(No Model.)

W. S. SCALES.

COLLAPSIBLE TUBE.

No. 548,890. Patented Oct. 29, 1895.

Fig. 1

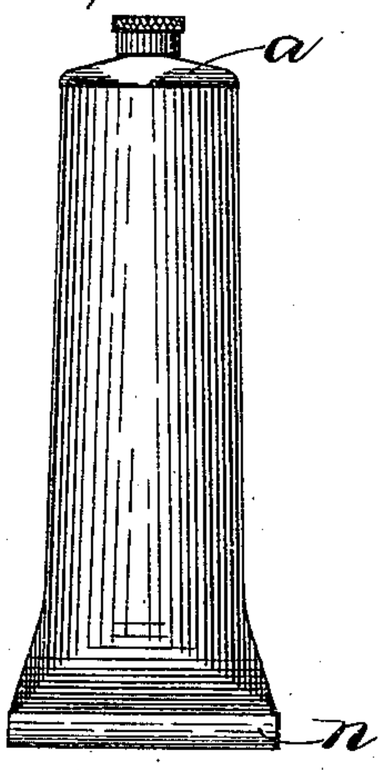


Fig. 2

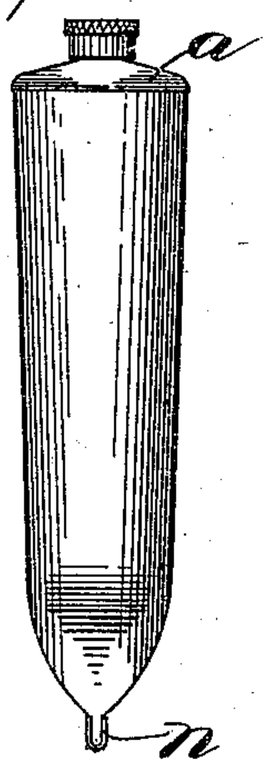


Fig. 3

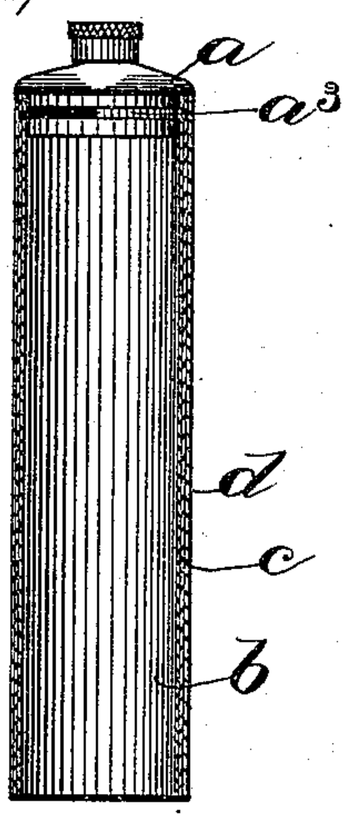


Fig. 5.

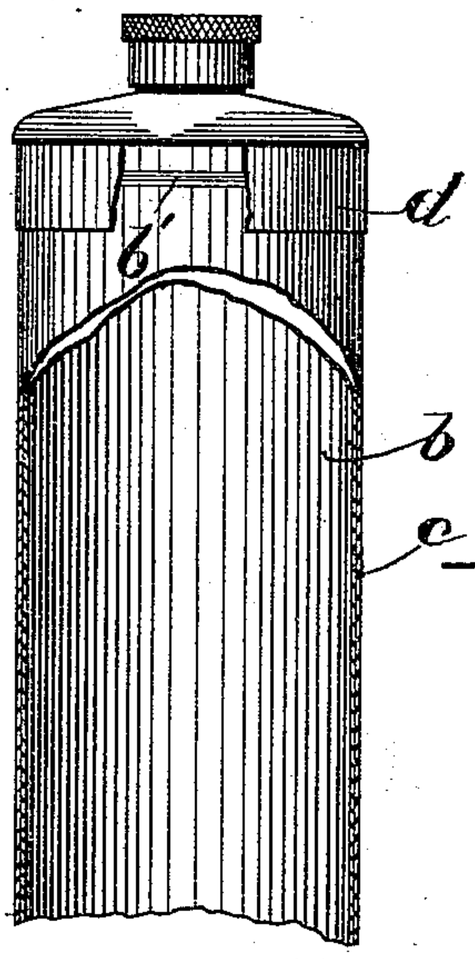


Fig. 4

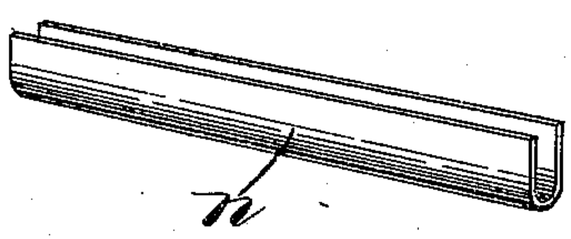
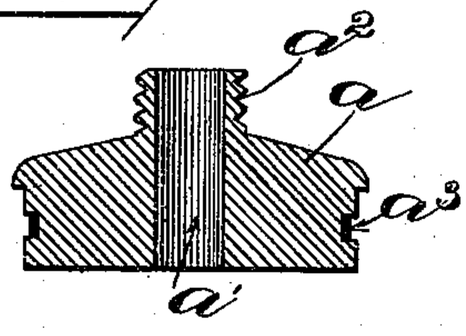


Fig. 6.



WITNESSES

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COLLAPSIBLE TUBE.

SPECIFICATION forming part of Letters Patent No. 548,890, dated October 29, 1895.

Application filed December 3, 1894. Serial No. 530,657. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. SCALES, of Everett, county of Middlesex, and State of Massachusetts, have invented an Improvement in Collapsible Tubes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve and cheapen the construction of collapsible tubes used for paint, ointments, and other plastic materials.

The invention consists, primarily, in a tube having a rigid head, with an outlet and means for closing it—such, for instance, as a screw-cap—and an independent collapsible reinforced tubular body secured to said head, adapted to be compressed to expel the material, and rolled up as the material is used. This independent collapsible tubular body having the two capabilities referred to may be composed of two tubes, the inner tube being made of any "paste-proof" material, such as properly prepared paper or tin-foil, while the outer tube may be made of ordinary paper or other material, although if the inner tube is composed of tin-foil, which is very frangible, the outer tube will be composed of a material stout enough to reinforce or strengthen the inner tube.

When two tubes only are employed as the component parts of the collapsible tubular body, the outer tube may be printed upon and thereby serve as the label.

If the collapsible tubular body is composed of three tubes, then the inner tube will be made of paste-proof material, which may be easily frangible, and the second tube, or the one which is superimposed on the inner one, may be made of stout reinforcing or strengthening material, and the outer tube may be made of any material which will serve as a label.

Whether the collapsible tubular body is composed of two or more tubes, I prefer that they terminate substantially flush at their lower ends, being flattened, folded, and sealed at said end, as, for instance, by a metallic clip.

By folding and sealing the outer or covering tube in with the inner tube a much better result is produced than when the inner tube is itself folded and sealed, as a much stronger end is secured—one that cannot be easily ruptured. As, for instance, if said inner tube is made of easily-frangible material, it is necessary to include or seal in the inclosing tube to produce a durable seal, and if the inner tube is composed of paste-proof material that is not as frangible as tin-foil, then by sealing in the outer tube or tubes not only is the durability of the seal increased, but a finished end produced at the lower end of the completed article.

Figure 1 shows in side elevation a collapsible tube embodying this invention, the collapsible tubular body being composed of three tubes, the lower ends of which are folded and sealed; Fig. 2, a right-hand side view of the same; Fig. 3, a vertical section of the same prior to folding and sealing the lower ends; Fig. 4, a perspective detail of the metallic clip by means of which the lower end is sealed; Fig. 5, a vertical section of a modified form of tube wherein the collapsible tubular body portion is composed of two tubes; Fig. 6, a vertical section of the head.

The head or end piece a may be made of wood or glass or other material, having a central hole a' through it, which serves as an outlet for the tube, and having a short neck or nipple a^2, which is preferably externally screw-threaded. Around the perimeter of the head a a circumferential groove a^3 is formed, which contains a rubber band. A metallic or other closing cap or stopper will be provided for the outlet a'.

Referring to Figs. 1 to 4, the inner tube b, of any suitable length, is wrapped around the head a, covering the groove a^3, the edges of the material composing the tube being folded to form a funnel or other seam, or they may be simply overlapped, said edges being secured by any adhesive material or solder. This inner tube may be made of tin-foil or lead-foil or paper properly treated or sized, insuring in any event a paste-proof tube—that is to say, the material of which the inner tube is composed is adapted to resist or hold any liquid which may be used in forming the plastic material which may be contained in the tube, or any oleaginous or other greasy matter which may form a component part of the plastic material or which may be used as the plastic material, and hence by the term "paste-proof"

I mean any such resisting material. In case thin tin or lead foil is used the expense will be decreased, yet such material is of a very frangible nature and must be reinforced or strengthened. A piece of stout paper or other material is then wrapped around the inner tube *b*, snugly fitting it and forming a covering *c* therefor, said covering being preferably pasted or otherwise secured in place, and it is made to extend from end to end of the inner tube, and in such case surrounding the head *a*. A binding cord *b'* is then wound around the perimeter of the head *a*, sinking into the groove a^3 therein, together with the material of the tubes *b* and *c*, thereby securing said tubular body firmly to the head. This tube *c* reinforces or strengthens the inner tube. The outer tube *d*, which is printed upon, serves as the label, is then floated or otherwise secured upon the tube *c*, it also preferably extending from end to end of the tubular body. The completed tube thus formed, and shown in Fig. 3, is in condition to be filled, the material being introduced at its lower end, although said end may be first sealed and the material introduced at the upper end, if desired.

To seal the lower open end, the inner tube and its covering are folded at said end, the lower edges of all the tubes being turned over together for a short distance, and a metallic clip, such as represented in Fig. 4, is applied and firmly compressed onto the folded end, and the tube shown in Figs 1 and 2 is produced.

I find that by making the inner tube of light-weight material and thereafter reinforcing or strengthening the same with a stout paper wrapper the expense of manufacturing the tube is materially diminished. Furthermore, I find that by sealing the lower end with a metallic clip a more secure seal is provided than would be the case were the lower edges merely turned over, particularly when using light-weight material for the inner tube, as there is not sufficient body or stiffness to it to form in itself a secure seal when overturned or to hold the metallic clip unless the reinforcing material is sealed in with it. Furthermore, I find that the tedious operation of labeling the tube after it has been filled, as well as the expense incident thereto, is avoided, and that the completed tube having a label sealed in at the lower end has the appearance of a "made-to-order" tube, as each consumer's name will be printed upon the label.

In case the label is omitted and the second tube used as the outer tube, (see Fig. 5,) then said second tube may be printed upon, serving as the label, or be made to extend from end to end of the inner tube, and therefore sealed in at the lower end. In many cases, however, such a construction does not give to the collapsible tubular body portion sufficient strength to hold the material as it is compressed or "worked" to expel it and rolled up as the material is used. In the event, however, of the inner tube being made of prepared paper, as it may be for some materials, then the second tube is all that is necessary.

When wooden heads are employed, they may be treated in various ways to make them paste-proof and to prevent expansion; but to obviate the expense of such treatment, as well as to produce a more efficient head, I prefer to use glass.

I claim—

1. A tube for plastic materials, consisting of a head having an outlet, means for closing it, a tubular body having thereon an independent tubular reinforcing label extending from end to end, the lower end of said tubular body, with its label, being flattened, folded, and sealed by means of a metallic clip.

2. A tube for plastic materials, consisting of a rigid head, having an outlet, means for closing it, and a collapsible tubular body secured to said head, and comprising a paste-proof inner tube, and an outer independent tubular reinforcing wrapper or covering inclosing the inner tube from end to end, the lower ends of both tubes being flattened, folded, and sealed.

3. A tube for plastic materials, consisting of a rigid head having an outlet, means for closing it, and a collapsible tubular body having superimposed thereon and forming a component part of it an independent reinforcing label which extends from end to end, said collapsible tubular body being secured to said head at one end, and flattened, folded, and sealed at the other, and adapted to be compressed to expel the material and rolled up as the material is used.

4. A tube for plastic materials consisting of a head provided with an outlet and having a circumferential groove, a collapsible tubular body comprising an inner paste-proof tube, and an independent outer reinforcing or strengthening tube, said tube being secured at one end to the head, by means of a cord entering said groove, and being flattened, folded, and sealed, at the other end.

5. The collapsible tube herein described consisting of an end piece, an inner tube of easily frangible material secured thereto, and an independent outer reinforcing or strengthening covering superimposed thereon, and operating to reinforce or strengthen the inner tube from end to end, the lower ends of both the tube and its covering being flattened, and folded upon itself, and a metallic clip inclosing and sealing said lower folded ends.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM S. SCALES.

Witnesses:
B. J. NOYES,
C. B. CROCKER.