

April 26, 1932.

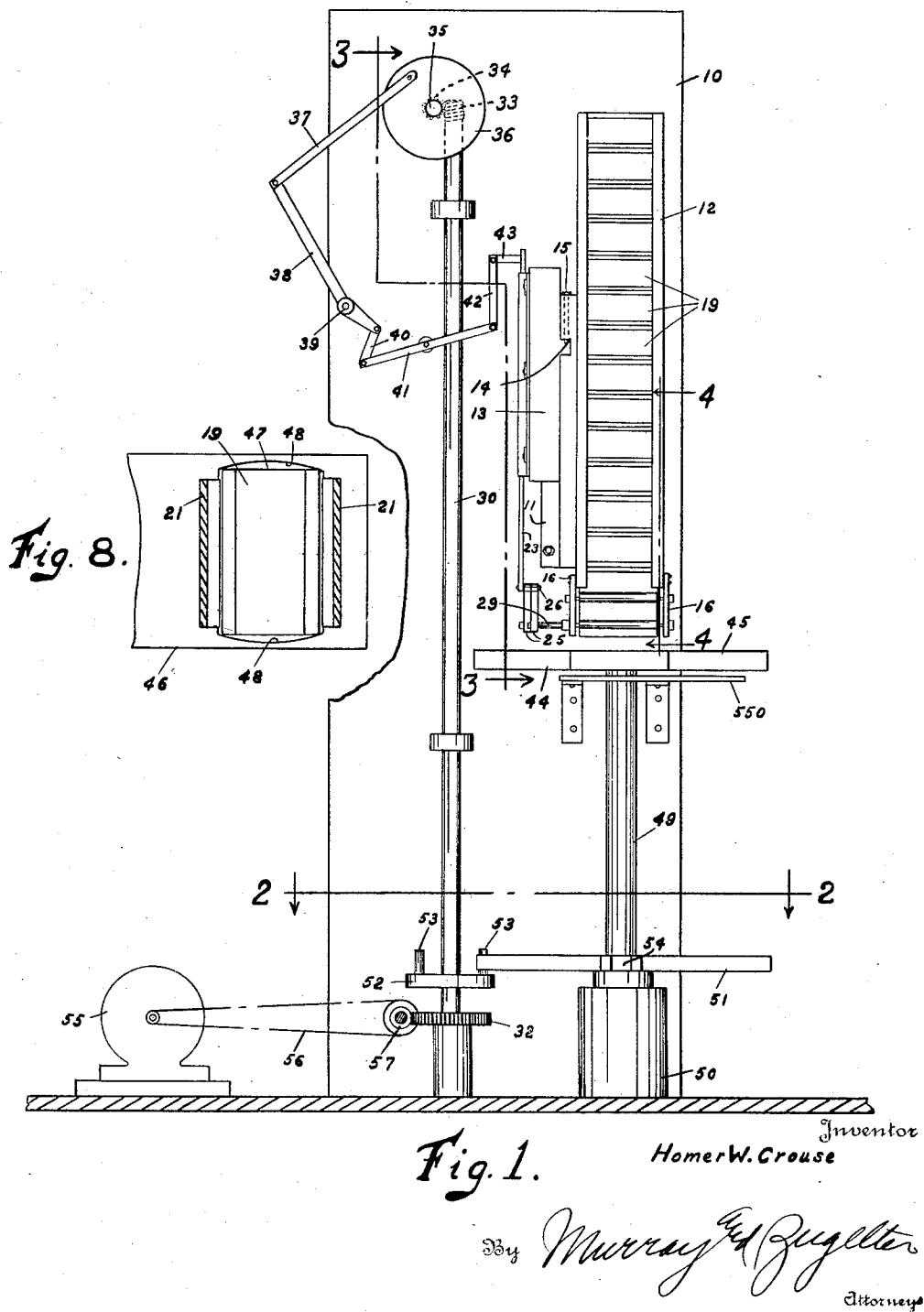
H. W. CROUSE

1,855,441

DISPENSING MECHANISM

Filed Feb. 8, 1930

2 Sheets-Sheet 1



April 26, 1932.

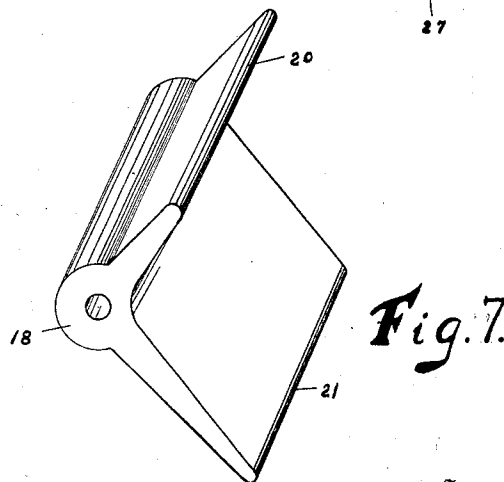
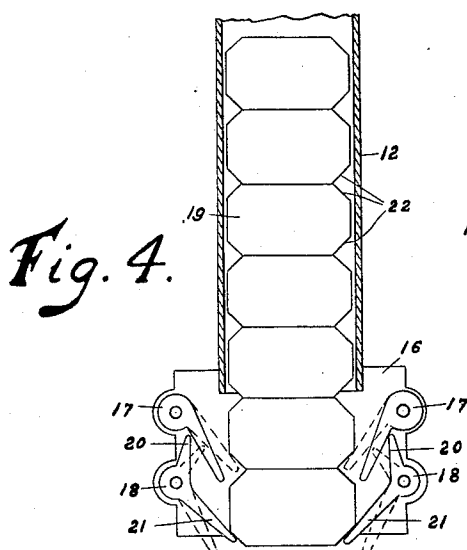
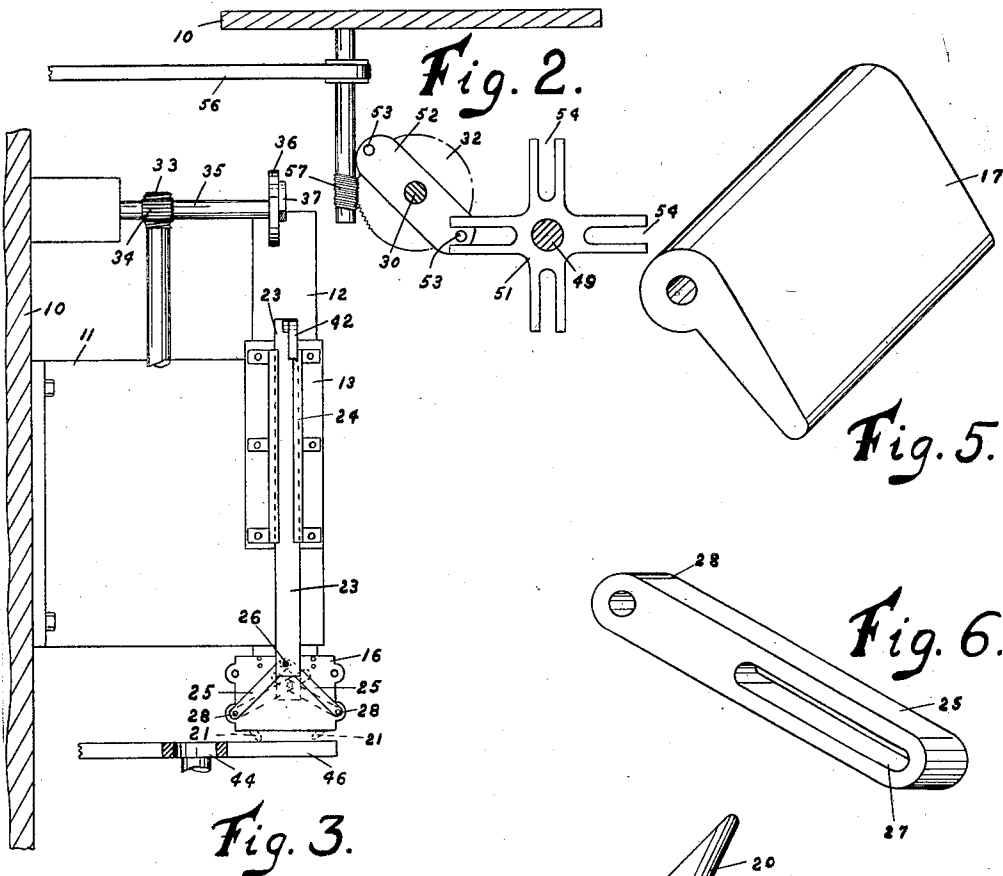
H. W. CROUSE

1,855,441

DISPENSING MECHANISM

Filed Feb. 8, 1930

2 Sheets-Sheet 2



Inventor

Homer W. Crouse

204 Murray and Zugelton

Attorneys:

UNITED STATES PATENT OFFICE

HOMER W. CROUSE, OF CINCINNATI, OHIO, ASSIGNOR TO THE ANDREW JERGENS COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO

DISPENSING MECHANISM

Application filed February 8, 1930. Serial No. 426,877.

This invention relates to mechanism for dispensing objects from a source of supply at regular intervals of time.

An object of the invention is to provide a device of the class described which is simple in construction and efficient in its operation.

Another object is to provide such a device in which danger of mutilation of the article dispensed is reduced to a minimum.

A further object is the provision of such a mechanism as may be synchronized in its action with that of other mechanical means employed in connection therewith, as in processes of manufacture.

These objects are attained by the means described herein and set forth in the accompanying drawings, in which:

Fig. 1 is a front elevational view of the device of the present invention shown in connection with cooperating mechanism;

Fig. 2 is a view taken on line 2—2 of Fig. 1;

Fig. 3 is a view taken on line 3—3 of Fig. 1.

Fig. 4 is a view taken on line 4—4 of Fig. 1;

Figs. 5, 6 and 7 are isometric views of details of the invention;

Fig. 8 is a plan view of details of the invention and cooperating means, parts being shown in cross-section, and parts broken away.

The means of this invention have a wide applicability and are particularly useful in the manufacture of various articles and commodities each of which passes through an identical process or operation requiring but a brief interval of time, such as the stamping of an impression upon the article. In such instances the means of this invention may be utilized for supplying a carrier which moves the articles individually to a suitable position for undergoing a subsequent manufacturing operation.

The device of the present invention is shown and described herein as being used in the manufacture of soap, the cakes of which are commonly impressed with the name and symbol of the maker as one of the final processes of manufacture. It is evident that any mutilation of the soap cakes, at this point, renders them unfit for packing and sale. It has been customary to move the soap cakes

into a position for stamping, by means of a push rod reciprocating at the bottom of a vertical chute into which the cakes were placed. This method resulted in the mutilation of a considerable number of the cakes, due to the somewhat forcible action of the push rod and the frictional contact of the cakes with one another. The present invention overcomes this difficulty in the manufacture of soap as well as of other commodities easily disfigured or mutilated.

The device comprises a feed chute provided at its bottom with a co-operating set of delivery gates or plates pivotally mounted and providing for the intermittent release of single bars of soap. The action is such that the gravitational feed is functionally retarded both in the chute and in the delivery from the chute to a receiver and this eliminates the marring or disfiguration of the plastic bars operated on.

The device of this invention is shown as mounted upon a standard 10 to which an outwardly-extending panel 11 is secured. A gravity chute 12, adapted to receive a supply of soap bars 19, is secured to one face of panel 11. A plate 13 is adjustably mounted on the other face of panel 12, such as by the ridge and groove construction indicated at 14, (Fig. 1), and suitable securing means such as a set screw 15.

The delivery gates of this invention, directly controlling movement of soap bars from the chute may be mounted upon oppositely-disposed journal plates 16 secured to the bottom of chute 12. Said gates comprise a pair of single plate members 17 and a pair of double plate or wing members 18 mounted beneath the single plate members and in vertical alignment therewith. Both pairs of gates are pivotally movable in a horizontal plane, inwardly and outwardly of the open bottom of the chute 12. The gates 18 comprise the upper plates 20 and the lower plates 21 fixed together in divergent relationship. Upper plates 20 are substantially shorter than lower plates 21. The single gates 17 and double gates 18 are so spaced that the outer edge of each plate 20 slidably contacts the under surface of one of the single gates 17 whereby

pivotal movement of the latter is effected by pivotal movement of the double gates. Thus, when the lower plates 21 move inwardly of the chute, the single gates 17 move outwardly therefrom, and vice versa. The comparative shortness of plates 20 obviates unnecessary pivotal movement of plates 17 beyond the positions (indicated in dotted lines, Fig. 4) required for efficient mechanical operation.

For this purpose, plates 20, at the extremity of their inward pivotal movement, slide upon the under surfaces of plates 17 to a slight extent without effecting further movement of the latter, the added purpose of this relationship being to permit of a somewhat greater pivotal movement of plates 21 than of plates 17.

The gates are designed to co-operate with soap bars of practically any form except those presenting plain right-angled side edges, it being necessary to provide between the stacked bars entry spaces to permit functioning of plates 17. As illustrated herein, the longitudinal edges of the soap bars are beveled to provide the surfaces 22. The thickness of bars 19 is such that gates 17, upon inward movement, contact the lowermost surfaces 22 of the soap bar adjacent thereto.

Action of the gates is as follows: plates 21 in their inward or raised position support the stack of soap. At this time the gates 17 are in their lowered or inoperative position. Upon reverse movement of gates 18, plates 21 release the lowermost bar of soap, while the stack is supported by the gates 17, which have assumed contacting relationship with the soap bar immediately above the one just released from the chute.

Rocking movement of the gate members 18 may be effected in various ways. A preferred means, as illustrated herein, comprises a rod 23 vertically reciprocable in a guide 24 secured to the exposed face of plate 13. A pair of arms 25 is slidably attached to the lower end of rod 23 by means of a stud 26 passing through longitudinal slots 27 in said arms. The lower ends 28 of the arms are fixed, one each, to one of the axial extensions 29 of the double plate members 18. Reciprocating vertical movement of rod 23 results in the rocking movement of gates 18.

A suitable means for reciprocating rod 23 comprises the vertical shaft 30 rotated by means of a motor 55, pulley 56, and worm 57, cooperating with a toothed wheel 32 fixed to shaft 30 adjacent the base thereof. A worm 33 at the top of shaft 30 meshes with a cog 34 fixed upon a stud shaft 35 rotatably mounted upon the standard 10. The outer end of stud shaft 35 has fixed thereto a wheel or plate 36 upon the outer face of which the end of a link 37 is eccentrically pivoted. The opposite end of the link 37 is pivotally attached to one end of a lever 38 pivoted as at 39 upon a suitable mounting secured to stand-

ard 10. A link 40 attaches the lower end of lever 39 to a second lever 41 which at its opposite end is pivotally connected by means of a link 42 to an arm 43 secured to the upper end of rod 23. By this system the rotation of shaft 30 results in rocking of the double gates 18.

As previously suggested, the intermittent release of soap bars is desirable so that a subsequent operation, such as stamping, may be performed upon the individual bars. A means for receiving the dispensed bars and for shifting and suitably holding them to be stamped, is provided by the carrier 44, positioned beneath the chute 12. The carrier consists of a cross-plate 45 having arms 46 provided adjacent their ends with substantially rectangular openings 47 extending transversely of the arms. The end walls 48 of openings 47 are curved outwardly to a slight extent. The cross-plate 45 is centrally fixed upon a vertical shaft 49 journaled in a block 50 positioned adjacent the base of standard 10. A Geneva wheel 51 is fixed upon shaft 49 adjacent the lower end thereof, said wheel being actuated by means of a plate 52 fixed upon the rotating shaft 30 and having the upright studs 53 adapted to enter the slots 54 of the Geneva wheel whereby intermittent rotation of carrier 44 is effected.

Carrier 44 is so positioned relative to chute 12 that openings 47 in the arms 46 pass directly beneath the chute in alignment with plates 21 in their release position. The action of the gates and carrier is synchronized so that the bottom plates 21 release a bar of soap as one of the arms 46 pauses beneath the chute.

Openings 47 are somewhat larger than the bars of soap except adjacent the corners thereof where the curved walls 48 make a line contact with the vertical edges of the bars whereby mutilation of the bars is obviated. Moreover, the upper and under faces of the bars are exposed so that the subsequent stamping operation may be performed upon both sides thereof. A curved slide or support 550 may be positioned immediately beneath carrier 44, extending from the point at which openings 47 receive the bars, over to the machine used in the subsequent operation. Thus a positive means for precluding complete passage of the soap bars through the openings may be provided.

The dispensing gates of this invention may be actuated at various speeds. When utilized in soap manufacture, as herein described, an efficient speed has been found to be that by which 80 soap bars per minute are dispensed. At such speed, contact between the gates and soap bars is reduced to a minimum.

What is claimed is:

1. A device for dispensing articles and comprising a chute for holding a supply of

the articles and having an opening at the bottom for passage of the articles therefrom, a pair of oppositely-disposed plate members hingedly mounted upon the chute adjacent the opening and movable into and out of the line of said opening, a pair of wing members each comprising two plates fixed in divergent relationship one to the other, the wing members being mounted upon the chute beneath said pair of plate members and pivotally movable into and out of the line of said opening, one plate of each wing member being in slidable contact upon the under surface of the plate member disposed thereabove, whereby pivotal movement of the wing members results in pivotal movement of the plate members, passage of articles from the chute being controlled alternately by the plate members and by the wing members upon pivotal movement thereof, and means for pivotally moving the wing members.

2. In combination, an article dispensing device comprising a gravity chute, two pairs of oppositely-disposed plates pivotally mounted one pair above the other at the bottom of the chute, an intermittently-revolving carrier having arms each adapted to pass and pause beneath the chute said arms being provided with openings adapted to receive dispensed articles and to effect a minimum of supporting contact of the arms therewith and means for simultaneously moving the pairs of plates in opposite directions for effecting passage of articles one at a time from the chute in synchronism with the intermittent movement of said carrier arms, whereby an article is deposited within the opening of each arm of the revolving carrier.

3. In combination, a dispensing device comprising a chute for holding articles to be dispensed and having an opening at the bottom for permitting passage of articles there-through, two pairs of plates pivotally mounted adjacent the opening and adapted, upon pivotal movement thereof, to dispense articles one at a time from the chute, a carrier adapted to receive and remove the individually-dispensed articles from the chute, said carrier being provided with article-receiving openings having border portions adapted for supporting contact with limited portions only of the dispensed articles, means for actuating said carrier, and means synchronized with the movement of the carrier for actuating said pairs of plates whereby to secure co-operative action of the dispensing device and the carrier.

4. The combination with a gravity chute, of means for effecting intermittent release of objects from the chute, said means comprising two vertically-spaced pairs of plate members pivotally mounted at the base of the chute, means for rocking the lower of said pairs of members to effect intermittent partial projection thereof into the chute, and

means on said lower pair operative on the upper pair for effecting like operation of the upper pair at alternate intervals relative to the lower pair.

5. The combination with a gravity chute, of means for effecting intermittent release of objects from the chute, said means comprising two pairs of vertically-spaced supporting members pivotally mounted at the bottom of the chute and directed downwardly and inwardly of the chute, and means for alternately rocking said pairs of members into and out of the chute whereby one pair assumes a supporting position relative to the objects in the chute while the other pair assumes a release position relative thereto, said pairs being so disposed relative to one another that deposit of an object by the upper upon the lower pair of said members is effected with a minimum of sliding and gravitational movement.

6. The combination with a gravity chute, of means for effecting intermittent release of objects from the chute, said means comprising a pair of oppositely-disposed plate members pivotally mounted at the base of the chute, an angularly projecting flange portion at the top of each of said plate members, a second pair of oppositely-disposed plate members pivotally mounted above the first pair and in vertical alignment therewith, said second pair being adapted to depend downwardly with the under faces thereof in contact upon said flange portions, and means for rocking the lower pair in a vertical plane to effect successive pivotal movement of both pairs into and out of the chute.

7. In combination, an article-dispensing device comprising a gravity chute, two pairs of oppositely disposed plates pivotally mounted one pair above the other at the bottom of the chute, a carrier adapted to pass and pause beneath the chute and provided with openings for receiving and holding dispensed articles with the upper and lower portions thereof exposed, and means for simultaneously moving the pairs of plates in opposite directions for effecting passage of articles one at a time from the chute in synchronism with the pauses of said carrier whereby articles are deposited in the carrier openings.

8. In combination, an article-dispensing device comprising a gravity chute, means at the bottom of the chute for dispensing articles singly therefrom, and a carrier adapted to pass beneath the chute and to pause in synchronism with the dispensing of articles from the chute, said carrier being provided with openings for receiving and holding the articles with their upper and lower portions exposed to permit subsequent operations thereon.

9. A dispensing and carrier mechanism for use in the manufacture of plastic articles,

and comprising a gravity chute, two pairs of vertically-spaced plate members pivotally mounted in opposed relationship at the bottom of the chute, means for rocking the lower
5 of said pairs of plate members to effect intermittent partial projection thereof into the chute, means on said lower pair operative on the upper pair for effecting like operation of the upper pair at alternate intervals rela-
10 tive to the lower pair, said plate members being adapted to release articles singly from the chute, and a carrier adapted to pass beneath the chute and to pause in synchronism with the release of articles from the
15 chute, said carrier being provided with article-receiving openings having border portions adapted to make supporting contact with limited portions only of the released articles, said openings permitting exposure of the up-
20 per and lower portions of the supported articles whereby to allow subsequent operations on articles so positioned.

In testimony whereof, I have hereunto subscribed my name this 23rd day of January,
25 1930.

HOMER W. CROUSE.

30

35

40

45

50

55

60

65