C. GEHRING AND C. C. CADDEN.

MAIL DISTRIBUTING APPARATUS.

APPLICATION FILED DEC. 3, 1913.

1,324,247.

Patented Dec. 9, 1919.

10 SHEETS—SHEET 1.

FIG. 1.

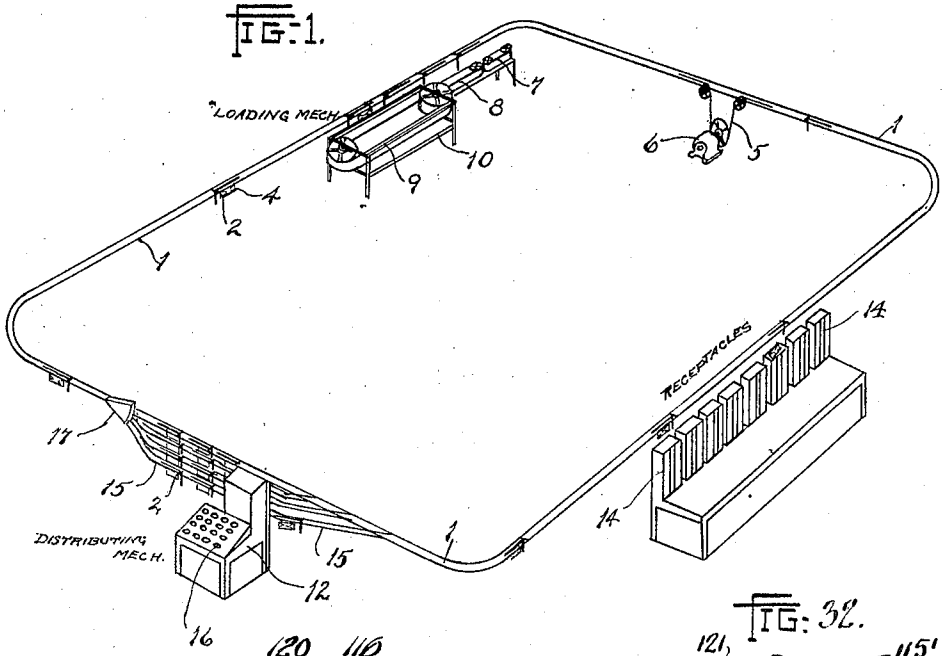


FIG. 31.

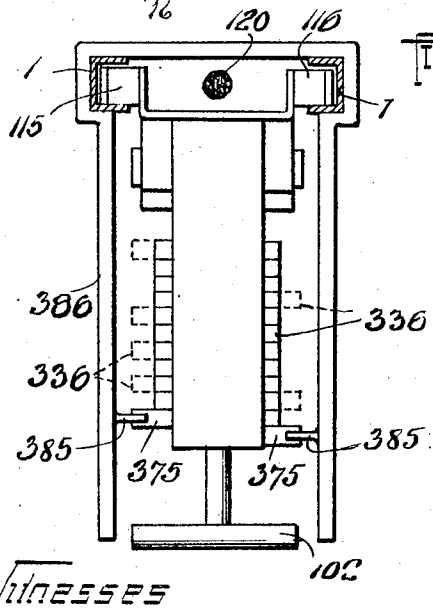
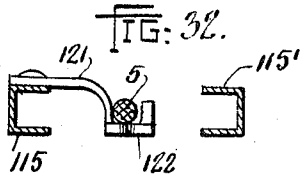


FIG. 32.



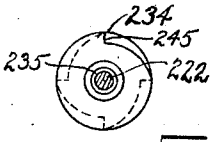
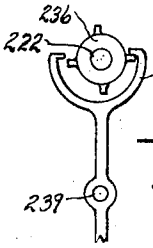


FIG. 33.

FIG. 34.



Witnesses

Justin W. Machlin

Robert S. Johnston

Inventors

Casimir Gehring

and

Charles C. Cadden

By Albert N. Baker, Atty

C. GEHRING AND C. C. CADDEN.

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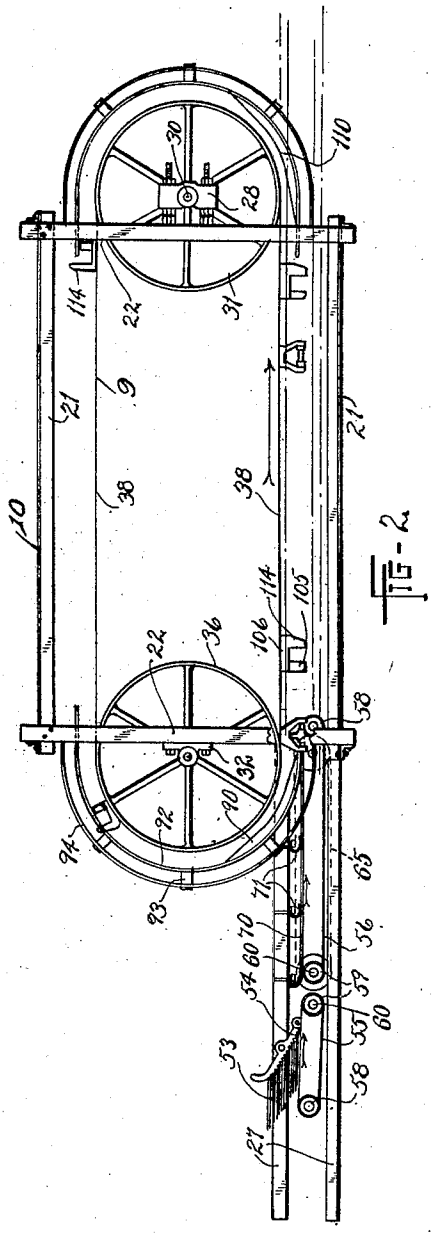


FIG. 2

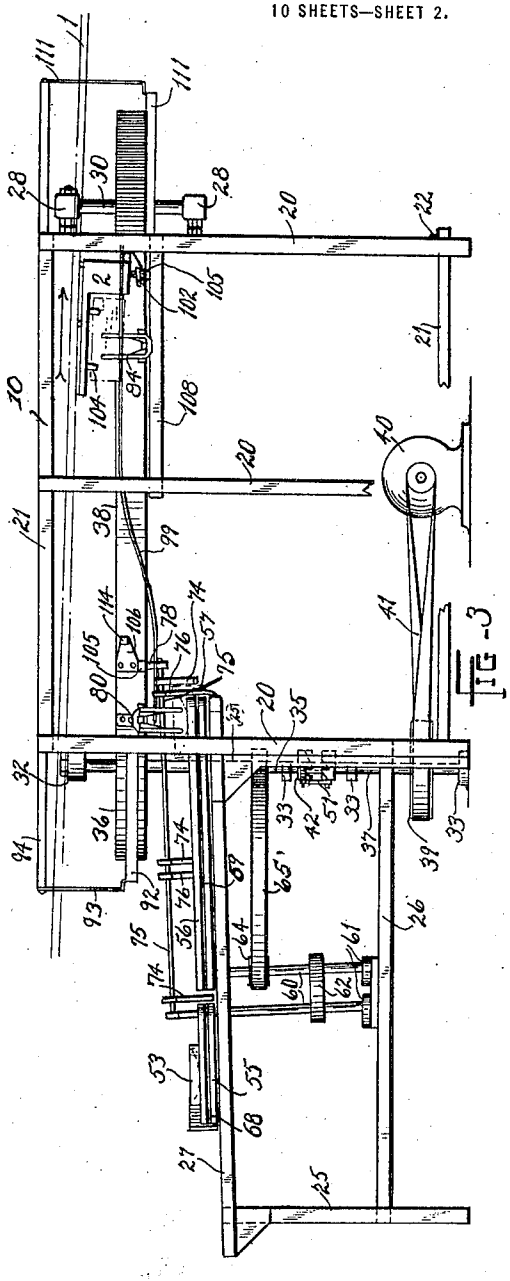


FIG. 3

Witnesses

Justin E. Machlin

Robt. S. Johnston

Inventors

Casimir Gehring

and

Charles C. Cadden

By Albert G. Davis, Atty

C. GEHRING AND C. C. CADDEN.

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10 SHEETS—SHEET 3.

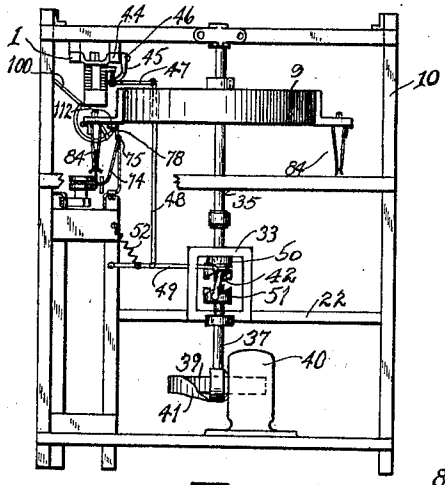


FIG. 4

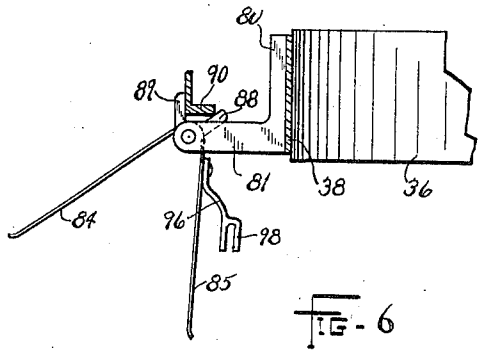


FIG. 6

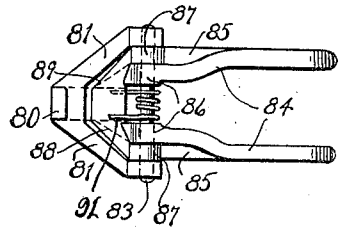


FIG. 7

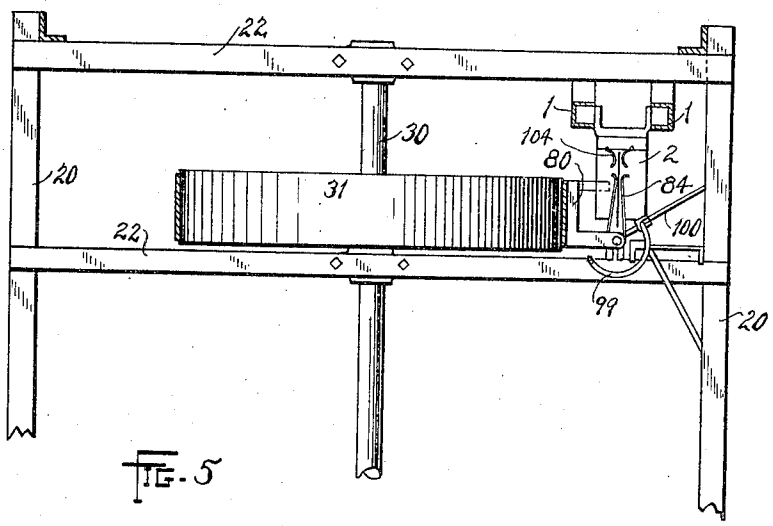


FIG. 5

Witnesses

Justin W. Macklin

Roe S. Johnston

Inventors

Casimir Gehring

and

Charles C. Cadden

By Albert H. Bates, Atty

C. GEHRING AND C. C. CADDEN.

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10 SHEETS—SHEET 4.

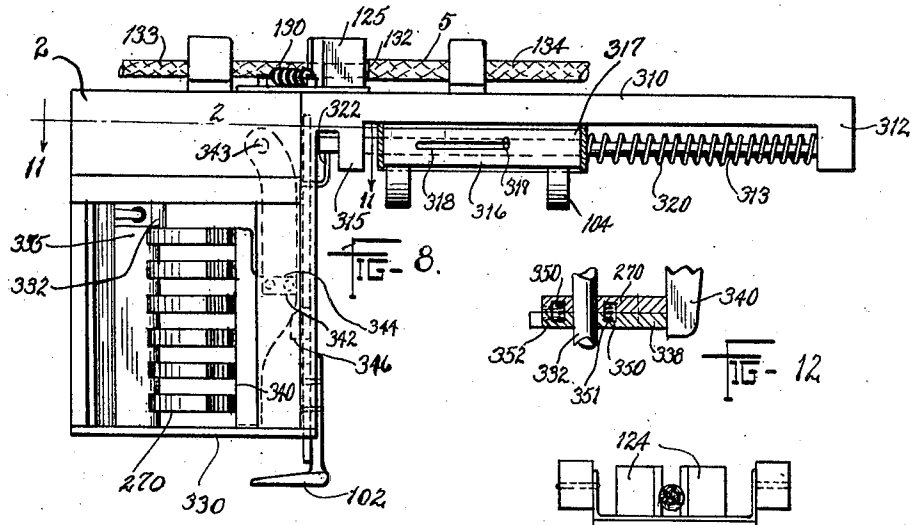


FIG. 8.

FIG. 12.

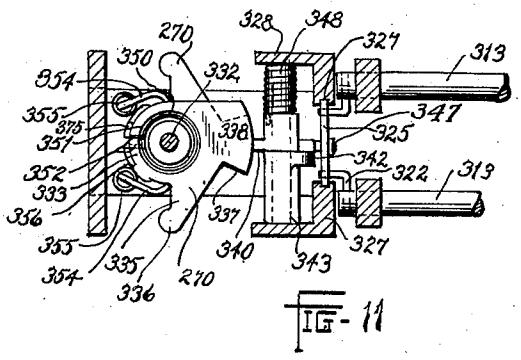


FIG. 11.

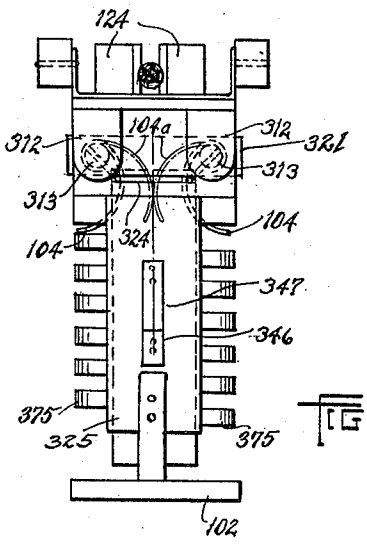


FIG. 9.

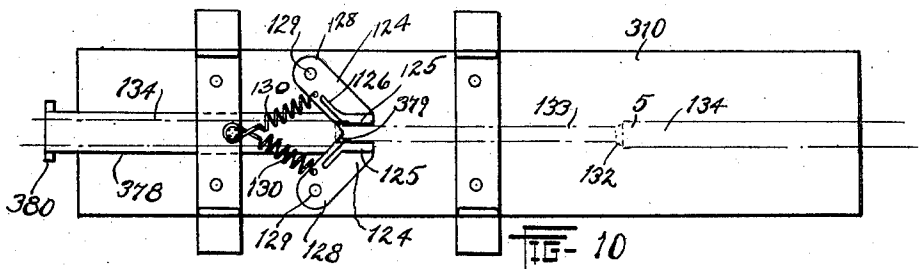


FIG. 10.

Witnesses

Justin W. Machlin

Robt. S. Johnston

Inventors

Casimir Gehring

and

Charles C. Cadden

By Albert G. Davis, Atty

C. GEHRING AND C. C. CADDEN.

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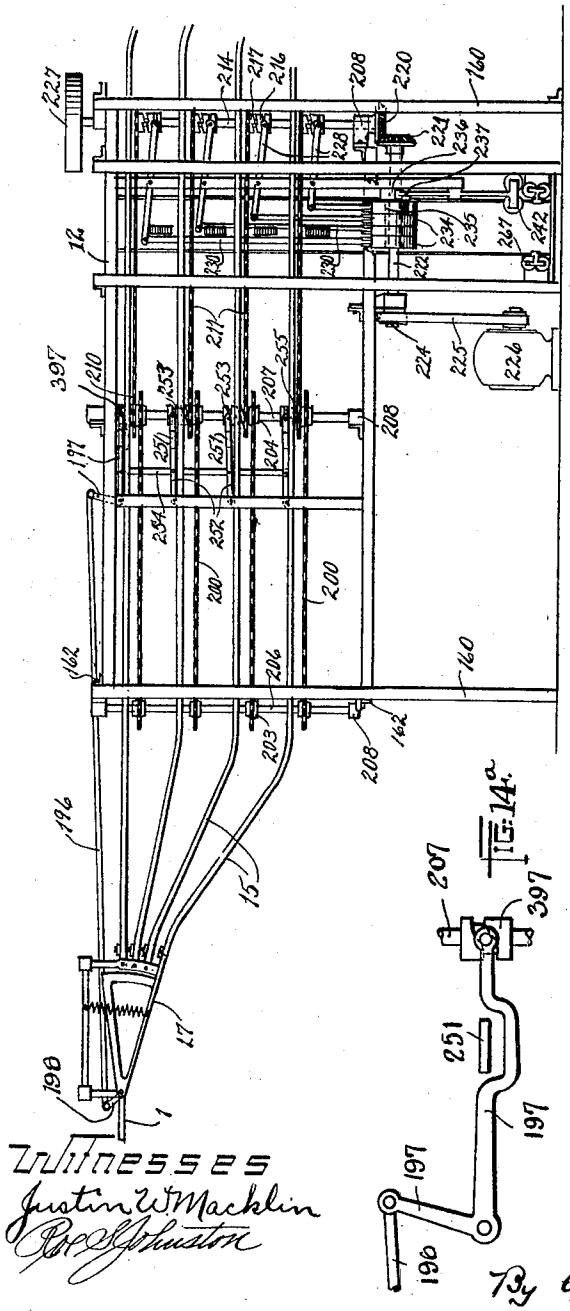


FIG. 13.

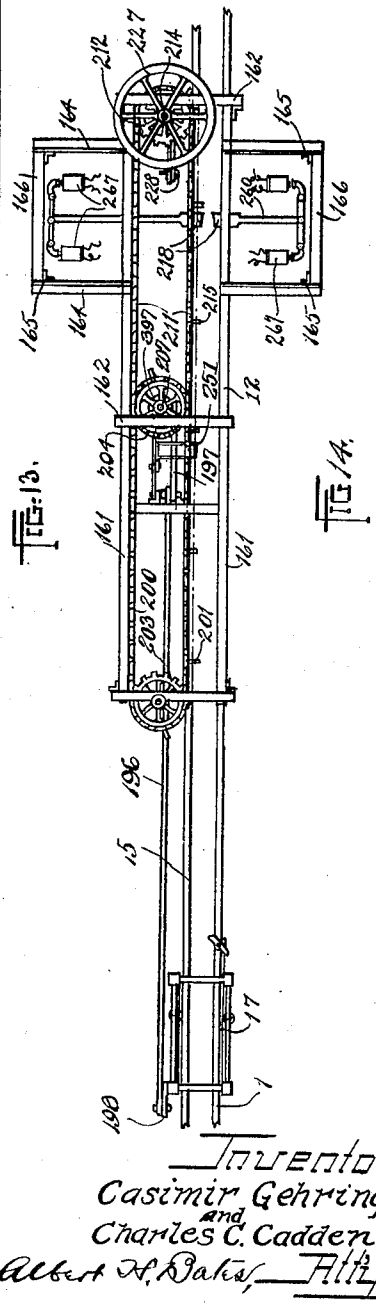


FIG. 14.

FIG. 14a.

Witnesses
Justin W. Macklin
Robt. Johnston

Inventors
Casimir Gehring
and
Charles C. Cadden
By Albert H. Bates, Atty

C. GEHRING AND C. C. CADDEN.

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10 SHEETS—SHEET 6.

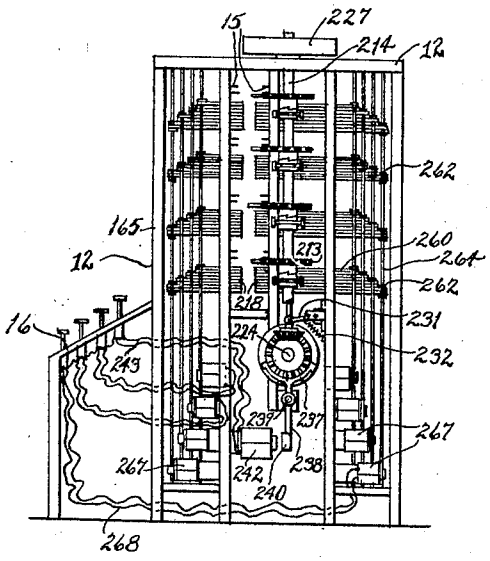


FIG. 15.

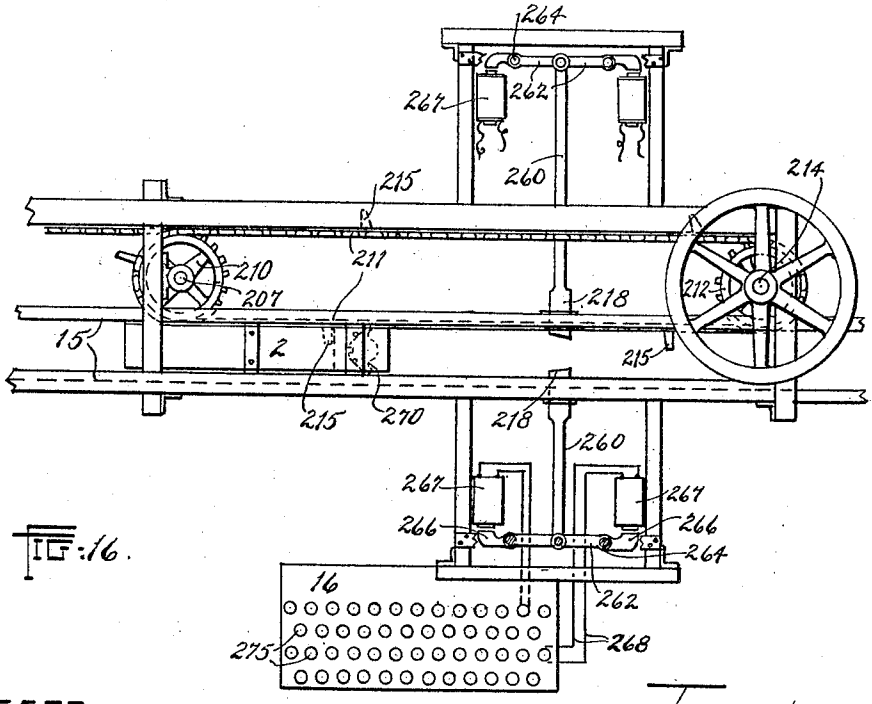


FIG. 16.

Witnesses
Justin W. Machlin
Robt. Johnston

Inventors
Casimir Gehring
and
Charles C. Cadden
By Albert N. Bates, Atty

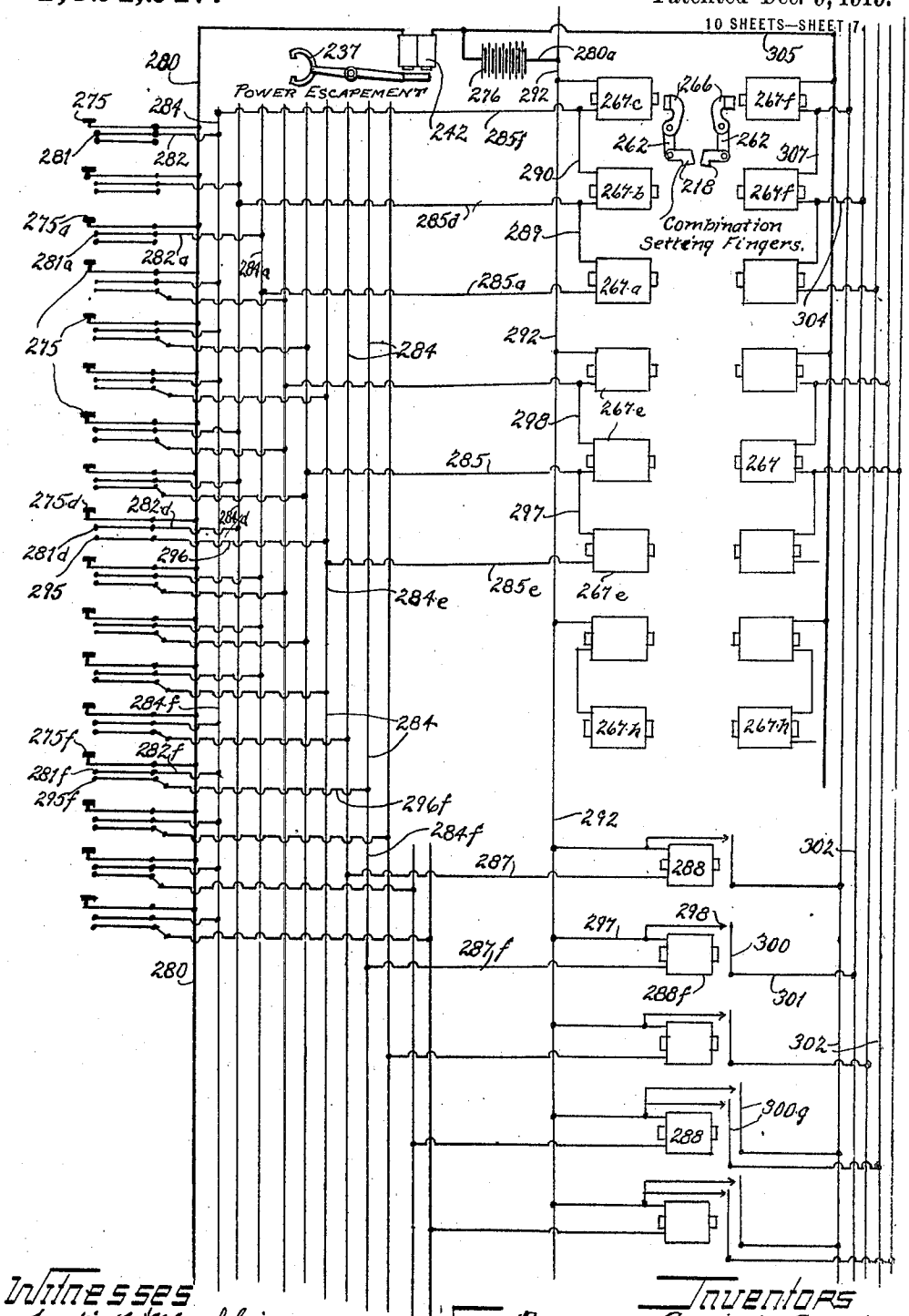
C. GEHRING AND C. C. CADDEN.

MAIL DISTRIBUTING APPARATUS.

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1,324,247. Patented Dec. 9, 1919.

10 SHEETS—SHEET 7.



Witnesses
Justin W. Machlin
Roe S. Johnstone

FIG-17

Inventors
Casimir Gehring
and Charles C. Cadden
By Albert H. Bates, Atty

C. GEHRING AND C. C. CADDEN.

MAIL DISTRIBUTING APPARATUS.

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10 SHEETS—SHEET 8.

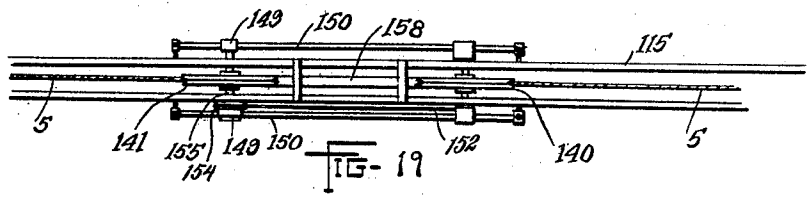


FIG. 19

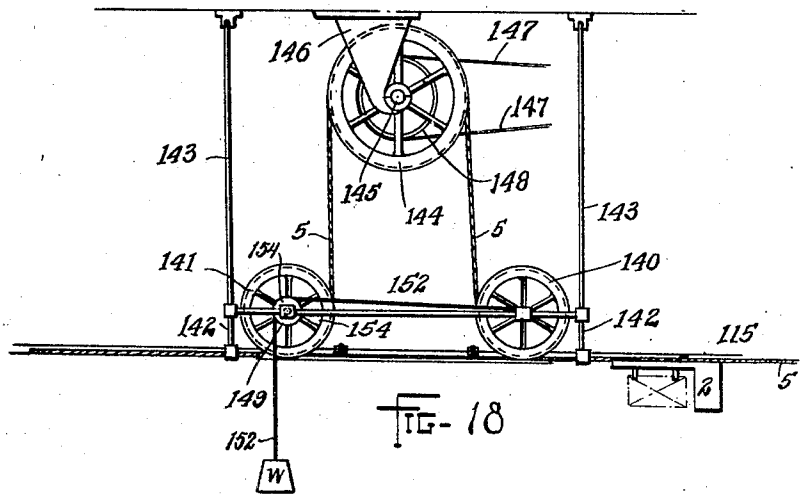


FIG. 18

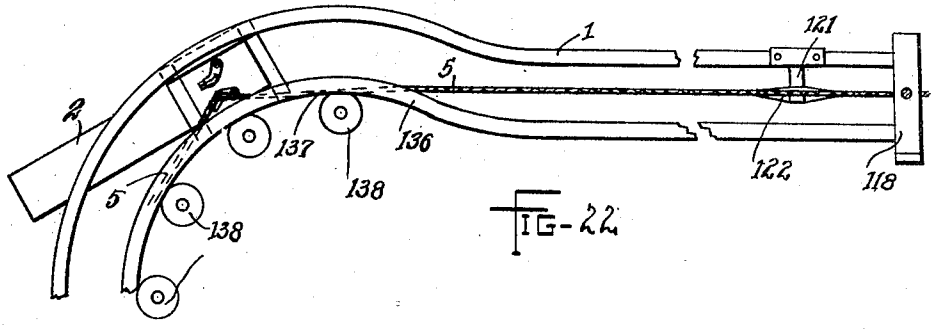


FIG. 22

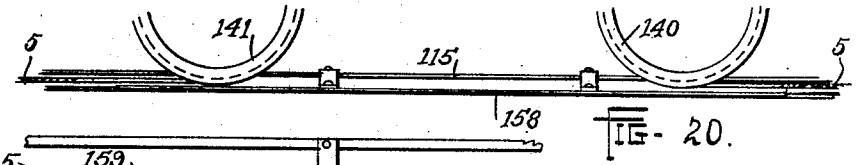


FIG. 20.

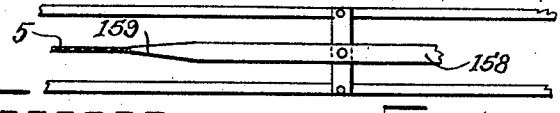


FIG. 21.

Witnesses
Justus W. Macklin
Roe S. Johnston

Inventors
Casimir Gehring
and
Charles C. Cadden
By Albert G. Bates, Atty

C. GEHRING AND C. C. CADDEN.

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10 SHEETS—SHEET 9.

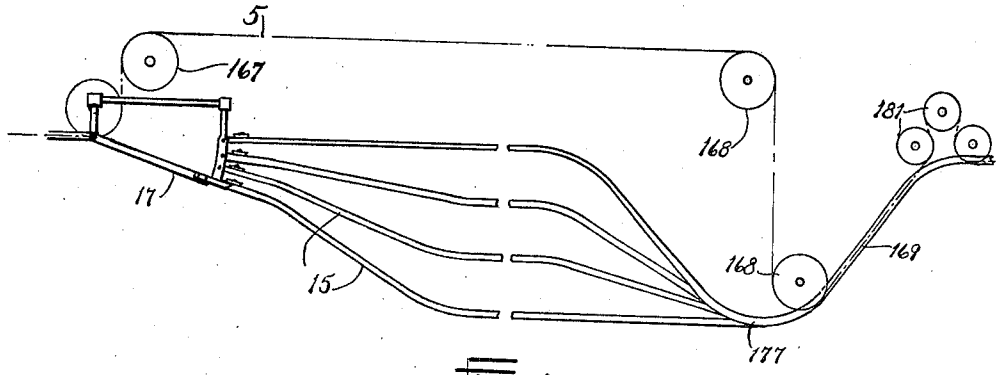


FIG. 23

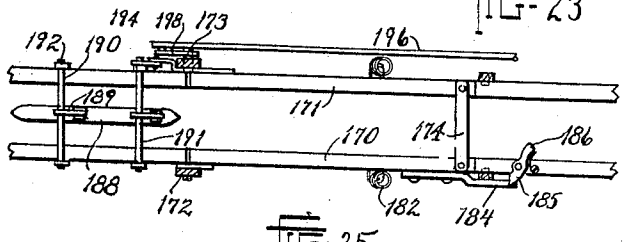


FIG. 25

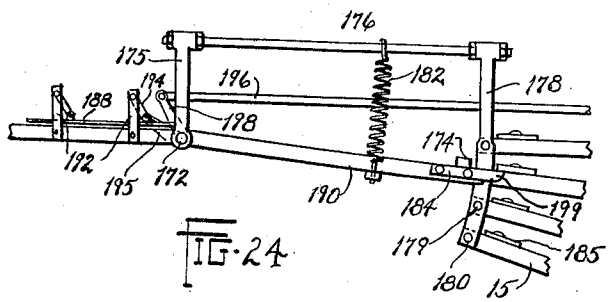


FIG. 24

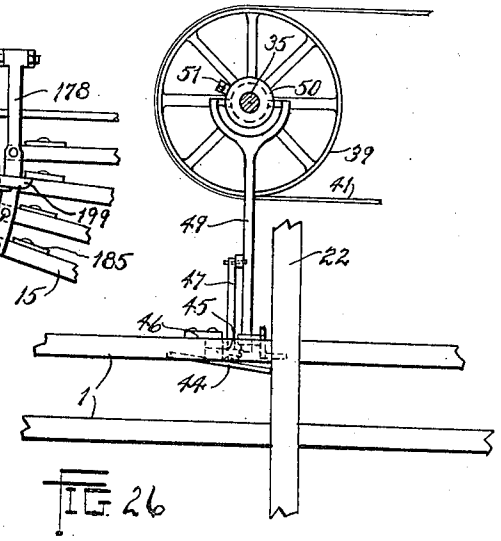


FIG. 26

Witnesses
Justus W. Macklin
Roy S. Johnston

Inventors
Casimir Gehring
and
Charles C. Cadden
By Albert N. Baker Atty

C. GEHRING AND C. C. CADDEN.

MAIL DISTRIBUTING APPARATUS.

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10 SHEETS—SHEET 10.

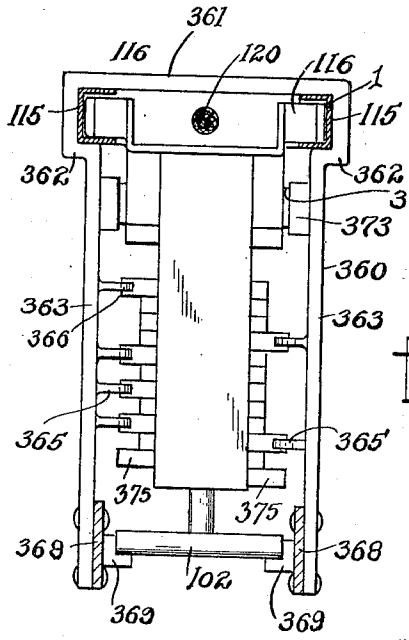


FIG-27

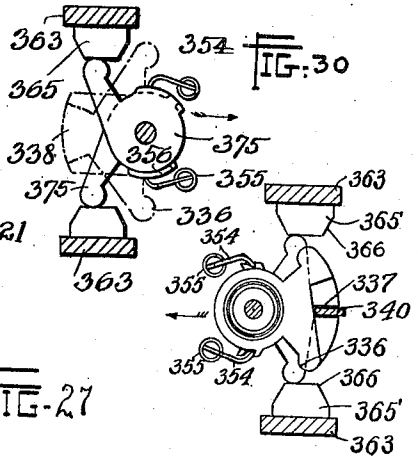
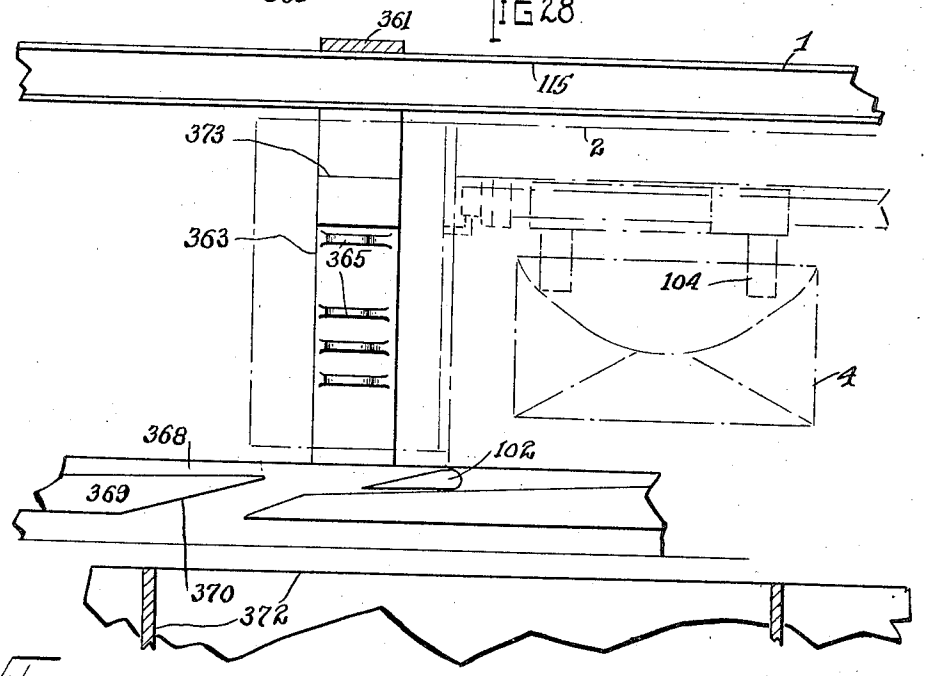


FIG-30

FIG-29.

FIG 28



Witnesses
Justin E. Macklin
Roe S. Johnston

Inventors
Casimir Gehring
and
Charles C. Cadden
By Albert N. Dyer, Atty

UNITED STATES PATENT OFFICE.

CASIMIR GEHRING, OF PARIS, FRANCE, AND CHARLES C. CADDEN, OF AKRON, OHIO, ASSIGNORS TO MECHANICAL EFFICIENCY COMPANY, OF AKRON, OHIO, A COPARTNERSHIP CONSISTING OF B. G. WORK AND J. K. MITCHELL, BOTH OF AKRON, OHIO, CASIMIR GEHRING, OF PARIS, FRANCE, AND C. A. MUNN, OF RADNOR, PENNSYLVANIA.

MAIL-DISTRIBUTING APPARATUS.

1,324,247. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed December 3, 1913. Serial No. 804,550.

To all whom it may concern:

Be it known that we, CASIMIR GEHRING and CHARLES C. CADDEN, a Russian subject and a citizen of the United States, respectively, residing at Paris, France, and Akron, in the county of Summit and State of Ohio, respectively, have invented a certain new and useful Improvement in Mail-Distributing Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a rapid and efficient system for distributing letters or other mail matter according to the addresses thereon. To this end we provide a trackway and carriers for the mail matter, and means for propelling them along the trackway, and combined with this is a loading station where the mail matter, received from the cancelling machine or other suitable source, is automatically placed, one article after another, in the respective carriers; then a distribution controller operated by a key board and adapted to set mechanism on the respective carriers, according to the addresses, which are read by the operator at the key board; then a plurality of discharge stations, opposite which the carriers come and which are provided each with one or more receptacles for the mail matter and have means for causing the carrier to discharge its matter in a receptacle selected by the mechanism upon the carrier, according to the way it has been set by the distribution controller. After the carriers discharge their matter they then continue on their course and automatically come again to the loading station. To enable the mechanism to operate with great rapidity, we provide a plurality of side tracks at and adjacent to the distribution controller, and suitable switch mechanism to direct the carriers successively to these different trackways, so that the operator may read a number of addresses substantially simultaneously, these side tracks again merging with the main track beyond the distribution controller. The means by which we accomplish these results will be hereinafter more fully explained in connection with a convenient embodiment of the invention shown in the drawings.

In the drawings Figure 1 is a perspective view showing conventionally our mail distributing apparatus; Fig. 2 is a plan view of the loading machine assembled; Fig. 3 is a side elevation of the same, showing the relative position of a carrier and trackway; Fig. 4 is an end elevation of the same; Fig. 5 is an enlarged section of the upper portion of the loading mechanism showing the letter gripper and the carrier; Fig. 6 and Fig. 7 are details of the letter grippers of the loading mechanism; Fig. 8 is a side elevation of one of the carriers; Fig. 9 is an end elevation of the same; Fig. 10 is a plan of the same; Fig. 11 is a section taken on the line 11—11 of Fig. 8, showing the mechanism of the carrier adapted to be set according to the address on the letter; Fig. 12 is a vertical cross sectional detail of one pair of the cams comprising such settable mechanism; Fig. 13 is a front elevation of the distributing mechanism showing the arrangement of the tracks leading through it and the switch mechanism; Fig. 14 is a plan view of the same; Fig. 14^a is a detail in elevation of the mechanism for actuating the rod 196; Fig. 15 is an end elevation of the distributing machine showing the mechanism coöperating with the devices on the carrier to control the destination of letters, also showing key-board controlling such mechanism; Fig. 16 is a plan view of the same, on a somewhat larger scale, a number of parts being omitted for clearness of illustration; Fig. 17 is a wiring diagram showing an electric connection between the keys and the distributing controlling mechanism; Fig. 18 is a side elevation of a portion of the trackway showing the cable for propelling the carriers and the method of driving the same; Fig. 19 is a plan of this portion of the trackway; Fig. 20 is a side elevation of a portion of this mechanism on an enlarged scale, showing the means for allowing the carriers to pass this part of the trackway; Fig. 21 is a detail of a portion of the same, it being a bottom plan on the same scale as Fig. 20; Fig. 22 is a portion of the trackway showing the arrangement of the cable and the relative position of the carrier at a curve. Fig. 23 is a diagramatic view showing the arrangement of a plurality of tracks leading to and from the distributing mechanism,

and the method of guiding the cable around this mechanism; Fig. 24 is a side elevation on a somewhat enlarged scale of the switch leading from the main track to the plurality of tracks adjacent the distributing mechanism; Fig. 25 is a plan of the same; Fig. 26 is a plan of a portion of the trackway at the entrance to the loading machine showing the device for operating the clutch which controls the driving of the loading mechanism; Fig. 27 is a front elevation of the mechanism for causing the carrier to discharge the letter, showing the relative position of the carrier as it passes this device; Fig. 28 is a sectional side elevation of a portion of this device showing the relative position of the trackway and the receptacle for the letter, and indicating the carrier in dot and dash lines; Fig. 29 is a horizontal section taken through this device and through a portion of the carrier, showing the relative position of the cams as they act to discharge the letter; Fig. 30 is a horizontal section looking upwardly through the resetting station located beyond the discharge stations, this view, which is taken on the line 30—30 of Fig. 31, showing the carrier positioned to have the cams reset; Fig. 31 is a front elevation of a mechanism for resetting the cams on the carriers after they have left the discharge stations; Fig. 32 is a cross section of the trackway, showing one of the cable supports; Figs. 33 and 34 are details of the mechanism for controlling the driving of the distributing machine.

Referring to Fig. 1, the general arrangement of our distributing device is here conventionally illustrated. The reference numeral 1, indicates the trackway along which carriers 2 are driven to carry the individual pieces of mail 4 from the cancelling machine to the receptacle corresponding to their destination. The carriers are driven along the trackway by the cable 5, which is suitably guided midway between two members of the trackway. The cable is not shown in Fig. 1 except at the point where it is driven by means of a motor 6.

These carriers are driven along the trackway to a point opposite a small belt 7 which wipes the letters from a common pile, one at a time, and moves them toward a belt 8 which picks them up and carries them to a position where they may be grasped by suitable grippers on the belt 9 of the loading machine 10. These grippers bring the letter to a proper position under a carrier, which moves along the trackway adjacent the belt 9. Suitable mechanism causes the grippers on the carriers to engage the letter, which is then carried along the trackway to the distributing mechanism indicated at 12.

On each of these carriers is a mechanism having a series of variably collocatable elements adapted to be set in different combinations or arrangements to control the discharge from the carriers. As shown this rearrangeable mechanism consists of a series of settable tumblers or cams adapted to operate the grippers holding the letter. These cams project from the sides of the carrier and are adapted to be engaged by projecting fingers in the distributing machine, which moves some of them to a set position, leaving a certain combination projecting outwardly to be engaged by corresponding projections at the discharge station corresponding to the address on the letter.

When the carrier reaches one of the discharge stations, indicated at 14, of which there may be any number, the remaining projecting cams are moved inwardly by means of the series of stationary fingers arranged to correspond to the combination of projecting cams on the carrier. This brings all the cams to a releasing position, causing the letter to be released and allowing it to drop into the proper receptacle. The carrier still continues on its course, being driven by the cable 5, and returns to the loading machine where it receives another piece of mail matter.

In order that the distributing mechanism may be operated rapidly, a series of side tracks 15 are provided preferably one beneath the other. These bring the carriers to a reading position, where several addresses (at least 3 or 4) may be read at a glance, allowing the operator to depress corresponding keys of the key-board 16 in rapid succession. Each of these keys controls collocating mechanism which effects a certain collocation or rearrangement of cams on the carrier, the particular combination thus selected determining the station at which the letter will be released. The carriers are caused to enter these side tracks 15 by means of a switch 17 which is so arranged that it allows the carriers to enter each side track in turn. At the right of the distributing machine, the side tracks 15 merge again in a suitable manner, with the main track 1.

The foregoing is a brief description of the general arrangement of our mail distributing mechanism and the plan upon which the distributing apparatus is constructed. It outlines the manner in which we accomplish the objects of the invention. The apparatus is hereinafter described in detail, each of the parts being taken up in the following order, namely: the loading mechanism 10; the construction of the trackway 1 and the arrangement of the driving cable; the construction and operation of the distributing mechanism 12, the carrier 2, and the devices located at each discharge station for causing the piece of mail matter to be released.

The frame of the loading mechanism com-

prises upright members 20; horizontal, longitudinal members 21; cross members 22 which connect the vertical and longitudinal members. Attached to the main portion of the frame just described, is an auxiliary frame comprising a pair of upright members 25 and pairs of longitudinal members 26 and 27, connected with the upright members.

Carried in suitable bearings 28, mounted on the cross members 22, at the right of the machine, is a vertical shaft 30 carrying a large flat-faced pulley 31. At the other end of the machine mounted in a bearing 32 carried by one of the cross members 22 and a bearing 33, at the lower portion of the frame (Fig. 4) is a second vertical shaft 35 which carries a similar flat-faced pulley 36 corresponding to the pulley 31. Over these two pulleys runs a belt 38 which is periodically driven at the same speed as the carriers on the trackway 1, and on which are mounted grippers, hereinafter described, which are adapted to engage the letter or piece of mail matter and bring it to a position to be gripped by the carrier.

Alined with the shaft 35 is a shaft 37 carrying a pulley 39, which is driven constantly by a suitable motor 40, through a belt 41. A clutch indicated at 42 is adapted to drive the upper portion of the shaft to rotate the pulley 36 and drive the belt 38 for a portion of a rotation whenever a carrier 2 enters the machine.

Referring to Figs. 4 and 26, the means for controlling this clutch is a cam 44 carried on a rock arm 45, pivotally carried on a bracket 46. This cam moves outwardly when a carrier passes it, and presses downwardly on an arm 47 which depresses a link 48 connected to a lever 49 which is connected to the clutch member 50 of the clutch 42. This downward movement connects the shaft 35 with the motor which drives all of the parts of the loading mechanism, while one piece of mail matter is being transferred from the common pile to the carrier.

After each carrier has received a letter, the belt 38, having moved a portion of a rotation, the clutch is disengaged by a spring finger 51, on the opposed member engaging the lever 49 and raising the upper clutch member 50. Thus the machine is not operated to pick up letters except when operated by carriers. The size of the pulleys 31 and 36 may have such a relation to the required amount of movement of the belt 38 that a rotation or equal part thereof, may be given to the clutch at each actuation. If the carriers follow each other in regular succession, the clutch will be held into engagement by a carrier engaging the cam 44 causing the spring finger 51 to pass idly under the lever 49, thus causing the machine to be driven constantly while there is a supply of carriers. The spring finger 51 stands normally in an upright position, and is of sufficient strength to throw the clutch out of engagement except when held in engagement by a carrier as just described. A spring 52, attached to the lever 49 and to the frame, acts to hold these parts normally in inoperative position.

The letters are taken from a common pile 53 at the auxiliary frame of the loading machine, where they are fanned out against a toothed stop 54 carried by one of the members 27 of the frame. This toothed member prevents the letters jamming or wedging against the belt 55, which feeds the letters to a belt 56, running in the same direction, to carry the letters to a position indicated by dot and dash lines at 57, Fig. 3, from where they are transferred to the carrier. The belts 55 and 56 run over suitable pulleys 58 and 59. The two pulleys 58 are mounted on stub shafts carried on small cross members of the frame, and the two pulleys 59 are mounted on the upper end of substantially vertical shafts 60, which have their lower ends suitably journaled at 61 and carry at their intermediate portions pulleys, over which runs a short belt 62 driving these two shafts in unison. On the upper portion of one of these shafts is a pulley 64 which is driven by a belt 65 running over a suitable pulley on the shaft 35.

The belts 55 and 56 are made in two parts separated to leave openings between them, indicated at 68 and 69. Now when the machine is started, the letters or other pieces of mail matter are wiped off one at a time, from the common pile 53, and passed along to the belt 56 where they are gripped between the belt and a yielding wall 70, held by leaf springs 71 against the belt 56. This belt moves the letters to the position indicated at 57.

This movement, however, from the common pile to the position 57, is interrupted twice by stop fingers 74, (Figs. 3 and 4). These fingers have inwardly curved lower ends adapted to enter the openings 68 and 69 between the two portions of the belts 55 and 56, and they are mounted on a rock shaft 75 which is carried by bracket arms 76, mounted on one of the longitudinal members 27. This rock shaft is operated after each letter is taken from the position 57, by means (to be hereinafter described) on the belt 38. This draws the curved ends out from between the belts allowing each piece of mail matter to advance to the next position against the next stop finger 74. Thus a short movement of these belts 55 and 56 brings the next letter to the position 57 from which it is transferred to the carrier, as will now be described.

On the belt 38 are mounted brackets 80 which have outwardly extended arms 81,

forming a bifurcated portion in which is carried a pivot pin 83. (Figs. 5, 6 and 7). Pivotally mounted on this pin 83 are two pairs of spring gripping fingers 84 and 85 adapted to contact with each other at their outer ends. The pair 84 are bent inwardly and made rigid with bearing members 86 on the pin 83. The outer pair 85 are made rigid with corresponding bearings 87 on the pin 83. The bearing members 86 are made rigid with a bridge 88, and the bearing members 87 with a similar bridge 89, each extending on the opposite side of the pin 83 from the fingers, and adapted to be engaged by a cam, as indicated at 90 in Fig. 6, to spread the fingers for releasing the piece of mail matter. A spring 91, coiled around the pivot pin 83 and having each end in engagement with one of the bridges, gives the fingers their gripping action. Accordingly, these gripping fingers normally press toward each other except when the bridges 88 and 89 are separated by the cam 90.

As the fingers are moved by the belt 38 toward the position 57, of the piece of mail matter, these bridges are engaged by the cam 90 to raise the outer pair of fingers. This cam is carried on a light circular frame, comprising a lower member 92, semicircular in form, carried by vertical members 93 depending from a semicircular member 94, carried by the frame of the machine. This cam 90 causes the outer pair of fingers to move outwardly and upwardly so that as they are brought in their arcual path to the letter, in the position 57, the inner pair come in contact with the letter and at this point the bridge passes off of the cam allowing the outer fingers to spring downwardly, thus grasping the letter between them.

When the letter is thus gripped by the gripping fingers, the fingers are raised from their normally depending position to bring the letter to a vertical position above the pivot of the fingers, where it is gripped by the gripper of the carrier. This is accomplished in the following manner. Mounted on the side of one of the fingers 85 of each of the grippers, is an arm 96 having a bifurcated end 98 adapted to engage a rod 99, which is arranged in a spiral about the path of the axis of the pivot pin 83, of the gripping fingers. As this bifurcated end 98 comes onto the rod 99 and is advanced along this rod, by the movement of the belt 38, the fingers are swung upwardly from the position indicated at the left, in Fig. 3, to the position indicated at the right in this figure. This rod is suitably supported by supporting studs, as indicated at 100 in Figs. 4 and 5, attached to the frame and to this spiral rod 99 at such an angle that the bifurcated end 98, may pass them freely.

Depending from the carriers 2, is a vertical movable foot 102 which when pressed upwardly causes the gripping fingers 104 of the carrier to engage the letter, as will be hereinafter described. To conveniently provide for raising this foot with relation to the carrier to cause such gripping, the trackway 1 passes through the loading machine at an angle as in Fig. 3. Now when the carrier arrives at the position shown at the right in Fig. 3, the gripping fingers 84, 85 have brought the letter to a position where it may be grasped by the grippers of the carrier, and the forward movement of the carrier causes the foot 102 to ride upon a projection 105 of a bracket 106, mounted on the belt 38 just ahead of the gripping fingers, when engaged by the foot 102. This projection 105 is supported, to prevent twisting the belt 38, on a short horizontal trackway 108, rigidly mounted in the frame of the machine, since the carrier is moved downwardly on its forward movement by the inclination of the track, moving this foot upwardly and causing the grips 104 to engage the letter.

Now when the grips 104 have engaged the letter, the carrier continues its movement along the trackway and the bridge portions 88 and 89 of the gripping fingers 84 and 85 engage a cam 110 similar to the cam 90 and similarly mounted in a frame 111. This cam causes the outer pair of fingers (the opposite pair from the pair swung outwardly during the gripping) to swing outwardly allowing the fingers to be carried around the pulley 31, without interfering with the forward movement of the letter in the carrier.

It will be seen from Fig. 3, that the belts 55 and 56 are inclined with relation to the belt 38 at an angle substantially equal to that of the trackway 1, but upwardly on approaching the machine, instead of downwardly. This provides for the letters being brought to the gripping fingers at a slight angle, which, when the gripping fingers are raised from their lower to their upper position, causes the letter to be presented to the carriers 2 at an angle substantially equivalent to the angle at which the carrier stands with the rest of the machine. In other words, this presents the letter to the carrier so that it will be properly positioned in the same.

To synchronize the movements of the carriers and belt 38, it is convenient to provide projections 114, rigid with the brackets 106 and extending into the path of the carriers to insure the belt being moved in unison with them. These brackets 106 are mounted at intervals around the belt 38 at the proper distance ahead of the gripping fingers to insure the letter being properly positioned in the carriers.

Mounted on the under side of the projections 105, are small cams 112, Fig. 4,

which engage the arm 78 to swing the stop fingers 74 out of the path of the letters adjacent the belts 55 and 56. Thus the letter at the position 57 is released just as it is engaged by the grippers 84. After the carriers have received the letter, they are propelled by the cable along the trackway to the distributing mechanism. The construction and arrangement of the trackway and cable, is as follows:

The trackway comprises two U shaped channels 115, which receive running blocks 116, (Fig. 27) mounted on the carrier. The channel members 115, may be supported by suitable bridge-like members indicated at 118 (Fig. 22). These extend over the tops of the two channels, allowing the carriers to pass beneath them, and may be supported from the ceiling or from the floor in any convenient manner.

The cable 5 is guided midway between the channels by supports 121, (Figs. 22 and 32) mounted on either of the channels, and having a cam-like portion 122 adapted to spread grippers 124, which are pivotally mounted on the top of the carrier, and act to engage the cable to move the carrier with it. These grippers are best shown in Figs. 8, 9 and 10, and are preferably made of two upright portions 125, which flare away from the cable, as at 126 to provide for the grippers being spread when they pass the cable supports 121. The upright portions 125 and 126 are preferably made rigid with horizontal members 128 pivoted to the top of the carrier, as at 129. These grippers are caused to pinch the cable by means of springs 130, causing the carriers to be drawn by the cable. At the rear, or side to the right, these upright members 125 have an abrupt edge, as shown in Fig. 10, which is adapted to engage shoulders formed in the cable by the differences in diameter, occurring at regular intervals throughout its length. Such shoulders are shown in Figs. 8 and 10 at 132, there being a short comparatively small diameter of the cable 133 and a larger diameter 134 at either side thereof. These smaller diameters preferably occur about every two feet throughout its length, although they may be spaced any distance. This keeps the carriers regularly spaced, which greatly facilitates the operation of my device.

The supports or guides, 121, do not interfere with the progress of the carrier because the flaring portions 126 of the grippers are momentarily spread by the cam 122, which allows them to pass the support by the momentum of the carrier, and grip the cable, at substantially the same place on the other side of the cable support.

To conveniently guide the cable around the curves in the trackway so that the progress of the carriers will not be impeded, the channels forming the trackway may be bowed outwardly, as at 136 so that a portion of the inner channel is brought into alinement with the center line of the trackway, (as at 137, Fig. 22). Guide pulleys 138 across which the cable may run, are mounted at short intervals around the curve of the inner channel. The carrier in passing around the curve, is propelled by the engagement of one of the grippers with the cable, as shown in Fig. 22, and it will be seen that as the carrier comes onto the straight portion of the trackway, both grippers will again engage the cable at their middle position.

We prefer to make the cable endless, extending throughout the circuit of the trackway. To drive this cable, we lead it away from the trackway by means of two pulleys 140 and 141, (Figs. 18 and 19) supported by a suitable frame 142 and so positioned that the cable is guided away from and back to the normal position in the middle of the trackway. From the pulley 140 the cable is lead over a pulley 144 mounted on a shaft 145 supported by a hanger 146 and driven by any suitable means from a belt 147 running over a pulley 148.

Thus it will be seen that the cable, running over the pulley 144, may be driven throughout its length from the same source of power. The frame 142 may be conveniently supported by suspension rods 143, suitably attached to the ceiling. To provide for a uniform tension on the cable, I mount the pulley 141 in two slidable journals 149 on horizontal members 150, of the frame 142, and attach a cord 152 to the frame and to a pulley 154, carried by the shaft 155 of the pulley 141. To this cord 152 is attached a weight 156 which tends to move the shaft 155 carrying the pulley 141, to the right, thus pulling on the cable throughout its length.

The carriers pass the pulleys 141 and 140, in the same manner that they pass the cable supports 121; that is a cam or spreader 158 slightly wider that these pulleys, tapering to a point at each end, as at 159, in Fig. 21, is mounted directly below them. As the carriers approach this portion of the trackway, the grippers are spread by the tapered portion of this spreader and they pass both the pulleys by the momentum of the carriers, slide off from the spreader at the opposite end and again grip the table.

The method of switching the carriers at the entrance to the side tracks of the distributing mechanism, is hereinafter described, in connection with the distributing machine. The distributing mechanism is shown principally in Figs. 13, 14, 15 and 16, in connection with a wiring diagram, Fig. 17. Referring to these figures the mechanism is mounted in a suitable frame

comprising vertical members 160, longitudinal, horizontal members 161 and various cross members 162, which form an oblong vertical frame; near one end of this frame, short horizontal members 164 project laterally from the members 161 and are supported at their outer ends by vertical members 165, which are connected by short longitudinal members 166, thus forming two side wings of the frame, adapted to support mechanism which is hereinafter described.

The side tracks 15 lead downwardly from the main trackway at the switch 17, then horizontally through the machine, the channels of the trackway being suitably supported by the frame just described, and then merge with the main trackway as they leave the machine. Fig. 23 illustrates this arrangement of the trackway and the manner of guiding the driving cable 5 around the distributing mechanism. A pair of pulleys 167 lead the cable away from the switch 17, and pulleys 168 lead the cable back to the trackway, which rises at 169 to the general level of the trackway. The upper side tracks lead downwardly to merge with the lower side track at 177, as they pass out of the machine at the right. A series of three pulleys 181 lead the cable parallel with the rising portion 169 and allow it to pass along the general level of the trackway.

It is to be understood that suitable means are provided for allowing these carriers to pass these pulleys, similar to the spreader 158, described in connection with Figs. 20 and 21.

The description and operation of the entry switch 17 is as follows; It comprises two parallel channel members 170 and 171 pivoted to the channels of the main trackway at 172 and 173, and connected at their free ends by a bridge member 174. A suitable frame comprises vertical members 175, rising from the pivots 172 and 173 and rigidly attached to longitudinal members 176. These are rigid at their opposite ends, with vertical studs 178, and have arcual extensions 179 at their lower ends to which the ends of the side tracks 15 are attached, as at 180. To these horizontal members 176, springs 182 are attached, each having their lower ends attached to one of the members 170 and 171. These cause the switch members 170 and 171 to swing upwardly to connect them with the next side track above, after a carrier passes through the switch.

Rigid with the switch member 170 is an extension 184 which is adapted to engage latch stops 185, pivotally mounted on each of the side tracks 15. These latch stops normally stand with one end in the path of the extension 184 and the other end overhanging the trackway as at 186, (Fig. 25) where it will be engaged by each carrier passing onto the side track. The engagement of the carrier with the inner arm 186 of these latches, swings the other end inwardly releasing the extension and allowing the springs to pull the switch members upwardly until the extension is engaged by the next stop 185, thereby connecting the switch members with the next side track above.

After the switch members reach the uppermost trackway and the carrier passes through the switch onto this trackway, thence into the distributing mechanism, a spreader 188 is brought into the path of the cable grippers on the carriers. This spreader 188 is pivotally carried by small parallel arms 189 mounted on rock shafts 190 and 191. These rock shafts are supported by short vertical struts 192, rigid with the channels of the trackway. The rock shaft 191 has, at one end, a rock arm 194 pivotally connected with an arm 195 which is rigidly carried on the switch member 171. This arm 195 is suitably slotted to allow the sliding of the pivotal connection with the arm 194.

Thus it will be seen that when the switch members reach the topmost position, the spreader 188 will be in its lowermost position, where it will engage the cable grippers of the next carrier to disengage them from the cable. While the spreader is in this position, no more carriers will enter the distributing mechanism, because each carrier disengages the grippers of the carrier behind it, from the cable, as they abut each other, by means hereinafter described.

The carriers accumulate in columns or panels, one above another on the side tracks and these panels of carriers are moved by steps through the distributing mechanism from the entry position to a reading position in front of the key board 16 and then to a discharging position from which they are moved out of the machine one at a time, each carrier having its cams set in a combination corresponding to the address of the letter carried thereby, as hereinafter described.

When the distributing mechanism has discharged all of the carriers from the discharging position, a rod 196 connected with the arm 198 also rigid with the switch member 171, pulls the switch members to their lowermost position where they are held by the lowermost catch 185. The rod 196 is attached to a lever 197 which is indirectly operated by the carrier in the uppermost trackway, as is hereinafter described. The extension 184 is suitably beveled at its outer end at 199, which pushes each catch out of its path in the downward movement, but catches under them on the upward movement, as described.

In the arrangement shown, when four carriers have entered the distributing machine, through the switch, these four carriers arrange themselves in a vertical column or

panel one above the other and there they come under the control of sprocket chains 200, which have evenly spaced projections 201 rigidly carried thereon, and adapted to engage the carriers to move them along the trackways through the distributing mechanism. There are four of these sprocket chains 200 each arranged below and adjacent to one channel of the side tracks, and mounted on suitable sprocket wheels 203 and 204 carried on vertical shafts 206 and 207 respectively. These shafts are suitably journaled at their upper and lower ends in bearings 208 supported on the frame of the machine. These sprocket wheels are mounted rigidly on the respective shafts and the shaft 207 is intermittently driven, causing the carriers to be moved as a unit toward the right by steps, from the entry position to the reading position, and then to the discharging position, under the control of the operator, as is hereinafter described.

Loosely mounted on the shaft 207 is another set of four similar sprocket wheels 210, over which four other sprocket chains 211 run, which also run on sprocket wheels 212 loosely mounted on the shaft 214. These sprocket chains are each adjacent and below one side of a side track, and carry projections 215 similar to the projections 201 also adapted to engage the carrier, as indicated in Fig. 16. These chains 211 may be driven one at a time, from the shaft 214 by means of slidable clutch members 216, adapted to engage corresponding clutch members 217, rigid with each of the sprocket wheels 212.

These clutch members 216 are suitably splined to the shaft 214; accordingly, when one is raised into engagement with the clutch member of a sprocket wheel, this sprocket wheel is driven and the chain passing over it is driven to thus move one of the carriers from the discharging position to the right, out of the machine.

When the four carriers are arranged in a panel at the left of the machine, they are moved one step to the right from the entry position to the reading position, where the letters carried by them may be read by the operator from the front of the machine. From the reading position they are moved again to the right, to the discharging position where they may be engaged by the sprocket chains 211, and discharged one at a time.

The operator reads the addresses on the letters, then presses one of the keys of the key-board 16 which acts to clutch the uppermost of the sprockets 212, with the shaft 214, by means of the clutch 216 and other mechanism, to be described, moving a chain 211 and causing the carrier on the adjacent trackway to be moved from the reading position to the discharging position and thence out of the machine. At the same time the other carriers in the reading position are moved to the discharging position, and the three following depressions of keys of the keyboard actuate the three other chains 211 discharging these carriers from the machine one at a time. In moving from the machine, the carriers pass a series of setting fingers 218, which act upon the cams of the carrier to set a certain combination corresponding to the key depressed. This determines the discharge station at which the letter will be released. The uppermost sprocket 210 is normally connected with the shaft 207 and when rotated by its chain 211 it rotates this shaft, moving the panel of carriers in the reading position to the discharge position.

The shaft 214 is driven as follows: At its lower end is a beveled gear 220, meshing with a beveled gear 221 on a horizontal shaft 222, which carries at its opposite end a pulley 224 driven by a belt 225, driven in turn by a suitable motor 226. The motor, the shaft 221, and the shaft 214 are running constantly and the mechanism of the machine is adapted to be driven periodically therefrom, by means of the clutches 216.

A suitable fly wheel 227 is provided on the upper end of the shaft 214 to insure the parts being instantly set in motion when clutched with the shaft 214. Connected with each of these clutch members 216, is a bifurcated lever 228 having a suitable engagement with the clutch member so that it may slide it along the shaft 214. Each of these levers is pivoted to a vertical member mounted in the frame of the machine and pivotally connected at its rear end to vertical links 230. These links 230 are guided at their lower ends by means of levers 231 pivoted to a longitudinal member of the machine and adapted to be drawn downwardly by means of springs 232, (Fig. 15).

Each of these links rides at its lower end on the periphery of a notched disk 234 (Figs. 13 and 33), rigidly mounted on a sleeve 235 on the shaft 222.. This sleeve 235 is driven by the shaft 222 by means of a frictional engagement therewith, sufficient to operate the clutch members through the levers described, but allowing the shaft 222 to turn inside the sleeve when an escapement wheel 236 is engaged by an escapement pallet 237, (Figs. 13, 15 and 34). This wheel 236 is rigid with the sleeve 235 and the escapement pallet 237 is carried by a lever 238 pivoted at 239 to a portion of the frame of the machine. At the lower end of this lever 238 is an armature 240 adapted to be attracted by a magnet 242 mounted on the frame and so connected in a suitable electrical circuit, indicated at 243, that the depressing of any key in the key-board energizes this magnet 242, attracting the armature 240 and operating the escapement, allowing the disks 234 to rotate a quarter turn,

which operates one of the links 230 thus operating one of the clutches to drive one of the chains 211. The disks 234 are provided with notches 245 which allow the links 230 to drop under the influence of the spring 232, thus raising the clutch members through the levers 228.

The escapement wheel 236 is conveniently provided with four teeth as shown in Fig. 34. Thus a complete rotation of each of these disks causes each of the clutches 216 to be actuated, which moves four carriers successively from the discharging position, through the cam setting mechanism and out of the machine.

Levers 252 carrying cams 251 in the path of the carriers are connected by a link 254 and operate clutches 253 connecting the sprockets 210 with the shaft 207. Thus a carrier on any trackway may unclutch the upper sprocket 210 and at the same time move the link 254 thereby operating the lever 197, rod 196 and arm 198, for resetting the switch member 17 to its lowermost position.

The fingers 218 adapted to set the cams on the carriers, stand normally in the path of these cams, there being any convenient number of fingers on a side, arranged in a vertical column just beneath each trackway. These fingers have rods 260 extending away from the trackway at either side and pivotally connected at the ends away from the trackway with levers 262. These levers 262 are rigidly mounted on the vertical shafts 264, there being one of these levers 262 for each of the fingers 218 in each set adjacent each trackway, that is, four levers 262 on each of the shafts 264. Near the lower ends of each of the shafts 264 is an arm 266, carrying an armature adapted to be attracted by the magnets 267 each of which is connected to the key-board. One or several of these magnets is energized by the depression of each key. A convenient arrangement of these magnets 267 is one above the other and each nearer the center of the machine than the one below, as shown in Fig. 15. This allows the shafts 264 to be arranged one behind the other. There may be any convenient number of these shafts and magnets. As shown, eight are used, which provides for eight fingers 218 on each side of the trackway, each one being actuated by a separate shaft 264 under the control of one of the magnets 267. Fig. 16 shows two of these shafts 264 near the front and two near the rear—the rest of the shafts (illustrated in Fig. 15), being omitted for clearness.

Each of these magnets, as before stated, is connected by suitable electric circuits, as indicated at 268 in Figs. 15 and 16, with various keys of the key-board, which are so arranged that the depression of one key closes one or more circuits, energizing corresponding magnets which pull on the armature arms 266, drawing outwardly on the levers 262, thus drawing the corresponding finger 218 out of the path of the corresponding cam on the carrier. Thus, when a certain key is depressed, a certain combination, that is, a number of fingers on one side, in certain positions, and a number of fingers on the other side in certain positions, are set in each of the groups of fingers 218 or withdrawn from the path of the cams 270 on the carriers, so that a carrier on any of the side tracks 15 would have its cams set by the remaining fingers for a combination corresponding to the address indicated by the key depressed. These combinations change at once in each of the four groups adjacent to each trackway with the depression of every key in the keyboard.

Any convenient arrangement of the wiring from the key board 16 to the magnets 267 may be used. We show a convenient arrangement of the circuits in Fig. 17, in which the keys are indicated at 275, the setting fingers at 218, the armatures at 266, and the magnets controlling said armatures at 267. A suitable source of electricity is indicated at 276 and the escapement pallet 237 is conventionally shown as operated by its magnet 242, which may be conveniently arranged in a common supply wire 280. Each of the keys 275 is connected directly to this common supply 280 and the depression of a key closes a circuit through a contact 281, a wire 282, and one of the vertical wires 284, which lead through the magnets 267 and back to the common return. Some of these magnets 267 are energized by means of wires 285, and others through wires 287 to relays 288, the operation of which will be presently described.

Now, when one of the keys, for example the one indicated at 275^a, is depressed, it completes a circuit from the battery through the magnet 242, the common supply 280 and through the contact 281^a, the wire 285^a to the magnet 267^a, through the wire 289 to the adjacent magnet 267^b, through the wire 290 to the magnet 267^c, and through a wire 292 to the common return 280^a to the battery 276. This energizes three magnets, indicated by 267^a, 267^b and 267^c, which withdraws, for example, the three upper fingers 218 on one side of the trackway. This leaves the other fingers in the path of the cams 270 of the carrier, which are accordingly set, (moved inwardly, as will be described,) and the combination thus set would be the three upper cams on one side of the carrier remaining out, to be acted upon at the discharge station.

Some of the keys 275 may close two circuits when depressed, as, for example, the key 275^d, which, when depressed, closes the circuit from the battery through the com-

mon supply 280, through the contact 281[d], the wire 282[d], the wire 284[d], the wire 285[d], the magnet 267[b], and the magnet 267[c], and back through the common return. At the same time, the switch 275[d] closes a circuit through the contact 295, the wire 296, the wire 284[e], and the wire 285[e], the three magnets indicated at 267[e], which are connected by wires 297 and 298 respectively, and back through the wire 292 to the common return. Thus it will be seen that the two magnets at the upper left (in the diagram) and those in the fourth, fifth and sixth positions, counting from the top on the left side, would be energized to withdraw corresponding fingers from the path of the cams of the carriers, allowing the others to remain in the path to act on these carrier cams.

The series of magnets 267 at the right may represent magnets at the right of the machine, controlling fingers at the right of the trackway, and these magnets are operated through relays 288, heretofore mentioned, in the following manner:

When a key connected with one of these relays, for example, the key 275[f], is depressed, it connects a circuit from the common supply 280 through the contact 295[f], the wire 296[f], the wire 284[f], the wire 287[f] through the magnet 288[f], the wire 297 and through the return wire 292 to the common return 280[a]. This energizes the magnet 288[f], closing the circuit through a contact 298, connected to the wire 297 leading from a branch 292 of the common return by means of an armature 300, a wire 301, a wire 302, a wire 304, through the magnets 267[f], connected by a wire 307 and a common supply wire 305. This operates the upper two magnets at the right of the diagram through the relay 288[f]. At the same time, this key closes a circuit from the common supply 280 through the contact 281[f], a wire 284, and a wire 285[f] through the magnet 267[c], the wire 292 and the common return 280[a], thus operating one of the magnets at the right of the diagram. It will be seen that, by the use of relays, the cam setting fingers may be operated on one side of the trackway, and, by the use of wiring, first described, the magnets operating the cam setting fingers at the other side of the trackway may be energized. It will also be seen that almost any desired number of combinations may be obtained, as the number of magnets and setting fingers may be readily increased, it being only necessary to continue the arrangement of the wiring to increase the circuits for the additional combinations made possible by the larger number.

To increase the number of combinations possible in the magnets, at the right of the diagram, with the use of a similar arrangement of the wiring, we provide a plurality of armature contacts for some of the magnets 288, as indicated at 300[e]. These may close circuits through a plurality of the wires 302 and energize a larger number of the magnets, under the control of the relay, at the depression of any key operating that relay.

The wiring diagram shown herewith is illustrative of one or many convenient arrangements. Only a few of the possible combinations and the circuits operating them have been described. It is thought, however, that these illustrate the arrangement of the wiring. The magnets 267[h], which are indicated without showing complete circuits connecting them, are to illustrate that the number of magnets and combinations might be continued indefinitely.

A convenient arrangement of the settable cams on the carrier is shown in Figs. 8 to 12 inclusive, 27 and 29, which will now be described in connection with the letter gripping mechanism of the carrier. The carrier 2 comprises a top plate 310 rectangular in form and somewhat narrower than the space between the panels for the trackway and has at the rear downward projections 312, at opposite corners of which are journaled rock shafts 313 having their other ends in similar depending projections 315. Mounted on these rock shafts are slidable sleeves 316, each having a slot 318 in engagement with a pin 319, which sleeves may slide on the shaft but may be turned thereby. These sleeves carry the letter gripping fingers 104 and may be rotated to spread these fingers apart, as indicated in Fig. 9, or may rotate to bring the fingers together, as indicated in dot-and-dash lines at 104[a]. These sleeves 316 are held normally in their forward position by means of compression springs 320 surrounding the shafts and interposed between depending projections 312, and the end of a rectangular frame having its ends 317 slidable on the shafts and engaging these sleeves and having its sides 321 (Fig. 9) bowed outwardly to be engaged by brakes at the discharge stations.

Rigidly mounted in the forward end of these rock shafts 313 are small crank arms 322 extending radially and then bent longitudinally to present the free ends to a slot 324 in a slidable plate 325, carrying the foot 102, heretofore mentioned, and slidable in suitable ways 327, formed at the rear of a box-like frame 328 depending from the top plate of the carrier.

This box-like frame of the carrier has a bottom plate 330 which supports the settable cams 270, and in which is journaled the lower end of a shaft 332, on which these cams are pivoted The cams comprise a partially circular portion 333, disk-like in form and lying one upon the other. From each of these circular portions extends a substantially radial arm 335 having a rounded por-

tion at its outer end 336 adapted to engage the setting fingers 218 and the cams of the discharge mechanism, as will be hereinafter described.

From the rounded portion 336 the arm extends rearwardly to a substantially radial shoulder 337 formed by rearwardly extending portions 338 of each cam. Now, when the cams are engaged by the setting fingers, they are moved rearwardly to a position which moves the shoulders 337 past the center line and allows a narrow vertical trigger 340 to move forwardly to actuate the releasing of the letter, as will be described. The rearwardly extending portions 338 of each of the cams has an arcual surface formed about the center of the shaft 332 which normally abuts the trigger 340; thus any one of the cams in the normal position indicated in Fig. 11 prevents the forward movement of this trigger and accordingly prevents the actuating of the releasing mechanism.

This trigger 340 is carried on an arm 342 pivoted on the shaft 343 mounted in the upper portion of the box-like frame 328. The arm 342 is offset from the trigger portion 340, thus presenting a horizontal shoulder 344 which is engaged by a catch 346 mounted on a leaf spring 347 and extending through a slot in said slidable plate 325.

When the foot 102 is moved upwardly by the projection 105 carried on the main belt of the loading mechanism, it slides the plate 325 upwardly rocking the shafts 313 and causing the fingers 104 to grip the letter as described. In this position said catch 346 stands over a shoulder 344 and securely holds said gripping fingers in engagement with the letter. When all of the cams have been moved to the rearward position described, allowing the trigger 340 to be moved forwardly, the shoulder 344 comes out from under the catch 346, the trigger being moved forwardly under the influence of a coil spring 348 on the shaft 343, allowing the plate 325 to be dropped slightly which brings the foot 102 to a position to be engaged by a means, to be hereinafter described, for pulling it downwardly to release the letter.

The fingers 104 are made resilient and the pressure on one or the other tends to rock the shaft, which exerts a spring pressure on the rock arms 322, acting downwardly on the sliding plate 325, quickly pressing it and the foot 102 downwardly when the trigger releases the catch 346.

The cams 270 are provided with annular grooves 350 arranged one in the top of one cam registering with one in the bottom of the cam above. This provides an annular space for a coil spring 351, Figs. 11 and 12, having one forwardly turned end 352 in one cam and the other forwardly turned end in engagement with the other cam. This spring tends to return the cams to their normal position, that is with the arms 336 projecting laterally, as in Fig. 11. In this position the arms engage the edge of vertical catch plates 354, pivotally mounted on vertical rock shafts 355 which limit the forward movement of the arms, causing them to stand in their normal position. On the periphery of the portion 333 of each cam, is a shoulder formed by a projection 356 which is adapted to engage the edges of these catch plates 354 when the cams are set clear back to their idle position, by means of the setting fingers. When a carrier passes out of the distributing machine, one or several of these cams are set back by the setting fingers, and these shoulders, one on each cam adapted to engage its respective catch plate, are engaged by said plates and the shoulders 337 stand out of the path of the trigger which then abuts only the cams in the normal or active position. Now when the carrier reaches the proper discharge station, these remaining projecting cams are engaged and pressed rearwardly, bringing all of the shoulders out of the path of the trigger, allowing it to move forwardly, releasing the catch 346, thus allowing the foot 102 to drop causing the gripping fingers to release the letter, as described. The means for actuating these cams at the discharge station, will now be described.

Mounted on the channels 115 of the trackway, at each discharge station, is a U shaped member 360 having a cross member 361 bridging the channels and having shoulders 362 in engagement with the under side of the channels and depending portions 363 extending downwardly somewhat lower than the foot 102 of the carrier and having thereon cam-like projections 365. These cam-like projections are beveled at their forward sides, as at 366 and are positioned to engage the rounded portions 336 on the arms of the cams 270, and as the carrier moves past these cams, the arms are pressed rearwardly far enough to bring the shoulders 337 out of the path of the trigger 340 and when the right discharge station is reached, the combination of the outstanding carriers will all be pressed rearwardly allowing the trigger to move forwardly, releasing the letter. These projections 365 do not press the cams in far enough for the catch plates to engage the shoulders, however, and the combination is not changed by passing through the discharge station.

The discharge combinations may be varied as greatly as the combinations of the settable cams, that is for every possible combination of the settable cams, a corresponding combination of the projections 365 may be arranged at the discharge stations. The combination shown in Fig. 27 is, on the right hand side, positions numbers 1 and 4, (count-

ing from the bottom upwardly), and, on the left hand side, positions numbers 1, 2, 3 and 5, and thus only carriers having cams projecting in these positions, with all the other cams set back, can discharge their letters at this discharge station.

At the lower ends of the members 363 are carried longitudinal members 368 extending parallel with the trackway and having thereon cams 369 adapted to engage the outer edges of the laterally extending foot 102 when the proper discharge station is reached. In Fig. 28 the carrier is indicated in dot and dash lines, showing the foot 102 about to be engaged on the further forward movement of the carrier (toward the left) by the downwardly sloping surface 370 of the cam 369. In this view the position of the foot is that after the catch 346 is released, allowing the foot to drop into the path of the cam 369. The foot normally is carried just above these cams at the discharge station. These cams are to insure the positive action of the foot and the releasing mechanism at the same time, insuring the letter being dropped into the proper receptacle, the top of which is indicated at 372 in Fig. 28. Brakes 373 engage the sides 321 of the frame surrounding the sleeves 316, stopping these sleeves and the letter without stopping the carrier, which allows the letter to drop straight down into the proper receptacle.

After discharging the letter, the carriers pass through a resetting station, shown particularly in Figs. 30 and 31, similar to the discharge mechanism, but having only two cams 385, carried respectively by the side members 386 of the station frame. These two cams are in position to invariably engage the two resetting cams 375 on the carrier. These resetting cams 375 have arcual shoulders (Figs. 11 and 30) corresponding to the shoulders 356 of the discharge stations, except that they extend farther around the surface of the circular portion 333 of the cams, providing no shoulder to be caught by the plates 354. These act to press the catch plates 354 outwardly releasing the shoulders 356 with all the other cams, allowing them all to be returned to their normal position under the influence of the coil springs 351, while returning themselves to normal position, by similar springs.

To provide for the carriers accumulating before passing into the entry switch without tearing or abrading the cable, and to provide for the carriers accumulating without causing damage, in case one carrier becomes stuck or inadvertently stopped, along the trackway, we provide each carrier with a slide plate 378 having beveled points 379 (Fig. 10) engaging the sides of the horizontal portions 128 of the grippers. This slide 378 is bent downwardly to provide a lip 380 adapted to abut any carrier stopped along the trackway, and spread the grippers, releasing them from the cable and allowing the cable to pass freely through the grippers at such times. As each of the carriers is provided with one of these spreader slides 378, it will be seen that any number of carriers may accumulate at the entry switch or any point along the trackway without causing damage to the cable or carriers. As soon as the first carrier in such an accumulation of carriers is released, or again allowed to grip the cable as at the entry switch when the spreader is raised, the springs 130 pulling inwardly on the grippers cause the slide to move forward, which allows the grippers to again engage the cable, thus each carrier will in turn be picked up automatically, and passed along the trackway in the usual manner.

For a more complete understanding of the operation of my device, it is briefly reviewed in the following paragraphs, taking each operation in sequence, following the order from the loading machine to the discharge station.

The carriers arrive empty at the loading machine, normally spaced about two feet apart by the enlarged portions of the cable engaging the grippers 124 of the carrier. Here they engage the projections 114 on the main belt of the loading mechanism and are brought opposite the gripping fingers 84 of the loader, which at the same time engages a letter in the position 57, this letter having been brought to this position by means of the feed belts 55 and 56 leading from the common pile 53 by a series of steps, the letter being stopped in its forward movement by the fingers 74. The carrier and grippers 84 now move forwardly in unison, the grippers being inverted from the depending position to the vertical upright position by means of the spiral cam 99.

The letter is brought to the gripping position with relation to the carrier, and the gripping fingers 104 of the carrier are caused to engage the letter by means of the foot 102 being pressed upwardly in the carrier, which action takes place because the carrier is brought downwardly by the incline of the trackway through the loading machine.

The gripping fingers 84 are then engaged by the cam 110 of the loading mechanism and caused to release the letter which is carried along the trackway in the carrier to the entry switch 17. This switch operates to lead the carriers into the side tracks 15, the members 170 and 171 of the switch being raised from one side track to the next by means of the springs 182 and stopped opposite each side track by means of the catches 185. When the four carriers have entered the side tracks, they stand in a vertical column, as indicated in Fig. 1 and the switch

being in its uppermost position has caused the spreader 188 to drop into the path of the grippers of the next carrier, which causes the carriers to accumulate one behind the other till the carriers in the entry position have been moved to the reading position, which through the connections described raises the spreader 188 and lowers the switch members to throw the next carrier into the lowermost trackway, again filling the entry panel, as described. Now the operator of the distributing machine reads the addresses of the letters in the carriers in the reading position, and dispatches them from the distributing position in the order read, by depressing the keys 275 of the key-board. This operates each of the clutches 216 in turn, which causes the sprocket chains to pick up each carrier in turn and pass it through the cam setting fingers, to the descending portion of the trackway, down which it slides and again grips the cable near the pulley indicated at 168 in Fig. 23.

As one of these four is discharged, the uppermost of the clutches 216 operates to rotate the shaft 207 which moves the next panel of carriers to the right. As a unit, at the same time, the rotation of this shaft through the cam 397 the bell crank 197 and the connecting links 196, reset the entry switch to re-fill the entry panel. As each of the carriers is dispatched, the combination of projecting setting fingers 218 is changed opposite each of the trackways, so that the cams 270 of the carriers are arranged, some of them projecting and some of them set back to inoperative position, so that they will discharge the letter at the predetermined discharge station, corresponding to the address on the letter carried thereby. The carriers are now propelled along the trackway, to the discharge station through which they pass, each discharge station actuating various approaching cams, but causing no actuation of the trigger and letter releasing mechanism until the proper combination is reached, at which time all of the cams will be set back, allowing the release of the trigger, permitting the foot to drop into the path of one of the cams 369 which pulls down the slide 325 rocks the gripping fingers 104 to the open position, causing the letter to drop. At the same time, the sleeves 316 are gripped by the mechanism described and stopped in their forward movement while allowing the carrier to move on, thus allowing the letter to drop straight down, its inertia having been taken up when the sleeves are stopped. As soon as the letter is released, however, the sleeves are released and immediately resume their normal position under the influence of the springs 313.

The carrier now passes on to the loading mechanism again, with the foot 102 in its lowermost position and the gripping fingers 104 accordingly in their upper position. Another letter is picked up at the loading machine, and the same operation repeated indefinitely.

From the foregoing description it will be seen that we have provided a mail distributing device which is highly efficient and very rapid in operation, and one which may be used for various sized parcels, from thin post cards to thick, heavy mail matter. By suitably arranging the grippers on the carriers, it will be seen that my device may carry parcels and small packages, thus adapting it for other uses than that of distributing mail. In the foregoing description the matter carried by the carrier is referred to as "letters," but it is to be understood that the use of our device is not limited thereto.

Having thus described our invention, what we claim is:

1. In a mail distributing apparatus, the combination of an endless trackway, a free carrier adapted to circulate around the same, mechanism for stopping the carrier at an inspection station, a keyboard, and mechanism controlled thereby for causing the carrier to discharge its load at various predetermined positions.

2. The combination of a trackway having a return portion, a plurality of free carriers adapted to travel in a circuit around the trackway, means for automatically and successively loading separate pieces of mail matter from a bulk thereof into the respective carriers, a keyboard, and mechanism controlled thereby for causing the carriers to discharge.

3. The combination of a plurality of trackways, a series of independently movable carriers, means for loading the carriers successively, means for propelling the carriers along different trackways, a keyboard, mechanism on the carriers adapted to be rearranged by the keyboard, and discharging means coöperating with such rearrangeable mechanism on the carriers.

4. The combination of a trackway, a series of free and independent carriers, means for propelling them one after the other along the same trackway, means for automatically loading the individual mail matter into the respective carriers, a keyboard, and mechanism adapted to be set thereby to cause the carrier to discharge at predetermined points.

5. The combination of a trackway, a series of free and independent carriers, means for propelling them along the trackway, means for automatically loading the individual mail matter into the respective carriers, a keyboard, mechanism on the respective carriers adapted to be set by the keyboard, and a plurality of discharging means each adapted to coöperate independently

with a definite setting of such mechanism on the carrier.

6. In a mail distributing system, the combination, with a keyboard and a series of independent mail carriers, of means for propelling a plurality of such carriers abreast in view of the operator at the keyboard, and discharging mechanism controlled by such keyboard.

7. The combination of a trackway having one or more side tracks, a plurality of carriers, means for advancing them in series along the trackway and two or more abreast at the side track portion, a keyboard located adjacent to such side track portion, and mechanism controlled by the keyboard for discharging matter from the respective carriers.

8. The combination of a trackway, one or more side tracks departing from and returning to the main trackway, a series of independent carriers, means for propelling the same along the main trackway and for successively switching them to said side tracks and thereafter returning them to the main trackway, whereby a plurality of carriers may pass abreast at the side track portion, a keyboard adjacent to such portion, and mechanism controlled thereby for discharging the matter from the carriers.

9. The combination of a trackway, one or more side tracks departing from and returning to the main trackway, a series of independent carriers, means for propelling the same along the main trackway and for successively switching them to said side tracks and thereafter returning them to the main trackway, whereby a plurality of carriers may pass abreast at the side track portion, a keyboard adjacent to such portion, mechanism on the respective carriers adapted to be set by the keyboard, and a series of discharging mechanisms adapted to coact with carriers according to the setting thereof.

10. In a mail distributing apparatus, the combination of a series of independently movable carriers, mechanism for independently stopping them at an insepction station, mechanism on the carriers adapted to be set, and discharging mechanism adapted to selectively coact with such mechanism on the carriers.

11. The combination of an endless trackway, a series of carriers supported thereon and having mechanism adapted to be selectively set, mechanism for independently stopping the carriers at an inspection station, propelling means for the carriers independent of the support therefor, and discharge means coöperating with the settable mechanism on the carriers.

12. The combination of a trackway, a series of carriers movable relative to each other, means for stopping them independently of each other for inspection, settable mechanism on the respective carriers, a plurality of discharge stations each adapted to coact independently with such settable mechanism according to the setting thereof, and mechanism for propelling each carrier along the same trackway past all of the discharge stations.

13. The combination of an orbital trackway, a series of carriers adapted to travel around the same, settable mechanism for causing said carriers to discharge their mail matter at different points, mechanism for loading the carrier, mechanism for then moving the carrier to an inspection position, and mechanism for then setting the settable mechanism.

14. The combination of an orbital trackway, a carrier, mechanism for propelling the same about the trackway, an independent loading machine interposed in the trackway, means whereby the arrival of a carrier at the loading machine controls the loading, settable mechanism for causing it to discharge at a selected one of various points, and keyboard mechanism adapted to act on the settable mechanism after the carrier has left the loading mechanism.

15. The combination of an orbital trackway having one or more side tracks departing from and rejoining the trackway, a series of carriers, means for propelling them successively along the orbital trackway and abreast at the side tracks, and mechanism adapted to be set from a point adjacent to the side tracks for controlling the discharge from the respective carriers.

16. The combination of an orbital trackway, a series of independent carriers, means for propelling them successively about the trackway, a magazine adapted to hold an unassorted supply of mail matter, mechanism for automatically loading such mail matter piece by piece into the respective carriers, settable mechanism on the different carriers, and a series of discharge stations having mechanism adapted to coact with the settable mechanism to cause the carriers to discharge their matter at points determined by the setting of the mechanism thereon.

17. The combination of an orbital trackway, a continuously traveling endless flexible member adjacent thereto, a series of carriers on the trackway, grips on said carriers adapted to engage the flexible member, means for causing said grips to release the flexible member at an inspection station, and settable means for controlling the discharge from the respective carriers.

18. The combination of an orbital trackway, a continuously traveling endless flexible member adjacent thereto, a series of carriers on the trackway, grips on said carriers adapted to engage or release the flexible member, a keyboard, and means con-

trolled thereby for determining the discharge from the respective carriers.

19. The combination of an orbital trackway, a continuously traveling endless flexible member adjacent thereto, a series of carriers on the trackway, grips on said carriers adapted to engage or release the flexible member, and means on each carrier for releasing its grip when it abuts another carrier.

20. The combination of a trackway having one or more side-tracks departing from and rejoining the trackway, a switch controlling the entries to these side-tracks adapted to connect the main track with the side-tracks successively, a series of carriers, means for propelling them successively along the trackway, and means for propelling them abreast at the side-tracks.

21. The combination of a trackway having one or more side-tracks departing from and rejoining the trackway, a switch controlling the entry to said trackway, a series of carriers, and means for propelling them successively along the trackway, and means for propelling them abreast at the side-tracks.

22. The combination of a trackway having one or more side-tracks departing from and returning to the main trackway, a switch controlling the entry to said side-tracks, a series of carriers, means for propelling them successively along the trackway, means for propelling them abreast at the side-tracks, a key-board adjacent to the side-tracks, discharge-controlling mechanism on the respective carriers adapted to be set by the key-board, said switch operating to stop the carriers entering the side-tracks and controlling the entry to each side-track successively and said switch being automatically operated by the movement of a carrier into one of the side-tracks from the main trackway.

23. In a mail distributing apparatus, the combination of a series of carriers, a trackway, mechanism for propelling the carriers along the trackway, means adapted to carry mail matter from a common pile, one piece at a time, means adapted to move at the same rate as the carrier for gripping each piece of mail matter and bringing it into position adjacent the carrier, means on the carrier for gripping it, and means causing the gripping means on the carrier to engage the mail matter.

24. In a mail distributing apparatus, the combination of a trackway, a plurality of free carriers for gripping a piece of mail matter, a belt having one span adjacent the trackway, grippers on the belt adapted to grasp the piece of mail matter, means for feeding the mail matter one piece at a time to said last mentioned grippers, and means for causing the belt to move intermittently at substantially the same speed as the carrier.

25. In a mail distributing apparatus, the combination of a trackway, a plurality of free carriers for gripping a piece of mail matter, a belt having one span adjacent the trackway, grippers on the belt to grasp the piece of mail matter, means for feeding the mail matter one piece at a time to said last mentioned grippers, means for causing the belt to move intermittently at substantially the same speed as the carrier, and means causing the belt to move only while the carrier is passing it.

26. The combination of a trackway, one or more side-tracks departing from and returning to the main trackway, a series of independent carriers, means for propelling the same along the trackway, means for successively switching them to the side-tracks, means for moving them abreast on the side-tracks for a portion of the length of the side-tracks, means for discharging them from the abreast position one at a time, a key-board adjacent to the side-tracks, mechanism on the respective carriers adapted to be set by the key-board, and a series of discharging mechanisms adapted to co-act with the carriers according to the setting thereof.

27. The combination of a trackway, one or more side-tracks departing from and returning to the main trackway, a series of independent carriers, means for causing them to move abreast at the side-tracks for a portion of the length thereof, means for discharging them from the side-tracks to the main track one at a time, settable mechanism on each of the carriers, mechanism adjacent each of the side-tracks adapted to coöperate with said settable mechanism and a key-board for determining the point of discharge of the carriers by said mechanism adjacent the side-tracks.

28. In a mail distributing apparatus, the combination of a series of carriers, mechanism on the carriers adapted to be set, an orbital trackway for the carriers, a series of one or more side-tracks departing from and returning to the main trackway, means for propelling the carriers abreast at the side-tracks, and successively discharging them from the abreast position, and means for driving said propelling means intermittently, mechanism adjacent each of the side-tracks coöperating with said settable mechanism on the carriers, a key-board adjacent the side-tracks controlling said last mentioned mechanism and controlling said driving means, and means coöperating with the mechanism on the carrier to selectively discharge mail matter carried thereby.

29. In a mail distributing apparatus, the combination of an orbital trackway, a plurality of carriers thereon, a plurality of movable members on each carrier adapted

to be set in combinations including two or more members, means adjacent the trackway for setting such members, a keyboard controlling said means, each key of the keyboard adapted to set a different combination of members on the carrier, and discharge mechanism along the trackway comprising stationary members adapted to cooperate with said movable members to control the release from the carrier.

30. In a mail distributing apparatus, the combination of an orbital trackway, a plurality of carriers thereon, means for propelling the same along the trackway, one or more side-tracks departing from and returning to the main trackway, means for propelling the carriers abreast a portion of the length of said side-tracks, a separate means for propelling them the remainder of the distance one at a time, a means for automatically feeding mail matter to the carriers, means on the carriers adapted to grip the mail matter, settable mechanism on the carriers adapted to control the release of said mail matter, means adjacent the side-tracks for setting said mechanism, a key-board adjacent the portion of the side-tracks along which said carriers are driven abreast each key on said key-board adapted to control the means adjacent the trackway coöperating with said settable mechanism on the carrier, and also adapted to control the discharge of the carriers passing said means from the abreast position one by one, and a plurality of discharge stations adapted to selectively co-act with the settable mechanism on the carrier to discharge the mail at the point determined by the key depressed.

31. In a mail handling apparatus, the combination of a trackway, a series of free carriers adapted to travel along the same, a key-board and mechanism controlled thereby for effecting the discharge from the carriers, and means for grouping the carriers adjacent to the key-board for inspection of their contents.

32. In an apparatus of the character described, the combination of an orbital guideway, independently movable carriers adapted to travel along said guideway, means for propelling the carriers, means for stopping them for independent inspection of their contents, a keyboard, and mechanism controlled by the keyboard for causing the carriers to discharge at predetermined points.

33. In an apparatus of the character described, the combination of a trackway, a propelling means, a series of independently movable carriers adapted to be moved thereby along the trackway, means for causing a relative movement between the propelling means and the carriers at an inspection station, and mechanism controlling the discharge from the carriers.

34. In an apparatus of the character described, the combination with a keyboard, of a series of independently movable mail carriers, a magazine for a supply of mail matter, means for taking the pieces of mail individually from the magazine and placing them in the carriers, mechanism on the carriers controlled by said keyboard to discharge the carriers at predetermined points, and an inspection station adjacent to the keyboard.

35. The combination of a trackway, a series of free carriers, means for grouping the carriers at a portion of the trackway, a series of discharging stations, and means adjacent the portion of the trackway where the carriers are grouped controlling the discharge of a carrier at a predetermined station.

36. The combination of a trackway, a series of free independent carriers, means for grouping the carriers at a portion of the trackway, a series of discharging stations, and means adjacent the portion of the trackway where the carriers are grouped for causing the discharge of the carrier at a predetermined station.

37. In a mail distributing system, the combination of a trackway, a series of discharge stations, a set of carriers each free from the others and adapted to traverse said trackway past successive discharge stations, settable mechanism on the carriers, each discharge station being arranged to coact with a definite setting of said settable mechanism, a keyboard, and power mechanism controlled thereby for causing such definite setting of the settable mechanism on the respective carrier.

38. In an apparatus of the character described, the combination of a series of carriers, a guide-way along which the carriers are adapted to travel in various positions relative to each other, an inspection station, means for stopping successive carriers thereat, a series of discharge stations adapted to receive the load of the carriers, and mechanism for controlling the station at which the carriers discharge.

39. In a distributing apparatus, the combination of an orbital guideway, a carrier adapted to travel around the same, a continuously movable propelling means, means for clutching the carrier to the propelling means at any one of a number of points, and a keyboard controlling the discharge from the carrier.

40. In a mail handling apparatus, the combination of a holder for a common pile of mixed letters, distributing mechanism, manually operable means controlling said mechanism, conveying means having a series of carriers adapted to travel one after the other from the holder to the distributing mechanism and means associated with said holder for automatically and continu-

ously loading letters from said common pile into the respective carriers.

41. In a mail distributing system, the combination of means for individually separating mail matter, a controlling mechanism for determining the place of distribution of the individual articles, a series of discharge stations, and a conveying means connecting the first mentioned means, the controlling mechanism and the discharge stations in the order named, said first mentioned means, controlling mechanism and discharge stations being separate and distinct and disconnected except for said conveying means.

42. In a distributing system, the combination of a guideway, a carrier movable thereon, a plurality of settable devices on the carrier adapted to be set in combinations of two or more, a keyboard, mechanism controlled thereby for setting said devices, and a discharge station having stationary members coöperating with the devices set on the carrier.

43. In a system of the character described, the combination of a guideway, a series of carriers adapted to move in succession thereon, mechanism for loading articles into the carriers, means for stopping the carriers at an inspection station successively and independently of each other, a keyboard, and mechanism controlled thereby for causing the carriers to discharge at predetermined stations.

44. The combination of a guideway, a series of independently movable carriers adapted to move along the same and having settable mechanism on them, mechanism for loading each carrier with a single piece of mail matter from a mixed supply thereof, keyboard controlled mechanism for setting the mechanism on the carrier, and discharge mechanism coöperating with the settable mechanism on the carrier to discharge the same.

45. In a distributing apparatus, the combination of a trackway, a plurality of free carriers, means for propelling them along the trackway, means for automatically and continuously loading the successive carriers, a keyboard, a plurality of discharge stations, and mechanism under the control of the keyboard for causing the discharge from each carrier at a predetermined station.

46. In a mail distributing apparatus, the combination of an endless trackway, a plurality of independently movable carriers thereon, each having settable mechanism upon it, means for loading said carriers individually, a keyboard, mechanism controlled thereby for setting the mechanism on the carriers, a plurality of discharge stations having means adapted to coact with the settable mechanism on the carriers, and means for propelling the carriers successively past the loading mechanism, the keyboard controlled mechanism and the discharge stations.

47. A mail distributing system comprising a trackway with a return portion, a carrier, propelling means adapted to cause the same to circulate about the trackway, mechanism for detaching the carrier from the propelling means at an inspection station, a series of discharge points, and keyboard-controlled mechanism for causing the carrier to discharge its load at a predetermined discharge point.

48. A distributing system comprising an orbital trackway, carriers adapted to travel said way, an inspection station where the contents of said carriers may be ascertained, a keyboard adjacent to said inspection station, said keyboard controlling carrier-discharging mechanisms, and a series of discharge points along said way adapted to coöperate with said keyboard-controlled mechanisms to discharge said carriers at various predetermined discharge points of said series.

49. In a mail distributing apparatus, an orbital trackway, carriers adapted to travel said trackway, an endless cable mounted adjacent said trackway and adapted to be engaged by said carriers, means for driving said cable, an independent loading station along said trackway, means for loading letters into said carriers, an inspection and distribution-controlling station along said trackway adapted to coöperate with said carriers and having keyboard-controlled selector-setting means, selectors on said carriers adapted to be set thereby to control the discharge of the contents of the carriers, whereby an operator may inspect the contents of the carrier and set the carrier accordingly, and a series of discharge stations adapted to coöperate with said selectors on the carriers to cause the carriers to discharge their contents at the predetermined stations according to the setting of said selectors.

50. The combination of a trackway having a return portion, a cable drive adjacent thereto, a series of carriers, means for connecting each carrier to the cable and for disconnecting it therefrom, means for loading the carriers individually, rearrangeable mechanism for controlling the discharge from the carriers, a keyboard, and mechanism controlled thereby for setting said rearrangeable mechanism.

51. In a mail assorting system, the combination with a series of independently movable carriers, of a carrier-loading station, an inspection station, means for propelling the carriers from the loading station to the inspection station, and a keyboard adjacent to the inspection station adapted to control the discharge from the carriers.

52. In a mail distributing system, the combination of a series of carriers, means for moving them about a circuit independently of each other, means for automatically loading the carriers, a keyboard independent of the loading means, and mechanism adapted to be set by said keyboard to determine the discharge of the loads from the carriers.

53. In a mail assorting system, the combination with independent carriers, of a carrier-loading station, an inspection station, a keyboard adjacent to the inspection station adapted to control the discharge from the carriers, a series of discharge stations, means for propelling carriers in a circuit from the loading station to the inspection station and from the inspection station past the discharge stations, and from there to the loading stations, and means for stopping any carrier at the inspection station without stopping carriers in other parts of the circuit.

54. A mail distributing system comprising a trackway, a carrier adapted to travel along the same, a keyboard, collocating mechanism controlled by said keyboard, rearrangeable mechanism on said carrier adapted to be set by said collocating mechanism, discharge mechanism on said carrier adapted to be controlled by said rearrangeable mechanism to discharge the contents of the carrier, a series of discharge points, and stationary engageable members at the various discharge points adapted to actuate the rearrangeable mechanism on the carrier when set to cause a discharge at that point, whereby the point of discharge is predetermined by the setting given said rearrangeable mechanism.

55. A mail distributing system comprising a letter conveying means, a series of discharge stations, rearrangeable mechanism determining the point of discharge of the letter, stationary means at said discharge stations to actuate said rearrangeable mechanism to discharge the letter, and a keyboard-controlled mechanism to collocate said rearrangeable mechanism.

56. In a mail distributing system, the combination of a series of rearrangeable carriers, mechanism for loading letters into said carriers, keyboard-controlled mechanism for collocating said carriers, a series of discharge-stations each having stationary actuating members adapted to coöperate with said carriers to discharge their loads according to the collocation established by said keyboard-controlled mechanism, and a carrier trackway connecting said loading mechanism, said collocating mechanism and discharging devices, said loading mechanism, collocating mechanism and discharge devices being separate and distinct except for said carrier-trackway.

57. In a mail sorting apparatus, the combination of a series of discharge stations and a distribution controller comprising stationary members and a plurality of selector members arranged to coact with the stationary members and by movement of the selector members past the same to control the discharge of letters to said station, said members being adapted to be set in combinations of two or more members, whereby the total number of combinations possible to control the said discharge of letters into classes exceeds the sum total of said members.

58. A mail distributing system comprising a way, a plurality of rearrangeable carriers to travel along said way, means for automatically loading said carriers, an inspection station where the contents of said carriers are inspected, a series of discharge points along said way, and keyboard-controlled means for collocating said carriers to discharge their contents at a predetermined discharge point.

59. Carriers for mail matter each having a plurality of members settable in combinations, combined with means for loading the mail matter into the carriers, a keyboard for setting the combinations, and discharge stations having stationary members adapted to coöperate with the set combinations to cause the carriers to discharge their contents at predetermined points.

60. A mail distributing system comprising a trackway, a plurality of carriers adapted to travel along the same, means for automatically and successively loading mail matter piece by piece into respective carriers, a keyboard, and separately actuated mechanism controlled thereby for causing the carriers to discharge the mail matter.

61. The combination of carriers, propelling means therefor, and a carrier loading device, comprising a magazine to hold a bulk of mail, a feeder adapted to take letters individually from said magazine and place them in the carriers of the apparatus, and means controlled by the arrival of an empty carrier to actuate said feeder to place a letter in such carrier.

62. In a mail assorting system, the combination of an initial feeder comprising propelling and separating mechanism, grippers for the individual letters, carriers adapted to be loaded by the grippers, mechanism including a clutch for controlling the propulsion of letters to the grippers, and means whereby said clutch is controlled by the arrival of a carrier in proper position for loading.

63. In a mail distributing system, in combination, a letter separator, a letter distributing conveyer having carriers, an initial letter feeder comprising a member carrying a series of letter grippers for individual letters and arranged to take letters singly from the letter separator and

place said letters in the carriers of the letter distributing conveyer, and means to move said member periodically to register said grippers with the carriers, said moving means being controlled by said carriers, whereby said member is moved only when a carrier is available to receive a letter.

64. In a mail assorting system, the combination of a carrier, loading mechanism therefor, an inspection station where the mail is exposed after being loaded, a keyboard adjacent to the inspection station for controlling the discharge from the carriers, means for circulating the carriers, and means whereby the loading is controlled by the arrival of a carrier at the loading station.

65. In a mail distributing system, a letter carrier, means on the carrier for gripping a letter, and said gripping means being slidably mounted on said carrier and adapted to be engaged by a discharge station and momentarily held while discharging the letter without interfering with the travel of the carrier, whereby the momentum of the traveling letter is overcome and the same falls at the discharge station.

66. In a mail distributing system, the combination with a series of individual letter carriers, of an initial feeder including a member carrying a series of letter grippers for individual letters and arranged to present said grippers in succession to letter separating means and take letters individually therefrom and feed them to the individual letter carriers.

67. In a mail distributing system, a letter magazine adapted to receive a pack of letters, means for stripping letters individually from the face of the pack and passing them to a letter conveyer provided with grippers adapted to seize said letters, and stop fingers adapted to be interposed in the path of said letters and actuated periodically to control said letters to travel synchronously with said grippers to insure the letters being uniformly placed in the same.

68. In a mail distributing system, an initial letter feeder comprising a member carrying a series of letter grippers for individual letters and arranged to present said grippers successively to a letter separating device, cams along the path of said grippers to actuate the same to take individual letters from said separating device, a letter distributing conveyer adapted to receive the individual letters from said grippers, and cams to control said grippers to discharge said letters to the conveyer.

69. In a mail distributing system, the combination with a distributing conveyer having carriers, of a letter separating device, an initial feeder comprising a member carrying a series of letter grippers for individual letters and arranged to take letters singly and successively from said letter separating device and place the same in carriers of said letter distributing conveyer, and means to move said member periodically to register said grippers with said carriers.

70. In a mail assorting system, a feeding device comprising the combination of separating and propelling means, a stop finger to stop the progress of fed letters, and means for advancing the letters from their stopped position.

71. In a mail assorting system, the combination of an initial feeder comprising propelling and separating mechanism, grippers for the separated letters, and a stop finger for such letters operated according to the position of the grippers to release the letters.

72. In a mail sorting system, the combination of a feeder comprising propelling and separating mechanism, means for moving the separated letters including grippers for engaging the letters, a stop finger actuated independently of the letters to control and position the same for engagement by said grippers.

73. In a mail distributing system, the combination with carriers, of a letter magazine adapted to receive a pack of letters, means for feeding letters individually from the face of the pack and placing them in the carriers, stop fingers adapted to be interposed in the path of said letters, and means for periodically actuating said stop fingers to control the travel of said letters.

74. In a mail distributing system, mechanism for disclosing a plurality of mail pieces simultaneously to the view of the operator, letter distributing mechanism for depositing the respective letters in predetermined receptacles, and a keyboard mechanism controlling said distributing mechanism.

75. In a mail distributing apparatus, a magazine for a supply of letters to be distributed, mechanism to separate letters from said supply and expose a plurality thereof simultaneously, and keyboard-controlled letter-distributing mechanism for distributing the letters after exposure.

76. In a mail sorting and distributing system, a conveyer having means for carrying pieces of mail, a feeding mechanism for singly feeding the mail units to the conveyer, means for presenting a plurality of mail units simultaneously for visual inspection, and keyboard-controlled selective means for causing the mail to be automatically discharged from the conveyer at a selected point.

77. In a mail handling apparatus, means to supply letters successively to an address-reading station, means to disclose said letters for reading, operator-controlled means

for despatching said letters to other letter handling devices, means for shifting the disclosed letters to a second position while other letters are moved to the disclosing position, said operator-controlled means being adapted to despatch said letters from said second position, whereby the operator despatchs letters from the second position according to the memorized addresses while reading said letters in the disclosing position.

78. In a mail handling apparatus, means to supply letters successively to an address reading station, means at said station to disclose two or more letters simultaneously for reading, and means for despatching said letters from said station successively in the order that they were supplied to same.

79. In a mail handling apparatus, means to supply letters to an address reading station, means to disclose two or more letters simultaneously for reading, and means for despatching said letters to other letter handling devices after they have been read.

80. In a mail distributing apparatus, a magazine for a supply of letters to be distributed, mechanism to separate letters from the supply in said magazine and move them to an inspection station, means to move said letters to a despatching position, a keyboard adjacent to said inspection station, mechanism controlled by the keyboard to move the letters from said despatching position and distribute the same, whereby the operator may inspect letters at the inspection station while operating the keyboard to distribute the letters at the despatching position.

81. In a mail handling apparatus, a magazine to hold a supply of letters, mechanism arranged to take letters successively from said magazine and display a plurality of the same for inspection, and a keyboard-controlled delivery mechanism arranged to despatch said letters successively to points predetermined by the operation of keys in said keyboard, whereby an operator is enabled to inspect the addresses of certain letters while operating keys for the despatch of other letters which were previously inspected.

82. In a mail distributing system, a main trackway, a plurality of branch trackways, switching means connecting said main trackway and branch trackways, carriers adapted to travel said trackways, a loading station to load letters into said carriers, an inspection and selector-setting station, and discharge stations adapted to coöperate with said carriers.

83. In a mail distributing system, a main trackway, a plurality of branch trackways, switching means connecting said main trackway and branch trackways, carriers adapted to travel said trackways, a loading station associated with the main trackway for loading letters into said carriers, an inspection and keyboard-controlled setting station associated with the branch trackways, and discharge stations associated with the main trackway and adapted to coöperate with said carriers, said inspection and setting station being between the loading station and discharge stations.

84. In a mail sorting and distributing system, a conveyer having means for carrying pieces of mail, an independently-actuated feeding mechanism controlled by said conveyer for singly feeding the mail units to the conveyer, a keyboard-controlled independently-actuated selector-setting mechanism, and selective mechanism adapted to be set by the same for causing the mail to be automatically discharged from the conveyer at a selected point.

85. In a mail sorting and distributing system, the combination of a constantly moving conveyer, a plurality of detachable carriers for carrying mail units and adapted to be propelled intermittently by said conveyer, a feeding mechanism for singly feeding the mail units to said carriers, and a keyboard selective mechanism comprising means for causing the mail to be automatically discharged at a selected point, said feeding mechanism adapted to feed said carriers independently of the control of said keyboard mechanism.

86. In a mail sorting and distributing system, a constantly moving conveyer, a series of mail carriers on said conveyer, intermittently operating means for feeding pieces of mail singly to the carriers, a keyboard-controlled selective mechanism for causing the carriers to deposit the mail at any one of a series of points in their course of travel, and means whereby the feeding of mail to the carriers is controlled by the carriers independently of the operation of the keyboard.

87. In a mail sorting and distributing system, a constantly moving conveyer, a plurality of detached carriers adapted to traverse said conveyer, a keyboard-controlled selective mechanism for causing the carriers to deposit the mail at a selective point, intermittently operating feeding means for supplying articles of mail singly to the carriers, a clutch controlling the feeding means, and an operative connection adapted to be engaged by passing carriers and controlling such clutch.

88. In a mail handling system, the combination with continuously moving propelling means, carriers, means for automatically loading letters without inspection into carriers, means for thereafter detaching the carriers from said propelling means without stopping the latter, settable devices on the carriers, means for setting such devices while the carriers are detached from said propelling means, the carriers being thereafter attached to said propelling means,

and discharge stations provided with means to coact with the settable devices on the carriers and discharge the carriers while they are being moved by said propelling means.

89. The combination, with a carrier provided with a letter-holding device, of settable members movably mounted on the carrier and adapted to be set in combinations including two or more members, mechanism past which the carrier may move and which is adapted to coöperate with said members, and a device actuated by said members when moved by engagement with said coöperating mechanism and adapted to operate the letter-holding device to discharge the carrier while the carrier is moving.

90. The combination with a carrier provided with a letter-holding device, of a settable member on the carrier, means for setting said member, a discharge device adapted to co-act with said settable member, means for propelling the carrier past said discharge device, and mechanism controlled by said settable member for causing a releasing operation of the letter-holding device while the carrier is moving.

91. The combination, with a carrier provided with a movable letter-holding device, of settable members movably mounted on said carrier and adapted to be set in combinations including two or more members, mechanism adapted to coöperate with said members to cause movement of said letter-holding device to release the letter, and means for propelling the carrier past said mechanism.

92. The combination, with a carrier provided with a letter holding device, of settable members movable on said carrier and adapted to be set in combinations including two or more members, and mechanism cooperating with said members to cause the discharge of the said letter holding device.

In testimony whereof, we hereunto affix our signatures in the presence of two witnesses.

CASIMIR GEHRING.

Witnesses:
HANSON C. COXE,
JACK F. C. BAKER.

CHARLES C. CADDEN.

Witnesses:
ALBERT H. BAKER,
JUSTIN W. MACKLIN.