

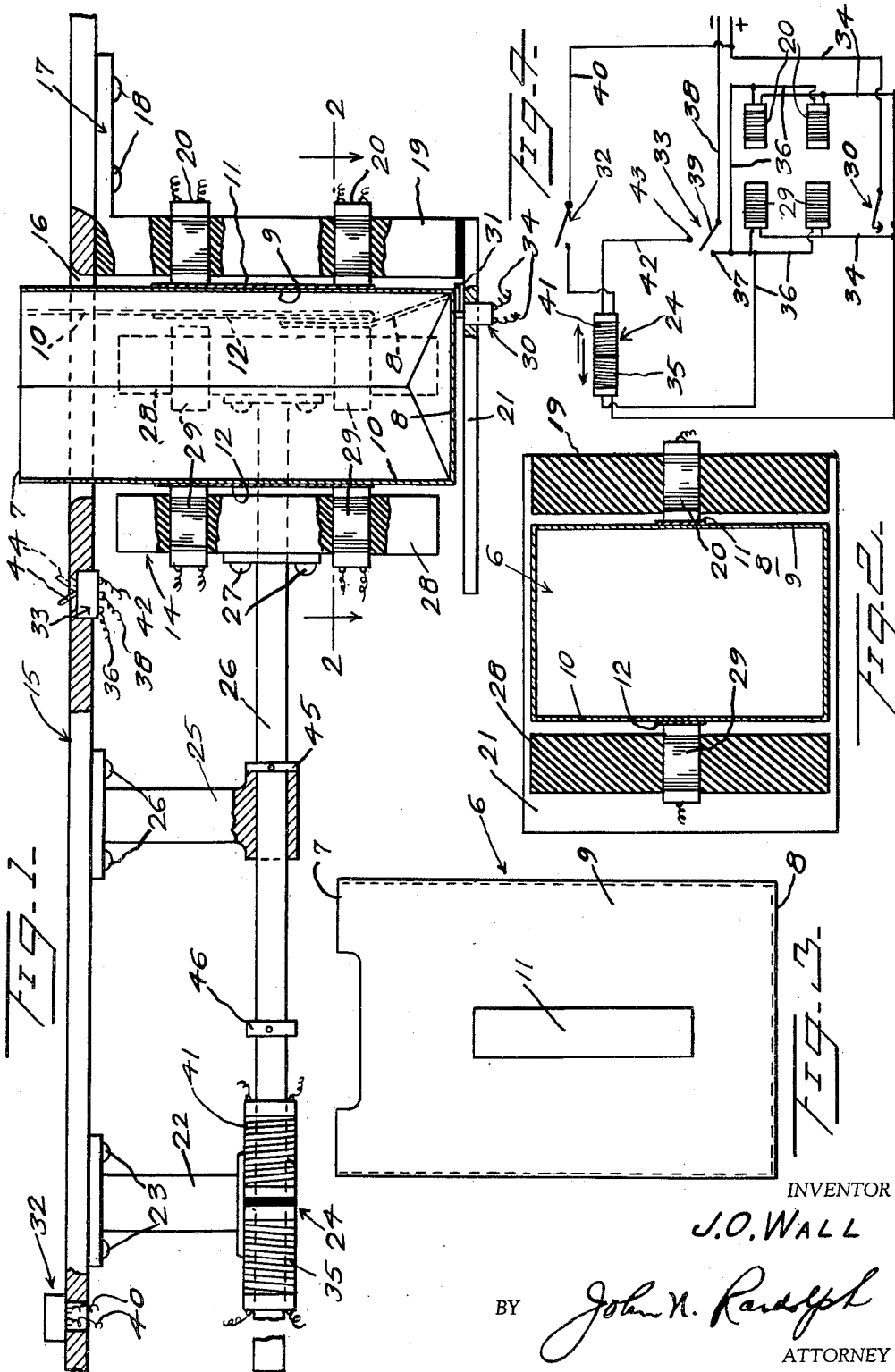
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FLEXIBLE CONTAINER WITH OPENING AND SUPPORTING MEANS THEREFOR

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3 Claims. (Cl. 229-53)

This invention relates to a novel flexible or collapsible container and a novel means to effect opening of the container and support of the container in an open position while the container is being loaded.

More particularly, it is an object of the invention to provide a flexible or collapsible container having portions formed of material responsive to magnetic attraction and which are so disposed relative to one another that the container will be opened and supported in an open position when said portions are displaced away from one another by magnetic attraction.

Still a further object of the invention is to provide a novel means whereby the collapsed flexible container may be magnetically grasped between forces pulling in different directions to effect opening of the container and support thereof in an open position during loading.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

FIGURE 1 is a view partly in side elevation and partly in vertical section showing the flexible container held in an open position for loading;

FIGURE 2 is a horizontal sectional view taken substantially along a plane as indicated by the line 2-2 of FIGURE 1;

FIGURE 3 is a side elevational view of the bag, and

FIGURE 4 is a diagrammatic view illustrating a wiring diagram for use with the apparatus of FIGURE 1.

Referring more specifically to the drawing, the numeral 6 designates generally a flexible container such as a bag having an open top 7, a bottom wall 8, and including side walls 9 and 10. The side walls 9 and 10 are each provided with an element of a material which is responsive to magnetic attraction, wall 9 being shown provided with such an element 11 and the wall 10 with an element 12. The elements 11 and 12 are shown as elongated strips or areas but may be of any size or shape and may be each located in any suitable position with respect to the wall of which it forms a part. Additionally, several separate elements 11 or 12 may be associated with each wall 9 and 10. The magnetic responsive elements may be impregnated into the bag walls, applied thereto as a coating, adhered thereto by any suitable bonding medium, printed thereon, stapled thereto or attached or fastened in any other suitable manner.

The apparatus 14, illustrated in FIGURES 1 and 2 in conjunction with the bag 6, includes a conventional counter 15, such as is used in stores, which is provided with an opening 16 of a size to accommodate a part of the bag 6, when the bag is opened. A hanger 17, preferably of electrical insulating material, is secured by fastenings 18 to the underside of the counter 15 along one side of the opening 16 and has a depending portion 19 which supports two longitudinally spaced electromagnets 20. A shelf 21 is supported by a lower end of the hanger portion 19 beneath and spaced from the opening 16 and substantially parallel to the counter 15.

A hanger member 22 is attached to the underside of the counter 15 by fastenings 23 and supports a double acting solenoid 24, which is disposed on the opposite side of the opening 16 to the hanger 17. A bushing 25 is attached by suitable fastenings 26 to the underside of the counter 15, on the same side of the opening 16 as the

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solenoid 24, and provides a support for a rod 26, an intermediate portion of which is reciprocally mounted therein. One end of the rod 26 extends slidably through the solenoid 24 and the other end of said rod, which is located between the bushing 25 and hanger bracket 17, has fixed thereto by fastenings or the like 27 an upright member 28, preferably of electrical insulating material and which supports a second pair of electromagnets 29. The member 28 is disposed substantially parallel to the bracket portion 19.

A very sensitive normally open electric switch 30 is supported by the shelf 21, adjacent the bracket portion 19, and has an actuator 31 located above said shelf. A normally open switch 32 may be mounted in any suitable position on the counter 15 and a third two pole switch 33 is likewise supported in any suitable location on the counter 15.

FIGURE 4 illustrates a form of electric circuits which may be utilized with the apparatus 14, including a positive conductor 34 leading from a conventional electric current source, such as a domestic outlet, and which is connected to the four electromagnets 20 and 29 and to one end of one of the coils or windings 35 of the solenoid 24. The switch 30 is interposed in the conductor 34 between the current source and the electromagnets and winding 35. A negative conductor 36 extends from the other end of the winding 35 and from the other contacts of the electromagnets 20 and 29 and terminates in a contact 37, forming one stationary contact of the switch 33. A negative conductor wire 38 leads from a movable blade 39 of the switch 33 back to the current source. A branch conductor wire 40 extends from the positive conductor wire 34 to one end of the other opposite winding 41 of the solenoid 24, around the switch 30, and has the switch 32 interposed therein. A branch negative conductor wire 42 leads from the other end of the winding 41 to the other pole or contact 43 of the switch 33.

Assuming that the rod 26 is in its dotted line position of FIGURE 1 with the member 28 supporting the electromagnets 29 in close proximity to the electromagnets 20, the bag 6 in its initial collapsed or folded condition, as shown partly in dotted lines in FIGURE 1, is inserted downwardly through the opening 16 between the electromagnets 20 and the electromagnets 29 until a portion of its bottom 8 comes to rest upon the actuator 31 of the switch 30. The weight of the bag 6 resting upon the switch actuator 31 is sufficient to close the switch 30. When this occurs, if the manual actuator 44 of the switch 33 is in its position of FIGURE 1, the blade 39 will be in contact with the pole 37 so that an electric circuit will be completed through the wiring 34, 36 and 38 and the switches 30 and 33 to energize the electromagnets 20 and 29 and the winding 35 of the solenoid 24. When the electromagnets are energized, the magnetic responsive material 11 will be attracted to and held by the electromagnets 20 and the magnetic responsive material 12 will be attracted to and held by the electromagnets 29. The energized solenoid winding 35 will cause the rod 26 to be drawn from right to left of FIGURE 1 through the solenoid 24 to move said rod, the member 28 and the electromagnets 29 from the dotted line to the full line positions of said parts. The bag wall 10 will be caused to move with the electromagnets 29 and relative to the bag wall 9, which is held by the stationary magnets 20, to effect opening of the bag 6 and support of the bag in its open position, as shown in full lines in FIGURES 1 and 2, in which position the bag is conveniently positioned for loading with the open top 7 thereof projecting upwardly from the counter 15 through the opening 16. After the bag 6 has been filled, for example, with articles, not shown, supported on the counter 15, the switch actuator 44 is moved from

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its full line to its dotted line position of FIGURE 1 to move the blade 39 out of engagement with the contact 37 and into engagement with the contact 43, to thereby de-energize the electromagnets and winding 35, so that the portions 11 and 12 of the bag walls 9 and 10, respectively, will no longer be held by the electromagnets to enable the loaded bag 6 to be lifted upwardly through the opening 16 and thus removed from the apparatus 14. The switch 32 is then manually closed momentarily to complete the second electric circuit including said switch, the switch 33, the conductor wires 40, 42 and 38 and the other winding 41 of the solenoid 24. The rod 26 will be displaced in the opposite direction when the winding 41 is energized to resume its dotted line position of FIGURE 1 with the electromagnets 29 supported by the member 28 spaced from but in relatively close proximity to the electromagnets 20, and with the apparatus 14 again positioned in its initial position to open and support another bag, in the manner as heretofore described, and after the switch actuator 44 has been moved back to its full line position of FIGURE 1 for moving the switch blade 39 out of engagement with the contact 43 and into engagement with the contact 37.

Stop collars 45 and 46 may be adjustably mounted on the rod 26, on opposite sides of the bushing 25, to engage said bushing for limiting movement of the rod 26, the member 28 and electromagnets 29, carried thereby, between the full line and dotted line positions of said parts.

Various modifications and changes are contemplated and may be resorted to, without departing from the function or scope of the invention as hereinafter defined by the appended claims.

I claim as my invention:

1. The combination of a flexible container having opposed walls each including a portion formed of a ma-

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terial responsive to magnetic attraction, and a support in which said container is received having a first part and a second part, said parts being disposed in opposed spaced relation to one another for straddling said opposed walls, and said parts each including means connected by magnetic attraction to said portion of the wall disposed adjacent said part for drawing said container walls away from one another and toward said parts for supporting the container on said parts by magnetic attraction.

2. The combination as defined by claim 1, said support including means for displacing said first part toward and away from the second part for drawing said container walls away from one another to effect opening of the container when the first part is displaced away from the second part while said container walls are connected to said parts by magnetic attraction.

3. A combination as defined by claim 2, said first mentioned means comprising electromagnets, said last mentioned means comprising an electrically actuated device connected electrically to said electromagnets for moving said first part away from the second part while the electromagnets are energized and a second electrically actuated device for moving the first part toward the second part when the electromagnets are de-energized.

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