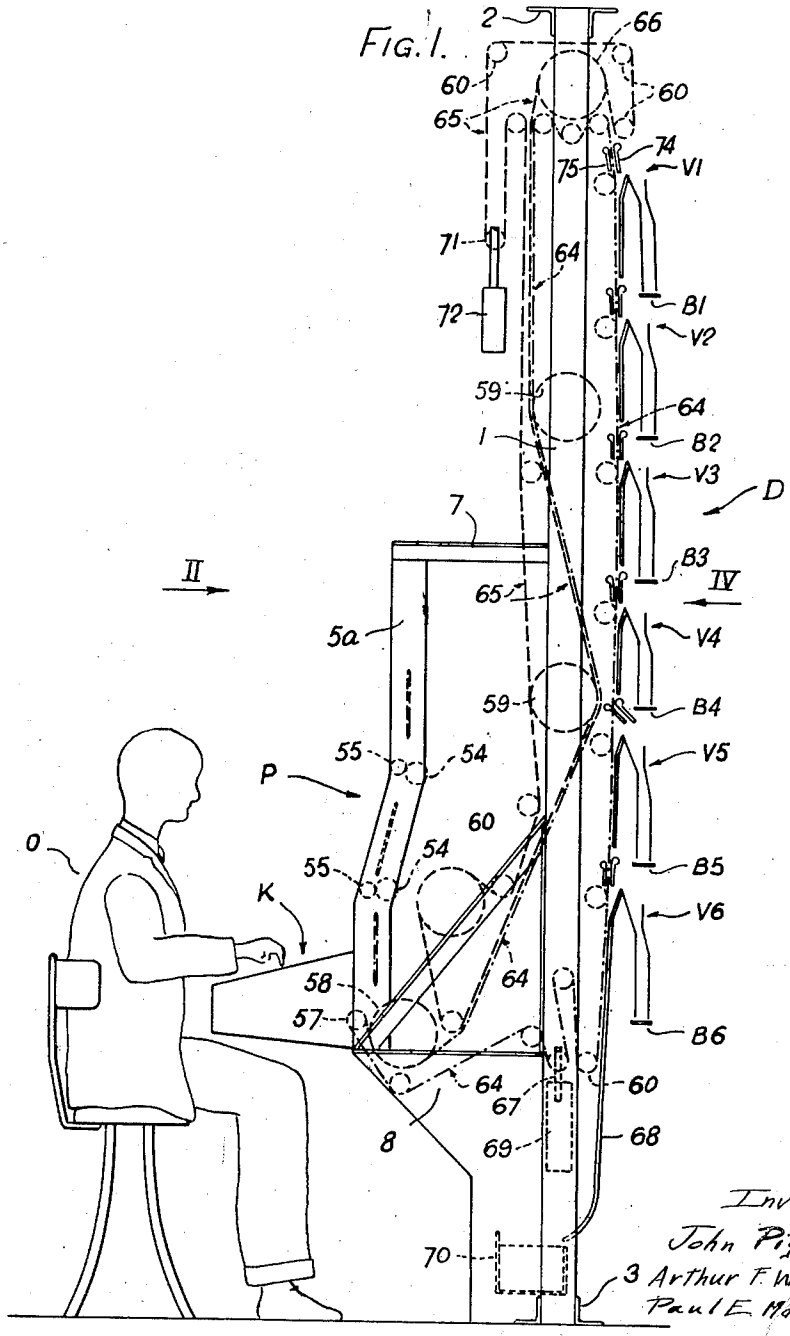
May 4, 1954 J. PIGGOTT ET AL 2,677,473

POSTAL SORTING APPARATUS

Filed Aug. 9, 1951

9 Sheets-Sheet 1

FIG. 1.



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FIG. 2

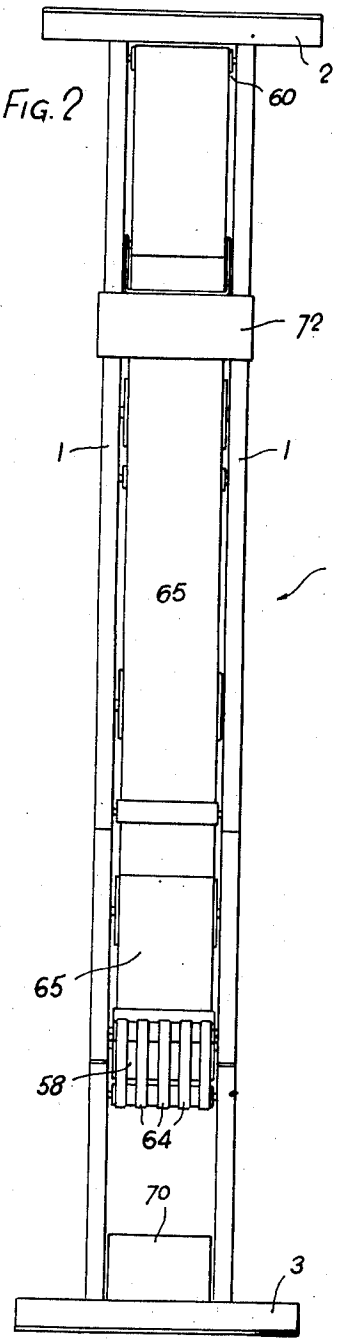
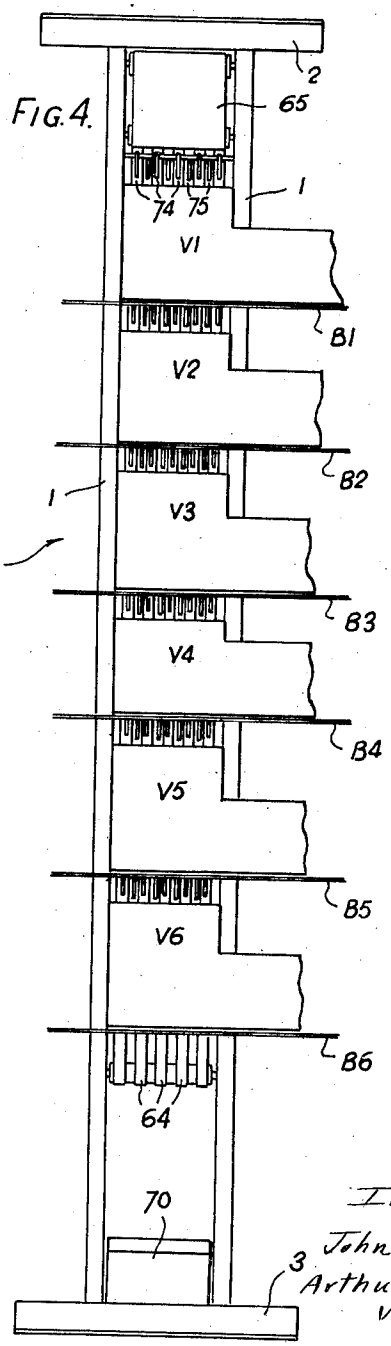


FIG. 4.



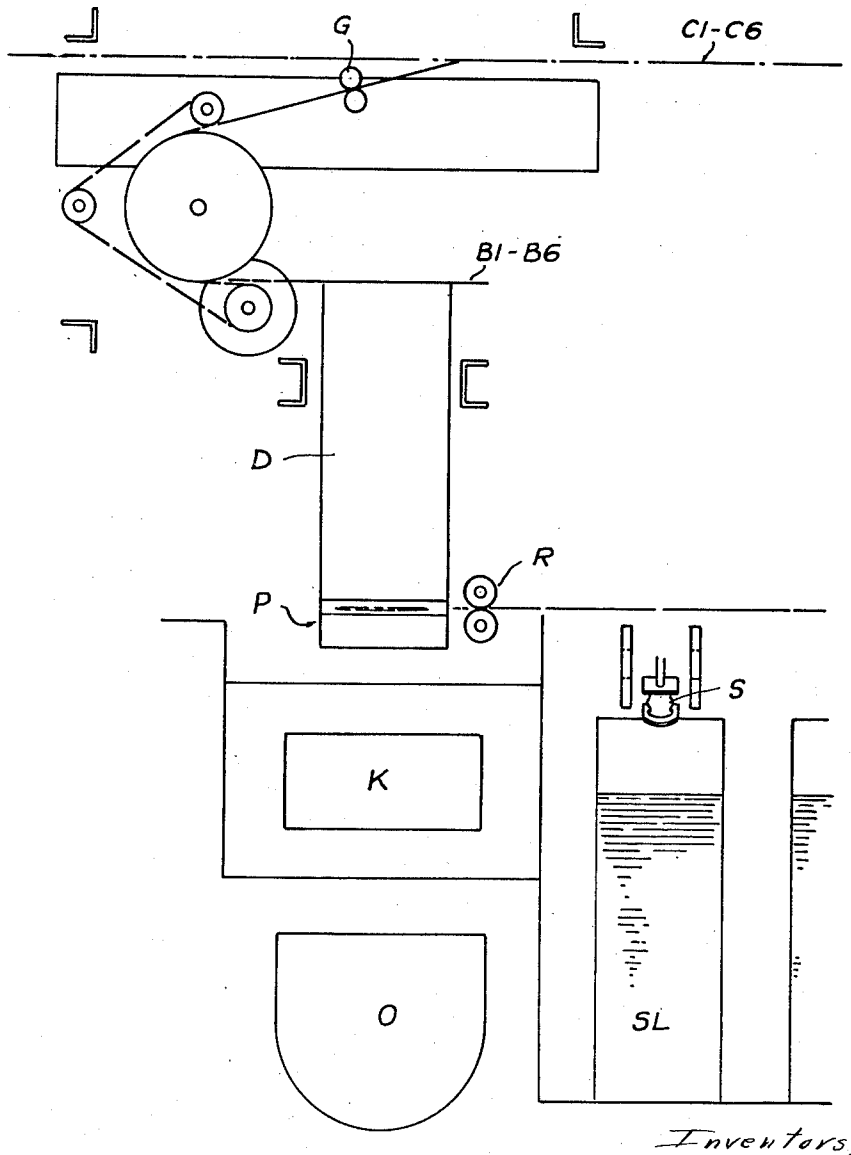
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POSTAL SORTING APPARATUS

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FIG. 3.



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POSTAL SORTING APPARATUS

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FIG. 5.

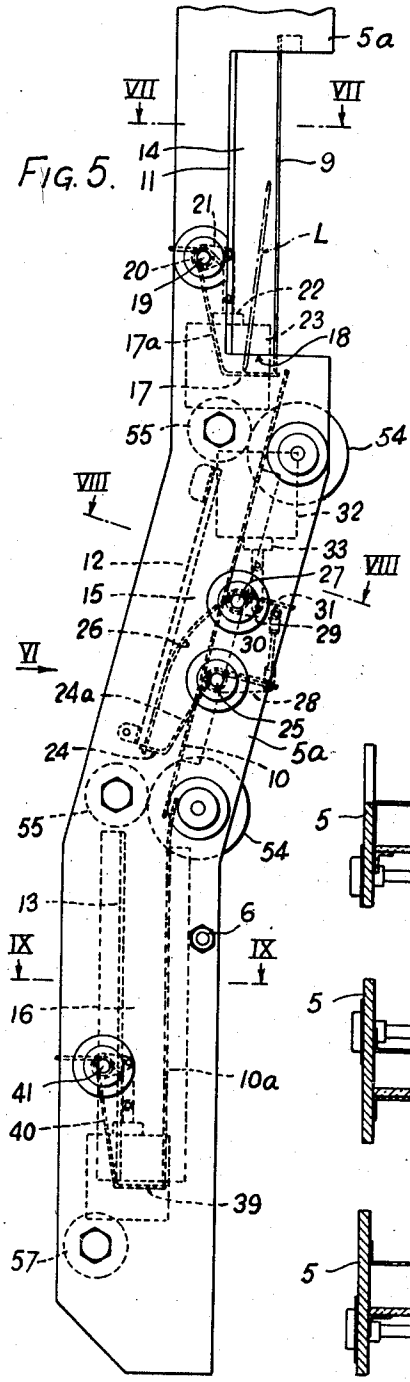


FIG. 7.

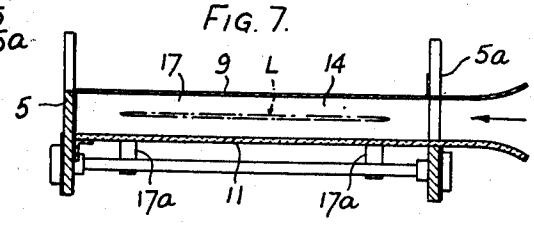


FIG. 8.

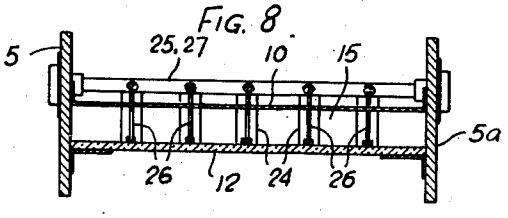
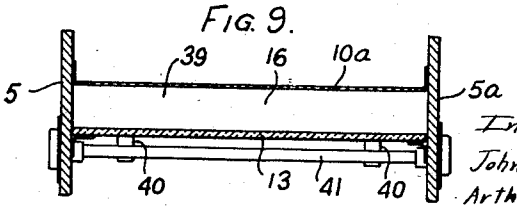


FIG. 9.



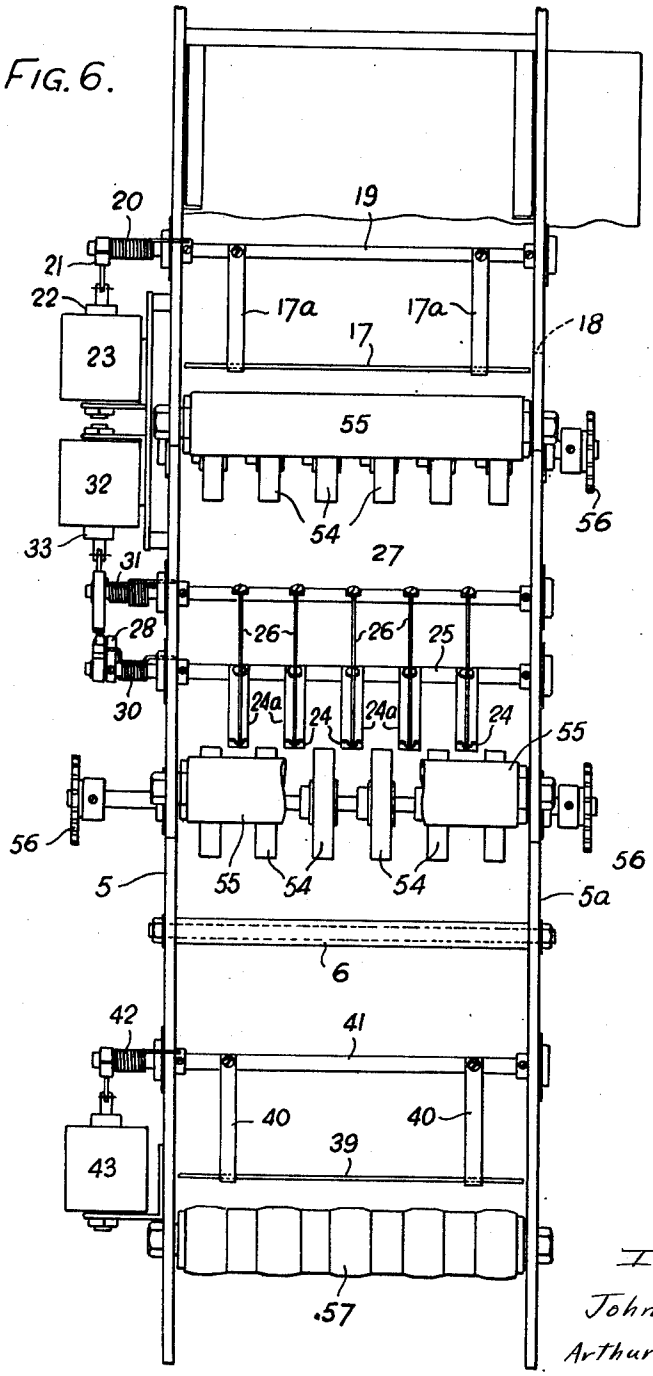
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POSTAL SORTING APPARATUS

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FIG. 6.



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POSTAL SORTING APPARATUS

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FIG. 10.

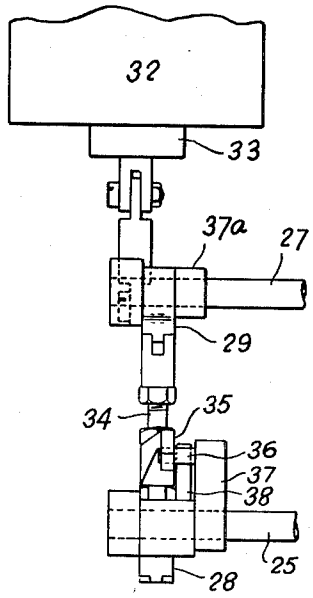


FIG. 11.

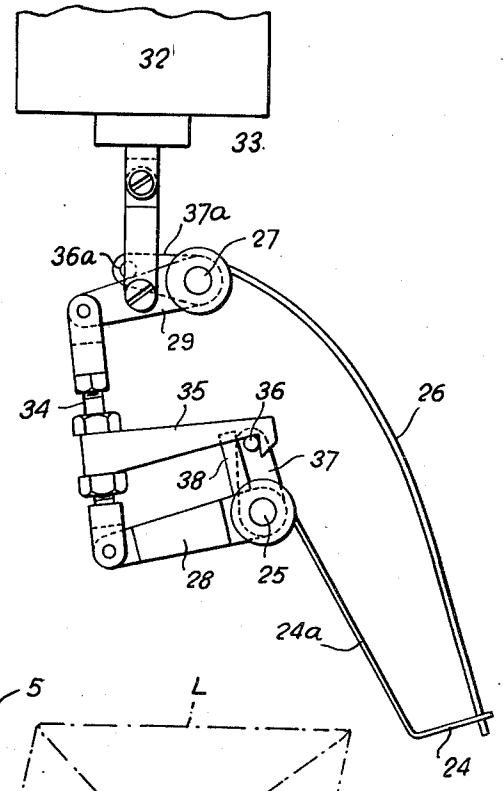


FIG. 15

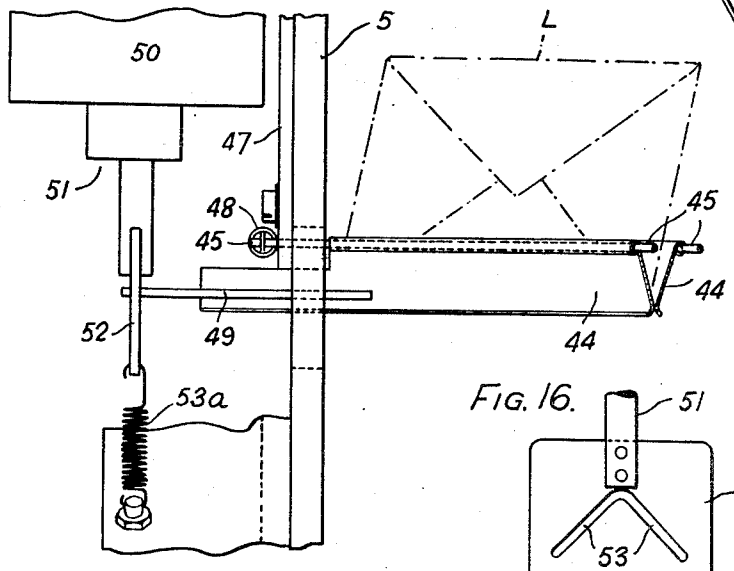


FIG. 16.

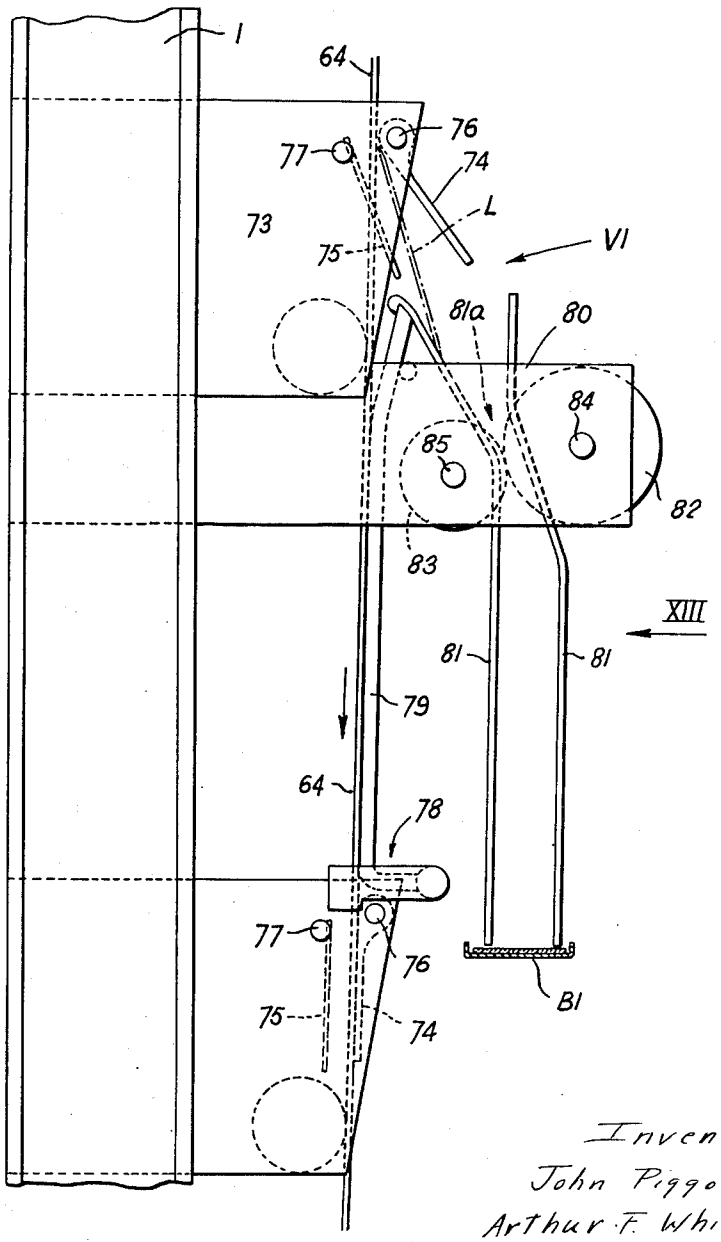
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POSTAL SORTING APPARATUS

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FIG. 12.



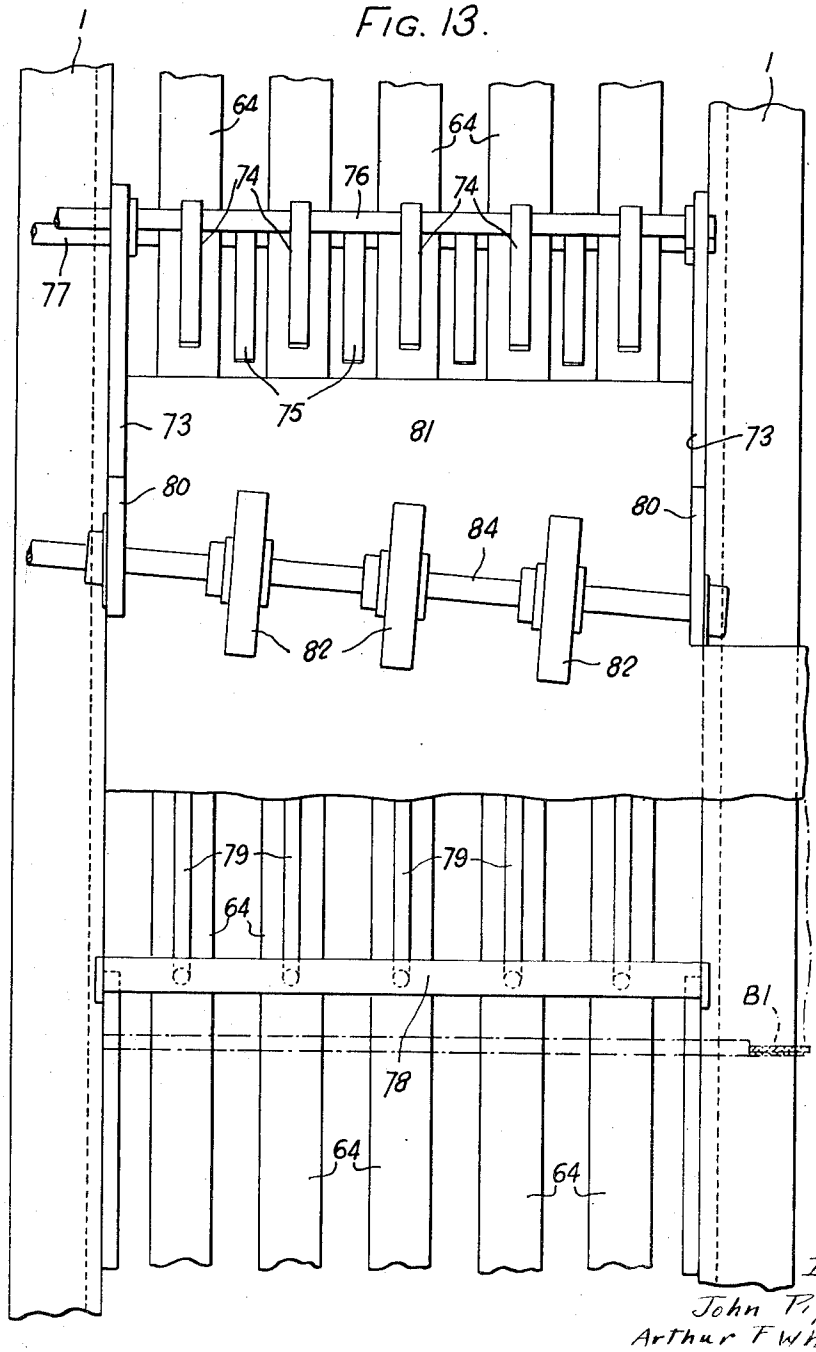
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POSTAL SORTING APPARATUS

Filed Aug. 9, 1951 9 Sheets-Sheet 8

FIG. 13.



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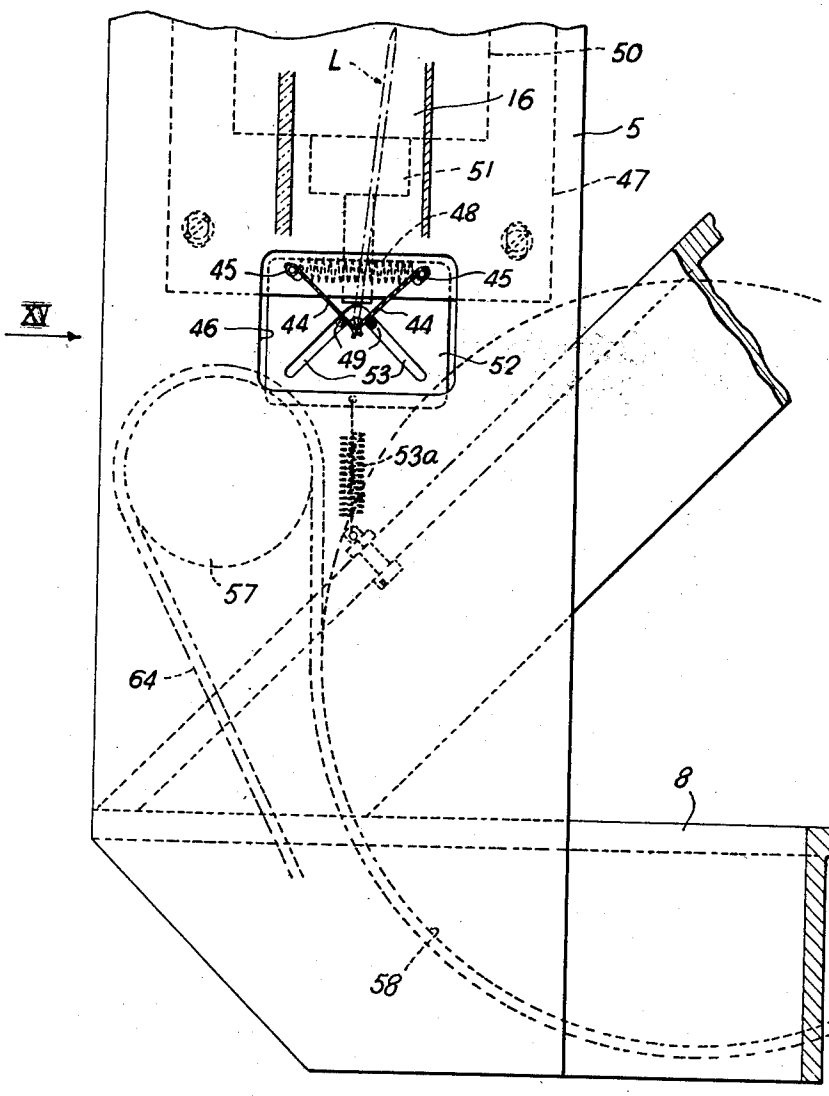
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POSTAL SORTING APPARATUS

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FIG. 14.



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Patented May 4, 1954

2,677,473

UNITED STATES PATENT OFFICE

2,677,473

POSTAL SORTING APPARATUS

John Piggott, Northwood, Arthur Frederick Whillock, Chesham, and Paul Ernest Marriott, Kenley, England, assignors to Hall Telephone Accessories Limited, London, England

Application August 9, 1951, Serial No. 241,132

30 Claims. (Cl. 214—11)

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This invention relates to postal sorting apparatus and has for its object to facilitate rapid and reliable distribution of letters, postcards and packets for example, from a stack or stacks to sorting equipment.

The specification of British patent No. 632,403 describes apparatus for sorting letters in which the letters are passed individually and in succession from a stack to a feeding position and then to a viewing position in which each letter is viewed by the operator of the apparatus who then depresses a key or keys coded in accordance with the destination of the letter. Key actuation is accompanied by release of the letter from the viewing position to a waiting position from which it is subsequently passed to a belt conveyor and later ejected into a container corresponding with its destination. The ejection of the letter may be effected by means actuated in response to electrical frequencies e. g. audio frequencies of distinctive tone recorded on a tape which moves in synchronism with the belt conveyor the tone being recorded at the instant of placing the letter on the belt conveyor.

In order that large quantities of letters may be dealt with by a single equipment, several operators' positions may be provided and the capacity of the equipment to deal with a large number of destinations may be increased by providing additional belt conveyors disposed vertically one above another. Such additional belt conveyors may be provided with synchronously driven individual tape records, destination containers and devices for ejecting the letters into the containers. It will be appreciated that considerable practical problems are involved in the design of suitable apparatus for transporting light articles such as letters from point to point in equipment of the kind referred to. It is essential for reliability in operation that the feeding of the letters through the successive stages from separation from a stack to the placing of the letters on one or another of the belt conveyors shall be under accurate control and all movements shall be positively timed within fairly close limits. The present invention seeks to meet these requirements.

According to the present invention, apparatus for distributing articles such as postal letters, postcards or packets in accordance with their destinations or other characteristics comprises traps or the equivalent, spaced one above another and each provided with releasable means for retaining a letter passed into the trap until the releasable means are actuated, the traps being

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so disposed in relation to each other that a letter released from one trap will drop into the trap below it and be retained therein until actuation of the release means associated with that trap.

The apparatus in a particular form may comprise key operated manually controlled electromagnetic devices for actuating the release means, the manually operated keys serving to control the circuits of the electromagnetic devices and code storage means which determine the instant of subsequent discharge of the letters from the apparatus onto a belt conveyor.

Apparatus according to the invention may also comprise means for conveying the letters after release from the final trap to one or another of a plurality of horizontal conveyors disposed vertically one above another, each of the said conveyors having associated therewith a container or plurality of containers identified with letter destinations.

In order that the invention may be clearly understood and readily carried into effect, one practical form of apparatus constructed in accordance therewith will hereinafter be described by way of example and with reference to the accompanying drawings in which:

Fig. 1 is a side elevational view of apparatus constituting an operator's position of a letter sorting machine arranged and adapted to operate in the manner above set forth;

Fig. 2 is a front elevational view of the apparatus looking in the direction of the arrow II (Fig. 1) and indicating diagrammatically a form of pneumatic separator means for feeding letters one by one to the apparatus;

Fig. 3 is a diagrammatic plan view of the apparatus and associated means for feeding letters to and conveying letters from the apparatus;

Fig. 4 is a rear elevational view looking in the direction of the arrow IV (Fig. 1);

Fig. 5 is a side elevation, drawn to a larger scale, of the letter presentation unit of the apparatus;

Fig. 6 is a part broken away front elevation thereof looking in the direction of the arrow VI (Fig. 5);

Figs. 7–9 are cross sectional views taken on lines VII—VII, VIII—VIII and IX—IX respectively of Fig. 5;

Figs. 10 and 11 are detail views, drawn to a larger scale, of the operating and locking means associated with the releasable floors of letter traps embodied in the apparatus;

Fig. 12 is a fragmentary view of part of the letter distributing unit of the apparatus drawn

to a larger scale and showing the letter diverting and guiding means in detail;

Fig. 13 is a fragmentary partly broken away view looking in the direction of the arrow XIII (Fig. 12);

Fig. 14 is a fragmentary detail view drawn to a larger scale to show an alternative form of electro-magnetically operated floor or gate for the traps of the letter presentation unit of the apparatus;

Fig. 15 is an elevational view of the construction shown in Figure 4 looking in the direction of the arrow XV (Fig. 14);

Fig. 16 is a detail view of the means for coupling the floor or gate flaps to the electromagnetic operating means shown in Figs. 14 and 15.

Referring more particularly to Figs. 1–3 of the drawings, it will be seen that the apparatus comprises a letter presentation unit P, letter distributing unit D and operating keyboard K conveniently disposed for manipulation by a seated operator O, and has associated therewith a loading track conveyor B1 for passing letters from the distributor unit D to a main conveyor C1; letter gun track conveyors B2—B6 for passing letters from the distributor unit D to main conveyors C2—C6 through the medium of letter guns G; and a pneumatic separator S for separating letters from a stack of letters SL and feeding the letters one by one to the letter presentation unit P.

The distributor unit D is built into a metallic framework comprising two vertical channel members 1 of appropriate section joined by upper and lower L-section horizontal members 2, 3 respectively, the outwardly projecting horizontal flanges of the lower members 3 forming feet upon which the framework is supported at ground or floor level.

The letter presentation unit P is built between a pair of elongated side plates 5, 5a rigidly connected together and held in appropriately spaced relation by tubular spacer members and co-operating screwthreaded means 6. The upper and lower ends of the side plates 5, 5a are connected to the outer ends of angle section rails 7, 8 secured to and projecting forwards from the vertical frame members 1 and thus form part of a rigid structural framework which may conveniently be in the order of ten feet high and have the upright members thereof spaced at about twelve inches apart.

As shown in detail Figs. 5–9, the lower vertical end parts of the side plates 5, 5a of the letter-presentation unit D are forwardly offset from the upper vertical end parts thereof and the two vertical parts of each plate joined by an inclined intermediate part. Rear wall members 9, 10 and 10a and front panel members 11, 12 and 13 extend between and are fixed to the side plates 5, 5a so as to form therewith a chute of rectangular cross section throughout its length and divided by deflectible floors or gates as hereinafter described into three letter traps 14, 15, 16 disposed one above the other in uppermost, middle and lowermost positions hereinafter referred to as the feeding, viewing and waiting positions respectively. As shown, the width of the viewing position trap 15 is less than that of the other traps. The rear wall members 9, 10 and 10a comprise sheets of any suitable material, e. g. mild steel sheet, having the inner surface thereof smooth faced. The middle front panel member 12 will be made of plate glass or other transparent sheet material suitable for use as a viewing window, while the uppermost and lowermost front panel members may be made of a suitable opaque or translucent sheet material or may be made of transparent sheet material e. g. glass or a transparent solid plastic for reasons hereinafter described.

All of the front panel members may be fixed in position between the side plates 5, 5a in a readily removable manner, and the member 12 forming the viewing window may be secured to the plates by hinged brackets so as to hinge about its lower horizontal edge.

The arrangement of the chute and letter traps is such that the feeding position trap 14 is substantially vertical, the viewing position trap 15 and viewing window thereof forwardly and downwardly inclined, and the waiting position trap 16 substantially vertical; the viewing position 15 being disposed at approximately the level of the head of the operator O when the operator is seated at the keyboard K which is supported from the framework of the apparatus for convenient manipulation by the seated operator.

As shown in Fig. 7, the feeding position trap 14 is open at one side and the corresponding side edges of the front panel 11 and rear wall 9 thereof outwardly curved or flared to form a mouth and passage for letters L fed to the trap, one by one from the stack SL and arranged so that the address side of each letter is correctly oriented and faces the operator. The specification of co-pending U. S. application Ser. No. 241,131 describes an appropriate form of letter separating and feeding device for the purpose, and the pneumatic separator S, stack SL and snatch rollers R arranged for passing the letters into the trap, as shown diagrammatically in Fig. 3, form part of such a device.

A letter L so received by the trap 14 from the separator device will drop edgewise on to a horizontal deflectible floor 17 which extends across the chute below the level of the bottom edge 18 of the mouth of the trap and serves releasably to hold the letter in the feeding position. The raised bottom edge 18 of the trap mouth forms a stop or step which engages the rear end edge of any letter which may attempt to bounce back out of the trap into which it is projected by the fast moving snatch rollers R.

The trap floor 17 comprises a horizontal plate held at the lower ends of inclined arms 17a fixed to a transverse rod 19 which is pivotally mounted in bearings provided in the side plates 5, 5a and disposed in front of the trap 14. One end of the pivotal rod 19 extends outwards from the supporting side plate 5 to receive a twist spring 20 which is anchored at one end thereof to the side plate and has its further end engaged with a short crank arm 21 keyed to the pivotal rod 19. The twist spring 20 thus acts normally to hold the floor 17 in the trap-closing position as shown in Figs. 6 and 7. The armature 22 of a solenoid 23, which is mounted on the side plate 5 beneath the projecting end of the rod 19 and twist spring 20, is coupled to the spring-loaded crank arm 21 so that on energisation of the solenoid the armature thereof is drawn downwards to rock the rod in clockwise direction (as viewed in Fig. 5) and thus move the trap floor 17 forwardly and downwardly from the bottom of the trap and into the space between the front panel members 11 and 12 to permit the letter L resting thereon to drop into the viewing position trap 15.

A letter dropped into the viewing position from the feeding position will rest edgewise upon the deflectible floor of the trap 15 consisting of

a row of light metal bars 24 supported from arms 24a, the bars and arms being formed as integral parts of bent metal strips fixed to a transverse rod 25 which is pivotally mounted in bearings provided in the side plates 5, 5a and disposed behind the trap 15, the bars 24 and arms 24a passing through clearance slots provided in the rear wall 10.

In order to prevent the dropped letter from bouncing from the floor of the trap 15 and also to maintain the addressed face of the letter as close as possible to the inner face of the viewing window, curved light wire fingers 26 are arranged to engage the rear faces of the falling letters so as to guide and hold each letter against the viewing window. The curved fingers 26 are mounted upon another transverse rod 27 which is pivotally mounted in the side plates 5, 5a behind the trap 15 and the lower ends of the wire fingers lie in clearance recesses formed in the free ends of the floor bars and pass therewith through the clearance slots in the rear wall 10.

The ends of the rods 25 and 27 project outwards from the side plate 5 to receive operating crank arms 28, 29 and twist springs 30, 31 which re-act between the crank arms and side plates yieldingly to hold the floor forming bars 24 and wire fingers 26 in the letter-holding position shown in Figs. 5 and 6.

The rods 25 and 27 are linked together for concerted movement by means hereinafter described and are operated by a solenoid 32 mounted upon the side plate 5 immediately above the projecting ends of the rods 25, 27 and having its armature 33 coupled to the crank arm 29, so that upon energisation of the solenoid 32 the pivotal bars 25, 27 are rocked in anticlockwise direction (as viewed in Fig. 5) and the floor bars 24 and spring wire fingers 26 withdrawn downwardly and rearwardly from operative position to permit the letter to drop from the viewing position trap 15 to the waiting position trap 16.

The energisation of the solenoid 32 also serves to release a positive locking check applied to the spring-loaded lightweight floor bars to prevent displacement thereof against the yielding force of their holding springs by impact of a heavy letter on the floor bars. To this end, as shown in detail in Figs. 10 and 11, an adjustable link 34 serves to couple the operating crank arm 29, which is rotatable upon the pivotal rod 27, to a crank arm 28 which is freely rotatable upon the pivotal rod 25. The link 34 also carries adjustably fixed thereon a catch member 35 with a hooked end which is adapted to engage and hold a locking pin 36 projecting at right angles thereto from a short arm 37 fixed to the rod 25. The hub of the freely rotatable crank arm 28 carries a pin 38 which projects therefrom and extends across the pin 36 so as drivingly to engage therewith in one direction of rotation of the crank arm.

The above described locking check and driving arrangement is such that when the solenoid 32 is de-energised the holding springs 30, 31 draw the parts into the positions shown in Figs. 10 and 11 so that the catch member 35 engages the locking pin 36 and positively locks the rod 25 against rotation in one direction (clockwise as viewed in Fig. 11), thus preventing the floor bars 24 from being moved from the bottom of the trap 15, and in this position of the parts a clearance is left between the pins 36, 38. If the solenoid 32 is now energised, the first part of the movement of the armature 33 draws up the link 34 and crank arm 28 in a lost motion movement relative to the rod 25 and crank arm 37 and thus releases the catch 35 from locking pin 36 before the latter is drivingly engaged by pin 38 which is moving with the crank arm 28. The rod 25 is then rocked by the continued upward movement of the armature 33 and link 34 to effect the desired displacement of the floor bars 24. The operating crank arm 29 which is pivotally mounted upon the rod 27 is loosely coupled thereto by a coupling pin 36a rigidly fixed to and extending at right angles from an arm 37a which is keyed to the rod 27. The pin 36a projects across the upper edge of the crank arm 29 and thus is engaged by the rising crank arm and lifted to rotate the rod 27 and displace the wire fingers 26 from their operative position when the solenoid 32 is energised. In this case, the loose coupling is devised to prevent back drive through the wire fingers 26 which would tend to unlock the catch member 35 from the pin 36.

The loading spring 30 which returns the floor bars to the normal trap-closing position when the solenoid 32 is de-energised is made sufficiently strong and appropriately energised to assist the return or idle movement of the armature and ensure positive re-engagement of the catch member 35 with the locking pin 36. The light wire fingers 26 are returned to the operative position shown in the drawings partly by the action of the loading spring 30 and partly by the action of the lighter and less highly tensioned loading spring 31 which acts yieldingly to maintain the wire fingers against the viewing window 12 or against the letters interposed between the window and fingers so that both light and heavy letters are smoothly brought to rest without undue strain upon the operating linkage connected to the fingers.

The waiting position trap 16 is provided with a removable floor plate 39 suspended by arms 40 from a pivotal rod 41 which is loaded by a twist spring 42 and rocked by the armature of a solenoid 43, the arrangement and operation thereof being similar to that above described with reference to the floor plate 17 of the feeding trap 14.

Any or all of the movable trap-closing floors described above may be replaced by the alternative V-flap floor arrangement shown in Figs. 14, 15 and 16. In this alternative form, the trap floor comprises a pair of flaps 44 hinged along their outer longitudinal edges and inwardly and downwardly inclined in the transverse sense so that, when the flaps are in the normal or floor closing position shown in the drawings, the inner longitudinal edges thereof meet to form a closed V-shaped channel in which the letters L rest with the bottom longitudinal edges thereof at the lowermost point of the V, as shown in Fig. 15.

In the drawings, the V-channel floor is shown, by way of example, applied to the waiting position trap 16, with the flaps 44 extending longitudinally between the side walls 5 and 5a of the trap and, in the transverse sense, extending between the rear wall 10 and front panel 13.

The upper longitudinal edges of the flaps 44 are provided with outwardly projecting hinge pins 45 which, at one end of the trough pivotally engage in bearing slots formed in the side plate 5a (not shown), and at the other end thereof pass through a clearance opening 46 formed in the side plate 5 and pivotally engage in bearing slots formed in the back plate of a bearing bracket 47 which is adjustably secured to the

outer lateral face of the side plate 5. The ends of the hinge pins 45 extend outwards from the bearing bracket 47 and engage therebetween a helical compression spring 48 which acts as a loading spring yieldingly to maintain the hinged flaps in the meeting or floor closing position.

The lower parts of the flaps 44 are extended so as to pass through the clearance opening 46 and project outwards from the side wall 5 beneath the bracket 47, and each flap extension has fixed to the outer face thereof a coupling pin 49 extending parallel to the base edge of the V-channel and projecting outwards beyond the end extensions of the flaps.

The bearing bracket 47 mounts a solenoid 50 set above the outwardly projecting ends of the floor flaps so that its armature 51 extends downwardly therefrom and substantially at right angles to the coupling pins 49. A cam-slotted plate 52 provided with an inverted V-shaped cam groove 53 is rigidly secured in the slotted lower end of the solenoid 50 so that the plate 52 is rigidly maintained and moved in a plane at right angles to the longitudinal axes of the floor flaps and coupling pins and disposed so that the opposite coupling pins enter and freely slide in the outwardly diverging limbs of the cam groove 53. The lower end of the cam plate 52 is connected to a helical tension spring 53a which assists the return or idle stroke of the armature when the solenoid is de-energised and also assists the return of the flaps 44 to the floor closing position. If so desired, the solenoid, flap-actuating coupling means and loading springs last described may be duplicated for application to both ends of the floor flaps 44.

The last described arrangement is such that when the solenoid 50 is energised, the armature 51 draws the cam plate 52 upwards so as outwardly to displace the coupling pins 49 and rock the flaps 44 outwards about their upper hinged edges as the coupling pins track along the outwardly diverging limbs of the cam groove 53, thus parting the flaps so that any letter L resting in the V-channel floor formed thereby is permitted freely to fall therethrough and gravitate to the next trap or to further letter-handling means.

The feeding and viewing position traps 14, 15 are spaced apart by a minimum practicable distance in order that the transit time of a letter from one position to the other shall be as short as possible. The letters may be transferred solely by gravity from one trap to another, but in the apparatus shown in the drawings, driven snatch rollers 54 extending through clearance openings in the rear wall members 9, 10 and co-operating inversely rotating follower snatch rollers 55 disposed in the gaps between the front panels 11, 12 and 13 are located beneath the floors of the traps 14 and 15 to receive each letter as it drops from the trap and positively drive the letter downwards towards the floor of the next trap. The ends of the spindles carrying the driven snatch rollers 54 carry chain sprocket wheels 56 for engagement by power actuated driving chains (not shown). The snatch rollers may be made of rubber or have rubber faced peripheral surfaces.

The waiting position trap 16 may be provided with means, e. g. suitably positioned rotating rollers (not shown), for dressing the letter so that one end or the other of each letter is aligned in respect of a fixed abutment, in order to facilitate subsequent control of letters of various lengths.

An elongated crowned guide roller 57 extends between and is mounted freely to rotate in the lower ends of the side plates 5, 5a immediately beneath the floor of the waiting position trap 16. The roller 57, in association with a belt conveyor roller 58 journalled in bearings in the base of the framework of the letter distributor unit D, provides a receiving mouth of a flexible belt conveyor system which receives the letters released from the trap 16 and passes each letter in turn to the distributor unit D now to be more fully described.

As shown in Figs. 1, 2 and 4, the belt conveyor system of the letter distributor unit comprises a plurality of flexible endless conveyor tapes 64 disposed in laterally spaced parallel relation and arranged for face-to-face engagement with an endless conveyor band 65 equal in width to the width of the conveyor tape assembly. The conveyor tapes 64 are passed around the receiving mouth rollers 57, 58 and, together with the conveyor band 65, are passed around a series of conveyor rollers 59 and rotating guide rods or rollers 60 all mounted in the framework of the apparatus to rotate about horizontal axes, so that the conveyor tapes and band travel upwards in the front of the apparatus in letter-clamping relation from the bottom conveyor roller 58 to the top of the apparatus, whereupon the conveyor tapes 64 pass around a direction reversing roller 66 and then travel downwards and past and between the cheek plates of a series of six letter diverter devices V1—V6 hereinafter more fully described. The lower looped ends of the endless conveyor tapes 64 pass around further rotatable guide rods 68 and a rotatable tensioning rod 67 acted upon by a weight 69 and are enclosed in the upper part of a chute 68 leading downwards to a collecting box 70 for cancelled items which is mounted upon the framework base member 3.

The upper looped end of the endless conveyor band 65 is diverted from the tapes 64 to pass around a rotatable band-tensioning rod 71 acted upon by a vertically guided weight 72 and then passes back to a point adjacent the receiving mouth of the conveyor means again to co-operate with the conveyor tapes 64.

As shown in detail in Figs. 12 and 13, each letter diverter device V1—V6 comprises a pair of vertical cheek plates 73 secured to and projecting rearwards from the vertical frame members 1 in mutually spaced relation to receive therebetween the vertical stretches of the conveyor tapes 64 and a co-operating pair of pivotally mounted letter diverting and guiding members.

The letter guiding member of each diverter device comprises a plurality of fingers 74 having smooth inner faces and secured at their upper ends to a horizontal rod 76 rotatably mounted at its ends in the outer top corners of the cheek plates 73 and closely adjacent the line of travel of the downwardly moving conveyor tapes 64 so that in the normal position, as shown in the lower part of Fig. 12, the fingers 74 extend vertically downwards with the smooth inner faces thereof in parallel relation and contacting or in close proximity to the outer faces of the yielding flexible conveyor tapes, thus to co-operate therewith in guiding and conveying letters downwardly past the diverter devices. A suitably elongated plate with a smooth inner face may be used in place of the fingers 74.

The letter diverting member of each diverter device comprises a plurality of fingers 75 having smooth outer faces and secured at their upper ends to a horizontal rod 77 rotatably mounted at

its ends in the cheek plates 73 in parallel forwardly offset relation to the pivotal axis of the retaining member 74 so that in the normal or rest position of the diverting member (as shown in the lower part of Fig. 12) the fingers 75 extend vertically downwards in forwardly spaced relation to the tapes 64. The fingers 75 are registered with the spaces between the conveyor tapes 64 and are narrower than the said spaces so as freely to pass therebetween when the rod 77 is rocked in anti-clockwise direction as shown at the top of Fig. 12.

The horizontal rotatable rods of the retaining member 74 and diverting member 75 are rocked by solenoid means (not shown) and may be coupled together for concerted actuation by a single solenoid or co-operating solenoids. Furthermore, the solenoid means may be coupled to the diverting and retaining means through linkages incorporating holding and locking devices to prevent uncontrolled restoration of the diverter member to the rest position by impact of a heavy letter therewith. Holding and locking means of the kind described above with reference to Figs. 10 and 11 may be adapted to serve the purpose. Alternatively a toggle linkage locking arrangement of any suitable form may be used.

The gaps between the vertically spaced cheek plates 73 are fenced in by frames 78 with smooth vertical bars 79 the frames being removably secured to the check plates so that the bars 79 lie in close proximity or contact with the outer faces of the conveyor tapes 64 and guide and retain the letters in the prescribed vertically downward path of movement from one diverter device to the next. The tops of the frames 78 and upper ends of the bars 79 are rearwardly offset to lie immediately beneath the outermost position reached by the lower ends of the fully operated deflecting fingers 75, as shown at the top of Fig. 12.

Brackets 80 secured to the vertical frame members 1 and projecting rearwards from beneath each pair of cheek plates 73 are spaced apart to support therebetween a pair of vertical fence plates 81 spaced apart to form a vertical guideway or chute and having the upper parts thereof suitably shaped to provide a flared mouth disposed immediately beneath the letter discharging space between the deflected letter diverting and retaining members and leading through a restricted throat 81a to the chute proper, as shown at the top of Fig. 12.

Co-operating pairs of resiliently faced power driven rollers, e. g., three pairs of rubber rollers 82, 83 as shown, are rotatably mounted upon spindles 84, 85 extending between and journalled in the bearing brackets 80, the said spindles being disposed to either side of the guideway or chute formed by the members 81 so that the rollers pass through clearance openings or slots in the fence members to meet in letter gripping engagement in the throat 81a of the chute.

As shown in the drawings, the longitudinal axes of the spindles 84, 85 are inclined to the horizontal and the line joining the centres of each co-operating pair of rollers is also slightly inclined to the horizontal. The rollers are driven at a peripheral speed which is such that the letter engaged therebetween is deflected sideways in passing down the chute or guideway formed by the fence members 81 and in thus being deflected sideways loses forward speed before reaching further conveyor means, e. g., a belt conveyor or another system of conveyor tapes which passes the letter to a distributing conveyor or letter gun. This reduction in forward speed greatly reduces the liability of the letter to bounce when it reaches the aforesaid further conveyor means, and the timing of the various sizes of letters is more under control.

The diverter devices V1—V6 are electrically controlled in response to key actuation by the operator at the keyboard K and the solenoid devices for operating the above described letter traps of the letter presentation unit are likewise controlled by key actuation from the keyboard K.

Conveyor loading or letter gun track conveyors B1—B6 are located beneath the delivery ends of the chutes or guideways of the diverter devices V1—V6 to initiate the loading of the letters received from the distributor unit D on to the main conveyors C1—C6 which are placed one above the other behind the distribution unit and at different levels corresponding to the levels of the conveyors B1—B6 and serve to convey the letters to appropriate destination containers.

In most mail sorting offices there is one particular selection of the many into which the letter mail is sorted which attracts a very great percentage of the mail. This selection is often that for delivery of mail to the district surrounding the sorting office. It is, therefore, in such cases advisable to arrange for all items addressed to this particular destination to be separately collected together from all the sorters working on a sorting machine, especially of the type described in British Patent No. 632,403, since this mass collection of a large bulk of the mail removes a substantial demand for space on the conveying means to the remainder of the destination containers. The application of this method of sorting to the present invention is effected by the provision of the conveyor C1 running along the top of the main sorting machine and passing horizontally at the rear of the distributor units so that letters diverted by the top diverting device V1 are loaded on to this conveyor and carried to the end of the machine where they are deposited in a "local" destination container or stacking box (not shown). Since only one destination container or stacking box is fed by this conveyor the need for a control system for it such as described in British Patent No. 632,403 for the other horizontal conveyors C2—C6, disappears and all the sorters have access to this conveyor all the time. This conveyor may be called the "local" conveyor.

In the operation of the above described apparatus, assuming that the pneumatic letter separating device S is operating and the conveyor belt means of the distributor unit D are being continuously driven in the direction of the arrows shown in Fig. 1, the letters L will be transferred one by one from the stack SL to the snatch rollers R and passed thereby into the open side of the trap 14 to fall edgewise into the feeding position. Upon key controlled momentary energisation of the solenoid 23, the floor 17 of trap 14 will open to permit the letter to fall therethrough and become engaged between the upper snatch roller pair 54, 55. The letter will then be driven downwards between the viewing window 12 and curved wire fingers 26 so as to rest edgewise upon the floor 24 of the trap 15 whilst held in the viewing position by the wire fingers. After viewing the letter, the operator will momentarily energise the solenoid 32 in actuating the "local" or coding keys according to the destination of the letter and thus open the trap floor 24 to permit the letter to fall therethrough and become engaged between the lower snatch roller pair 54, 55 which drives the letter

downwards so that it rests in the waiting position trap 16 with its bottom edge upon the trap floor 39.

Energisation of the solenoid 43 which occurs when the "local" or coding keys are actuated at the keyboard K will then serve to open the trap floor 39 thereby to permit the letter to fall therethrough into the receiving mouth of the continuous conveyor belt means. The letter will thereupon become clamped between the travelling conveyor tapes 64 and conveyor band 65 and carried thereby up to the top of the apparatus and then diverted to travel with the conveyor tapes 64 between the direction-reversing roller 66 and associated guide plates 66a. Thereafter, the letters will be moved downwards with the conveyor tapes whilst pressed between the flexible tapes and rigid letter guiding and retaining members 74 and guiding and retaining bars 78 which together form a substantially continuous and retaining wall extending from top to bottom of the apparatus whilst the members 74 are maintained in the vertical position. Thus, the letters engaged between the conveyor tapes and fixed and movable guiding and retaining members may be carried down towards the bottom of the apparatus until delivered into the chute 68 and discharged thereby into the cancelled items collecting box 70. In certain circumstances this may happen, as hereinafter described, but normally the solenoid means provided for operating one or the other of the diverter devices V1—V6 will be energised according to prior actuation of the "local" or coding keys of the keyboard, whereupon the corresponding guiding and retaining member 74 will swing outwards to provide a discharge gap in the continuous guiding and retaining wall, while the fingers of the cooperating deflecting member 75 will also swing outwards and pass between the conveyor tapes 64 (as shown at the top of Fig. 12), thereby forming a downwardly inclined discharge passage through which the downwardly travelling letter L is deflected so as to pass into the throat 81a of the discharge guideway and between the rollers 82, 83 which are arranged to drive the letter diagonally downward so that it lands upon the corresponding conveyor B1—B6 at a reduced speed.

If the diverter device V1 is operated, the deflected letter will be discharged onto the loading track conveyor B1 and passed therealong to the "local" conveyor C1 for conveyance to the common collecting box for all letters diverted to the "local" conveyor.

On the other hand, if any one of the other diverter devices V2—V6 is operated, the letter will be discharged on to the corresponding letter gun track conveyor B2—B6 and conveyed thereby to a letter gun device G (Fig. 3) which will operate under control as described in the prior British patent specification No. 632,403 to place the letter in an appropriate position upon the corresponding conveyor C2—C6 which will convey the letter to the appropriate destination container. Each of the conveyors C2—C6 may have associated therewith a plurality of destination containers and a diverting device associated with each destination container and automatically operated selectively to divert letters from the conveyor into the appropriate container.

The keyboard K may also be provided with a cancelling key which the operator can use to cancel the keying or coding for any letter still in the waiting position and which the operator may realise he has mis-keyed. The cancelling key will serve to prevent energisation of the solenoids which operate the diverter devices V1—V6 and such cancelled items will then be passed straight through to the cancelled item box 70 located near the operator as above described.

The method of confining the viewing of the letters and reading of the addresses thereon to the normal viewing position i. e., when the letters are in the trap 15, as described above, may be regarded as the elementary method of utilising the apparatus of this invention. When the operator has become sufficiently experienced in the manipulation of the apparatus, he may be able also to make use of a transparent viewing window provided in the front of the feeding trap 14. With such an arrangement, the operator can transfer his attention, at will, from the letter held in the normal viewing position trap 15 to the following letter held in the feeding trap 14 and thus overlap the function of reading the address of one letter with the act of keying the destination code according to the memorised address of the preceding letter and causing the trap release of the two or three letters involved in the overlapping functions.

It will be appreciated that the devices for effecting the various movements involved in the distribution of the letters may take any convenient form and for example, although reference has been made to electro-magnetic devices for actuating the release devices associated with the letter traps, mechanically or pneumatically operating devices may be employed.

We claim:

1. In apparatus for distributing articles such as postal letters, postcards, packets and the like, in accordance with their destination addresses or other characteristics, at least one letter-presentation unit comprising a downwardly extending chute, displaceable floor members extending across said chute transversely to divide said chute into upper, middle and lower sections constituting a feeding position trap, a viewing position trap and a waiting position trap respectively, said feeding position trap having an opening therein through which said letters are fed one at a time so as to rest on edge on said displaceable floor of said feeding position trap, said viewing position trap having a lateral opening forming a viewing window, said traps being set one above another so that each letter in turn is segregated in said feeding position trap, then dropped therefrom so as to rest on edge upon said floor of said viewing position trap, with the addressed face of said letter displayed through said viewing window opening, and thereafter dropped from said viewing position trap into said waiting position trap, devices for determining the displacement of said trap floor members to release each said letter in turn from each said trap in turn, and manually operated coding keys to control the operation of said devices.

2. The apparatus claimed in claim 1, wherein said feeding position trap and waiting position trap each have front and rear walls disposed vertically to define vertical passageways therebetween, and said viewing position trap has front and rear walls forwardly inclined in the downward direction to define an inclined passageway therebetween, and said viewing window opening is formed in said inclined front wall of said viewing position trap.

3. The apparatus claimed in claim 1, wherein said feeding position trap is provided with a lateral opening forming a preliminary viewing

window set immediately above said viewing window opening in said viewing position trap.

4. Apparatus as claimed in claim 1, wherein said feeding position trap is provided with a lateral opening forming a viewing window, and including transparent panels covering said lateral viewing window openings of said feeding position trap and said viewing position trap and forming transparent viewing windows.

5. The apparatus as claimed in claim 1, wherein said feeding position trap is provided with a lateral opening through which to introduce letters one at a time into the said trap, and guide means arranged to guide the letters edge first through said lateral opening and into said trap so as to rest on edge upon the said floor of said trap.

6. The apparatus as claimed in claim 1, wherein said feeding position trap is provided with a lateral opening through which to introduce letters into the said feeding position trap, guide means arranged to guide the letters edge first through said lateral opening and into said feeding position trap, so as to rest on edge upon said floor of said trap, and stop means associated with the lower edge of said lateral opening and arranged to engage the rear edge of each said letter deposited upon the said floor of said feeding position trap and so prevent a letter from bouncing back if forcibly fed into said feeding position trap.

7. The apparatus as claimed in claim 1, wherein at least one of said releasable trap floor members comprises a series of pivotally mounted bars arranged to extend across the said chute to form a support for a letter resting edgewise thereon, and means for swinging said pivotally mounted floor bars out of said letter-supporting position to permit the letter supported thereby to fall from said trap with which said floor member is associated, and means for returning said pivotally mounted floor bars to the letter-supporting position.

8. The apparatus as claimed in claim 1, wherein at least one of said releasable trap floor members comprises at least one pivotally mounted plate arranged to project transversely of said chute to form a support for a letter resting edgewise thereon, and means for swinging said pivotally mounted floor plate out of said letter-supporting position to permit the letter supported thereby to fall from said trap with which said floor plate is associated, and means for returning said pivotally mounted floor plate to the letter-supporting position.

9. The apparatus claimed in claim 1, wherein at least one of said releasable trap floor members comprises a series of pivotally mounted bars arranged to extend across the said chute to form a support for a letter resting edgewise thereon, electro-magnetic means for positively swinging said pivotal floor bars out of said letter-supporting position to permit the said letter supported thereby to fall from the said trap with which said floor bars are associated, when said electro-magnetic means are energised, and spring means for yieldingly holding said pivotally mounted floor bars in the said letter-supporting position and returning said bars to said letter-supporting position after the deflection of said bars to release said letter.

10. The apparatus as claimed in claim 1, wherein at least one of said releasable trap floor members comprises at least one pivotally mounted plate arranged to project across the said chute to form a support for a letter resting edgewise thereon, electro-magnetic means for positively swinging said pivotal floor plate out of said letter-supporting position to permit the said letter supported thereby to fall from the said trap with which said floor plate is associated, when said electro-magnetic means are energised, and spring means for yieldingly holding said pivotally mounted floor plate in the said letter-supporting position and returning said floor plate to said letter-supporting position after the deflection of said floor plate to release the said letter.

11. The apparatus as claimed in claim 1, including spring-loaded lightweight fingers pivotally mounted so as to engage and control the position of each letter which falls into the viewing position trap.

12. The apparatus as claimed in claim 1, including spring-loaded lightweight fingers pivotally mounted so as to engage and control the position of each letter which falls into said viewing position trap, and means for linking said pivotally mounted fingers to said displaceable floor member of said viewing position trap for concerted actuation of said fingers and said trap floor member by said means for displacing said trap floor member.

13. The apparatus as claimed in claim 1, wherein at least one of said releasable trap floor members comprises a series of pivotally mounted bars arranged to extend across the said chute to form a support for a letter resting edgewise thereon, and electromagnetic means for swinging said pivotally mounted floor bars out of said letter-supporting position to permit the letter supported thereby to fall from said trap with which said floor member is associated, means for returning said pivotally mounted floor bars to said letter-supporting position, locking means for positively locking said trap floor bars in said letter-supporting position, thereby to prevent said trap floor bars from being deflected from said letter-supporting position by the impact of a heavy letter thereon, and means for linking said locking means to said electro-magnetic devices for determining the displacement of said trap floor bars, so that said electro-magnetic devices act to release said locking means from said trap floor bars prior to displacing said trap floor members from the letter-supporting position.

14. The apparatus as claimed in claim 1, wherein the said trap floor member of at least one of said letter-presentation traps comprise a pair of flap plates which are substantially horizontal longitudinally and disposed side by side and inwardly and downwardly inclined towards each other in the transverse sense to form a closed V-channel floor, said flap plates being hinged to pivot about their top edges so that the inwardly inclined plates can be swung downwards and away from each other to permit a letter supported thereon to fall therebetween and pass downwards from said trap with which said flap plates are associated.

15. The apparatus claimed in claim 1, wherein the said trap floor member of at least one of said letter presentation traps comprise a pair of flap plates which are substantially horizontal longitudinally and disposed side by side and inwardly and downwardly inclined towards each other in the transverse sense to form a closed V-channel floor, said flap plates being hinged to pivot about their top edges so that the inwardly inclined plates can be swung downwards

and away from each other to permit a letter supported thereon to fall therebetween and pass downwards from said trap with which said flap plates are associated, rigid coupling members projecting from the opposite ends of each said flap plate, cam means engaged by said rigid coupling members, and an electro-magnetic actuating device drivingly connected to said cam means so that said flap plates are swung downwards about their hinge axes when said electro-magnetic actuating device is energised.

16. The apparatus claimed in claim 1, wherein said trap floor member of at least one of said letter-presentation traps comprise a pair of flap plates which are substantially horizontal longitudinally and disposed side by side and inwardly and downwardly inclined towards each other in the transverse sense to form a closed V-channel floor, said flap plates being hinged to pivot about their top edges so that the inwardly inclined plates can be swung downwards and away from each other to permit a letter supported thereon to fall between said parted plates and pass downwards from said trap with which said flap plates are associated, and loading spring means which yieldingly hold said flap plates in the V-channel forming position.

17. In apparatus for distributing articles such as postal letters, postcards, packets and the like, in accordance with their destination addresses or other characteristics, at least one letter-presentation unit comprising a downwardly extending chute, displaceable floor members extending across said chute transversely to divide said chute into upper, middle and lower sections constituting a feeding position trap, a viewing position trap and a waiting position trap respectively, said feeding position trap having an opening therein through which said letters are fed one by one so as to rest on edge on said displaceable floor of said feeding position trap, said viewing position trap having a lateral opening forming a viewing window, said traps being set one above another so that each said letter in turn is segregated in said feeding position trap, then dropped therefrom so as to rest upon edge upon said floor of said viewing position trap, with the addressed face of said letter displayed through said viewing position window opening, and thereafter dropped from said viewing position trap into said waiting position trap, means for determining the displacement of said trap floor members to release each said letter in turn from each said trap in turn, and manually operated coding keys to control the operation of said means, and a letter-distributor unit embodying means for selectively diverting a succession of letters to different paths of travel, and means for transferring each letter released from said waiting position trap of said letter-presentation unit to said letter-distributor unit.

18. The apparatus claimed in claim 17, including co-operating roller means disposed between the lower end of said feeding position trap and upper end of said viewing position trap, and further co-operating roller means disposed between the lower end of said viewing position trap and upper end of said waiting position trap to provide means for assisting the downward passage of the letters from trap to trap, and means for positively driving said co-operating roller means.

19. The apparatus as claimed in claim 17, including spring-loaded lightweight fingers pivotally mounted so as to engage and control the position of each letter which falls into the viewing position trap, and means for linking said pivotally mounted fingers to said displaceable floor member of said viewing position trap for concerted actuation of both said fingers and said trap floor member by said means employed for displacing said trap floor member.

20. The apparatus claimed in claim 17, wherein the said trap floor member of at least one of said letter-presentation traps comprise a pair of flap plates which are substantially horizontal longitudinally and disposed side by side and inwardly and downwardly inclined towards each other in the transverse sense to form a closed V-channel floor, said flap plates being hinged to pivot about their top edges so that the inwardly inclined plates can be swung downwards and away from each other to permit a letter supported thereon to fall between said parted plates and pass downwards from said trap with which said flap plates are associated, rigid coupling members projecting from the opposite ends of said flap plates, cam means engaged by said rigid coupling members, an electro-magnetic actuating device drivingly connected to said cam means so that said flap plates are swung downwards about their hinge axes when said electro-magnetic actuating device is energised, and loading spring means which yieldingly hold said flap plates in the V-channel forming position.

21. In apparatus for distributing articles such as postal letters, postcards, packets and the like, in accordance with their destination addresses or other characteristics, the combination of at least one letter-presentation unit comprising a downwardly extending chute, displaceable floor members extending across said chute transversely to divide said chute into upper, middle and lower sections constituting a feeding position trap, a viewing position trap and a waiting position trap respectively, said feeding position trap having an opening therein through which said letters are fed one at a time so as to rest on edge on said displaceable floor of said feeding position trap, said viewing position trap having a lateral opening forming a viewing window, said traps being set one above another so that each said letter in turn is segregated in said feeding position trap, then dropped therefrom so as to rest on edge upon said floor of said viewing trap, with the addressed face of said letter displayed through said viewing position window opening, and thereafter dropped from said viewing position trap into said waiting position trap, devices for determining the displacement of said trap floor members to release each said letter in turn from each said trap in turn, and manually operated coding keys to control the operation of said devices, a plurality of substantially horizontal conveyors disposed at different levels, a letter distributor unit embodying a downwardly extending passageway, a plurality of diverter devices located adjacent said passageway for selectively diverting a succession of letters to said horizontal conveyors, and further letter conveyor means for raising each letter from the level at which it is released from said waiting position trap to a level above that of the highest one of said horizontal conveyors and thereafter passing said raised letters downwards through said downwardly extending passageway and past said diverter devices so that each letter is diverted by a diverter device towards a selected one of said horizontal conveyors.

22. The apparatus claimed in claim 21, wherein

said letter distributor unit comprises a plurality of displaceable letter diverter devices disposed one above another in close proximity to said downwardly extending passageway, and said conveyor means for raising each said letter from the level at which said letter is released from said waiting position carries said letters to the top of said diverter passageway so that said letters subsequently travel one by one down said diverter passageway for engagement with a selected one of said diverter devices.

23. The apparatus as claimed in claim 21, wherein said conveyor means for raising each said letter from the level at which it is released from said waiting position trap comprise a travelling conveyor belt system including a plurality of flexible conveyor tapes disposed in spaced parallel relation, and means for guiding said conveyor tapes to form an inner moving wall of the said downwardly extending passageway along which said letters are conveyed from one to another of said diverter devices.

24. The apparatus claimed in claim 21, wherein said letter diverter devices each comprise a letter diverter member forming part of an inner wall of said diverter passageway, and a letter guiding and retaining member forming a part of an outer wall of said diverter passageway, each said letter diverter member being pivotally mounted so as to swing across the said diverter passageway into the path of the letters passing down said passageway, each of said letter guiding and retaining members being pivotally mounted so as to swing outwards to provide a discharge opening for the passage of the letters diverted from said passageway by said outwardly swung associated diverter member, and means for swinging said members about their respective pivots to the letter diverting and retaining and guiding positions respectively.

25. The apparatus claimed in claim 21, wherein said conveyor means for raising the said letters from the level at which they are released from said waiting position trap include spaced parallel conveyor tapes and means for guiding a stretch of each said conveyor tape downwards to form the inner wall of said downwardly extending diverter passageway, and wherein said letter diverter devices each comprise a letter diverter formed by a plurality of fingers disposed in alignment with the spaces between the downwardly travelling stretches of said conveyor tapes forming the said inner wall of the said diverter passageway, and associated letter guiding and retaining means consisting of a plurality of fingers arranged to form part of an outer wall of said diverter passageway, said letter diverter devices and letter guiding and retaining means being pivotally mounted, and means for swinging each said diverter device and each said guiding and retaining device about its pivotal axis to the letter diverting and retaining and guiding positions respectively.

26. The apparatus claimed in claim 21, wherein said letter diverter devices each comprise a letter diverter member forming part of an inner wall of said diverter passageway, and a letter guiding and retaining member forming a part of an outer wall of said diverter passageway, each said letter diverter member being pivotally mounted so as to swing across the diverter passageway into the path of the letters passing down said passageway, each of said letter guiding and retaining members being pivotally mounted so as to swing outwards to provide a discharge opening for the passage of the letters diverted from said passageway by said transversely swung associated diverter member, and electro-magnetic actuating means drivingly coupled to said letter guiding and retaining member and said letter diverter member so that said electro-magnetic actuating means when energised displaces said members to the letter diverting positions, and loading spring means for returning said members to their respective letter guiding and retaining positions.

27. The apparatus claimed in claim 21, wherein the said distributor unit includes a plurality of downwardly discharging letter chutes, each diverter device of said distributor unit having an individual chute associated therewith, and co-operating roller means disposed to receive the letters diverted from said passageway by said diverter devices and feed said diverted letters into the upper ends of the respective chutes, said co-operating roller means being disposed to change the direction of travel of the letters received thereby so that the velocity of the letters is reduced as they are passed through said chutes and discharged from the lower ends thereof.

28. The apparatus claimed in claim 21, including a plurality of containers identified with the destinations of the letters released from said waiting position trap of said letter-presentation unit and individually identified with the horizontal conveyors so that the letters selectively diverted to said horizontal conveyors are deposited thereby in the appropriate destination boxes.

29. The apparatus claimed in claim 28, wherein said conveyor means for raising the letters from the level at which they are released from said waiting position trap include spaced parallel conveyor tapes and means for guiding a stretch of each said conveyor tape downwards to form the inner wall of the said downwardly extending diverter passageway, and wherein said letter diverter devices each comprise a letter diverter formed by a plurality of fingers disposed in alignment with spaces between the downwardly travelling stretches of said conveyor tapes forming the said inner wall of said diverter passageway, and associated letter guiding and retaining means consisting of a plate arranged to form part of an outer wall of said diverter passageway and pivoted to swing about its upper edge, said letter diverter members each being pivoted to swing across the said diverter passageway into the path of the letters passing down said passageway, each of said letter guiding and retaining means being arranged to swing outwards about its pivot to provide an opening in the said outer wall of said passageway for the passage of letters diverted from said passageway by said transversely swung associated diverter member, and means for swinging said diverter members and retaining and guiding means about their respective pivots to the letter diverting and guiding and retaining positions respectively.

30. The apparatus claimed in claim 28, wherein said letter diverter devices each comprise a letter diverter member forming part of an inner wall of said diverter passageway, and a letter guiding and retaining member forming a part of an outer wall of said diverter passageway, each said letter diverter member being pivotally mounted so as to swing across the diverter passageway into the path of the letters passing down said passageway, each of said letter guiding and retaining members being pivotally mounted so

as to swing outwards to provide a discharge opening for the passage of the letters diverted from said passageway by said transversely swung associated diverter member, an electro-magnetic actuating means drivingly coupled to said letter guiding and retaining member and said letter diverter member associated therewith so that said electro-magnetic actuating means, when energised, displaces said members to the respective letter diverting positions, loading spring means for returning said members to their respective letter guiding and retaining positions, locking means for positively holding each said letter diverting member in the letter diverting position across said diverter passageway, and thereby preventing the deflection of said diverter

member by the impact of a heavy letter, and means whereby said letter diverter member is released from said locking means when said electro-magnetic means are actuated for moving said letter diverter member into the letter diverting position across said passageway.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,295,432	Chandler	Feb. 25, 1919

FOREIGN PATENTS

Number	Country	Date
632,403	Great Britain	Nov. 28, 1949