

Oct. 7, 1941.

R. E. DE KAY

2,258,002

MOVABLE CLOSURE DEVICE

Filed Dec. 18, 1939

FIG. 1.

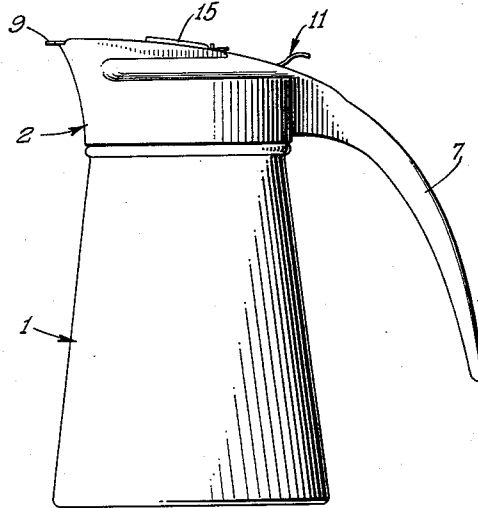


FIG. 2.

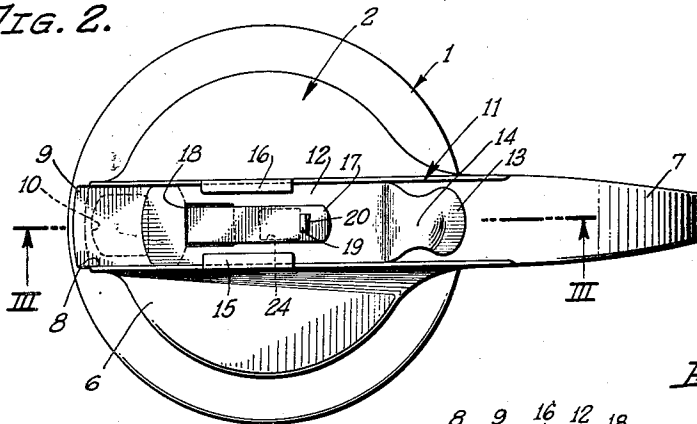


FIG. 4.

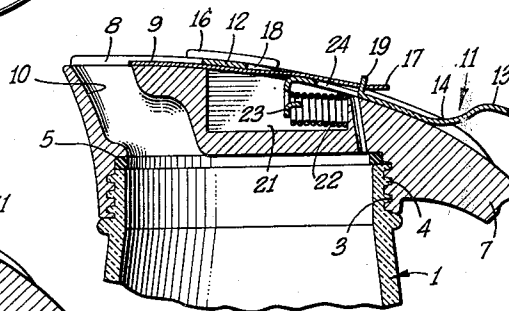
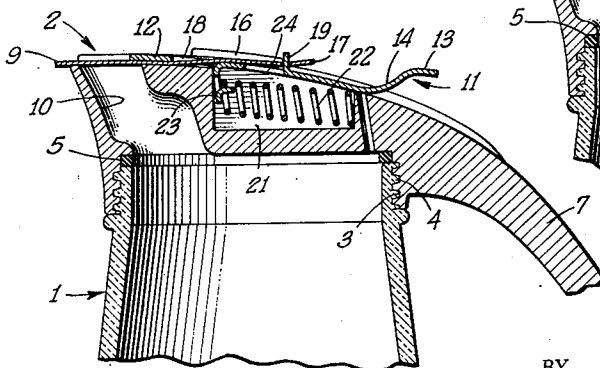


FIG. 3.



BY

INVENTOR.  
ROBERT E. DE KAY  
*Harold W. Mattingly*  
ATTORNEY

## UNITED STATES PATENT OFFICE

2,258,002

## MOVABLE CLOSURE DEVICE

Robert E. De Kay, Los Angeles, Calif., assignor to  
Na-Mac Products Corp., Los Angeles, Calif., a  
corporation of California

Application December 18, 1939, Serial No. 309,760

7 Claims. (Cl. 65—31)

My invention relates to a movable closure device and has particular reference to a movable closure device for use on detachable container caps.

When syrup, honey, or other relatively viscous and sticky fluids are served or dispensed from containers, it is a common experience for the fluid to drip and run down the side of the container after each dispensing operation. Numerous attempts have been made in the past to provide a movable closure member adapted to be used on a cap for such containers and which is so constructed as to cleanly and surely cut the flow of fluid from the container when the closure is moved to the closed position so as to avoid this difficulty of the fluid running down the sides of the container.

While many of the prior devices served to effect this cutting off operation, all are somewhat complicated in nature, employing a slide closure member which is coupled by means of various types of linkages to a handle which is in turn pivotally secured to the cap body. Such constructions have numerous disadvantages, not the least of which is the relatively high cost of manufacture and the difficulty of keeping such devices clean and in a satisfactory operating condition. Most of these disadvantages arise from the employment of a pivotally mounted handle and the use of the necessary linkages required to couple the handle to the sliding closure member.

It is accordingly an object of my invention to provide a movable closure device in which the handle member or thumb-piece is mounted for slidable movement in contra-distinction to the pivotal movement employed on the prior devices.

It is also an object of my invention to provide a closure member of the character set forth in the preceding paragraph in which the path of movement of the thumb-piece is such as to conform to the natural path of movement of the thumb of a person using the device.

It is a further object of my invention to provide a closure device of the character set forth in the preceding paragraphs in which the various parts employed are detachably inter-related so that disassembling and cleaning operations may be readily performed.

It is a still further object of my invention to provide a device of the character set forth in the preceding paragraphs in which the cap member is die cast, molded, or similarly constructed to provide an integral supporting handle and integrally formed means for guiding and securing the movable closure member thereto.

It is also an object of my invention to provide a device of the character set forth in the preceding paragraphs which employs a minimum

number of moving parts, thus reducing the cost of manufacture and maintenance.

Other objects and advantages of my invention will be apparent from a study of the following specifications, read in connection with the accompanying drawing, wherein:

Fig. 1 is an elevational view illustrating the appearance of one form of cap and closure device of my invention as installed on a conventional syrup container;

Fig. 2 is a plan view of the closure device illustrated in Fig. 1;

Fig. 3 is a longitudinal vertical section taken substantially along the line III—III of Fig. 2 and illustrating the cooperative relationship between the parts when the device is in its closed position; and

Fig. 4 is a sectional view similar to Fig. 3 but illustrating the various positions of the parts when the closure member is retracted to open the orifice in the cap.

Referring to the drawing, I have illustrated a conventional form of a syrup or honey container 1 as being fitted with a removable cap 2 which cap is illustrated as incorporating the preferred embodiment of the closure member of my invention.

As illustrated particularly in Fig. 3, the cap member 2 is accordingly provided on its underside with a cylindrical recess 3 which may be threaded as indicated at 4 to provide an attachment with the upper threaded end of the container 1. If desired a gasket 5 may be interposed between the cap member 2 and the top edge of the container 1 to prevent leakage around the threads of the fluid contained within the container. The cap member 2 is preferably provided with an upper body portion 6 with which is integrally formed a rearwardly and downwardly extending handle member 7, thus providing a means by which the container 1 may be lifted and disposed in a pouring position.

The upper surface of the body portion 6 is preferably provided with a longitudinally extending shallow groove 8 which groove is preferably arcuate in shape and disposed in substantial alignment with the handle 7. Within the groove 8 is slidably received a flat blade-like closure member 9 which is preferably formed of a thin resilient material, such as thin spring steel, spring brass or other strong resilient material.

The closure member 9 is adapted to be slid along the groove 8 from a forward or closed position such as that illustrated in Figs. 2 and 3, in which position it overlies an orifice 10 formed in the body of the cap 2 and communicating with the interior of the container 1, to a retracted or orifice opening position such as that illustrated in Fig. 4.

In order that the closure member 9 may be readily and easily moved between the aforementioned two positions, I provide a thumb-piece 11 which includes a plate portion 12 having a width substantially equal to the width of the slot 8 and which is disposed in this slot in a position overlying the closure member 9. Formed integrally with the plate portion 12 I may provide a portion 13 which is displaced upwardly relative to the plane of the plate member 12 and which may be provided with a concave depression 14 therein to provide a secure engagement with the thumb of a person lifting the container 1 by means of the handle 7.

The closure member 9 and the overlying plate portion 12 of the thumb-piece 11 may be prevented from moving transversely of the slot 8 in which they are disposed by providing flange means 15 and 16 which are preferably formed integrally with the body portion 6 of the cap member 2 and which overlie the closure member 9 and the thumb-piece 11, preferably extending across at least a part of the width of the groove 8.

In order that movement of the thumb-piece 11 may be translated into a corresponding movement of the closure member 9, I provide the closure member 9 with a rearwardly extending tongue portion 17 which is passed upwardly through a rectangular opening 18 formed in the plate portion 12 of the thumb-piece 11. The tongue portion 17 may be detachably engaged with the thumb-piece 11 by providing thereon an upwardly extending projection 19 adapted to be received in a correspondingly shaped opening 20 provided near the end of the tongue 17.

The closure member 9 is preferably formed in such shape as to be normally concave downwards so that when the tongue portion 17 is passed upwardly through the opening 18 the resilience of the material from which the closure member 9 is formed will operate to continually urge the tongue portion 17 down against the upper surface of the thumb-piece 11, thus insuring a continuous engagement between the projection 19 and the opening 20 which is formed in the end of the tongue portion. It will be observed that by thus interconnecting the closure member 9 and the thumb-piece 11, slidable movement of the thumb-piece 11 forwardly or rearwardly along the groove 8 will result in a corresponding opening and closing movement of the closure member 9 relative to the orifice 10.

I prefer to provide means for normally urging the closure member 9 toward its orifice closing position and for this purpose I provide in the body portion 6 of the cap member 2 a recess such as that indicated at 21 in Figs. 3 and 4. This recess is preferably disposed directly below the thumb-piece 11 so as to be covered thereby and is adapted to receive a compression spring 22. A spring engaging member 23 formed integrally with the thumb-piece 11 is projected inwardly into the recess 21 in a position to engage one end of the spring 22 so that the natural tendency of the spring 22 to extend and completely fill the recess 21 operates to urge the thumb-piece 11 and the closure member 9 toward their orifice closing positions.

The spring engaging means 23 may be conveniently formed at the time of manufacture of the thumb-piece 11 by employing a die stamping operation and merely turning downwardly into the desired position the material which would normally be removed to provide the aforementioned opening 18. In a similar manner the upwardly

directed projection 19 may be formed by shearing the metal of the plate portion 12 along three sides of a rectangle and bending this material along the fourth side so as to displace the material so bounded into an upwardly directed position.

It will be observed that this operation will provide a second opening in the plate portion 12 which opening is identified by the reference character 24. I prefer to dispose the parts in such location that the opening 24 is normally disposed above the recess 21, thus permitting the opening 24 to be employed as a means for introducing the spring 22 into the recess 21 or removing the spring therefrom without removing the thumb-piece 11 from its normal position in the groove 8.

Attention is called to the fact that the device just described may be readily and easily disassembled for cleaning purposes by merely springing the tongue 17 upwardly against the normal resilience of the material to disconnect the closure member 9 from the thumb-piece 11 and then sliding the closure member 9 forwardly relative to the thumb-piece 11. This operation permits the closure member 9 to be completely removed so that it and the orifice with which it is associated may be cleaned. If a further disassembly of the device is desired, it is only necessary to remove the spring 22 forwardly through the opening 24, this operation freeing the thumb-piece 11 from the cap member 2, allowing both the spring and the thumb-piece to be separately removed for cleaning. After these movable parts have been removed, the cap member 2, of course, may also be cleaned.

I prefer to form the cap member 2 by a die casting or molding operation, thus permitting the various openings, recesses, threads and the like to be formed integrally therewith at extremely low cost.

From the foregoing it will be observed that I have provided a movable closure device for use on caps to be detachably associated with containers which is characterized by a minimum number of moving parts and the complete elimination of all pivots, linkages, and similar means for interconnecting the thumb-piece or handle with the closure member and that the novel features of construction herein described permit the ready and inexpensive manufacture and maintenance of the device of my invention.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown or described herein, except as defined in the appended claims.

I claim:

1. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a shallow groove formed in said cap member extending transversely of said orifice; a flat blade-like closure member mounted in said groove for slidable movement therealong to open and close said orifice; flange means formed integrally with said cap member and extending across at least a part of the width of said groove and over said closure member for preventing movement of said closure member in a direction transverse to the length of said groove; a thumb-piece also slidably mounted in said groove below said flange; and means coupling said closure

member to said thumb-piece for movement therewith.

2. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a flat blade-like closure member; means on said cap defining an arcuate path of movement of said closure member forwardly and rearwardly across said orifice; a handle means on said cap member extending rearwardly and downwardly from said cap in substantial alignment with said path of movement; and a thumb-piece secured to said closure member in such position as to be moved therewith along an arcuate path of movement substantially paralleling the length of said handle.

3. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a flat blade-like closure member; means on said cap defining an arcuate path of movement of said closure member forwardly and rearwardly across said orifice; a handle means on said cap member extending rearwardly and downwardly from said cap in substantial alignment with said path of movement; a thumb-piece; means mounting said thumb-piece on said cap for sliding movement along an arcuate path of movement substantially paralleling the length of said handle; and means coupling said thumb-piece to said closure member.

4. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a flat blade-like closure member; means on said cap defining an arcuate path of movement of said closure member forwardly and rearwardly across said orifice; a handle means integral with said cap member extending rearwardly and downwardly from said cap in substantial alignment with said path of movement; a thumb-piece; means mounting said thumb-piece on said cap for sliding movement along an arcuate path of movement substantially paralleling the length of said handle; means coupling said thumb-piece to said closure member; and spring means interposed between said thumb-piece and said cap member for normally urging said closure member to a position closing said orifice.

5. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a shallow groove formed in said cap member extending transversely of said orifice; a thumb-piece mounted in said groove for sliding movement therealong; flange means formed integrally with said cap member and extending across at least a part of the width of said groove and over said thumb-piece for preventing movement thereof in a direction transverse to the length of said groove; a flat blade-like closure member also mounted in said groove for sliding movement therealong below said flange means; a

rearwardly extending tongue portion formed on said closure member; an opening in said thumb-piece, said closure member being disposed between said thumb-piece and said cap member and having the tongue portion thereof passed through said opening so as to overlie said thumb-piece; and means detachably coupling said tongue portion to said thumb-piece, whereby releasing said detachable coupling allows said closure member to be detached from said thumb-piece to permit cleaning of said device.

6. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a shallow groove formed in said cap member extending transversely of said orifice; a thumb-piece mounted in said groove for sliding movement therealong; flange means formed integrally with said cap member and extending across at least a part of the width of said groove and over said thumb-piece for preventing movement thereof in a direction transverse to the length of said groove; a flat blade-like closure member formed of a relatively thin resilient material also mounted in said groove for sliding movement therealong below said flange means; a rearwardly extending tongue portion formed on said closure member; an opening in said thumb-piece, said closure member being disposed between said thumb-piece and said cap member and having the tongue portion thereof passed through said opening so as to overlie said thumb-piece; an upwardly directed projection formed on said thumb-piece; and an opening in the end of said tongue portion for receiving said projection, whereby springing said tongue portion away from said thumb-piece against the resilience thereof permits disassociation of said closure member from said thumb-piece to permit disassembly and cleaning of said device.

7. The combination with a container cap having means for attachment to the open end of a container and means defining an orifice through which the contents of said container may be discharged, of a movable closure device including: a shallow groove formed in said cap member extending transversely of said orifice; a flat blade-like closure member mounted in said groove for slidable movement therealong to open and close said orifice; flange means formed integrally with said cap member and extending across at least a part of the width of said groove and over said closure member for preventing movement of said closure member in a direction transverse to the length of said groove; a thumb-piece also slidably mounted in said groove below said flange; means coupling said closure member to said thumb-piece for movement therewith; a recess formed in said cap member below said thumb-piece; a spring disposed in said recess; a spring engaging means formed on said thumb-piece projecting into said recess and engaging one end of said spring; and an opening through said thumb-piece in a position to normally overlie said recess and of a size sufficient to pass said spring, whereby said spring may be inserted into or removed from said recess without removing said thumb-piece from said groove.

ROBERT E. DE KAY.