Oct. 3, 1939. G. W. KNAPP 2,175,058

PACKAGE AND CLOSURE THEREFOR

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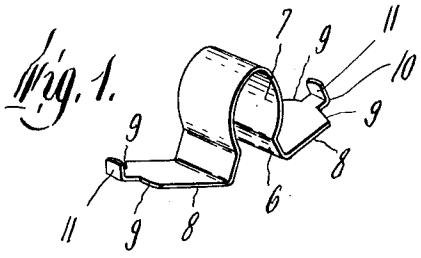


Fig. 1.

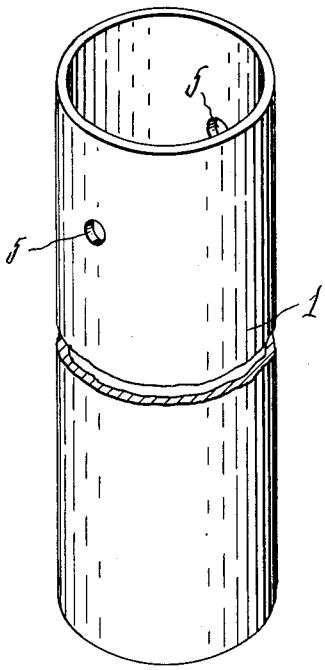


Fig. 2.

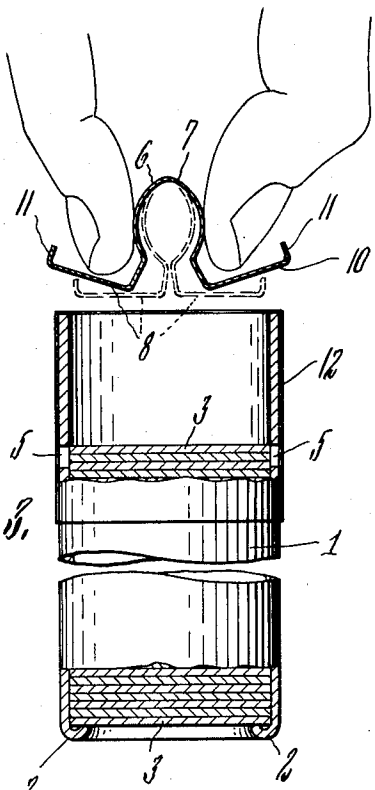


Fig. 3.

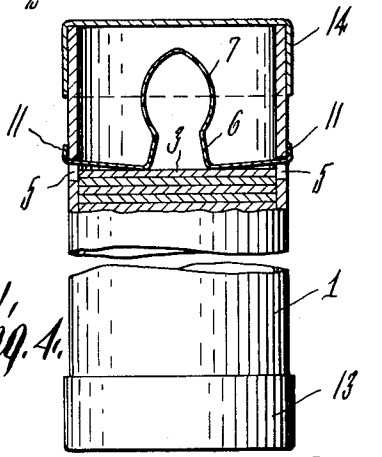


Fig. 4.

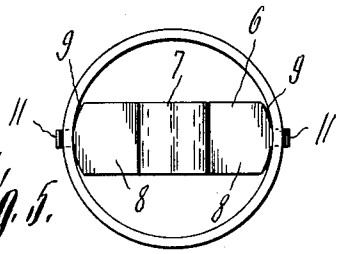


Fig. 5.

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PACKAGE AND CLOSURE THEREFOR

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Application May 2, 1936, Serial No. 77,494

1 Claim. (Cl. 229—93)

This invention relates to the packaging of stacked articles, and while not limited thereto, has been more particularly designed for the packaging of disk-like articles such as the flat cardboard disks commonly employed, either by themselves or in connection with other parts, for closing milk and cream bottles.

Heretofore such articles have commonly been packaged in stacked relation in cardboard tubes, one end of such a tube usually being flanged over to provide a seat for the first disk to be inserted, and the other end capped over and sealed after the last disk has been inserted.

When ready for use the capped end of the tube has commonly been removed as by cutting off. This shortens the tube so that even if it were carefully handled, it would not be suitable for re-use, since it would not be able to carry the same number of caps which it contained originally, and since the tube has little salvage value as paper stock, it has been usual practice to throw it away after a single use. The cost of the tube, however, represents a considerable proportion of the cost of the complete package.

An object of the present invention, therefore, is to provide a simple and inexpensive retainer for the top end of the stack which will permit the ready securing or release of the packaged articles without cutting or otherwise damaging the tube, so that it can be re-used satisfactorily. Because of this capacity for re-use the tube can be made of better material than heretofore commonly employed, or it can be reinforced so that it is better able to withstand shipment and handling, additional first cost of the tube being amply justified by its much longer useful life.

In accordance with this invention, therefore, the stack of articles is secured within the tube by an easily removable retainer, which, however, securely holds the stack when in position. A cap may then be placed over the open end of the tube, and if desired, one may be placed over the lower end as well. The retainer takes the thrust of the tube contents, relieving the cap of this duty, so that a simple frictionally held cap at the top is all that is required since its function is only to protect the top of the stack from entry of foreign matter and to prevent accidental removal of the retainer, the in-turned ledge of the bottom of the tube also relieving the cap at the lower end from any pressure from the tube contents. This retainer may be, conveniently, a spring clip or latch which may engage the tube when in stack-retaining position.

For a more complete understanding of this invention, reference may be had to the accompanying drawing in which

Figure 1 is a perspective view of a spring clip which may be employed to secure the stack in position.

Figure 2 is a perspective view of a tube prepared to receive the clip shown in Figure 1.

Figure 3 is a view partly in side elevation and partly in central vertical section showing the filled tube and the clip about to be placed in position therein.

Figure 4 is a view similar to Figure 3, but showing the clip in position and the package ready for shipment.

Figure 5 is a top plan of the package of Figure 4, but with the top cap removed.

Referring to the drawing, at 1 is shown a tube of cardboard or the like which may have one end in-turned as at 2 (see Figure 3) to form a shoulder against which the lowest article of a stack, such as disks 3, may be engaged, so as to prevent the stack of articles from escaping from the tube at this end. Somewhat inwardly from the opposite, or what may be termed the "upper end" of the tube is shown as provided with means with which may be engaged an article-retaining element. As shown this means on the tube comprises the oppositely disposed perforations 5. The tube is filled up with the disks or other articles substantially to the level of the top of these perforations, there being sufficient resiliency of the material of the articles to permit them to be pressed together enough to admit of a retainer being sprung into position thereupon and engaged through the perforations 5. A retainer 6 suitable for this purpose is shown detached in Figure 1. As shown it comprises a resilient strip of metal having a portion intermediate its ends formed up into a normally somewhat open loop 7. From the ends of this loop extend the flat portions 8 which are narrowed toward their ends to form at each a pair of arcuate shoulders 9 on either side of a narrow extension 10. The extremity of this extension is bent laterally of its thickness, and is shown upwardly bent as at 11. This retainer may be grasped between the fingers at the loop portion 7 and pressed together from the full line position shown in Figure 3 to the dotted line position. In the dotted line position, the portions 8 are brought into substantially the same plane, and the extremities 11 are brought together sufficiently so that the retainer may be inserted into the upper end of the tube, pressed against the top article 3 therein, and then allowed to expand to permit

the portions 10 and 9 to project through the perforations 5, as far as is permitted by the engagement of the arcuate edges 9 with the inner wall of the tube. The retainer then being released, the parts assume the position shown in Figure 4 with the articles pressing upwardly on the retainer and pressing the extremities 11 against the outer wall of the tube in overlapping relation thereto. The articles are thus retained firmly within the tube, but may be released readily by merely engaging the loop portion 7 of the retainer between the fingers, and squeezing it together and pressing downwardly so as to lower the extremities 11 and to permit them to be drawn inwardly through the perforations 5 the extremities 11 being shorter than the diameter of the perforations. Then while the retainer is held retracted, it may be removed from the tube. The tube may then be applied in inverted position to any suitable machine for feeding the articles one by one from the open end of the tube to the point of use.

In order to prevent entry of foreign matter into the tube during shipment or storage or otherwise, the tube ends may be enclosed by friction caps such as 13 and 14, as shown in Figure 4. Since neither of these caps takes any thrust from the packaged articles, this thrust being taken by the in-turned portion at the lower end of the tube, and by the spring retainer in engagement with the tube walls at its upper end, no special fastening of these end caps is required and they can be merely held frictionally in position, if desired. By reason of the fact that no cutting of the tubes is required to free the articles therein, the tubes can be used repeatedly, and in order to make them more serviceable than the relatively cheap tubes formerly usually employed, they may be made of a higher grade material, and if desired, they may be reinforced, more particularly at their upper end portions, where the perforations 5 are positioned. One method of so reinforcing the tube is to impregnate it with a stiffening and hardening compound, such, for example, as a hot wax, preferably one having as one ingredient a hard wax of the nature of carnauba or montan, or, if desired, the upper end portion of the tube may be reinforced with a metal ferrule or other reinforcing member such as 12 shown in Figure 3. Such reinforcement should extend somewhat below the perforations 5 in order to be most effective.

From the foregoing description of one embodiment of this invention, it should be evident to those skilled in the art that various changes and modifications may be made without departing from the spirit or scope of this invention as defined by the appended claim.

I claim:

In combination, a tube having oppositely disposed perforations adjacent to one end, and a closure clip comprising a resilient strip member having an intermediate normally open loop closeable by pressure exerted against opposite sides thereof and having outwardly extending end portions retractible by such closing pressure sufficiently to permit insertion of said clip into said tube, said ends having portions narrower than said perforation which may be projected outwardly therethrough on release of such loop closing pressure after said clip has been inserted in said tube, the extremities of said ends being bent toward parallelism with the axis of said tube to overlap the outer wall of said tube when said ends have been so projected and said clip has been pressed toward said tube end as by resilience of material enclosed by said tube, said clip ends being provided with shoulders inwardly of said narrow portions to engage with the inner wall of said tube and limit the outward spring of said clip.

GORDON W. KNAPP.