

July 19, 1932.

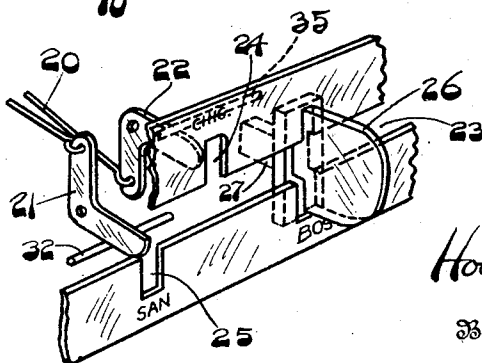
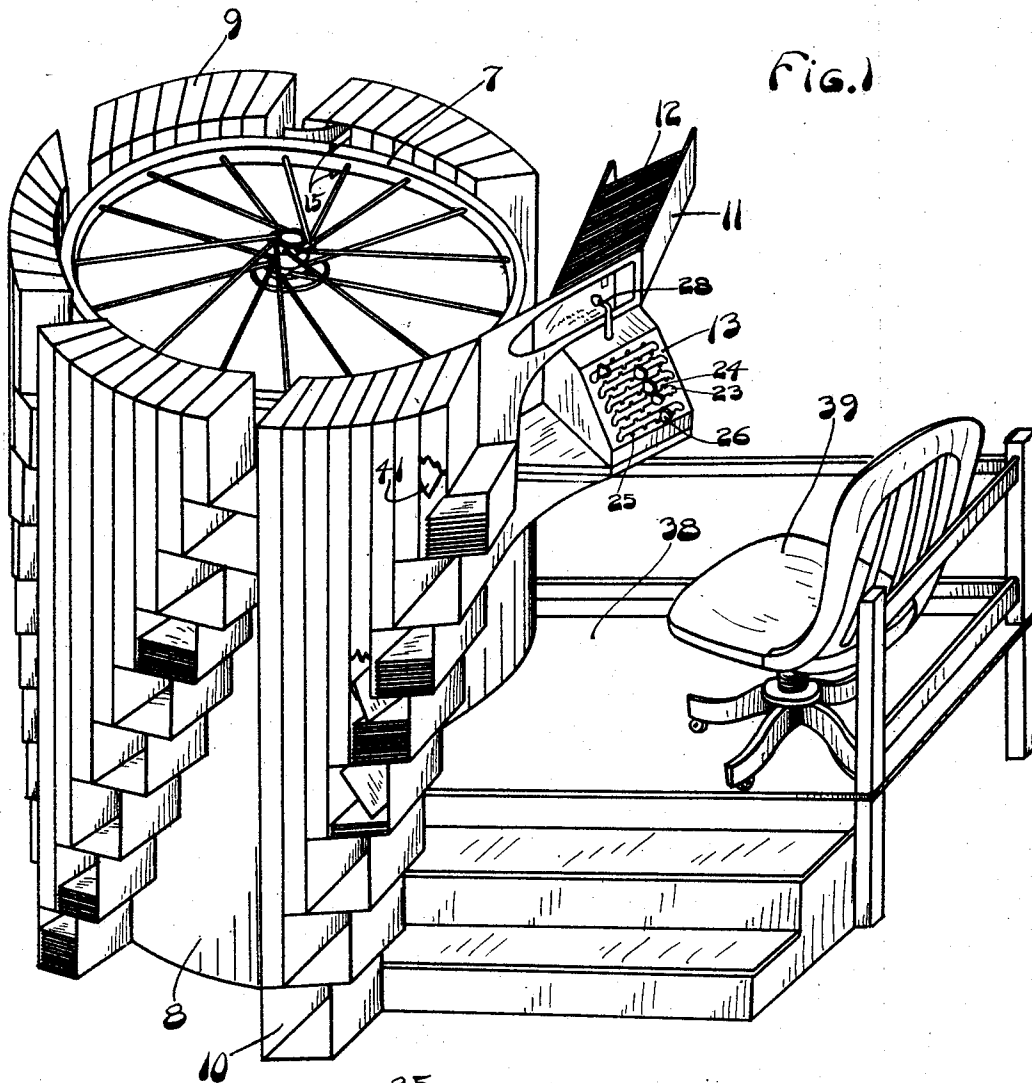
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1,868,243

MAIL DISTRIBUTING MACHINE

Filed Oct. 18, 1927

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

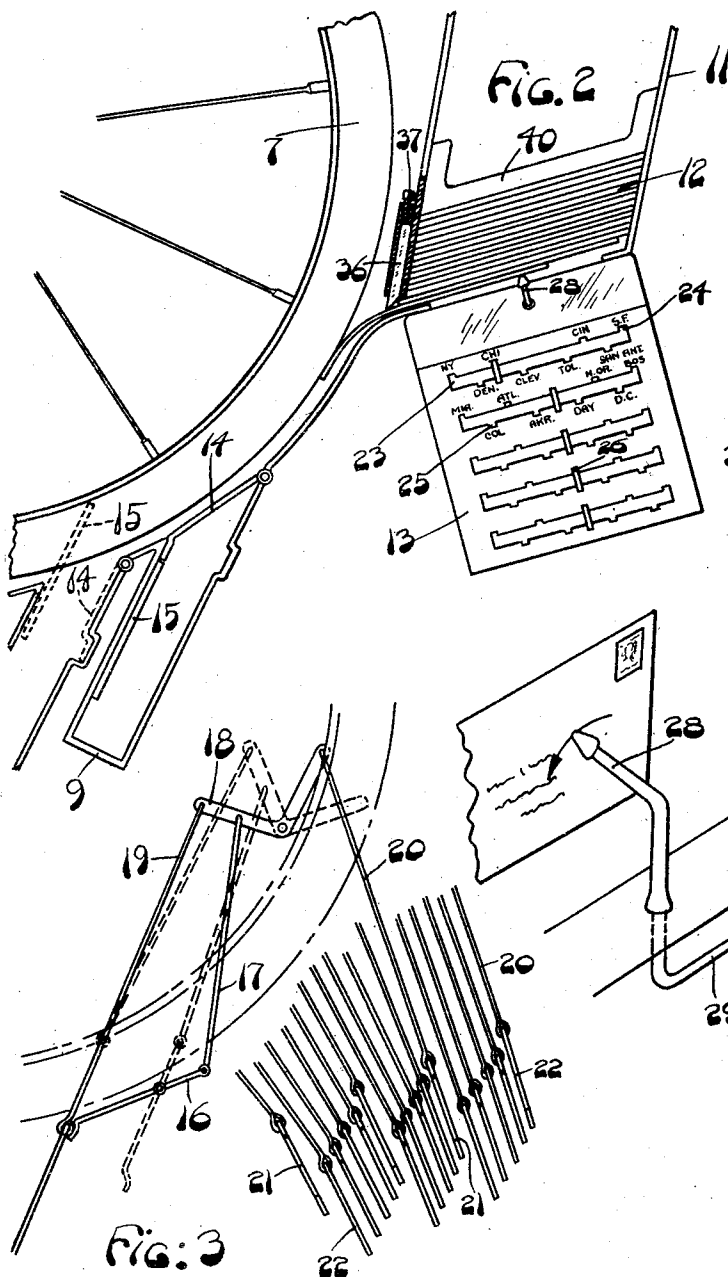


FIG. 6

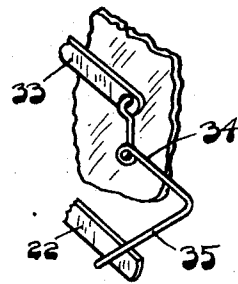


FIG. 5

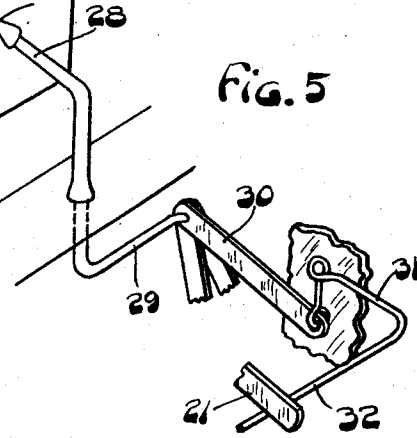


FIG. 3

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MAIL DISTRIBUTING MACHINE

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This invention relates especially to a machine designed to distribute mail matter of the usual letter type and size, so that it will be arranged in groups as to cities or other convenient political subdivisions. Such distribution is usually accomplished by a hand process of actually placing each piece of mail matter individually in its proper bag or container; it being usual to have such bags or containers supported in open condition upon a rack of convenient size and shape to hold the bags so that they may receive the pieces of mail as a clerk tosses each piece into the proper bag.

An object of our invention is to produce a machine having the smallest possible number of moving parts in order to avoid complications and the possibility of a break down in the machine mechanism during periods of rush in the handling of mail.

A further object is to produce a machine which will accomplish the distribution of mail as rapidly as is possible for an operator to read the addresses and in a manner which necessitates the utmost accuracy in the correct distribution thereof.

An additional object is to produce a distributing machine which will operate with the smallest possible expenditure of energy or power consumption and in which the noise occasioned by the operation of the machine is negligible.

These and other objects are attained in the machine described in the following specification and illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of a distributing machine embodying my invention.

Fig. 2 is a fragmental plan view upon a slightly enlarged scale, of the machine shown in Fig. 1.

Fig. 3 is a fragmental plan view of a detail of the invention shown in Figs. 1 and 2 and disclosing the operating mechanism designed to operate the parts shown in Fig. 2.

Figs. 4, 5 and 6 are fragmental perspective views of details of the invention as shown in Figs. 1 and 2 and taken upon an enlarged scale.

Our invention naturally assumes a more or less cylindrical form because of the utilization of a large rotary member or carrier wheel 7 which forms the basis of operation and upon the rotation of which the entire machine depends for its functioning. This wheel is mounted for rotation in a horizontal plane and is preferably driven by an electric motor located within a cylindrical casing 8 about which there has been placed several series of groups of mail chutes 9. These chutes each lead to a box 10 into which the mail dropping down the chutes will fall. A trough or letter guide 11 is provided to hold a stack of mail matter 12 to be delivered or distributed to the various boxes 10 through the agency of the wheel 7 and chutes 9, and a key board mechanism 13 has been provided to actuate suitable mechanism for effecting distribution of the letters to the proper chutes and boxes.

The wheel 7 is of a diameter sufficient to permit of the spacing of as many groups of mail chutes about its periphery as may be necessary or desirable to include all the cities to which mail distribution is to be made. It is desirable to include as many cities in the list to be served as may be possible, because in this manner the wheel periphery may be great enough to produce a relatively high surface speed with but slow rotational speed. Grouped around the wheel periphery the mail chutes 9 are arranged preferably in such a manner that they are tangential or at least substantially tangential therewith. These chutes are preferably of elongated rectangular transverse cross sectional shape so that the letter may enter the side of each chute endwise as will be explained. At the bottom of each chute is located a box 10 adapted to receive the mail. These boxes are so shaped

that the letters which drop down the chutes may lie flat therein and pile up one upon the other as shown in Fig. 1. In this manner they may be quickly removed in bunches and thus thereby permit of being tied in bundles ready for the mail bag. Because of the shapes of the letter boxes, and the chutes being materially narrower than the boxes, a compact grouping of the chutes about the wheel is only possible by placing the boxes one beneath the other in stepped relation, which permits the chutes to be placed against each other and merely requires that each succeeding chute be made slightly longer than the preceding chute, as shown. However, inasmuch as the floor is eventually reached in such a successively stepped off relation, the following group of chutes has to be started by placing the shortest chute to which the highest box is attached, in spaced relation to the preceding group, because of having to place the first box of the new group against the last chute of the preceding group. Thus group after group is spaced about the wheel as shown. This spacing is accomplished by attaching the chutes and boxes to the cylindrical casing 8 in any suitable manner, and the casing is of somewhat larger diameter than the wheel 7 so that an annular space is left between it and the periphery of the wheel. This space is for the passage of letters as they are carried by the wheel to the chutes which are to receive them.

Sufficient space is left, preferably surrounding the wheel periphery, for the installation of the control mechanism by means of which the distribution of letters to the various chutes and boxes is accomplished. This mechanism consists primarily of the keyboard device 13 and the letter guide 11, with the suitable mechanism for affording control from the keyboard and which will be described. The chutes are each provided with a door 14 which opens inwardly against the side of the chute as shown in Fig. 2, as well as a guide finger 15 which preferably is forked and slides across the rim of the carrier wheel 7 with one finger branch above and the other finger branch below the wheel rim as also shown in Fig. 2. The arrangement of the door and finger is such that when the door is closed the finger is drawn into the chute, but when the door is open the finger is moved across the wheel rim as shown.

The mechanism to accomplish movement of the door and finger of each chute from the keyboard 13, consists of the linkage shown in Fig. 3. This provides an arm 16 on the door 14 to which a link 17 is attached. This arm in turn connects with a bell crank 18. Connected directly with finger 15 is a link 19 which is also connected to crank 18. By the linkage described, operation of bell crank 18 to dotted line position shown in Fig. 3, will cause the finger and door to move to

the dotted line position shown in Figs. 2 and 3, while movement of the bell crank to full line position will cause the door and finger to move to the full line positions also shown in Figs. 2 and 3. In order to operate the door and finger of each chute there has to be provided a separate bell crank. Each of these bell cranks is connected in turn with a single operating link 20 which, with all of its fellow links provided for the same purpose, are brought to a common grouping as shown in Fig. 3, where they are connected each to the proper one of a series of bell cranks 21 and 22 for operating them. The bell cranks 21 are of an upright type and the bell cranks 22 are of an inverted type, as shown more clearly in Fig. 4. The purpose of this is to afford economy of space and arrangement of mechanism as will now be explained.

The keyboard is conveniently arranged with five slots 23 which correspond to the five groups of mail chutes shown in Fig. 1, one slot being provided for each group of chutes. In each slot are provided eight notches which correspond to the eight chutes in each group about the propelling wheel 7. Four of these notches 24 are in the upper edge of the slot and four of these notches 25 are in the lower edge of the slot. Each of the lower edge notches 25 is located opposite the alternately spaced upright bell cranks 21 while each of the upper edge notches 24 is located opposite each of the alternately spaced inverted bell cranks 22. Thus with this arrangement of the keyboard the bell cranks 21 and 22 will have to be arranged in five groups which are located substantially one above the other but in progressively stepped back relation from the lowermost to the uppermost row of bell cranks. In each slot 23 is mounted a key 26 which is slidable therein from end to end and which, when opposite or in register with any notch may be moved upwardly or downwardly into it, depending upon which one of notches is in register. A detent 27 on each key will engage an end of the bell crank which registers with each notch so that when the key is moved to occupy the notch there will be a corresponding operation of the chute door and finger connected with the bell crank registering with the notch so occupied by the key. It is quite obvious therefore that any one of the chutes may be opened or closed and that letters may be directed into any one of them by a mere movement of any one of the keys into any one of the notches.

There is one important feature of the mechanism which remains to be described. This is that portion of the mechanism by means of which the letters are fed from the letter trough or guide 11 in such relationship with the propelling wheel 7 that they are carried by it into the chute which has been opened to receive them. This mechanism is quite simple and consists of a feeder 28 which

is bent to engage the face of a letter to be fed from the letter trough to the wheel and which is vertically rotatable in the top of the key board 13. An arm 29 from the feeder 28 connects with a link 30 having attached at its opposite end an inverted bell crank 31. The bell crank 31 has an integral bar 32 which extends across beneath the ends of the series of upright bell cranks 21, as shown in Figs. 5 and 4 so that operation of any one of these bell cranks will operate the feeder 28. This is true of any upright bell crank in any one of the slots 23 of the keyboard, because the elements 30, 31 and 32 are duplicated for each of the keyboard slots. There is the same provision made for each of the inverted bell cranks 22, but in this case there have been provided additional links 33 and upright bell cranks 34 which have bars 35 extending across above the inverted bell cranks 22. By this means movement of any one of the bell cranks 22 will cause feeder 28 to move a letter from the trough.

A feature of the trough feeding operation consists in being able to move but one letter at a time from the pile in the trough without disturbing any of the others until ready to do so. This is accomplished by a simple mechanism consisting of the rubber tipped feeder 28 which accomplishes the movement of the first letter from the face of the letter stack by a swinging motion which has been described and which is shown by the arrow in Fig. 5. Should two or more letters be moved simultaneously in this manner there has been provided a friction element 36 preferably of rubber, which bears lightly against the back of the letters being fed from the stack. This acts to separate and hold back all but the one letter against which the feeder 28 bears and moves. The feeding action of feeder 28 and retarding action of friction elements 36 is clearly shown in Fig. 2. This element 36 may have a means such as an adjustment screw 37 back of it in order that proper pressure of the element against the backs of the letters may be brought to bear. In order to facilitate the pick-up of the wheel 7 after the fed letter has been brought to engage its surface as shown in Fig. 2, the tire or rim of the wheel has preferably been made of a material such as rubber and may either be made tubular and inflated or of solid rubber.

Now because of the size of the machine it will be necessary to provide an arrangement such as the platform 38 upon which the operator's chair 39 may be placed in position before the keyboard 13. Having thus made arrangements for the operator's comfort and convenience, a stack of letters is placed in the trough II between the open front of the trough and a weighted or spring pressed follower 40 which keeps the letters normally moving toward the feeder 28 as they are

fed from the stack to the wheel. In Figs. 2 and 4 have been shown how the operator may know what to do in order to cause delivery of the letters to their proper boxes. Each of the keyboard slot notches 24 and 25 are marked in a suitable manner with the name of the town or post office to which the letters may have to be sent. The operator has merely to bring the desired one of the five keys shown, into position to be opposite the notch for the postoffice to which the first letter in the stack is to be sent. In this position the key is moved into the notch having the proper post office designation. For example, in Fig. 2, the top key has been moved into the notch marked "CHI" which is the Chicago notch. This was done because the letter which is shown ready to be carried along by the wheel 7, contained a Chicago address. Inasmuch as the second notch is therefore engaged by the key, it is the second chute in the group surrounding the wheel, which is opened and into which the letter is carried by the wheel. This is shown in dotted lines in Fig. 2. The operation through the connected bell cranks and links is quite obvious, as has been explained. As each letter is directed into and falls through the chute which receives it, it falls down the chute sidewise and at the bottom of the chute encounters a slightly curved wall ledge 41 which throws the letter with its face up into the box 10 which receives it. This is true of all the letters thus received by the box or any other box about the wheel, so that they are piled one upon the other right side up and ready for quick removal and packaging.

Having thus described the invention what we claim is:

1. A mail distributing machine comprising a carrier wheel, a series of mail boxes arranged about the wheel in spaced relation thereto, a door on each mail box, said doors forming a continuous wall spaced from the periphery of the wheel and intercepting the plane of the wheel periphery to form a letter-receiving passage, said passage receiving a letter in flexed condition longitudinally between the wall and the wheel periphery, a letter trough adjacent to the passage, and mechanism to cause the opening of any desired door simultaneously with the delivery of each letter from the trough to the passage.

2. A mail distributing machine comprising a frame, a carrier wheel mounted upon the frame for rotation in a horizontal plane, a series of mail chutes arranged upon the frame about the wheel in spaced relation thereto, a door in each mail chute, said doors forming a continuous wall spaced from the periphery of the wheel and intercepting the plane of the wheel periphery to form a letter-receiving passage, said passage receiving

a letter in flexed condition longitudinally between the wall and the wheel periphery, a letter trough adjacent to the passage, mechanism to cause the opening of any desired door simultaneously with the delivery of
5 each letter from the trough to the passage, a mail box on the frame at the lower end of each chute, and means therein to stack the letters from the chute to the box with their address sides uppermost.
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In testimony whereof we have hereunto affixed our signatures.

HOWARD H. MILLER.
JOSEPH MILLER.

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