May 27, 1969 R. J. MATTHEWS 3,446,543

METHOD OF DISPENSING MILK FILTER DISKS AND APPARATUS THEREFOR

Filed May 2, 1966 Sheet 1 of 2

Fig 1

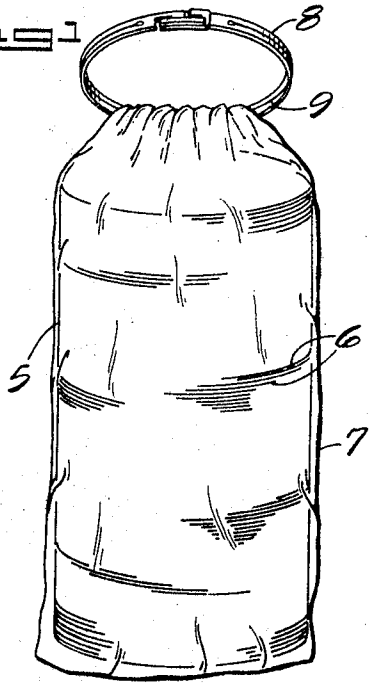
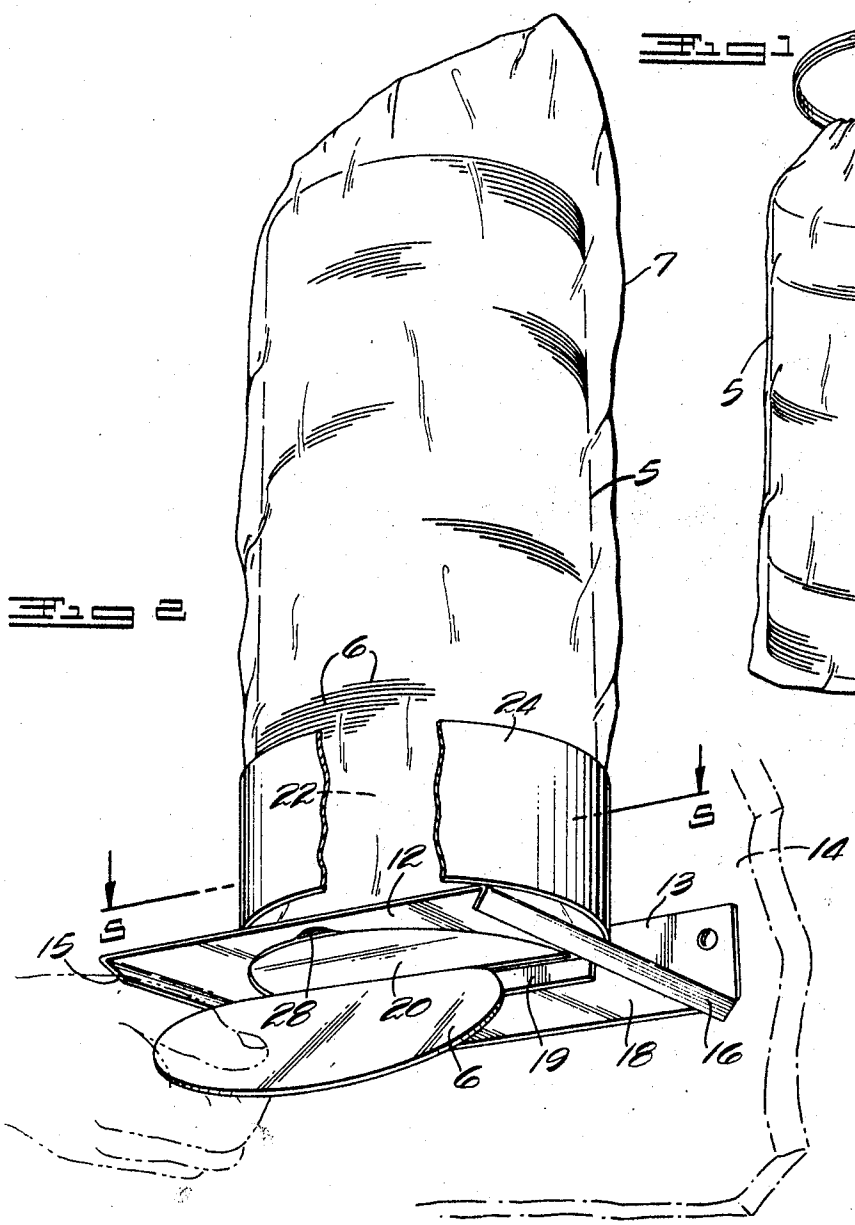


Fig 2



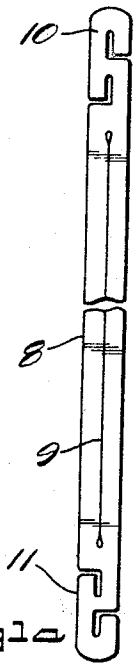


Fig 1a

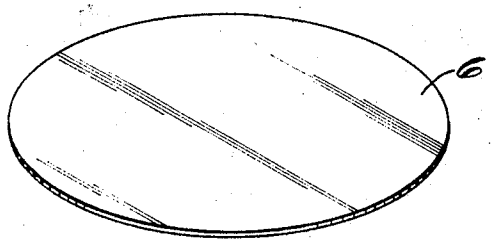


Fig 3

INVENTOR.
ROBERT J. MATTHEWS
BY
Gordon C. Mack
ATTORNEY

May 27, 1969 R. J. MATTHEWS 3,446,543

METHOD OF DISPENSING MILK FILTER DISKS AND APPARATUS THEREFOR

Filed May 2, 1966 Sheet 2 of 2

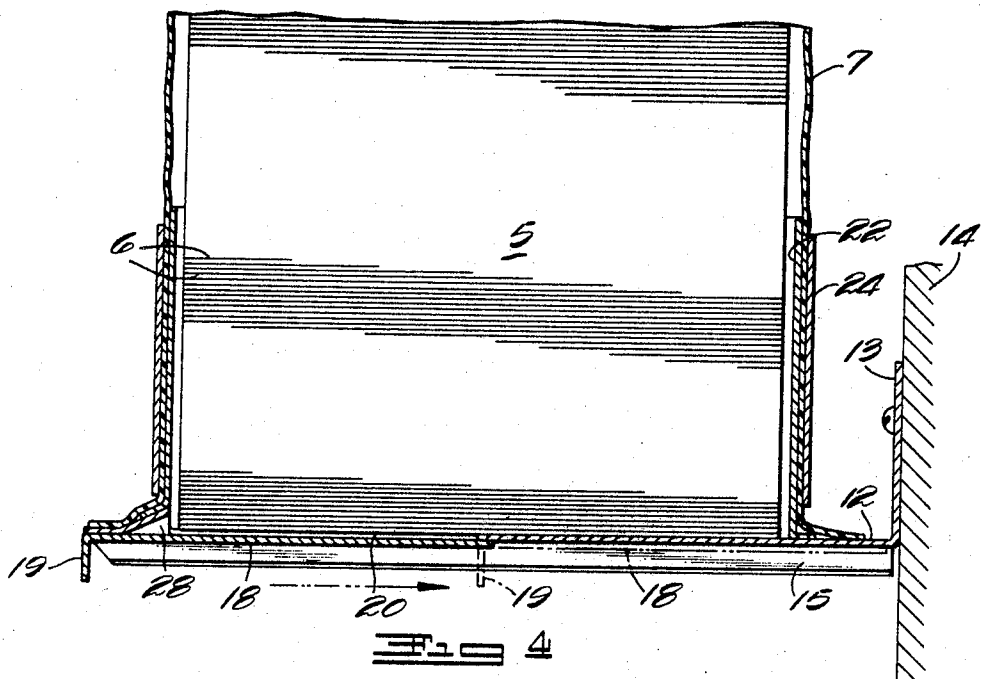


Fig 4

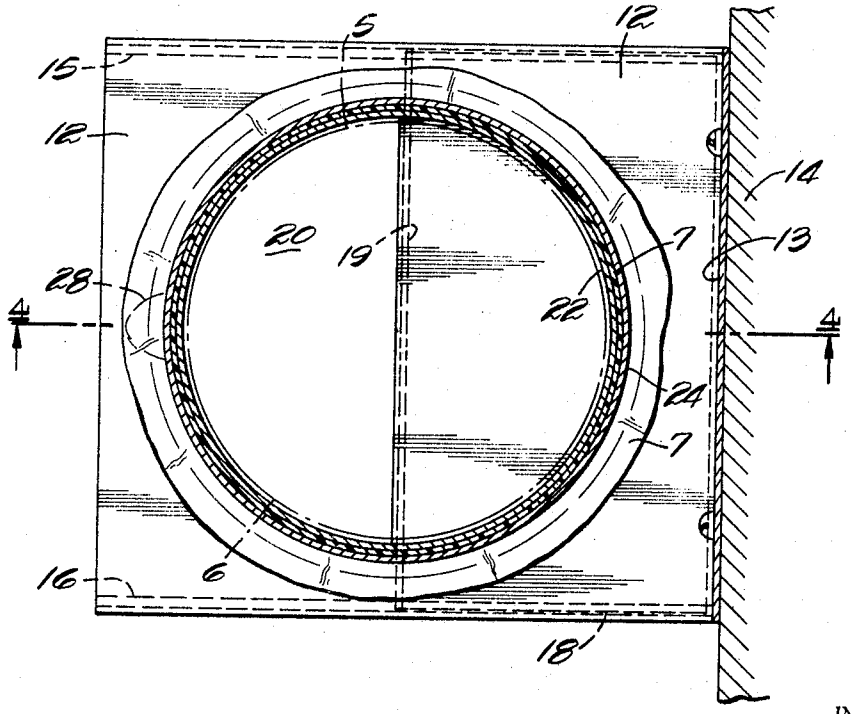


Fig 5

INVENTOR.
ROBERT J. MATTHEWS
BY Gordon C. Lucas
ATTORNEY

United States Patent Office 3,446,543
Patented May 27, 1969

3,446,543

METHOD OF DISPENSING MILK FILTER DISKS AND APPARATUS THEREFOR

Robert J. Matthews, 5155 14th St. SW., Canton, Ohio 44710

Filed May 2, 1966, Ser. No. 546,696
Int. Cl. B65g 1/08; A47f 1/08
U.S. Cl. 312—42 10 Claims

ABSTRACT OF THE DISCLOSURE

A dust-and-moisture-tight dispenser for milk filter disks is provided. The disks, as received, are stacked in a container, usually flexible. The dispenser is provided with a horizontal support with an opening in it which is as wide as the diameter of a disk. A flange surrounds the opening. The package is opened, inverted over the opening, with the flange inside of the package, around the disks. The bottom disk is exposed through the hole and a depression at the edge of the opening is provided to accommodate the thumb or finger of a person who desires to manually remove the bottom disk. The disks are removed flat, without distortion. Apparatus and process claims are provided.

This invention relates to a method of storing and dispensing milk filter disks while preventing contamination thereof by dust and/or moisture, and includes a dispenser with a bottom delivery therefor.

Statutory regulations require that milk filter disks be used from the original container and through a dispenser. The prime purpose and function of milk filter disks further dictate that they be protected completely from dust, moisture and/or any other contamination. No inexpensive satisfactory dispensing means for removing the disks one at a time from a package while maintaining the remaining disks free of dust and dirt has heretofore been marketed.

According to this invention the disks are preferably sold in a transparent container which holds a stack of the disks. The container may be either flexible or rigid, and it is usually cylindrical although it may be square in cross section. The container is closed at the bottom and temporarily closed at the top by readily releasable means. A preferred form of closure is a roll-down fastener which forms a tight closure and provides a handle. When the disks are to be used, the top of the container is opened and the entire container is inverted and then, with the top of the container opened wide, it is fastened in a dust-and-moisture-proof manner over the dispenser which has a dispensing opening in it. Then, as disks are desired from time to time, they are removed one at a time from the bottom of the stack, through the opening.

The dispenser of the invention is designed with a horizontal support having a generally semi-circular opening in it and a package of the disks, after opening, is inverted over the opening and fastened to the support with a dust-and-moisture-tight seal. This is advantageously done by providing a flange around the opening which extends up into the package and the package is then sealed to this flange. The stack of disks in the package is usually supported to the rear of the opening, the opening being a generally semi-circular segment which is about half the size of the disk. The disks are removed one by one through this opening from the bottom of the stack.

The method of this invention is not limited to the use of such a container.

The invention is further described in connection with the accompanying drawings, in which:

FIGURE 1 is a package which contains a stack of the disks;

FIGURE 1A is a plan view of a preferred form of closure means;

FIGURE 2 shows the dispenser with an opening in it and the package fastened over the opening and one of the disks being removed through the opening;

FIGURE 3 is a view in perspective of one of the disks;

FIGURE 4 is an enlarged vertical section through the dispenser and the bottom of the container on the line 4—4 of FIGURE 5; and

FIGURE 5 is a horizontal section through the bottom of the assembly shown in FIGURE 2 on the line 5—5 thereof.

FIGURE 1 shows a stack 5 of disks 6 in a bag of flexible material 7. The disks are all of the same size. The dispenser of this invention was designed particularly for use with the filter known variously as a "non-gauze" or "bonded" disk because the cotton filtering fibers of these disks are, in the manufacturing process, bonded to one another in a permanent relationship. The filter fibers do not reply on a gauze network for support as some earlier types do. For this reason, the dispenser of this invention dispenses the filter disks in a manner that prevents distortion of the disk in any way because once the disk is crumpled or bent, the bonds among some of the fibers are destroyed, and the disk cannot be restored to its original condition.

The bag material is shown as being made of any flexible, usually transparent, sheet packaging material which is dust-and-moisture-proof. The container 7 is preferably formed of a cylindrical wall closed at the bottom and drawn together at the top and tied by suitable means. A preferred closure means 8 is illustrated in FIGURE 1A. It is made of plastic and provided with a long slot 9 down the middle. The ends 10 and 11 are shaped to interlock with one another, as shown in FIGURE 1B. The top of the bag is gathered together and introduced through the slot. Then the closure means 8 is rolled over and over, and the gathered portion of the bag is rolled over and over around the closure means. This closes the bag in a dust-proof and substantially moisture-proof closure. The ends of the closure means 8 are then brought together in any suitable manner. With closure means such as shown in FIGURE 1A, the ends are engaged with one another. This provides a loop which serves as a handle, as illustrated in FIGURE 1.

The disks are kept in the package until they are to be used. Then the closure means 8 is removed and the top of the package is opened up to expose the entire surface of the top disk. The package is then inverted and placed on the dispenser.

The dispenser is of simple construction. It is usually made metal but may be made of plastic. The drawings illustrate a dispenser made of metal.

The dispenser comprises the flat support 12 which is bent up at one edge to form the flange 13 which is fastened to the wall 14. Thus the support is maintained in a substantially horizontal position, and the stack of disks remains vertical at all times and, as a result, in perfect alignment for delivery. The provision of the vertical flange for attachment to a vertical surface, such as a wall, makes the dispenser well suited for use in milking parlors and milk houses where counter- or table-mounted dispensers would inconvenience routine sanitary practices.

Opposite edges of the support 12 are turned down and under at 15 and 16 to form a track which supports the slide 18 the front edge of which is bent down to form the operating handle 19.

There is an opening 20 in the support which exposes substantially one-half of the bottom disk. The disks are so stiff that although only one-half of the bottom disk is supported by the support 12, the other half does not

droop sufficiently to interfere with the operation of the slide **18**.

On top of the support **12** is a flange **22** which is somewhat larger in diameter than the disks, and which is concentric with the disks. The wall of the package is slightly larger in diameter than this flange **22**. After the package is opened and inverted, the stack of disks is placed inside of the flange **22** and the open end of the packaging material is slid down over the outside of the flange **22**. Generally the edge of the packaging material will build up and be compressed between the flange **22** and the cylindrical band **24**, forming a snug, tight seal.

It is only necessary that the packaging material be compressed sufficiently to form a dust-and-moisture-tight seal. The cylindrical band **24** is of a diameter sufficiently greater than the diameter of the flange **22** to accommodate the packaging material between the two. After the packaging material has been slid down over the outside of the flange **22**, the band **24** is lowered over the package and forced down over the part of the packaging material which is outside of the flange **22**. The flange **22** is usually somewhat taller than the band **24**, but this is not necessarily true. They are both high enough to prevent dust and moisture from entering the dispenser and contaminating the disks, and to establish the vertical direction of the stack of disks so as to position the lower portion of the stack for delivery through the dispensing opening. If the container is a rigid, bottomed, plastic cylinder, it will fit over the flange **22**, or it may fit within it. It is preferable that it fit outside of it and although it is then not necessary to used band **24**, it is desirable to slip it down over the outside of the container and seat it against the support **12**. This increases the dust-proofness and moisture-proofness of the dispenser. A rigid container of square cross section is not as convenient, and usually will not be as dust-and-moisture-tight. The container will be inverted, and the stack of disks will be located within flange **22**. It may be desirable to leave the flaps on the container and spread these out over the support **12**. Such flaps are desirably weighted, as by a band which is slipped down over the container. If the flaps are removed, it is desirable to slip a tight-fitting square sleeve down over the outside of the container to improve the seal. With rigid containers, instead of slipping an outer sleeve down over the container, there may be two flanges on the support **12** with at least one of them forming a relatively snug fit with the inner or outer surface of the container.

The flanges **15** and **16** hold the slide **18** tight against the underside of the support **12** but permit it to be readily slid from a closed position in which it covers the opening, to an open position in which it uncovers the opening to expose substantially one-half of the bottom surface of the bottom disk. FIGURE 4 shows the slide in the closed position in full lines, and in the open position in phantom.

It is desirable to provide a slight indentation **28** (FIGURE 2) in the edge of the opening, usually opposite the wall, large enough to permit insertion of a finger to facilitate removal of the bottom disk.

FIGURE 4 shows (in full lines) the slide in the normally closed position. When a disk is desired the slide is pushed toward the wall, the edge of the bottom disk is brought down under the plane of the support **12** by inserting the thumb or a finger into the depression **28** and applying pressure to the edge of the stack of disks. Once the edge of the bottom disk has been lowered below the plane of the support **12** it is readily grasped by the thumb and first finger (as shown in FIGURE 2) and, by pulling it downward and forward, the covered portion of the disk is slid out from under stack. The opening is then closed by returning the slide **18** to its former position.

Modifications will suggest themselves to the man skilled in the art. Essentially, the dispenser provides a support for the inverted package which includes an opening for removal of the disks. The stack of disks is placed on the dispenser in a dust-and-moisture-proof manner. When the dispenser is opened for the removal of disks, the handle **19** is located at substantially the diameter of the stack of disks. Different means will be required for fastening different types of packages to the dispenser.

The invention is covered in the claims which follow.

I claim:

1. A dispenser for a stack of circular milk filter disks in a package open at the bottom which dispenser comprises

(a) a horizontal support with an opening therein in substantial alignment with the stack which is at least as wide as the diameter of a disk so that a disk can be removed therethrough without distortion and through which about one-half of the circumference of the bottom disk is exposed,

(b) means on the support for positioning the open end of a package over the opening,

(c) a cover for said opening movable between closed and open positions whereby when the cover is in the open position said disks can be dispensed through said opening, and

(d) at the edge of the opening a small depression large enough to permit entrance of a thumb or finger to assist in removal of the bottom disk from a stack thereof.

2. The dispenser of claim **1** which includes means for holding the package on the support.

3. The dispenser of claim **1** in which there is a cylindrical flange on top of the support concentric with the opening, which flange is adapted to closely surround a stack of disks within the package.

4. The dispenser of claim **3** which includes a cylindrical band the inner surface of which has a diameter somewhat greater than the diameter of the outer surface of said cylindrical flange, the space between the band and the flange being adapted to hold a portion of the wall of a flexible cylindrical package in a dust-and-moisture-tight seal.

5. The method of removing circular milk filter disks one at a time from the bottom of a stack thereof, which disks are all of the same size and stacked concentrically and in dust-and-moisture-proof storage on a horizontal support over a dispensing opening in the support with a closure movable between a closed position which closes the opening and an open position which exposes at least a part of the bottom disk in the stack, which method comprises moving the closure from the closed position to an open position, then manually removing the bottom disk from the stack and thereby causing the remainder of the stack to rest on said support over the opening and then returning the cover to the closed position.

6. The method of claim **5** in which the back of the stack rests on a portion of the support immediately behind the opening and on removal of the bottom disk the back of the remaining stack is caused to rest on said portion of the support.

7. The method of storing and dispensing circular milk filter disks which are all of the same size and enclosed in a dust-and-moisture-proof package, using a dispenser with an opening therein and a closure therefor, which method comprises:

(a) opening said package at one end,

(b) inverting the package and placing the opened end on the dispenser in a position which is sufficiently vertical to cause the stack to feed toward said opening as the disks are removed one by one through the opening,

(c) forming a dust-and-moisture-tight seal around the opening between the dispenser and the open end of the package,

(d) moving the closure from the closed position to an open position and exposing a portion of the edge of the bottom disks including substantially one-half the circumference of the bottom disk, applying pressure to the exposed edge of the bottom of the stack of the

disks and lowering this edge of the bottom disk below the plane of the top of the part of the dispenser which supports the stack, and by pulling this disk forward and downward sliding it out from under the stack, while the balance of the disks remain in the package, and returning the closure to the closed position.

8. The method of claim **7** in which the bottom disk is manually removed through the opening.

9. The method of claim **7**, using a stack of disks enclosed in a substantially cylindrical flexible packaging material closed at the bottom end and temporarily closed at the top, with a circular flange on the dispenser about the opening therein, which method comprises opening the top of the package wide, inverting the package and resting it on the dispenser in a vertical position over the opening therein, with the flange within the package and making the dust-and-moisture-proof seal between the flange and the package.

10. The method of dispensing milk filter disks from the bottom of a stack thereof, the stack being maintained

in a dust-and-moisture excluding enclosure, a part of the bottom disk being covered by a movable closure, which method comprises moving the closure and thereby exposing at least a part of the bottom disk and at least substantially one-half of its circumference, manually grasping the bottom disk adjacent its exposed circumference and by pulling it, thereby sliding it out from under the remainder of the stack.

References Cited

UNITED STATES PATENTS

1,225,728	5/1917	Cooley	221—287
2,289,099	7/1942	Buttermann	221—287 X
2,295,313	9/1942	Weir	312—42
2,340,090	1/1944	Vineburgh	312—43 X
2,475,738	7/1949	Epplin	221—197
2,486,973	11/1949	Ostinelli	312—42

BOBBY R. GAY, *Primary Examiner.*

J. L. KOHNEN, *Assistant Examiner.*