

Oct. 9, 1962

D. B. BAKER

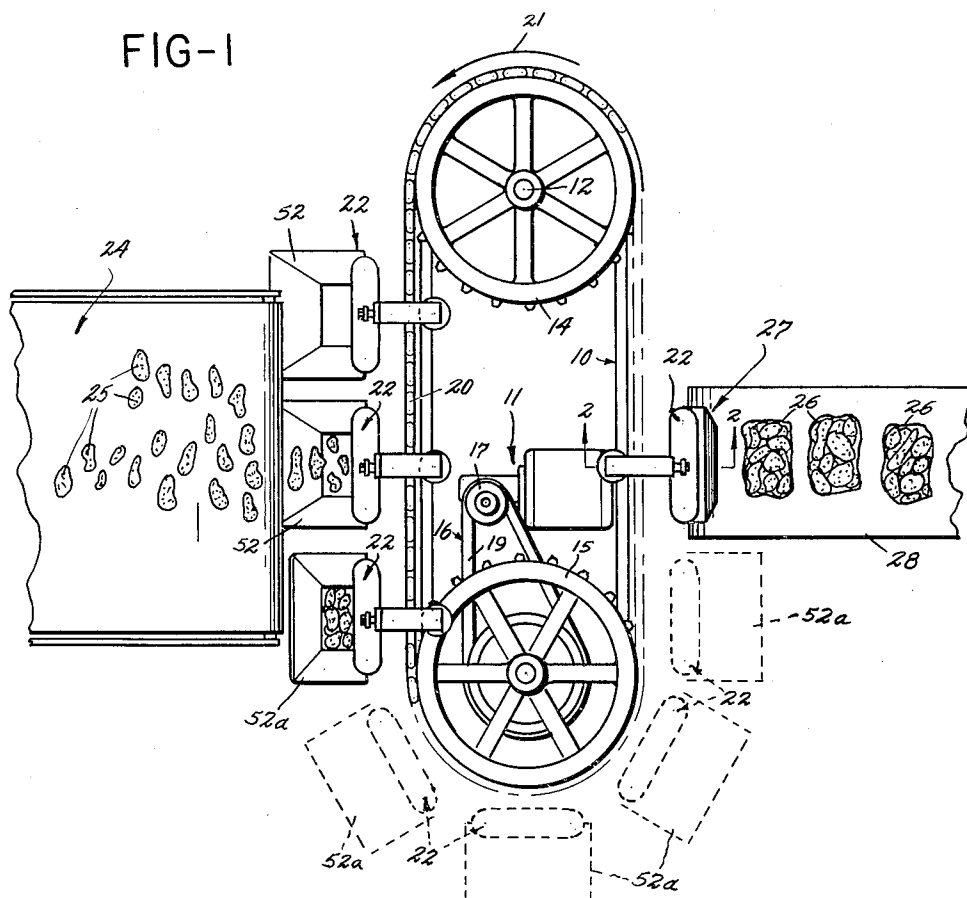
3,057,382

ARTICLE BAGGING MACHINE

Filed Nov. 27, 1959

3 Sheets-Sheet 1

FIG-1



INVENTOR.

DAVID BYRON BAKER

BY

Norman H. Huff

Oct. 9, 1962

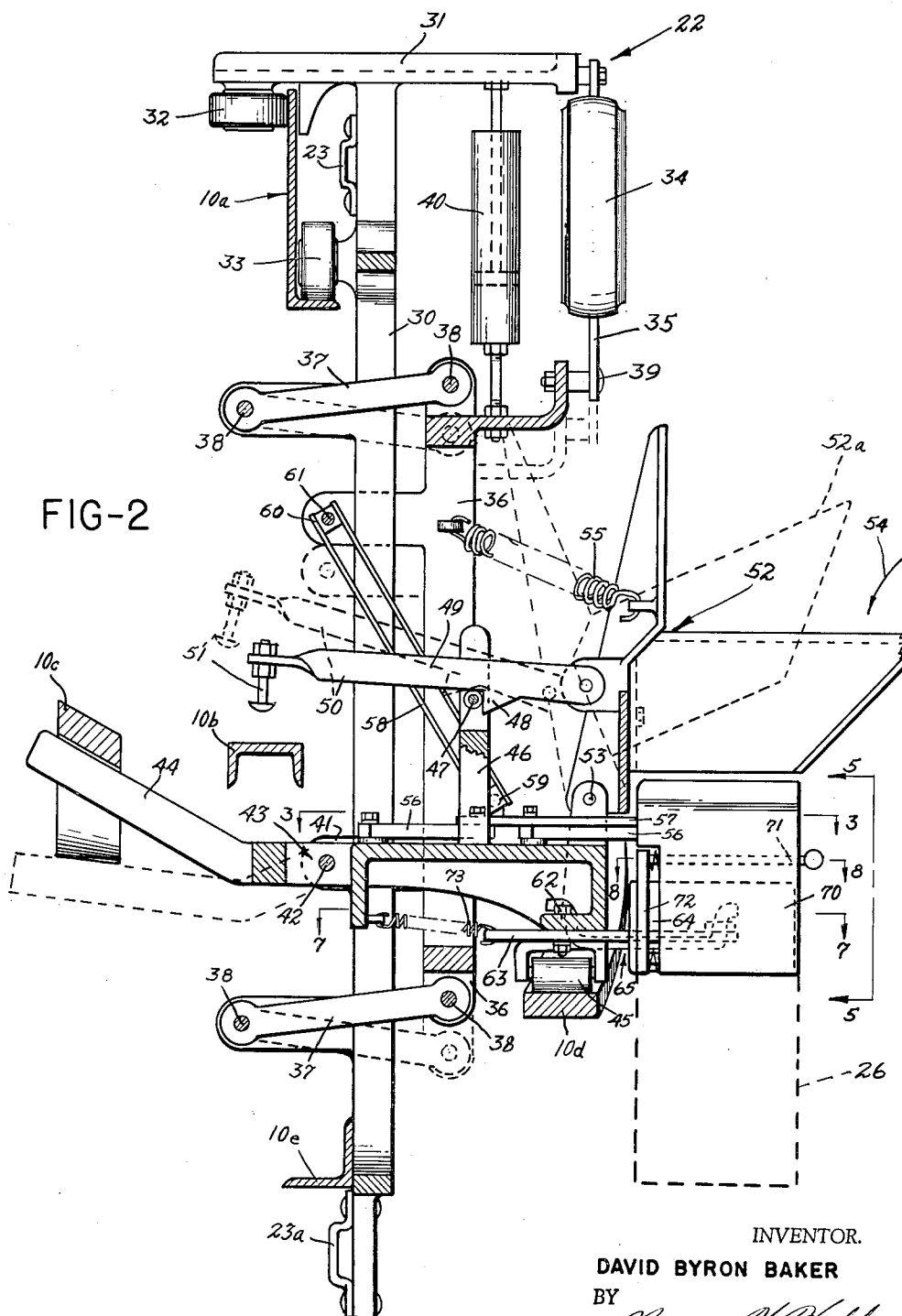
D. B. BAKER

3,057,382

ARTICLE BAGGING MACHINE

Filed Nov. 27, 1959

3 Sheets-Sheet 2



Oct. 9, 1962

D. B. BAKER

3,057,382

ARTICLE BAGGING MACHINE

Filed Nov. 27, 1959

3 Sheets-Sheet 3

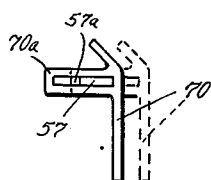


FIG-6

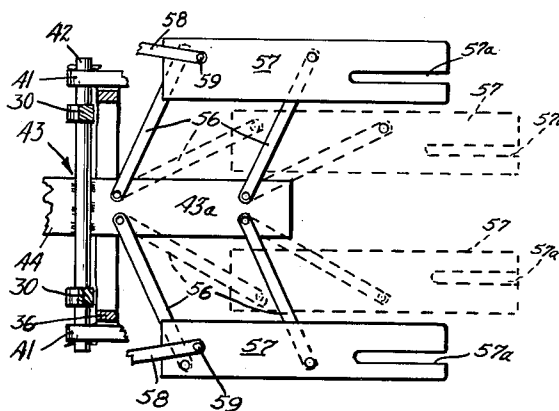


FIG-3

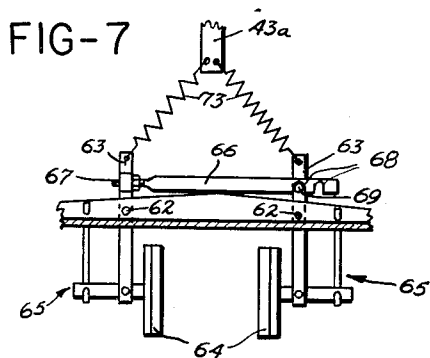


FIG-7

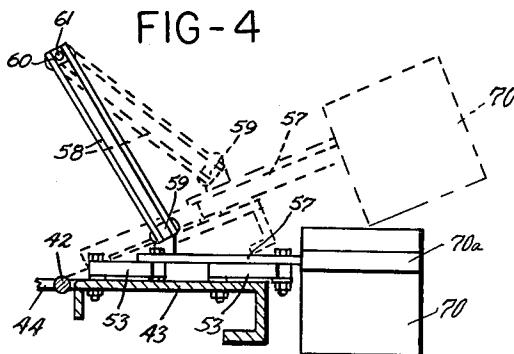


FIG-4

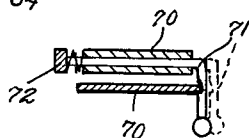


FIG-8

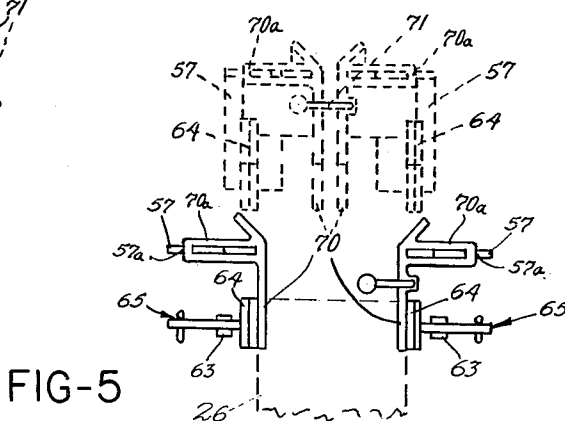


FIG-5

INVENTOR.
DAVID BYRON BAKER

BY

Herman R. Hoff

1

3,057,382

ARTICLE BAGGING MACHINE

David Byron Baker, Box 455, Kennewick, Wash.

Filed Nov. 27, 1959, Ser. No. 855,930

6 Claims. (Cl. 141-83)

This invention is a machine for bagging bulk articles and controlling the quantity of articles bagged by the weight contained in the bag.

More particularly the invention relates to an apparatus for supporting and positioning successively plural open bags while the same are being filled to a predetermined weight of contents and subsequently releasing the bags successively at a predetermined point of discharge.

Generally, the apparatus comprising the preferred embodiment of the present invention, comprises a fixed or supporting frame having constantly rotating driving means supporting plural bagging units effecting their constant movement about a predetermined constant path through a filling station wherein articles are introduced into bags supported by the bagging units through material directing funnels. Means are provided on each bagging unit to deflect articles from entering the bag when a predetermined weight of contents is reached and subsequent thereto the bags are discharged at the discharge station disposed at a predetermined point along said endless path.

It is therefore an object of this present invention to provide an improved bag filling machine capable of high speed operation.

Another object of the invention lies in the provision of an article bagging machine of the nature indicated which is simple in construction, economical to manufacture and may be assembled with facility.

It is a further object of this invention to provide a novel article deflecting mechanism to preclude overfilling bags.

Yet another object of this invention is to provide novel means for holding a bag by the apparatus and spreading the same to insure proper entry of articles thereinto.

Still another object of the invention lies in the provision of an article bagging machine having bag supports with adjustment means for adjusting the bag holding means individually to accept bags of different sizes.

A still further object of the invention lies in the provision of a bag holding device wherein the gripping pressure increases proportionately to the weight of the bag and its contents.

Other objects and advantages of the present invention will appear to those skilled in the art as the description proceeds when considered in connection with the accompanying drawings illustrating a preferred embodiment of the invention.

In the drawings wherein like numerals are employed to designate like parts:

FIGURE 1 is a top plan view of a preferred form of bag filling machine constructed in accordance with the present invention;

FIGURE 2 is a vertical cross section taken substantially on the plane indicated by line 2-2 of FIGURE 1 and shown upon an enlarged scale;

FIGURE 3 is a fragmentary horizontal cross section taken substantially on the plane indicated by line 3-3 of FIGURE 2 and having parts removed for convenience of illustration;

FIGURE 4 is a fragmentary vertical view of the bag gripping device in alternate positions and taken on the plane substantially as indicated at line 2-2 of FIGURE 1;

FIGURE 5 is a front elevation of the bag gripping device shown in alternate position coincident to the alternate positions of FIGURE 4;

FIGURE 6 is a front elevation of one gripping plate in alternate positions;

2

FIGURE 7 is a fragmentary horizontal cross section taken substantially on the plane indicated by line 7-7 of FIGURE 2; and,

FIGURE 8 is a fragmentary cross section taken on the plane indicated by line 8-8 of FIGURE 2.

Referring first to FIGURE 1 of the drawing, I provide a fixed frame or standard generally indicated by the numeral 10, which supports the prime mover 11 constituting a source of rotary power. Frame 10 journals the spaced vertically disposed shafts 12 and 13. Bull wheel sprockets 14 and 15 are rotatable with the shafts 12 and 13 respectively and are disposed in a coincident horizontal plane with respect to each other. A power transmission 16 comprising a drive pulley 17, a driven pulley 18 and an interconnecting belt 19 transmit rotary motion from the source of power 11 to the shaft 13. An endless chain 20 is trained about the bull wheel sprockets 14 and 15 for movement about an endless path in the direction of arrow 21.

Bagging units 22 are supported by the frame 10 and are adapted for movement about the endless path by means of the chain 20 which is secured to each bagging unit 22 by means of the bracket 23 (FIGURE 2). An endless conveyor 24, here shown to be of the belt type, supplies articles or produce 25 continuously to the article bagging machine. (A return conveyor, not shown, may be supplied to remove any articles which may fall, back to the supply from whence the articles 25 are conveyed to the machine.)

It should be understood that the machine is capable of filling bags with any bulk or loose articles, and even though I describe the present invention as it respects produce and potatoes in particular, it is not my intention to limit the invention except insofar as it is limited by the appended claims.

It will be noted that the supply conveyor has a somewhat enlarged lateral dimension, thus it is not necessary to interrupt the movement of the bagging units 22 because sufficient produce will move from the conveyor 24 into the successive bagging units as they pass by this receiving station.

When a predetermined weight of produce is contained within a bag 26, carried by its respective bagging unit 22, means subsequently described are provided for deflecting the entrance into the bag of any additional produce 25. Subsequently to proper filling, at a predetermined discharge station indicated in general by the numeral 27, the bags are deposited upon a second conveyor 28 which removes them from the bag filling machine.

In FIGURE 2 of the drawing, specific portions of the fixed frame or standard 10 are disclosed but are not interconnected to avoid confusing the drawing with lines considered to be unnecessary to a complete understanding of the invention. It will be understood however, that frame 10 is a unitary structure similar to that disclosed in my Patent No. 2,763,109, and includes among other elements a bagging unit support and stabilizing rail 10a, cooperating tilting cams 10c and 10d, a weight sensing member 10b, and a frame guide bar 10e.

At the lower end of its first frame 30 the bagging unit is provided with a second bracket 23a to which is secured a second endless chain trained about spaced bull wheel sprockets carried by the shafts 12 and 13 concentric with the sprockets 14 and 15 and spaced therebelow. At its upper end the first frame 30 is provided with a cross head 31 at the inner end of which is disposed a stabilizing roller 32 disposed to roll on the inner face of the frame member 10a and on a horizontal plane. Spaced below the cross head 31 a support roller 33 disposed in a vertical plane rides upon the horizontal flange of the frame member 10a and supports the bagging unit 22 by means of the first frame 30. At its forward end the cross head 31

supports a scale 34 which may or may not have a visual weight indicating dial and which includes a weight-sensitive arm 35.

A floating frame 36 is pivotally secured at its upper and lower ends to the first frame 30 by means of the links 37—37 which are hingedly associated at opposed ends to the frames 30 and 36 by means of hinge pins 38—38. Floating frame 36 is bolted or otherwise secured at 39 to the weight-sensitive arm 35 of the scale 34. A movement damper 40 is secured at one end to the floating frame 36 and at the opposed end to the cross head 31 of the first frame 30.

The floating frame 36 has a pair of rearwardly projecting arms 41 which support a horizontally disposed shaft 42 upon which is pivotally supported a tilt frame 43. At its inner or rearward end the tilt frame is provided with a cam follower arm 44 which is adapted to cooperate with cam 10c to shift the arm from the full line position of FIGURE 2 to the dotted line position at which time simultaneously therewith, the roller 45 supports the forward or outer edge of the tilt frame 43 by contacting the cam 10d. Thus the tilt frame 43 is tilted at a predetermined location from the full line position of FIGURES 2 and 4 to the dotted line position of FIGURE 4, the purpose of which will be subsequently described and clearly understood.

The tilt frame 43 has an integral perpendicular post 46 which carries a keeper 47 with which a dog 48 interacts to form a latch 49 having an elongated bar 50 provided with an adjustable actuating foot 51. The latch bar 50 at its forward or outer end is pivotally secured to a material directing funnel 52 which is movable relative to the tilt frame from the full line position of FIGURE 2 to the broken line position thereof, by means of the pivots 53 carried by the tilt frame.

Material or produce advancing from the supply conveyor 24 follows the path indicated by the arrow 54 and is thus directed by the funnel into a bag 26 carried by the bag support forming a part of the tilt frame. As the material contained in the bag increases in weight, the floating frame 36 moves downwardly from its full line position toward the dotted line position whereupon the foot 51 strikes the frame member 10b or other fixed member on frame 10 or 30, lifting the dog 48 from the keeper 47 whereupon the spring 55 moves the funnel 52 to the broken line position.

Produce following the path 54 is then deflected away from entrance into the bag 26 by the funnel in the deflecting position which position is disclosed at 52a of FIGURES 1 and 2.

The tilt frame 43 is provided with articulate linkage, which may more particularly be understood by viewing FIGURE 3 of the drawings, and comprises pairs 56 of links pivotally secured to a member 43a of the tilt frame 43, and at their outer ends are pivotally secured to bars 57 which are maintained in parallel relationship thereby throughout their path of movement from the full line position of FIGURE 3 to and beyond the broken line position thereof.

Other articulate linkage 58—58 is swivelly connected to the bars 57 at 59—59 and the upper ends of the linkage 58 is swivelly connected at 60 to a rod 61 fixed with respect to the frame 36 at a point rearwardly of the swivel connection 59.

When by means of cams 10c and 10d, at the discharge station 27, the tilt frame 43 is tilted to the broken line position of FIGURE 3, the linkage 58 pushes the bars 57 outwardly or forwardly and linkage 56 causes them to withdraw toward each other as shown by the broken line position of FIGURE 3. Simultaneously therewith tilt frame 43 is brought back into the full line position with respect to the funnel 52 and the latch 49 is thereby reset so that when cams 10c and 10d release the tilt frame 43 and the entire bagging unit returns to the full line position shown in FIGURE 2, the funnel is held in the funneling position.

Secured to the tilt frame 43 by pivotal connection 62—62 are stop plate support arms 63 which carry at their outer ends the stops comprising stop plates 64 having articulate linkage 65 designed to maintain the stop plates in spaced parallel relationship. Adjustment bar 66 is loosely associated with one arm 63 at 67 and has spaced slots 68 which cooperate with a pin 69 on the other arm 63 for adjusting the spacing between the stop plates 64.

Inspection of FIGURE 5 will reveal that the bars 57 are provided with gripping plates 70 which cooperate with the stop plates 64 to grip the marginal edges of a bag 26 therebetween. When by tilting the tilt frame 43 the bars 57 are moved to the broken line position of FIGURES 3, 4 and 5. The bag 26 is released to drop from the bagging unit 22. Simultaneously therewith a locking bar 71 releasably secures the clamping plates 70—70 in adjacency, as shown in FIGURES 5 and 8, so that the tilt frame 43 may not lower by reason of the inability of the bars 57 to spread to full line position of FIGURE 3. However, when an operator places a bag about the gripping plates 70, the spring loaded presser foot 72 is struck by the bag and shifts the latch bar 71 from a full line position to the dotted line position of FIGURE 8 thus releasing the gripping plates 70 to spread to the position shown in FIGURE 5 wherein the bag is gripped therebetween as the tilt frame 43, by gravity, returns to the full line position.

The gripping plates 70 may be applied to the ends of the bars 57 as shown in full line position at 56 wherein the sleeves 70a encircle the bars or the outer wall of the sleeves may be disposed in the slot 57a to position the gripping plates 70 inwardly as shown by broken lines of FIGURE 6, at which time the adjusting bar 66 is adjusted to bring the stop plates 64 toward each other against the action of the springs 73 to coincide with the spacing of the gripping plates 70.

The frame 43 is supported by the gripping plates 70 striking the faces of the stop plates 64 which prevent further spreading movement of the bars 57. Therefore it will be seen that gripping pressure between the plates 70 and 64 is coincident to the weight supported by the tilt frame and therefore increases as the weight of material in a bag 26 held by the gripping jaws 64—70 increases.

It will be understood that the cams 10c and 10d are not required on the frame 10 for more than just a portion of the path over which the bagging unit 22 travels at the discharge station 27.

Having thus described my invention, I claim:

1. A bag holder comprising a weight depressable frame; said frame having a pair of flat stop plates disposed in parallel planes and opposed to each other and each constituting one element of a bag gripping jaw; means supporting said plates for manually adjustable relative spacing; a pair of gripping plates intermediate said flat plates; means interconnecting said frame and said gripping plates for causing the weight of said frame to outwardly bias said gripping plates toward face to face engagement with said flat plates and each together with a flat plate constituting a gripping jaw, whereby a bag wall disposed between said cooperating plates is gripped thereby; and means upon upward movement of said frame for withdrawing said gripping plates to receive the mouth of the bag in encircling relationship with respect to said gripping plates.

2. A produce bagging and weighing machine comprising a conveyor supplying produce continuously; a fixed frame; a powered mobile bag support carried by said frame for continuous movement about a predetermined endless path and at one point disposed to receive produce from said conveyor; a bag holder carried by said bag support and releasably holding a bag to receive produce from said conveyor; means sensitive to weight of produce in said bag for deflecting produce advancing from said conveyor away from said bag when a predetermined weight of produce is supported in said bag;

5

and means for releasing said bag from said support at a predetermined point along said path.

3. A bagging unit for an article bagging machine comprising a first frame adapted for continuous movement about a predetermined path; a floating frame pivotally carried by said first frame for relative vertical movement; a scale carried by said first frame and having a weight depressible scale actuating arm supporting said floating frame; said floating frame having a bag holder releasably holding a bag to receive articles; and means on said floating frame sensitive to the weight of articles in said bag for precluding entrance of additional articles into said bag after a predetermined weight is supported by said floating frame.

4. A bagging unit for an article bagging machine comprising a first frame adapted for continuous movement about a predetermined path; a floating frame pivotally carried by said first frame for relative vertical movements and supported upwardly of its lowest movement limit by a weight-sensitive arm; said floating frame having a bag holder releasably holding a bag to receive articles; a funnel pivotally carried by said floating frame for movement alternately to a deflecting position and a funneling position whereby the articles are directed away from and into said bag respectively; yieldable means urging said funnel to said deflecting position; a latch carried by said floating frame for releasably maintaining said funnel in a funneling position; and means effective to release said latch when a predetermined quantity of articles are contained in said bag, whereby the funnel is moved to said deflecting position by said yieldable means.

5. A bagging unit for an article bagging machine comprising a first frame; a second frame pivotally carried by said first frame for relative vertical movements and yieldably supported upwardly of its lowest movement limit by weight-sensitive means; a tilt frame on said second frame for vertical tilting movements between a horizontal and an angular position; a bag holder carried by said tilt frame and movable alternately to a bag holding position, to receive articles when said tilt frame is horizontal, and a bag releasing position, whereby to

6

release a bag when said tilt frame is in the angular position; a funnel pivotally carried by said tilt frame for movement alternately to a deflecting position and a funneling position, whereby articles are respectively directed away from and into a bag held by said bag holder; yieldable means urging said funnel to said deflecting position; latch means in said second frame releasably maintaining said funnel in the funneling position; means sensitive to predetermined weight on said bag holder effective to release said latch for effecting movement of the funnel to said deflecting position; and means effective to release a bag from said holder and reset said latch when the tilt frame is tilted from the horizontal position to the angular position and returned to the horizontal position.

6. A bag gripping device wherein the gripping pressure increases proportionately to the weight of the bag and its contents comprising: a pair of stop plates disposed in spaced parallel planes and opposed to each other; a pair of gripping plates intermediate said stop plates and adapted to cooperate one with each stop plate for gripping a bag wall therebetween; said stop and gripping plates being carried by a tilt frame pivotally supported for vertical tilting movement; and an articulate linkage supporting said gripping plates and carried by said frame and operable to spread said gripping plates toward their gripping positions during downward tilting movement of said frame and to withdraw said gripping plates from said gripping position during upward tilting movement of said frame.

References Cited in the file of this patent

UNITED STATES PATENTS

619,834	Nickerson	Feb. 21, 1899
936,169	Rulison	Oct. 5, 1909
2,691,476	Petrea	Oct. 12, 1954
2,705,585	Wise	Apr. 5, 1955
2,907,153	Toles	Oct. 6, 1959

FOREIGN PATENTS

325,595	Great Britain	Feb. 24, 1930
347,446	Great Britain	Apr. 30, 1931