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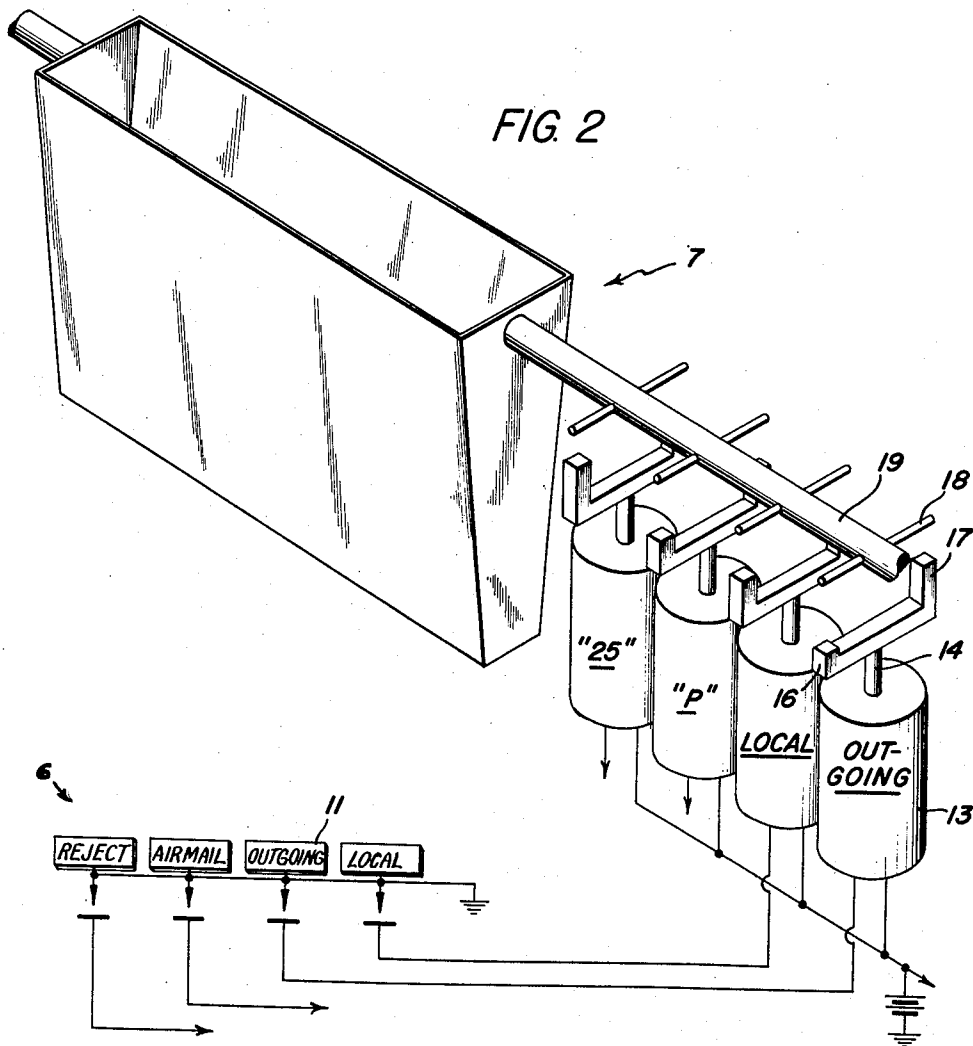
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CODE PRINTING AND SORTING STATION FOR MAIL

Filed March 13, 1958

3 Sheets-Sheet 2



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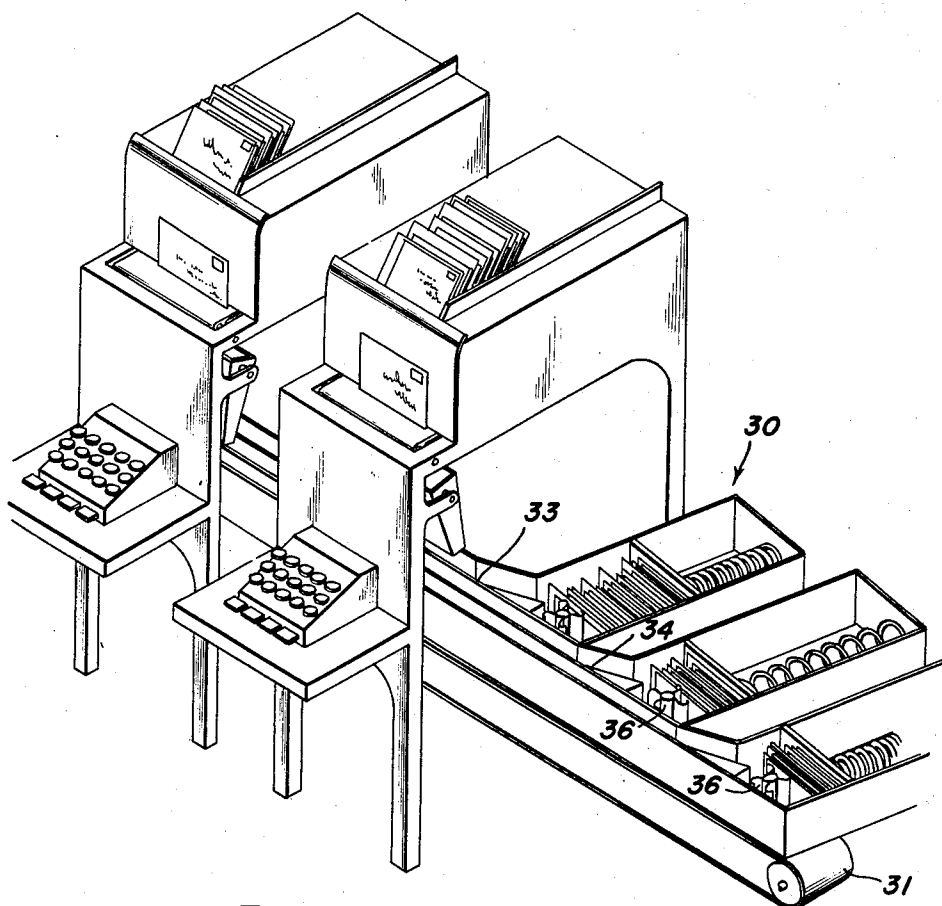


FIG. 3

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1

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CODE PRINTING AND SORTING STATION FOR MAIL

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4 Claims. (Cl. 101—2)

This invention relates to the art of applying code marks to pieces of mail and of sorting these into several categories.

There is a large art of machinery used for the automatic and semi-automatic sorting of letter mail. These machines generally break down into two classes: One, in which a letter is read by an operator and the sorting machine is controlled by the operator so that the letter reaches its correct destination. In such machines, generally, an operator operates a keyboard which controls a conveyor that distributes the mail. In another class of automatic sorting machines the letters are marked by a code, generally consisting of printed dots, which are then read by photoelectric means. The information thus gathered is transferred into some electronic "memory" which controls the sorting machine that distributes the mail. We are concerned, generally speaking, with this second class of machinery except that this invention combines some of the features of manual sort with the automatic devices.

In sorting mail it is generally important to separate the local from the outgoing mail, and both of these from airmail and other special letters at the earliest possible moment. This is necessary because outgoing mail in large cities has to make connections with various trains and airplanes while the mail for local distribution is generally sorted late at night, or early morning, long after the outgoing mail has left. It is a principal purpose of this invention to provide a coding station where human operators can mark envelopes and at the same time do a certain amount of sorting so as to expedite the handling of mails.

Another object is to provide a coding machine which automatically provides a limited amount of sorting in accordance with the code address printed by the operator and without any attention on the part of the operator; this enables immediate sorting of major categories, particularly those requiring special or expedited handling.

While the objects sorted are referred to as letter mail, it will be understood that the invention is applicable to any objects which must be sorted and delivered to a plurality of predetermined destinations, and the terms "mail" and "letters" are intended to include any such objects.

The specific nature of my invention, as well as other objects and advantages thereof, will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings, in which:

Fig. 1 is a sectional schematic view of a machine according to the invention;

Fig. 2 is a perspective detail view of a chute control mechanism for the machine of Fig. 1;

Fig. 3 is a perspective view of another embodiment of the invention; and

Fig. 4 is a schematic diagram of a control network for automatically sorting and printing.

Fig. 1 shows the general scheme of my machine. In the embodiment shown in Fig. 1, an operator sits before

2

a keyboard 2 and the letters 3 are presented to him by automatic machinery. A printer suitable for such machines is described in my co-pending patent application for Differential Pressure Envelope Printer, Serial No. 719,133, filed March 4, 1958. The letters may be fed to the operator by a vacuum pickoff device 4 which is well-known to the art such as, for instance, is described in U.S. Patent No. 2,792,218, to F. Van Marle. The operator reads the address and operates the keyboard so as to print on the back of the envelope a series of dots representing the address, usually in abbreviated form, as shown in my above-referred-to co-pending application. He then pushes one of several keys 6 which operate a chute mechanism 7, shown in Fig. 2, that releases the letter into one of several stacks 8. In Fig. 1, I show a complete coding-sorting unit with its own output stacks.

One arrangement for dropping the letter after printing and for separating into the stacks is shown in Fig. 2. When key 11 is depressed indicating that the operator wants the letter to go into the outgoing stack 12, a solenoid 13 is energized which causes its armature 14 to move up causing pins 16 and 17 to impinge on the lever 18 attached to the rotary shaft 19. This shaft swings the chute or gate 7 which deflects the letter into the pocket 12. If one wants to separate the letters into four stacks, four keys and four solenoids are necessary, as shown. The pins 16, 17, etc., for each solenoid are so located that the gate assumes the correct position as each key is pressed. The release of the letter initiates a cycle controlled by a timer 22 which permits a new letter to drop in front of the printing station. For example, a vacuum line can be made to open, sucking the letter against the face plate of the printer, as shown in my co-pending application above referred to. Thereafter the operator can start printing the new abbreviated address.

Fig. 3 shows the second embodiment of this invention. This embodiment shows a method of collecting the letters not in individual stacks for each operator as shown in Fig. 1, but in master stacks 30 fed by a conveyor belt 31 which collects the letters from many operators. In this embodiment the swinging gate 7 of each machine instead of dropping the letter directly into a receiving pocket drops it onto the moving belt 31. Above this belt there is a group of vertical partitions 33, 34, etc. which guide the letters into the correct stackers. At the receiving end of the machine there are conventional stackers 30 such as are used in the post office today. In these stackers the letters are pushed against a spring loaded plate by a star wheel 36 revolving at high speed. It should be understood that such stackers are well-known to the art and the details of their construction are not a part of the present invention. The advantage of having only a few major stackers is that an operator who has to unload these letters onto cars or into sorting machines can stand at one place, supervise and unload the stackers, and in this way service a great many coding operators. It is also possible by this arrangement to have the coding operators close together and to simplify their equipment.

While a letter separation into four stacks is shown, a larger number can, of course, be used. The swinging gate, particularly in the design of Fig. 3 which uses the moving belt, can have many positions, and separations of the order of ten groups are entirely feasible.

While I so far have shown the separation being done entirely by manual control, that is, where the operator has to decide where to put the letter, automatic means to do this are possible as shown in Fig. 4. Here a relay network is used which automatically recognizes, from the operation of the printing code, which of the stacks the letter is destined for. For example, if the operator is sorting mail in Washington and presses only the key

3. marked "P" indicating that the letter is intended for the Pentagon, relay 41 connected to the "P" key will be energized so that the letter will be directed to the "P" stack without further effort on the part of the operator, by actuating the "P" solenoid (see Fig. 2). Similarly a bank of relays can be wired to keys "2" and "5" which are depressed to code the letter for zone "25" (in Washington all Government mail). Thus if the operator in Washington pressed key "2" followed by key "5," the letter will be sent directly to that stack without further attention. Relay "2" is a "slow break" relay; thus its contacts stay closed long enough to permit relay "5" to operate if the two are keyed in rapid sequence. The particular arrangement of such a function table depends on the distribution of mail in a particular city and many other factors. The examples merely show several of many possible ways of attaching electrical devices to the keyboard which will not only print a code on the back of an envelope but also control an initial sort without an increase in the time of operation.

The advisability of this pre-sort can be understood when one remembers that about half of the mail originating in a typical large city is designated for points outside of the city and it is imperative that this mail be handled and sorted as quickly as possible. If no pre-sort were used at the coding station, all of the letters would have to be passed into the automatic sorting machines thus cutting the effective speed of the machine for outgoing mail in half. Since there is a good deal of time available later at night for sorting the bulk of the local mail, the pre-sort of the mail at the coding station enables the subsequent sorting machinery to operate exclusively on the outgoing mail first, thus greatly expediting the functioning of the post office.

The separation of airmail, registered, and other unique mail is also advantageous because these have to be handled in a special manner. The main feature of the invention is that not only is the operator able to act on a letter so as to convert the address into a form more suitable for machine handling, but his intelligence is also used for performing part of the sorting function.

Although the invention has been described in connection with a mail handling apparatus, it will be apparent that the apparatus can also be adapted to many other articles and uses, such, for example, as the handling of checks in clearing house operations, and the distribution and addressing of any articles which require

addressing, distribution and sorting.

It will be apparent that the embodiments shown are only exemplary and that various modifications can be made in construction and arrangement within the scope of my invention as defined in the appended claims.

I claim:

1. A mail coding and sorting machine comprising an individual letter pickup device, means for feeding a stack of mail to said pickup device for picking up one letter at a time, a code printing device supplied with individual letters by said pickup device for printing a destination code on each such letter, an operator-controlled keyboard device for controlling the printing device to print the destination code on each letter, a plurality of sorting channels each having a letter-receiving input located adjacent the code printing device for receiving said individual letters after printing, and channel selector means controlled by said keyboard means for directing each letter into a selected one of said channel inputs after it has been printed.

2. The invention according to claim 1, said channel selector means comprising a gravity slide chute movable into a plurality of positions to direct a letter from the printing device toward any selected one of said channels, a selector means for moving said chute into respective ones of said positions, and operating means for said selector means controlled by said keyboard device.

3. The invention according to claim 2, said slide chute being fixedly mounted on a rotatable shaft for rotational movement into any one of said positions, said selector means comprising a plurality of individual motor means controlled by said keyboard device for respectively moving said shaft into said positions.

4. The invention according to claim 1, said channel selector means comprising electrical circuit means controlled by the printing keys of the keyboard device according to a combinational characteristic of the destination code printed to select a particular channel.

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