Aug. 6, 1940. J. A. MELVILLE 2,210,250

DISPENSING DEVICE

Filed Dec. 8, 1937 3 Sheets-Sheet 1

Fig. 1.

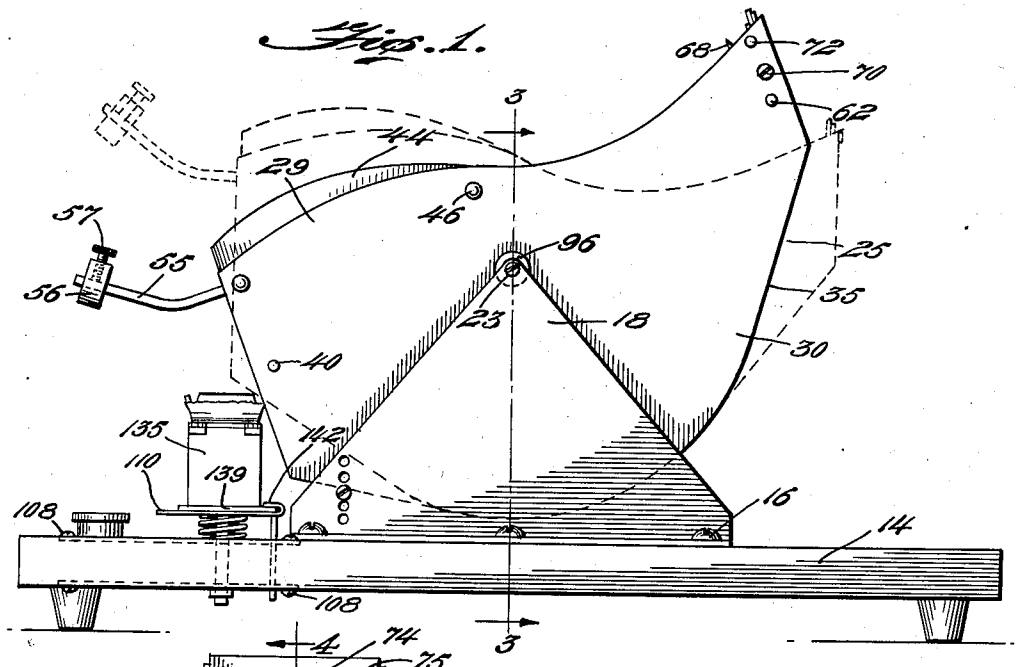


Fig. 2.

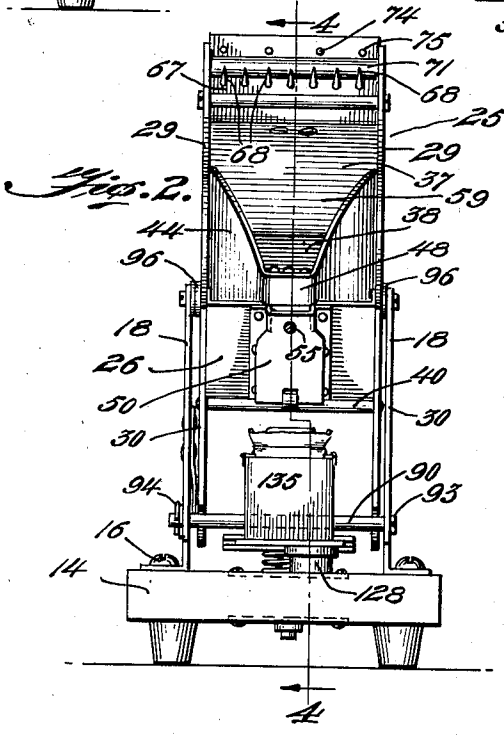
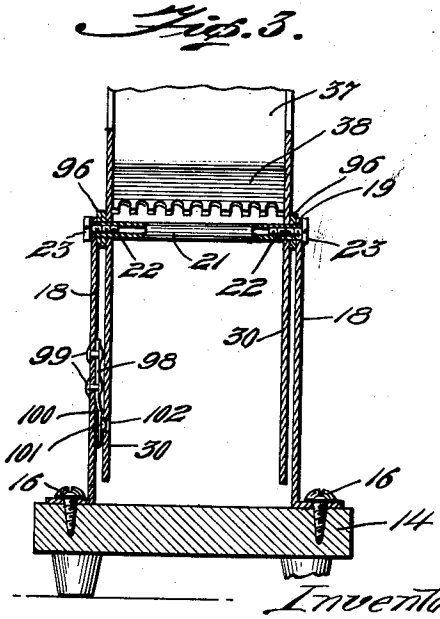


Fig. 3.



Inventor

James A. Melville

By Horatio E. Billows

Attorney

Aug. 6, 1940. J. A. MELVILLE 2,210,250

DISPENSING DEVICE

Filed Dec. 8, 1937 3 Sheets-Sheet 2

Fig. 4.

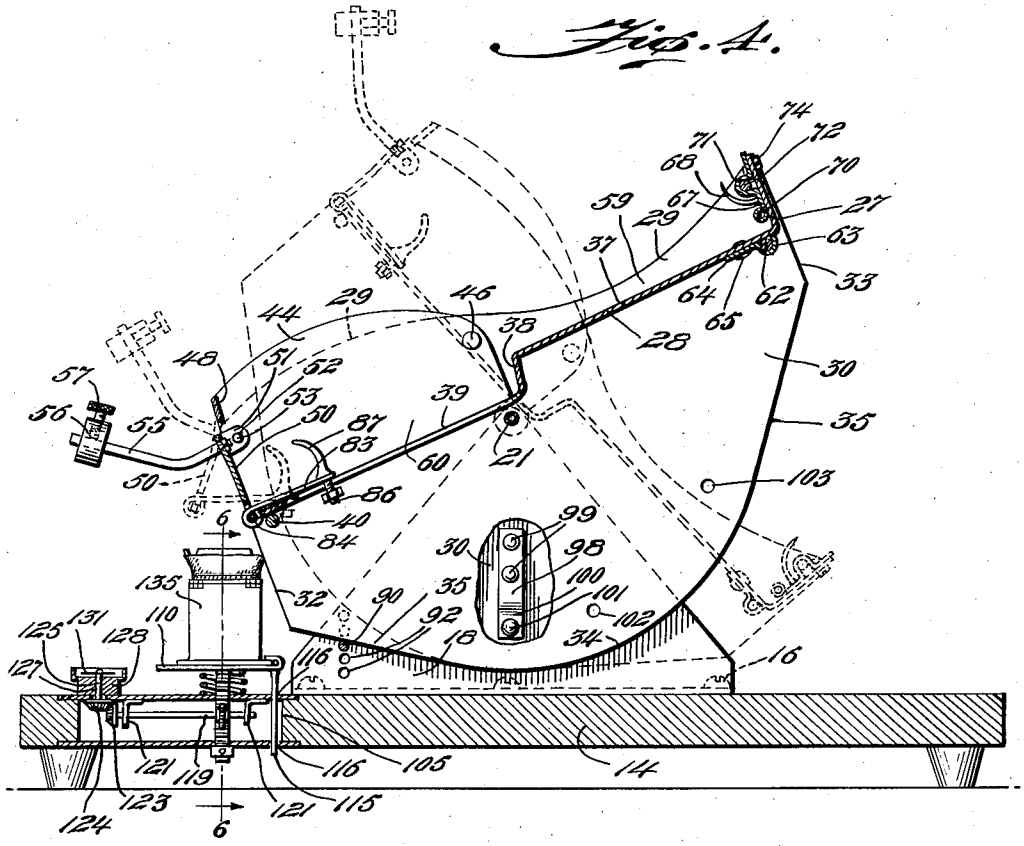
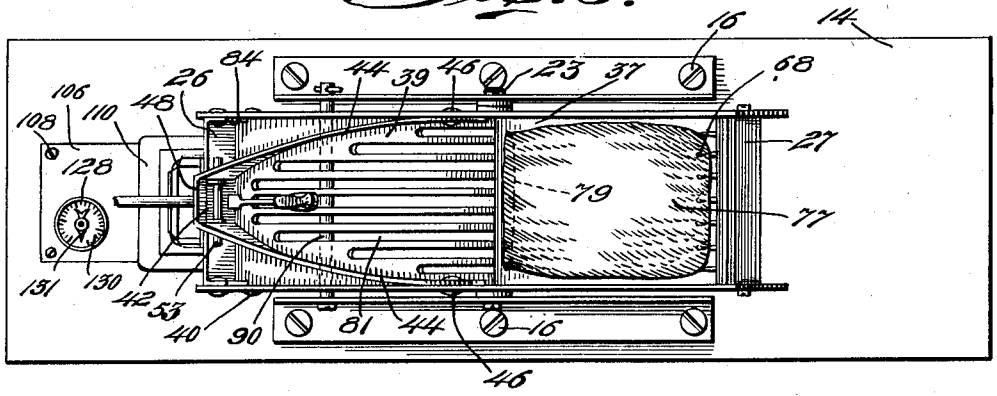


Fig. 5.



Inventor
James A. Melville
By Horatio E. Bellows
Attorney

Aug. 6, 1940. J. A. MELVILLE 2,210,250

DISPENSING DEVICE

Filed Dec. 8, 1937 3 Sheets-Sheet 3

Fig. 6.

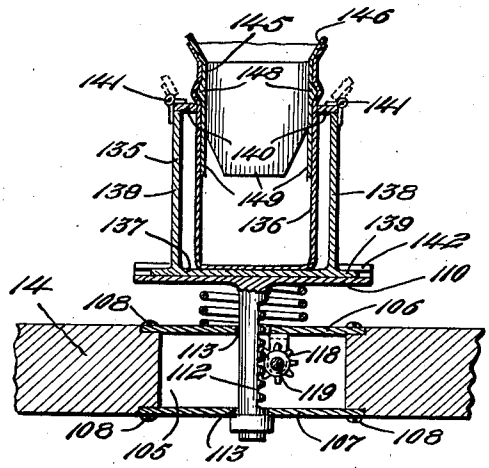


Fig. 7.

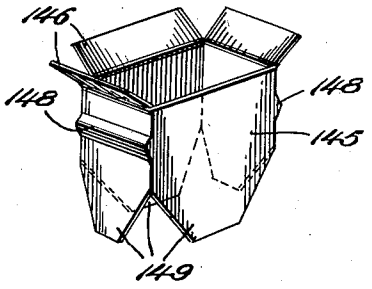


Fig. 9.

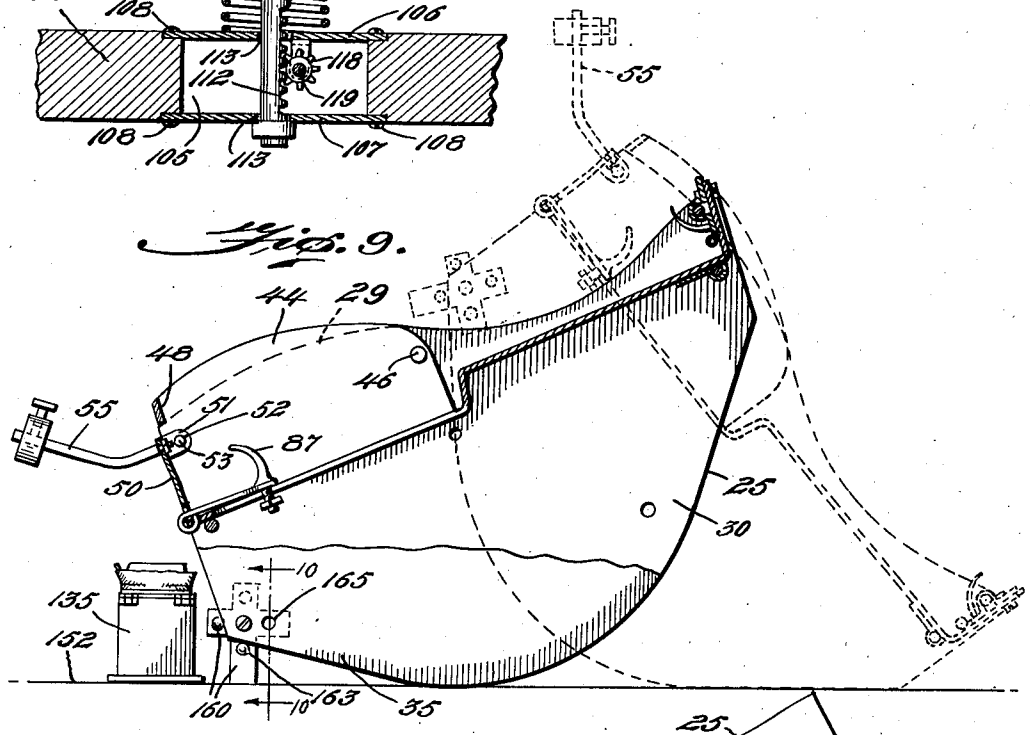
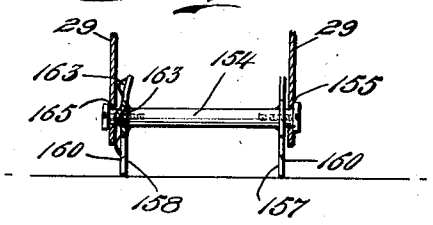


Fig. 10.



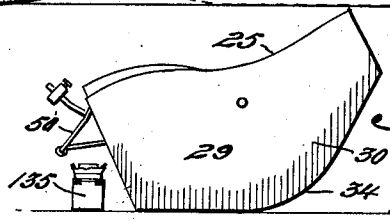


Fig. 8.

Inventor
James A. Melville
By Horatio E. Bellows
Attorney

Patented Aug. 6, 1940 2,210,250

UNITED STATES PATENT OFFICE

2,210,250

DISPENSING DEVICE

James A. Melville, Cranston, R. I.

Application December 8, 1937, Serial No. 178,757

8 Claims. (Cl. 221—146)

My invention relates to machines for delivering potatoes or other vegetables from sacks to bags preferably of paper, and for packaging the same.

The essential objects of my invention are to save time and labor in delivering and packaging; to facilitate the loading of the sacks upon the hopper; to prevent choking or impeding delivery of the contents from the mouth of the sack; to permit the escape of the dust or earthy adhesions from the surfaces of the articles during their travel from the sack to the bag; to provide guiding means in the hopper for the articles in their travel to the point of discharge; to prevent choking of the discharge opening; to control the discharge of the articles to the bag holder; to enable the determination of the weight of the articles in the bag holder at all times during said discharge; to provide means for prevention of tearing the bag during the filling operation and during the removal of the filled bag from the holder; to control the height of the discharge end of the hopper; to enable easy operation; and to provide a construction whose parts permit disassemblage to enable the removed parts to be utilized elsewhere than before removal.

Other objects and advantages of my invention will be hereinafter adverted to.

To the above ends essentially my invention consists in such parts and in such combinations of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification,

Figure 1 is a side elevation of my novel machine,

Figure 2, a front end elevation of the same,

Figure 3, a fragmentary section of the same on line **3**—**3** of Figure 1,

Figure 4, a longitudinal section of the same, partially in side elevation, taken on line **4**—**4** of Figure 2, showing in full lines the hopper in delivery position, and in broken lines in loading position,

Figure 5, a fragmentary top plan view of the machine including a sack located therein and attached thereto,

Figure 6, a section taken on line **6**—**6** of Figure 4,

Figure 7, a perspective view of the container sleeve,

Figure 8, a reduced side elevation of the hopper and bag container, removed from the base of the machine and in cooperating relation to each other,

Figure 9, a central longitudinal section of the hopper partly in side elevation, and a side elevation of the bag container located in operative relation thereto, both removed from the base, the former embodying a modified form of the adjusting means of the former member, and the broken lines showing the loading position of the same, and

Figure 10, an incomplete section taken on line **10**—**10** of Figure 9.

Like reference characters indicate like parts throughout the views.

For the purpose of illustrating my invention, I have shown in the accompanying drawings forms thereof which are at present preferred by me, since the same will give in practice satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

As shown in the drawings a base **14** has fixed thereto by screws **16** or otherwise standards **18** in whose upper ends are openings **19** to receive a tubular threaded bearing shaft **21** adapted to receive detachable end screws **22** whose heads **23** are adapted to frictionally engage the standards, as shown in Figure 3. This shaft serves as a pivotal support for a hopper **25** for the potatoes to be packaged.

This hopper includes a front wall **26**, a rear wall **27** of less height than the front wall, a floor **28** and side walls **29** including parallel integral extensions or flanges **30** depending below the floor. The front vertical edges **32** of the extensions, as shown in Figure 4, are longer than their rear vertical edges **33**, the intermediate portions **34** of their bottom edges are convex or curved, and the uncurved portions **35** of said bottom edges are inclined.

The floor **28** of the hopper comprises an upper section **37** integral with the lower edge of the rear wall **27** at one end, and having a depending abutment wall **38** at its front end. The latter wall at its lower end is integral with a floor section **39** lying in a plane parallel to, but below, the upper floor section **37**, and extending to and engaging the front wall **26**. In this instance the lower floor section **39** is fixed by brazing or otherwise to a brace rod **40** fixed at its ends in the extensions **30**.

The front wall **26** of the hopper is provided midway its length with a vertical rectangular dis-

charge opening 42. Forwardly directed inwardly converging guide plates 44, fixed at their rear ends adjacent the depending wall 38 by rivets 46 to the side walls 29, as shown in Figure 5, extend in contact with the floor section 39 to the front wall 26 at either side of the opening 42. As the forward ends of the guide plates are higher than the adjacent portions of the side walls 29 of the hopper the guide plates are connected at their forward ends by a resultant web 48 above the discharge opening 42, which web constitutes in effect a vertical extension of the front wall of the hopper. A closure for the opening 42 includes a door 50 provided at its upper portion with lateral rearwardly directed lugs 51 provided with perforations 52 to loosely receive a pintle 53 fixed in the forward portions of the guide plates 44. The door is normally held in closed position by an angular forwardly directed rod 55 fixed to the top margin of the door and carrying near its outer end a counterweight 56 adjustable upon the rod by a set screw 57.

The portion of the hopper above the upper floor section 37 constitutes a sack compartment 59, and the portion of the hopper above the lower floor section 39 and within the guide plates constitutes a bin 60.

A bracing rod 62 connecting the extensions 30 contacts with the lower face of the upper floor 37 of the hopper, as shown in Figure 4, and is engaged by a hook 63 integral with an attaching plate 64 fixed to the floor by a rivet 65. An oblong rack plate 67 to which is fixed a row of inwardly and upwardly directed hooks 68 has its lower edge in contact with a cross bar 70 and is adapted to abut against the rear wall of the hopper. This plate has a longitudinal recess 71 to admit a cross rod 72 upon which the plate has pivotal movement when necessary by turning a series of adjusting screws 74 in threaded perforations 75. By means of this construction the inclination of the hook series may be adjusted. In Figure 5 is shown a potato sack 77 of usual construction resting sidewise upon the floor section 37, with its closed end engaged by the hooks 68, and its opposite end open, as at 79, adapted to discharge its contents into the bin 60 below when the hopper is forwardly tilted.

The floor section 39 of the bin, as shown in Figure 5, is provided with numerous interstices or openings 81, in this instance longitudinally disposed, to perform a screening effect upon the adhesions carried by the potatoes. For agitating or leveling the potatoes to facilitate their delivery through the discharge opening 42 a reciprocable rod 83, as shown in Figures 4 and 5, is pivotally attached, as at 84, to the bottom of the door, and is guided by a depending pin 86 slidable in one of the openings 81. An upright finger 87 upon the inner end of the rod 83 agitates the adjacent potatoes when the arm 55 is moved.

The hopper 25, when mounted on the shaft 23 has a tilting or rocking movement limited in its travel in one direction by means hereinafter referred to and limited in its movement in the opposite direction by a vertically adjustable stop member consisting, as shown in Figures 2 and 4, of a cross bar 90 passing loosely through selected perforations 92 disposed in vertical series in the forward ends of the standards 18, and prevented from escape by a head 93 and cotter pin 94 upon its ends. The vertical disposition of the perforation series affords a selective variation of the height of the discharge opening 42 above the receptacle intended to receive the articles from the hopper.

When the hopper is pivotally suspended washers 96 loose on the bearing shaft 23 serve to space the hopper from the standards; and in order to prevent unusual speed in the movement of the hopper under heavy loads a braking means is provided as follows. As shown in Figures 3 and 4, a spring detent arm 98 is fixed at one end by rivets 99 to one of the standards 18 while its inwardly inclined free end portion 100 bears against one of the extensions 30 of the hopper. A nub 101 upon the portion 100 is adapted to register in a socket 102 in the extension immediately below the shaft 23 when it is desired to maintain the hopper in an approximately horizontal position, which position is shown in broken lines in Figure 1. The nub 101 is adapted to also register in a socket 103 in the rear portion of the extension to maintain the hopper in the loading position, as shown in broken lines in Figure 3.

Adjacent the forward ends of the standards 18, midway its width, the base 14 is provided with an opening 105 closed by plates 106 and 107 fixed by screws 108 to the top and bottom of the base, as shown in Figures 4 and 6. A platform 110 in the vertical plane of the forward portion of the hopper below the door 52 has integral therewith a depending rack 112 slidable through openings 113 in the closure plates. A guide rod 115, depending from the platform 110, also slidably moves through perforations 116 in closure plates. A pinion 118, engaging the rack 112 is fixed to a shaft 119 rotatably mounted in brackets 121 fixed to the closure plate 106. A gear 123 upon the shaft meshes with a gear 124 fixed to the lower end of a vertical pin 125 passing through a perforation, not shown, in the closure plate 106, and through a central bore 127 in a cylindrical block 128 fixed by brazing or otherwise to the top of the plate 106 and having upon its top a graduated scale 130 of pounds and fractions thereof. A pointer 131 upon the top of the pin 125 cooperates with the scale for indicating weight.

A container 135 for the paper bag 136 into which the articles are fed from the discharge opening 42 of the hopper, as shown in Figures 6 and 7 comprises a bottom 137, four side walls 138, a horizontal flange 139 upon the bottom, and inwardly directed normally horizontal bearing plates or strips 140 attached by hinges 141 to the tops of two opposite walls. The strips may be swung to broken line position to admit a fresh bag. The container rests upon the platform 110 and an inturned marginal flange 142 upon the latter overlaps the flange 139 with a moderate degree of friction and with sufficient looseness to render the container readily detachable.

The inner plane edges of the bearing strips abut against the side of the bag 136 whose bottom rests upon the bottom 137 of the receptacle, and forces the bag into contact with a quadrilateral sleeve 145 having a flaring top portion 146, and upon two of its side walls are elongated external shoulders 148 in a horizontal plane slightly above the clamping plates whereby the wall of the bag is frictionally clamped into engagement with the strips 140, and the bag is thus retained against sliding and collapse as the articles fall therein. The sleeve includes resilient depending laterally tapering portions or fingers 149 to facilitate introduction into the container. The flange portion 146 of the sleeve spreads the bag mouth as the articles enter the bag. After the bag is filled

the sleeve is removed and the filled bag is withdrawn from the container.

It is sometimes advantageous to detach the hopper from its standards 18 by the removal of the screws 20, and pull the bag container 135 from engagement with the flange 142, and place the members 25 and 135 in cooperative relation to each other upon the floor 152 as shown in Figure 8, where the floor is utilized as a base, when for lack of room the larger base 14 would not be as practical. The tilting or rocking action of the hopper when resting on the floor as a base is effected by the direct contact of the base 152 with the intermediate curved portions of the bottom edges 34 of the side walls 29 and straight portions 35 of said edges of the side walls according to the wholly manual impulse and control of the operator.

In Figure 9 the detached hopper is also shown mounted with an adjustable stopping means for controlling the extent of downward travel of the front of the hopper relatively to the height of the container. This means consists of a cross bar 154 rotatably mounted in perforations 155 in the extensions of the side walls. Fixed to the cross bar adjacent the extensions are two plates 157 and 158, each alike in peripheral outline which has a plurality, in this instance four, radial arms 160. The face of each of the arms of the plate 158 has a knob 163 equidistant from its inner end adapted to successively enter recess 165 in the adjacent extension when the plates are manually turned for adjustment purposes.

The cooperation of the hopper with the weighing means and with the paper bag container, saves time in merchandising potatoes or other vegetables. The construction of the container whereby the paper bag is not torn during the reception of the contents of the hopper facilitates the packaging operation. The rocking character of the hopper permits its loading end to approach the plane of the base whereby loading a heavy sack requires little effort, and the delivery end of the hopper by its downward tilt so shifts the weight of the load as to utilize gravity to assist in the delivery of the hopper contents to the receptacle.

The elevated position of the sack compartment 59 relatively to the floor of the bin 60 further assists the delivery of the contents of the sack 77 when the forward portion of the hopper is downwardly tilted, and during such movement the height of the floor 37 of the sack compartment relatively to the height of the floor 39 of the bin, as defined by the depending wall 38 prevents the mouth of the sack 77 from being choked by an unusual accumulation of the contents of the bag in the bin. The means for adjusting the hooks 68 adapts the latter to sacks of different sizes. The converging plates 44 guide the contents of the bin to the discharge opening. When the forward end of the hopper is downwardly tilted into delivery position the contents of the bin are thereby propelled through the delivery opening 42, the door 50 being manually opened for that purpose by the operator who lifts the arm 55 to the broken line position shown in Figure 4. The longitudinal adjustment of the counterweight 56 upon the arm 55 controls the degree of resistance of the door to the contents of the bin, and thus minimizes the efforts of the operator in opening or closing the door. The cooperating agitator 87 assists delivery of the contents of the hopper and tends to break up any congestion of material adjacent the doorway.

The described different means for adjusting the elevation of the forward end of the hopper relatively to the height of the receptacle 135 are of advantage when employed.

I claim:

1. A device of the character described, comprising a hopper having a discharge opening therein, a door pivotally mounted on said hopper above the opening, a counterweight connected with the door and acting on the door for normally holding the same in a closed position, means for supporting said hopper for rocking movement, and means slidable along the floor of said hopper and actuated by the movement of said door for agitating the contents of the hopper during the discharge.

2. A device of the character described, comprising a hopper having a sack compartment at one end thereof and a bin at the other end thereof, said bin having a discharge opening at the last-mentioned end thereof and having a bottom below the bottom of the sack compartment and communicating therewith, means for supporting said hopper for rocking movement to cause flow of the contents from the sack compartment to the bin and to discharge the contents of the bin through said opening, and means slidable along the floor of said bin for agitating the contents thereof during the discharge.

3. A device of the character described, comprising a hopper having a sack compartment at one end thereof and a bin at the other end thereof, said bin having a discharge opening at the last-mentioned end thereof and having a bottom below the bottom of the sack compartment with an upwardly extending abutment between said compartment and bin, means for supporting said hopper for arcuate reciprocatory movement to impel the contents thereof through the discharge opening, and the means slidable along the floor of said bin for agitating the contents thereof during the discharge.

4. A device of the character described, comprising a hopper having a sack compartment at one end thereof and a bin at the other end thereof, said bin having a discharge opening at the last-mentioned end thereof and having a bottom below the bottom of the sack compartment and provided with screening openings, means for supporting said hopper for rocking movement to cause flow of the contents from the sack compartment to the bin and to discharge the contents of the bin through said opening, a door mounted in position to close said discharge opening, and means responsive to the movement of said door and slidable along the floor of said bin for agitating the contents of the hopper during the discharge.

5. In a device of the character described, a hopper having a sack compartment at one end thereof and a bin at the other end thereof, said bin having a bottom below the bottom of the sack compartment and provided with screening openings, said hopper having a discharge opening at one end portion thereof, a door pivotally connected with the hopper and normally tending to close the discharge opening, a rod pivotally connected with the bottom portion of the door and slidable in the guide opening, and an upright agitator finger connected with the rod for movement in the hopper.

6. In a device of the character described, the combination of a support, a hopper mounted on the support for bodily tilting movement comprising a sack compartment in its rear end, a bin

in its other end communicating with the compartment, and a depending extension below the compartment and bin, said bin being provided with a discharge opening, and said extension being provided near its rear end with a socket, a resilient arm interposed between the hopper and the support, and a nub upon the arm registerable in the socket when the hopper is tilted.

7. In a device of the character described, a hopper having side and end walls and a bottom, the side walls having downward extensions fixed thereto and depending below the bottom and terminating in centrally disposed convex edge portions, said hopper having a discharge opening in one end thereof, a door mounted in position to close said opening, and means normally tending to hold the door closed when said hopper is pivoted about the centrally disposed convex edge portions so that said opening is in a raised position.

8. In a device of the character described, a hopper comprising side and end walls and a bottom, one of the end walls having a discharge opening therein, and the side walls having integral downward extensions projecting below the bottom and terminating in lower edges, the lower edge of the edge extension having a central portion and upwardly inclined lateral portions on opposite sides of the central portion, a door mounted on said hopper in position to close said discharge opening, and means normally tending to hold the door in closed position.

JAMES A. MELVILLE.