Jan. 19, 1960 W. E. MEISSNER 2,921,718

FLEXIBLE SACK CONTENTS EXTRACTOR

Filed July 2, 1957 2 Sheets-Sheet 1

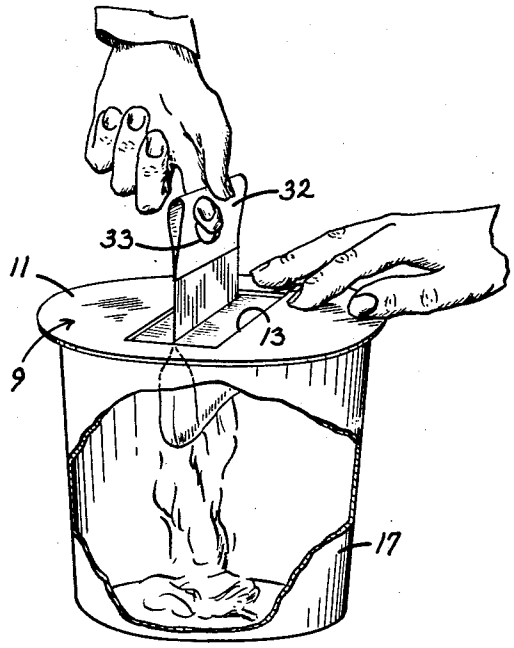


Fig. 1

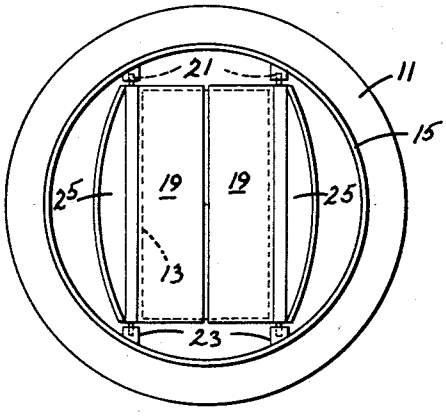


Fig. 2

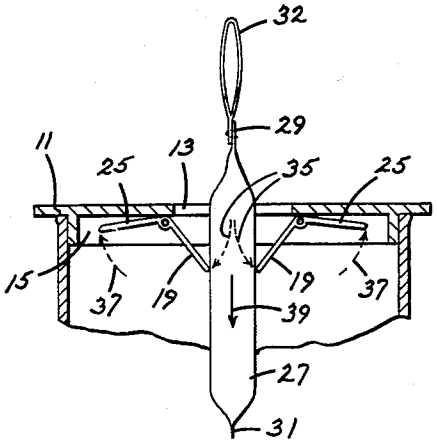


Fig. 3

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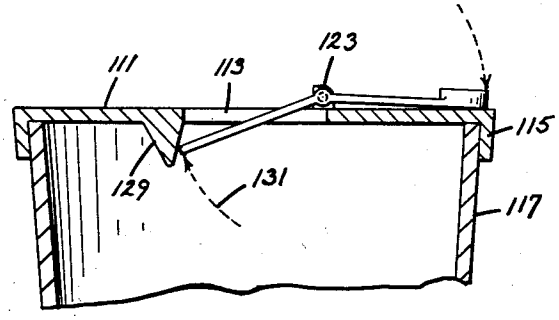


Fig. 4

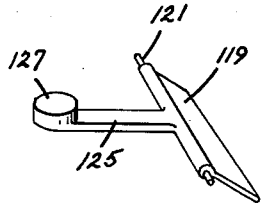


Fig. 5

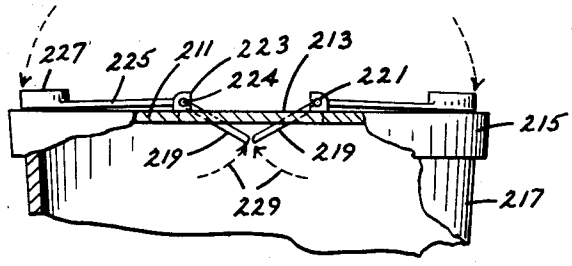


Fig. 6

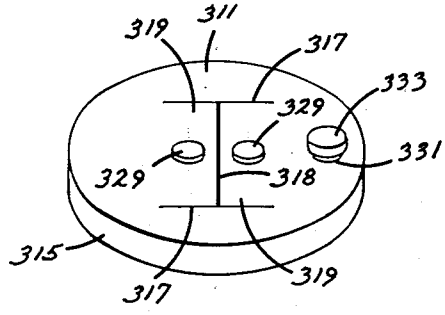


Fig. 7

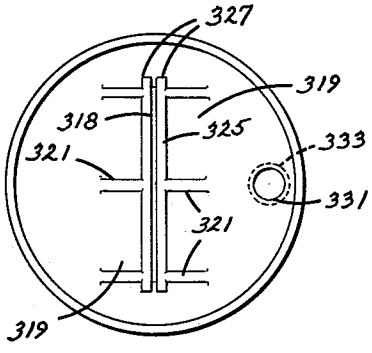


Fig. 8

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2,921,718

FLEXIBLE SACK CONTENTS EXTRACTOR

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9 Claims. (Cl. 222—103)

The present invention relates to a dispensing or extracting device and, more particularly, to an apparatus for removing the contents from flexible sacks.

In the packaging industry, flexible wall containers, generally known as flexible or plastic sacks, have been long employed in packaging dry articles. The relatively inexpensive packaging material normally employed, taken with the apparent economies in transportation and storage costs, would naturally dictate the utilization of this form of packaging with a variety of different materials. With fluid and semi-fluid or viscous plastic materials, however, removal of the package contents by merely puncturing the sack and squeezing the material therefrom has not met with full approval. In addition to providing no assurance that all of the container contents will be removed, this conventional dispensing practice offers no control over the packaged material, which is often expelled into the hands of the user and the outside of the container itself. Accordingly, it is a primary object of this invention to provide a new or improved and more satisfactory device for dispensing materials from flexible containers.

Another object of the invention is the provision of a device by means of which a flexible container may be ruptured and rapidly emptied and stripped of its entire contents with a squeezing action.

Still another object of the invention is to provide an apparatus for collapsing the opposite walls of a flexible container against each other successively along the container length to discharge the contents therefrom.

A further object is the provision of a dispensing device having at least one door or flap hingedly mounted for pivotal movement in a first direction, and which cooperates with a similar door or a fixed abutment in squeezing the contents from a flexible container as the container itself is moved relative thereto in a second direction.

These and other objects and advantages of the invention will be apparent from the following description and accompanying drawings in which:

Figure 1 is a pictorial view showing one embodiment of the present invention in use, with a portion of the illustrated structure being broken away;

Figure 2 is a bottom view of the dispensing device shown in Figure 1;

Figure 3 is a transverse vertical section of the dispensing device shown in Figure 1;

Figure 4 is a view similar to Figure 3 illustrating a second embodiment of the invention;

Figure 5 is a perspective view of one element of the structure shown in Figure 4;

Figure 6 is a view similar to Figure 4 illustrating another embodiment of the present invention;

Figure 7 is a perspective view of still another embodiment of the invention; and

Figure 8 is a bottom view of the structure shown in Figure 7.

In general, the device of the present invention is designed for removing or dispensing the contents from flexible containers or sacks which, in the usual constuction,

have their walls sealed to each other at opposite ends of the container. The device includes a main body having an aperture through which a filled flexible container may be easily passed. At least one door or flap is hingedly mounted on the dispenser body for pivotal movement toward and away from its normal position of rest in which it closes the aperture of the device. Dispensing is effected by initially passing a filled flexible container into the dispenser aperture while the door or flap is deflected from its rest position. The container is lowered until its uppermost seal is adjacent the dispenser aperture, after which the door or flap is allowed to assume its normal position. Applying an upward pull on the container causes the free edge of the door to cooperate with the edge of a similar door or a fixed abutment to squeeze successive portions of the container. In this manner, the initial pull on the container serves to compress its contents and effect a rupture of its lowermost seal, while a continued upward movement on the container causes the package contents to be stripped from the container itself.

Referring now to the drawing, and particularly to Figures 1–3, the dispensing device there illustrated and generally indicated at **9** includes a main body or plate **11** having a rectangular aperture **13** substantially centrally thereof. A cylindrical flange **15** projects from the underside of the plate **11** and is adapted to engage with the internal wall of a suitable collection container, shown at **17**, preferably with a snug frictional contact between these parts. A pair of doors or flaps **19** are hingedly mounted to the underside of the plate **11** by the pintles **21** and bearings **23**. The doors **19**, as shown in Figure 2, are longer than the aperture **13** and are each normally urged into a rest position up against the underside of the plate **11** by extensions **25**, each disposed at an angle to the plane of its respective door **19**. The angular relationship between each door **19** and its extension **25** may of course be varied, but must be at least 90° to insure that a turning moment, equal to the weight of the extension multiplied by the distance from its center of gravity to the pivot axis **21**, acts on each door to automatically urge the same into its rest position. Further, it is essential that the inclination of each extension **25** be such as to prevent the extensions themselves from engaging with the underside of the plate **11** before the doors **19** have opened sufficiently to allow the filled flexible container, shown at **27**, to pass easily therebetween.

As heretofore mentioned, the dispensing device of the present invention is particularly suited for removing the contents from flexible wall containers or sacks. While the present invention is not limited to any particular form of packaged material, it is apparent however that the consistency of the contained matter may vary from a freely flowing fluid, as for example a lubricating oil or soup, to a semi-solid or stiff plastic material, such as a frozen fruit juice concentrate, baby foods, or a viscous table syrup. The flexible container is preferably formed as shown at **27** in Figures 1 and 3 and is, in effect, a flat tube sealed transversely at **29** and **31**. For ease in handling and dispensing, a pulling tab **32** is provided at one end of the container and has a suitable finger grip opening shown at **33**. It will also be apparent that the tab **32** may carry advertising matter and/or instructions for package dispensing or article use.

In use, the dispensing device is first engaged over the open end of the collection container **17**, as explained above. The flexible walled package **27**, being held by its pulling tab **32**, is then lowered toward the aperture **13**. As the package contacts the doors **19**, its weight deflects the same from their normal rest position as shown by the arrows **35**, and swings the extension **25** upwardly toward the bottom of the plate **10**, as indicated by the arrows **37**. Downward movement of the package in the direction of

the arrow **39** is continued until its uppermost reduced portion, adjacent the seal **29**, enters between the free ends of the doors **19**. In this position of the container **27**, the doors **19** are free to swing back into their rest position under the action of the turning moment provided by the cantilevered extension **25**.

With the doors **19** in their horizontal position, the flexible sack **27** is now pulled upwardly between the doors **19**. Since the doors **19** are restricted from moving into or above the aperture **13**, their free edges act with a squeegee action in preventing the sack contents from moving upwardly along with the container **27**. Thus, the sack contents are initially and progressively compressed as the container **27** is drawn upwardly between the doors **19**. Ultimately, the lowermost seal **31** of the sack **27** is overstressed and ruptured, thereby allowing the major portion of the contents to fall into the container **17**, as seen in Figure 1. It will be noted however that once the container has been ruptured, the free edges of the doors **19** squeeze successive portions of the container walls against each other and thus strip away any of the remaining package contents therefrom. To avoid any unnecessary frictional force which may retard the movement of the sack **27** during its upward travel, the free edges of the doors **19** are spaced apart slightly, as shown in Figure 2, preferably a distance equal to the thickness of the container walls.

It is apparent from the above description of the dispensing procedure that the device of the present invention is designed to discharge the packaged contents directly into a collection cup, without any special care being taken on the part of the operator and under the most sanitary conditions. Further, since all parts of the dispensing device are readily accessible, any of the package material which may spatter onto its under surface or collect at the free edges of the doors **19** may be easily removed by a fast rinsing of the device.

In lieu of the arrangement described above, there is disclosed in Figure 4 a dispensing device having a single door or flap, the free edge of which cooperates with a fixed abutment in squeezing the contents from a flexible sack in substantially the same manner as heretofore explained. Specifically, the embodiment shown in Figure 4 includes a main body or plate **111** having a substantially rectangular opening **113** and a downwardly projecting peripheral flange **115** which frictionally engages the outer wall of the collection container shown in part at **117**. A door **119** is hingedly mounted to the upper surface of the plate **111** and adjacent one edge of the opening **113** by the trunnions **121** and the bearings **123**. To permit the door **119** to be removed from the plate **111**, as for example during replacement or thorough cleaning, the bearings **123** are formed with reduced entrance slots so that the trunnions **121** may be snapped into and out from the bearings **123** with a slight flexing of the bearing itself.

As best seen in Figure 5, an extension or arm **125** is formed integrally with the door **119**. A weight **127** is secured to one end of the arm **125** to provide a turning moment constantly urging the door **119** and the arm **125** into their normal rest position as shown in Figure 4. On the underside of the plate **111**, and along the edge of the opening **113** opposite the bearings **123**, there is provided an enlarged abutment **129** which cooperates with the free edge of the door **119** during the dispensing operation as hereinafter described. As with the structure shown in Figures 1–3, the extension or arm **125** is disposed at an angle relative to the plane of the door **119**. In this embodiment, however, the angular relationship between these parts is such that the free edge of the door **119** will be spaced slightly away from the abutment **129** when the extension **125** is in its rest position on top of the plate **111**.

In the operation of this last described embodiment of the invention, the filled flexible container is inserted downwardly into and through the opening **113** until the uppermost seal of the package is disposed between the free edge of the door **119** and the abutment **129**. During this downward movement of the container, the door **119** will of course be deflected away from the opening **113**, that is in a counter-clockwise direction as viewed in Figure 4. The turning moment provided by the weight **127** will then urge the door **119** and the extension **125** into their positions of rest as indicated by the arrows **131** and **133** respectively. An upward pull then applied to the container will effect a rupture of its lowermost seal and a stripping of the container contents in a manner as described above. It will be noted that with the structure of Figure 4, the upward force applied to the door **119** is counteracted by the engagement of the arm **125** against the plate **111**, and that this upward pull serves to more firmly urge the door trunnions **121** into the bearings **123**, thus preventing any unintentional disassembly of the parts.

The structure shown in Figure 6 incorporates the twin door or flap arrangement of Figures 1–3 and the specific door construction illustrated in Figures 4 and 5. Thus, the device of Figure 6 includes a main body or plate **211** having a central substantially rectangular opening **213** and a peripheral flange **215** which is adapted to engage with the exterior wall of the collection container **217**. A pair of cooperating doors **219** are hingedly mounted by the trunnions **221** and the bearings **223** to opposite sides of the opening **213**. An extension or arm **225** is formed integrally with each of the doors **219** and carries at its outermost end a weight **227**. As explained with reference to Figure 4, the weights **227** provide turning moments sufficient to constantly urge the doors **219** and the arms **225** into their rest position as illustrated.

The operation of the invention modification illustrated in Figure 6 is substantially the same as that shown in Figures 1–4 and the description of the same is believed unnecessary. As with the structure shown in Figure 4, it will be noted that the doors **219** of the structure shown in Figure 6 are inclined angularly relative to their respective arms **225** so that their free edges are spaced apart slightly when the arms themselves are resting on the uppermost surface of the plate **211**. Further, the bearings **223** utilized in the structure of Figure 6 are the same as those described with regard to the structure of Figure 4, and it will be apparent that any upward pull applied to the doors **19** serve to more snugly engage the trunnions **221** with their respective bearings **223**.

The last embodiment of the invention shown in Figures 7 and 8 is particularly desirable from the standpoints of economy and extreme simplicity. As will be apparent from the following description, this embodiment of the invention is especially suited for manufacture from flexible plastic materials, as for example polyethylene, by inexpensive and conventional molding procedures. More specifically, the structure shown in Figures 7 and 8 includes a main body or plate **311** having a peripheral flange **315** which is adapted to engage with the outer wall of a suitable collection container, not shown. The plate **311** is provided with a pair of spaced parallel slits **317** which are interconnected by a relatively wide cross-slit **318** to form a pair of flexible doors or flaps **319** having their confronting edges spaced apart preferably a distance equal to the thickness of walls of the flexible container. On its undersurface, each of the doors **319** is formed with a plurality of stiffening ribs **321** and **325**, the latter of which extends along the free edge of its respective door. These ribs together serve to impart rigidity to each of the doors and permit the same to flex as a single unit, as more fully described hereafter. As best seen in Figure 8, the uppermost ends of the ribs **325** project outwardly beyond the edges of the doors **319** and form abutments **327** which are adapted to engage with the underside of the plate **311** during the dispensing operation and thus prevent movement of the flaps **319** above their normal horizontal rest positions shown in Figure 7.

In using this embodiment of the invention, the doors **319** are first deflected downwardly and the filled flexible container is passed therethrough until its uppermost seal lies between the opposing free edges of the doors **319**. In this case however the weight of the filled container is not relied upon to move the doors **319** inwardly of the collection container, but instead the operator is required to manually urge the doors downwardly during this initial dispensing operation. To assist in this preliminary step and, more important, to encourage the user to apply the deflecting force substantially essentially of the doors **319**, a pair of finger grip buttons are provided at **329** as shown in Figure 7. Once the package is lowered into its desired position, the operator merely releases the doors **319**, which automatically return to their horizontal positions in view of their inherent resiliency. As with the structure heretofore described, the operator needs now merely to pull the filled container upwardly between the doors **319** to effect a rupture and a stripping of the contents therefrom. During this upward pull on the flexible sack, it will be noted that the abutments **327** bear up against the underside of the plate **311** and thus prohibit any movement of the doors **319** in an upward direction.

If desired, the devices heretofore described may serve as covers while the contents, such as fruit juice concentrate, is stirred as with a swirling movement. In addition, each of the embodiments may be provided with a pouring spout and removable stopper, such as shown at **331** and **333** in Figures 7 and 8.

In all embodiments of the invention described above, it will be noted that the features incorporated into the devices impart simplicity to the invention both from the standpoints of construction and operation. Further, it will be noted that all parts of the device are readily accessible for thorough cleaning and that replacement of the flaps, in the structure shown in Figures 1–6, can be made with ease. From the operation standpoint, the squeegee action exerted on the walls of the flexible containers or sacks assure complete removal of the container contents in a rapid, neat, and sanitary fashion.

It will be seen from the above description that the objects of the invention are well fulfilled by the structure described. The description is intended to be illustrative only and it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A device for dispensing contents from flexible walled containers including a body member, walls defining an opening in said body member into which a flexible walled container may be inserted, a door on said body member mounted for movement into a first position away from said opening when the container is inserted therein along a first direction and into a second position in which said door at least partially closes said opening, means on said body member cooperating with the free edge of said door for squeezing the contents from the container as it is moved therebetween in a direction opposite the first direction, and means for preventing movement of said door beyond said second position.

2. A device for dispensing contents from flexible walled containers including a body member, walls defining an opening extending through said body member, a door hingedly connected to said body member adjacent to one wall of said opening for covering at least a portion thereof, said door being movable into a position away from said opening as a flexible walled container is inserted therein along a first direction, means normally urging said door toward said opening whereby the free edge of said door engages with one wall of a flexible walled container disposed within said opening, and means on said body member adjacent to said opening and opposite to free edge of said door for engaging another wall of the flexible walled container disposed within said opening, said last-mentioned means cooperating with the free edge of said door to squeeze contents from the flexible walled container disposed therebetween as the container is moved in a direction opposite to the first direction.

3. A device for dispensing contents from flexible walled containers including a body member, walls defining an opening extending through said body member, a door hingedly connected to said body member adjacent to one wall of said opening for substantially covering the same, said door being movable into a position away from said opening as a flexible walled container is inserted therein along a first direction, a weighted extension connected to said door for normally urging the same toward said opening whereby the free edge of said door engages with one wall of a flexible walled container disposed within said opening, and a fixed abutment on said body member adjacent to said opening and opposite to the free edge of said door for engaging another wall of the flexible walled container disposed within said opening, said abutment cooperating with the free edge of said door to squeeze contents from the flexible walled container disposed therebetween as the container is moved in a direction opposite to the first direction.

4. A device as defined in claim 3 wherein said weighted extension is disposed at an angle to the plane of said door and engages with a surface of said body member when said door is in closing relationship with said opening to thereby prevent movement of said door through said opening when the flexible walled container is moved in a direction opposite to the first direction.

5. A device for dispensing contents from flexible walled containers including a body member, walls defining an opening extending through said body member, a pair of doors hingedly connected to said body member adjacent to opposite walls of said opening for substantially covering the same, said doors being movable into positions away from said opening as a flexible walled container is inserted therein along a first direction, and means normally urging said doors toward said opening whereby the free edges of said doors engage with oppoite sides of a flexible wall container disposed within said opening and together cooperate to squeeze contents therefrom as the container is moved in a direction opposite to the first direction.

6. A device for dispensing contents from flexible walled containers including a body member, walls defining an opening extending through said body member, a pair of doors hingedly connected to said body member adjacent to opposite walls of said opening for substantially covering the same, said doors being movable into positions away from said opening as a flexible walled container is inserted therein along a first direction, a weighted extension connected to each of said doors for normally urging the same toward said opening whereby the free edges of said doors engage with opposite sides of a flexible walled container disposed within said opening and together cooperate to squeeze contents therefrom as the container is moved in a direction opposite to the first direction.

7. A device as defined in claim 6 wherein said weighted extensions are each disposed at an angle to the plane of its respective door and engage with a surface of said body member when said doors are in closing relationship with said opening to thereby prevent movement of said doors through said opening when the flexible walled container is moved in a direction opposite to the first direction.

8. A device as defined in claim 6 further including projections along opposite sides of said doors, said projections engaging with said body member to prevent movement of said doors through said opening as the flexible walled container is moved in a direction opposite to the first direction.

9. A device for dispensing contents from flexible walled containers including a body member formed of flexible and resilient material, a pair of spaced substantially paral-

lel slits extending through said body member, a cross slit extending between said pair of slits approximately midway between their ends to provide a pair of cooperating doors, said doors being movable away from each other to permit a flexible walled container to be inserted therebetween along a first direction and resiliently engaging with the flexible walled container to squeeze the contents therefrom as the container is moved in a second direction opposite to the first direction, and means for preventing movement of said doors beyond the plane of said body member as the flexible walled container is moved in the second direction.

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