Oct. 27, 1936. K. RUETZ 2,058,830

COLLAPSIBLE TUBE

Filed June 3, 1935

Fig. 1

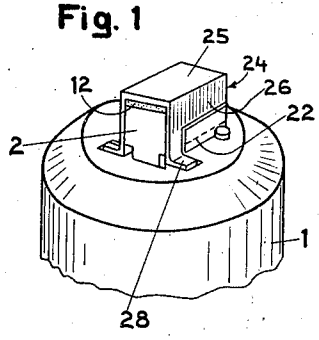


Fig. 2

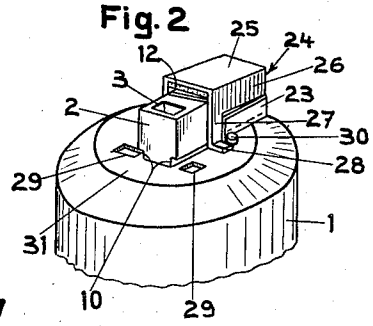


Fig. 7

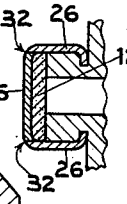


Fig. 3

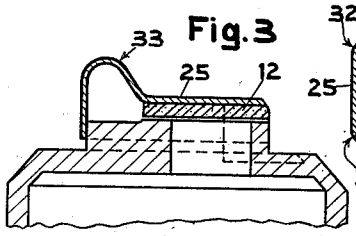


Fig. 4

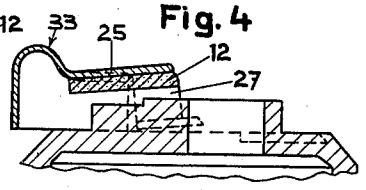


Fig. 5

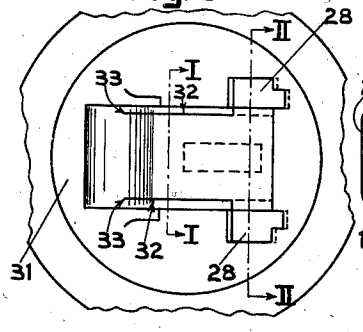


Fig. 8

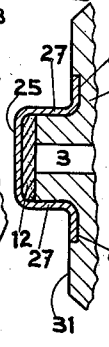


Fig. 6

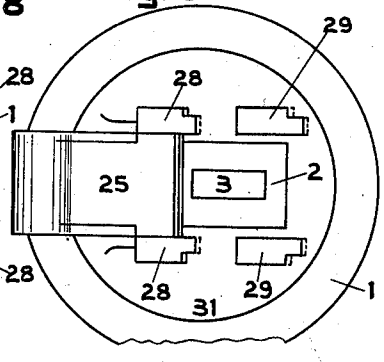


Fig. 9

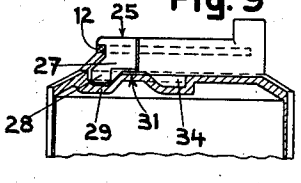


Fig. 11

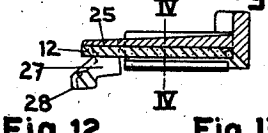


Fig. 12

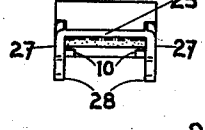


Fig. 13

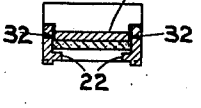
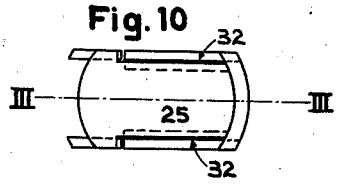


Fig. 10



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Karl Ruetz

Patented Oct. 27, 1936 2,058,830

UNITED STATES PATENT OFFICE

2,058,830

COLLAPSIBLE TUBE

Karl Ruetz, Zurich, Switzerland

Application June 3, 1935, Serial No. 24,691
In Germany June 11, 1934

3 Claims. (Cl. 221—60)

The application Ser. No. 724,720 of May 9, 1934 concerns a collapsible tube with prismatic head, this having a discharge opening for issuing the contents, and being provided with a longitudinally movable sliding closure cap on top of said head. What characterizes the aforementioned application is that the packing means with which the slide is provided, is lifted on opening the slide and, on closing the slide, is pushed down again from above on to the opening. The means for managing to lift the springy part of the slide are either special springs (Figs. 1–7) or lips bent downward on the front part of the slide (Figs. 8–14) which rise to the surface of the tube head and thus keep the packing means at a distance from the tube head. In the last mentioned examples, part of the slide is itself made into a spring.

The present invention now concerns additional improvements of the invention as described in application Ser. No. 724,720, namely that the lifting of the springy part of the closing head is managed by different means sliding no longer on the surface of the tube head, but along the surface of the tube cylinder instead. A further alteration consists in the method of making part of the slide springy.

In the drawing several ways of executing the object of the invention are exemplified:

Fig. 1 showing in perspective a first way of executing the object in the closed position,

Fig. 2 the same in the open position.

Figs. 3–6 show a second way of executing; namely,

Fig. 3 in vertical section in closed position,

Fig. 4 the same in vertical section in open position,

Fig. 5 a plan of Fig. 3,

Fig. 6 a plan of Fig. 4,

Fig. 7 a section along line I—I of Fig. 5,

Fig. 8 a section along line II—II of Fig. 5.

Figs. 9–13 show another way of executing; namely,

Fig. 9 shows the slide in closed position in elevation and the tube body in section,

Fig. 10 shows the slide by itself in plan,

Fig. 11 shows the slide by itself in vertical section along line III—III of Fig. 10,

Fig. 12 shows a face view of the slide, and

Fig. 13 a section along line IV—IV of Fig. 11.

On each of the longer sides of the prismatic tube head 2, provided with a discharge opening 3 of the tube cylinder 1, a longitudinal groove 10 is arranged in Figs. 1 and 2. An edge bent inward 22 of parts 23 of the slide grips either of these longitudinal grooves 10 on either side. Parts 23 are fastened in the rear of the back side 24 of the slide. Furthermore, the cover 25 of the slide which has lateral walls 26 is fastened to the back side 24. The packing means 12, for instance a cork-plate, is fastened to the bottom surface of the slide. At the front part of the upper portion of the slide, which consists of the back side 24, the lateral walls 26 and the cover 25, there are feet bent down 27, possessing parts 28, parallel to surface 31 of tube cylinder 1. Notice that the feet and the lateral walls 26 are separated by slits from parts 22, the latter being connected with the slide in rear of back side 24 only. In surface 31, recesses 29 are arranged, the size of which corresponds to that of parts 28. On moving the slide from the position marked in Fig. 1 to the position shown by Fig. 2, parts 28 are pushed from the recesses 29 and thus lift the packing means off the surface of the tube head 2, as the slits between parts 22 and 26 allow the back side 24 some elasticity. Parts 28 now slide along surface 31, keeping the packing means together with the cover of the slide 25 lifted up. When one of parts 28 hits against a stop 30 on surface 31, the movement of the slide in a backward sense is terminated. When, on closing the slide, parts 28 spring back into the openings 29 again, the packing means 12 is pressed down vertically on the opening 3.

In Figs. 3–8 the central part of cover 25^a is made to be springy by means of slits between itself and the lateral walls 26. The slits 32^a reach as far as points 33. On the bottom side of the elastic cover 25 the packing means 12^a is fastened. At the front of the cover, there are fastened aprons 27^a which are bent down and are ended by parts 28^a. For these, recesses 29^a on surface 31^a are provided. Stops 34^a on surface 31 serve to limit the opening movement of the slide.

While the ways of executing seen so far are particularly suitable for manufacture in metal, as for instance aluminium, the slide as shown in Figs. 9–13 is suitable for manufacture in synthetic resin such as Bakelite. Its construction resembles that of the way of executing shown in Figs. 3–8, except that parts 28^b at the feet 27^b are not bent parallel to surface 31^b, but are bent down. When the slide is in closed position, parts 28^b lie in the recesses 29^b, and when the slide begins to open, they glide on the surface 31^b and, in completely open position of the slide, they sink into additional recesses 34^b. It is only when one starts closing the slide again that the parts 28^b lift the slide cover 25^b between slits 32^b again

and let cover 25b with packing means 12b spring down from above on to opening 3 shortly before the closing is completed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a collapsible tube having a prismatic head with a discharge opening for the contents, a sliding closure-cap on top of said head longitudinally movable and of the same length as said head, one end of said cap being springy and longitudinally movable up to a point adjacent to said opening and being resiliently liftable, packing means on the bottom-side of said end, rigid lips bent down from said springy end as lifting means for the latter and extending onto the top-surface of the tube-body.

2. In a collapsible tube having a prismatic head, a sliding closure cap on top of said head longitudinally movable and of the same length as said head, one end of said cap being springy and longitudinally movable up to a point adjacent to the orifice of the tube, said end being resiliently liftable, packing means on the bottom-side of said end and as lifting means for said end rigid lips bent down from said springy end and extending into recesses of the top-surface of the tube-body.

3. In a collapsible tube having a prismatic head, a sliding closure cap on top of said head longitudinally movable and of the same length as said head, one end of said cap being springy and being longitudinally movable up to a point adjacent to the tube-orifice, said end being resiliently liftable, packing means on the bottom-side of said end, rigid lips bent down from said springy end as lifting means for said end, said lips in the closed position of the cap engaging into recesses of the top-surface of the tube-body and additional recesses to the rear of the aforesaid ones for engaging the lips in the open position of the cap.

KARL RUETZ.