

March 23, 1954

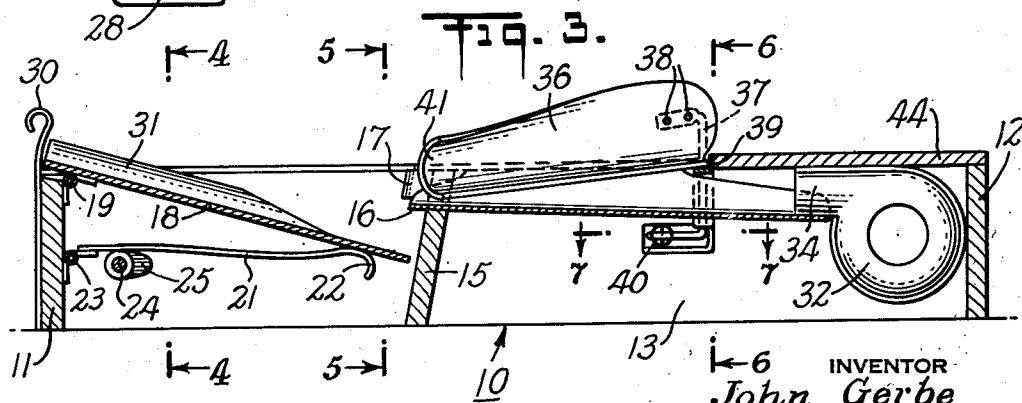
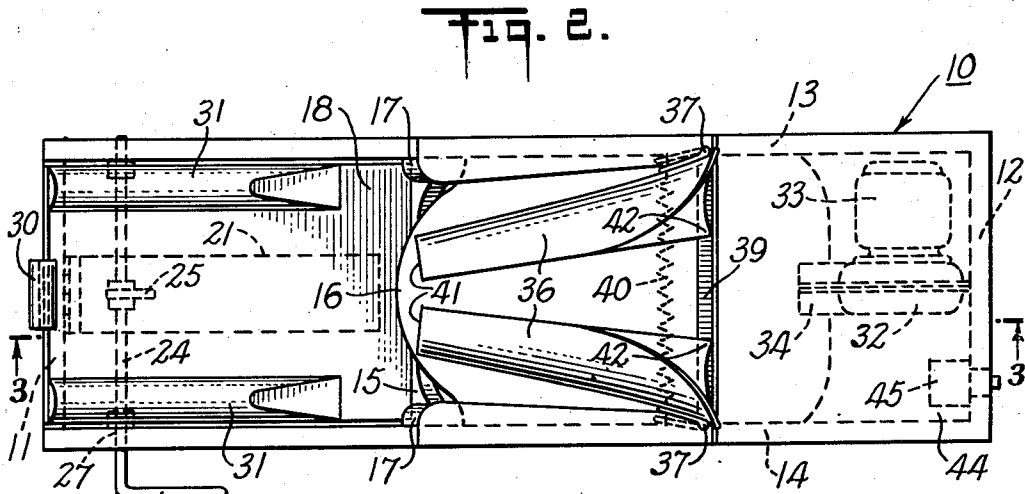
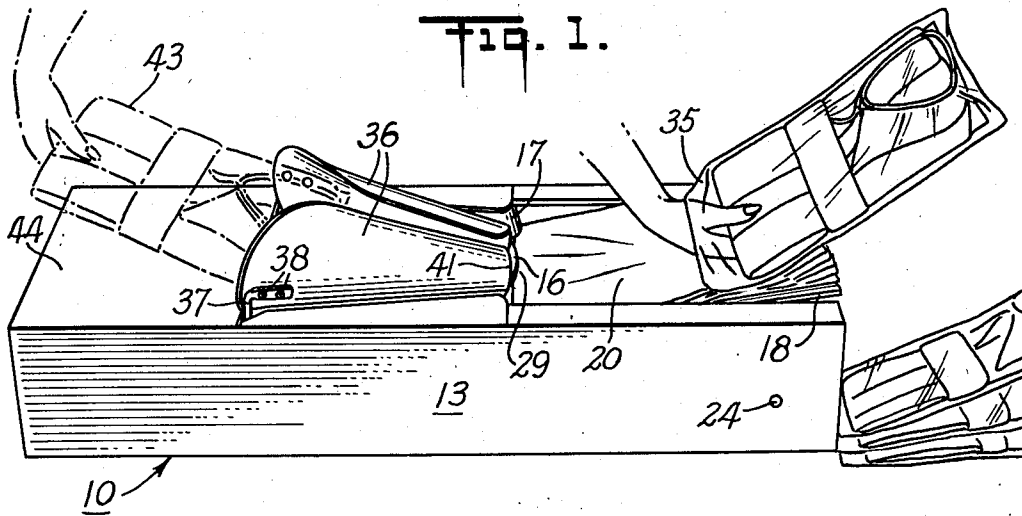
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2,673,016

BAG DISTENDING APPARATUS

Filed Oct. 11, 1952

2 Sheets-Sheet 1



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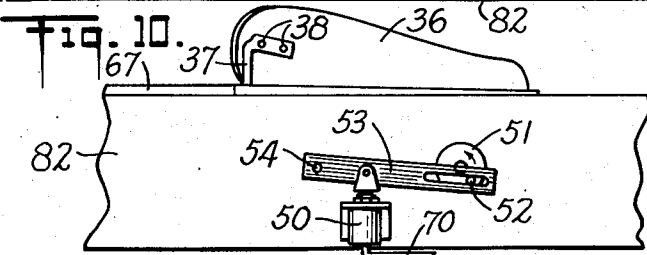
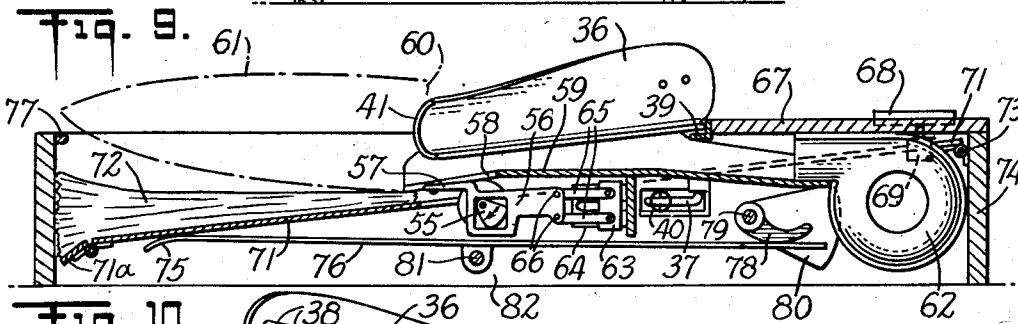
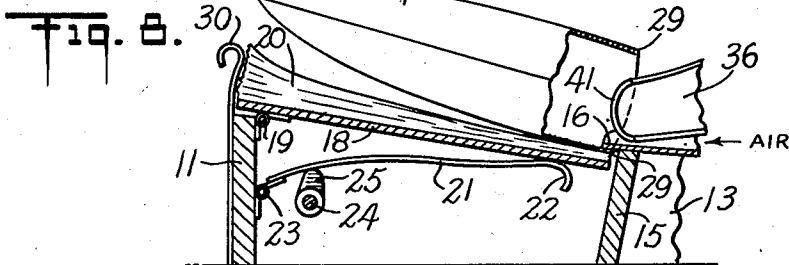
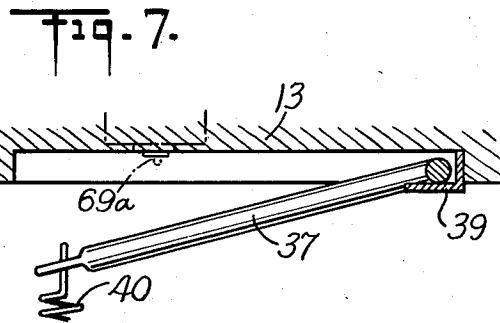
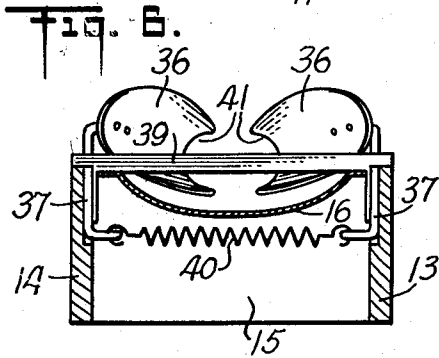
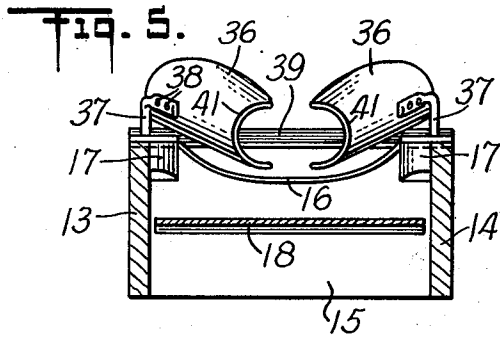
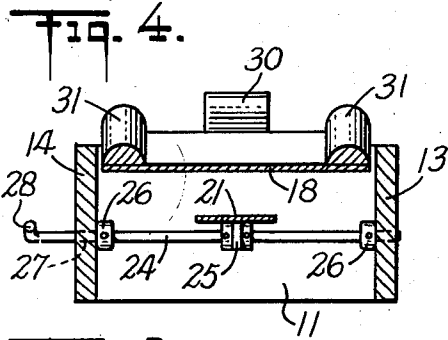
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BAG DISTENDING APPARATUS

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2 Sheets-Sheet 2



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BAG DISTENDING APPARATUS

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11 Claims. (Cl. 226—18)

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My invention relates to apparatus for supporting and distending bags to facilitate filling with an article to be packaged thereby.

The principal object of my invention is to provide an apparatus supporting a stack of bags in a suitable manner whereby an article may be moved into the apparatus and emerge therefrom suitably contained within a bag.

I accomplish these and other objects and obtain my new results as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing, in which—

Fig. 1 illustrates a man's shirt, shown in dot-dash, being inserted into the bag distending apparatus, shown in perspective view, and emerging therefrom inserted in a bag having a transparent top.

Fig. 2 is a top plan view of my apparatus, some of the elements thereof being shown in dotted lines.

Fig. 3 is a longitudinal sectioned elevational view taken in the plane 3—3 of Fig. 2.

Fig. 4 is a transverse sectioned elevational view taken in the plane 4—4 of Fig. 3.

Fig. 5 is a similar view taken in the plane 5—5 of Fig. 3.

Fig. 6 is a similar view taken in the plane 6—6 of Fig. 3.

Fig. 7 is a partial sectioned plan view taken in the plane 7—7 of Fig. 3.

Fig. 8 is an enlarged partial sectioned view of the bag supporting end of the apparatus illustrated in Fig. 3, with the top bag distended.

Fig. 9 is a longitudinal sectioned view, similar to Fig. 3, of a modification of my apparatus.

Fig. 10 is a partial view of the driving mechanism for the modification of Fig. 9.

Referring to Fig. 1, reference numeral 10 designates a frame made of wood or other suitable material for supporting the various elements of my apparatus, and consists of end walls 11 and 12, joined by longitudinally extending side walls 13 and 14. An intermediate wall 15 transversely extends across the housing for supporting a tongue 16, and corner guides 17 hereinafter described in detail.

A bag holder 18 is pivotally hinged at 19 to the end wall 11 and supports the bags 20 thereon as is shown in Fig. 8. A resilient pressure plate 21 is positioned beneath the bag holder 18 and is provided with a cam 22 at one end and a hinge 23 at the other for pivot support on end wall 11. Beneath the pressure plate, a pressure shaft 24

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extends, upon which is mounted a pressure cam 25. The shaft is supported on bushings 26 mounted on the inside of walls 13 and 14 and extends through an aperture 27 in wall 14 to terminate in a handle 28.

Lifting the handle 28 causes the cam 25 to ride under pressure plate 21 forcing cam 22 to lift the pressure board 18 and apply a resilient pressure to the bags, the lips 29 of which are caught under tongue 16 as shown in Fig. 8.

Extending upwardly from the outside of wall 11 is a back stop 30 which is centrally positioned and curves slightly above the ends of the supported bags to hold the bags in position and prevent their endwise movement until they are inflated. This again is best shown in Fig. 8.

Upon the upper surface of the bag holder 18 are positioned two convexly shaped lateral supports 31 which extend longitudinally in spaced apart parallel position, as is shown in Fig. 2 and Fig. 4. When the bags are supported on the bag holder, the two sides of the bags are upwardly arched by supports 31 and cause the bags to assume a concave position. I have found that supporting the bags in this position gives them greater rigidity and permits one bag to slide on another when removed without buckling.

When a stack of bags are placed upon the bag holder and caught in position under tongue 16 by turning handle 28, the two corners of the bags at the open end are also caught under the corner guides 17. This construction facilitates the release of one bag at a time under the inflating pressure caused by the blower 32 when driven by the motor 33, see Fig. 2. The nozzle 34 of the blower is directed above and along the chute-like tongue 16, as shown in Fig. 3, and causes a jet of air to be directed towards the upper bag, the upper lip of which is freed from the tongue to allow the bag to distend.

The inflated bag 35 takes the position shown in Fig. 8, around the ends of two juxtaposed distending funnels or chutes 36, hingedly mounted to pivot shafts 37 by rivets 38. The shafts, bearing on angle plate 39, are biased toward each other by spring 40. The free ends 41 of the funnels consequently are pulled towards each other until the rear edges 42 engage the upper connecting angle plate 39 forming a stop for the inward movement of the funnels.

Thus a shirt 43, as an example of an article to be covered by the bag, as is shown in Fig. 1, and preferably folded about a shirt board, not shown, to hold its position, may be propelled by hand through the enlarged ends of co-acting

funnels 36 and against the pressure of spring 40, forcing the narrowed ends 41 of the funnels to engage and distend the ends of the inflated bag 35 and hold it securely while the shirt is moved into the bag. When the shirt is fully inserted, the movement of the shirt is sufficient to overcome the friction of the bag and free it from the ends of the tongue and funnels. The upward movement carries the encased shirt over the ends of the apparatus where it may be dropped, as shown in Fig. 1, or otherwise disposed of.

Tongue 16 is convex shaped, as shown in Fig. 2, to allow the mouth of the bag to open to a predetermined shape around the ends of the funnels under the inflating air pressure. The smaller ends of the funnels are shaped to permit the article, such as the collared end of the shirt, to slide into the supported and shaped end of the distended bag. The bag holder is sloped downwardly at the tongue region, and thereby supports the uppermost bag in position for filling and removal. A cover 44 may be positioned above the blower and motor to prevent accidents. The switch 45 mounted in end wall 12 may be used to start and stop the blower motor.

The bags may have their uppermost lip notched in the shape of the tongue 16 to free it, when inflating the bag while the pressure of plate 21 frictionally holds the remaining bag lip against the tongue 16 to prevent dislocation under the inflating pressure. In order to reduce the cost of notching the upper lip of the bag, the operator who inserts the shirt with the right hand may frictionally slide the upper lip free of the tongue, with the thumb of the left hand to permit inflation of the bag.

The manually freeing of the upper lip of the bag may instead be automatically accomplished with the square cam motion illustrated somewhat diagrammatically in Fig. 9. An air cylinder 50 drives the disc 51 through the pin 52 in slotted lever 53 pivoted at 54. To the rotating disc is secured a triangular cam roller 55 which fits within the square cam frame 56. A rubber tipped finger 57 extends integrally from the frame, and the motion of the cam and frame causes the finger to pass through a slot 58 in tongue 59 to free the top lip 60 of the upper bag 61 to enable the air from the blower 62 to inflate the bag to the position shown in dot-dash lines in Fig. 9.

The square cam frame is maintained in proper position during its motion by the slides 63 moving on the guide 64, which pivotally supports arms 65 to the square cam frame 56 by pins 66.

At the top rear surface 67, a pressure plate 68 controls an air valve 69, or a suitable micro-switch, to operate the feed line 70 to air cylinder 50, or some other suitable equivalent mechanism such as a solenoid. Thus the weight of the article or of the hand supporting the article in position for insertion into the bag will cause the release of the upper lip of the bag to permit its inflation just prior to insertion.

In Fig. 7, reference numeral 69a designates an alternative form of micro-switch operated by arms 37 to start the automatic cam motion, when a shirt is inserted into the funnels 36.

In Fig. 9, there is also shown a modified form of bag-holder 71 for supporting the bags 72 in proper position. The bag-holder is hinged at 73 to the end wall 74 and is urged upwardly by the cam 75 of pressure plate 76. The stop 77 holds the ends of the uninflated bags in position. A cam 78 secured to shaft 79 and operated by a balance weight 80 provides the necessary pressure

to the plate 76 pivoted at pin 81 to the side walls 82. The remaining parts are identical to the parts described with respect to the previous embodiments. In this embodiment, the bags are automatically inflated to facilitate rapid insertion of an article in the distended bags.

In Fig. 9, reference numeral 71a designates a spring hinged flap in bag-holder 71 for accommodating the extra thickness of the bags at the bottom section.

In attaining the objects of my invention, I have provided means for supporting a stack of bags in transversed arched position which I have found gives suitable rigidity to the readily collapsible bag and prevents buckling. I have discovered that the corners of the bag adjacent to its opening must be held down to prevent inflation of the succeeding bags while the top bag is being inflated. Furthermore, the tongue plate for the lips of the bag is preferably rounded at its free end to allow the mouth of the bag to assume a proper position for encircling the funnels to permit distention therein.

Additionally, I have provided spring biased funnels whereby the movement of the article through the funnels will cause the funnels to shape and frictionally support the bag in distended form and to resist dislocation until the article is properly positioned therein.

Finally, I have provided means whereby only the inflated bag will be released from the stack of bags at the completion of the fitting operation to permit ready removal from the apparatus.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I can claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

I claim:

1. A bag supporting and distending apparatus for enclosing articles comprising a tongue for engaging one side of a collapsed bag, an openable distending means having bag engaging ends for shaping the inside of the bag when opened, and a support for said collapsed bag for holding a side of the bag stationary in filling position against the tongue and for holding the collapsed bag in proper position for filling with respect to the distending means, said distending means being longitudinally fixed in position with respect to said tongue and laterally openable inside the bag while said bag is secured between said support and tongue.

2. The apparatus of claim 1, wherein the distending means comprises a pair of chute-like members having free ends positioned over the collapsed bag whereby when the bag is opened, a portion of said free ends will be positioned inside the bag.

3. The apparatus of claim 1, wherein the distending means are normally spring biased to closed position over the collapsed bag.

4. The apparatus of claim 1, wherein the distending means are pivotally mounted and having article engaging cam faces and pressure means

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secured to said distending means and operated by the pressure of the article for opening said distending means.

5. The apparatus of claim 1, wherein the edge of the tongue is convexly curved over the collapsed bag to facilitate opening of the bag about the distending means.

6. The apparatus of claim 1, wherein the distending means are provided with a longitudinally extending space having a width equal to the human hand whereby the article to be inserted into the bag may be supported while moved through the distending means.

7. In a bag supporting apparatus, a movable support for holding a stack of collapsed bags, each bag having an open end, means for blowing air into the top bag of the stack; and resisting means positioned across corners of the top bag at the open end thereof, means for applying pressure to the movable support pressing all the corners of the collapsed bags at their openings towards the corner resisting means, and pressing the aforesaid corners of the top collapsed bag to engage the corner resisting means.

8. In a bag supporting and distending apparatus, a movable support for holding a stack of collapsed bags; each bag having an open and an oppositely positioned closed end; means for inflating the top bag; and a stop means positioned beyond the closed ends of the collapsed bags; a tongue positioned over the open ends of the collapsed bags; and engaging the outside of the top bag of the stack, means for applying pressure to the movable support pressing only the open ends of the bags, the stop means extending beyond the closed ends of the collapsed bags for a distance less than the distance to the end of the top bag in inflated position.

9. An apparatus for supporting, distending and inflating bags for enabling a folded shirt to be fitted in each bag, comprising a housing having side and end walls, a pivoted pressure plate member mounted to said housing for supporting a stack of collapsed bags; a tongue member, against which the bags are pressed, said plate member having longitudinally extending supports along two parallel sides thereof for causing the bags to be arched transversely when supported thereover; corner means mounted to said side wall members against which corner means the bags are pressed; a stop member mounted to an end wall and extending above the end of the bags; a pair of oppositely positioned curved distending members pivotally mounted to said housing; a spring for biasing the free ends of the distending means towards each other; a blower for inflating the top bag; said pressure plate member supporting the bags so that the longitu-

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dinal axis of the top bag is inclined with respect to the longitudinal axis of the distending members in the form of a V, to permit the mouth of the inflated bag to be automatically positioned about the free ends of the distending means whereby a folded shirt when moved through the distending means will cause the free ends of the distending means to engage the inside mouth of the bag and hold it in the exact shape needed to fit the shirt into the bag and thereafter free the bag-enclosed shirt from the housing in one continuous motion.

10. A bag-supporting apparatus for handling a collapsed bag having inner and outer surfaces and a flush-cut open end; comprising a slotted tongue, a support for pressing the open end of the bag against the slotted tongue, a finger for engaging the outer surface only of the bag, means for moving said finger through said slotted tongue and for pressing the bag against the support and for moving a portion of the outer surface of the bag in a direction away from the slotted tongue, for freeing a portion of the open bag from between the support and the tongue.

11. In a bag supporting apparatus a movable support for holding a stack of collapsed bags, each bag having inner and outer surfaces and a flush-cut open end, means on the support for bending the stack of bags into the form of a trough extending from the open end towards the opposite closed end of the bags, a slotted tongue, means for urging the support against the tongue to press the open end of the bag against the slotted tongue, a finger for engaging the outer surface only of the top bag of the stack, means for moving said finger through said slotted tongue and for pressing the bags against the support and for moving a portion of the outer surface of the top bag in a direction away from the slotted tongue for freeing a portion of the top open bag from between the support and the tongue.

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