

April 25, 1933.

C. E. CONSTABLE ET AL

1,905,217

MECHANICAL ASSORTING DEVICE

Filed Sept. 30, 1929

3 Sheets-Sheet 1

Fig. 1.

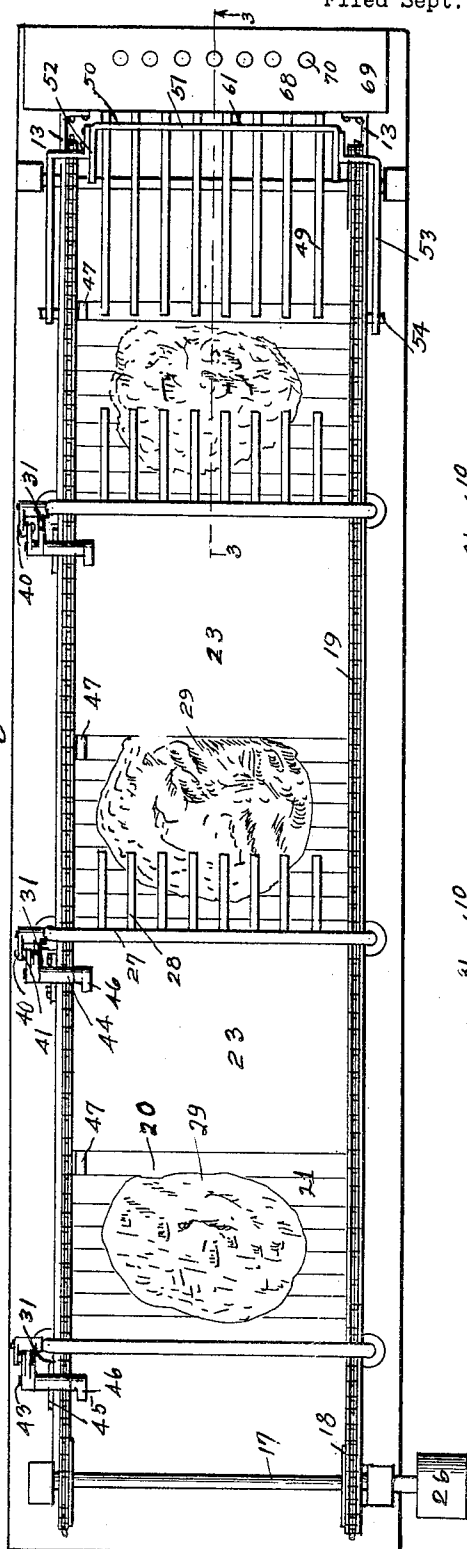
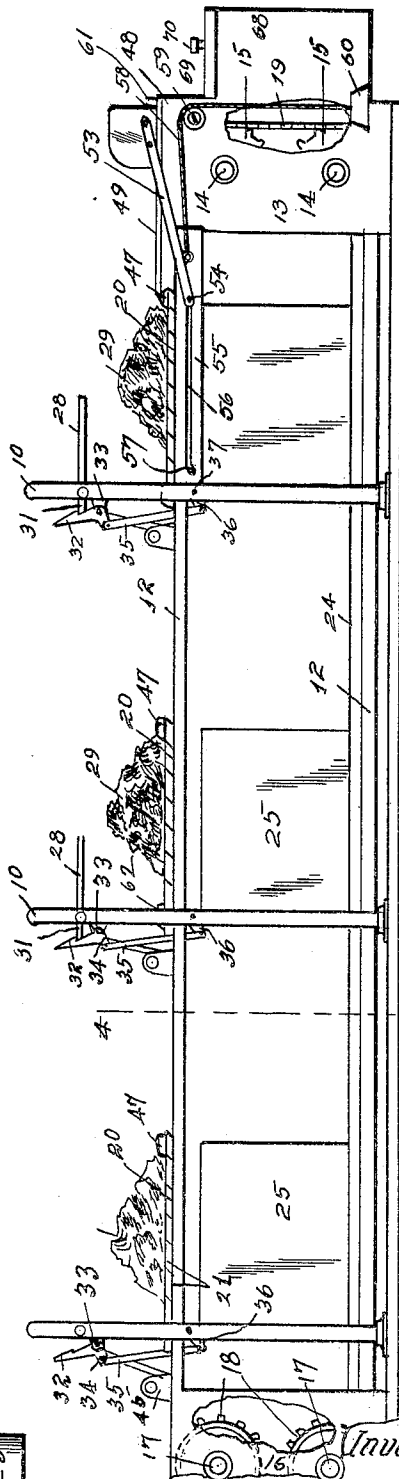


Fig. 2.



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3 Sheets-Sheet 2

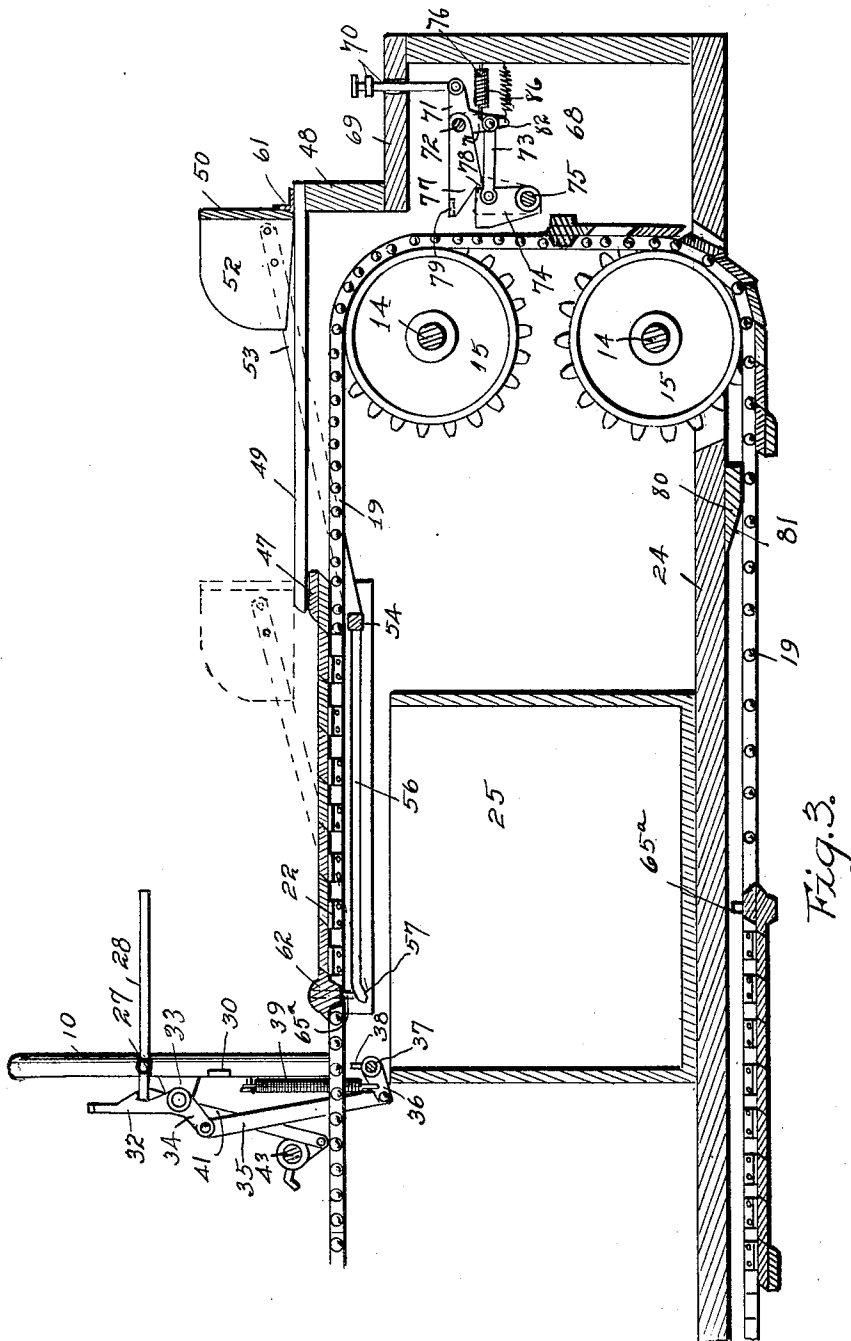


Fig. 3.

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3 Sheets-Sheet 3

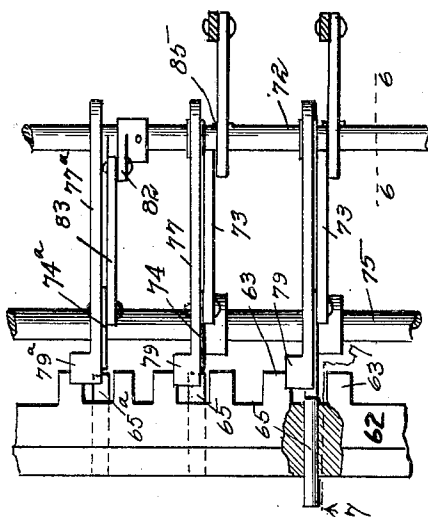


Fig. 5.

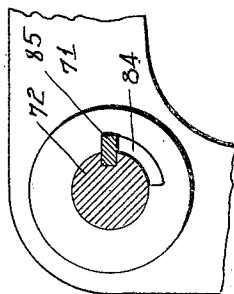


Fig. 6

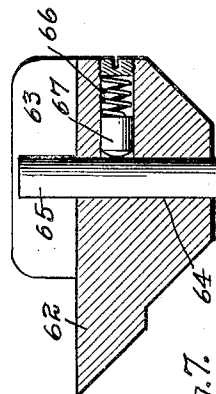


Fig. 7.

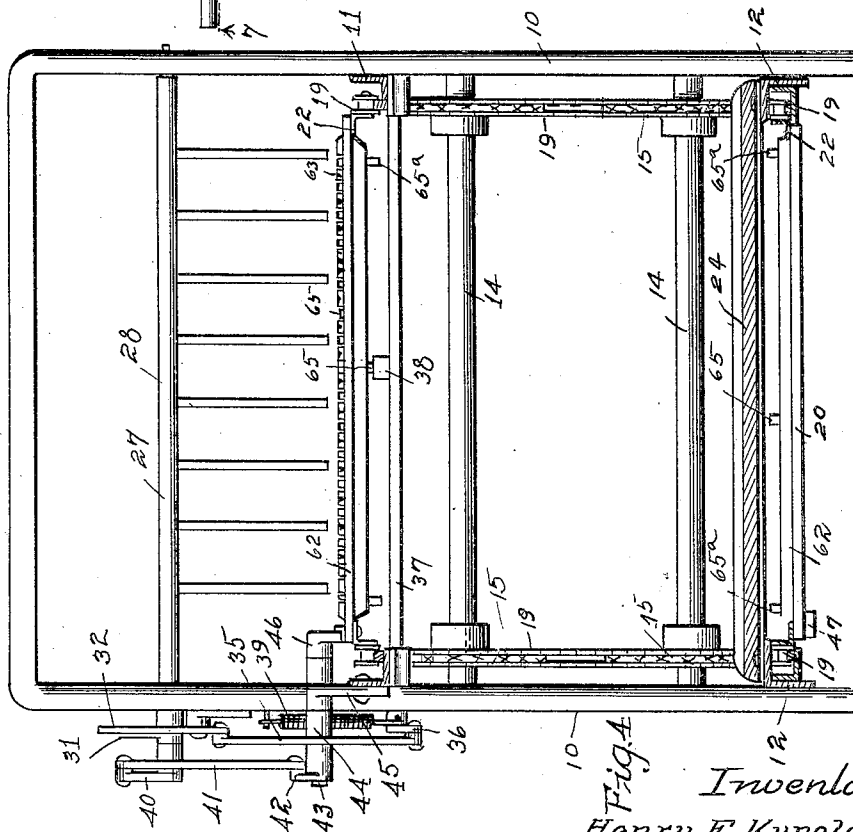


Fig. A.

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UNITED STATES PATENT OFFICE

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MECHANICAL ASSORTING DEVICE

Application filed September 30, 1929. Serial No. 396,346.

The object of our invention is to provide mechanism of simple, durable and inexpensive construction, which may be used in connection with the assorting of laundry articles and the like, so that a series of suitable boxes or containers may be provided for receiving the assorted articles, and to provide means whereby the assorted articles may be first delivered to a platform and then mechanically distributed to any one of the various boxes or containers upon the depression of a suitable key or other operating device.

More specifically it is the object of our invention to provide in an assorting mechanism having a series of boxes or containers for receiving the assorted articles and a table or platform for receiving the articles as they are assorted, and a key board having a separate key for each of the containers, improved means whereby the depression of either one of said keys will set into operation a suitable conveying mechanism whereby the articles on the platform will be automatically and mechanically delivered to the container corresponding to the key depressed.

Our invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of our improved assorting mechanism.

Figure 2 is a side elevation of same.

Figure 3 is an enlarged, detail, sectional view taken on the line 3—3 of Figure 1.

Figure 4 is an enlarged, transverse, sectional view taken on the line 4—4 of Figure 2.

Figure 5 is an enlarged plan view of the key actuated mechanism for setting the selecting pin.

Figure 6 is an enlarged sectional view taken on the line 6—6 of Figure 5.

Figure 7 is an enlarged, detail, sectional view taken on the line 7—7 of Figure 5.

Our improved device comprises a series of upright supporting posts 10 to which horizontal frame members 11 and 12 are attached. The forward ends of the frame members 11

and 12 are provided with side plates 13 in which is rotatively mounted shafts 14, each of which is provided with a pair of sprocket wheels 15. The rear ends of the frame members are provided with upright side members 16 in which are mounted shafts 17 which have sprocket wheels 18.

The sprocket wheels 15 and 18 are designed to support and operate chains 19. The chains 19 are provided with a series of platforms 20 spaced apart a considerable distance. Each of the platforms comprises a series of transversely arranged slats 21. The forward and rear edges of said slats are beveled in the manner illustrated in Figures 2 and 3, so that the rear edge of one of the slats will overlap the forward edge of the adjacent slat. The ends of the slats are secured to the chains 19 by suitable angle plates 22. The said platforms 20 are spaced apart to form openings 23 through which the articles are delivered from the upper run of the conveyor, in the manner herein-after set forth.

Supported between the posts 10 is a floor 24 for supporting boxes or containers 25. The said containers are supported between the upper and lower runs of the conveyor formed by the chains 19 and the platforms 20. The spacing of the containers 25 is the same as the spacing of the platforms 20.

A pulley 26 is provided for the upper one of the shafts 17, whereby the said shafts may be rotated in an anti-clockwise direction as shown in Figure 2, which will cause the chains 19 to be moved rearwardly and with them the platforms 20. The said platforms, on account of being formed of narrow slats, will pass easily over and under the sprocket wheels 15 and 18 and will provide means whereby laundry articles may be delivered from the forward end of the conveyor to the boxes 25.

Suitable means is provided for raking the material from any given platform to a given box beneath. Said raking means comprises a shaft 27 rotatively mounted in each corresponding pair of uprights 10. Said shaft 27 has a series of laterally extending teeth 28 which rest normally in a horizontal

position at a point above the piles of laundry 29 on the platforms.

The rakes formed by the shafts 27 and the teeth 28 are adapted to swing with the teeth 28 in a vertical position in front of one of the piles 29, so that the said pile will be held against forward movement as the conveyor is advanced and the platform on which the pile rests will be moved from beneath the pile, permitting it to fall into the box 25. The lower ends of the teeth 28 are limited against rearward movement by one of said teeth engaging a stop lug 30 secured to one of the uprights 10.

Each of the rakes is supported with its teeth in a horizontal position by means of a suitable latch device comprising a rearwardly extending arm 31 secured to one end of the shaft 28. The free end of the arm 31 extends rearwardly and is held against upward movement by means of a pivot latch 32 supported by a suitable bracket 33 from the uprights 10. The latch 32 has a rearwardly extending arm 34, the free end of which is connected to a link 35 having its lower end connected to an arm 36 supported on a rock shaft 37 rotatively mounted in the uprights 10 and beneath the chains 19. The upper edge of the rock shaft 37 is provided with an upwardly extending lug 38.

The latch 32 is held in a closed position by means of a suitable spring 39 connected to the arm 36. The shaft 27 is also provided with a rearwardly extending arm 40 having a downwardly extending link 41, the lower end of which is connected to an arm 42 secured to a shaft 43 rotatively mounted in a bearing 44. Said bearing is secured to one of the frame members 11 by a bracket 45. The inner end of the shaft 43 is provided with a downwardly extending lug 46 supported above one edge of the platform 20. The rear edge of one end of each of the platforms is provided with a lug 47 which operates in alignment with the lug 46, and is designed to engage said lug 46 as the platform is advanced, which will cause the shaft 43 to be rotated and the rear end of the arm 42 lowered, which in turn will cause the rear end of the arm 40 to be lowered and the rake moved from a vertical to a horizontal position.

Thus means is provided whereby said rakes will be automatically elevated and latched in their elevated positions after the articles on the corresponding platform 20 have been delivered to the boxes 25.

Supported on the forward end of the frame members 11 is a support 48, the top edge of which is provided with rearwardly extending slats 49. Said slats 49 are mounted immediately above the platforms 20 and are designed to form what we shall term a receiving platform.

Slidably mounted on the receiving plat-

form is an unloading frame 50, having a back member 51 and side members 52. Connected to each of the side members 52 is a link 53 which extends rearwardly and downwardly. The lower ends of the links 53 are connected by an operating bar 54. Said bar 54 is slidably mounted in guide plates 55 attached to the side members 11 and projecting downwardly therefrom. Each of the guides 55 has a slot 56 in which the bar 54 is slidably mounted. The rear end of the slot 56 is provided with a downwardly curved portion 57.

Each of the members 53 is provided with a cable 58 supported on a pulley 59. The free end of each cable is provided with a weight 60 for the purpose of moving the unloading frame forwardly, the forward movement of which is limited by a stop 61.

For moving the unloading frame rearwardly and also for selectively releasing the latches 32, we have provided the following mechanism:

Secured to the forward edge of each of the platforms 20 we have provided an especially constructed slat 62 secured to the chains 19 in the same manner as the slats 21. The top or outer edge of each of the slats 62 is provided with a series of upwardly extending lugs 63, said lugs being arranged in pairs slightly spaced apart. The slats 62 are also provided with an opening 64 between the lugs of each pair. Each of the openings 64 is provided with a slidably mounted pin 65.

Each slat 62 also has its forward edge provided with an opening 66 opposite each of the openings 64 and designed to receive a spring actuated detent 67 for the purpose of frictionally retaining the pin 65 in either of its sliding positions of movement. The pin 65 is of such length that when the top of the pin, as illustrated in Figure 7, is even with the top of the slat 62, its lower end will extend a considerable distance below the lower edge of the slat. In practice this distance is equal to the height of the lugs 63.

The number of pins 65 is equal to the number of boxes 25 plus two. The two end pins 65a when projected downwardly are designed to engage the bar 54 as the conveyor is advanced, causing said bar to be moved rearwardly in the slot 56, which will cause the frame member 50 to be moved rearwardly until the bar 54 reaches the rearward portion 57 of the slots 56, at which time the bar 54 is moved downward and caused to disengage the pins 65, after which the frame member 50 is moved forwardly by the action of the weights 60.

Supported on the forward end of the frame is a cabinet 68 having a key board 69 in which is mounted a series of key stems 70. The lower end of each key stem is pivotally connected to a bell crank lever 71. All of said bell crank levers are pivotally mounted on a

shaft 72 rotatively mounted transversely in the cabinet 68. The spacing of the keys 70 is the same as the spacing of the pins 65, and the number of keys is equal to the number of boxes 25.

The downwardly projecting arm of each of the bell cranks 71 is pivotally connected to a link 73, which in turn is pivotally connected to a pin operating plate 74, all of said plates being pivotally mounted on a shaft 75. The forward edge of each of the plates is beveled upwardly and inwardly and designed to travel through the space between each pair of lugs 63 as the slat 62 is moved upwardly past said plates and designed to move the corresponding pin 65 inwardly when the plate 74 is in the upright position illustrated in Figure 3, at which time the key actuating the same is depressed.

A spring 76 is provided for swinging the upper end of the plate 74 outwardly so that its beveled edge is supported in a substantially vertical position, as indicated by dotted lines in Figure 3, at which time the pins 65 will move upwardly past the member 74 without being moved to an operative position.

A latch device 77 is provided for retaining the upper end of the plate 74 at its inner limit of movement, the latch 77 being provided with a shoulder 78 which drops outside of the upper edge of the plate 75 by gravity. Said plate 77 is pivotally mounted on the shaft 72.

The inner end of the plate 77 is provided with a laterally extending lug 79 which normally rests in the path of one of the lugs 63 as the slat 62 is moved upwardly. This will cause the plate 77 to be elevated and to disengage the plate 75, permitting the plate to return to its normal position after the pin 65 has been moved inwardly.

A beveled plate 80 is secured to the under surface of the floor 24 and immediately above the chains 19. The rear edge of the plate 80 is provided with a beveled portion 81 designed to engage the inwardly projecting ends of any of the pins 65, and to return them to their normal positions within the slat 62 as the conveyor is advanced.

Each of the shafts 37 is provided with a single lug 38 in alinement with one of the pins 65. Said pins 65 are moved into operative position by a given one of the keys 70, so that if said key 70 is depressed, then the link 73 will be moved forwardly, causing the corresponding plate 74 to be moved forwardly and the corresponding pin 65 to be moved to an operative position as the conveyor is advanced. A continuation of the advance of the conveyor will cause the pins 65a to engage the bar 54 and the unloading frame to be moved rearwardly in the manner before described, and the material thereon to be delivered to the platform 20 beneath and to the

rear of said platform. The pin 65 will then be moved rearwardly until it engages the lug 38, which will cause the upper end of the lug 38 to be moved in a counter-clockwise direction as viewed in Figure 3, causing the latch member 32 to disengage the arm 31, permitting the teeth 28 to be moved to a vertical position in front of the pile of material on the platform 20. The rearward movement of said platform will cause the material thereon to be raked into the box 25 beneath the conveyor.

The lug 47 will then engage the lug 46, causing the link 41 to be lowered and the shaft 27 to be rotated and the teeth 28 elevated to permit other piles of material to pass beneath the said rakes positioned above other boxes 25.

By this arrangement it will be seen that each of the boxes 25, or the position it assumes when receiving material from the platform 20, may be provided with a number, and the key for actuating the corresponding pin 65 may be provided with the same number, so that the operator may deliver material from the receiving platform to any desired box 25 by simply depressing the corresponding key.

For actuating the pins 65a, we have provided plates 74a similar to the plates 74. Connected near each end of the shaft 72 is a downwardly projecting arm 82. The plate 74a and the arm 82 are connected by a link 83. Each of the bell crank arms 71 is provided with a slot 84, see Figure 6, for receiving a key 85 mounted in the shaft 72. One of these keys 85 is provided for each of the bell cranks 71 so that as any one of the keys 70 is depressed, the shaft 72 will be rotated in an anti-clockwise direction, as shown in Figure 6, which in turn will cause the arms 82 to be moved rearwardly and with them the links 83, and the plates 74a into the path of the pins 65a.

Thus means is provided whereby the pins 65a will be set each time one of the keys 70 is depressed. The slot 84 prevents movement of the key 85 without effecting the bell crank levers of the keys that remain in their normal position. A spring 86 is provided for returning the plates 74a to their normal positions.

Thus it will be seen that we have provided a mechanical assorting device of simple, durable and inexpensive construction, which is reliable and accurate in its operation, and in which the selecting pins 65 and 65a are carried by the conveyor platforms, where they will operate on suitable tripping mechanism at each of the unloading stations, thus providing a very simple and effective mechanism for accomplishing the purpose of selectively dumping the material from the receiving platform to any one of the receiving boxes or containers.

A simple operation of any one of the keys sets into operation both the unloading member of the receiving platform and the desired tripping mechanism of the rakes. It will, therefore, be seen that the operation of the device is very simple and accurate.

We claim as our invention:

1. A mechanical assorting device comprising an endless conveying means having a series of horizontally arranged and spaced conveying platforms, means for driving said conveying means, a series of pivoted rake devices adapted to swing from an inoperative horizontal position above said conveying platforms to a vertical operative position adjacent to the upper surface of the corresponding conveying platforms, whereby material on said platform will be raked therefrom through the space between the conveying platforms as the conveying means is advanced, locking means for holding each of said rake devices in an inoperative elevated position, a key for each of said rake devices, and means carried by each of said platforms whereby the depression of one of said keys will cause the locking device of the corresponding rake device to be actuated and the rake device lowered into position in operative relation with said platform as the conveying means is advanced.

2. A mechanical assorting device comprising a series of aligned and spaced containers, a loading platform, an endless conveying means supported on sprockets carried by horizontal axes, a series of spaced conveyor platforms carried by said conveying means, means for driving said conveying means, an unloading device having an actuating bar, a rake device for each container supported normally in a horizontal inoperative position above said platform, actuating means for moving said rake device to a vertical operative position adjacent to the upper surface of said platforms, a key mechanism having a key for each rake device, a selecting device carried by each platform comprising a slat having a series of slidable pins adapted to be selectively moved into operative relation with the actuating bar of said unloading device and with the actuating means for said rake device as the conveying means is advanced, a key mechanism having a key for each rake device for actuating one of said pins, whereby material from the loading platform will be automatically delivered to the conveyor platform having the selecting device carrying actuated pins and the rake device corresponding to the key actuated moved to operative position for delivering material from the conveyor platform to the corresponding container, and means for returning said pins to a normal inoperative position.

3. A mechanical assorting device comprising a loading platform, an endless conveying

means having a series of horizontally arranged and spaced conveying platforms, means for driving said conveying means, a series of rake devices adapted to be moved from an inoperative horizontal position above said platforms to an operative vertical position adjacent to corresponding conveying platforms, whereby material on said platforms will be delivered to the spaces between said conveying platforms as the conveying means is advanced, means for latching said rakes in an elevated inoperative position, means for delivering material from said loading platform to one of said conveying platforms, a key mechanism including a key for each of said rake devices, and means carried by each of said conveying platforms whereby the depression of one of said keys will set into operation the means for unloading said loading platform and into operation the rake device corresponding to the key depressed.

4. A mechanical assorting device comprising a series of spaced containers, a loading platform, an endless conveying means having one of its runs traveling over said containers, a series of horizontally arranged and spaced conveying platforms carried by said conveying means, means for driving said conveying means, unloading means for delivering material from said loading platform to one of said conveying platforms, a series of horizontal rake devices adapted to be moved from a horizontal inoperative position to a vertical operative position adjacent to the upper surface of the corresponding ones of said conveying platforms, means for locking said rake devices in an elevated inoperative position, a key mechanism including a key for each of said rake devices, and means carried by each of said platforms whereby the depression of one of said keys will set into operation said unloading means and the locking means of the rake device corresponding to the key depressed whereby the material on the corresponding conveying platform will be delivered to a corresponding container as the conveyor is advanced.

Des Moines, Iowa, August 28, 1929.

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