Sept. 30, 1947. S. LESCHIN 2,428,231

DISPENSING UNIT

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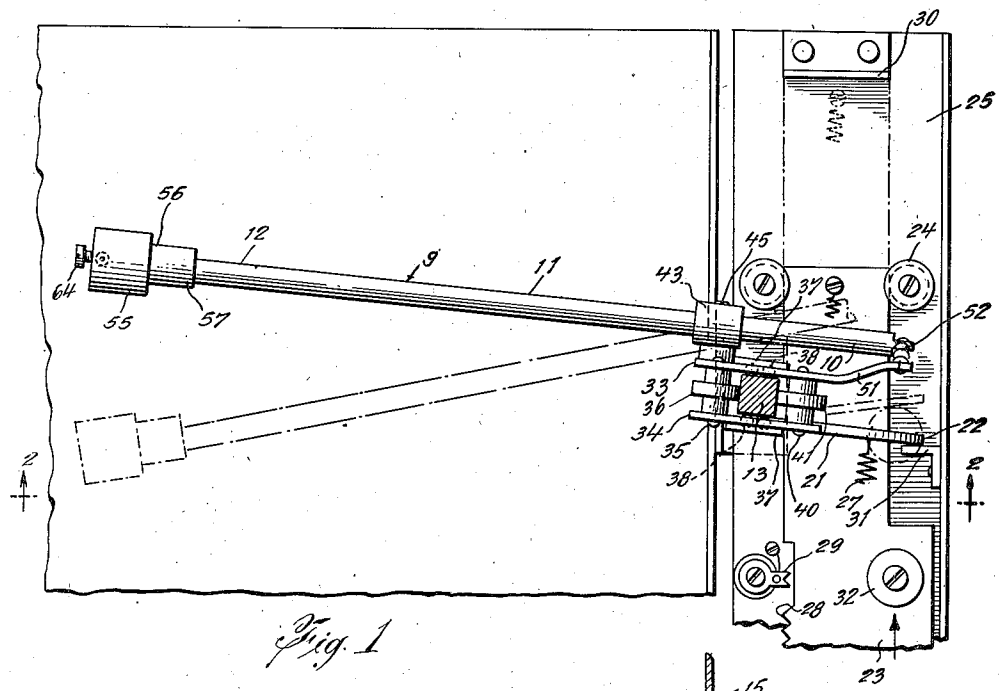



Fig. 1

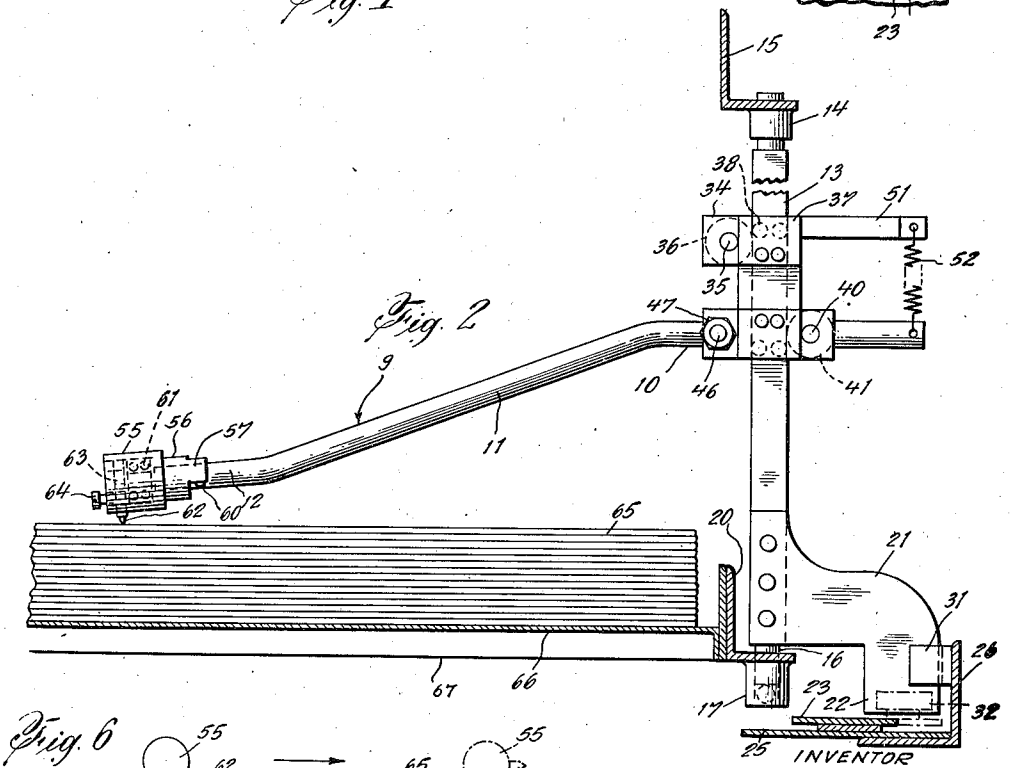



Fig. 2

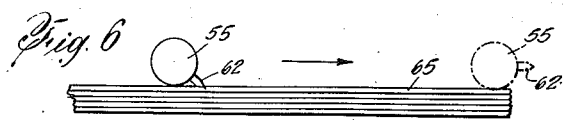



Fig. 6

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Fig. 3

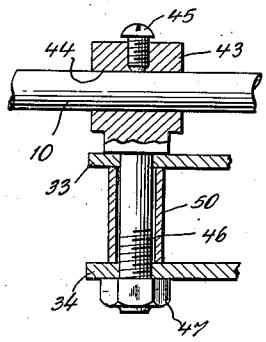



Fig. 4

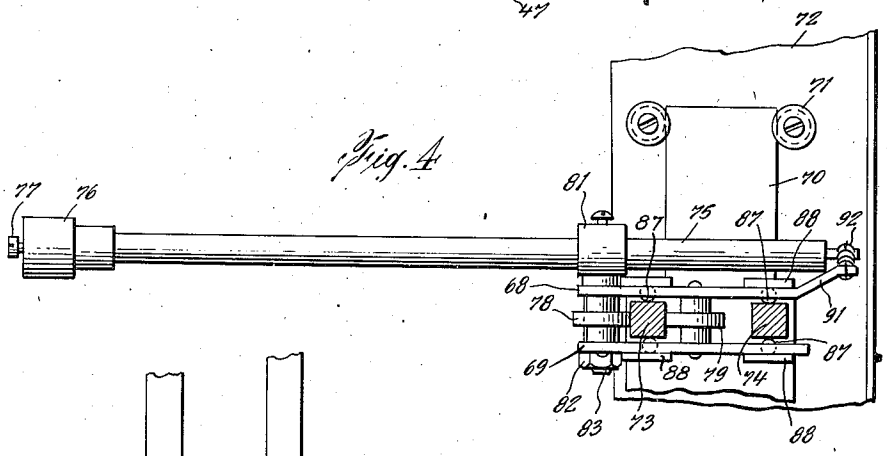
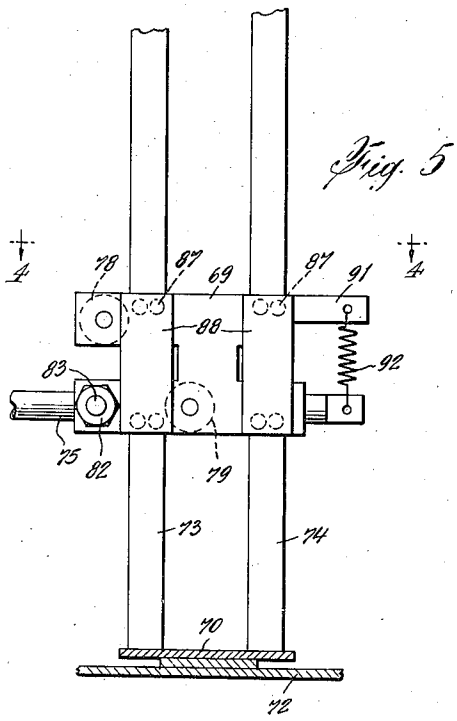



Fig. 5




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2,428,231

# UNITED STATES PATENT OFFICE

2,428,231

## DISPENSING UNIT

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Application January 25, 1946, Serial No. 643,386

7 Claims. (Cl. 271—42)

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This invention relates to dispensing devices for use in vending machines or the like, and relates more particularly to an improved unit for delivering a flat article, such as a newspaper or a packaged handkerchief, from the top of a stack of such articles. The present application constitutes a continuation-in-part of my co-pending application Serial No. 575,746, filed February 2, 1945.

The principal object of the present invention is to provide improved means for dispensing flat articles, one at a time, in such a manner as to avoid injury to the article and to make the operation positive and foolproof.

In general, the device may be said to consist of an arm and a support for the arm, and a post upon which the support is carried, novel means being provided to afford a full floating mounting of the arm relative to the post. As the flat articles are dispensed, one by one, the arm descends by gravity on the post, and during such descent the floating relationship between the arm and the post is preserved. The arm is thus mounted, adjacent one end thereof, on the post, and at its opposite end it is provided with novel means which pick up the paper or other flat article and deliver the same to the customer as such pick-up end of the arm moves forwardly. The pick-up end has a rolling or wiping action over the next article when the arm moves rearwardly to a position where it can deliver the next such article.

The coin-controlled vending unit, per se, forms no part of the present invention. In all devices of this character, there is a reciprocating or rotating manually-operated element which furnishes the power to operate the dispensing unit of the present invention. In one form of the invention the arm is caused to rotate, and in another form the arm reciprocates in a direction generally at right angles to the arm. In either case, the pick-up end of the arm functions in the same fashion. That is to say, in one case the post supporting the arm is caused to rotate, the arm rotating similarly, and the pick-up end of the arm describes an arc. In the other case, the post moves longitudinally and the pick-up end moves in the same fashion.

In the drawings:

Fig. 1 is a broken top plan view of the dispensing unit of the present invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1.

Fig. 3 is a detailed view, partially in section, of the means for mounting the arm relative to the support.

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Fig. 4 is a sectional view taken on line 4—4 of Fig. 5, showing a modified form of the present invention.

Fig. 5 is a front elevation thereof.

Fig. 6 is a view which illustrates the operation of the article pick-up means.

The dispensing unit of the present invention comprises an arm 9 having a portion 10 at its inner end which is normally substantially horizontal, a downwardly-inclined portion 11, and an outer terminal portion 12 which also is normally substantially horizontal, although it may be slightly inclined, as shown in Fig. 2. A post 13 which may be rectangular in transverse section is rounded at its upper end and is journalled in bearing 14 mounted on a frame element 15. At its lower end, post 13 may be rounded, as shown at 16, and be journalled in bearing 17 mounted on frame member 20. The post is provided with a lever 21 which is secured thereto, such lever having a downwardly-extending portion 22 at its outer end.

The means for actuating this lever by rotating the same through an arc of suitable length to effect delivery of the article forms no part of the present invention. There is, however, a fragmentary showing of such means which is the subject of a separate application. It may comprise a reciprocating slide 23 which is mounted for such reciprocating movement in rollers 24 mounted on frame 25 secured on a frame element 26. Rearward movement of slide 23 is limited by a stop 30, and forward movement of lever 21 is limited by a stop 31. A roller 32 carried on slide 23 contacts lever 21 during rearward movement of such slide, and thus rotates lever 21 and post 13 through a suitable arc. Movement of the slide rearwardly is done manually, and a spring 27 effects forward or return movement. A ratchet portion 28 on the side of slide 23 is engaged by a pawl 29 which prevents return movement before the slide has had full rearward travel.

Full floating movement of arm 9 as it gravitates downwardly on post 13 is effected by the novel structure forming a support for the arm, and which comprises spaced frame members 33 and 34. Adjacent the upper left-hand corner of such frame members, when viewed as in Fig. 2, a shaft 35 provides a journal for a ball-bearing roller 36, and adjacent the lower right-hand corner of such frame members a second shaft 40 provides a journal for a second roller 41. These shafts also serve to maintain the frame members in spaced relation. Plates 37 support

ball bearings 38 which contribute to the free movement of the support.

The upper portion 10 of the main arm is mounted in a stud 43, shown in detail in Fig. 3. The stud is provided with a transverse aperture 44 which receives portion 10 of the arm, the arm being secured therein by means of a set screw 45. At its opposite end, stud 43 is of a reduced diameter, as shown at 46, and is threaded. This reduced, threaded portion passes through aligned openings in the spaced frame members and is secured therein by means of nuts 47. A spacer bushing 50 retains frame members 33 and 34 in such spaced relation.

It will be apparent from the foregoing that arm 10 is freely mounted with reference to spaced frame members 33 and 34, although, if desired, stud 43 may be rigidly mounted with respect to frame members 33 and 34. Frame member 33 is provided with an extension 51 at its upper end, and a spring 52 connects the outer terminal of such extension with the outer terminal of arm 10. If desired, extension 51 may be slightly offset with reference to frame member 33, all as shown in Fig. 1.

The novel pick-up device for moving the newspapers or other articles forwardly for delivery to the customer is mounted at the outer end 12 of arm 9. This device comprises a generally cylindrical roller 55 having a reduced portion 56 and an arcuate extension 57. A pin 60 may extend through portion 12 of the arm, and arcuate extension 57 is so proportioned as to permit cylindrical roller 55 to oscillate approximately 45° on the arm. In order to permit relatively free rotation of roller 55 relative to the arm, there are desirably provided ball bearings 61. A pointed pin or needle 62 is mounted in a transverse aperture 63 in roller 55, the pin being secured therein by means of a set screw 64. In the case of newspapers or magazines, such newspapers 65 are mounted in superimposed relationship on a platform 66. In this connection, it is preferable that the platform slope downwardly and rearwardly, the lower rear edge being designated at 67.

As the pick-up end of the arm moves forwardly, the pin 62 picks up the paper and delivers the same forwardly into a suitable trough (not shown) where it is picked up by the customer. As the arm then moves rearwardly, the wiping action between the cylindrical roller and the next paper causes the roller to rotate sufficiently so that the pin rides clear of the paper. This relationship is particularly shown in Fig. 6. The position of roller 55 and of pin 62 when the paper is being delivered forwardly is shown in full lines, and the position thereof during rearward movement is shown in dotted lines. It was earlier pointed out that pin 60 and arcuate extension 57 are so proportioned as to permit oscillation of the roller through an arc of substantially 45°, and this is substantially the relationship shown between the two portions of Fig. 6.

The modified arrangement of Figs. 4 and 5 is substantially similar to that shown in the first embodiment of the invention, except that means are arranged to cause the arm to reciprocate rather than to have the pick-up end thereof move through an arc. In this case, slide 70 is mounted in rollers 71 on frame element 72, and on this slide two posts 73 and 74 may be mounted. In this case, the arm 75 may be identical with arm 10 shown in Figs. 1 and 2 and be provided with the same cylindrical roller 76 which supports the pick-up pin (not shown) by means of set screw 77. The slide 70 in this instance is adapted to be moved forwardly and then rearwardly, which is the reverse of the arrangement shown in Fig. 1. Posts 73 and 74 may have some suitable sliding support, such as a trackway (not shown), at their upper ends.

The support for the arm comprises frame members 68 and 69 with ball-bearing rollers 78 and 79 which engage post 73 during downward gravitational movement. The arm is likewise mounted in a bushing 81 which projects between the frame members, a nut 82 being carried on the reduced end portion 83 thereof. Frame members 68 and 69 are slightly wider than are the frame members of Fig. 1. Arm 75 is caused to maintain the rightangular relationship with slide 70 by means of ball bearings 87 which are held by plates 88, and similar members are provided with respect to post 73. Frame member 68 is provided with a rearward offset portion 91, and a spring 92 connects the end of this extension with the outer end of arm 75.

While two forms or embodiments of the invention have been shown and described herein for illustrative purposes, and the construction and arrangement incidental to two specific applications thereof have been disclosed and discussed in detail, it is to be understood that the invention is limited neither to the mere details or relative arrangement of parts, nor to its specific embodiments shown herein, but that extensive deviations from the illustrated forms or embodiments of the invention may be made without departing from the principles thereof.

What I claim is:

1. A dispensing unit for delivering flat articles one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with a generally cylindrical roller which is journalled for rotative movement on the arm and which is arranged for limited oscillatory movement from one extreme position to another as such roller contacts said surface during forward and rearward movement as a result of wiping action between the roller and the surface, pick-up means carried by the roller adapted to engage and pick up the uppermost article during forward travel thereof and to ride clear of the next article during rearward travel thereof, means for moving the pick-up end of the arm forwardly and rearwardly, and means adjacent the opposite end of the arm supporting the same and permitting free gravitational downward travel thereof.

2. A dispensing unit for delivering flat articles one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with a portion which is generally parallel with the surface of the articles, a generally cylindrical roller journalled thereon and arranged for limited oscillatory movement from one extreme position to another as such roller contacts said surface during forward and rearward movement as a result of wiping action between the roller and the surface, pick-up means carried by the roller adapted to engage and pick up the uppermost article during forward travel thereof and to ride clear of the next article during rearward travel thereof, means for moving the pick-up end of the arm forwardly and rearwardly, and means adjacent the opposite end of the arm supporting the same and permitting free gravitational downward travel thereof, said means comprising a substantially vertical

post, a support for the arm carried by the post and provided with means which permit free movement relative thereto.

3. A dispensing unit for delivering flat articles one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with a portion which is generally parallel with the surface of the articles, a generally cylindrical roller journalled thereon and arranged for limited oscillatory movement from one extreme position to another as such roller contacts said surface during forward and rearward movement as a result of wiping action between the roller and the surface, a needle carried by the roller adapted to engage and pick up the uppermost article during forward travel thereof and to ride clear of the next article during rearward travel thereof, means for moving the pick-up end of the arm forwardly and rearwardly, and means adjacent the opposite end of the arm supporting the same and permitting free gravitational downward travel thereof, said means comprising a substantially vertical post, a support for the arm carried by the post and provided with rollers which engage the post and permit free movement relative thereto, and means urging the pick-up end of the arm downwardly.

4. A dispensing unit for delivering flat articles, one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with a roller journalled thereon and arranged for limited oscillatory movement from one extreme position to another as such roller contacts said surface during forward and rearward movement as a result of wiping action between the roller and the surface, a needle carried by the roller adapted to engage and pick up the uppermost article during forward travel thereof and to ride clear of the next article during rearward travel thereof, means for mounting the arm adjacent its opposite end comprising a vertical post, a support for the arm arranged for free, gravitational, downward movement on the post, pivotal means for mounting the arm on the post, and means comprising a spring for urging the pick-up end of the arm downwardly.

5. A dispensing unit for delivering articles, one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with article pick-up means arranged to move the uppermost article forwardly upon forward movement of the arm and to ride over the next article during rearward travel thereof, means for mounting the arm comprising a vertical post, a support for the arm mounted on the post and arranged for free, gravitational, downward movement on the post, pivotal means for mounting the arm on the support, means comprising a spring for urging the pick-up end of the arm downwardly, and means for moving the pick-up end of the arm forwardly and then rearwardly.



6. A dispensing unit for delivering flat articles, one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with article pick-up means, means for mounting the arm adjacent its opposite end comprising a vertical post, means for oscillating such post on a vertical axis through an arc, a support for the arm arranged for free, gravitational, downward movement on the post, rollers carried by the support which engage the sides of the post and prevent relative rotation between the support and the post, pivotal means for mounting the arm on the post, and means comprising a spring for urging the pick-up end of the arm downwardly.

7. A dispensing unit for delivering flat articles, one at a time, which are arranged in superimposed relationship, said unit comprising an arm provided at one end thereof with a portion which is generally parallel with the surface of the articles, a generally cylindrical roller journalled on such portion and arranged for limited oscillatory movement from one extreme position to another as such roller contacts said surface during forward and rearward movement as a result of wiping action between the roller and the surface, a needle carried by the roller adapted to engage and pick up the uppermost article during forward travel thereof and to ride clear of the next article during rearward travel thereof, means for mounting the arm comprising a vertical post of non-circular cross-sectional contour, means for oscillating such post on a vertical axis through an arc, a support for the arm arranged for free, gravitational, downward movement on the post, rollers carried by the support which engage the post and prevent relative rotation between the support and the post, pivotal means for mounting the arm on the post, and means comprising a spring for urging the pick-up end of the arm downwardly.

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