Z. P. CANDEE.

HOPPER MECHANISM.

APPLICATION FILED JUNE 1, 1916.

1,232,893.

Patented July 10, 1917.

2 SHEETS—SHEET 1.

FIG. 1.

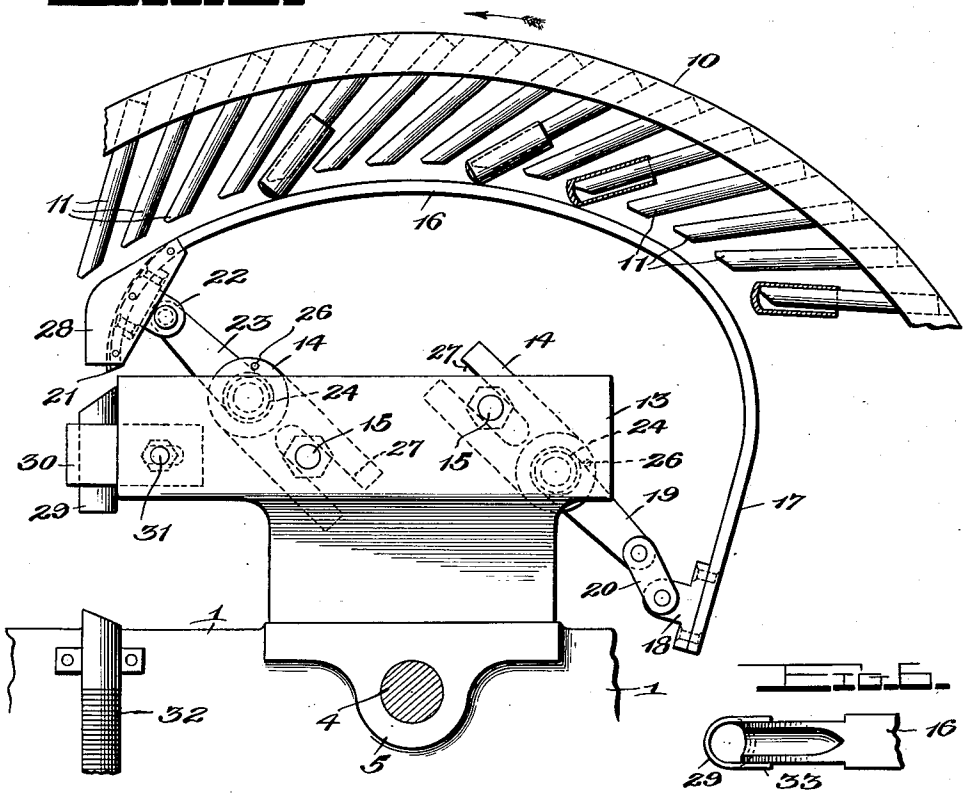


FIG. 6.

FIG. 3.

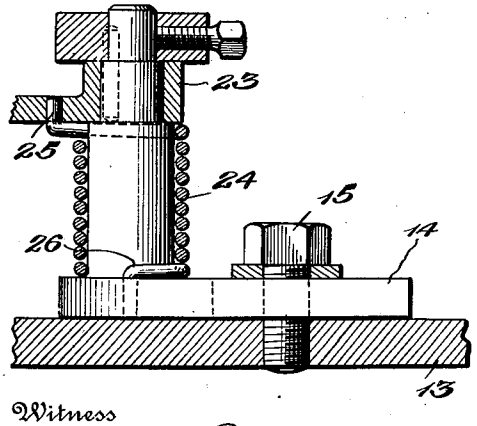


FIG. 4.

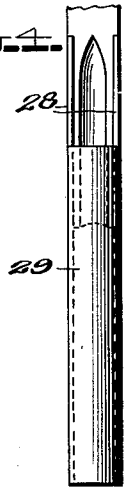
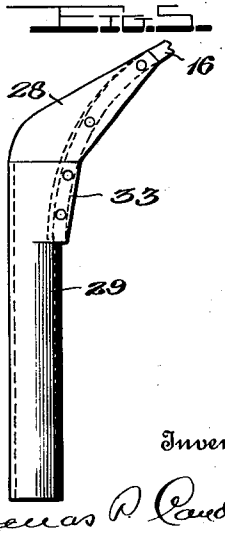


FIG. 5.



Witness

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HOPPER MECHANISM.

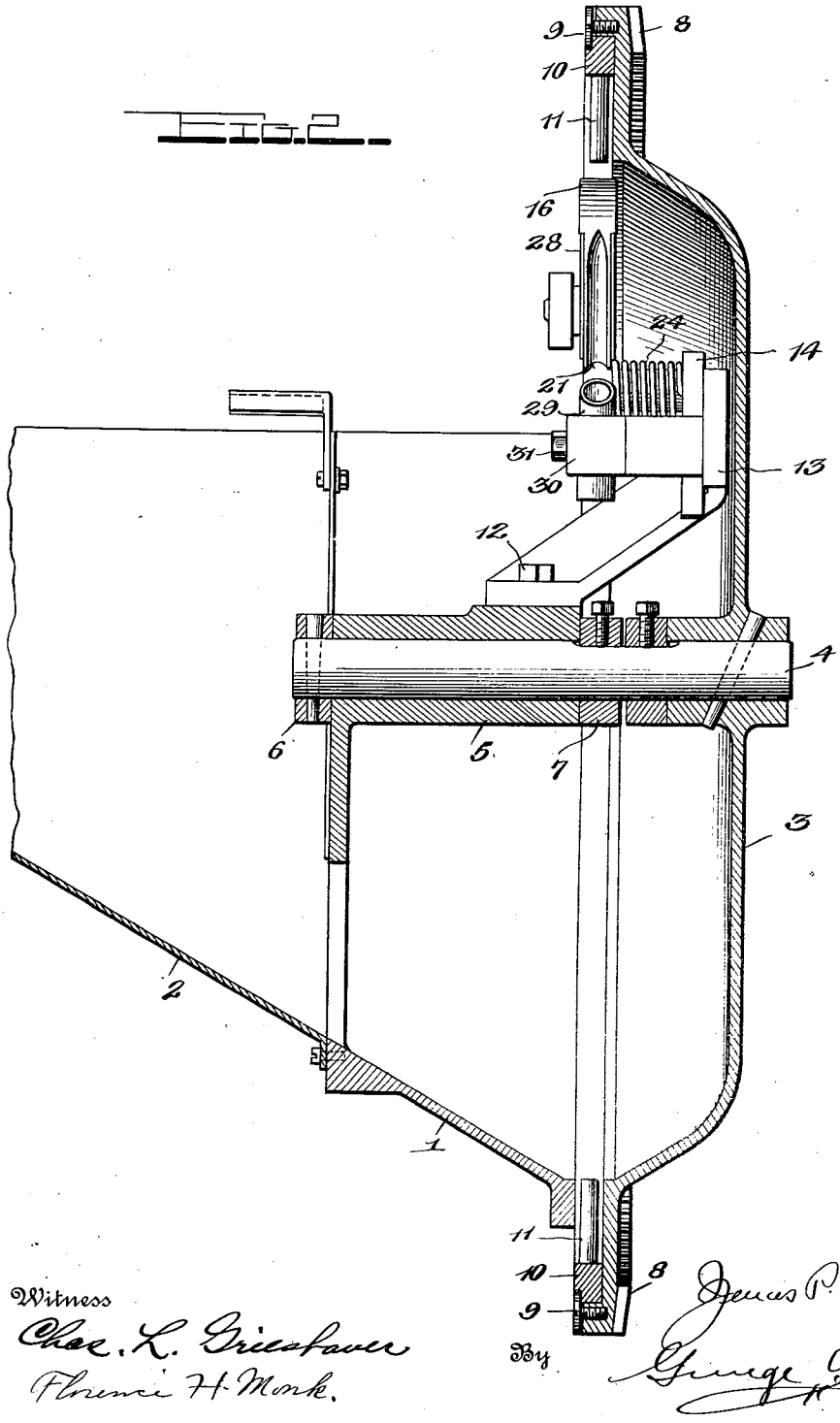
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2 SHEETS—SHEET 2.

FIG. 2



Witness

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UNITED STATES PATENT OFFICE.

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HOPPER MECHANISM.

1,232,893. Specification of Letters Patent. Patented July 10, 1917.

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To all whom it may concern:

Be it known that I, ZENAS P. CANDEE, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Hopper Mechanism, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a new and improved hopper mechanism, having particular reference to that type of hopper mechanism having members therein for separately taking articles or blanks out of the common mass and delivering them successively to a discharge point.

It is the object of this invention, among other things, to provide guide means of such mechanism that will be equally sensitive to pressure at substantially all points throughout its length; to provide a flexible support therefor at both ends thereof; to so arrange the delivery means that any excess of articles or blanks will be returned to the hopper without the aid or assistance of additional parts or mechanism; and to so design and arrange the several mechanisms that they will be exposed to view and readily accessible for installation, adjustment and repairs.

To these, and other ends, my invention consists in the hopper mechanism, having certain details of construction and combinations of parts, as will be hereinafter described and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals of reference designate like parts in the several figures;

Figure 1 is a side elevation of the guide means and a portion of the adjacent mechanism;

Fig. 2 is a sectional view of the entire mechanism assembled;

Fig. 3 is a plan view of one of the guide brackets with some of the adjacent mechanism shown in section; and

Figs. 4, 5 and 6 show a front view, side view and plan view respectively, of a modified form of discharge tube.

In the drawings, the numeral 1 designates the hopper body, which is secured to a fixed part in any desired or preferred manner, 2 the hopper extension separably secured thereto and both open at the top, and 3 the hopper back circular in form which is secured upon a shaft 4 rotatably mounted in the journal 5 connected with the hopper body 1 and held against endwise movement by the collars 6 and 7.

The hopper back 3 is provided on its rear face with a bevel gear 8, into which mesh the teeth of a pinion (not shown) so as to impart rotation thereto.

Fixed to the inner face of said hopper back by the screws 9, is the pin ring 10 having a plurality of pins 11 fixed therein.

Secured to the journal 5 by the bolt 12 is the standard 13, to which are adjustably secured the guide brackets 14 by the bolts 15, which pass through the slots 27 in the base portions of said brackets.

The guide plate 16 is made with its central portion substantially concentric with the pin ring 10, as shown in Fig. 1, and the opposite ends 17 and 21 turned inwardly therefrom. A block 18 is fixed to the receiving end 17 and this is connected with a lever 19 on one of the guide brackets 14 by a link 20. Attached to the discharge end 21 is a block 22, which is pivotally connected with a lever 23 rotatably mounted upon the other guide bracket 14. A spring 24 surrounds a portion of each of said guide brackets with one end 25 thereof projecting into the levers 19 and 23 and the other end 26 projecting into the base portion of the bracket. Means are thus provided for holding said levers 19 and 23 in a normally fixed position and through it the guide plate 16, while at the same time permitting said guide plate to yield, if necessary, by pressure thereon and return to its original position after the pressure is removed.

Upon both sides of said guide plate, adjacent to said discharge end 21, are the plates 28, which are in close proximity to the guide tube 29 that is mounted in a bracket 30 adjustably secured to the standard 13 by the bolt 31. Said guide tube 29 is directly in line with the discharge tube 32 fixed to the hopper body 1 in any preferred or desired manner, with the upper end thereof at a distance from the lower end of the guide tube 29 so as to provide an open space therebetween.

In operation, the hopper is filled with blanks or articles that are substantially cylindrical in form and lie therein in a mass

or bulk. As the hopper back 3 rotates, some of the pins 11 which pass through said mass pick up these blanks or articles and carry them upwardly. They are prevented from dislodgment from the pins 11 by the guide plate 16, the ends of said blanks or articles during their travel contacting therewith, substantially as shown in Fig. 1.

When the pins have successively arrived at a position adjacent to the side plates 28, the blanks or articles drop off the pin and pass by gravity between the plates 28 into and through the guide tube 29 across the open space thereunder and enter the discharge tube 32 by which they are carried to the desired point. If the discharge tube 32 is filled any additional blanks or articles that drop off the pins 11 will engage the upper blank or article therein and be deflected therefrom and drop back into the hopper to be taken up again as above described.

The articles do not always lie upon the pins 11 in their proper relative position, sometimes being canted at such an angle that if the same engage a fixed guide plate either the article is damaged or the pin broken. Therefore, the guide plate is mounted so as to yield by pressure wherever applied throughout its entire length. Hence, if the position of the blanks or articles on the pins 11 is not correct the guide plate by its yielding action will have a tendency to press the article onto said pins in their proper relative position. These guide plates have heretofore been mounted upon a yielding part at one end only, preferably the end corresponding with the receiving end 17 herein, and the other end has usually been free. By a guide plate so mounted the blanks or articles first contact with that portion thereof adjacent to its mounting, where the greatest pressure is required to move it, hence the articles are frequently bent or injured and the pins broken because the guide plate is not sufficiently flexible, and again, as the other end is entirely free the blank or article is not always guided into the discharge tube, because at the same moment it might be thrown out of alinement by its yielding action, and hence an improper delivery results.

With my device the guide plate is yieldingly mounted at both ends and the discharge end 21 always moves in a rotary path toward and away from the discharge tube in proper alinement therewith, and on the receiving end 17 the pivot mounting is so far away from the point of contact of the blanks or articles therewith that only a slight pressure is required to make the same yield.

The guide plate 16 and all of its operative parts are mounted upon a single standard, which can be assembled as a unit before being installed. This is a result that has not heretofore been possible, as the guide plates have formerly been constructed and mounted so as to be practically inaccessible and to require the dismantling of the entire hopper in order to gain access thereto for repairs or other purposes.

If desired, the guide tube 29 may be connected with the guide plate itself and a method of accomplishing this is shown in Figs. 4, 5 and 6, wherein the plates 28 are secured to wings 33 upon the upper end of the guide tube 29.

There are minor changes and alterations that can be made within my invention, aside from those herein suggested, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, except as defined by the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a hopper mechanism, the combination with a rotary member having blank carrying elements connected therewith; of a guide member; and means yieldingly connecting the opposite ends of said guide member to a member independent of said rotary member.

2. In a hopper mechanism, the combination with a rotary member having blank carrying elements connected therewith; of a guide member, a portion of which is substantially concentric with said rotary member; bracket members independent of said rotary member; and a yielding, flexible connection between each of said bracket members and the opposite ends of said guide member respectively, whereby both ends of said guide member are supported by a flexible joint.

3. In a hopper mechanism, the combination with a rotary member having blank carrying elements connected therewith; of a standard secured independently of said rotary member; bracket members adjustably secured to said standard; a guide member; means for connecting one end of said guide member with one of said brackets, said means having a spring connection with said bracket; and means for connecting the other end of said guide bracket with another of said brackets, said means having a spring connection with said latter bracket.

4. In a hopper mechanism, the combination with a rotary member, having blank carrying elements connected therewith; of a standard secured independently of said rotary member; a guide tube connected therewith; a guide member; and means for yieldingly securing each end of said guide member to said standard with one of said ends adjacent to said guide tube.

5. In a hopper mechanism, the combination with a rotary member, having blank

carrying elements connected therewith; of a unitary structure secured independently of said rotary member, comprising a standard, companion brackets movably secured thereto, a guide member, and means for yieldingly securing each end of said guide member to said brackets.

6. In a hopper mechanism, the combination with a rotary member having blank carrying elements connected therewith; of a guide tube; a guide member; means for yieldingly connecting the opposite ends of said guide to a separably secured member; and means connected with said guide member at the end thereof adjacent to said guide tube for preventing lateral movement of a blank in relation to said guide member.

7. In a hopper mechanism, the combination with a rotary member having blank carrying elements connected therewith; of a standard secured independently of said rotary member; companion brackets mounted on said standard; a lever mounted upon each of said brackets; a link connected with one of said levers; and a guide member having connection at one end with one of said levers and at the other end with said link.

In testimony whereof I have hereunto affixed my signature.

ZENAS P. CANDEE.