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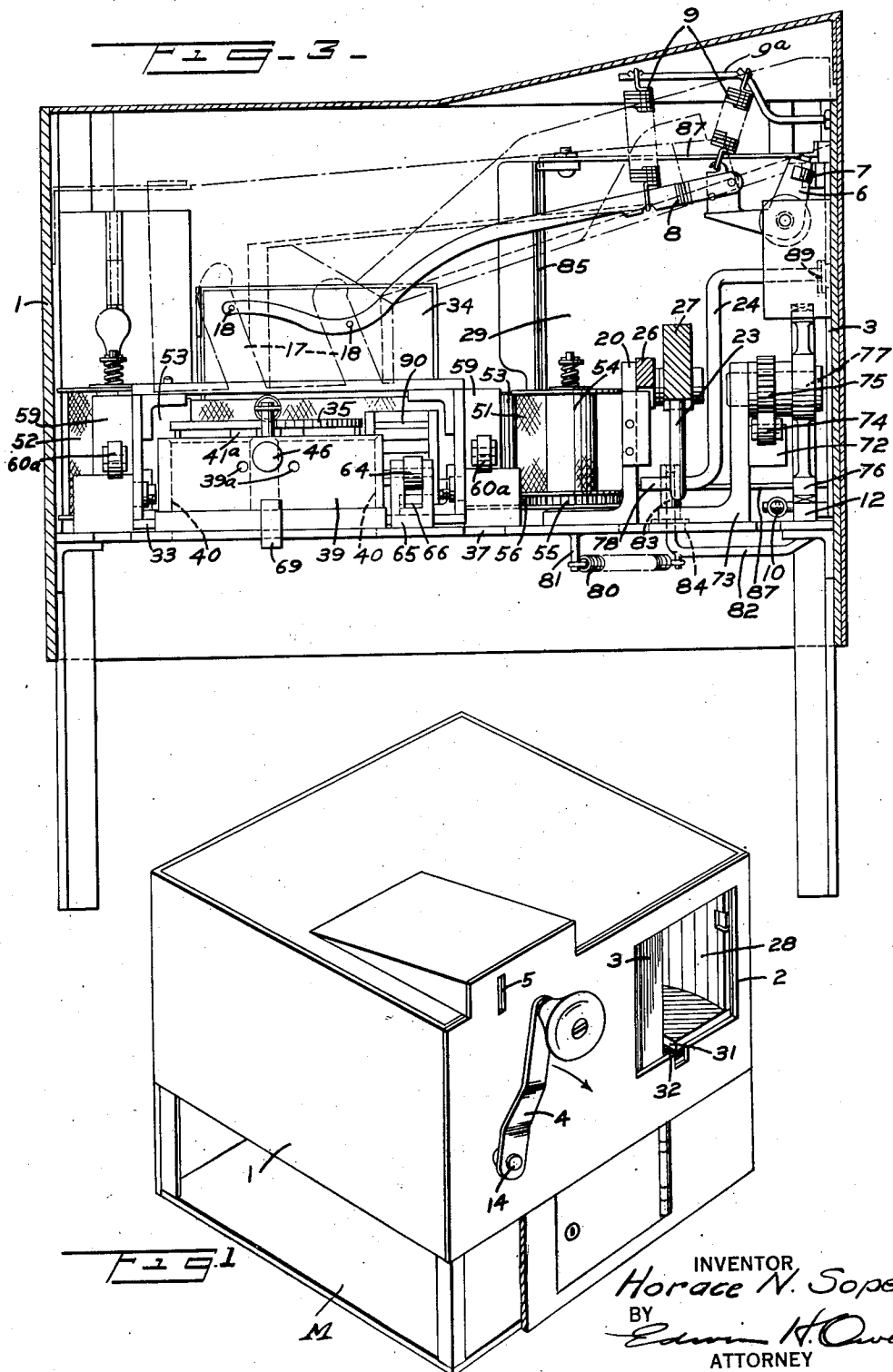
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COIN FREED FRANKING MACHINE

Filed March 17, 1939

5 Sheets-Sheet 1



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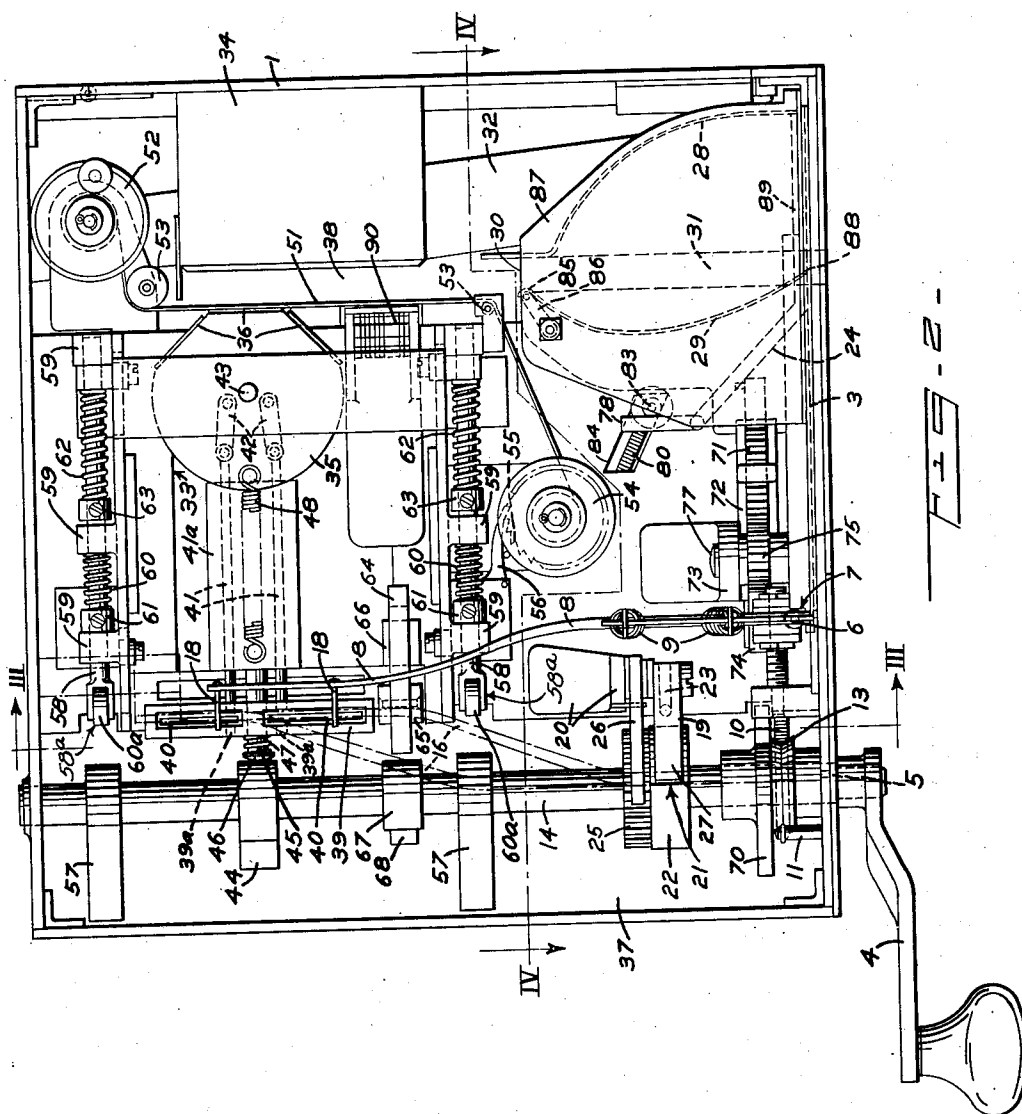
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5 Sheets-Sheet 2



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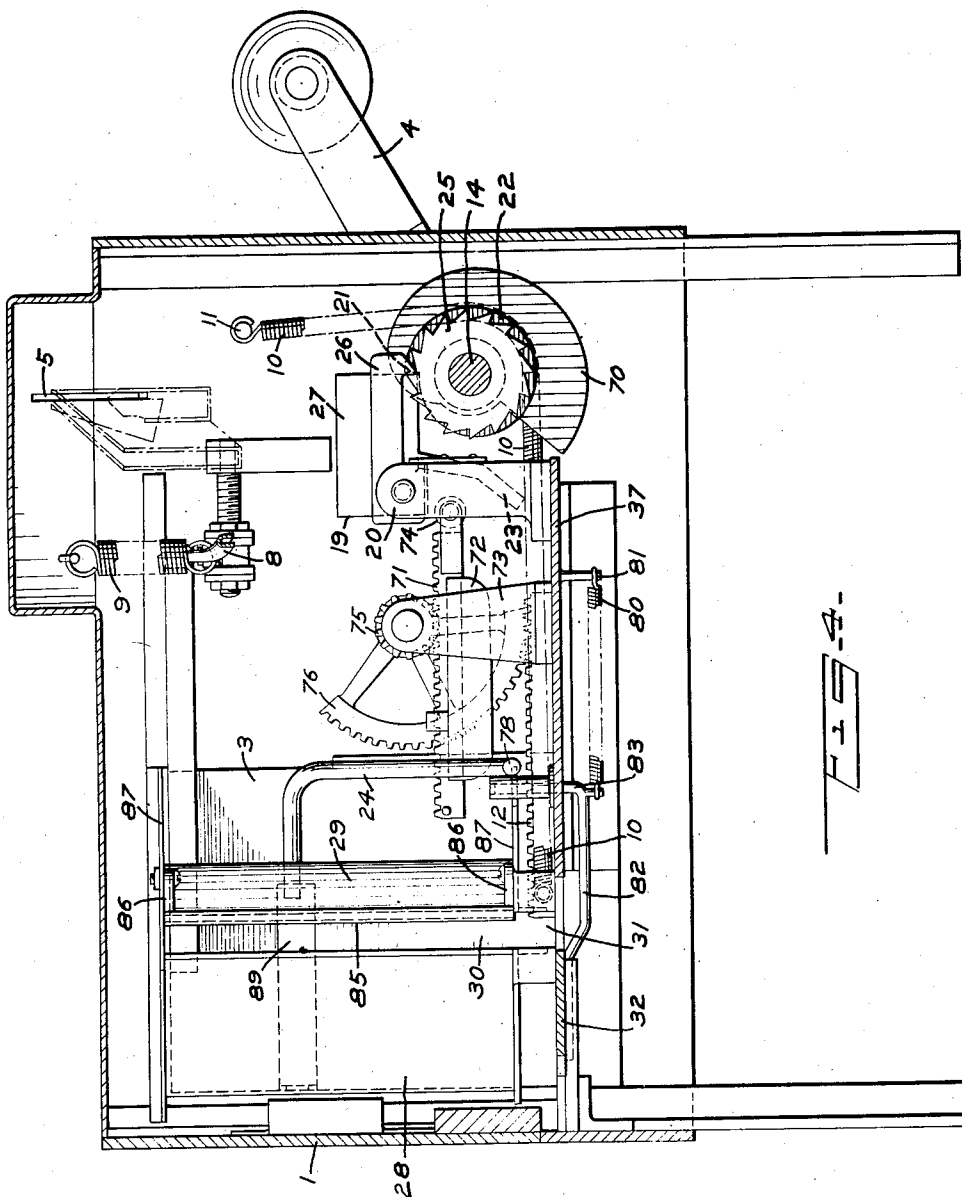
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5 Sheets-Sheet 3



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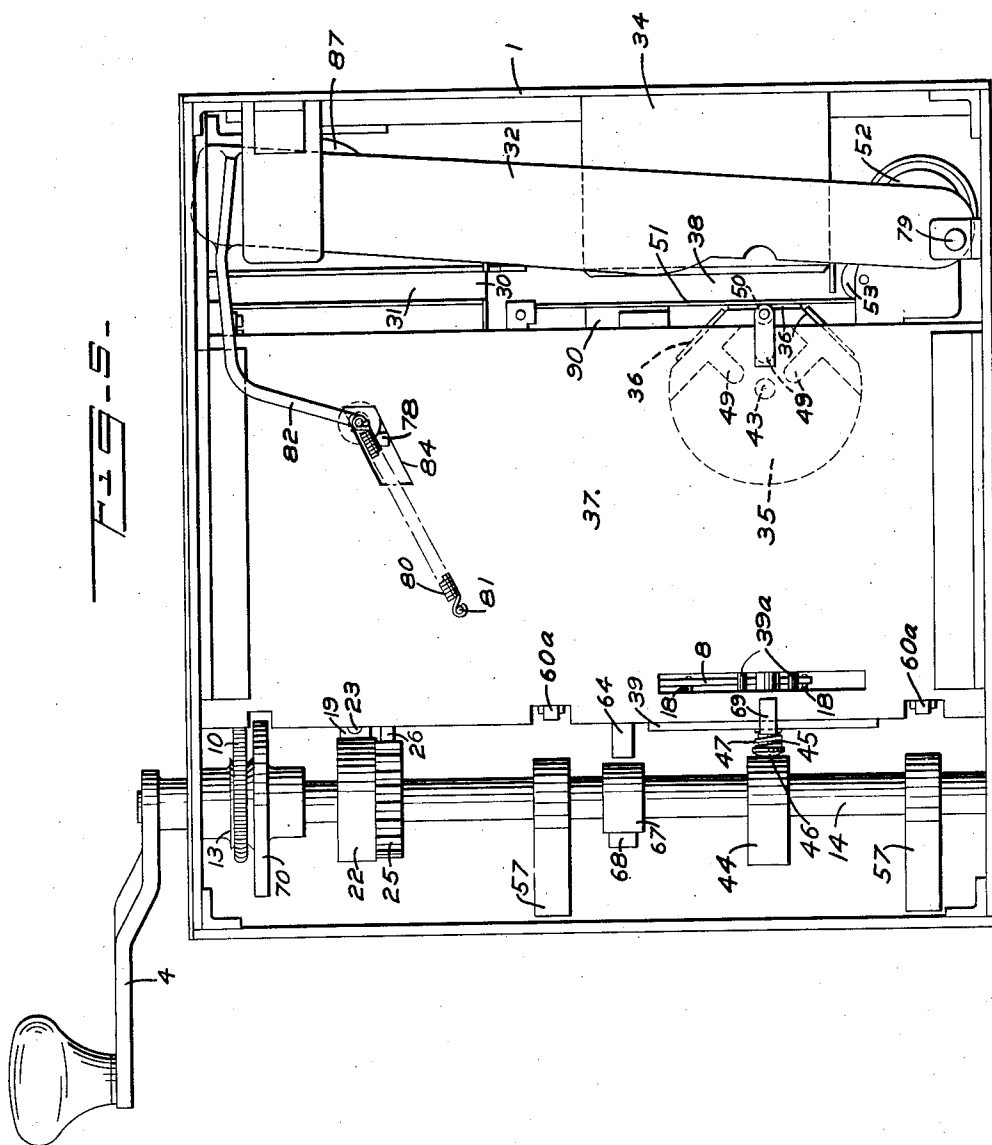
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5 Sheets-Sheet 4



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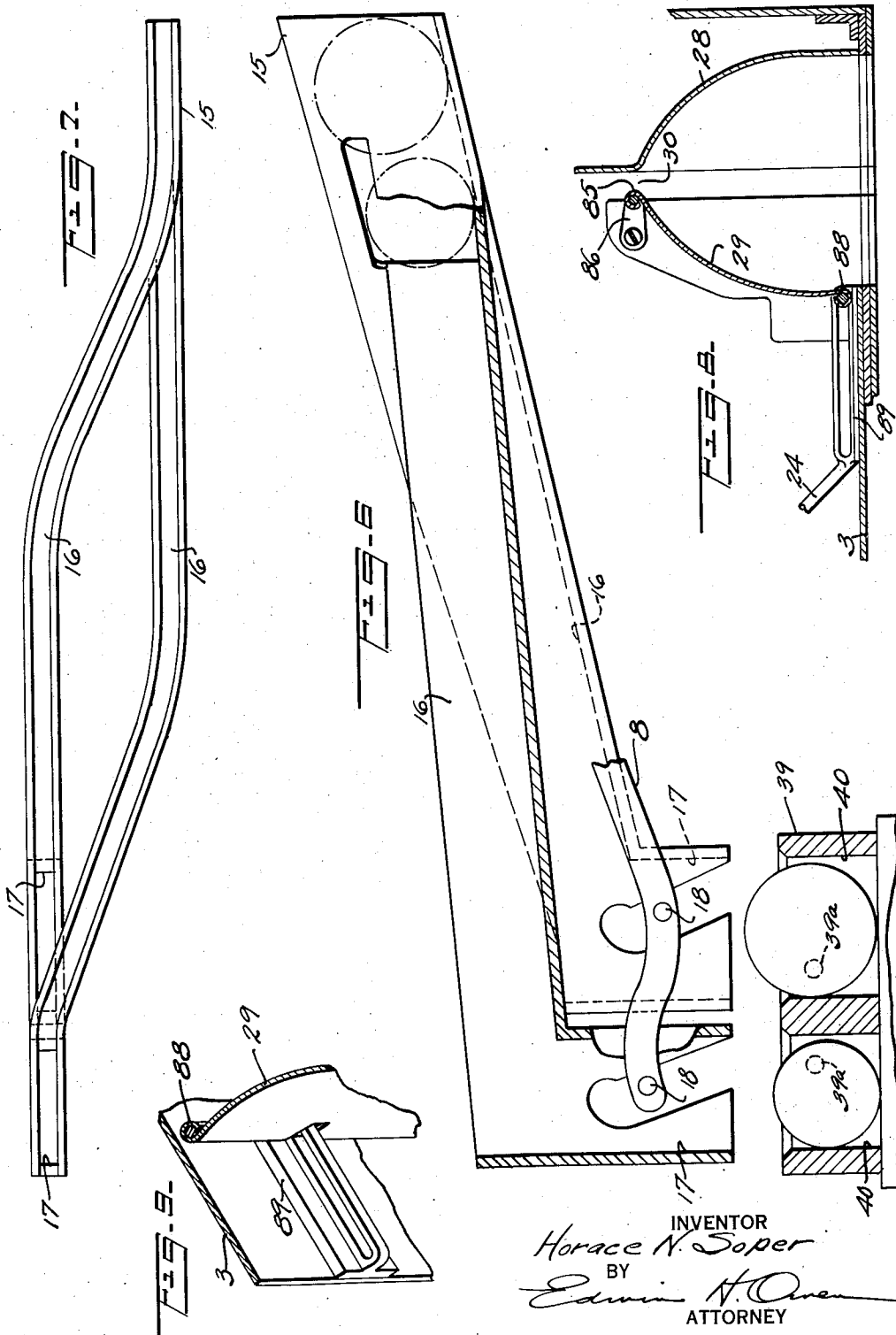
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COIN FREED FRANKING MACHINE

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5 Sheets-Sheet 5



UNITED STATES PATENT OFFICE

2,299,042

COIN FREED FRANKING MACHINE

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5 Claims. (Cl. 101-71)

This invention has reference to a machine for franking, i. e. printing a value stamp on letters or other postal packets, hereinafter referred to as letters, and has for its object to provide improvements whereby fraudulent operation of the machine is minimised and posting of the letter may follow automatically after franking so that the machine is particularly suitable for use by the public in such places as post offices. The invention also has for its object to provide a simple arrangement for selecting a desired franking value, and so to construct the parts that ease of operation together with reliability is ensured.

According to this invention there is provided a coin-operated machine for the franking of a value stamp on letters inserted therein, wherein a letter receiving opening through which a letter can be passed to the franking device, is normally closed by a locked door, and means is furnished by which the door is opened and the franking device is conditioned for operation upon the passage of one or more coins. These coins may be of like or unlike value, and will correspond to the value of the stamp to be franked on the letter.

Any suitable means will be provided to ensure that only coins deemed correct shall operate the machine.

In order that the invention may be readily understood and carried into effect, one embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, this embodiment including an arrangement for selecting three franking values, conveniently, a halfpenny, penny and three halfpennies in accordance with the existing rates of ordinary letters, but it will be clear that the constructional principles involved are applicable in general whether the machine will frank at only one value or more than three.

In the said drawings:

Figure 1 is an outside pictorial view of the machine showing the front thereof, and drawn to a scale smaller than that of the remainder of the figures;

Figure 2 is a top plan view with the roof of the outside casing removed, and shows the general layout of the mechanism;

Figure 3 is a section on the line III-III of Figure 2;

Figure 4 is a section on the line IV-IV of Figure 2;

Figure 5 is an inverted plan view of the machine.

Figure 6 is an enlarged detail view of the coin

chutes and coin pockets with part in section and part in elevation;

Figure 7 is a plan view of the coin chutes;

Figure 8 is a detail plan sectional view showing the position of the adjustable letter thickness gauge when the letter slot door is open; and

Figure 9 is an enlarged perspective view of the connection between the door and adjustable wall of Fig. 8.

Door release mechanism

The machine shown comprises an enveloping casing 1 in the front wall of which there is formed a letter receiving opening 2 which is normally closed by a rectilinearly slidable door 3. The machine is operated by a handle 4 which together with the door is normally locked and is adapted to be released by a coin or coins inserted into the machine through a coin slot 5.

The door is locked by a pivoted catch 6 (see Figures 2 and 3 particularly) which engages an abutment 7 fixed on the door and said catch 6 carries a pallet lever 8 adapted to be rocked by an inserted coin, the catch being maintained in engagement with the abutment by a pair of springs 9 having their lower ends fixed to the pallet lever 8 and catch structure 6, and their upper ends fixed to a support 9a. Said springs 9 are so arranged as to balance the lever 8 accurately and ensure proper tripping of the catch by a coin as it strikes the pallet in passing. The door is held in the closed position against the action of a spring 10 which at one end 11 is anchored to the casing and at the other end is connected to a rack 12 (Figures 3 and 4) secured to the door, the spring passing round a guide pulley 13 (Figure 2) fixed on a main cam shaft 14 which extends transversely of the machine.

The coin slot 5 (Figure 1) leads to a coin chute 15 (see particularly Figures 6 and 7) which has branches 16 or other suitable means which select coins according to their size and direct them to separate chutes 17. One of each of two pins 18-18 project from the pallet lever 8 into each of the chutes 17-17 and are adapted to be struck by a passing coin. The weight of the coin will effect the depression of the pallet and the consequent rocking of the catch 6 to remove the roller at the end thereof from the abutment 7 on door 3. The door will then be free to move to an open position under the influence of spring 10. The first coin through will control the opening of the door.

Operating mechanism lock

The operating handle 4 (Figures 2 and 4 par-

ticularly) is secured to the cam shaft 14 which is normally locked against rotation by a pawl 19 which is pivotally mounted on a bracket 20 and which normally engages an abutment face 21 formed on a cam disc 22. The cam disc 22 is fixed to the cam shaft 14 and thus both shaft and handle are locked by the pawl. The pawl 19 is provided with a tail 23 which lies in the path of a release rod 24 projecting inwardly from the door 3, so that as the door opens, the rod 24 strikes the tail 23 and rocks the pawl 19 upwardly out of engagement with the cam disc 22. The handle is then free to be rotated in the direction indicated by the arrow in Figure 1, reverse rotation being prevented by a ratchet wheel 25 fixed to the cam shaft and co-operating with a second pawl 26, also pivotally mounted on the bracket 20. The cam shaft locking pawl 19 is loaded by a weight 27 so that when the release rod moves away from the tail piece 23 during reclosing of the door, the pawl 19 will ride on the surface of the cam disc 22 and will eventually drop into engagement with the abutment surface 21 when one revolution of the cam shaft has been completed.

Letter receiving compartment

The main letter opening 2 (Figure 1) gives access to a compartment having a fixed wall 28 (Figures 2 and 4 particularly) and a movable wall 29 the inner edges of which wall form a second letter opening 30 adapted also as a gauge for predetermining the thickness of a letter which can be passed to the franking device. The letter to be franked and posted is inserted through the doorway or letter opening 2 and along a guide 31 which leads to a movable seat 32 (Figure 5) on which the letter is supported during franking. The compartment is of such dimensions, especially the depth from front to opening 30 that it enables the hand of a person to pass a sufficient distance within the machine to ensure correct positioning of the letter in relation to the franking device. The construction and operation of the platform and letter gauge will be hereinafter described.

Franking printer selector

The means for franking the received letter will now be described with particular reference to Figure 2, and in this embodiment it comprises a carrier 33 which is rectilinearly slidable towards and away from an impression member 34 and supports a three faced rotatably mounted printing member 35 each face 36 having numeral type which corresponds to a particular franking value. The carrier and the impression member are mounted on a base plate 37. The printing member is mounted at the end of the carrier adjacent the impression member, and normally has its face of highest value facing the impression surface as shown. There is normally a space 38 between the impression member and the printing member, access to which is had through the second letter opening 30 at the inner end of the pocket (of which the mouth is the aforesaid main letter opening 2 closed by the sliding door 3). Extending transversely of the carrier and at the end thereof opposite to the printer, is the cam shaft 14.

On the carrier, and mounted on pins 39a for sliding movement independently thereof, is a coin pocket slide or depository 39 into which the appropriate coin or coins fall. The coin or each coin falls from the appropriate coin chute 17, and rests finally in the respective pocket 40 and

just behind one of two feeler members in the form of push rods 41 connected at the opposite ends by means of links 42 each on one side of the axis 43 of the printing member 35, so that according to which push rod is moved the printing member is turned appropriately to select the required franking face 36. The push rods 41 are mounted in a block 41a secured in the carrier.

When the handle 4 and thereby the cam shaft 14 are released as before described, the handle is turned one complete revolution, and during the initial part of the latter, the selection of the required franking value as determined by the coin or coins inserted, is effected. For this purpose, there is fixed on the cam shaft 14 a cam 44 which co-operates with a spring pressed plunger 45, the head 46 of which bears against the cam and is connected by a spring 47, to the coin pocket slide 39, which connection provides for lost motion between the plunger and the slide. Thus if a coin is in each pocket of the slide, the slide will not move, the spring 47 being merely compressed, since the coins, acting as interponent abutments, will press on the push rods 41 together, with the result that the printing member will be moved toward the impression member without adjustment of the value face. The type numeral on said face will represent the value of the two coins, and the received letter will thus be franked with this value. If however, one pocket of the slide is empty, there will be no abutment for the corresponding push rod, and accordingly the plunger 45, through its spring 47, will move the slide 39, and since the other pocket has a coin in it, this coin will operate on the corresponding push rod 41, to turn the printer so that the required franking face comes opposite the impression member. The printing member 35 is turned against the action of a return spring 48.

Any suitable means may be provided for locking the printing member in the selected position, and as a convenient construction there is employed, as shown (see Figure 5) slots 49 in the printing member 35 projecting radially inwards from the respective faces 36, the appropriate slot, according to the face selected, being adapted to ride over a fixed pin 50 as the carrier moves to effect franking by impressing the selected printing face against the received letter. A suitable inker ribbon or pad or other means will be provided for keeping the faces properly inked, and in the embodiment shown, an inker ribbon 51 is employed. This ribbon is carried on a spool 52, and passes across the face of the printer, being guided by rollers 53, and finally is wound on to a second spool 54, Fig. 3, which is furnished with a ratchet wheel 55. A pawl 56 mounted on the side of the carrier 33 engages the ratchet 55 to turn the spool 54 one step in the winding on direction each time the carrier moves forward to print.

Printing action

After the selection, the carrier 33 is adapted to be moved for printing, by a pair of similar printer cams 57 fixed on the actuating shaft 14 one on each side of the selector cam 44, and each engaging a carrier actuating device generally indicated at 58a-58a which allows for lost motion or "give" according to the thickness of the letter to be franked. This device acts according to the resistant pressure arising by the printing face meeting the letter, the lost motion occurring when this pressure exceeds a predetermined value. Thus for this purpose, in the em-

embodiment shown the device 58a consists of a pair of rods 58—58 each of which passes through side lugs 59 of the carrier, and has one end which, after the franking value selection, engages, through a roller 60a, the associated printer cam 57 under the action of a spring 60. Each of these springs acts between a side lug 59 and a collar 61 fixed on the rod 58. A second spring 62 is connected between a second collar 63 on the rod 58 and on the lug 59 of the carrier so that as the rods 58 are pushed by the printer cams 57 towards the impression member 34, the carrier will follow the rods 58 to cause the selected printer face to press against the impression pad, the springs 60 and 62 then being compressed and lost motion taking place. Printing will be effected by an increasing pressure arising from the springs being compressed as the rod continues to move forward.

In the embodiment provision is made for a sharp impact printing as an alternative to pressure printing as just described. For this purpose, the following movement of the carrier, while the rods 58 are being moved forward by the printer cams, is prevented by a pawl 64 which is pivotally mounted in a bracket 65 fixed on the base plate 37, and which normally engages over a catch 66 secured to the carrier. A cam 67 secured on the cam shaft 14 is provided with a rise 68 which at an appropriate time in the cycle of operations, releases the pawl 64 from the catch 66, whereby the carrier shoots forward suddenly under the pressure stored in the springs 60 and 62 and the selected type face thereby impacts sharply against the letter to be franked. After printing and during the finishing portion of the revolution of the operating handle 4—which constitutes one operating stroke—the carrier will return to the initial position shown, by reason of the energy in the springs 60 and 62 which, as the printer cams recede from the rollers 60, cause the rods 58 to move backward until the collars 61 strike the adjacent carrier side lugs 59, whereupon the rods and the carrier will move together. The initial position of the carrier is determined by a suitable stop 69 fixed to the base plate 37, as best seen in Figs. 3 and 5.

Door closing mechanism

During the aforesaid operations, the door 3 has been closing and will be closed when the letter has been franked. For this purpose a snail cam 70 (Figures 2 and 4) is fixed to the cam shaft 14, and is arranged to push the door closed against the action of the associated spring 10, immediately after the operating handle is turned. The cam 70 acts through a rack and pinion device comprising a rack 71 mounted in a guide 72 which is fixed on a bracket 73 supported by the base plate 37. The rack 71 has a roller 74 (Fig. 4) at one end with which the cam 70 contacts, and through a pinion 75 and a toothed sector 76 is coupled to the rack 12 which is secured to the door 3, the pinion 75 and sector 76 being coaxial and fixed to the same spindle 77 (Fig. 3) which is rotatably supported by the bracket 73.

Mailing arrangements

The posting of the letter is conveniently effected by the closing of the door, the received letter being supported during franking on the seat 32, Figures 4 and 5, which, when removed from beneath the letter, gives access to a suitable franked letter receiving compartment M, i. e. a mailing box. The seat 32 is adapted to

be slid from under the letter after franking and during the final closing of the door, by an extension 78 (Figures 2 and 4 particularly) of the release rod 24 which is carried by the door. Thus the franked letter will fall into the mailing box. During the opening of the door with the next coin insertion, the seat 32 will again move into the letter supporting position. The seat 32 is pivoted at 79 to the underside of the base plate 37, and is normally urged by a spring 80 into the letter supporting position. The spring 80 is anchored at 81 to the base plate 37 and is connected to the end of a rod 82 which projects laterally from the pivoted seat 32. This rod has an upward terminal portion 83 which projects through a slot 84 in the base plate into the path of movement of the rod extension 78 so that as the door is on the point of being fully closed, the latter engages the terminal portion 83 and pushes the seat 32 aside into the inoperative position shown.

Letter thickness gauge

To prevent letters being jammed in the second or inner letter opening 30 (see Figure 2) so that they will not fall upon removal of the platform 32, the door is adapted to increase the width of the letter opening 30 as the door closes, and to contract the said opening to a gauge limit as the door opens. To this end the pocket is provided with the movable wall 29, which is a swinging member carried at the inner vertical edge 85 between two links 86 which are pivotally mounted on the top and bottom plates 87 of the pocket. The edge 85 of the movable wall 29 forms one edge of the letter opening 30 and gauges the thickness of the letters, whilst the opposite edge 88 of the movable wall cooperates with a projection 89 (Figure 4) on the door so that as the door opens the movable wall 29 is swung rearwardly to cause the gauging edge 85 to move towards the stationary edge of the opening 30 thereby to reduce the effective size of the opening and provide a gauge for maximum thickness of letters. Towards the end of the closing movement of the door the projection 89 swings the movable wall 29 forwardly to increase the size of the opening 30 to that shown in Figure 2. Thus, if a letter has been forced into the reduced opening 30, it will be cleared by this increase of size of the said opening.

Operation

The operation of the machine may be briefly summarised as follows:

The coins corresponding to the value to be franked on a letter are inserted in the coin slot 5. These coins in the embodiment shown may be a halfpenny or a penny, and the coin selection devices comprised in the coin chute branches 16 are so constructed that the particular coin inserted is directed to the proper coin chute and coin pocket in the coin slide or depository 39.

When the coin or coins is or are inserted, the first coin through either chute 16—17 (Fig. 6) will engage a pin 18 on the pallet lever 8 and rock the said pallet lever 8 and the catch 6, (Fig. 3) whereupon the door will be released to open under the action of the spring 10. As the door moves to its fully open position, the release rod 24, by engaging the tail piece 23, trips the pawl 19 so that the handle 4 and thereby the main cam shaft 14 is released and thus conditioned for operation. Thereafter, the handle is turned in the direction shown by the arrow in Figure 1, and a sequence

of operations takes place which results in franking and posting of the letter inserted, through the letter openings 2 and 30, to the franking device. Firstly, selection of the appropriate type face 36 in accordance with the value of the coins or coins put into the machine is effected as previously described with reference to the selector cam 44, and thereafter the printer cams 57 come into action to cause the carrier and thereby the printer member 35 to shoot forward under the action of the compressed springs 60 and 62 so that an impact impression of the selected value stamp is made on the letter located in between the printer and the impression pad 34. During the forward movement of the carrier 33, and after the printer 35 has been locked in the selected position by the pin-and-slot mechanism 49-50, the coin or coins drop out of the depository 39 through a suitable slot in the base plate 37. Whilst the franking operation proceeds, the door is closing (Figure 1 shows this condition of affairs), and while the printer carrier 33 is returning to the normal position as the handle is completing its revolution, the letter supporting seat 32 is withdrawn from the operative position by the door 3 so that the franked letter falls through to a mailing compartment and is thereby posted.

Upon the completion of one revolution, the handle 4 will be locked by the pawl 19 engaging the abutment face 21 of the cam disc 22, and the door 3—which is now closed—is locked by the trip catch 6 falling in behind the abutment 7.

The machine is now in a condition for another franking and posting operation, which may again be effected upon the insertion of further coins.

In the embodiment illustrated, there is printed in addition to the value of the required stamp, the date of printing, an adjustable date stamp 90 being mounted on the printer carrier 33 for this purpose.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a letter printing machine, a postage printing device, a casing enveloping said machine and printing device and having a compartment therein within which a letter may be inserted on edge to a position for printing, a movable supporting seat for said letter, said compartment having space to permit the entrance of a hand when inserting a letter, letter engaging means within the compartment spaced to restrict the thickness of a letter which is inserted therebetween to a printing position, means to relieve said restricted spacing during a printing cycle of operation, and means to remove the supporting seat from beneath the letter, whereby the letter is released to drop into a receptacle below said seat after printing.

2. In a coin released letter printing machine, a postage printing device, a casing enveloping said machine and printing device and having a

compartment therein within which a letter may be inserted on edge to a position for printing, a movable supporting seat for said letter, a latched self opening door normally obstructing passage to said letter compartment, means freeable by an inserted coin to effect release of the latch and consequent opening of the door to expose the letter compartment, said compartment having space to permit the entrance of a hand when inserting a letter, letter engaging means within said compartment spaced to restrict the thickness of a letter, means to relieve said restricted spacing during a cycle of operation, and means to remove the supporting seat from beneath the letter, whereby the letter is released to drop into a receptacle below said seat after printing.

3. In a coin released letter printing machine, a postage printing device, a casing enveloping said machine and printing device and having a normally inaccessible compartment therein within which a letter may be inserted to a position for printing when accessible, means freeable by an inserted coin to provide access to the letter compartment, said compartment having space to permit the free entrance of a letter, letter gauging means within the compartment spaced to restrict the thickness of a letter which is inserted therebetween, and means to increase the spacing between the gauging means after printing.

4. In a coin released letter printing machine, a postage printing device, a casing enveloping said machine and printing device and having a normally inaccessible compartment therein within which a letter may be inserted on edge to a position for printing when accessible, means freeable by an inserted coin to provide access to the letter compartment, said compartment comprising walls spaced to permit the entrance of a letter and converging at their inner ends to a restricted width for limiting the thickness of letters passed therebetween, and means to increase the spacing between said converging ends during a printing cycle of operation.

5. In a coin released letter printing machine, a postage printing device, a casing enveloping said machine and printing device and having a normally inaccessible compartment therein within which a letter may be inserted on edge to a position for printing when accessible, a movable supporting seat for said letter, means freeable by an inserted coin to provide access to the letter compartment, said compartment comprising walls spaced to permit the entrance of a hand when inserting a letter and converging at their inner ends to a restricted width for limiting the thickness of letters passed therebetween, means to increase the spacing between said converging ends after printing, and means to remove the supporting seat from beneath the letter, whereby the letter is adapted to be released into space below the seat after printing.

HORACE NETTLESHIP SOPER.