May 17, 1932. A. F. SETHER 1,858,419

CAP FOR PASTE TUBES

Filed March 12, 1930

FIG. 4

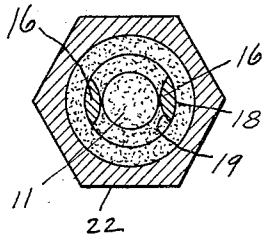


FIG. 3

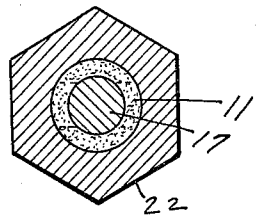


FIG. 5

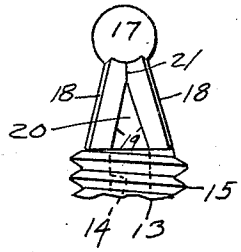


FIG. 6

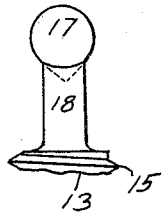


FIG. 8

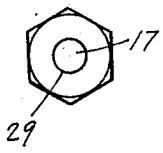
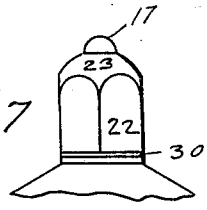


FIG. 7



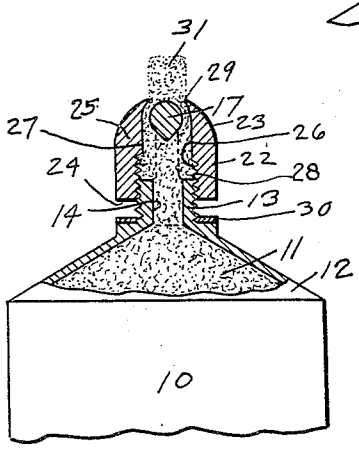


FIG. 2

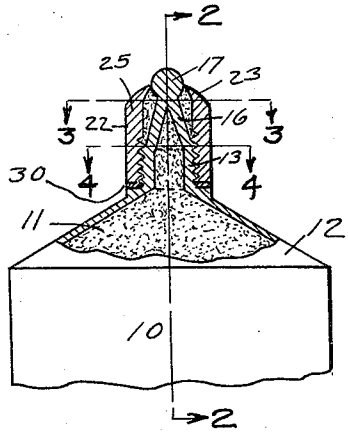


FIG. 1

INVENTOR
A. F. SETHER.
BY E. B. Birkenbuel.
ATTORNEY

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UNITED STATES PATENT OFFICE

ALVIN F. SETHER, OF EUGENE, OREGON

CAP FOR PASTE TUBES

Application filed March 12, 1930. Serial No. 435,241.

This invention relates generally to flexible tube containers for paste, and particularly to a special form of closure therefor.

The main object of this invention is to provide an exceedingly simple and efficient form of closure for paste containing tubes.

The second object is to produce a cap or closure which need not be completely removed from the top in order to eject the material therefrom.

The third object is to so construct the cap as to provide the minimum amount of resistance to the flow of paste when opened and to completely seal same against evaporation and contamination when not in use.

The fourth object is to produce a cap which will be easy to construct by casting methods in order that its cost may be kept as low as possible.

The fifth object is to so construct the cap that while it may not be removed for the ejection of paste it can be removed for cleansing or sterilizing purposes should same be desired.

The sixth object is to so construct the cap that the closing operation is performed without requiring two metal faces to be forced into contact with each other.

These, and other objects, will become more apparent from the specification following as illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary side elevation of the outlet end of a paste tube with a portion of its cap broken away in section.

Figure 2 is a section taken along the line 2—2 in Figure 1.

Figure 3 is an enlarged section along the line 3—3 in Figure 1.

Figure 4 is an enlarged section along the line 4—4 in Figure 1.

Figure 5 is an enlarged fragmentary elevation of the discharge tip.

Figure 6 is a side elevation of Figure 5.

Figure 7 is an enlarged side elevation of the cap in position on a tube.

Figure 8 is a plan of the cap.

Similar numbers of reference refer to similar parts throughout the several views.

Referring in detail to the drawings, there is shown the ordinary form of flexible tube 10 for holding paste 11. The discharge end 12 of the tube 10 is considerably heavier than the sides of the tube 10 and preferably converges toward a point, after the fashion illustrated in the drawings. The end 12 terminates in an outlet tip 13 having a central opening 14 and an external thread 15.

Extending beyond the ends of the tip 13 are the converging arms 16 which terminate in a ball shaped tip 17 and are integral therewith. The outer face 18 of each arm 16 is curved to correspond with the root of the threads 15. The inner face 19 of each arm 16 is also preferably curved, as shown in Fig. 4. Between the arms 16 is an opening 20 which communicates with the opening 14 within the tip 13. The converging faces 19 intersect along the lines 21 which form a divider for the out-going paste 11.

Turning now to the cap itself it will be seen to consist of a hexagonal portion 22, one end 23 of which is rounded and the other end 24 is square.

The cap 25 thus described is provided with a recess 26 at one end and is threaded along its major axis about one half the length of the cap, the remaining portion having a cylindrical cavity 27 equaling the inside diameter of the cap thread 28. The recess 27 is somewhat larger than the diameter of the tip 17, but at its extreme end converges to form the outlet opening 29, which is equal in diameter to the tip 17.

It is desirable to provide a gasket 30 around the outlet tip 13 against which the face 24 seats when the cap is screwed tight.

The operation of the device is as follows: When it is desired to eject paste 11 from the tube 10 it is only necessary to rotate the cap 25 to the position shown in Fig. 2, giving the material a free outlet. When no more paste is required the cap is screwed down to a seat against the gasket 30, causing the parts to take the position shown in Fig. 1 thereby completely cutting off any unused portion 31 of the paste, making it possible to cleanse the tube and cap in any way desired without wasting or contaminating the contents thereof.

It is a well known fact that many attempts

have been made to provide devices of this character, which devices have failed to find their way into the market for the reason that they were too difficult to manufacture, or because of the fact that they would soon become inoperative, the common method employed being to provide relatively small outlet openings in the tube or its outlet tip and then causing some other member to form a flat seat thereon. Obviously, the efficiency of such devices suffers when a relatively stiff paste is handled or when the paste becomes stiff, due to evaporation.

It will be noted in my device that the area of the outlet passages beyond the opening 14 exceeds in area the size of that opening, and that when the cap is screwed down there is no tendency to compress the paste between a pair of seating faces but only to discharge the small surplus within the recess 27 to allow the cap to seat upon the gasket 30.

I claim:

1. In a paste container the combination of a flexible tube having a threaded outlet with a pair of arms projecting from the end of said outlet and converging toward each other in a manner to permit an opening to exist between said arms communicating with said outlet tip, said arms terminating in a tip of circular cross section, a cap on said outlet having a recess formed therein larger than said tip, the outer end of said cap converging to form an opening adapted to be closed by said tip, and a gasket between said cap and the junction of said tube and threaded outlet.

2. A tip for tubular paste containers consisting of a threaded end having an opening formed therethrough, converging arms extending from opposite sides of said threaded end and terminating in an enlarged ball the space between said arms constituting outlets communicating with the opening in the threaded end, a cap adapted to be threaded on said tip having an opening extending through the major portion thereof larger than said ball, the extreme outer end of said opening having a reduced diameter for which said ball forms a closure.

3. The combination of a threaded tip having an outlet opening therein and having a flat tapering extension formed thereon, said tapering extension having an opening formed through its flat side communicating with the opening in said tip, said tapering extension having a large ball formed on the end thereof and a threaded cap mounted on said tip having an opening in the end thereof approximating the diameter of said ball.

4. In a paste tube the combination of a threaded tip having an outlet opening therein having a flat tapering extension formed thereon, said tapering extension having an opening formed through its flat side communicating with the opening in said tip, said tapering extension having a large ball formed on the end thereof, a cap having one end thereof internally threaded to receive said tip and the other end thereof provided with an opening normally occupied by said ball which forms a closure therefor, and a gasket against which the inner end of said cap can seat while the outer end thereof is closed by said ball.

5. A paste container having an externally threaded outlet tip provided with a central opening and having a gasket at the junction of the tip and container, said tip having a pair of converging arms extending from its open end intersecting along the axis thereof, said arms having a double convex cross section, and having a ball point formed at said intersection together with a threaded cap for said tube having an opening along its entire length one end of which is threaded and the other end of which is reduced in diameter to that of said ball point.

6. In a tubular paste container, the combination of a flexible tube having a threaded outlet tip projecting from one end thereof, a gasket surrounding the base of said tip, a pair of converging arms forming an extension for said tip, the space between said arms constituting diverging connections with the tip opening, and having a spherical point at the end of convergence of said arms, and a threaded cap for said tip adapted to seat against said gasket, said cap having a tapering opening in its outer end whose minimum diameter equals the maximum diameter of said spherical point.

ALVIN F. SETHER.