H. STAKE.

TURNSTILE MECHANISM FOR BOTTLES AND SIMILAR CONTAINERS.

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1,256,070. Patented Feb. 12, 1918.

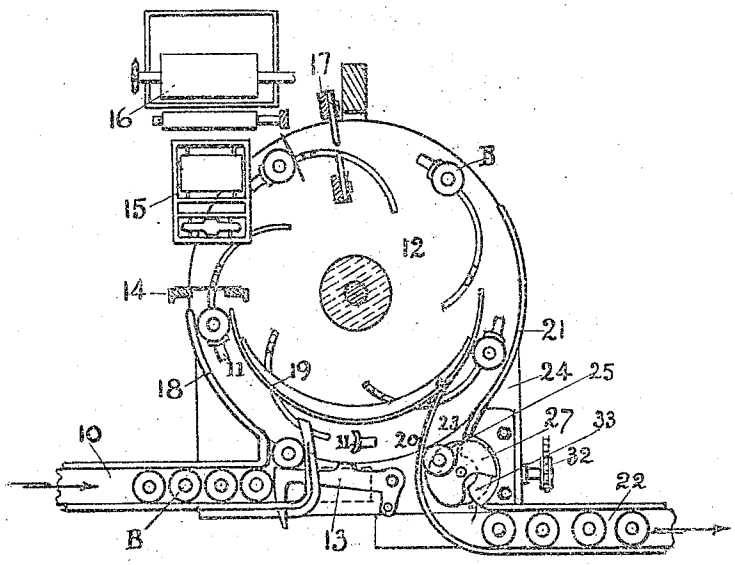


FIG. 1.

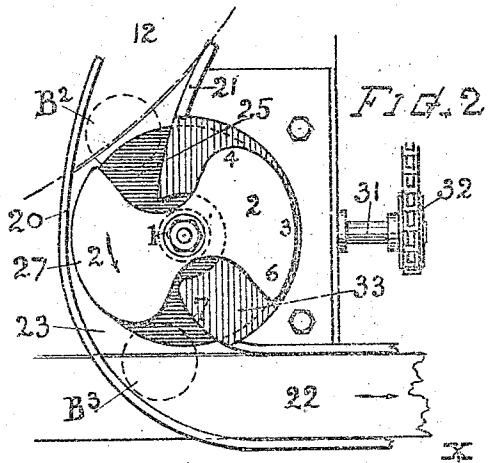


FIG. 2.

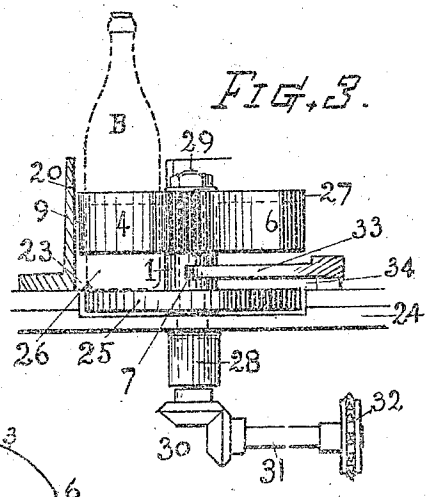


FIG. 3.

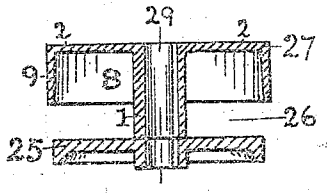


FIG. 5.

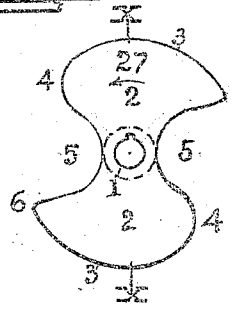


FIG. 4.

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TURNSTILE MECHANISM FOR BOTTLES AND SIMILAR CONTAINERS.

1,256,070. Specification of Letters Patent. Patented Feb. 12, 1918.

Application filed November 20, 1916. Serial No. 132,336.

To all whom it may concern:

Be it known that I, HERMAN STAKE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Turnstile Mechanism for Bottles and Similar Containers, of which the following is a specification.

My present invention relates to a peculiar novel construction of turnstile mechanism adapted for facilitating the passing or transfer of upright bottles or similar containers through the curved exit way from the rotary carrier to the traveling conveyer, in automatically fed labeling machines and similar working machinery; the prime object of my invention being to improve the construction and combination of the turnstile means and to provide a simple, efficient and satisfactorily operating device, of the character described, for upholding the bottles or containers and effecting transfer thereof in a rapid, steady and safe manner.

To this end my invention consists in a turnstile device constructed and combined essentially as hereinafter explained and as illustrated in the accompanying drawings; wherein Figure 1 represents a top plan view of my improved turnstile mechanism shown in its relation to the rotating bottle-carrier and discharge conveyer of a labeling machine.

Fig. 2 is a plan view of the mechanism embodying my invention.

Fig. 3 is an elevation view of the same. Fig. 4 is a separate outline view illustrating the shape of the bottle-guiding turnstile head, and Fig. 5 is a vertical central section of the turnstile disk and head, at the position X X on Fig. 4.

The invention herein set forth is more especially designed as an improvement applicable to labeling machines of the character of that described in Letters Patent Nos. 1,113,854 and 1,203,676, for inventions of F. O. Woodland, and dated, respectively, October 13, 1914, and November 7, 1916, but may in practice be employed in machines of other construction for similar purpose.

The general relation of the various operative parts of such machines is briefly indicated in Fig. 1 for the better understanding of the nature of my present improvement and its connection therewith. The previously employed parts indicated on Fig. 1 include the feed-way conveyer 10 by which bottles B or the like are supplied to the machine; the rotatable bottle-carrier 12 with pushing rests 11 secured thereon; a feeding-in mechanism 13, of any approved kind, for passing bottles or the like from the conveyer to the rotatable carrier; the label pickers 14 indicated at position for presenting the labels; the bottles; the label-supply holder 15; the glue-supply 16, suitable wiper means 17; guides or fenders 18, 19, 20 and 21 along the path the bottle travels; and a discharge conveyer 22 upon which the bottles are taken away from the machine. Said parts are assumed to be constructed for operating as heretofore employed, or in suitable manner for performing the labeling or work upon the bottles or containers while passing around with the rotary carrier.

The fenders or guides 20 and 21 at the delivery side of the carrier, are arranged to form a reversely curved exit way 23 from the path of the carrier 12 to the outgoing conveyer 22.

In some instances bottles or containers are formed with bottoms that are more or less rounded, convex, or of contracted area; thus presenting a somewhat unstable standing base when in upright position and moving rapidly in a circular direction, as when passing along the curved exit way 23; which being of short radius develops a tendency for tipping the bottles from upright position.

To attain a mechanism capable of successfully handling either flat-bottomed or rounded-bottomed bottles or containers, and adapted for high speed operation, I provide a turnstile device consisting of the peculiarly shaped turnstile-head in combination with the rotary disk or whirler, and the exit way between the rotatable carrier 12 and discharge conveyer 22, as best shown in Figs. 1 and 2.

Referring to the drawings, numeral 25 indicates the horizontally rotating disk or whirler arranged approximately level with the face of the carrier 12 and top surface of the conveyer 22, and forming a portion of the bottom of the exit way 23; the periphery of the disk being near the respective edges of the carrier and the conveyer, and adjacent to the curved guide 20. The diam-

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eter of said disk is preferably made about three times, more or less, that of the bottle or container to be operated upon.

In combination with the circular whirler disk 25, I provide a superposed turnstile-head, or steadying member 27, of the character shown; the hub 1 of which fits against the disk and positions the head to afford an intervening annular space 26 of about one inch, more or less, between the overlying turnstile-head and upper surface of the disk. Both the disk 25 and head 27 are rigidly keyed or secured upon the upright axis shaft 29 to rotate in unison at the required speed, and in the direction indicated by the pointer; said shaft 29 being mounted in a bearing 28 on the supporting frame 24 and operated by any suitable means, as bevel-gears 30; cross shaft 31; sprockets and sprocket chain 32 driven from an operating part of the main machine.

This turnstile-head 27 is, according to my invention, shaped in its plan contour narrow at the central part or hub 1, and with opposite laterally projecting broad wing portions or lobes 2 that spread outward from the center and terminate with circular peripheral arcs at the ends 3; and having inward bottle-receiving spaces 5 rounded at each side between the projecting lobes 2. The longer transverse dimension of the two-lobed head 27 corresponds, or nearly so, with the diameter of the disk 25; while the peripheral edge face, which is about one and one fourth inches, more or less, in height, is formed approximately upright or parallel with the axis, as at 9.

The leading side of each lobe 2 is formed with a rounded protuberance, as at 4; while the following or rearward side of each lobe is formed with a wedge-like tapered protuberance, as at 6; affording an approximately radial straight inner surface, against which the bottles or containers are received as they enter the recess or space 5.

The interior 8 of the turnstile-head is preferably hollowed out leaving a light shell form, as indicated in Fig. 5.

Extending into the space 26, between the whirler disk and head 27, I arrange a stationary cam-plate or deflector member 33; the inner edge 7 of which defines the course of the exit-way across the area of the disk, and serves as a guide for expelling or directing the bottles from the turnstile onto the conveyer 22 should any have a tendency to tilt toward said guide. The cam-plate has an open clearance space 34 beneath its outer edge and above the frame or bed 24.

In practice, the bottles or containers B, which are automatically fed into the machine and labeled in well known manner, are projected or shot from the rapidly rotating carrier 12, through to pass the exit-way 23 and onto the discharge conveyer 22, by the momentum acquired from the carrier; the velocity of their movement being reduced from the swifter movement of the carrier 12 to the slower movement of the conveyer 22 while rounding the curved exit-way 23 by the improved turnstile means, the peculiar structure and combination of which constitutes the subject matter of my present invention.

The bottle or the like, slides from the carrier onto the disk 25, as indicated by the dotted lines B^2, and against the inclined straight portion of the rearward protuberance 6, which causes the bottle to move into the inwardly rounded recess 5, where it is maintained upright and steady by the upright side surface of the turnstile-head 27, and caused to assume a reduced velocity more nearly conforming to that of the conveyer 22, which travels much slower than the carrier, so that the bottles will be closer spaced thereon than the spacing of stations on the carrier. As the turnstile is rotated and the bottle advanced around the curved way, it is crowded from the recess 5 by the combined action of the cam-plate edge 7 and forward-rounded protuberance 4 on the front lobe of the turnstile-head, thereby keeping the bottle upright and steady as it leaves the turnstile device and passes onto the traveling conveyer 22, as indicated by dotted lines at B^3 on Fig. 2. The action and result of this invention is that bottles or the like are effectively controlled and steadily maintained in upright relation without liability to tip over while being rapidly whirled along the curved exit-passage and discharged at reduced velocity. The device is simple and compact in structure and of comparatively small dimension; and is of great utility and efficiency for rapid operation and employment in high speed machines.

I am aware that turnstiles of different construction have heretofore been employed in machines for labeling or operating on bottles or the like. It will therefore be understood that I do not broadly claim such mechanism irrespective of its structure and mode of operation.

What I claim and desire to secure by Letters Patent, is—

1. In a labeling machine for bottles, the combination with a rotary carrier of the character specified, and the reflexly curved exit-way having path-defining guides along which the bottles are projected from said carrier; a discharge-controlling turnstile device including a dual formed turnstile head consisting of a central hub having integral oppositely extended arms shaped on plan as shown, narrow at the hub with inwardly rounded spaces at the sides, with broad approximately circular outer ends, each arm having an outwardly rounded front edge projection merging with the peripheral line

by a circular arc, and a backwardly projecting rear edge with an approximately straight portion near the peripheral line, against which the bottles impinge, an axis-shaft supporting said head partially without and partially within the exit way, and means for rotating said turnstile with the rounded projecting edges foremost, at less lineal velocity than that at which the bottles are projected from the carrier, substantially as set forth.

2. In a mechanism of the class specified, the combination as described, with a rapidly rotatable carrier table provided with means for supporting and advancing upright bottles, a slower moving discharge conveyer, a curved exit-way into which the bottles are projected from said carrier to pass to said conveyer, and path-defining fenders along the exit-way; of a turnstile device including a plain-faced circular rotating disk forming a portion of the bottom of said exit-way, an upright axis-shaft therefor located adjacent the inner-curve line of the exit-way, and a turnstile-head mounted on said axis-shaft above the disk, said head comprising a central hub provided with a pair of similar lateral arms, shaped and disposed for operating as set forth, the respective arms being narrow at the hub and having broad approximately circular peripheral ends, outwardly rounded projecting front edges and backwardly projecting rear edges forming a wedge-like angle with the peripheral line; said turnstile head being arranged for rotation with its rounded projections foremost, and means for rotating said turnstile at a lineal velocity less than the lineal velocity at which the bottles are projected into the exit-way by the carrier, but at greater lineal velocity than the movement of the conveyer.

In testimony whereof I hereunto set my hand this eighteenth day of November, 1916.

HERMAN STAKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."