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AUTOMATIC BOTTLE FEED MECHANISM.

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1,197,569.

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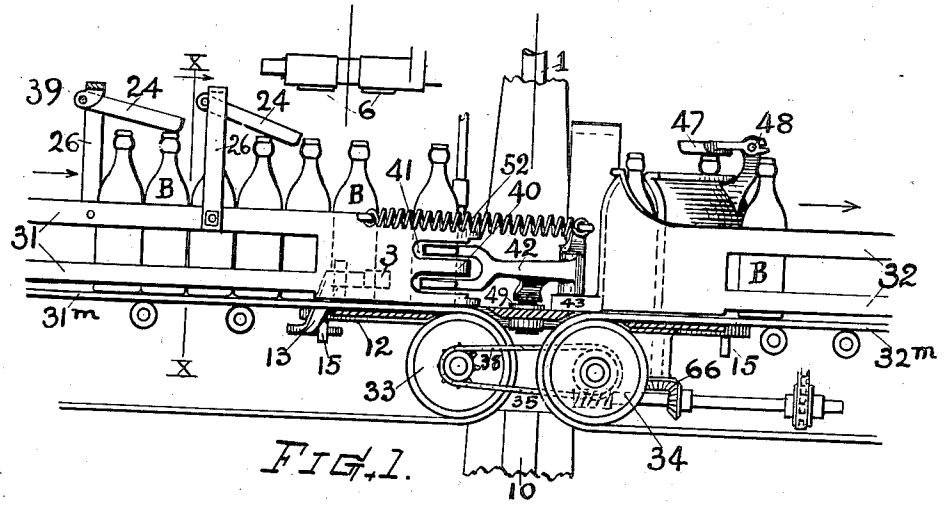


FIG. 1.

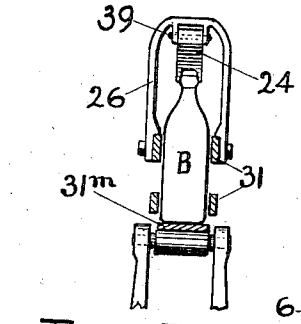


FIG. 3.

FIG. 2.

Witnesses.

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AUTOMATIC BOTTLE-FEED MECHANISM.

1,197,569. Specification of Letters Patent. Patented Sept. 5, 1916.

Application filed April 27, 1914. Serial No. 834,593.

To all whom it may concern:

Be it known that I, FRANK O. WOODLAND, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Automatic Bottle-Feed Mechanism, of which the following is a specification, reference being made therein to the accompanying drawings.

My present invention relates to certain improvements in automatic mechanism for transferring bottles or the like from a traveling conveyer to a continuously moving carrier in a labeling machine, or similar apparatus, into which bottles or the like are to be consecutively fed in a rapid and regular manner; said invention being more specially designed for use in machines of the character described in my previous applications for Letters Patent, Serial Nos. 730,913 and 805,737, which being for complete machines will give a fuller understanding of such parts of a labeling machine as are not included in this case, or explained in this specification.

The prime object of my present invention is to provide a more simple and efficient means for shifting bottles or the like, automatically, from a continuously traveling belt or conveyer on to a rotating or constantly moving carrier by an easy, accurate and smooth running action.

Another object is to provide an improved device for preventing the series of advancing bottles standing upon the forwardly moving conveyer, from crowding against the foremost bottle at the feeding-in passway, or otherwise interfering with the freedom of the feeding-in action. Also to afford a simple means for steadying the bottles, or preventing their tipping over within the feed-way, or between the guiding fenders or directing walls.

Another object is to provide a simple means for temporarily resisting the advancing series of bottles upon the conveyer-bed, and successively releasing the single bottles for transfer to the moving carrier in their order; said means being controlled by an actuating member in connection with the moving carrier to which the bottles are being fed.

Another object is to provide a bottle-carrier having thereon a suitably spaced series of pusher devices for supporting and advancing consecutively bottles or the like, and fitted along its edge with a corresponding series of cam surfaces; and a bottle-feeder or projector controlled directly by said carrier and its cam surfaces, as more fully hereinafter explained.

I attain these objects by mechanism the nature, organization and operation of which is illustrated in the accompanying drawings, and explained in the following description; the particular subject matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 represents a front view of such parts of a labeling machine as embodies my present invention. Fig. 2 is a plan view of my improved feed-mechanism, as arranged for operation with a rotating table or carrier, in a labeling machine. Fig. 3 represents a cross section of the feed-way at line X X on Fig. 1.

In the drawings, the part marked 12 represents the bottle-actuating carrier provided with a series of rests 14 secured thereon at suitable intervals apart, and each adapted for supporting a bottle or the like in proper position to receive its label, or labels, while advancing in regular successive order through the labeling operation by the movement of the carrier, which latter is preferably mounted to revolve upon an upright axis shaft 1 supported in a suitable frame or standard 10 and provided, in practice, with means for imparting motion thereto, as heretofore employed and described in my prior applications for Letters Patent.

27 and 28 indicate stationary guards or guiding fenders arranged adjacently above the surface of the carrier table, and inclosing certain portions of the path in which the bottles B, and their pushing rests 14, travel when the machine is in operation.

31 indicates the feed-way or delivering conductor, and 32 the discharge-way or outgoing conductor, each comprising an endless traveling belt or chain, as 31^m and 32^m, upon which the bottles stand and are moved forward with the movement of the belts; the bottles being kept in proper serial aline-

ment by longitudinal side-bars or suitable guides, as indicated. The respective conveyers can extend for such distance as may in any instance be desired. The belts pass around pulleys 33 and 34 supported on the frame 35 at the inner ends of the conveyers, and similar pulleys at their outer extremities; the upper run of the belts being intermediately supported by small rollers, or in other suitable manner. The conveyers can be operated by any approved driving means for imparting motion thereto in the direction indicated by arrows on Fig. 2. The feed-way conveyer may be operated by gearing or sprockets and chain 38 from the axle of the discharge conveyer pulley, or vice versa. The speed of the feed-way conveyer is preferably made slightly greater than the speed of the discharging conveyer.

40 indicates a barrier at the end of the feed-way, and 41 indicates the pass-way leading from the conveyer to the path of the carrier or space between the fenders 27 and 28.

The numeral 6 indicates the glue-applying pickers, which may be such as heretofore employed; their position on Fig. 2 showing the place where the labels are presented or transferred to the bottles. 7 indicates the grip-devices that traverse in curved slots 8 and move forward for temporarily gripping the labels to the bottles and stripping the same from the pickers, and 25 indicates the wipers or label-affixing means. The pickers, grip-devices and wiper means may be constructed to operate substantially as described in my previous applications, or in other approved manner.

As a feature of my present invention I provide at one side of the feed-way conveyer 31, at a short distance from the pass-way 41, an engaging element 3 controlled by the rotating carrier 12, and projecting into the feed-way for intercepting or arresting the advancing movement of the train of bottles B, or the like, brought forward by the conveyer; and to be automatically retracted to permit a single bottle to move forward, but arresting those following until such time as the freed bottle has been shunted through the pass-way 14 onto the carrier 12. This intercepting means preferably consists of a simple lever 13 pivotally fulcrumed upon the frame at 5, its shorter arm or member 3 extending through an opening in the wall of the feed-way and properly fitted for contact with the surface of the bottle, approximately as shown in Fig. 2; while the longer arm of said lever is extended beneath or adjacent to the edge of the carrier 12 to be actuated by a detent or pin 15 fixed in or moving with said carrier; the arm of the lever being shaped as a cam for giving the extent and quality of movement required for releasing bottles singly. A suitable spring 51, or equivalent means, is combined with the lever 13 for normally pressing its intercepting end 3 into engaging position. The pin 15 which actuates the lever 13, may be the same pin that actuates the wiper devices 25 when movable wipers are employed; or said lever may be actuated in proper time with the carrier and feed devices by other form of connections if desired.

42 indicates the feeding-in lever or forcing element which is pivoted upon the upright stud 43, and is arranged to swing its free end through spaces in the barrier 40 and to sweep the pass-way 41 for shunting an upright bottle or the like from the conveyer to the carrier. In my present invention the bifurcated end of the lever is made rigid with the arm thereof and is disposed so that when at rearward or idle position its face will be approximately flush with the inner face of the outer conveyer wall of the feed-way. (See full lines on Fig. 2). The extremities of the bifurcate members are provided with means or horns 44 that serve as guards for preventing a bottle from getting behind the lever while it is swung forward to the position indicated by dotted lines.

A spring 52 is provided for swinging the feeding-in lever in one direction, and a roller 49 is mounted upon a stud fixed in a projecting arm on the lever, which roller runs against the periphery of the carrier 12, or a part thereof, the same being formed with a series of cam surfaces 53, the number of which corresponds with the number of bottle-pushing rests 14, said cam surfaces being relatively located and properly shaped to control the action of the feeding-in lever and give the quality of movement best adapted for transferring the bottles with an easy and effective action and without severe impact or shock.

24 indicates an upwardly and downwardly movable back-guard combined with the feed-way conductor for steadying the bottles as they advance, and preventing bottles from tipping over backward on the conveyer, as may sometimes occur when the bottles thereon are not placed close together; or in a quick running machine; or by the effect of the arresting and releasing of the oncoming series of bottles. As shown in the drawings, said back-guard consists of a bar 24, preferably of wood or other light weight structure, and supported at one end upon a standing bracket 26 attached to the frame or guides, and overhanging the feed-way; the said bar being loosely hinged thereto by a transverse horizontal pivot 39, or otherwise connected so that the opposite end of the bar is free to move up and down, to lightly seat upon the tops of the bottles as they pass beneath it; and to fall

in rear of the head or neck of a bottle as the latter moves from beneath the end, approximately as shown in Fig. 1. The guard member can be arranged more or less inclined in relation to the plane of the conveyer, and a single back-guard, or a plurality thereof, can be employed at intervals upon the feed-way as may in any instance be preferred; or in some instances the back-guard can be omitted, the other parts of the feed mechanism being employed as hereinbefore described.

47 indicates a drag-bar arranged above the path of the carrier 12 at the discharge side of the machine. Said drag-bar is preferably formed of wood or of light weight material, curved to correspond with the circular shape of the path-defining fenders 29 and 30 over which it is arranged and loosely connected therewith by a hinge or hinges 48, or by other attaching means that will retain the drag-bar in connection while permitting its lifting or free up and down action as it rests upon the tops of the bottles passing beneath it. As shown, the hinging 48 is arranged at the outer side of the drag-bar, but the form and arrangement of hinging or connecting means may be modified in any way desired, provided the drag-bar is permitted sufficient freedom to rest its weight upon the heads of the passing bottles and to automatically accommodate the variations in the height of the various bottles as they come along. When the bottles are all of uniform size and shape the drag-bar need have but slight freedom; but in practice it frequently occurs that bottles of various patterns become mixed together and are used indiscriminately; hence for such cases the free acting drag-bar is of considerable utility. The under face of the bar 47 may be flat or concaved, and its ends beveled or rounded under similar to a sled runner, to permit easy passage of the bottles thereunder.

The discharge-way conveyer and means for effecting transfer of bottles from the carrier thereto, may be substantially the same as described in my previous application, Serial No. 805,737, except that the whirler 65 is operated by gearing 66 instead of by contact with the edge of the carrier 12.

In the operation, the bottles B are placed upon the conveyer in any convenient manner, and brought forward by the movement of the belt or chain 31^m upon which they stand. They are arrested in their approach to the barrier 40 by the engaging element or intercepting member 3, without stopping the conveyer belt 31^m. When a pin 15 on the carrier 12 runs against the lever 13 the intercepting member 3 is thereby retracted for a sufficient distance and time to allow the foremost bottle B to escape therefrom and to move forward toward the barrier while the intercepting member assumes its primal position in time to prevent the second bottle from going beyond it until a second action thereof ensues. The foremost or freed bottle is in the mean time, by the action of the conveyer-belt, moved up to the barrier 40, and at that instant one of the cam surfaces 53 on the periphery of the carrier 12, coacting with the roller 49, permits the spring 52 to actuate the feeding-in lever 42, swinging it inward to the position indicated by dotted lines on Fig. 2, thereby shunting the bottle from the conveyer to the path of the carrier and just in front of one of the bottle pushing rests 14 which then advances the bottle through the machine and to the place of discharge by the movement of the carrier. The operation of the labeling mechanism, not being a part of my present invention, need not be described herein. The timing of the intercepting member, the feeding-in lever and carrier are in such relation that normally a bottle is freed and a bottle shunted onto the carrier at each of the series of stations or rests, as the carrier rotates.

In practising my invention some changes in the construction or form of parts may be made by those skilled in the art, without creating a departure from the nature and scope of the invention as expressed in the claims. I do not wish, therefore, to be limited to the special construction in detail as herein shown, but would include the right to all such modifications as may properly come within the scope of my claimed invention.

I claim and desire to secure by Letters Patent—

1. A bottle-feed mechanism including in combination, substantially as described, a revolving carrier table for supporting and advancing bottles, said table having a circumferential cam-shaped edge, and a series of upright pusher devices fixed upon the bottle-supporting surface of the table, a feed-way conveyer having adjacent to the carrier a stationary barrier and transverse pass-way, a feeder-arm pivoted at a position beyond the end of the conveyer, and provided with an intermedially disposed cam-engaging roller that runs against said circumferential cam-shaped edge, a spring attaching projection, and a rigid bottle-engaging fork that extends through said barrier into said pass-way to swing across the end of the feed-way, and a spring strained from said attaching projection to a fixed attaching member, and tensioned for moving said feeder arm toward the carrier.

2. In a feed mechanism for bottles or the like, in combination with a rotary carrier having means for receiving and advancing bottles or the like, a guide-way and a continuous traveling conveyer adapted for bringing a train of bottles adjacent to said

carrier, of means for segregating the foremost bottle from the train, consisting of a spring-pressed lever fulcrumed adjacent to the guide-way and having a long arm extending adjacent to the rotary carrier table and a short arm that projects through the wall of the guide-way, its end adapted for temporarily intercepting the advance of the following bottle or bottles, means for shifting said foremost bottle onto the carrier, a detent revolving with the carrier that contacts with said long arm for controlling the action of said intercepting lever, actuating springs for coacting therewith, and means for rotating said carrier.

3. In a bottle-feed mechanism, the combination, of a traveling conveying means adapted for advancing bottles standing upright thereon, parallel guiding means for keeping the advancing bottles in serial alinement, and a back-guard device that automatically assumes position behind the respective bottles for preventing backward tipping of the bottles, but permitting the forward movement thereof with the conveying-means.

4. In a bottle-feed mechanism, in combination substantially as described, a rotatably movable carrier table, a series of upright rests standing thereon for supporting and carrying forward bottles or the like, inner and outer non-rotatable fenders defining a receiving space through which said pushing rests travel to take the advancing bottles, a delivery conveyer terminating with a transverse barrier and a lateral pass-way connecting said conveyer and the fender-inclosed space of the carrier, a spring actuated feeder arm arranged for shunting bottles through said pass-way, a series of cams upon the carrier for controlling the movement of said feeder arm, an arresting lever near the latter end of the conveyer for effecting individual release of the bottles thereon, said lever actuated by contact with the rotary carrier table, said feeder-arm controlled for synchronous action with the release of the bottle on the conveyer.

5. In mechanism of the class described, in combination with a movable carrier having means thereon for supporting and advancing bottles or the like, guard fenders defining a portion of the path in which the bottles are carried, a feed-delivery-way having an endless traveling conveying means, an end-barrier and a pass-way from the conveyer to the path of the carrier, a lever fulcrumed near said conveyer, the shorter arm of said lever adapted to contact with a bottle within said feed-delivering way for alternately arresting and releasing the forwardly moving bottles therein, the other arm of said lever extending adjacent to the carrier, a pin or detent upon said carrier for actuating said lever, means for shunting a bottle from said conveyer to said carrier, and means upon the carrier for actuating said shunting means.

6. In a bottle-feed mechanism, in combination, a rotary supporting carrier having an annular flat table surface, a plurality of bottle pushing rests fixed thereon, the periphery of said carrier formed with a plurality of cam contours corresponding with the number of said rests, a walled pass-way through which bottles are directed onto said carrier, a bottle-shunting element consisting of a lever or arm pivoted at its rear end, and having a spring attaching ear, and an intermediately disposed projection carrying a roller that runs against said peripheral cam contours, the fore end of said arm formed with fingers having backwardly projecting horns thereon and adapted for swinging in said pass-way, a push-spring connected and tensioned for moving said arm to drive a bottle through said pass-way, and means for delivering bottles at the head of said pass-way.

7. In a mechanism for automatically delivering bottles or the like, the combination, of a delivery-way provided with an endless traveling conveying bottom upon which the bottles stand, a rotatable carrier provided with supporting rests at predetermined positions thereon, and having a circumferential edge forming a continuous track cam surface with a plurality of depressions and swells about its periphery disposed in uniformly corresponding order with respect to said rests, a pass-way from the conveyer to said carrier, a pivoted feeding-in lever disposed substantially as described, its end adapted to swing within said pass-way for moving a bottle therethrough, said lever provided with a side arm and roller that runs against the peripheral cam surface of the carrier, and a spring connected with said lever for normally forcing its free end and roller toward the carrier.

8. In a bottle transferring mechanism for the purposes set forth, a traveling conveyer element adapted for advancing a series of upright bottles supported thereon, means for keeping the bottles in serial alinement along the conveyer, means for operating said conveyer element, and a gravity actuated drop member loosely supported above the path of the bottles and adapted to rest upon the heads of the bottles as they successively pass beneath said member.

9. In a bottle-feed mechanism, the combination with a bottle-conducting means comprising parallel longitudinal side guiding members, and an endless traveling conveyer bottom upon which bottles are carried in upright standing position, a standing bracket mounted on said conductor, a swinging downwardly inclined element arranged above the conveyer and having one end

loosely attached to said bracket by a transverse horizontal hinging joint, its other end being free and adapted for engaging behind the heads of the advancing bottles, and means for operating said traveling conveyer.

10. In a bottle-feed mechanism the combination, of a traveling conveyer element adapted for advancing a series of upright bottles supported thereon, guiding means for keeping the bottles in serial alinement along said conveyer, a yieldable hingingly supported pawl-device located above the path of the bottles upon the conveyer element, its free end adapted to rest upon the heads of the bottles as they move beneath it, and to drop in rear thereof as they successively pass its end.

11. In a mechanism of the character specified, the combination with a horizontally rotatable carrier, bottle-pushing devices fixed thereon, outer and inner stationary guiding fenders that define the course of, and laterally support the advancing bottles; of an overhead non-traveling drag-piece consisting of a curved plate hinged at one edge by projecting hinge members for free up and down yielding action and having a suitably shaped under surface against which the heads of the bottles slide as said bottles are advanced between the fenders.

Witness my hand this 25th day of April, 1914.

FRANK O. WOODLAND.

Witnesses:

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