

Sept. 18, 1956

D. B. BAKER
BAGGING MACHINE

2,763,109

Filed July 13, 1953

4 Sheets-Sheet 1

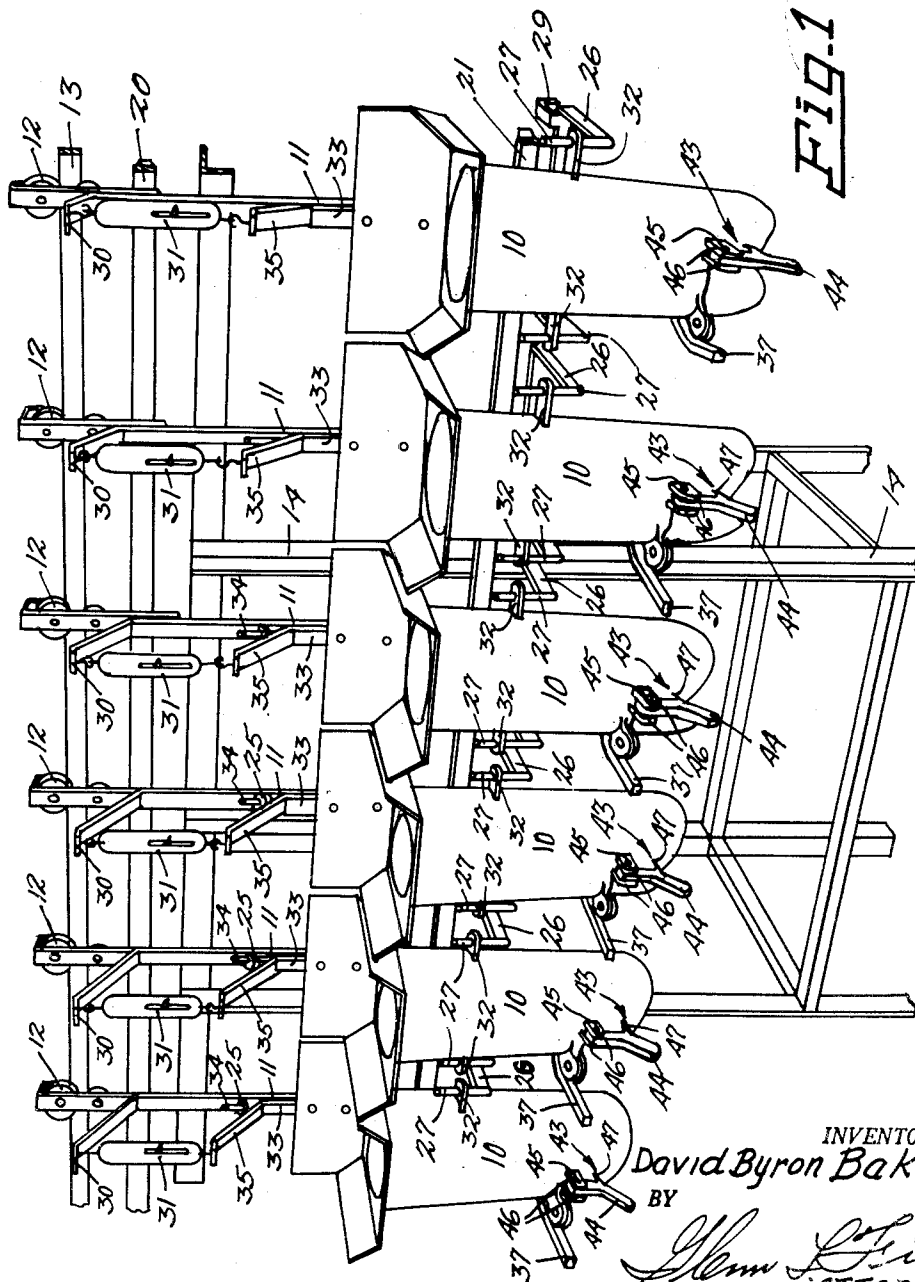


Fig. 1

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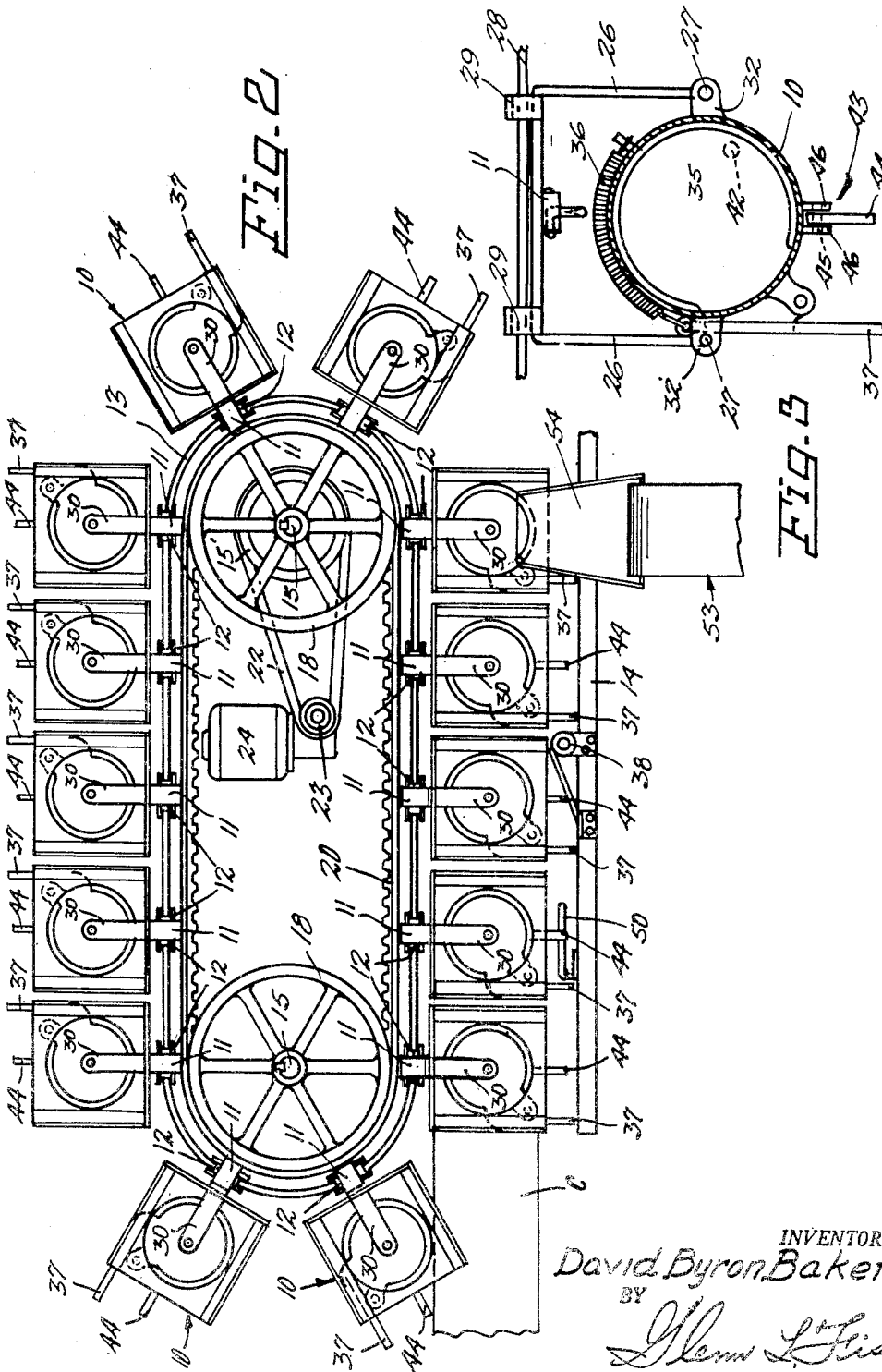
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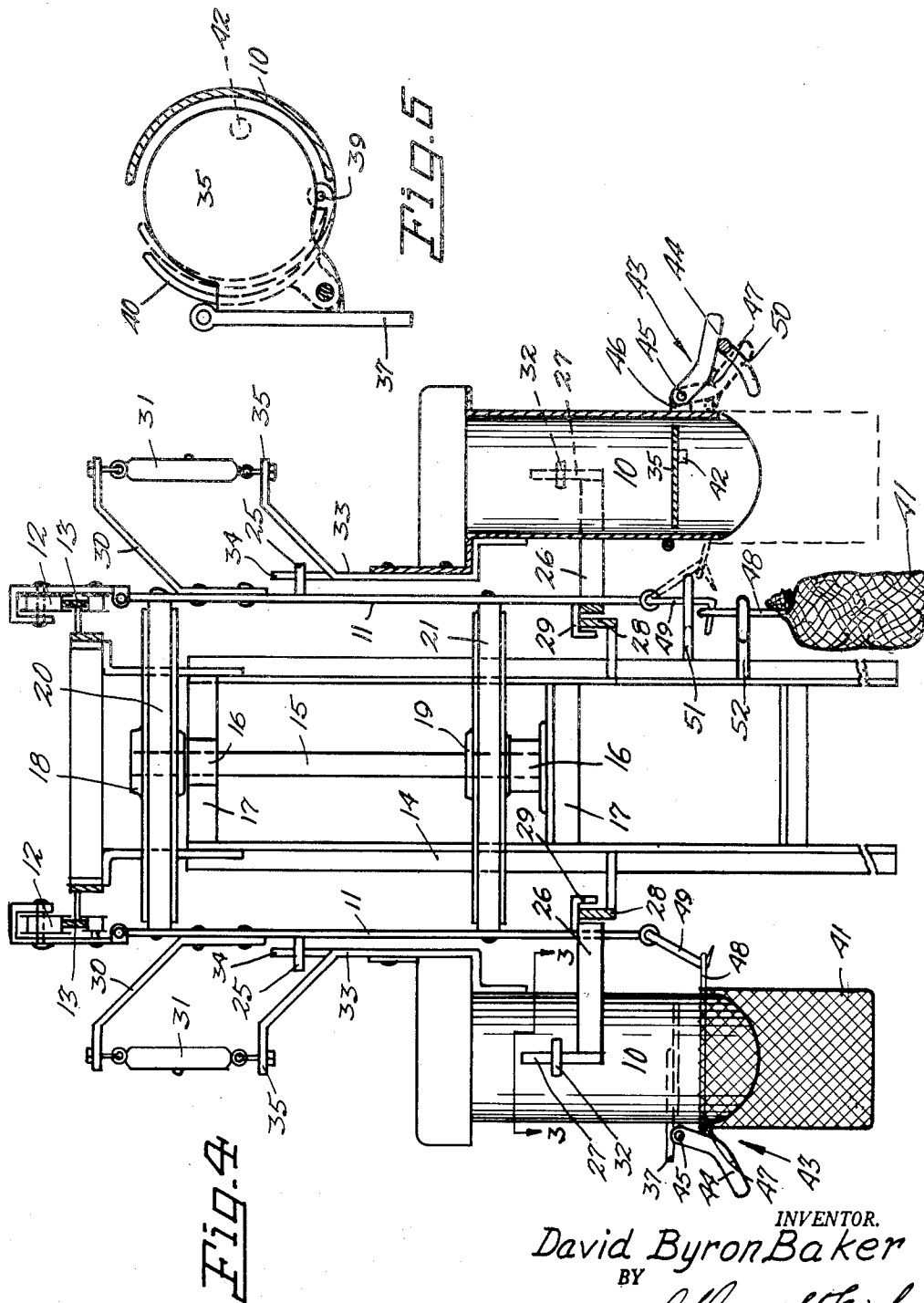
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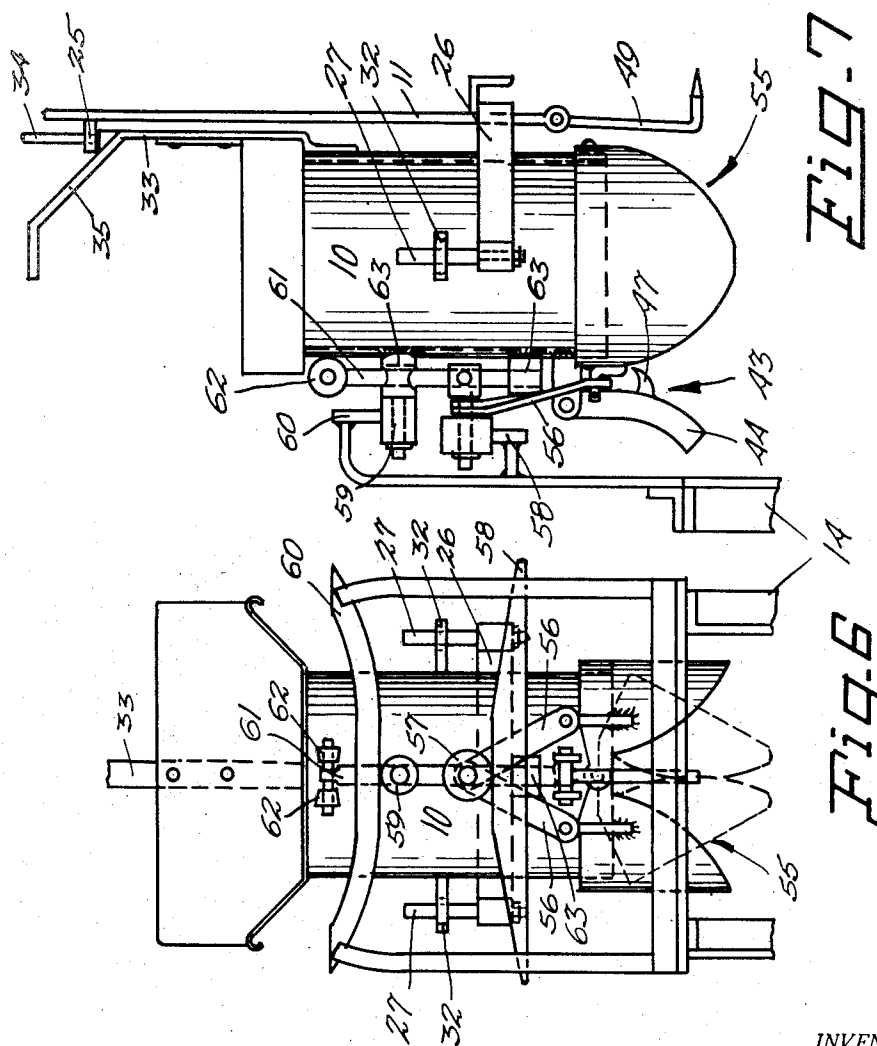
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BAGGING MACHINE

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5 Claims. (Cl. 53—135)

This invention relates to merchandise packing machines and more particularly to a bagging machine.

One object of the invention lies in the provision of a bagging machine which has a plurality of tubular receptacles each supported for movement about an endless pre-determined path and adapted to receive and support a merchandise bag having its mouth in encircling relation about the lower open end of the receptacle and which after being filled with merchandise is automatically released and its open mouth secured.

Another object of the invention lies in the provision of multiple vertical tubular receptacles movable about an endless pre-determined path and having closures normally closing the lower end of each receptacle and automatically movable to open positions whereby the contents of the receptacles are discharged into bags having their mouths encircling the open lower ends thereof.

Another object of the invention lies in the provision of a bagging machine having scale supported receptacles wherein the weight of merchandise supported therein is shown upon the scales thus enabling an operator to control the quantity of merchandise to be bagged by sight reading the scale and adding or removing merchandise as required prior to its discharge into the bags.

Another object of the invention lies in the provision of a bagging machine having receptacles, each being provided with an automatically releasable fastener carried at the lower end of the receptacle for initially supporting a bag with its mouth encircling said lower end of the receptacle and adapted to automatically release the bag at a predetermined point along the path of movement of the receptacle.

These and other objects of the invention will become apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification, and in which like numerals are employed to designate like parts;

Figure 1 is a view in perspective showing a bank of receptacles and associated elements of a bagging machine constituting the subject matter of the present invention;

Figure 2 is a top plan view of a preferred embodiment of the bagging machine;

Figure 3 is a horizontal cross section through one receptacle as at line 3—3 of Figure 4;

Figure 4 is an elevation showing one end of the machine and disclosing the track in vertical cross section;

Figure 5 is a horizontal cross section taken through one of the receptacles immediately above its movable closure;

Figure 6 is a side elevation of a modified receptacle; and

Figure 7 is a side elevation of the modified receptacle taken on a plane rotated 90 degrees from that of Figure 6.

Referring now more particularly to the drawings, I have shown a bank of vertical tubular receptacles 10, each having open upper and lower ends constituting receiving and discharge mouths. Each said tubular re-

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ceptacle 10 is supported for vertical movement with relation to its mobile supporting frame 11 movably carried upon rollers 12 disposed to roll upon an endless substantially elliptical track 13.

The track 13 is supported on a frame 14 which rests upon a supporting surface or floor. The frame also carries vertically disposed longitudinally spaced shafts 15, which are rotatably carried in bearings 16 supported on cross braces 17 of the frame 14.

Each shaft 15 is supplied adjacent its upper and lower ends with horizontally disposed pulleys 18 and 19. Endless belts 20 and 21 are trained about the pulleys 18 and 19 and the companion pulleys 18 and 19 of the opposed shaft 15, thus adapting the belts 20 and 21 for movement about an endless horizontal substantially elliptical path. One shaft 15 is provided with a drive pulley 15' about which a belt 22 is trained. The belt 22 is driven from a powered pulley 23 energized by the geared motor indicated by the numeral 24.

The mobile frames 11 are each secured to the upper and lower belts 20 and 21 by means or rivets and are supported in vertical position for movement with the belts about the endless path. Each mobile frame 11 is provided with a horizontally extending ear 25 substantially mid-way its length. Adjacent to the lower end of each frame 11, I provide a horizontally extending U-shaped yoke 26. The ears 25 and yokes 26 extend outwardly of the frame 14, and the yokes 26 have upwardly disposed pins 27 carried by their outer ends.

Mid-way the vertical length of each receptacle 10, I have provided diametrically opposed outwardly extending apertured ears 32, which are adapted to receive the upwardly disposed pins 27 and permit vertical reciprocation of the tubular receptacles thereon.

A second stabilizer rail 28 having a plan shape commensurate with that of the rail 13 is carried by the frame 14 and cooperates with hooks 29 carried by each frame 11 to aid in maintaining the frames 11 in vertical positions. Adjacent to its upper end each mobile frame 11 is provided with a support arm 30. Each support arm suspends a weight scale 31 which supports a companion tubular receptacle 10.

Vertically extending bars 33 are secured to the upper end of the tubular receptacles 10 and have upwardly extending pins 34 which reciprocally pass through the ears 25 of mobile frames 11. Hanging brackets 35 are carried by the bars 33 and are secured to the lower end of the weight scales 31. It will thus be seen that the tubular receptacles 10 and the contents which for the time being may be therein will be supported by the weight scales 31, whereby the weight of the material in the receptacles may be ascertained by sight reading the scales.

To selectively maintain the material or merchandise within each receptacle 10, I have provided a movable closure 35 which comprises a horizontally disposed plate pivoted externally of the receptacle 10 and urged by resilient means 36 into closing relation with the lower end of the receptacle 10. Each closure 35 is controlled by means of a lever 37 which extends outwardly from the receptacle 10 on a horizontal plane and is adapted to strike an abutment wheel 38 thus effectively moving the closure 35 from its normal closing relation with the receptacle to an open position wherein the merchandise within the receptacle is discharged from the open lower end.

Each receptacle is preferably circular in cross section as shown in Figure 3; however, it may be of other shape if desired. To facilitate placing the mouth of a merchandise bag 41 in encircling relation to the lower end of the receptacle, I hinge one side portion 40 of the lower end of the receptacle to the remaining portion by means of a vertically extending hinge 39, thus permitting the hinged portion 40 to move toward and away from the

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rigid portion between the full and the dotted line positions shown in Figure 5, and thereby making the mouth smaller when in the broken line position. To prevent the hinged portion 40 from interfering with the discharge of merchandise from the lower end, I provide a depending boss 42 on each closure 35 which strikes the portion 40 shifting it to the outer full time position as the closure 35 is moved to its open position.

Inspection of Figure 4 will show the means by which bags 41 are secured in merchandise receiving relation to the receptacles 10, wherein each bag 41 is supported by a fastening means 43, carried by the lower end of a tubular receptacle. The fastening means 43 comprises a lever 44 pivotally united at 45 to horizontally extending ears 46, supported on the receptacle and adapting the lever 44 for vertical tilting movement away from the receptacle. A sharp claw or point 47 is carried by each lever and is movable arcuately about the pivot 45 into position against the outer face of receptacle 10 where it is adapted to support the bag.

The bag 41 is of the type having a draw string 48 and this draw string is secured to a hook 49 which is pivotally carried by the lower end of frame 11. It will thus be seen that as the lever 44 is vertically tilted away from the receptacle 10 to move the claw or point 47 out of grasping or hooking relation to the upper edge of the bag 41, the bag by means of the weight of merchandise disposed therein may drop and hang by the draw string on hook 49 wherein the draw string draws the mouth of the bag into a closed position.

To effect movement of the lever 44 to a releasing position, I provide a cam 50, carried by the frame 14 and adapted to strike the lever and tilt it vertically to release the bag. As the device progresses about its path, the bags 41 are each carried over a belt type conveyor C and are subsequently released to drop upon the conveyor where they are transported to another place for further processing.

Frame 14 carries a pair of cams 51 and 52 which cooperate to draw the hook 49 in one direction as the draw string 48 is moved in the opposite direction, thus releasing the draw string from the hook 49 and permitting the bag 41 to drop upon the conveyor.

The tubular receptacles 10 of the present invention are filled by means of a conveyor, shown in Figure 2 and indicated by the numeral 53, which is timed to supply approximately 10 lbs. of potatoes or other merchandise to the receptacle during the time which elapses as each individual receptacle passes the mouth or discharge chute 54 of the conveyor 53. However, an operator will be positioned to add or remove additional merchandise as is shown necessary by each weight scale 31. Obviously, as many loading and discharge stations as are desired about the endless path, may be supplied, and it is not my intention to limit the scope of this invention to any particular size, quantity or type of merchandise which is to be bagged by the present machine.

Referring now to Figures 6 and 7 of the drawing, I have shown a modified type of closure for the lower open end of the receptacles 10. The closure in this particular instance is shown to be of the clam shell type, indicated in general by the numeral 55, having its two half segments pivotally united to the receptacle 10, diametrically thereof, and movable from the open position shown in full line of Figure 6 to the closed position shown in dotted line of Figure 6.

To move the clam shell closure 55 to the open position, I have provided a pair of links 56 pivotally united to each clam shell at a point remote from its pivot to the receptacle. The links carry at their upper end a roller 57 adapted to cooperate with a cam 58 supported on the frame 14 of the machine. As the roller strikes the cam 58 and is lifted, the segments of the clam shell 55 are moved to the open position.

It is necessary to limit the upward movement of the

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receptacle 10 during this function to prevent the lifting motion from raising the receptacle also, and I therefore provide a roller 59 fixed relative to the receptacle 10 and adapted to cooperate with an inverted cam 60, which secures the receptacle 10 against upward movement during the opening of clam shells 55.

To stabilize roller 57, I provide a vertically shiftable reciprocating rod 61 having a pair of horizontally spaced vertical rollers 62 on its upper end and which bear against the forward face of the receptacle 10. The roller 57 has its journal fixed on the shaft and as the roller 57 is lifted by cam 58, the rod 61 moves vertically in upper and lower guides 63, carried by the receptacle 10.

It will be obvious to one skilled in the art that the speed of operation of the machine may be such that great or small quantities of materials may be bagged by use of the machine.

I do not wish to limit myself to the conveyor means of loading the receptacles nor to the conveyor means of removing the loaded bags after release from the receptacles, but wish to claim the invention broadly as defined in the instant in view of claims and the prior art.

Obviously, my device may be adapted to handle paper and plastic bags without the drawstrings if desired and to accomplish this, I provide two spring steel clips at the center and top edges of each cam section to hold the empty bags until the weight of the material therein becomes such as to cause them to drop onto the conveyor belt therebelow.

Having thus described my invention, I claim:

1. A bagging machine comprising upper and lower endless drive means trained about horizontally disposed pulleys rotatable about spaced vertical axes; horizontal support rails carried by a supporting frame and commensurate with said drive means in plan shape; a plurality of mobile frames carried by said rails for movement thereon; said mobile frames being secured to said drive means and motivated thereby; a vertically disposed open ended tubular receptacle supported on and movable horizontally with each said mobile frame and adapted for vertical movement relative thereto; a weight scale carried by each said mobile frame and dependently supporting its companion receptacle for determining the weight of contents in the receptacle; a movable closure for the open lower end of each receptacle; means securing a bag having a drawstring closure in encircling relation to the open lower end of said receptacle with the drawstring separately fastened to the frame; and means actuated by the movement of each receptacle along said rails for opening said closures to discharge material from the receptacle into the bags; and other means for subsequently releasing the bags, whereby the bags may drop by weight to hang on their drawstrings and thereby close the bags.

2. In a bagging machine, a mobile frame movable about a predetermined endless path; a support arm on the frame; a material receptacle comprising a tubular body having open upper and lower ends and carried by said mobile frame and shiftable vertically thereon; a weight scale suspended from said support arm and supporting said receptacle for visually determining the weight of material contained in said receptacle; automatically operable means for releasably securing a bag having a drawstring in material receiving relation to the open lower end of said receptacle; means normally closing the lower end of said receptacle and automatically operable to discharge said material into said bag at a point on said path; and a fastening means disposed adjacent to the lower end of said receptacle for securing the drawstring of said bag to close said bag upon release of the bag from the bag securing means.

3. A bagging machine comprising a plurality of interconnected vertically disposed open ended receptacles adapted for unitary powered horizontal movement about a predetermined path; a scale for each receptacle, each of

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said receptacles being dependently supported from one said scale for determining the weight of contents in the receptacle; a movable closure normally closing the lower end of each said receptacles and movable to an open position at a predetermined point along the path of movement; a fastener carried at one side of each receptacle for securing the drawstring of a bag with its mouth telescopically receiving the lower marginal end of said receptacle; an automatically releasable fastener carried at the opposed side of a receptacle for initially supporting the bag and adapted to release the bag at a predetermined point along said path of movement, whereby the bag by gravity drops and the weight of the contents draws the string hanging on the first-named fastener to close the bag; and means for automatically releasing the first-named fastener to release the drawstrings subsequent to the closing drop.

4. A bagging machine comprising a plurality of interconnected vertically disposed tubular receptacles open at upper and lower ends and adapted for unitary powered horizontal movement about an endless predetermined path; a scale for each receptacle, each of said receptacles being dependently supported from one said scale for determining the weight of contents in the receptacle; a closure normally closing the lower end of each said receptacle and movable to an open position at a point along the path of movement; a drawstring fastener carried at one side of the open lower end of each receptacle and adapted to initially secure the drawstring of the bag with the bag mouth encircling the lower end of said receptacle; and a releasable bag fastener on the receptacle and adapted to release a bag subsequent to the opening of said closure, whereby the weight of the contents discharged from the receptacle into a bag will

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cause the bag, upon release, to drop and hang by the drawstring.

5. A bagging machine comprising a plurality of interconnected vertically disposed tubular receptacles open at upper and lower ends and adapted for unitary powered horizontal movement about an endless predetermined path; a scale for each receptacle, each of said receptacles being dependently supported from a scale for determining the weight of contents in the receptacle; conveying means adapted to discharge material into each receptacle through its open upper end; a closure for the lower end of each said receptacle movable at a predetermined point in said path to an open position; means on each receptacle for releasably holding a bag having a drawstring to receive material from said receptacle; a drawstring fastener movable with each said receptacle and adapted to releasably secure the drawstring of a bag; means for releasing the bag holding means at a predetermined point in said path subsequent to the opening of said closure, whereby the bag may drop to hang from its drawstring; means for actuating said drawstring fastener subsequent to the release of said bag holder to free the drawstring; and a conveying means disposed to receive the bags released from each said receptacle.

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