

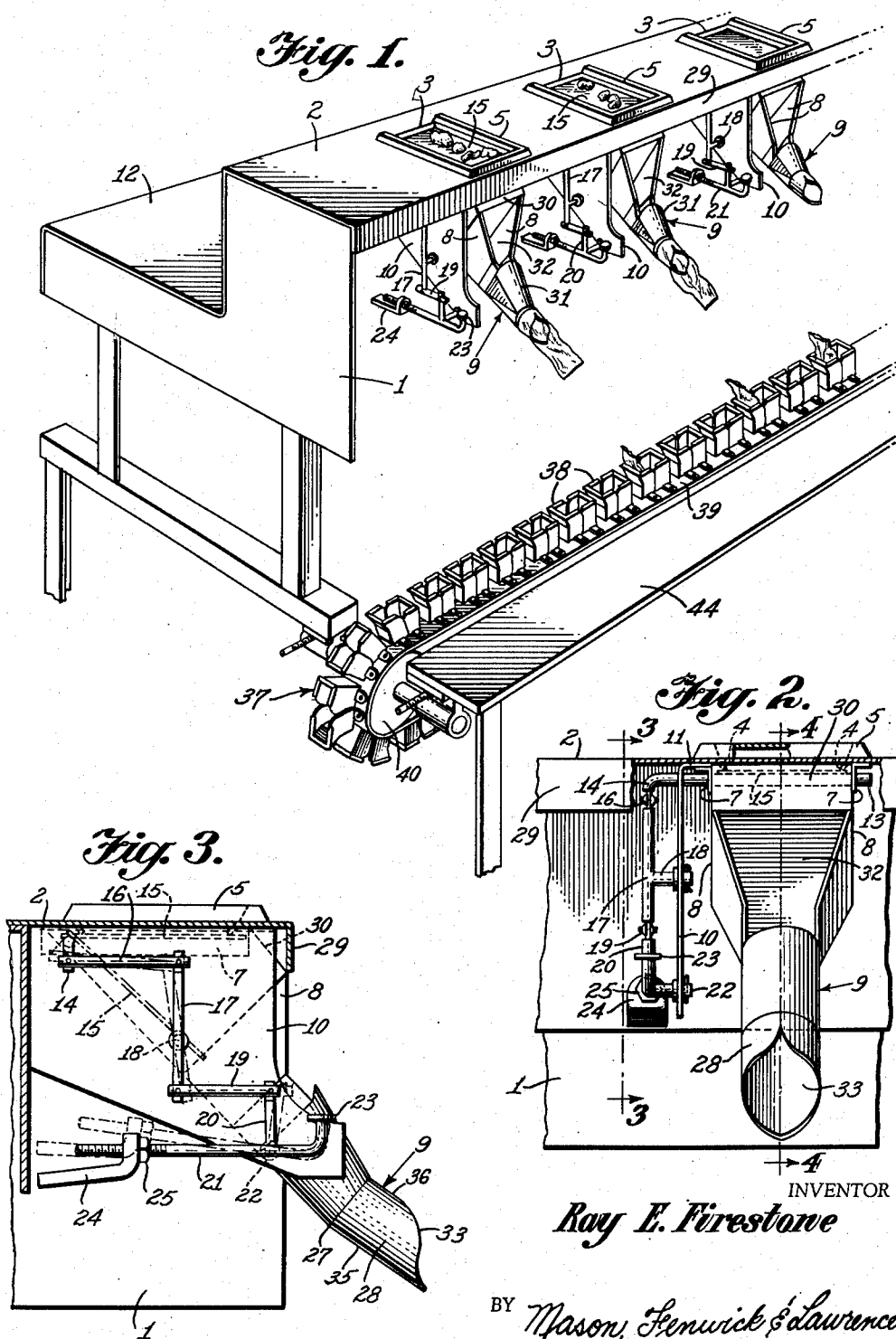
Dec. 30, 1952

R. E. FIRESTONE
BAG FILLING MACHINE WITH MOVABLY
MOUNTED FUNNEL CLOSING MEMBER

2,623,671

Filed Oct. 4, 1950

2 SHEETS—SHEET 1



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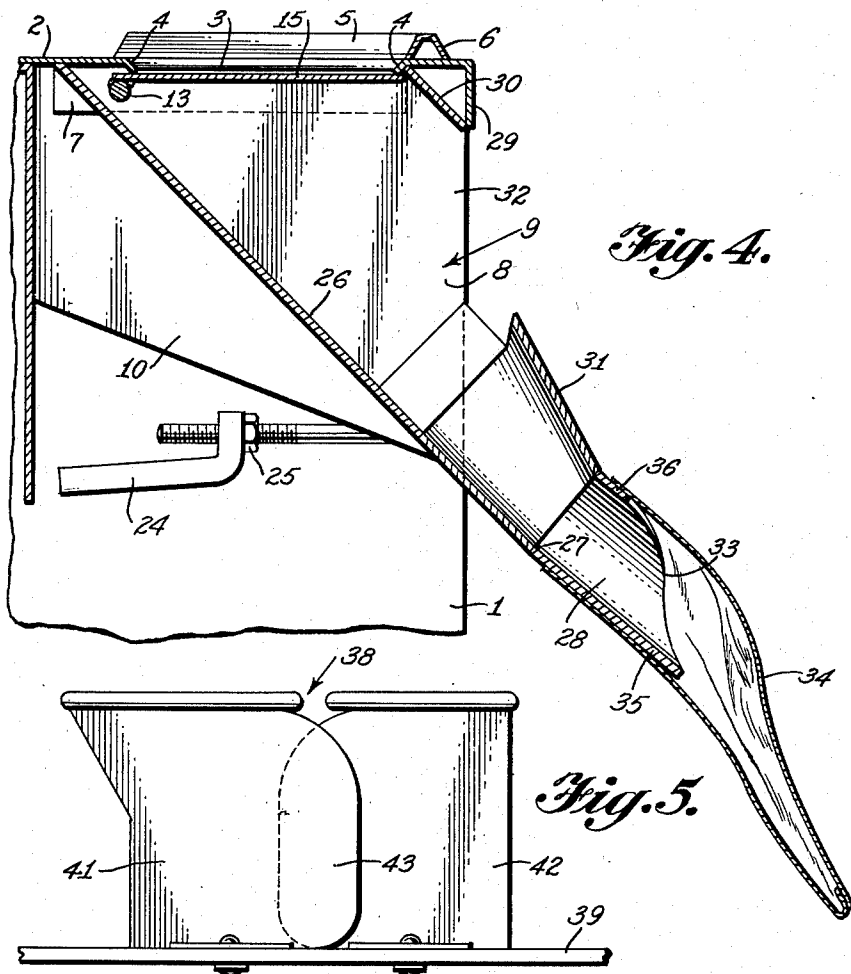
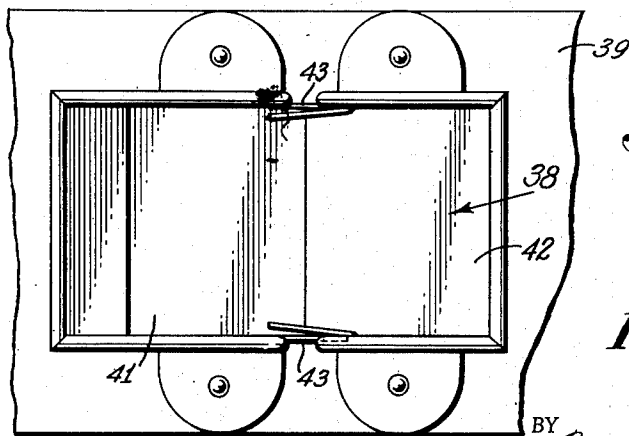


Fig. 6.

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BAG FILLING MACHINE WITH MOVABLY
MOUNTED FUNNEL CLOSING MEMBER

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6 Claims. (Cl. 226—59)

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This invention relates to a dispensing funnel such as will ordinarily be employed in packing establishments, in plurality, in association with a conveyor, for filling receptacles from said funnel in proximity to said conveyor, which receptacles are then in any desired manner transferred to the conveyor.

The dispensing funnel of the present invention is of general application, since many commodities are of a type which it is capable of handling efficiently, but the illustrated embodiment is one that has been tried out in a plant for packing eviscerated poultry, and the invention will be described in connection with this specific use. In such a plant, a certain number of birds are completely dressed, wrapped, and placed in a suitable container ready to be refrigerated and shipped. Since the consumers wish certain of the giblets, such as heart, liver and gizzard, such an assortment is packaged in cellophane bags, and the proper number of bags, one for each bird, are placed in the container with the birds and frozen with them. The retailer in selling the poultry places one of the bags of giblets within the body cavity of each bird sold.

One of the objects of the present invention is to provide a dispensing funnel which includes a tilting plate upon which the giblets are placed, with means for tilting the plate at will, generally after a bag has been positioned at the mouth of the funnel to receive the giblets. In a variant of the use of the invention, it is an object to have the tilting plate automatically dump a predetermined weight of the giblets into the funnel.

Another object of the invention is to provide a dispensing funnel having a sight opening in the front, which also serves to give access to relieve clogging, said funnel having a continuous surrounding wall in a zone just above the mouthpiece, flared in an upward direction, affording a support over which the mouth of a bag can be more or less snugly fitted and held during the filling act.

Still another object of the invention is to provide a dispensing funnel with tilting plate as described, having an adjustable counterbalance for resisting the tripping mechanism and normally holding the tilting plate in contents-supporting position, which counterbalance may be permitted to yield responsive to the weight of the supported

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commodity for automatically dispensing a determined weight of the commodity.

A further object of the invention is the positional relationship of one or more of the dispensing funnels with respect to an underlying conveyor, such that bags filled at the mouths of funnels may be permitted to descend gravitationally into cups carried by said conveyor, and translated to a common discharge point.

Another object of the invention is to provide a flexible continuous belt conveyor having cups secured to the belt, said cups each comprising separate lapping halves, which construction permits each half to assume independently a radial position when it goes around the pulley at the end of the conveyor.

Other objects of the invention will appear as the following description of a preferred and practical embodiment thereof proceeds.

In the drawings throughout the figures of which the same reference characters have been used to denote identical parts:

Figure 1 is a perspective view of a table and conveyor, the table being equipped with a plurality of dispensing funnels, all embodying the principles of the subject invention;

Figure 2 is a front elevation of one of the dispensing funnels, partly in section;

Figure 3 is a cross-section taken along the line 3—3 of Figure 2;

Figure 4 is a cross-section on an enlarged scale, taken along the line 4—4 of Figure 2;

Figure 5 is a side elevation of a portion of the conveyor, showing one of the cups;

Figure 6 is a top plan view of the cup shown in Figure 5.

Referring now in detail to the several figures, the numeral 1 represents a suitable table preferably made from stainless steel. The top face 2 of the table lies in a horizontal plane and is provided with the rectangular openings 3, shown in Figure 1. In Figure 2 it is to be noted that the marginal edge portions 4 which surround the openings are depressed at an angle, their lower free edges being in a horizontal plane. The openings 3 are surrounded by the rectangular three-sided flange 5, the cross-section 6 of which, best shown in Figure 4, is of inverted V form, sloping divergently downward both inside and out. This facilitates thorough cleaning of the table 1, in-

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cluding the structure associated with the openings.

Figure 2 shows that certain structure is secured to the under side of the table adjacent the opening. The securing means will ordinarily be by welding. At the sides of said opening are secured the angle members 7, providing downwardly extending flanges. The sides 8 of the funnel 9 are secured to the members 7. Brackets 10, individual to the dispensing funnels, are arranged adjacent said funnels at one and the same side of each, each of said brackets having an angularly turned flange 11 at the top, which is secured to the under side of the table. The planes of the brackets 10 extend transversely to the length of the table 1. Said brackets are designed to support the linkage through which the operation of the tilting table is effected.

Referring now to Figure 1, it will be noted that the back part of the table 1 is formed as a level shelf 12, the purpose of which is to support pans containing quantities of the giblets. Girls standing behind the table put giblets in the respective dispensing funnels, taken from the said pans.

Referring to Figure 2, it will also be noted that a shaft 13 is journaled to rotate in bearings in the flanges of the angle irons 7, and that said shaft passes through an aperture in the brackets 10, and has a downwardly extending end 14. A flat tilting plate 15 is riveted or otherwise secured to the upper side of the shaft 13, said tilting plate when in its normal uppermost position contacting the edge portions 4, and closing the funnel. The shaft 13 is normally maintained in position to keep the funnel closed by the following linkage. A transverse rod 16 is pivotally connected to the down turned end 14 of the rod 13, and to one end of the rocking lever 17. Said rocking lever has an extension 18 at an intermediate point which is journaled in the bracket 10, and forms a turning fulcrum for said rocking lever. The opposite end of said rocking lever is pivotally connected to the link 19, which connects to the intermediate upstanding arm 20 of another rocking lever 21. The last mentioned rocking lever has an extension 22 pivotally mounted in the bracket 10, affording a fulcrum of oscillation for said rocking lever. A finger depressible key 23 is at one end of said rocking lever and when depressed rocks said lever in a clockwise direction. The opposite end of said lever is threaded and carries a counterweight 24, which adjustably screws thereupon and rocks said lever in a counterclockwise direction when the key 23 is released, restoring said key to normal position. A lock nut 25 maintains any set adjustment of said weight.

In operation, the weight 24 normally keeps the tilting plate 15 closed even when the giblets are upon it. To operate, the key 23 is depressed, moving the arm 20 clockwise, drawing the link 19 forward, oscillating the rocking lever 17 counterclockwise, moving the rod 16 backward, and tilting the rod 13 in a clockwise direction, dipping the tilting plate 15 to the broken line position shown in Figure 3. The contents of the plate slide off into the funnel 9. When the key 23 is released, the weight 24 re-closes the tilting plate 15.

The floor 26 of the funnel 9 inclines downward in a uniform planiform slope as far as the point 27, which represents the juncture of the mouthpiece 28 with the rest of the funnel. The front of the table 1 has a downwardly extending flange 29, extending throughout its length, which con-

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ceals the upper front wall 30 of the funnel, excepting the edge portion which appears below said flange in Figure 1. Below the front wall 30 the funnel is open in the front as far as the cuff portion 31, forming a window 32 through which the descent of the giblets from the tilting plate through said funnel can be observed, and giving ample access to the interior of said funnel to relieve any clogging which may occur. The cuff portion 31 is a surrounding closed wall and is divergently conical in an upward direction forming a lip confronting the open front of the funnel which serves as a splash shield. The mouthpiece 28 which is joined to the lower end of the cuff portion 31 has an inclined downward opening 33 at its front, which faces in an upward direction.

The bags 34 which are provided for use with the dispensing funnel are relatively narrow and are employed by slipping the mouth of the bag over the mouthpiece and upwardly upon the cuff portion 31, until the mouth of the bag snugly fits the cuff portion. In operation a skilled worker will not find it necessary to pull the bag up so far as to make it hug the cuff portion. The lower wall 35 of the mouthpiece extends into the bag a greater distance than the upper wall 36. This permits the lower wall to support the weight of the giblets until most of them have come out from the mouthpiece into the bag beyond the upper wall 36. This prevents the weight of the first part of the giblets which enters the bag, from pulling the bag gravitationally into a vertical position, thus bringing the forward and back walls of the bag together and closing it against the admission of the rest of the giblets.

In operation, girls stand both behind and in front of the table 1. The conveyor 37 is directly beneath the mouthpiece of the dispensing funnels so that the girls who are working in front of the table are in front of the conveyor also. Those back of the table have the pans of giblets from which the desired assortment of giblets, for example, heart, liver and gizzard are placed upon the respective tilting plate 15. It will be noted that the flange 5 is omitted from the side of the opening nearest the rear of the table, so that the girls behind the table may have some giblets lying on the table in front of the openings, ready to slide upon the tilting plate as soon as the latter has returned to its closing position. The girls in front who are watching the tilting plates, place a bag over the mouthpiece, holding it upon the cuff portion 31, and when the giblets are on the tilting table the girl in front presses the key 23 and drops the contents of the tilting plate into the funnel and into the bag. The bag is then quickly removed and lowered into one of the cups 38 of the conveyor, with a single movement of the arm, and without any excessive motion or energy. Some commodities, such for example as peanuts, will settle readily into the bottom of a bag so that it could be dropped upon an underlying belt without the provision of cups, and remain in a more or less upright position, at any rate without spilling its contents. However, giblets act differently. They do not settle into the bottom of the bag but their weight is distributed substantially throughout its length, so that in the absence of the cups the filled bags would fall over and some of the giblets slide out. The purpose of the cup is to retain the bags in upright position until the bags reach the far end of the conveyor, at which point they are suitably removed from the cups and closed.

As shown, the conveyor is a simple endless

leather belt 39, which runs around pulleys 40 at the ends of the conveyor. The cups are riveted directly to the belt. Since the cups have appreciable width, they would not follow the curvature of the belt at the ends where it runs over the pulleys, but would cause portions of the belt to run stiffly tangent to the pulleys, resulting in undue wear on the belt, and impairing the riveted connections between the cups and belt. To avoid this difficulty the cups are each made in two halves 41 and 42 (see Figure 5), the sides of which lap, as is indicated at 43. When this cup rides about the pulley, each half of the cup is free to assume a radial position, thus taking the strain from the belt as well as from the riveted connections between the cup halves and the belt.

The shelf 44 is intended to afford support for means, not shown, for holding a supply of bags.

This invention as shown and described, without any structural change whatever, can be employed to discharge definite weights of giblets into the bags by simply foregoing the operation of the key 23 and relying upon the amount of giblets placed upon the tilting plates 15 to overbalance the weight 24.

While I have in the above description disclosed what I believe to be a preferred and practical embodiment of the invention, it will be understood by those skilled in the art that the specific details of construction and arrangement of parts are by way of example and not to be construed as limiting the scope of the invention.

What I claim as my invention is:

1. Dispensing apparatus comprising a tubular funnel generally tapering in a downward direction, terminating in a mouthpiece adapted to enter a bag, the floor of said funnel sloping unidirectionally downward toward said mouthpiece, a transverse cover for said funnel having an opening therein giving access thereto, said opening being rimmed by flanges extending downward within said funnel terminating in a common transverse plane near the top of said funnel, a movable plate mounted within said funnel beneath said flanges engaging their free edges, defining with said flanges a receptacle, means for biasing said movable plate into closed relation to said flanges, a release key, and linkage between said key and movable plate operable when said key is depressed to drop said movable plate to discharge the contents of said receptacle into said funnel.

2. Dispensing apparatus comprising a tubular funnel open at the top and generally tapering in a downward direction terminating in a mouthpiece adapted to enter a bag, a tilting plate mounted in said funnel normally closing the passage through said funnel in a transverse plane below but adjacent the top, said funnel being inclined to such extent that said mouth is lateral with respect to the downward projection of the top of said funnel, the under side of said funnel having a uniformly downward slope to said mouthpiece, the front of said funnel being open below the plane of said tilting plate, said funnel having an upwardly flared tubular cuff in an intermediate zone between said mouthpiece and the open front forming a lip confronting said open front and affording a seat for the mouth of a bag when the mouthpiece is inserted in said bag, a release key, and linkage between said key and tilting plate operable when said key is depressed to drop said tilt-

ing plate, and counterbalance means for restoring said tilting plate to closed position.

3. Dispensing apparatus comprising a table having horizontal faces at two levels, the higher of said faces being toward the front of said table and provided with an opening rimmed by downwardly extending flanges terminating in a common transverse plane, said opening being bounded by a bead raised above the level of said higher face and being discontinuous on the side of said opening adjacent the rear of said table, a funnel secured below said higher face, surrounding said opening, said funnel extending downwardly terminating in a mouthpiece adapted to be inserted into a bag, and being inclined to such extent that the mouthpiece is lateral of the downward projection of the top of said funnel, a tilting plate mounted within said funnel beneath said flanges engaging the free edges thereof defining with said flanges a receptacle, means for biasing said tilting plate into closed relation to said flanges, a release key, and linkage between said key and tilting plate operable when said key is depressed to drop said tilting plate to discharge the contents of said receptacle into said funnel.

4. Dispensing apparatus comprising a table having a horizontal substantially planiform face, said face having an opening rimmed by downwardly extending flanges terminating in a common transverse plane, a funnel secured below said face surrounding said opening, said funnel extending downwardly terminating in a mouthpiece adapted to be inserted into a bag, and being inclined to such extent that the mouthpiece is lateral of the downward projection of the top of said funnel, a tilting plate mounted within said funnel beneath said flanges engaging the free edges thereof defining therewith a receptacle, a release key, and linkage between said tilting table and key including a pivoted rocking lever as the end instrumentality of said linkage, said rocking lever having opposite limbs to one of which said key is connected, and a counterweight adjustably secured to the other, said linkage being operable when said key is depressed to drop said tilting table to discharge the contents of said receptacle into said funnel.

5. Dispensing apparatus comprising a table having horizontal faces at two levels, the higher of said faces being toward the front of said table and provided with an opening rimmed by downwardly extending flanges terminating in a common transverse plane, said opening being bounded by a bead raised above the level of said higher face and being discontinuous on the side of said opening adjacent the rear of said table, a funnel secured below said higher face surrounding said opening, said funnel extending downwardly terminating in a mouthpiece adapted to be inserted into a bag, and being inclined to such extent that the mouthpiece is lateral of the downward projection of the top of said funnel, a tilting plate mounted within said funnel beneath said flanges engaging the free edges thereof defining therewith a receptacle, the under side of said funnel having a uniformly downward slope to said mouthpiece, the front of said funnel having an opening below the plane of said tilting plate and having an upwardly flared tubular cuff in an intermediate zone between said mouthpiece and opening, affording a seat for the mouth of a bag when the mouthpiece is inserted in said bag, a tilting plate mounted within said funnel beneath said flanges engaging the free edges thereof de-

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fining with said flanges a receptacle, means for biasing said tilting plate into closed relation to said flanges, a release key, and linkage between said key and tilting plate operable when said key is depressed to drop said tilting plate to discharge the contents of said receptacle into said funnel.

6. Dispensing apparatus as claimed in claim 4, including a bracket secured beneath the face of said table in a plane perpendicular to the front of said table, said rocking lever being journaled in said bracket.

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