

May 3, 1938.

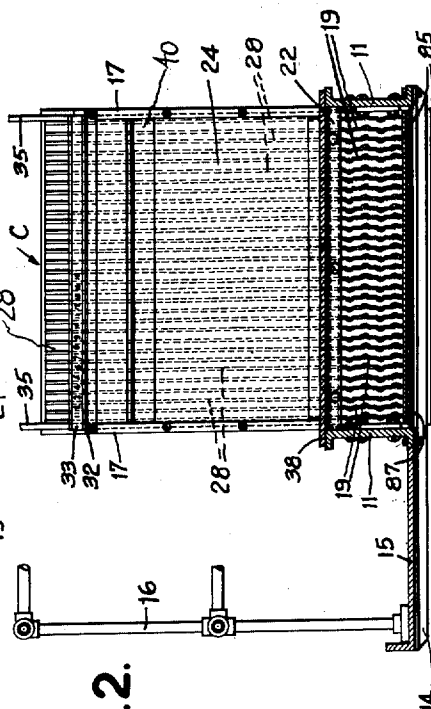
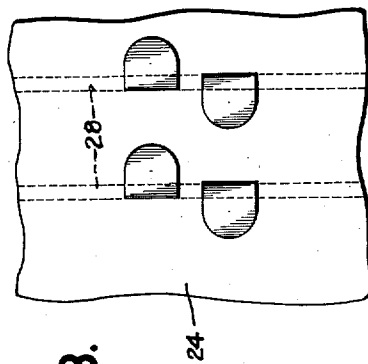
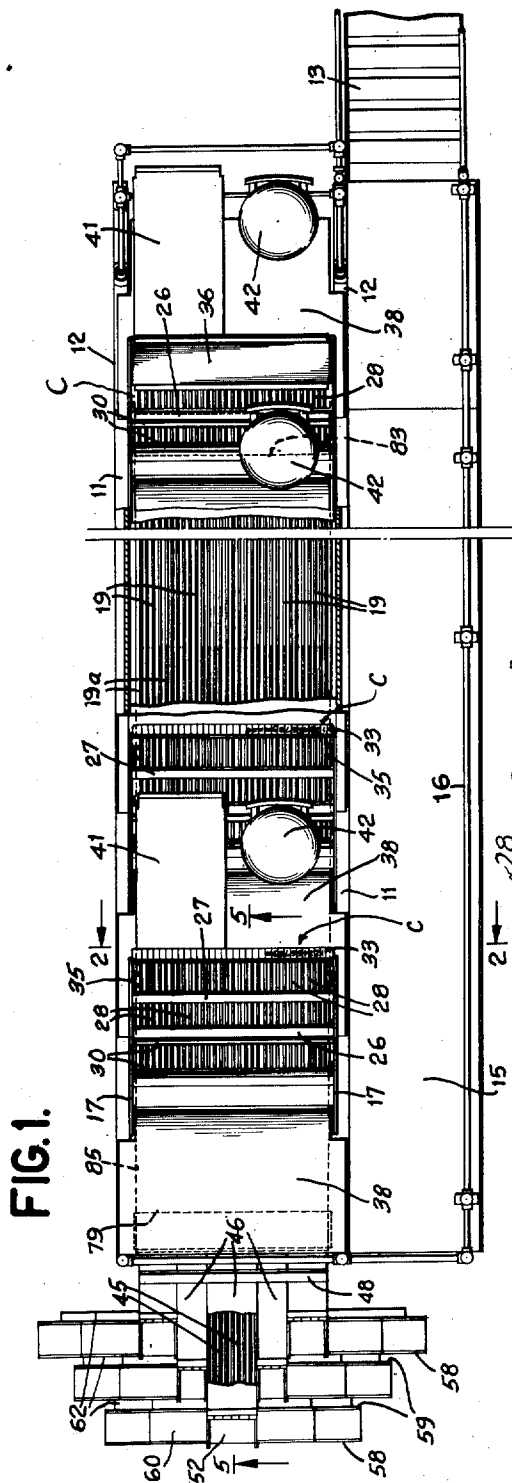
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2,115,805

MAIL SORTER

Filed May 27, 1936

5 Sheets-Sheet 1



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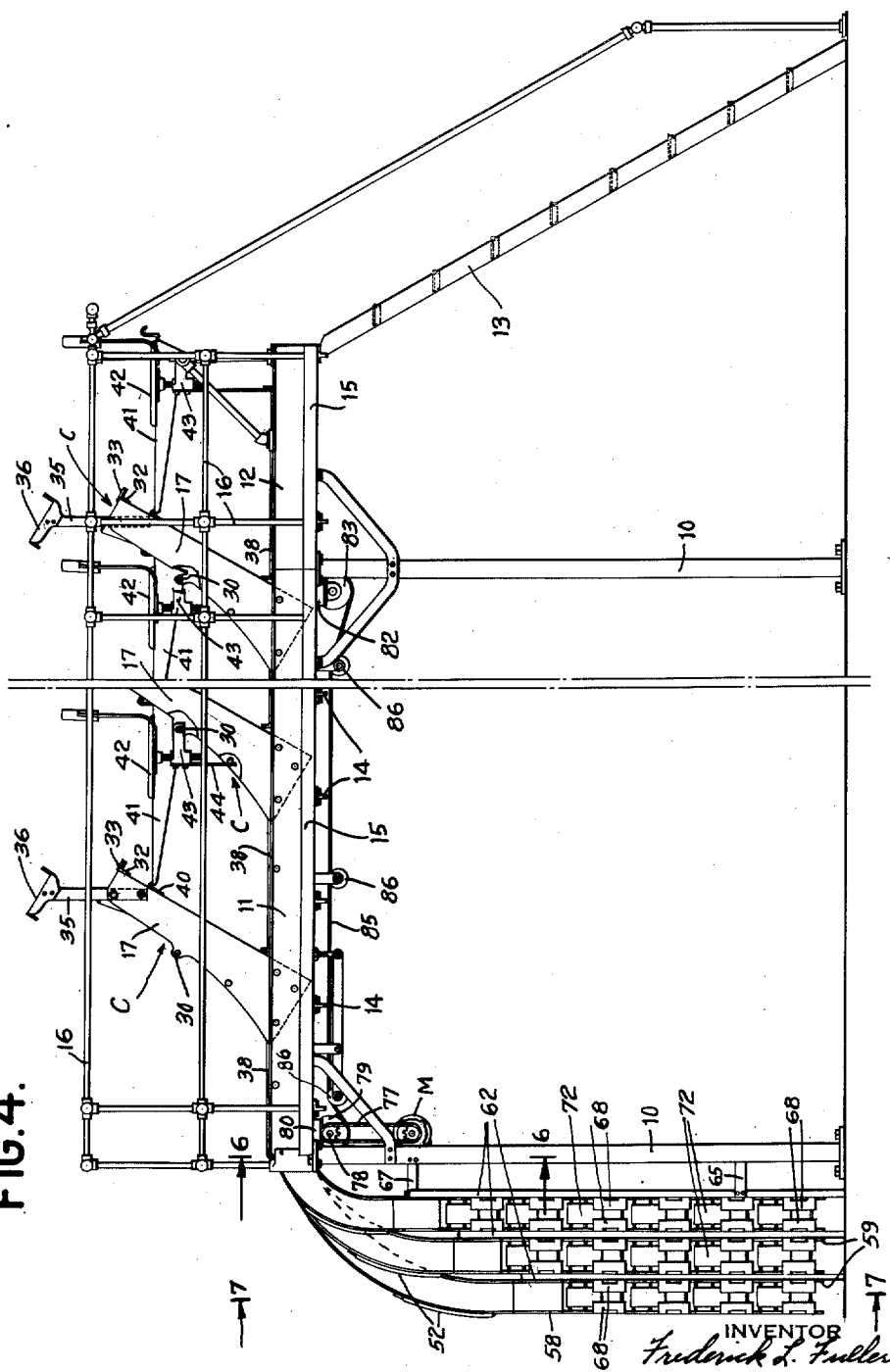
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FIG. 4.



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FIG.5.

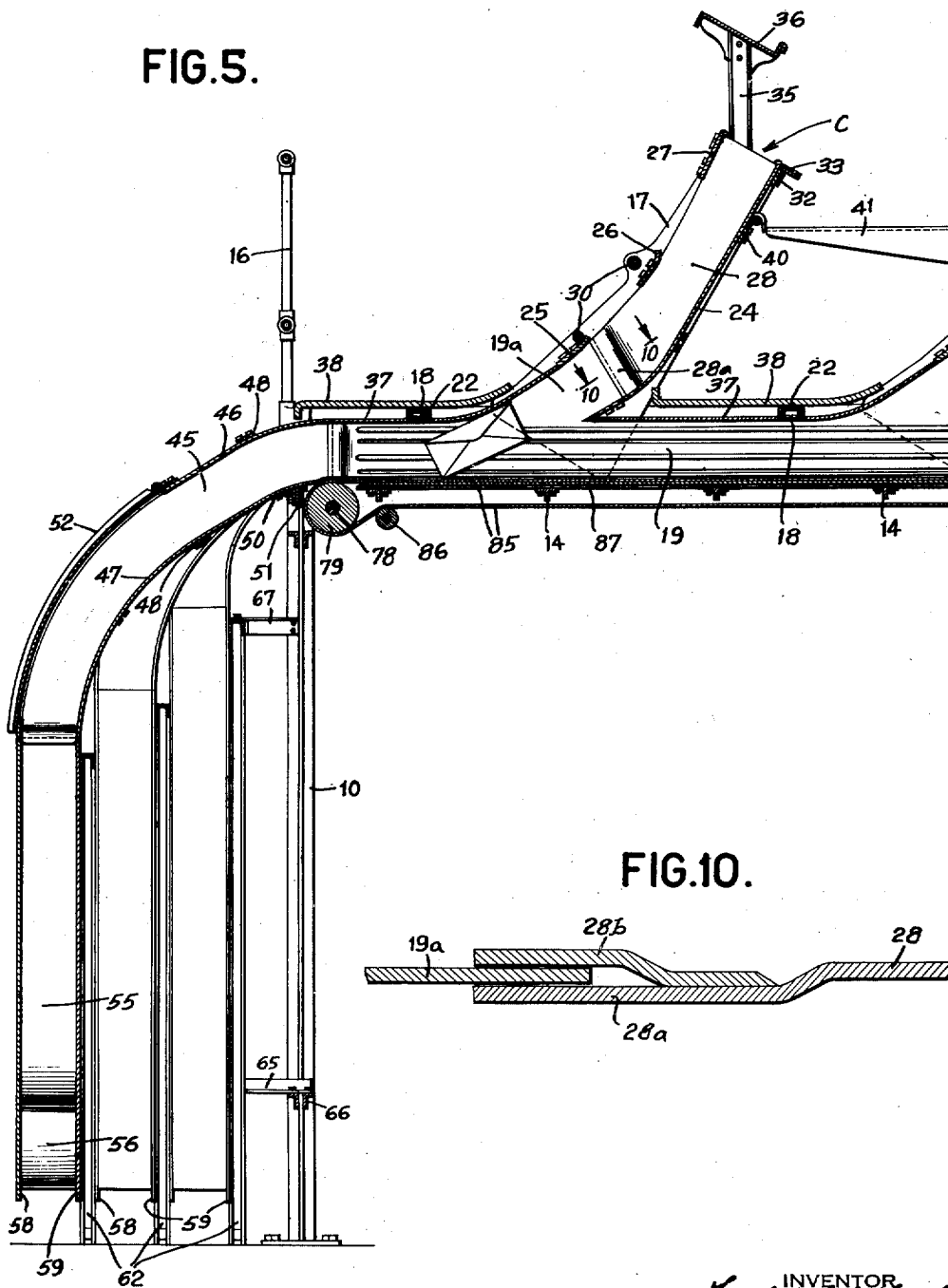
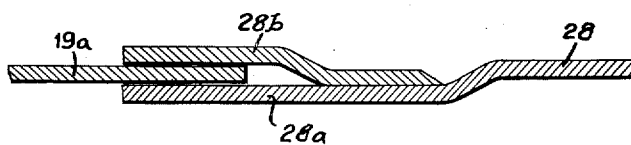


FIG.10.



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5 Sheets-Sheet 4

FIG. 6.

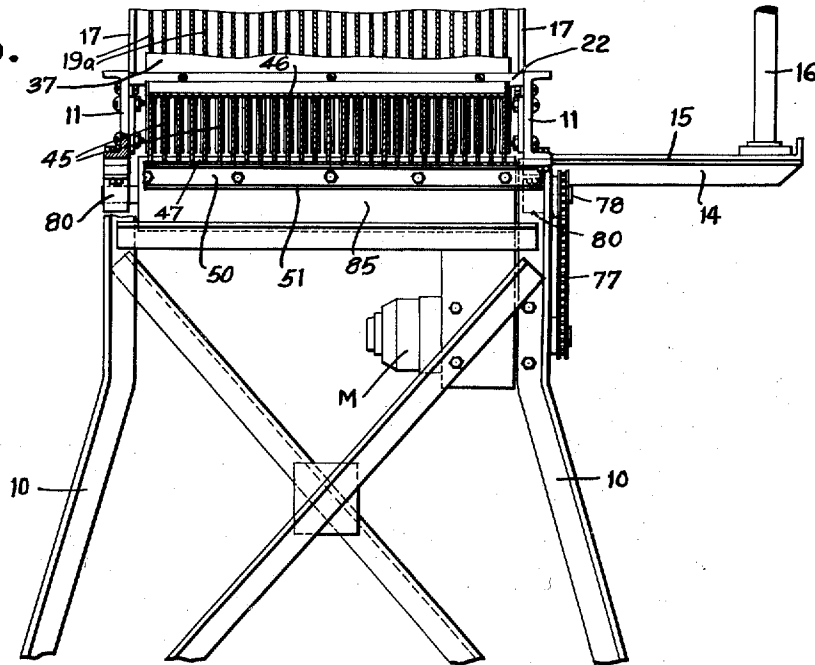


FIG. 8.

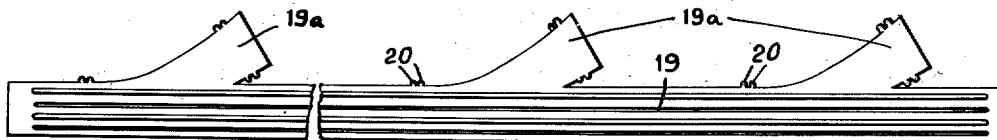
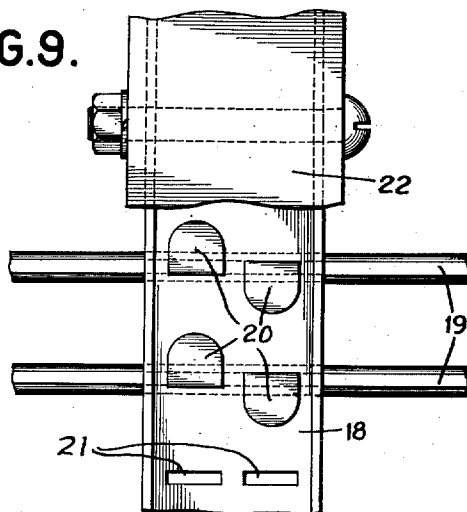


FIG. 9.



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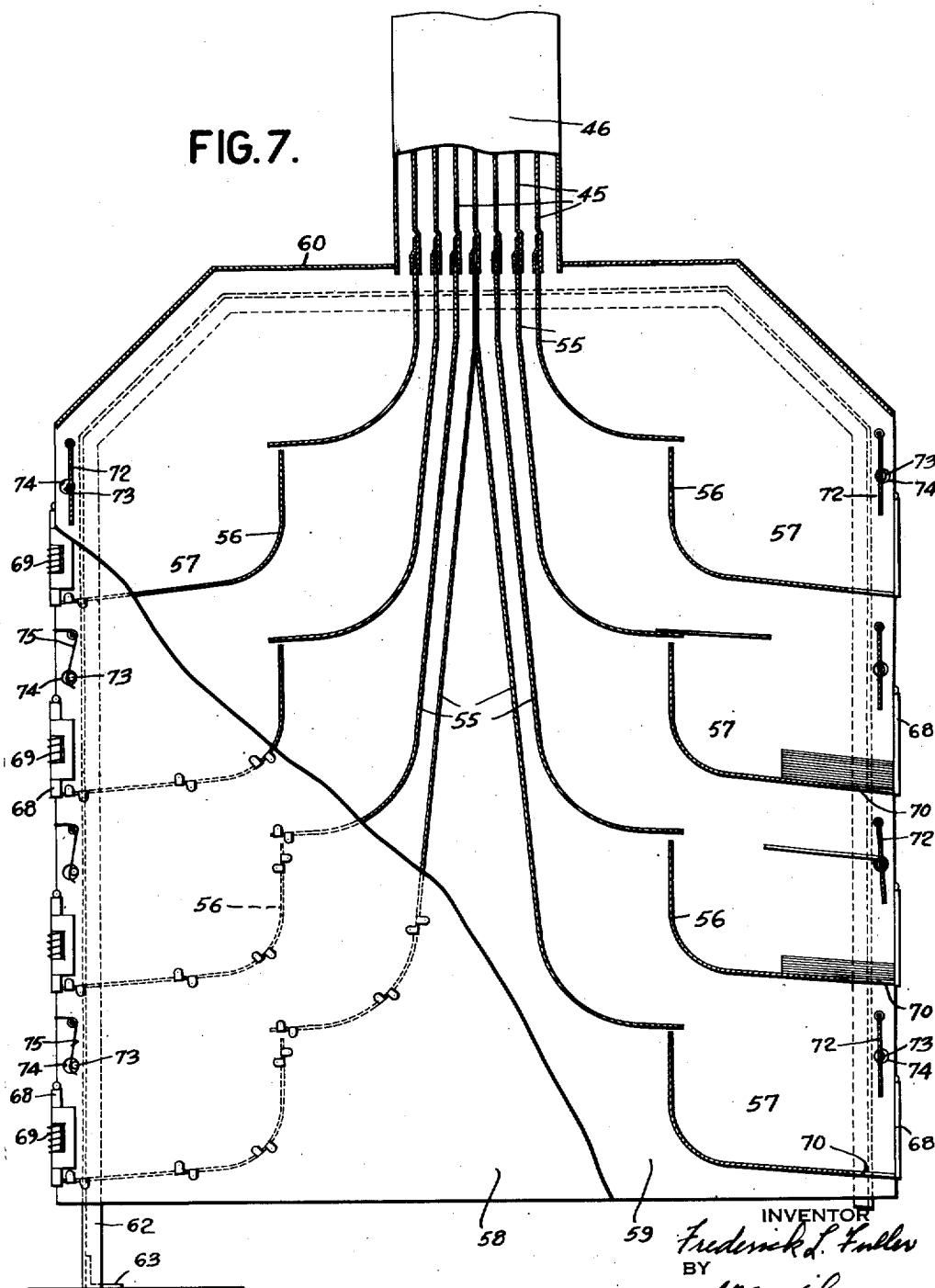
2,115,805

MAIL SORTER

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FIG. 7.



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2,115,805

MAIL SORTER

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Application May 27, 1936, Serial No. 81,986

14 Claims. (Cl. 198—42)

This case relates to a machine for sorting mail, particularly letters.

The general object is to provide a compact machine for handling large quantities of mail and rapidly sorting them into separate batches.

Another object is to interfit the mail guiding parts of the sorting machine in a manner providing smooth riding surfaces for the mail by providing joints between the separate parts of the mail guiding means of such a nature as to present no obstructions, at either side of the guide parts, to the free flow of the mail.

It is an object also to provide a mail insert duct for gravity feeding the mail and shaped to eject the inserted letter to conveying mechanism without jamming.

The latter object is, further, to shape the exit end of the gravity feed duct so as to eject the letter substantially in the direction of movement of the conveying mechanism.

The object is, further, to shape the exit end of the gravity feed duct so as to eject the letter with a less speed than that which is a function of the angle of the upper portion of the duct.

It is also an object to provide a mail gravity feed duct which is more vertical at the upper, entrance, end than at the lower, exit, end so that the maximum number of such ducts may be placed in series, one behind another, without gravity feeding the letters at too great a speed, yet with no sacrifice of compactness.

An object also is to curve the exit end of a wall of the gravity duct so as to cam the letter, as it encounters the conveying means, completely onto the conveying means.

It is a further object to provide a mail guiding and feeding means by which a letter is effectively and smoothly fed to the receiving pocket while the letter stands on the same edge.

Still another object is to feed articles such as pieces of mail, by a common conveyor, along parallel guide channels to a common exit line and to transmit the articles from the exit line of the different channels to receiving means spaced at different distances longitudinally from said exit line.

Another object is to feed articles by a common conveyor along channels to a common exit line and to transmit the articles as they leave the channels at the exit line to receiving means at different levels.

Other objects will appear from the following parts of the specification and from the drawings.

Fig. 1 is a plan view of the machine,

Fig. 2 is a section along lines 2—2 of Fig. 1,

Fig. 3 is an enlarged detail view of part of Fig. 2 showing the manner of assembly of a gravity duct to the front wall of the letter insert cabinet.

Fig. 4 is a side view of the machine,

Fig. 5 is a section on lines 5—5 of Fig. 1,

Figs. 6 and 7 are sections, respectively, on lines 6—6 and 7—7 of Fig. 4,

Fig. 8 is a detail of a guide plate,

Fig. 9 is a detail plan view of a guide plate supporting and spacing bar, and

Fig. 10 is a section on lines 10—10 of Fig. 5.

The machine frame is made up of vertical supports 10, each comprising a built-up truss structure (see Figs. 4 and 6). At each side, the truss structures support parallel, horizontally disposed, channel beams 11. The rear support 10 also carries the front ends of parallel channel beams 12, in back of and in line with beams 11. The rear ends of beams 12 are supported by a stairway 13. Beams 11 and 12 are bolted to the flanges at the upper ends of supports 10. Bolted to the bottom flanges of beams 11 and 12 are transverse T-bars 14 which extend laterally past the beams and on their extended portions carry sections of the cat-walk 15 (see Figs. 1, 2, and 6). To the cat-walk is fixed the guard railing 16.

Bolted to the vertical sides of beams 11 are the opposite sides 17 of mail insert cabinets C. As shown in Figs. 1 and 2, the cabinets C are arranged one behind another. The beams 11 are made in lengths, each sufficient to carry five cabinets C. If ten, or any other multiple of the five cabinets C, are to be used, the number of lengths of beams 11 is correspondingly increased and a suitable number of supports 10 is provided. The rear portion of the machine, comprising beams 12 and stairway 13, may be referred to as the stairs section, and the latter is always attached to the rear end of the machine, regardless of the length of the machine.

Horizontal channel bars 18, of U-shaped cross-section are flanged at opposite ends to be bolted to the sides of the beams 11. One such cross bar 18 is located in front of each cabinet unit C. Vertical guide plates 19 are pendently supported by the bars 18. The plates 19 are of a length suited to five cabinet units. The plates 19 are secured to the bars 18 by means of tabs 20 extending from the plates and insertable in slots 21 of the bars (see Figs. 8 and 9). After the tabs 20 are protruded through the slots of bars 18, they are bent over to rigidly secure the guide plates 19 to the bars. A reinforcing channel bar 22 is then secured to bar 18 to form with the latter a rigid box-section structure.

Each plate 19 has five upwardly formed ears 19a, spaced according to the spacing of the cabinet units, and each ear 19a extends between the sides 17 of one cabinet unit. The front wall 24 of a cabinet unit is bolted to the sides 17 and is fastened to ears 19a by tab and slot connections such as between plates 19 and bar 18. A spacer bar 25 is similarly interlocked with ears 19a at the sides of the latter opposite the front wall 24. Above spacer bar 25 are spacer bars 26 and 27. Between bars 26 and 27 and front wall 24 are provided partition plates 28 of a cabinet unit. These plates 28 are interlocked with bars 26 and 27 and front wall 24 by tab and slot connections such as previously described. Each partition 28 is formed at its lower end with an offset portion 28a (see Fig. 10). To the offset portion is welded an oppositely offset strip 28b, the upper part of which lies within the angle formed at the junction of the partition with its offset end 28a.

Thus, the outer face of the upper part of strip 28b lies substantially within the same plane as the plane of partition 28. The upper edge of strip 28b is smoothly beveled so as to leave no abrupt edge extending outside the planes of the upper part of strip 28b and the adjacent part of partition 28. The upper and lower parts of strip 28 are joined by an inclined portion. Thus, the face of a letter feeding downwardly along plate 28 will encounter no obstruction but will ride smoothly off the end of the plate and onto the surface of strip 28b.

Parts 28a and 28b thus form a channel at the lower end of the plate 28 which extends along the entire width of the plate. This channel receives the upper end of an ear 19a of a guide plate 19, as indicated in Fig. 10. All the guide plates are similarly jointed to the partitions 28, and this joint is such as to present no obstruction to the smooth travel of a letter as it rides off the partition and onto the surface of the ear 19a of the guide plate.

Furthermore, the above joints between partitions 28 and parts 19a of guide plates 19 permit expansion and contraction of these elements upon changes in temperature, without the slightest tendency of either of these elements to buckle.

The side walls 17 of a cabinet unit C are connected to each other by brace rods 30. To the front wall 24 of a cabinet and at the upper end of the wall is attached an angle bar 32. The upper flange of bar 32 removably carries an indicating strip 33, on which are marked suitable indications (see Figs. 1 and 2) for designating destinations of the mail. Each indication on strip 33 is in front of and in line with the duct formed by two adjacent partitions 28.

Bolted to the side plates 17 of a cabinet unit are vertical posts 35 supporting between them, at a distance from the top of the cabinet, a shelf 36 on which boxes of mail may be rested.

Between the cabinet units are cover plates 37 for guide plates 19—19a, resting freely on the upper edges of the guide plates. Floor plates 38 are also disposed between the cabinet units and rest freely on top of channel bars 11 and 12 and on top of bars 22.

Front wall 24 of a cabinet unit C carries a plate 40 rounded at the upper end to receive the concaved left end (Fig. 5) of a sheet metal table 41 on which boxes of mail may be placed. Near their right hand ends, the sides of a table 41 are recessed to receive the upper rod 30 of the cabinet unit C behind the table. Thus, the table may be slid along on its opposite supports along the

width of a cabinet unit. The table may also be freely lifted off its supports and removed.

In front of each cabinet unit is an operator's seat 42, the carrier 43 of which is slotted to seat on the upper cross rod 30 of the cabinet behind the seat. The carrier 43 is provided with a depending bar 44 abutting the lower brace rod 30 of the cabinet in back of the seat. The carrier and seat may be slid along the width of the cabinet, and may be freely lifted off rod 30.

The stair section is similarly provided with an operator's seat in front of the rear or right hand cabinet unit C.

The front or left hand ends of guide plates 19 are channeled similarly to the lower ends of partitions 28 and receive in these channels the rear ends of separator plates 45. Plates 45 are in the same vertical planes as the plates 19 with which they are interlocked, but within its plane, each plate 45 has its upper and lower edges formed along parallel curves.

As indicated in Fig. 1, the separator plates 45 are arranged in five groups; two end groups, a central group, and two intermediate groups. The plates of the two end groups are the shortest (see Fig. 4), the plates of the intermediate groups are longer and extend further forward and beyond the plates of the end groups, and the plates of the central group are the longest and extend forwardly completely beyond the intermediate group of plates 45.

Each group of plates 45 is secured by tab and slot connections, such as previously described, to top and bottom curved metal sheets 46 and 47. To stiffen the tab and slot joints, cross bars 48 are provided and the tabs go through the sheets 46 and 47 and then through the cross bars against the outer face of which they are bent.

Plates 45 are thus held in definite vertical, spaced, planes by their connections with the top and bottom sheets 46 and 47. Together with these sheets, plates 45 form curved end passages, extending horizontally at their upper ends where they join the exits of the horizontal passages between guide plates 19 and gradually curving into vertical lower ends.

As indicated in Figs. 4 and 5, the upper portions of the different groups of end passages are in horizontal alignment and bottom sheets 47 of the different groups of passages are disposed at their upper ends in a common, substantially horizontal, plane. Across these ends of the bottom sheets is welded an angle bar 50 which rigidly holds all the groups of end chutes together. Thus, the end passage structure is put together to form a rigid unit assembly, the plates 45 of which are to be interlocked simultaneously with the exit ends of the guide plates 19. When thus interlocked, the vertical flange of bar 50 abuts the front of an angle iron 51 secured to the left hand support 10 (Fig. 5). After the end passage assembly has been set in interlocking relation to plates 19, the vertical flange of bar 50 is bolted to the abutting flange of angle iron 51. The end passage unit is thereby rigidly secured to the framework of the machine.

The top sheets 46 of the groups of end passages have covers 52 hinged thereto and which may be lifted to inspect the inside of the end passage assembly.

Fig. 7 shows the lower, exit ends of plates 45 of the central group of end passages. The lower ends of plates 45 are provided with channels to receive the upper ends of chute blades 55. The chute blades are thus interlocked with plates 45

in the manner and for the purposes previously described. The blades 55 are vertical along their upper parts where they join the plates 45 and then gradually curve in a direction transverse to the planes of plates 45, 19, and 28 to provide lower horizontally extending ends. Each blade 55 terminates above and extends slightly past the upper edge of the vertical rear wall of a plate 56 bent similarly to blades 55.

Plates 56 form the rear and bottom sides of a letter receptacle 57. The receptacles associated with each group of end passage plates 45 are arranged in two series or sets, one series at each side of the associated group of plates 45. The receptacles of each series are vertically disposed, one above another. Blades 55 leading to one series are bent horizontally in an opposite direction to that in which the blades 55 leading to the other series of receptacles are bent, and since the receptacles of each set are in vertical arrangement, the blades 45 leading thereto are of different lengths.

Blades 55 and receptacle plates 56 are secured by tab and slot connections, such as previously described, to front and rear side plates 58 and 59. These side plates form the opposite sides of receptacles 57, and together with blades 55 define closed chutes leading to the receptacles.

The uppermost receptacle 57 of each set and the uppermost chute leading thereto are covered by a common cover 60.

Between the front and intermediate group of receptacles 57 and between the latter group and the rear group of receptacles are located generally U-shaped bars 62, the shape of one being shown in Fig. 7. The legs of these bars 62 terminate in feet 63 resting on the ground. The bars 62 are welded to the plates 58 and 59 between which they are located. To the back plate 59 of the rear group of receptacles is similarly welded a bar 62. The bars 62 thus form upright supports for the receptacles 57 and the chutes leading thereto and also rigidly connect the groups of receptacles and chutes to each other. The receptacles and chutes are thus built up as a rigid assembly or unit to be removably connected to the end passages by the slip joints between the chute blades 55 and the end passage defining plates 45.

Straps 65 are bolted at one end to the rear upright 62 and at the other end to the cross bar 66 of the front frame support 10. Straps 67 are similarly secured between the legs of this support 10 and the upper end of the rear upright 62. Thus, straps 65 and 67 removably but rigidly secure the receptacle assembly to the machine frame.

The front of each receptacle 57 is partially closed by two flaps 68, one vertically hinged to the outside face of a side 58 and the other similarly hinged to a side 59 of the receptacle. Springs 69 normally hold the flaps against the front edges of receptacle plates 56. Each of the latter plates has a slot 70, permitting the operator to engage his thumb with the bottom of a stack of mail in the receptacle and with the other fingers of the same hand grasp the stack and bring it out through the front of the receptacle. The flaps 68 yield to pressure and swing outwardly to permit the stack to be removed. After the pressure of the flaps has been relieved, the flaps are returned by springs 69 to closing position.

Horizontally pivoted to the side plates 58 and 59 of the receptacles are buffer plates 72, one for

each receptacle or pocket 57 and located inside the receptacle near its front end and behind the flaps 68. Stud 73 provided at each side of plates 72 pass, with clearance, through holes 74 in the side plates. Springs 75 engage studs 73 and normally urge the plates away from the front of the pocket 57 and maintain studs 73 engaged with the back of holes 74. The buffer plate 55 and is moved by the force of the striking letter towards the front of the receptacle, against resistance of spring 75.

The buffer plate yields as the letter strikes it so as to prevent injury to the contacting edge of the letter. In removing a stack of mail, in the manner previously explained, the plate 72 may move towards the front of the pocket 57 until its stud 73 encounters the front of the hole 74. This prevents the plate 72 from being moved to the outside of the pocket and to a position in front of the flaps 68, where it would be inoperative.

As indicated in Figs. 4 and 6, the front frame support 10 carries a motor M, the shaft of which, through a chain drive 77 rotates the shaft 78 of a plain pulley 79, extending across the entire distance between the beams 11. Shaft 78 is journaled in hanger blocks 80 bolted to the bottom of the spaced channel beams 11 at the left hand ends of the latter. At the opposite ends, and past the right hand cabinet unit C, beams 11 similarly carry blocks 82 for supporting the shaft of a pulley 83. Passing around pulleys 79 and 83 is a conveyor belt 85. The lower reach of the belt is engaged by tensioning rollers 86. The upper reach of the belt lies on a corrugated plate 87 which is secured to the top of cross bars 14, which, as previously, explained are bolted at opposite ends to beams 11. The plate 87 is corrugated to minimize the friction between the belt and the plate as the belt moves across the plate. The rear or right hand end of the upper reach of the belt extends beyond the lower, exit, ends of the gravity ducts of the right hand cabinet unit C. The left hand end of the upper reach of the belt terminates flush with the rear beveled ends of the bottom sheets 47 of the end passage assembly. Sufficient clearance is maintained between the upper reach of the belt and the lower edges of guide plates 19 so as to prevent contact between them.

The operation of the machine is as follows:

An operator is stationed in front of each cabinet unit C and supplies of letters to be sorted are laid on tables 36 and 41 of each cabinet unit. As directed by the indications on the indicator strip 33, each operator inserts the letters lengthwise into the ducts defined by fins 28 and ears 19a. A letter inserted lengthwise into a duct will first drop down abruptly and smoothly pass from fin 28 to ear 19a. As the edge of the letter meets the curved, less steep, lower section of the front wall 24 of the cabinet unit, the speed of the descent of the letter will be lessened. At the same time, the letter will be turned by the lower curved section of the duct from a position in which its length extends nearly vertically to a position in which its length extends nearly horizontally. Further, the curved lower portion of the duct throws the letter off in substantially the same horizontal direction of movement, from right to left, as that of the upper reach of belt 85. Thus, the force of the belt as it meets the lower corner of the letter turns the letter still more with its length in a horizontal direction, and proceeds to move the letter completely away from the lower end of

the duct. Still further, as the letter is turned to a horizontal position and moved to the left by belt 85, the upper, long, edge of the letter may encounter the curved portion of the cover plate 37 and be cammed thereby into a horizontal position and completely away from the mouth of the cabinet duct. The letter now rests with its lower long edge on top of the upper reach of belt 85.

After the letter passes the mouth of the duct, the conveyor belt 85 moves it along the horizontal extending channels defined by guide plates 19. The letter is thus moved past the left, exit, end of the horizontally extending channels and into the rear end of the connected end passage formed by a pair of adjacent plates 45 and top and bottom sheets 46 and 47. The letter then drops down the end passage with the same long edge which engaged the belt also riding on the curved lower sheet 47. The end passage turns the letter from a horizontally extending position to a vertical position such as it had when dropped down the cabinet duct. As the letter leaves the lower terminus of the end passage, it rides onto a chute blade 55. As the letter coasts down the chute blade, it is turned from a vertical to a horizontal plane and ejected into the pocket 57 below the chute blade. The letter leaves the chute blade with sufficient momentum to strike its front edge against the buffer plate 72 of the pocket and is kicked back by the buffer plate onto the top of the stack already in the receptacle. The letter now lies flat in the pocket.

Letters to the same destination inserted in the corresponding ducts of several of the cabinet units may be simultaneously fed by belt 85 along the same horizontally extending channel between plates 19 and will drop one after another down the connected end passageway and onto the same chute blade 55 to be ejected into the same receptacle.

Thus, letters may be rapidly sorted to the destinations selected by the several operators at the cabinet units C arranged one behind another above the common conveyor belt 85.

It is understood that not only letters but post cards and other cards or similar articles may be sorted by the illustrated machine described herein.

While the invention has been disclosed in the form herein shown and described, it is understood that variations, departures, and changes may be made in the form or details of the disclosed apparatus, without departing from the principles of the invention. It is, therefore, desired to be limited in accordance with the scope of the following claims.

What is claimed is:

1. A machine to sort articles such as cards or pieces of mail, comprising channels disposed side by side with a common channel-defining and separating wall between them along opposite faces of which articles are fed, each channel to guide articles to a different destination, said defining wall including a pair of plates arranged one in continuation of another along the channel and having adjoining ends, an interlocking joint between the adjoining ends of said plates provided with gradually bulging portions extending outwardly beyond opposite faces of both plates to deflect the articles at the opposite faces of the plates, as they depart from one plate, outwardly from the plane of the continuation plate until said articles pass the joint, and separate article-receiving means each to receive articles from one of said channels.

2. A machine to sort articles such as cards or pieces of mail, comprising adjacent channels with a common channel-defining and separating wall between them along opposite faces of which articles are fed in the same direction, said defining wall including a pair of sections disposed one in continuation of the other and having adjoining ends, an interlocking joint between the adjoining ends of said pair of wall sections provided with portions bulging outwardly in the direction of feed of the articles beyond opposite faces of both sections at their adjoining ends to thereby deflect the articles as they leave opposite faces of one section outwardly beyond the opposite faces of adjoining section until the articles pass said joint, and separate receiving devices to selectively receive the articles from the different channels.

3. An article sorting machine having a group of adjacent guide walls forming a group of adjacent parallel horizontally extending article guiding channels arranged side by side for guiding articles for travel in a horizontal direction and having their exit ends at substantially the same level and terminating in substantial alignment, a series of receiving pockets arranged one above another, and downwardly directed guide elements adjoining the exit ends of the channels and terminating remote from said exit ends one above another, each above a different pocket, to gravity-feed articles from the channels to the pockets.

4. An article sorting machine having horizontally extending guide walls occupying parallel vertical planes to form adjacent parallel article guiding channels lying side by side for guiding articles for travel in a horizontal direction, a series of vertically spaced article receiving pockets arranged one above another, and chute blades having their upper ends in the same planes as and adjoining the exit ends of the channel walls, the chute blades extending downwardly and transversely from their adjoining channel walls to provide substantially horizontally extending lower ends, the chute blades being of progressively increasing length to dispose their lower, horizontally extending ends one above another, with each lower end adjoining one of the vertically spaced receiving pockets, to thereby direct articles from the guide channels to the pockets.

5. An article sorting machine comprising parallel walls forming article guiding channels arranged side by side and having curved article guiding and supporting bottoms extending substantially horizontally at their upper ends and curving to substantially vertical disposition at their lower ends, the channels being arranged in groups terminating one in front of another, the channels of any one group terminating in alignment, sets of receptacles arranged side by side and extending transversely to the lengths of the channels, one set being disposed adjacent the front group of the channels and the other adjacent the other group of channels, and chute blades extending transversely to the lengths of the channels and leading from the lower termini of said channels downwardly to the interior of said receptacles for directing articles from each group of channels to the adjacent set of receptacles.

6. A sorting machine comprising article guiding channels arranged side by side and running horizontally, each channel having a receiving mouth at the upper level thereof, a conveyor web underlying the channels to feed articles therealong in one direction, and an article insert cabinet above the channels and having article receiving gravity feed ducts arranged side by side,

each duct in line with one of said channels and having its lower or exit end comprised of front and rear article confining and guiding walls directly joining the mouth of the channel, said ducts
 5 having said front and rear walls of the exit ends disposed at a greater horizontal inclination, in the direction of movement of the conveyor web, than the duct portions above the exit ends to eject the articles into the channels substantially
 10 in the same direction as the direction of movement of the conveyor web.

7. A sorting machine comprising article guiding channels arranged side by side and running horizontally and defined by separating walls, each
 15 having an upwardly extending fin, a conveyor web underlying the channels for feeding the articles therealong in one direction, and an article insert cabinet above the channels and having article receiving gravity feed ducts arranged side
 20 by side, each having an exit end in line with one of said channels and including front and rear walls terminating at the top of the aligned channel and having as its side walls the pair of fins extending from the adjacent channel-defining walls,
 25 whereby said exit end comprises a four-sided article guiding and confining chute, and said cabinet having duct-defining side partitions the lower ends of which join the upper ends of the fins to form upwardly but separable continuations
 30 thereof, said ducts being more nearly vertical at their upper than at their lower, exit ends, to eject the articles in a more nearly horizontal direction into the connected channel and onto the conveyor web.

8. An article sorting machine comprising article guiding channels arranged side by side and running horizontally, a conveyor web underlying the channels for feeding the articles therealong in one direction, and an article insert cabinet having
 40 parallel walls to form the sides of gravity feed ducts for articles inserted therein and having a front wall common to all said ducts and connected to the side walls of the ducts to secure the side walls in definite spaced parallel planes,
 45 each duct having its lower exit end or portion defined by a section of said front wall and a substantially parallel rear wall section, said front and rear wall sections confining and guiding the articles as they drop down the duct, the exit portion
 50 of each duct opening on a different one of said channels to eject articles therein, and said exit portions having their front and rear article guiding wall sections inclined more horizontally, in the direction of movement of the conveyor web,
 55 than the remainder of the ducts above the exit end to direct the articles as they leave the ducts more nearly in the direction of movement of the conveyor web and the front wall being continuous at its lower end with the top of the channels.

9. A sorting machine comprising article guiding channels arranged side by side and running horizontally, a conveyor web underlying the channels for feeding the articles therealong in one direction, an article insert cabinet having a series
 65 of ducts arranged side by side each in line with one of the channels for gravity feeding inserted articles to the channels, and a cam surface provided at the exit end of each duct and inclined, relatively to the portion of the duct above the
 70 exit end, in the direction of movement of the conveyor web, for engaging the articles, ejected from a duct onto the conveyor web, and camming the articles towards the conveyor web as the articles are moved by the conveyor web past said cam surface.
 75 face.

10. A sorting machine comprising a narrow guide channel guiding substantially flat articles such as cards or pieces of mail while the articles are vertically disposed, a conveyor web forming
 5 a moving bottom of the channel, engaging an edge of the article in the channel and moving in a direction to feed the articles along the channel to the discharge end of the latter, a narrow gravity chute to receive the articles in vertical
 10 disposition and having its lower exit portion adjoining the channel to lead the articles, dropped into the chute, from the chute and into the channel and onto the conveyor web, said exit portion being inclined relatively to the upper portion of
 15 the chute and relatively to the conveyor in the direction of movement of the web to discharge the articles into the channel in a direction substantially but not entirely the same as the direction of movement of the conveyor web, said
 20 exit portion being defined by front and rear inclined walls having their lower termini at the same level as the top of the channel whereby the articles are guided and confined by the front and rear walls of the exit portion until after they have intruded into the channel.
 25

11. A sorting machine comprising a narrow guide channel provided with an upper receiving mouth for receiving vertically disposed flat articles such as cards or pieces of mail, a conveyor web forming a moving bottom of the channel
 30 and on which an edge of an article in the channel rests while the conveyor is moving the article in one direction along the channel, a narrow gravity chute open at the upper end to insertably receive the articles and gravity feed them while
 35 the articles are disposed in a vertical plane, said gravity chute having an exit end joining the channel mouth and inclined, relatively to the rest of the chute, in the direction of movement of the web to eject the articles into the channel
 40 substantially in said direction of movement of the web, said exit end being defined by front and rear walls engaging opposite edges of the article in the chute and terminating at the same level as the top of the channel at either side of
 45 the channel mouth, with the front wall also serving as a portion of the top cover of the channel, whereby the front and rear walls of the exit end guide and confine an article dropped down the chute in a vertical plane until after the article
 50 has intruded into the channel and an edge thereof dropped onto the conveyor web.

12. A machine to sort flat articles such as pieces of mail or cards, comprising substantially horizontal, parallel guide channels to maintain
 55 the articles in vertical position while guiding the articles, each channel having an upper, receiving mouth, a conveyor web forming a common moving bottom for the channels and feeding the articles in the channels while the articles have one
 60 edge resting on the web, and an article insert cabinet having narrow ducts to gravity-feed the articles while the latter are in vertical planes into the channels, said ducts having their lower, exit ends directly joining the mouths of aligned channels to confine and guide the articles until after they enter the channels, and each exit end being
 65 inclined more nearly horizontally than the remainder of the duct and comprising a curved camming wall for engaging the upper edge of an article while the article is in inclined position within the channel with a lower corner resting on the conveyor web and being moved by the web towards the said wall, to cam the moving,
 70 inclined article downwardly into the channel and
 75

turn the article into substantially horizontal position in which its lower edge is resting completely on the conveyor belt.

13. A machine to sort flat articles such as cards
5 or pieces of mail, comprising a group of adjacent, substantially horizontal parallel and narrow channels to guide articles for horizontal travel while disposed in vertical planes along said channels, a conveyor forming a common moving bot-
10 tom for said channels and supporting the articles on their lower edges while feeding them along said channels, said group of channels having discharge orifices in transverse alinement and located in a common plane substantially coexten-
15 sive with the leading end of the conveyor lap whereby said conveyor positively feeds the articles through and out of the discharge orifices of said channels, a group of adjacent downwardly inclined article directing and guiding devices
20 having upper ends alined with the channels and adjoining and continuous with the discharge orifices of the horizontal channels to receive articles leaving the channels, said devices including directing elements disposed in substantially the
25 same direction, with at least their terminal portions arranged transversely to the length of the channels, and one above another to direct articles from the different channels to vertically spaced locations.

14. A machine to sort flat articles such as cards or pieces of mail, comprising a plurality of groups of adjacent, substantially horizontal parallel and narrow channels, to guide articles vertically disposed within the channels, a conveyor
5 lap forming a moving bottom for all the channels of said groups to support articles on their lower edges while feeding them along said channels, said groups of channels having discharge orifices terminating in a common transverse plane in
10 substantial alinement with the leading end of the conveyor lap whereby the latter positively feeds the articles out of the discharge orifices of all said channels, and groups of downwardly inclined chutes, all with their upper ends ad-
15 joining the discharge orifices of said channels, each group of chutes to receive articles from a different group of said channels, said groups of chutes being of different length, terminating at
20 their lower ends one in front of another to feed the articles received from the corresponding channel groups different distances longitudinally away from the alined discharge orifices of said
25 channels to emit the articles from the different channel groups at longitudinally spaced locations.

FREDERICK L. FULLER.

CERTIFICATE OF CORRECTION.

Patent No. 2,115,805.

May 3, 1938.

FREDERICK L. FULLER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, first column, line 29, claim 7, for the word "upwardly" read upward; page 6, first column, line 15, claim 13, strike out the word "lap"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of July, A. D. 1938.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

turn the article into substantially horizontal position in which its lower edge is resting completely on the conveyor belt.

13. A machine to sort flat articles such as cards
5 or pieces of mail, comprising a group of adjacent, substantially horizontal parallel and narrow channels to guide articles for horizontal travel while disposed in vertical planes along said channels, a conveyor forming a common moving bottom for said channels and supporting the articles
10 on their lower edges while feeding them along said channels, said group of channels having discharge orifices in transverse alignment and located in a common plane substantially coextensive with the leading end of the conveyor lap
15 whereby said conveyor positively feeds the articles through and out of the discharge orifices of said channels, a group of adjacent downwardly inclined article directing and guiding devices
20 having upper ends aligned with the channels and adjoining and continuous with the discharge orifices of the horizontal channels to receive articles leaving the channels, said devices including directing elements disposed in substantially the same direction, with at least their terminal portions
25 arranged transversely to the length of the channels, and one above another to direct articles from the different channels to vertically spaced locations.

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