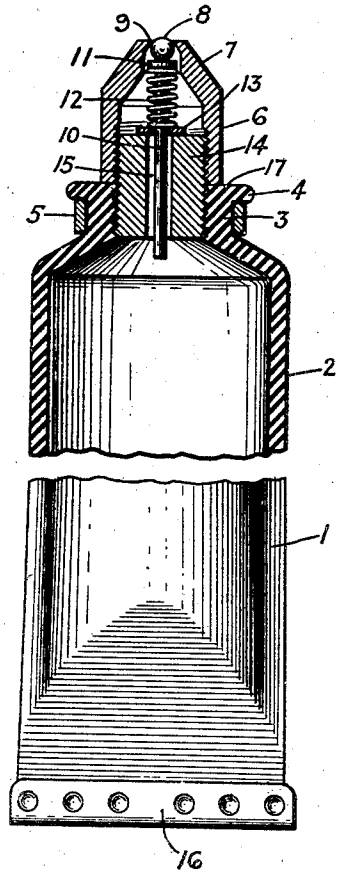
Sept. 6, 1938. F. A. STURM ET AL 2,129,186

MARKING TUBE

Filed Oct. 5, 1937

Fig. 1.



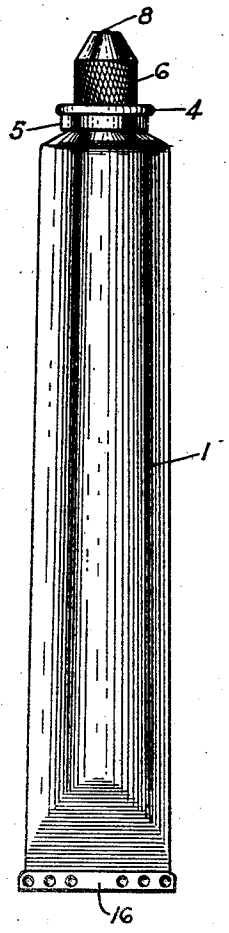
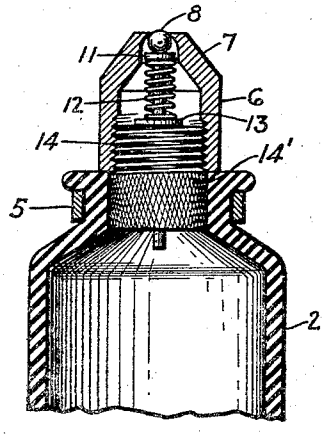


Fig. 2.

Fig. 3.



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MARKING TUBE

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6 Claims. (Cl. 120—43)

It is an object of our invention to provide a writing implement which will house a viscous writing substance or a writing fluid for marking purposes. Among the objects of our invention is the provision of a tubular container for said material, which will at all times retain its shape so as to form a ready handle for the person using the implement. This object is obtained by using a collapsible rubber tube which has a wall of such thickness, so that it may retain its tubular shape regardless of the amount of material in said tube.

Furthermore, an object of our invention is to provide a tube which readily conforms itself to the pressure of the user's fingers.

A further object of our invention is the provision of such a marking implement comprising a tube wherein a marking substance might be stored, said substance having sufficient fluidity so as to flow by gravity out of the tube while the tube is being manipulated as a marking implement. When the tube is not being used as a marking implement, air is sucked back into the housing of the tube so as to form a tubular handle of predetermined shape. In the event that the material used in the tube does not flow by gravity, sufficient pressure might readily be applied to the outer surface of the tube by the hand of the user, so that the contents of the tube is forcefully expelled therefrom.

These and other objects which will become apparent as the disclosure proceeds, are accomplished by means of our invention illustrated in the attached drawing, in which:

Fig. 1 is a side elevational view, partly in section, showing the manner of attaching the end cap to the elastic tube.

Fig. 2 is a side elevational view showing the assembled elastic tube and the marking implement associated therewith.

Fig. 3 is a view of a modification of our invention, partly in section, taken through the marking implement and the upper portion of the elastic tube.

In the preferred embodiment of our invention shown in sectional detail in Fig. 1, it will be seen that we have provided a rubber tube 1. The wall 2 of the tube 1 is of sufficient thickness so that said tube will retain its shape, regardless of the amount of the contents contained within said tube. Thus it is apparent that the tube 1 will always be shaped as illustrated in Fig. 2, regardless of whether the tube is full, empty or merely partially filled. The neck of the tube 2 is reinforced at 3 and has a lip 4. The marking implement comprises the cap 6 which terminates in a conicle surface 7. The apex of the conicle surface 7 has an orifice 9 through which the marking substance or fluid within the tube is emitted. A marking ball and valve 8 projects partially through the orifice 9. This ball 8 is retained in a seated position by means of a pin 10 having a head 11, the latter bearing against the ball 8 as illustrated in Fig. 1. A connecting nipple 14 which is screw threaded, connects the cap 6 to the neck of the tube 1. Seated upon the end of the nipple 14 is a washer 13. A spring 12 is interposed between the washer 13 and the head 11 of the pin 10, and normally retains the ball 8 in the seated position shown in Fig. 1. The nipple 14 is centrally apertured to receive the pin 10. The marking substance within the tube 1 flows between the surrounding wall of the aperture 15 and the surface of the stem 10, through the aperture of the washer 13, into the space of the hollow cap 6.

In order to permanently join the hollow cap 6 to the neck of the tube 1, the nipple 14 is initially screwed into the neck 3 of the tube 1. Preliminary to this operation, however, a metal ring 5 encompasses the neck 3 of the tube 1 and is positioned beneath the lip 4. The headed pin 10, 11, washer 13, spring 12 and ball 8, are then associated with the cap 6 and the nipple 14. The cap 6 is then screwed down on the lip 14, so that the base of the cap 6 bears against the surface 17 of the tube neck. As pressure from the base of the cap 6 is directed upon the surface 17, the rubber comprising the neck 3 between the nipple 14 and the ring 5 is compressed lengthwise and expanded widthwise, so that a definite, positive and sturdy connection is maintained between the tube 1 and the cap 6.

In the actual use of the device, the elastic tube 1 is filled with a marking substance. The viscosity of this substance may vary. If the substance has sufficient fluidity so that it will flow by gravity, it is merely necessary for a user to grasp the tube 1 in his hand with the marking implement facing down and bearing against the material being marked. In this position the ball 8 acting against the surface of the material being marked, will be moved back against the tension of the spring 12, permitting an opening of the orifice 9 and a gravital flow of the marking substance within the tube 1, through said orifice 9. As long as the implement is being used in this manner, whereby the roller 8 is retracted from its seat, the marking fluid will continue to flow therefrom. In the event that the flow of substance from the tube is retarded for any reason at all, it is merely necessary for the user to apply pressure

to the outer surface of the tube 1 which he holds in his hand while writing. The pressure of the hand will be transmitted either directly to the writing substance within the tube, or to the air contained in the tube, bearing against the substance. Increasing the pressure on the outer surface of the tube in this manner, will increase the flow of the substance therefrom. As soon as the pressure is released from the outer surface of the tube 1, said tube will return to its normal tubular shape by reason of the elasticity of the rubber tube 1 and the thickness of the wall 2. Air will be sucked back into the tube 1 past the ball valve 8. This is an important function, because the tube, when ready for use, always retains the same shape so that the hand of the user does not have to adapt itself to different shapes of the marking tube. If the marking substance has considerable fluidity, it will flow from the tube 1 merely by gravity. On the other hand, if the marking substance has a high viscosity, it may require in addition to the gravital flow, an increased pressure on the outer surface of the elastic tube 1. However, as soon as said pressure is released upon the tube, said tube sucks air back past the valve 8 and assumes its normal tubular shape.

In Fig. 3 we have shown a modification of the nipple 14. The lower portion of the nipple, indicated by the numeral 14', instead of being screw threaded as in Fig. 1, is knurled. This knurled surface 14' offers sufficient resistance when in engagement with the neck 3 of the tube 1, so that it will not pull out of the neck when the cap 6 is being screwed down into an assembled condition. The outer surface of the cap 6 may also be knurled, as shown in Fig. 2. The bottom of the elastic tube 1 can be closed by means of the metallic fold 16.

It is apparent that other constructions equivalent to ours might be made by one skilled in the art, but it is our intention to cover all equivalent forms of our invention, as defined by the scope of the following claims.

We claim:

1. A marking implement comprising a collapsible, elastic, tubular body constituting a container for a marking substance, said body having a neck and tubular member received in said neck and projecting outside of said neck, a discharge member fitted upon the projecting portion of said tubular member at one end of the body through which said marking substance is emitted, a combined marker and closure for the member movably mounted therein and retractable in writing position, means for yieldingly holding the marker and closure in a projected closed position, said tubular body having a wall of such thickness as to normally retain the body in a tubular shape, whereas upon the application of pressure thereon deforming the shape of the tube the marking substance therein will be forcefully emitted past the retracted marker when the implement is in writing position.

2. A marking implement comprising a collapsible, rubber, tubular body constituting a container for a marking substance, said body having a neck and tubular member received in said neck and projecting outside of said neck, a discharge member fitted upon the projecting portion of said tubular member at one end of the body through which said marking substance is emitted, a combined marker and closure for the member movably mounted therein and retractable in writing position, means for yieldingly holding the marker and closure in a projected closed position, said rubber tubular body having a wall of such thickness as to normally retain the body in a tubular shape, whereas upon the application of pressure thereon deforming the shape of the tube the marking substance therein will be forcefully emitted past the retracted marker when the implement is in writing position.

3. A marking implement comprising a collapsible, elastic, tubular body constituting a container and a handle for a marking substance, said body having a neck and tubular member received in said neck and projecting outside of said neck, a discharge member fitted upon the projecting portion of said tubular member at one end of the body through which said marking substance is emitted, a combined marker and closure for the member, means for yieldingly holding the marker and closure in a projected closed position, said tubular body having a wall of such thickness as to return the same to a tubular shape upon the release of pressure which has deformed the tube to forcefully emit substance through the discharge member, said marker and closure permitting the passage of air into the tube against the yieldable means when said tube returns to its normal shape.

4. The combination of an elastic, tubular body constituting a container for a marking substance, said body having an open neck portion, an annular ring engaging about the outer surface of said neck portion, a nipple frictionally engaged within the neck of the tube and projecting therefrom, said projecting portion of the nipple being threaded, a discharge cap internally threaded to engage with the projecting portion of the nipple, the base of said cap bearing upon the neck of the tube so as to forcefully expand the neck between the nipple and the annular ring.

5. The combination of an elastic, tubular body constituting a container for a marking fluid, said body terminating in an open neck portion having an overhanging lip, an annular ring engaging about the outer surface of said neck portion beneath the lip, a nipple frictionally engaged within the neck of the tube and projecting therefrom, said projecting portion of the nipple being threaded, a discharge cap internally threaded to engage with the projecting portion of the nipple, the base of said cap bearing upon the neck of the tube so as to forcefully expand the neck between the nipple and the annular ring.

6. The combination of an elastic, tubular body constituting a container for a marking substance, said body having an open neck portion, a rigid annular ring positioned about the outer surface of said neck, a threaded nipple engaged within the neck of the tube and projecting therefrom, a discharge cap internally threaded to engage with the projecting portion of the nipple, the base of said cap bearing upon the neck of the tube so as to forcefully expand the neck of the tube between the nipple and the annular ring.

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