Nov. 25, 1930. N. O. JOHNSON 1,782,429

COLLAPSIBLE TUBE PROTECTOR

Filed March 21, 1929

Fig. 2.

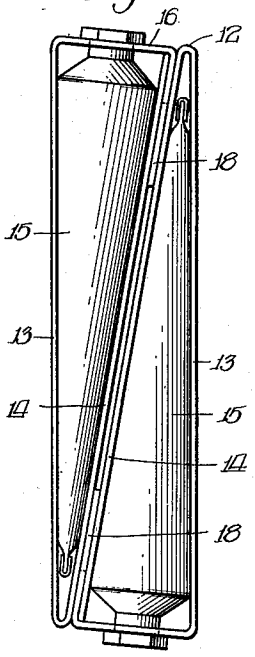


Fig. 1.

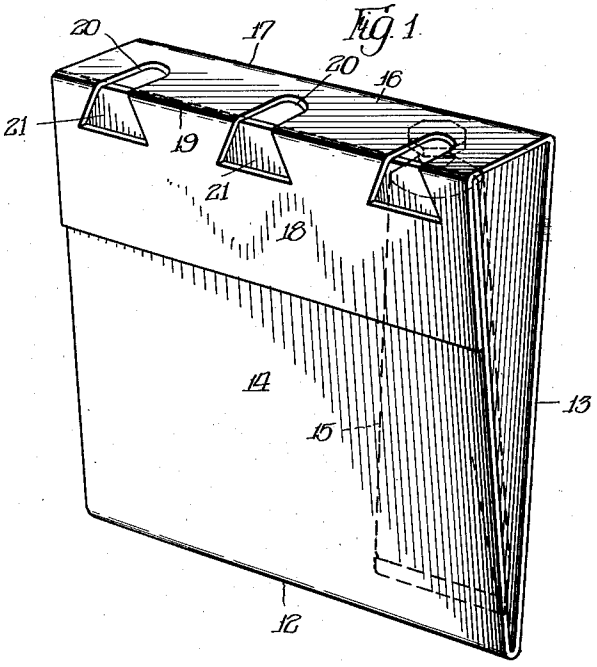
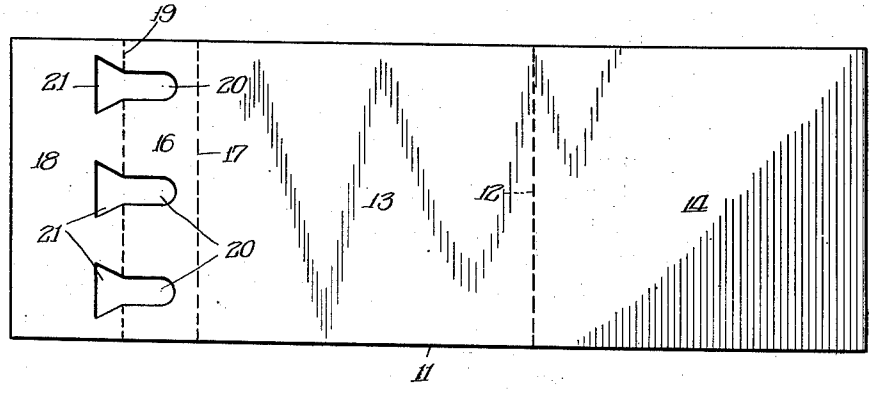


Fig. 3.



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Patented Nov. 25, 1930 1,782,429

UNITED STATES PATENT OFFICE

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COLLAPSIBLE TUBE PROTECTOR

Application filed March 21, 1929. Serial No. 348,712.

My invention pertains to novel and advantageous means for shielding or protecting collapsible or thin metal tubes and their contents, or similar appliances, during shipment, as in cartons or the like.

The ordinary, collapsible, unsubstantial, thin, metal tubes with necks and screw caps at one end taper toward their other ends, and, since such tubes are usually produced by drawing the metal from the ends or shoulders having the necks and caps, their opposite end portions are ordinarily their thinnest portions and are consequently more likely or subject to rupture or breakage during transportation and cartage, especially when the tubes are laden or charged with relatively heavy material, such as paints or pigments.

The leading aim or prime purpose of the present invention is to provide or supply simple and inexpensive protective means for such tubes whereby to reduce greatly the present day losses incident to the breaking or damaging of the tubes during transportation at which time they are subject to numerous jolts and jars.

To enable those skilled in this art to understand the invention and its various benefits fully, in the accompanying drawing, forming a part of this specification, a present preferred embodiment of the invention has been illustrated and detailed, and, for the sake of simplicity, the same reference numerals have been employed throughout the views to designate like parts.

In this drawing:—

Figure 1 is a perspective view of one of the protectors designed to accommodate a plurality of such collapsible tubes, a single one being presented in dotted lines;

Figure 2 indicates the manner in which a plurality of such loaded protectors may be readily assembled side by side for introduction into cartons for shipment; and

Figure 3 is a face view of the blank from which one of the shields or protectors is formed.

By reference to the drawing, it will be perceived that one of the protectors comprises a single, folded, rectangular sheet 11 of pasteboard, cardboard, or the like, of appropriate thickness and stiffness, and that it is folded or bent on the cross line 12 to provide a pair of side-walls 13 and 14 which diverge from one another away from the folding line, whereby they may readily accommodate the tapered tube 15 between them. If desired the side-wall 14 may be made slightly longer than its companion side-wall 13, although the exact relative lengths of these two walls is largely immaterial.

An end-wall 16, integral with and desirably but not necessarily at right-angles to the side-wall 13, has a folding line 17 along which it is connected with such side-wall, and a terminal flap 18 overlies an adjacent portion of the outer surface of the side-wall 14 and is connected with the end-wall 16 along a folding line 19.

Thus the side-wall 14 by underlying the end-wall 16 acts as an efficient support or prop for one edge portion thereof, the opposite edge being adequately sustained or held by the companion side-wall 13.

Such end-wall has a plurality of parallel slots 20, 20 through it, extending inwardly from the bending or folding line 19 but terminating short of the folding line 17, and each of such slots has an enlarged, flaring extension 21 reaching partway down the flap 18, all as is clearly illustrated.

Each slot 20 is made of such width that it will receive the neck only of one of the tubes 15, as is fully portrayed in the drawing, the enlargement 21 being of sufficient size to allow the screw cap or cover of the tube to pass through it.

In order to introduce the several tubes into place in the protector, while it is opened up, and with the flap 18 in substantially the same plane with the end-wall 16, the caps of the loaded or charged tubes are passed outwardly through the enlargements 21, 21 and then the tubes are shifted to the position shown in Figures 1 and 2 to cause their necks of reduced diameter to occupy the narrower slots or openings 20, 20, whereupon the side-wall 14 is swung up under the end-wall and the flap 18 is turned down against its outer face.

Such side-wall 14 not only performs the

supporting function specified, but, by overlapping the larger openings 21, 21, it prevents accidental dislodgment of the tubes and acts as a locking means for holding them in place.

By thus grasping and holding the tubes by the necks between their bodies and their removable caps, the tubes are prevented from shifting materially longitudinally in either direction and sidewise displacement is also precluded.

The supporting protector is somewhat larger than its tubes whereby their bottoms are suspended clear of the protector or shield and hence not subject to injury or damage.

Such security or preservation from harm is equally well afforded whether the protector and its tubes are maintained right side up or are reversed as is one shown in Figure 2 which illustrates the manner in which the structures and their shielded tubes may be stacked side by side, for packing in cartons or boxes.

The invention is not limited and restricted to the precise and exact details of structure shown and described, the scope of the invention being defined by the appended claims which indicate that various minor mechanical changes may be incorporated in the structure without departure from the heart and essence of the invention and without the loss of any of its material or substantial benefits or advantages.

I claim:

1. A protector for collapsible tubes, comprising a sheet of relatively stiff material folded along a cross line to afford a pair of diverging side-walls, one of said walls having an end-wall integral therewith and at substantially right-angles thereto, said end-wall having a flap integral therewith and bent to overlap the other side-wall, said end-wall having a slot therethrough to accommodate the neck only of a collapsible tube, said flap having an enlarged extension of said slot of sufficient size to permit the passage of the cap of said neck therethrough whereby to allow the introduction of the tube into said protector.

2. A protector for collapsible tubes, comprising a sheet of relatively stiff material folded along a cross line to afford a pair of diverging side-walls, one of said walls having an end-wall integral therewith and at substantially right-angles thereto, said end-wall having a flap integral therewith and bent to overlap the outer face of the other side-wall, the edge of the latter contacting with the inner surface of said end-wall, said end-wall having a slot therethrough of a width to accommodate the neck only of a collapsible tube, said flap having an enlarged extension of said slot of sufficient dimensions to permit the passage of the cap of said neck therethrough, whereby to allow the introduction of the tube into said protector.

3. A protector for collapsible tubes, comprising a sheet of relatively stiff material folded along a cross line to afford a pair of diverging side-walls of slightly different lengths, the shorter of said side-walls having an end-wall integral therewith and at substantially right-angles thereto, said end-wall having a flap integral therewith and bent to overlap the outer face of the other side-wall, the edge of the latter contacting with the inner surface of said end-wall, said end-wall having a plurality of slots therethrough of such width as to accommodate the necks only of a number of collapsible tubes, said flap having enlarged extensions of said slots of sufficient dimensions to permit the passage of the caps of the necks therethrough, whereby to allow the introduction of the tubes into said protector.

4. A protector for collapsible tubes, comprising a sheet of relatively stiff material folded along a cross line to afford a pair of diverging side-walls of about the same length one of said side-walls having an end-wall integral therewith and at substantially right-angles thereto, the edge of the other side-wall being located beneath, bearing against and assisting in supporting said end-wall, said end-wall having a slot therethrough extended to its edge and of a width sufficient only to accommodate the neck of a collapsible tube.

5. A protector blank for collapsible tubes, comprising a substantially rectangular sheet of relatively stiff material having three parallel cross folding lines, the first between two side-sections of the protector, the second between one of said side sections and an end section and the third between said end section and a terminal flap, said end section having a plurality of substantially parallel slots therethrough of a width to accommodate the necks only of collapsible tubes, said terminal flap having enlarged extensions of said slots of a size to permit the passage of the caps of said necks therethrough.

In witness whereof I have hereunto set my hand.

NORMAN O. JOHNSON.