and 19 retracted. The urging of lever 61 by plunger 63 insures that the projection 69 will drop into the appropriate recess 69, 73 or 77 as the same is approached by the lever, and that the lever will remain in the set position and locking the shaft 33 against rotation until another setting is desired. It will also be noted that a retracted die, such as die 19 in the third class position or either of dies 17 and 19 in the registered mail position, is positively locked against projection to printing position. This occurs first, because the shaft 33 is positively locked against rotation by the reception of projection 69 in the appropriate recess 73 or 77, and second, because of the positive nature of the interengagement between the bar 49 and the hooked end of operator 47 or 51. When the dies 17 and 19 have both been extended to a printing position by the cam 39, as in Figs. 1 and 3, the bar 49 lies between hooked operators 47 and 51. The outward movement is limited however, by a pin 85 projecting from a sliding collar 86 and extending into a slot 87 of the sleeve portion 21 of the town die 17. The collar 86 is retained within a recess 88 in the printing drum and is normally urged toward the town die by means of a spring 90. Complete removal of the town and dater dies may be effected if the collar is forced rearward to remove the pin 85 from the slot 87.

In order that the lever 61 may be readily manipulated, an opening 81 is provided in the side of the housing 13, closed by a movable mounted cover 83. The opening 81 is so located as to provide access to the lever 61 when the drum 11 is in rest position.

In the following description of the operation of the device of the invention, it is assumed that the starting position is with the drum 11 in its normal rest position of Figs. 1 and 2. The user opens the cover 83 and swings the control lever 61 outwardly to release the projection 69 from whichever recess it is in, and swings the lever until it overlies the recess defining the desired position. If we assume that a first class or fourth class printing is desired, the lever is swung to the vertical position of Fig. 2, and its projection 59 is allowed to move into the recess 69 under the influence of the spring pressed plunger 63. The cover 83 is then closed. This operation places the cam enlargements 35 and 37, in the position shown in Figs. 1 and 3. Cam surfaces 39 are therefore holding the dies 17 and 19 in projected printing position. A subsequent rotation of the drum 11 during the printing operation of the meter therefore produces an impression similar to that shown in Fig. 7. If the user desires to effect a third class printing, the lever 61 is set in the manner above-described, except that its projection 67 is placed in the left-hand recess 73. This moves the shaft 33 so that the cam enlargements 35 and 37 assume the positions of Figs. 4 and 6. Cam surfaces 45 are therefore projecting the town die 17, while the surfaces 43 opposite the dater die carriage 31 permit the same to be retracted by the action of rod 49 on the operator 47. A subsequent rotation of the drum 11 makes an impression like that shown in Fig. 8 in which the date indicia is absent. When the user desires an impression for registered mail, the lever 61 is set in the previously described manner, except that the projection 67 is placed in the right-hand recess 77. This so places the shaft 33 that cam enlargements 35 and 37 assume the position of Fig. 5. Cam surfaces 41 are thus turned upwardly to permit the retraction of both the town die 17 and the carriage 31 of dater die 19. This retraction is simultaneously effected by the engagement of rod 49 with the hooked end of operator 51 which draws the town die towards the shaft 33. The carriage 31 is automatically retracted therewith since it has portions underlying the head 22 of the town die 17. A subsequent rotation of the drum 11 makes an impression like that shown in Fig. 9 in which both date and town indicia are absent.

Having described the invention, what is claimed is:

1. In combination with a printing member having an indicia printing surface; a first adjustable printing die slidably mounted in the member and movable to printing position flush with the indicia printing surface, or to a non-printing position; a second adjustable printing die slidably mounted within said first adjustable die; and manipulable means for moving one or both of said adjustable dies to printing position, or for permitting retraction thereof to non-printing position in response to movement of said means, said manipulable means including a control member normally urged towards said printing member, said control member and printing member including interengaging portions preventing control movement of said control member except when the latter is moved away from said printing member against the normal urging forces to separate said interengaging portions.

2. In combination with a printing member having an indicia printing surface; a first adjustable printing die slidably mounted in the member and movable to printing position flush with the indicia printing surface, or to a non-printing position; a second adjustable printing die slidably mounted within said first adjustable die; a single manipulable member for moving one or both of said adjustable dies to printing position, or for permitting retraction thereof to non-printing position in response to movement of said member; means operated by movement of said manipulable member for positively simultaneously retracting such of said adjustable dies as are not being

moved to printing position, said manipulable member including an indicator positioned exteriorly of said printing member; and indicia on said printing member adjacent the path of movement of said indicator for indicating the positions automatically assumed by said adjustable dies for various positions of said manipulable member.

3. In combination with a printing member having an indicia printing surface; a first adjustable printing die slidably mounted in the member and movable to printing position flush with the indicia printing surface, or to a non-printing position; a second adjustable printing die slidably mounted within said first adjustable die; a single operating member having means thereon for moving one or both of said adjustable dies to printing position, or for permitting retraction thereof to non-printing position in response to movement of said member; and means operated by movement of said member for positively simultaneously retracting such of said adjustable dies as are not being moved to printing position, said means including a draft element connected to each of said adjustable dies, and an actuator associated with said operating member and engageable with one or the other of said draft elements.

4. In a postage meter having indicia, town and dater dies, a single operating member comprising: a first cam for positively moving said town die and dater die to printing position relative to said indicia die when the operating member is moved to one position; a second cam for moving only the town die to said printing position when the operating member is moved to another position; and means responsive to a predetermined motion of the operating member for positively returning the town die and the dater die to non-printing position, and for preventing completion of such predetermined motion in case either the town or dater die is not free to return to non-printing position.

5. In a device of the character described an indicia printing die member; a town printing die member adjustable relative to said indicia printing member to a printing or non-printing position; a dater die member positioned within the town printing die member and adjustable relative thereto; a selector having a cam portion arranged to engage said adjustable die members, said cam portion including a plurality of elevations arranged to support one or both of said adjustable dies in printing position with their printing surfaces flush with said indicia printing surface; and hooks associated with said dies for engaging a pin on said cam for retracting such of said adjustable dies as are not being projected to printing position by said cam.

6. In a device of the character described an indicia printing die member; a town printing die member adjustable relative to said indicia printing member to a printing or non-printing position; a dater die member positioned within and partially underlying the town printing die member and adjustable relative thereto; a rotatable selector shaft having a cam portion arranged to engage said adjustable die members, said cam portion including a plurality of elevations arranged to support one or both of said adjustable dies in printing position with their printing surfaces flush with said indicia printing surface; retracting draft elements, one connected with each of said adjustable die members; and means on said shaft and movable therewith for engaging the draft element connected with the dater die member for retracting the same alone, or for engaging the draft element connected with the town die member for retracting both of said adjustable die members from printing position.

7. In a device of the character described an indicia printing die member; a town printing die member adjustable relative to said indicia printing member to a printing or non-printing position; a dater die member positioned within and partially underlying the town printing die member and adjustable relative thereto; a rotatable

selector shaft having a cam portion arranged to engage said adjustable die members, said cam portions including a plurality of elevations arranged to support one or both of said adjustable dies in printing position with their printing surfaces flush with said indicia printing surface; retracting draft elements, one connected with each of said adjustable die members; means on said shaft and movable therewith for engaging the draft element connected with the dater die member for retracting the same alone, or for engaging the draft element connected with the town die member for retracting both of said adjustable die members from printing position; a control lever swingably mounted on said shaft and spring urged towards said printing member, said printing member having recesses adjacent the path of travel of said lever during rotation of said shaft corresponding to the various adjusted positions of said adjustable dies; and means on said lever receivable in any one of said recesses when the lever moves towards said printing member for locking the shaft and adjustable dies in the corresponding selected adjusted position.

8. In combination with a printing member having an indicia printing surface; an adjustable die slidably mounted in the member and movable to printing position flush with the indicia printing surface or retractable to a non-printing position, said printing die having an outer end carrying the printing surface and an inner end constituting a foot; an operating member rotatable in said printing member adjacent said foot; a cam on said operating member for engaging said foot and sliding said die to printing position when the operating member is rotated in one direction; a hook on said die extending beyond said foot; and a retracting element projecting from the cam and engageable with said hook to retract the die when the operating member is rotated in the opposite direction.

9. In combination with a printing member having an indicia printing surface; an adjustable die slidably mounted in the member and movable to printing position flush with the indicia printing surface or retractable to a non-printing position, said printing die having an outer end carrying the printing surface and an inner end constituting a foot; an operating member rotatable in said printing member adjacent said foot; a pair of spaced cams on said operating member for engaging said foot at opposite sides and sliding said die to printing position when the operating member is rotated in one direction; a hook on said die extending beyond said foot and between said cams; and a retracting element on the operating member between the cams and engageable with said hook to retract the die when the operating member is rotated in the opposite direction.

10. In combination with a printing member having an indicia printing surface; an adjustable die slidably mounted in the member and movable to printing position flush with the indicia printing surface or retractable to a non-printing position, said printing die having an outer end carrying the printing surface and an inner end constituting a foot and carrying a draft member adjacent said foot; operating means movable in said printing member adjacent said foot and operable to two positions one for engaging and moving said foot to move the die to printing position and another for engaging and moving said draft member to retract the die to non-printing position, said operating means being arranged to clear said draft member when said die is in printing position, whereby the die can be withdrawn from the printing member without affecting said operating means.

11. In combination with a printing member having an indicia printing surface; a first adjustable die slidably mounted in the member and movable to printing position flush with the indicia printing surface, or retractable to non-printing position; a second adjustable printing die slidably mounted within the first adjustable die to move between printing and non-printing position; and a single operating member movably mounted in said printing mem-

ber and engageable with said dies for positively moving the same to printing position or for positively retracting them to non-printing position, said operating member being movable to three positions, one in which said first die is moved to printing position and said second die is positively retracted, a second position in which both of said dies are moved to printing position, and a third position in which both of said dies are positively retracted, the positive connections between said operating member and said dies being such that movement of the operating member to the first position is prevented in case the second die is not free to retract within the first die, and movement of the operating member to the third position is prevented in case the first die is not free to retract.

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