Jan. 2, 1940. C. H. NEER 2,185,947

PACK FEED MECHANISM FOR LABELING MACHINES

Filed July 10, 1939 4 Sheets-Sheet 1

FIG. 1.

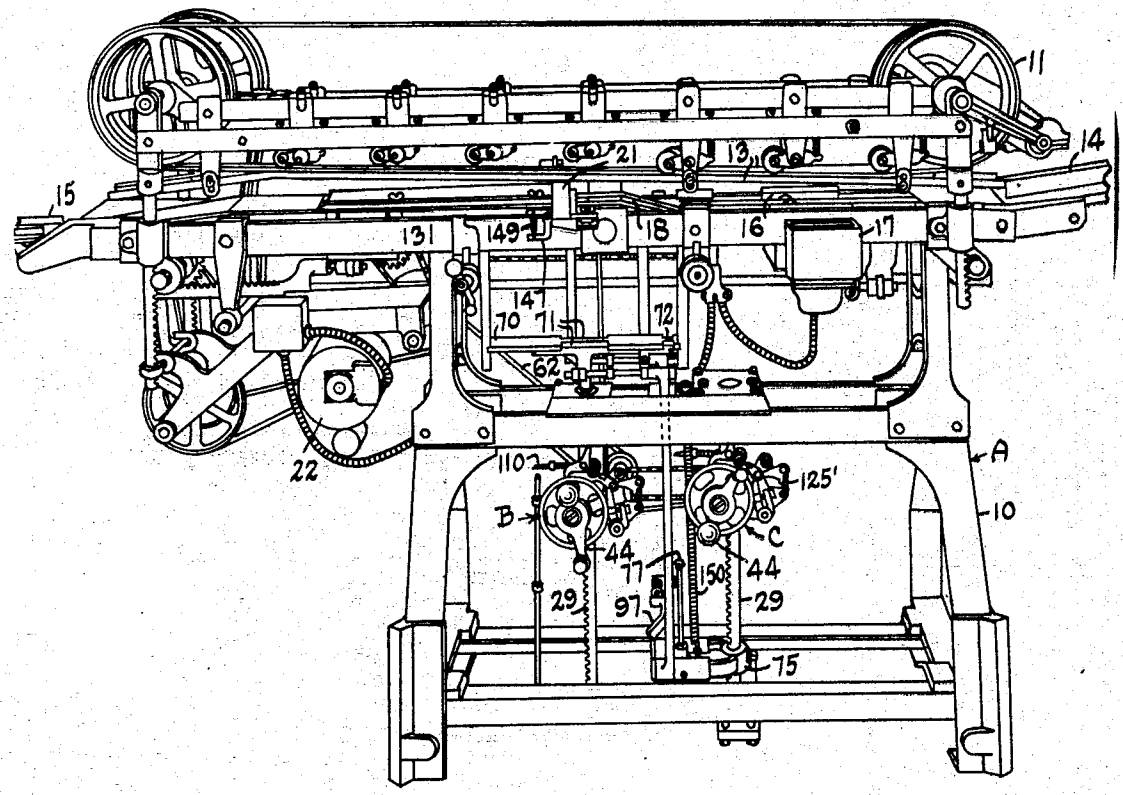
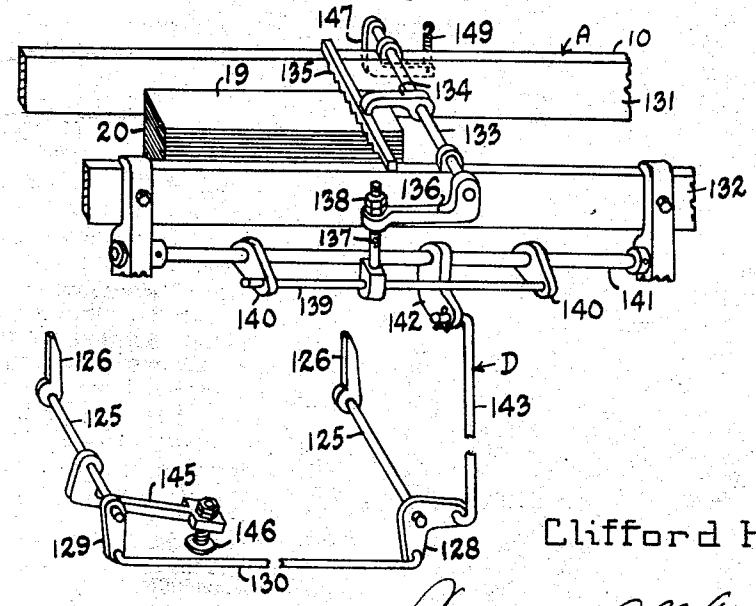


FIG. 7.



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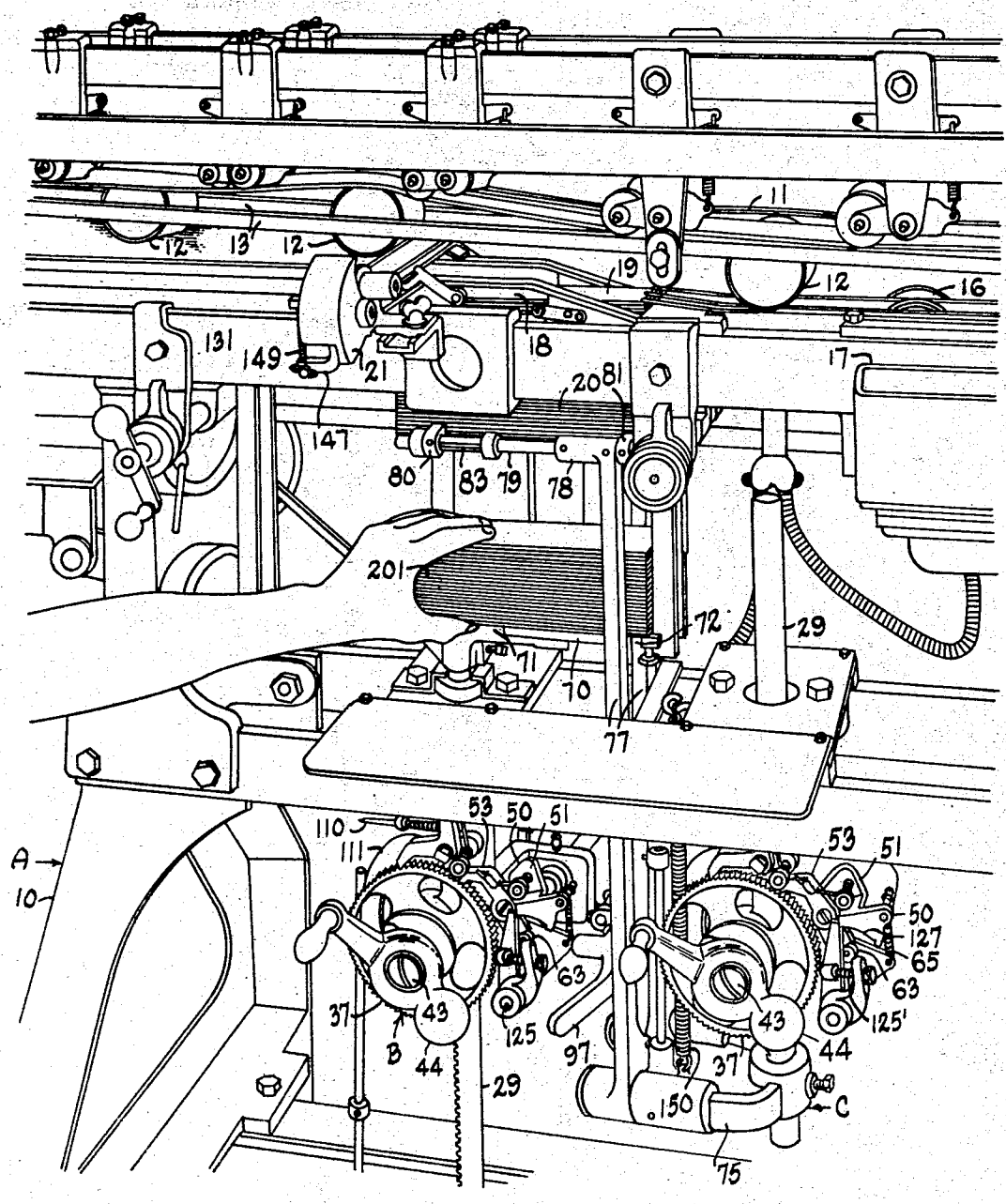
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PACK FEED MECHANISM FOR LABELING MACHINES

Filed July 10, 1939 4 Sheets-Sheet 2

FIG. 2.



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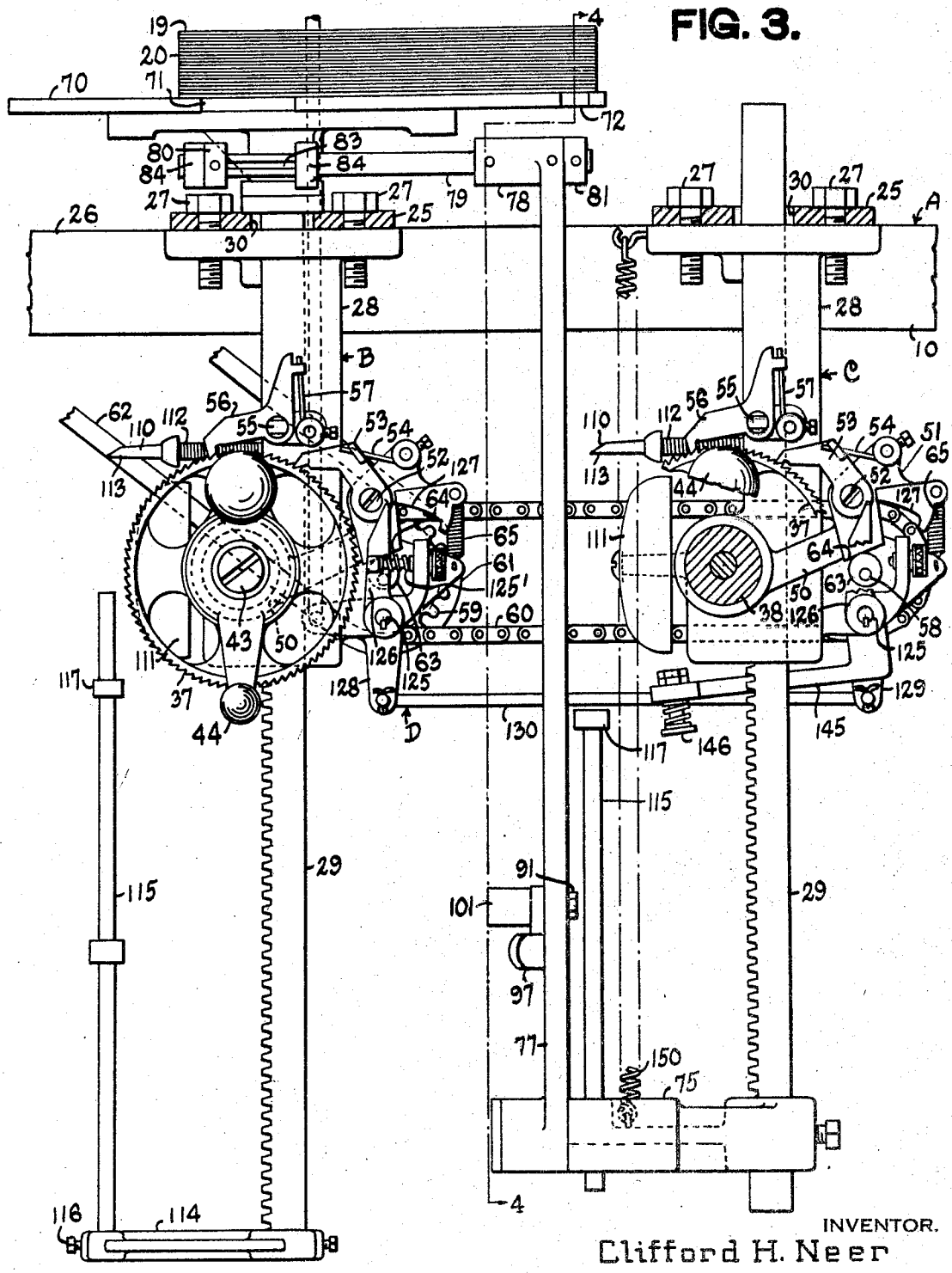
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PACK FEED MECHANISM FOR LABELING MACHINES

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FIG. 3.



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PACK FEED MECHANISM FOR LABELING MACHINES

Filed July 10, 1939 4 Sheets-Sheet 4

FIG. 4.

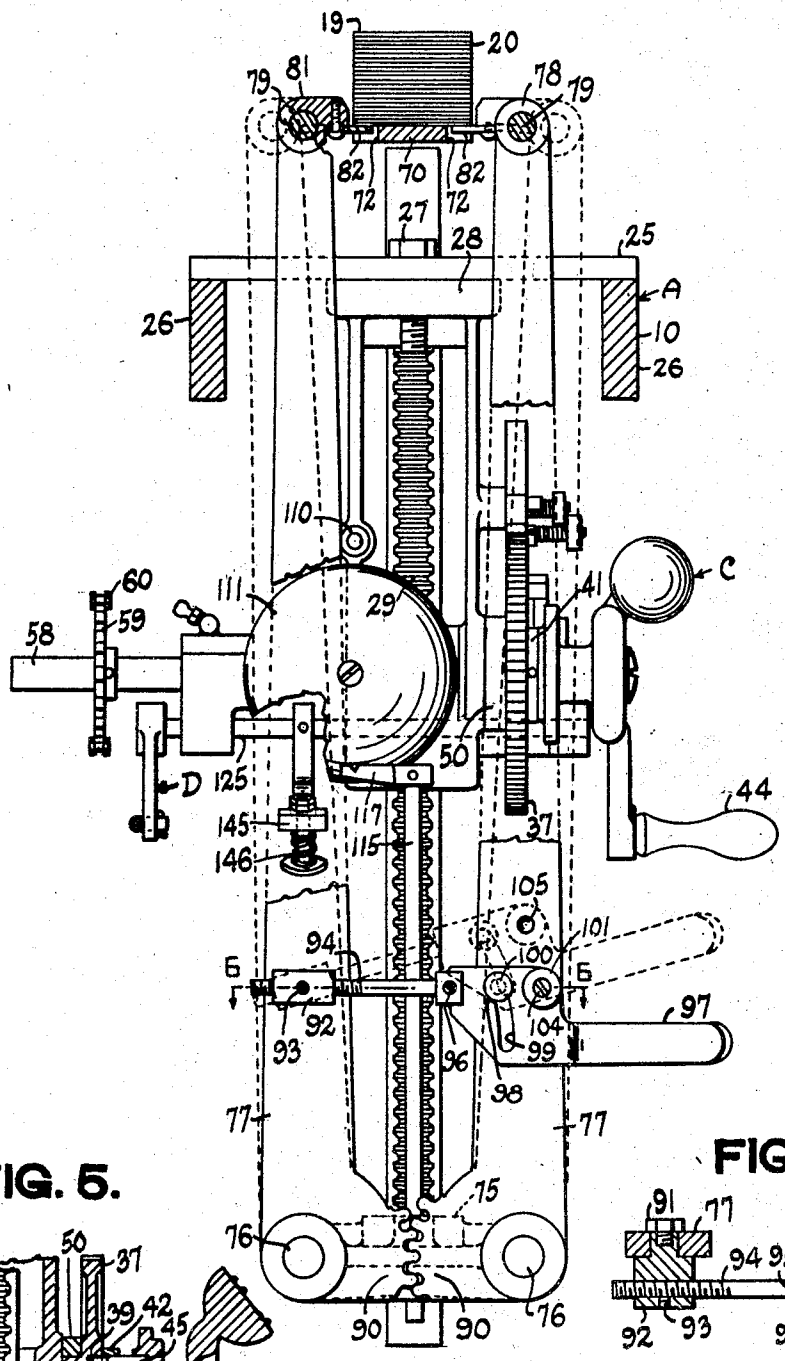


FIG. 5.

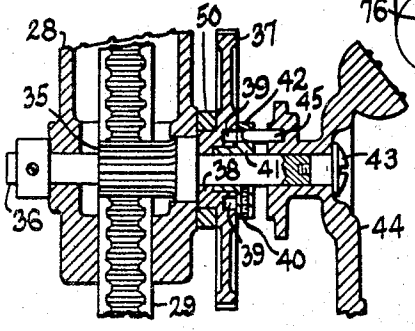
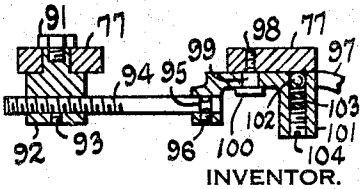


FIG. 6.



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Patented Jan. 2, 1940 2,185,947

UNITED STATES PATENT OFFICE

2,185,947

PACK FEED MECHANISM FOR LABELING MACHINES

Clifford H. Neer, Baltimore, Md., assignor to Burt Machine Company, Incorporated, Baltimore, Md., a corporation of Maryland

Application July 10, 1939, Serial No. 283,661

17 Claims. (Cl. 216—58)

The invention relates to improvements in pack feed mechanism of the character employed in conjunction with a labeling machine adapted to handle containers, such as cylindrical cans, that pass along a given route adjacent a labeling zone in which successive containers are supplied with successive label sheets from the forward end of the pack and wherein pack feed mechanism is employed to advance successive label sheets into the labeling zone, such a machine being shown and described in U. S. Patent 1,323,940 to Whitehurst and Wild. The invention further relates to improvements in the pack feed mechanism illustrated and described in the Wild Patent 1,529,043, wherein resilient means is provided to temporarily support a pack of label sheets with its forward end in the labeling zone in a manner whereby to permit retraction of the pack feed mechanism to provide for the insertion of an additional pack of labels.

One of the objects of the present invention is to provide improved pack feed mechanism for a labeling machine.

Another object is to provide pack feed mechanism having improved feed control means.

A further and important object is the provision of a main pack feed normally advancing the pack and an auxiliary pack feed removably disposable in feeding relation to the pack to provide for the furnishing of an additional pack to the main feed without interrupting the feeding of the pack.

A still further object of the invention resides in the provision of main and auxiliary pack feeds with improved feed control means therefor.

The invention also aims to provide improved means for advancing or retracting the pack support relative to the feed mechanism.

The invention further aims to provide improved means for moving the auxiliary pack feed mechanism into and out of feeding relation to the pack.

The invention additionally resides in the provision of means stopping operation of the pack feed mechanism prior to exhaustion of the pack of label sheets.

Other objects and advantages of the invention will become apparent during the course of the following detailed description, taken in conjunction with the accompanying drawings, forming a part of this specification, and in which drawings:

Figure 1 is a perspective view of the labeling machine, looking toward the front thereof, and equipped with the improved pack feed mechanism.

Figure 2 is a perspective view of the pack feed mechanism shown in Figure 1, with the auxiliary pack feed disposed in feeding relation to a first pack, and showing an additional pack being furnished to the retracted main pack feed.

Figure 3 is a view in front elevation of the pack feed mechanism, with a pack of label sheets operatively associated with the main pack feed.

Figure 4 is a vertical cross sectional view taken substantially on the line 4—4 of Figure 3, the pack of label sheets being operatively associated with the auxiliary pack feed to permit retraction of the main pack feed.

Figure 5 is a vertical cross sectional fragmentary detail view showing means for advancing or retracting the pack support relative to the feed mechanism.

Figure 6 is a horizontal cross sectional view taken substantially on the line 6—6 of Figure 4.

Figure 7 is a diagrammatic perspective view looking toward the rear side of the feed control means preferably forming a part of the invention.

In the drawings, which for the purpose of illustration show only a preferred embodiment of the invention, and wherein similar reference characters denote corresponding parts thruout the several views, the letter A generally designates a labeling machine, equipped with main and auxiliary pack feeds B and C and feed control means D.

In the example shown, the machine A includes a frame 10 across the upper portion of which extends a conveyor 11 for rolling cans 12 along a route of travel determined by guides 13 extending from entrance 14 at one end of the frame to exit 15 at the opposite end thereof. As successive cans 12 pass zone 16, adhesive from pot 17 is applied to their peripheries. The cans 12 then traverse a labeling zone 18 in which successive uppermost label sheets 19 of pack 20 are picked up one by one and rolled around successive cans, the flap end of each sheet being provided with a marginal strip of adhesive adjacent the paste belt housing structure 21. The machine A also includes a motor 22 for driving certain parts of the machine, such as the conveyor 11.

Referring now to the main and auxiliary pack feeds B and C, the same are supported by yoke plates 25 extending transversely of opposite side bars 26 of the frame. Fixed to the yoke plates 25, as by cap screws 27, are downwardly de-

pending brackets 28. Mounted for vertical sliding movement in the brackets are racks 29 extending upwardly thru openings 30 in the yoke plates.

Each rack 29 is provided with a pinion 35, as shown in Figure 5, fixed on or integral with a shaft 36 that is mounted for rotation transversely of the lower end portion of one of the brackets 28. Freely rotatable on each shaft 36 is a ratchet wheel 37 provided with a reduced annular hub 38 and an annular series of sockets 39. Fixed on shaft 36, as by set screw 40 is a collar 41 provided with an opening 42 axially alignable with any one of the sockets 39 by rotation of the shaft 36 relative to ratchet wheel 37. Secured for limited movement axially of the shaft, as by screw 43 forming a stop, is a hand-wheel 44 provided on its hub with an inwardly extending stud 45 of a length whereby upon inward movement of the hand-wheel 44 axially of the shaft 36, stud 45 will extend thru opening 42 and may be plugged into one of the sockets 39, and whereby, upon outward movement of the hand-wheel, the stud is withdrawn from the socket 39 but remains at least partially in opening 42, as shown in Figure 5. With this arrangement, the hand-wheel 44 of each feed B and C is at all times connected for rotation with its shaft 36, by way of stud 45, collar 41, and set screw 40, whereas ratchet wheels 37 are connected for rotation with the shafts 36 only while the hand-wheels are thrust inwardly toward the respective ratchet wheels 37, the connection of each ratchet wheel 37 to its shaft 36 being by way of socket 39, stud 45, collar 41 and set screw 40.

Rotatably mounted on hubs 38 of ratchet wheels 37 are arms 50 each including a free end portion 51, to which is pivotally secured, as by screw 52, a driving pawl 53, urged into engagement with one of the ratchet wheels as by spring 54. Pivotally mounted on the brackets 28, as by screws 55, are holding pawls 56, urged into engagement with ratchet wheels 37, as by springs 57.

Rotatably mounted in brackets 28 are drive shafts 58, connected for rotation in unison as by sprockets 59 and chain 60. The drive shaft 58 of the main feed B is constantly driven, preferably in a counter-clockwise direction, as by fixed pulley 61 and belt 62 operatively connected to motor 22.

Mounted on drive shafts 58 are eccentric cams 63 engaging cam surfaces 64 on arms 50 to swing said arms 50, together with driving pawls 53, upwardly. In order that cam surfaces 64 will tend to remain in contact with cams 63, the arms 50 are downwardly urged as by springs 65. With this construction, the arms 50 normally are moved up and down whereby to intermittently rotate ratchet wheels 37, so that the latter, when connected to their respective shafts 36, thru studs 45 and collars 41, will elevate racks 29 in the direction of feed.

Secured to the upper end of the rack 29 of main pack feed B is a horizontal pack-supporting table 70 preferably of a width substantially equal to the width of the pack 20 and provided in its opposite marginal sides with spaced apart inwardly extending notches 71—72. The table may be of a length sufficient to support packs of varying lengths. It will be understood that tables of various widths may be provided, if desired, for properly supporting different width packs.

Secured to the lower end of the rack 29 of auxiliary pack feed C is a laterally extending bearing 75 including stub shafts 76 pivotally supporting a pair of elongate lever arms 77. Each arm 77 is provided at its free end with a sleeve 78 fixedly supporting a horizontal rod 79 carrying collars 80—81 provided with inturned supporting fingers 82, for disposition in notches 71—72 of the pack supporting table 70. If desired, the collars 80 may be keyed to grooves 83 in rods 79, for movement axially thereof between annular stops 84. The notches 71 of pack supporting table 70 are of a width to accommodate the fingers 82 regardless of the axial adjustment of collars 80 between stops 84.

In their swinging movement, the arms 77 are correlated thru the provision of intermeshing gear segments 90 integral with the pivotal end portions of the arms. Pivotally secured to one arm 77, as by cap screw 91, is a sleeve 92 releasably secured, as by set screw 93, to rod 94 extending thru the sleeve and in screw threaded engagement therewith. At its free end portion, the rod is swivelled, as by annular groove 95 and pin 96, to handle 97. Fixed to the other arm 77 is a pin 98 retained in arcuate slot 99 of the handle as by head 100. The handle also includes an axially bored boss 101 containing ball 102 urged as by coil spring 103 and adjustment screw 104 into depression 105 in the upper position of the handle, whereby to retain the handle against casual displacement. The arcuate slot 99 is shaped to provide a camming co-action with pin 98 whereby to open the arms 77 upon lifting of the handle.

In order to provide a signal upon predetermined depletion of a pack of label sheets, knockers 110 are mounted on the brackets 28 for co-action with bells 111. Each knocker includes a resilient stem 112 and a projecting finger 113. To the lower end of the main feed rack is secured a lateral extension 114 carrying an upstanding rod 115, vertically adjustable as by set screw 116. The laterally extending bearing 75 of the auxiliary pack feed is also provided with a similar upstanding rod 115. To the upper ends of these rods 115 are secured laterally offset trip arms 117, adapted to engage fingers 113, whereby to flex the respective knockers 110 in a direction away from bells 111, until the tip ends of the fingers slip off and out of engagement with the trip arms 117, in a manner whereby to rebound and cause the knockers to strike the bells.

In order to maintain the uppermost label sheet 19 of the pack 20 in the labeling zone 18 of the machine A, feed control means D is provided. The main and auxiliary pack feeds B and C are each provided with a control shaft 125. In the example shown, these control shafts are mounted for rotation in brackets 28 below and parallel to the drive shafts 58, which, as previously described, operate thru the eccentric cams 63 and springs 65 to normally raise and lower the arms 50 that carry the driving pawls 53. Fixed to the control shafts 125 are abutment arms 126 normally urged, as by springs 125' into non-interfering relation to the free end portions 51 of arms 50, but adapted, upon rocking of the control shafts 125 in a clockwise direction when viewed from the front of the machine A as shown in Figure 3, to swing beneath arcuate shoulders 127 of the raised arms 50 and thereby prevent lowering of the arms by springs 65. Fixed to the control shafts 125 are levers 128—129 connected by link 130 in a manner whereby the control shafts are simultaneously operable.

In Figure 7 are shown the front and rear top bars 131—132 of the machine frame 10 rotatably

carrying a curling bar rod 133 provided with a lever 134 engaging the curling bar 135 and an arm 136 adjustably carrying depending rod 137 as by nuts 138. At its lower end, rod 137 is pivotally and slidably connected to an elongate rod 139 bridging the free ends of spaced levers 140 fixed on rock-shaft 141. Mounted for rotation with rock-shaft 141 is an arm 142 connected as by link 143 to the lever 128 that is fixed on the main feed control shaft 125. Secured to the auxiliary feed control shaft is a stop lever 145 provided with a resilient contact 146 adapted to be engaged by the laterally extending bearing 75 upon predetermined elevation of the auxiliary feed rack 29. The curling bar rod 133 may be provided with a lever 147 biased by spring 149 to urge lever 134 toward the curling bar 135.

On account of the weight of parts supported by the auxiliary feed C, a suitable spring 150 may be secured between bearing 75 and a fixed portion of the frame in a manner whereby to counterbalance and relieve excessive strain on the auxiliary feed.

In the operation of the pack feed mechanism, the initial pack 20 is supplied to the table 70 of the main pack feed B. This pack 20 may then be manually advanced to dispose its uppermost label sheet 19 beneath the curling bar 135. This may be accomplished by merely turning the hand wheel 44 in a counter-clockwise direction, assuming that the wheel 44 is disposed in its normal position of engagement with ratchet wheel 37 of the main feed. Upon predetermined depletion of the initial pack 20, the main feed bell knocker 110 will be actuated. The operator or care-taker of the machine will now depress the handle 97 and turn the hand-wheel 44 of the auxiliary feed C to dispose the auxiliary feed fingers 82 in the notches 71—72 of the main feed table 70, which may then be retracted from the initial pack 20, while the auxiliary feed C is disposed in feeding relation to the pack 20. To retract the table 70, the main feed hand-wheel 44 is pulled out to disconnect the main feed ratchet, whereupon the hand-wheel may be turned in a clockwise direction to lower the rack 29 carrying the table. After an additional pack 201 is supplied to the table, the same is advanced thru operation of the main feed hand-wheel 44 into engagement with the auxiliary feed fingers 82, which may then be retracted from feeding relation to the initial pack 20 by lifting handle 97.

In the event either the main or auxiliary feed tends to advance the pack faster than the label sheets are utilized, the curling bar 135 will be lifted, and thru the connections described will rock the control shafts 125 whereby to dispose the abutment arms 126 beneath shoulders 127 and thereby cause the pack to dwell. Upon the utilization of label sheets permitting the curling bar to lower, the abutment arms 126 will be returned to their normal position of non-interference, as by springs 125', 149, and the feed will be resumed. In the event the auxiliary feed C is permitted to advance to a predetermined position, the bearing 75 will engage the resilient contact 146 whereby to rock the control shafts and stop the feeding action.

Various changes may be made in the form of invention herein shown and described without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. In pack feeding mechanism for a labeling machine, a main feed, an auxiliary feed, means for positively driving said main and auxiliary feeds, said main feed normally being disposed in feeding relation to the pack and said auxiliary feed normally being disposed out of feeding relation to the pack, means for removably disposing said auxiliary feed in feeding relation to the pack, means for retracting said main feed from feeding relation to the pack so that an additional pack may be supplied to the main feed while the first-mentioned pack is being advanced by the auxiliary feed and means for advancing the main feed so that the additional pack is disposed in succeeding relation to the first-mentioned pack.

2. In pack feeding mechanism for a labeling machine, a main feed for the pack, an auxiliary feed for the pack, automatic means for positively driving said main and auxiliary feeds, said main feed normally being disposed in feeding relation to the pack and said auxiliary feed normally being disposed out of feeding relation to the pack, manually operable means for removably disposing said auxiliary feed in feeding relation to the pack, manually operable means for retracting said main feed from feeding relation to the pack so that an additional pack may be supplied to the main feed and manually operable means for advancing the main feed so that the additional pack is disposed in succeeding relation to the first-mentioned pack.

3. In a pack feeding mechanism for a labeling machine, a main feed including a table for normally advancing the pack, an auxiliary feed including a member movable transversely of the path of travel of the table into and out of supporting relation to the pack, means actuating said main and auxiliary feeds to positively drive said table and member in the direction of feed, means removably disposing said member in supporting and feeding relation to the pack, means for retracting said table from supporting and feeding relation to the pack so that an additional pack may be placed thereon while the first-mentioned pack is being advanced by the auxiliary feed and means for advancing the table so that the additional pack thereon is disposed in succeeding relation to the first-mentioned pack.

4. In a pack feeding mechanism for a labeling machine, a main feed including a table for normally advancing the pack, an auxiliary feed including members at opposite sides of the path of travel of the table, means correlating said members for movement transversely of the path of travel of the table into and out of supporting relation to the pack, means actuating said main and auxiliary feeds to advance said table and said members in the direction of feed; means removably disposing said members in supporting and feeding relation to the pack, means for retracting said table from supporting and feeding relation to the pack so that an additional pack may be placed thereon while the first-mentioned pack is being advanced by the auxiliary feed and means for advancing the table so that the additional pack is disposed in succeeding relation to the first-mentioned pack.

5. A pack feeding mechanism for a labeling machine comprising a main feed normally advancing the pack, and an auxiliary feed for advancing the pack during non-operation of the main feed, said auxiliary feed including a bearing, a pair of levers pivotally mounted thereon and including inturned fingers at their free end portions, means correlating said levers for swinging movement to dispose said fingers in or out of feeding relation to the pack, and means for advancing the bearing in the direction of feed.

6. A pack feeding mechanism for a labeling machine comprising a main feed including a table normally advancing the pack, said table having opposite sides provided with a plurality of inwardly extending marginal notches, and an auxiliary feed for advancing the pack during non-operation of the main feed, said auxiliary feed including a bearing, a pair of levers pivotally mounted thereon, a pair of bars fixed transversely of said levers, a plurality of inturned fingers fixed in spaced relation longitudinally of said bars, means for swinging said levers to insert said fingers in said notches and thereby removably disposed said fingers in feeding relation to the pack, and means for advancing the bearing in the direction of feed.

7. A pack feeding mechanism for a labeling machine comprising a main feed normally advancing the pack, and an auxiliary feed for advancing the pack during non-operation of the main feed, said auxiliary feed including a bearing, a pair of levers pivotally mounted thereon, a pair of bars fixed transversely of the levers, a plurality of inturned fingers mounted for movement longitudinally of the bars, means for swinging said levers to dispose said fingers in or out of feeding relation to the pack, and means for advancing the bearing in the direction of feed.

8. In a pack feeding mechanism for a labeling machine, a main feed including a pack-advancing table provided with marginal notches, an auxiliary feed including pack-advancing members removably disposed in feeding relation to the pack upon insertion of said members in said notches, said table being retractible from the pack upon disposition of said pack advancing members in said feeding relation whereby an additional pack may be furnished to the table, said table being advancable to dispose said additional pack in substantially succeeding relation to the first-mentioned pack whereby said pack-advancing members may be removed from feeding relation to the first-mentioned pack.

9. A pack feed mechanism for a labeling machine comprising a main feed for normally advancing the pack, an auxiliary feed movable into and out of feeding relation to the pack, said main feed being retractible from the pack upon movement of the auxiliary feed into feeding relation to the pack, whereby an additional pack may be furnished to the main feed, and means positively driving said main and auxiliary feeds.

10. A pack feed mechanism for a labeling machine comprising a main feed for normally advancing the pack, an auxiliary feed movable into and out of feeding relation to the pack, said main feed being retractible from the pack upon movement of the auxiliary feed into feeding relation to the pack, whereby an additional pack may be furnished to the main feed, means positively actuating said main and auxiliary feeds, and means controlling said actuating means to substantially maintain the forward end portion of the pack in a predetermined zone.

11. Pack feed mechanism of the character described comprising a bracket, a rack mounted for reciprocation relative to the bracket, said rack being movable in one direction to advance the pack and in the opposite direction to provide for the insertion of an additional pack, a pinion shaft mounted for rotation relative to the bracket, a pinion fixed relative to the shaft and meshing with the rack, a ratchet wheel rotatable on the shaft, a pawl for driving the ratchet wheel, a collar fixed on the shaft, a hand-wheel reciprocable between axially spaced positions on the shaft, and clutch means connecting said hand-wheel and collar upon disposition of the hand-wheel in one of said positions to permit manual advancement or retraction of the rack, said clutch means upon disposition of the hand-wheel in the other of said positions connecting said hand-wheel, collar and ratchet wheel to permit automatic or manual advancement of the rack.

12. Pack feed mechanism of the character described comprising a bracket, a rack mounted for reciprocation relative to the bracket, said rack being movable in one direction to advance the pack and in the opposite direction to provide for the insertion of an additional pack, a pinion shaft mounted for rotation relative to the bracket, a pinion fixed relative to the shaft and meshing with the rack, a ratchet wheel rotatable on the shaft, and provided with a socket, a pawl for driving the ratchet wheel, a collar fixed on the shaft and provided with an opening alignable with said socket, a hand-wheel reciprocable between axially spaced positions on the shaft, and a pin fixed on the hand-wheel, said pin upon disposition of the hand-wheel in one of said positions projecting into said opening to connect said hand-wheel to said shaft for manual advancement or retraction of the rack, and upon disposition of the hand-wheel in the other of said positions extending thru said opening into said socket whereby to connect said hand-wheel and ratchet wheel to said shaft for automatic or manual advancement of the rack.

13. Pack feed mechanism of the character described comprising a pack-engaging member, means to advance the pack-engaging member including a ratchet wheel, pawl means movable between first and second positions whereby to intermittently rotate the ratchet wheel, cam means normally intermittently thrusting said pawl means toward the first position, a spring urging the pawl means toward the second position, an arm, means pivotally mounting the arm for swinging movement into and out of the path of travel of said pawl means, said arm upon disposition in said path of travel constituting a stop preventing movement of said pawl means toward said second position under the influence of said spring, means urging the arm out of said path of travel, and means disposed in the path of travel of the pack, said last-mentioned means upon engagement by the forward end of the pack operating to swing said arm into the path of travel of said pawl means.

14. In pack feed mechanism for a labeling machine, a main feed normally advancing the pack, an auxiliary feed movable into and out of feeding relation to the pack, means to retract the main feed from the pack to permit supplying an additional pack thereto, means to advance the main feed relative to the auxiliary feed whereby to dispose said additional pack in succeeding relation to the first pack, and means actuating said main and auxiliary feeds in unison including motion transmitting means connecting said feeds.

15. In pack feed mechanism for a labeling machine, a main feed normally advancing the pack, an auxiliary feed movable into and out of feeding relation to the pack, means to retract the main feed from the pack to permit supplying an additional pack thereto, means to advance the main feed relative to the auxiliary feed whereby to dispose said additional pack in succeeding relation to the first pack, means actuating

said main and auxiliary feeds in unison including motion transmitting means connecting said feeds, and means to simultaneously discontinue actuation of said main and auxiliary feeds.

16. In pack feed mechanism for a labeling machine, a main feed normally advancing the pack, an auxiliary feed movable into and out of feeding relation to the pack, means to retract the main feed from the pack to permit supplying an additional pack thereto, means to advance the main feed relative to the auxiliary feed whereby to dispose said additional pack in succeeding relation to the first pack, means actuating said main and auxiliary feeds in unison including motion transmitting means connecting said feeds, and means to simultaneously discontinue actuation of said main and auxiliary feeds, including a detector member disposed in the path of travel of the advancing pack.

17. In pack feed mechanism for a labeling machine, pack-engaging means, means to advance the pack-engaging means including pawl means movable between first and second positions, an arm, means pivotally mounting the arm for swinging movement into and out of the path of travel of said pawl means, said arm upon disposition in said path of travel constituting a stop discontinuing the operation of said pawl means, a lever including a resilient contact disposed in the path of travel of said pack-engaging means, and means connecting said lever and arm to swing said arm into the path of travel of said pawl means upon movement of said pack-engaging means into engagement with said resilient contact.

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