

Aug. 25, 1942.

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2,294,050

ARTICLE DISPENSER

Filed Oct. 10, 1940

2 Sheets-Sheet 1

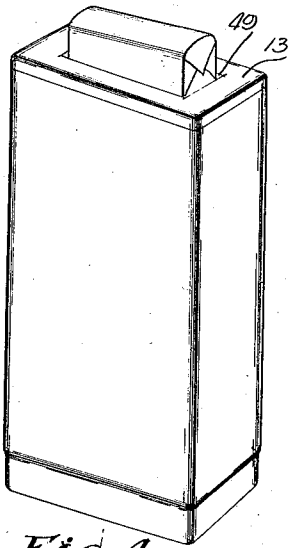


Fig. 4.

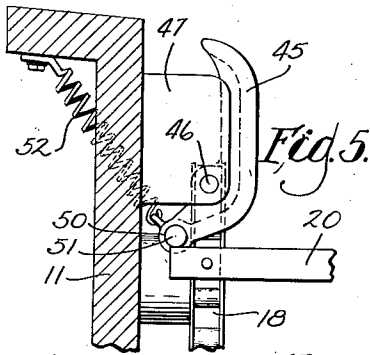


Fig. 5.

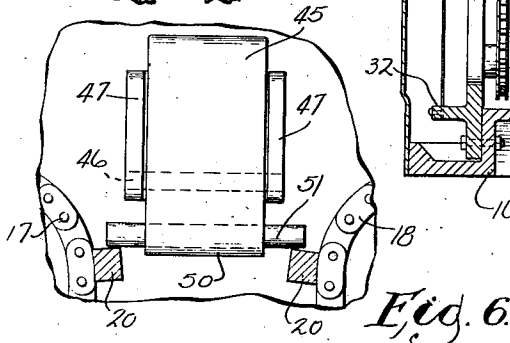


Fig. 6.

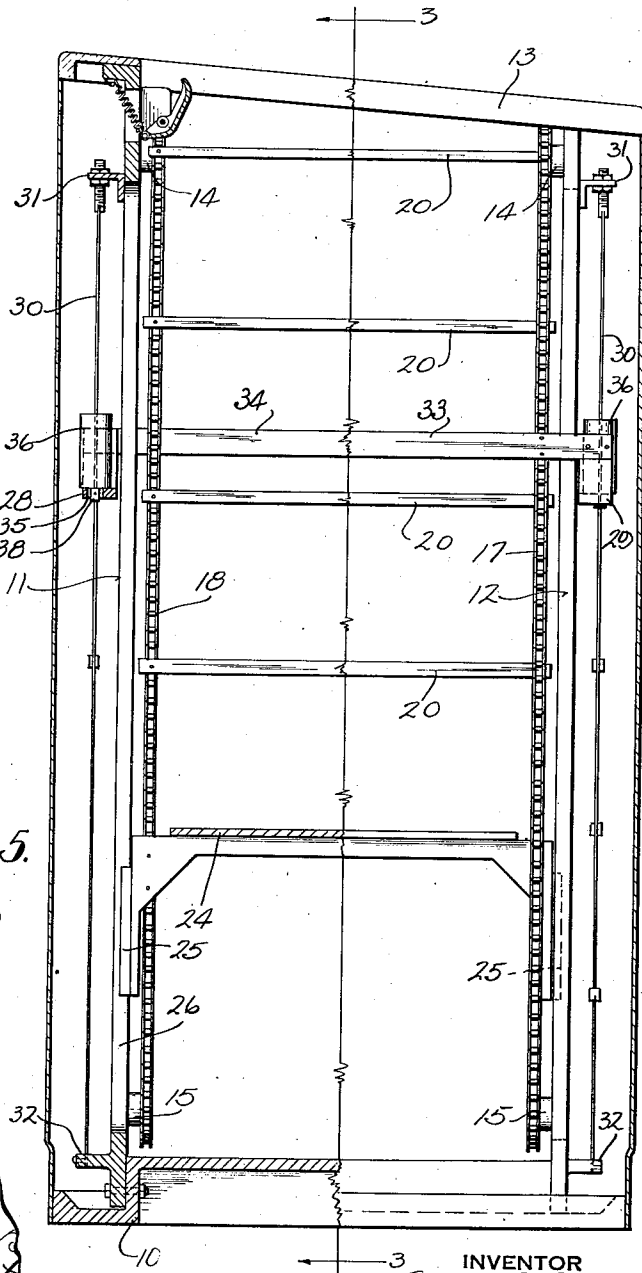


Fig. 1.

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2 Sheets-Sheet 2

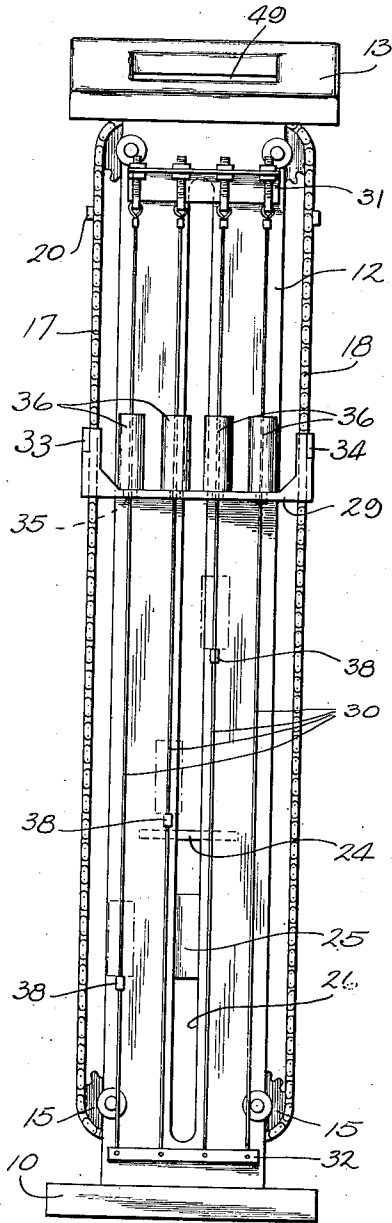


Fig. 2.

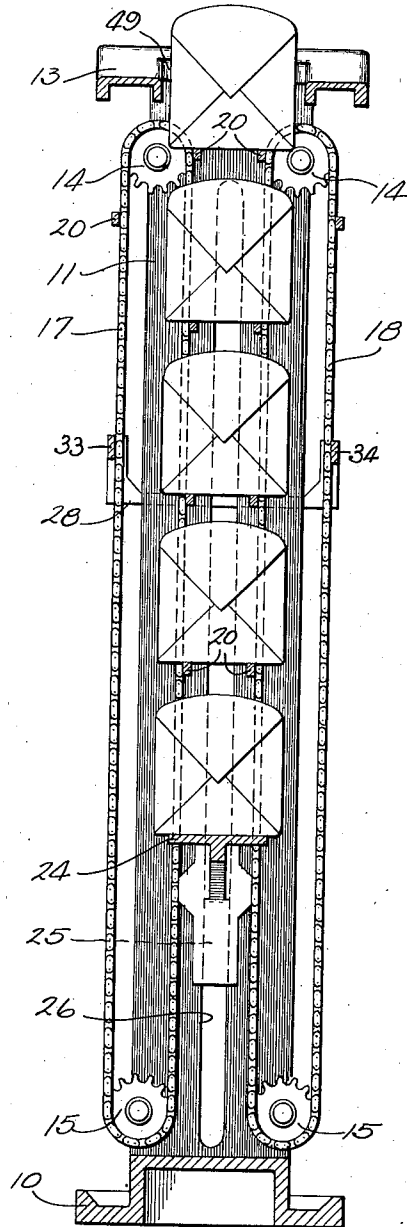


Fig. 3.

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2,294,050

ARTICLE DISPENSER

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Application October 10, 1940, Serial No. 360,577

12 Claims. (Cl. 312-71)

This invention pertains to dispensers, and more particularly it pertains to article merchandising dispensers.

An important object of the invention is to provide improvements in a vertically disposed dispenser including latch controlled conveyor means, whereby a conveyor locking latch is automatically actuated between conveyor locking and unlocking positions by the respective movements of an article into a dispensing position and by the removal of said article from that position.

Another object of the invention is to provide improved means for urging articles to be dispensed toward a position of dispensation, the force employed to urge the articles being dependent upon the number of articles held within the device.

A further object of the invention is to provide improved latch means for locking the conveyor against movement while the article is disposed in a dispensing position, said latch means being released upon removal of said article, whereby to allow the conveyor to move an adjacent article into dispensing position.

Other objects and advantages will become obvious to those skilled in the art upon an examination of the following specification and claims.

In the drawings:

Figure 1 is a front elevational view, partly in section, of a dispenser having my invention incorporated therein.

Figure 2 is a side elevation of the device shown in Figure 1.

Figure 3 is a section taken along line 3-3 of Figure 1, and showing articles disposed within the conveyor.

Figure 4 is a perspective view of the dispenser enclosed in a casing.

Figure 5 is an enlarged detail of the latch mechanism shown in Figure 1.

Figure 6 is a fragmentary section taken along line 6-6 of Figure 1, and showing the latch mechanism.

Like parts are identified by the same reference characters throughout the several views.

As shown in Figures 1 to 3, the device includes a base 10 and a pair of end walls or standards 11 and 12 secured to the base to extend upwardly therefrom. An apertured top plate 13 connects the upper ends of the walls 11 and 12. Each end wall has rotatably mounted thereto an upper and lower pair of sprockets 14 and 15, the sprockets of each pair being positioned near the side margins of the walls 11 and 12. A pair of endless conveyor belts, preferably chain belts 17, engage the upper and lower sprockets positioned on one side of the end walls, and a pair of endless chains 18 engage the sprockets on the other side of the walls. A plurality of connecting bars 20 are positioned horizontally between the individual chains

of each pair 17 and 18, as best shown in Figure 1, the termini of the connecting bars being engaged with the outer surfaces of the chains in any suitable manner. Bars 20 are adapted to move over the upper sprockets 14 during operation of the device, whereby the bars may be transferred from a position inwardly of the device to a position outwardly thereof as shown in Figure 3.

The four chains are synchronized to operate in unison by means of being mutually connected to a chain connecting plate 24. This plate 24 is disposed between the end walls 11 and 12, and is guided by means of depending guide members 25, which are at least partially disposed within vertically extending companion guideways such, for example, as the slots 26. This plate 24 supports the lowermost article, and when the device is completely loaded this plate is supported slightly above sprockets 15, the lower ends of guide members 25 resting upon the base 10. The other articles in the column are supported upon the chain connecting cross bars 20, the articles being successively unloaded at the top of the column as hereinafter explained.

As the conveyor is unloaded the carrier plate and associated article supporting bars 20 rise step by step with each successive package withdrawal, upward movement of the plate being limited when guides 25 contact the upper ends of slots 26.

The conveyor is actuated to move the stack of articles upwardly, and it is apparent that a much larger force is required to effect this upward movement when the device is full than when it is substantially empty. In other words, the conveyor propelling power is obtained by the use of weights but could be obtained through the use of springs or any other available source of power. This power must be slightly greater than the downward pull of gravity on the conveyor and its contents. Through the provision of a series of weights and associated weight holders the conveyor propelling power or force is altered automatically as the device is emptied.

A pair of weight supporting platforms 28 and 29 are connected between outer portions of the paired chains 17 and 18, respectively. Each pair of chains is connected by horizontally positioned straps or bars 33 and 34, the end portions thereof extending laterally from the chains to provide support means for weight platforms 28 and 29, which preferably depend therefrom, as best shown in Figure 1. A plurality of cables 30, are supported by brackets 31 and 32 in parallel spaced relation to the outer surface of each of the end walls. Platforms 28 and 29 are provided with spaced apertures 35 corresponding in number to the number of cables and through which the cables extend the weight carrying platforms 28 and 29 at the respective ends of the frame are each provided with a set of weights 36, pref-

erably corresponding in number with the number of cables and the number of pairs of package carrying bars 20. Each weight has a bore for registry with the aperture in the platform but of less diameter, and each cable extends through the bore of an associated weight and through the corresponding platform aperture, with a weight support 38 located below the platform when the package carrier is fully loaded and adapted to function as a stop to prevent the weight from descending with the platform below a point determined by the position of the stop, said stop being small enough to pass through the platform aperture but large enough to engage and support the weight during downward movement of the platform.

The stops 38 will be located at different levels on their respective cables, and each will be positioned to take the load of one weight from the platform when the carrier is relieved of the weight of the corresponding package or article to be dispensed, thereby keeping the article carrier and the weighted platforms nearly counterbalanced with only a slight advantage in favor of the weighted platforms at all stages of carrier unloading operations.

Operation of the weight carrying mechanism is as follows. When the device is completely loaded the weight carrier platforms are positioned near the top of the device, with all the weights resting on the platform, and hence the entire weight load is effective to urge the articles in an upward direction. As the articles are dispensed the weight platforms descend and the weights are periodically removed from the platforms in the following manner.

As stated, each cable is provided with a stop member 38. Platform apertures 35 are large enough to permit the passage of stop members 38 therethrough. As stated, weights 36 are slidably mounted on cables 30 but their center bores are too small to allow the passage therethrough of stop members 38. As the platform descends it passes down over the uppermost stop member 38, at which point the weight comes to rest on the stop member. During further descent the other weights are periodically picked off the platform in a like manner to compensate for the increased lightness of load as the articles are dispensed. The cables at one end of the device are equal in number and in alignment with the cables at the other end, and, as heretofore mentioned, the stops attached to each pair of cables are at equal elevations to effect simultaneous pick-up of corresponding weights at the respective ends of the frame.

The device is preferably enclosed in an attractive housing as shown in Figure 4. Top 13 is provided with a centrally disposed aperture 49, through which an article at least partially projects to provide convenient access by a user. As best shown in Figures 5 and 6, a latch type control mechanism operates adjacent the aperture 49 to control operation of the device, whereby, upon removal of an article by a user, a successive article is automatically moved into its position. The position assumed by the uppermost article when the conveyor is at rest is shown in Figure 4.

The latch mechanism comprises a lever 45 having an offset portion 50, the terminus of which is preferably provided with a roller 51. Lever 45 is tiltably mounted on pintle 46, the pintle being supported intermediate a pair of brackets 47 which in turn are fastened to end

support 11. A spring 52 has its termini secured to the terminus of offset lever portion 50 and to support member 11, respectively, whereby to normally bias the lever in the position shown in Figure 1. In this position roller 51 is drawn out of contact with the uppermost bars 20 and the conveyor is free to move under power of the weights and hence move the articles upwardly. Aperture 49 is only slightly larger than the horizontal outline of each article dispensed, and as an article moves into the aperture it contacts lever 45 and tilts it into the position shown in Figure 5, thereby swinging roller 51 into the path of the pair of upwardly moving bars 20, Figure 6, to prohibit further movement of the conveyor at a point where the uppermost article assumes the position shown in Figure 4. Upon the removal of this article by a user the cycle is repeated and the next successive article moves into position. This operation is automatically repeated until the conveyor is completely unloaded.

Loading of the conveyor may be effected in two ways. While I prefer to merely force articles through aperture 49 in a manner to reverse the action of a conveyor chain, it is apparent that a crank may be provided to extend through the casing to be connected in any suitable manner to one of the conveyor chain sprockets, whereby the movement of the conveyor may be conveniently reversed while articles are dropped through aperture 49 at appropriate intervals.

The above description of my invention is for the purpose of illustration and not for the purpose of limitation. It will be apparent to those skilled in the art, for example, that endless belts and appropriate pulleys may be employed in the conveyor in place of the chains and sprockets described. It is also apparent that springs may be employed to replace the weights, if desired, without departing from the spirit and scope of the invention.

I claim:

1. A dispensing device including a casing having an apertured top wall, conveyor means within the casing for delivering articles successively from within the casing through the top wall aperture, conveyor actuating means, and latch means adapted to be successively controlled by articles carried by the conveyor, and operative to hold the conveyor against movement when one of the articles is in position for delivery.

2. In a device of the character described, an endless belt type vertically disposed conveyor adapted to receive a column of articles in spaced relation to each other, weights associated with the conveyor for urging the articles vertically upward toward the dispensing position, and automatically acting means for successively relieving the conveyor of the load imposed by one of the weights in correspondence with deliveries from said column of articles.

3. In an article dispenser, the combination with two sets of opposing endless conveyor belts, said sets moving in opposite directions, of bars connecting the belts of each respective set and adapted to support articles to be dispensed, latch means tiltably mounted to swing from a bar engaging to a disengaging position to alternately permit and prohibit conveyor motion, said latch means being disposed in the path of article movement and controlled as to release by the removal of an article from dispensing position.

4. An article dispenser including a vertically disposed conveyor and an apertured top plate disposed above the conveyor, the aperture in

said top plate being aligned with the conveyor, and latch means disposed marginally of and below said aperture and adapted, under pressure of one of the articles, to lock the conveyor against movement, said latch means being adapted, upon removal of such article, to release the conveyor for movement for substituting another article in position for delivery.

5. In a dispensing device adapted to support a stack of articles in a vertical plane with a portion of the uppermost article exposed in position to be readily grasped for removal, a supporting frame having an opening through which the articles may be inserted and dispensed, conveyor means to urge the stack of articles upwardly, and tiltably mounted latch means adjacent the opening in position to be actuated into locking engagement with the conveyor by one of the articles as it moves into exposed position, said latch means being biased to release the conveyor upon removal of the exposed article whereby to allow the conveyor to move a succeeding article into exposed position.

6. The combination set forth in claim 5, including a plurality of weights mounted for engagement with the conveyor to urge articles upwardly, and mechanical means associated with the conveyor for successively removing the weights in a predetermined proportion to the diminishing conveyor load.

7. A dispensing device including a casing having an opening through which articles are adapted to be inserted and dispensed, a conveyor positioned in the casing in alignment with the opening for delivering articles through the opening, means for operating the conveyor to urge articles toward the opening, and control means within the casing and below the opening and responsive to movement of an article to a position of exposure in said opening and adapted to prohibit movement of the conveyor while the article is in such position, and to permit conveyor movement upon the removal of said article to allow a successive article to be conveyed upwardly into said opening.

8. In a dispenser of the described class, the combination with a traveling article support, of a normally inoperative latch having a latch operating arm in the path of articles carried by the support, and adapted, when actuated by one of said articles, to move the latch into engagement with the support by direct contact therewith pending removal of such article.

9. In an article dispenser, the combination with conveyor guide means, of two endless conveyors operable thereover and having contiguous flights connected for concurrent movement in the same direction and provided with spaced article supports concurrently cooperative for the elevation of successive articles with said flights, means defining a dispensing station at which such articles may be delivered from said conveyor flights, latch means disposed adjacent an article at said station and engageable by said article to restrain conveyor movement pending removal of the article from said conveyor flights, gravity means for actuating said conveyors in directions to move said flights for the advance of successive articles toward said station subject to regulation of said latch means, said latch means being operable from a conveyor restraining posi-

tion to a conveyor releasing position by the removal of the article at said station and operable from said releasing position to a conveyor restraining position by the subsequent movement of another article to said station.

10. In an article dispenser, the combination with two sets of conveyor guide means and two endless conveyor belts operable thereover in opposite directions, said conveyor belts having contiguous flights movable in the same direction and being provided with successive article supports mutually cooperative for the elevation of successive articles with said flights, latch means positioned adjacent upper portions of the conveyors and adapted to swing from a position of conveyor engagement to a position of conveyor release for respectively inhibiting and permitting conveyor movement, said latch means having portions disposed in the path of article movement upon the respective supports of the respective conveyors to be actuated by the arrival of and removal of successive articles from a predetermined position, and gravity means for propelling said conveyor belts when the latch means is in its conveyor releasing position, said gravity means comprising a weight holder connected with the respective belts, and a plurality of weights slidably mounted for displacement in a vertical plane in the path of movement of the weight holder, and means for limiting the range through which the respective weights are movable whereby the number of weights enclosed upon said weight holder in any given position thereof may correspond in a general way to the number of articles remaining undelivered upon said conveyor belts.

11. In an article dispenser, the combination with frame means having an upper delivery opening from which articles are freely removable in an upward direction, of conveyor means providing a succession of article supports movable upwardly toward said dispensing opening, means for actuating said conveyor means in a direction to deliver successive articles upon the respective supports to said opening, and latch means laterally adjacent the position of successive articles at said opening, said latch means including a portion engageable by successive articles and another portion movable by such engagement to a position for restraining further conveyor movement pending the removal of the article delivered to said opening.

12. In an article dispenser, the combination with a cabinet having a top dispensing opening from which articles to be dispensed are freely removable, of endless conveyor means within the cabinet including work supporting means for the advance of successive articles to exposed positions in said opening, operating means acting upon said conveyor for its actuation for the advance of such articles, and latch means releasably engageable with the conveyor to restrain its advance, said latch means including a portion projecting into the path of an article exposed at said opening to be displaced by said article toward a conveyor restraining position, said latch means being biased toward a conveyor releasing position, whereby to permit the advance of the conveyor upon the removal of the article exposed at said opening.

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