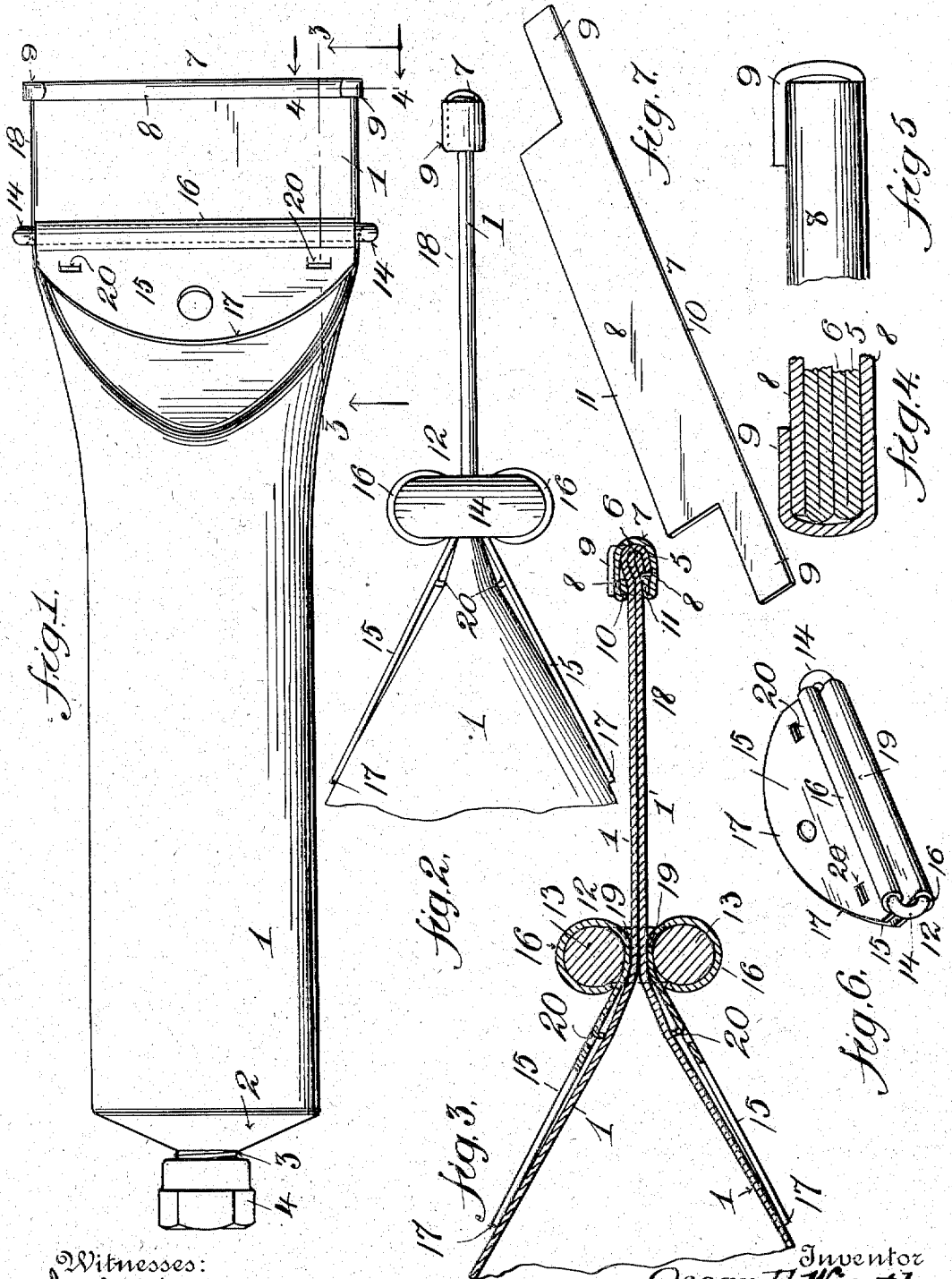


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COLLAPSIBLE TUBE AND EJECTOR THEREFOR.
APPLICATION FILED DEC. 29, 1909.

980,377.

Patented Jan. 3, 1911.



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COLLAPSIBLE TUBE AND EJECTOR THEREFOR.

980,377.

Specification of Letters Patent.

Patented Jan. 3, 1911.

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To all whom it may concern:

Be it known that I, OSCAR F. WIERTH, a citizen of the United States, residing in the city of New York, county of Kings, and State of New York, and whose post-office address is 254 President street, in said city, have invented certain new and useful Improvements in Collapsible Tubes and Ejectors. Therefore, of which the following is a specification.

My invention relates to improvements in tubes, which is the popular name for cans made in tubular form of some soft or ductile metal, closed at one end and provided with a contracted and suitable opening at the other end, and which are used for the purpose of containing paints, varnishes, pastes, dentifrices and material of that kind; and the object of my invention is to improve the construction of an article of this class, and to improve the means previously employed for discharging the contents of the tube.

In articles of this class it has been customary to close the lower end of the tube by merely turning over upon themselves the lower edges of the tube then press these edges together and indenting the turned over edges so as to anchor them together, or to turn the edges over upon themselves, compress them together, and this latter with or without the anchoring process above described. By reason of the fact that the metal is necessarily very soft it is easily distorted, and if pressure is brought to bear upon the contained material, its movement very often spreads the ends open thereby rendering the tube comparatively useless.

One of the features of my present invention, resides in the improved construction for sealing the end of such a tube, as will be herein described and pointed out in the claims, the means insuring a permanent and unobtrusive seal for the closed end.

In tubes of this character it has often been customary to apply means for discharging or pressing out the contents of the tube. When mechanical means have not been employed the result of pinching the tube is that comparatively little of the contained material is ejected, and it is next to impossible to thoroughly "clean" the tube, or in other words, extract all of the material con-

tained therein. When mechanical means have been employed the same has, so far as I am now informed, consisted entirely or exclusively of a key comprising a stem with a slot, and a handle which projects laterally from the closed or sealed end of the tube, the end of the tube being inserted through the slot of the stem of the key; and by turning the key the metal is turned upon itself, so as to shorten the length of the tube and eject its contents. There are many disadvantages found in the use of such a device. It makes an unsightly and unwieldy lump at the end of the tube, which as it grows larger, becomes more difficult to turn, increasing the difficulty of completely cleaning the tube. Sometimes the key is lost and the ejecting of the contents of the tube is rendered difficult. At all times the projection of the key from the side of the tube makes it not only unwieldy, but if applied to the tube before being packed it increases the difficulty of packing and shipping the same, and if applied to the tube by the user after it is packed it is generally in the way. Consequently another feature of my improvements consists in the device for ejecting the contents from the tube which may become a companion part of the tube, closely conforms to its outline, is unobtrusive, economical of manufacture, easy of application, and very effective for the purpose of completely ejecting the contents of the tube, or in other words "cleaning it".

My invention therefore, resides in the specific improvements in the construction of the tube itself, and in the novel ejecting means therefor, all of which will be herein described, and further pointed out in the claims.

In the drawing forming part of this specification, Figure 1 is an elevation of a tube embodying my several improvements, the tube being somewhat enlarged over the size ordinarily in use. Fig. 2 is a side elevation of the end portion of the tube, somewhat enlarged, graphically illustrating the use of the ejecting device. Fig. 3 is a sectional view of Fig. 2, taken substantially on the line 3—3, Fig. 1, looking in the direction of the arrows. Figs. 4 and 5 are fragmentary views of the end of the tube, enlarged, Fig. 4 being a section taken on the line 4—4 Fig. 1,

looking in the direction of the arrows. Fig. 6 is a perspective view of the ejecting device, removed from the tube. Fig. 7 is an enlarged perspective view of the sealing-strip used for closing the end of the tube.

Similar reference characters indicate like parts throughout the several views.

I shall first describe my improvements in the construction of the tube itself. The tube comprises a tubular portion 1, a contracted head 2, provided with a threaded spout 3 upon which is the usual internally threaded cap 4 for closing it, the contents being ejected through an aperture in the spout.

In my improved construction the ends 5, 6, are turned over upon themselves and slightly diverted from the horizontal plane of the body of the tube as shown in Fig. 3. A strip 7, preferably of the same material as the tube (although any other suitable material can be used) comprising an intermediate enlarged section 8, and end ears 9, is placed around the end of the tube and embracing the turned over ends 5, 6, the ears being turned up and bent down on the opposite side of the strip. Before placing the strip 7 about the end of the tube its edges 10, 11, are curled over as shown in section in Fig. 3. The ends of the tube and the strip may be then compacted together, and, if desired, the end closure may be again compacted or compressed in any desired way so as to cause the tube-end and the closing strip to be firmly united. In this way the end of the tube is not only securely closed against inadvertent opening, but its seal is symmetrically closed, and the parts thoroughly anchored together.

The ejecting means consists broadly in two plates or wings pivotally supported upon a traveling frame or yoke which is adapted to be bodily moved along the tube in the direction of its length.

One embodiment of this means is shown in the accompanying drawing, and consists in the following: At 12 is a yoke or frame, made preferably of rounded wire, comprising longitudinal members 13 and side members 14, the members 13 being spaced far enough apart to permit the two thicknesses of metal of the tube, and the metal of the pivoted wings to be described to lie between them. Pivoted to the transverse members of the yoke are two plates or wings 15. To form pivots for the same, in the embodiment shown, the material of the wings is turned over around the members 13 of the yoke to form eyes as at 16, with just sufficient closeness of fit so as to prevent lost motion while permitting a free pivotal movement within the limits hereinafter set forth. The front ends 17 of the wings is preferably curved, and the length of the wings in the direction of the length of the yoke is designedly substantially the same as the width of the tube

when its material is compressed together as shown at 18 in Figs. 1, 2 and 3, the curve given to the front edge of the wings being such as to not only press the material forward but slightly to one side so as to thin it out and to permit it to be expeditiously moved along in the tube. I prefer, instead of rounding that part of the eyes 16 which lies adjacent the tube, to make them flat as shown in Fig. 2, at 19, so as to increase the bearing surface of those portions of the wing which lies normally within the yoke, to the end that the "cleaning" operation of the ejector will be more complete and thorough than it would be if the wings were rounded at that point.

The operation of ejecting the contents of the tube by the use of my improved device consists in pressing the two wings 15 toward each other, by which movement the contents of the tube may be, by a step-by-step motion, discharged; and in doing this the ejector may be moved along the body of the tube (the ejector being placed upon the tube before the end is sealed) in order to bring the wings up against a more or less full portion of the tube as shown in Figs. 1, 2 and 3, in which the ejector has traveled a short distance along the tube. The holes seen in Figs. 1 and 6 in the wing are for the purpose of providing means for hanging up the tube so as to be out of the way when in use. In order to do this either wing can be thrown back so it becomes substantially parallel with the flattened portion of the tube.

In order to insure against the ejector retreating when the wings are moved toward each other upon the inclined surface of the tube, I provide stops or anchoring devices such as lugs 20 projecting inwardly from the surface of the wings, and preferably located near the pivots or eyes 16. These stops or anchoring projections 20 may be made in any desired way, but I prefer to make them, as shown herein, by striking them out of the material of the wings and forcing them inwardly as shown. By means of these stops or anchoring projections the ejector can be moved along the body of the tube until it strikes a section of the tube wide enough to stop its progress, and by pinching the wings toward each other, the stops or anchoring projections bind on the material or tube, preventing a rearward or retreating motion of the ejector, and ejecting from the tube the amount of material desired, the flat portions 19 of the wings compressing the material of the tube together across its entire width, completely cleaning it; and by a continuation of this step-by-step pinching operation, the tube can be completely discharged or "cleaned", except for such material as may finally lie within the extreme upper or discharge end of the tube.

While I have shown and described one em-

bodiment of my improvements, I do not intend to limit myself thereto, but deem that my invention is broad enough to be included within the scope of the claims appended hereto.

Having described my invention, I claim:

1. In a tube ejector the combination of a plurality of oppositely acting plates, means for movably securing said plates together, the said latter means being transversely apertured and adapted to embrace the tube and to move along the same in the direction of its length.
2. In a tube ejector, the combination of two oppositely acting plates secured together, at one end by means adapted to embrace and move along the tube in the direction of its length, said plates being adapted to frictionally engage the tube to prevent back movement of the ejector when the plates are moved toward each other.
3. In a tube ejector the combination of a frame apertured to permit the passage of the collapsible tube therethrough, and a plurality of oppositely acting plates movably secured to the frame.
4. In a tube ejector the combination of a frame-like structure transversely apertured to admit the flattened tube to pass there-through and oppositely acting plates extending from said frame-like structure, and adapted to be moved toward each other, whereby the ejector may be moved along the length of the tube.
5. The combination with a frame and wings secured thereto and adapted to be substantially aligned therewith, one of said wings being formed with a suspending aperture.
6. In a tube ejector, the combination with a yoke-like frame, of wings pivoted to said frame, their free ends being adapted to be moved toward each other.
7. In a tube ejector the combination of a frame, movable pinching elements secured

to said frame, and stops on said elements for engaging the tube.

8. In a tube ejector, the combination of a frame, a plurality of oppositely acting plates movably secured to the frame and stops on the plates extending inwardly.

9. In a tube ejector, the combination with a yoke-like frame, of wings pivoted to said frame the free ends of which are adapted to be moved toward each other, and stops extending inwardly from each wing toward the other wing.

10. In a tube ejector, the combination with a yoke comprising longitudinal and side bars, wings pivoted to and extending from said longitudinal bars, said wings being adapted to move toward each other.

11. In a tube ejector, the combination with a frame, wings having eyes which are flattened within the frame, the wings being pivoted to the frame.

12. In a tube ejector, the combination with a yoke-like frame, wings pivoted to and extending from said yoke, said wings being adapted to move toward each other, and inwardly extending anchoring projections on said wings.

13. In a tube ejector, the combination of a frame comprising parallel bars spaced apart, side bars connecting the parallel bars, wings pivoted to and extending from said parallel bars, the wings between said bars being flattened.

14. In a tube ejector, the combination with a yoke-like frame, wings pivoted to the frame, and stops pinched from each wing and extending toward the opposite wing.

Signed at the city, county and State of New York, this 28th day of December, 1909.

OSCAR F. WIERTH.

Witnesses:

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