Feb. 1, 1966 C. W. LOFGREN 3,231,924

MARKING DEVICE

Filed Dec. 27, 1963

Fig. 1.

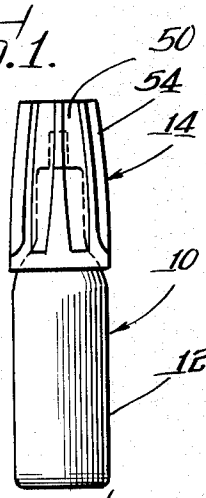


Fig. 2.

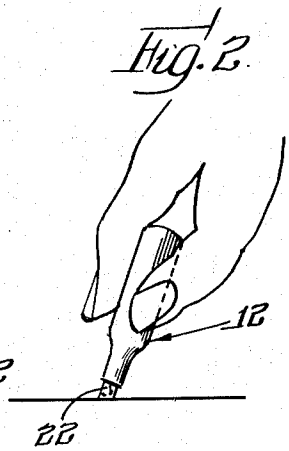


Fig. 3.

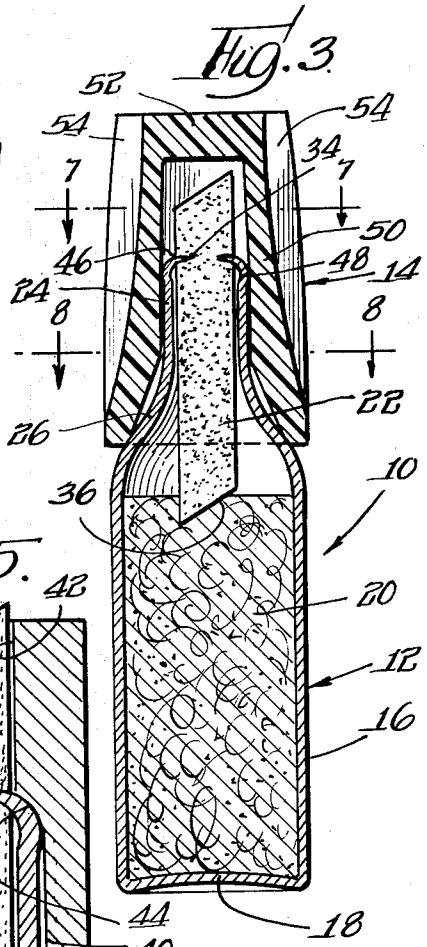


Fig. 4.

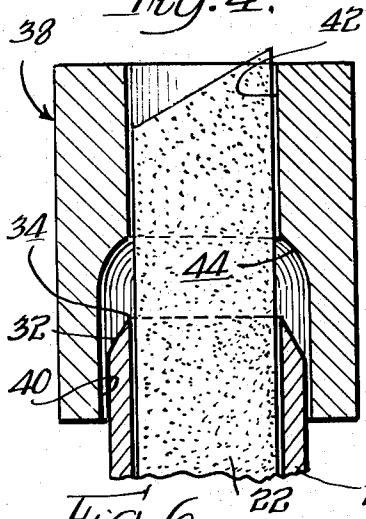


Fig. 5.

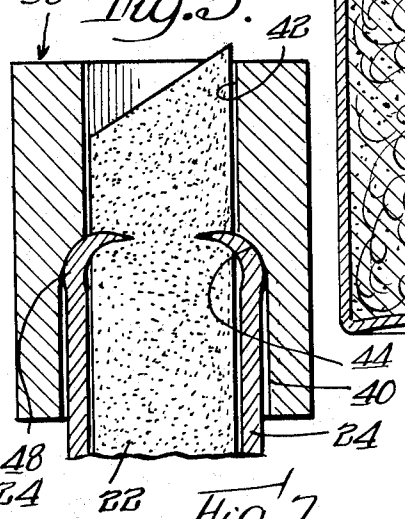


Fig. 6.

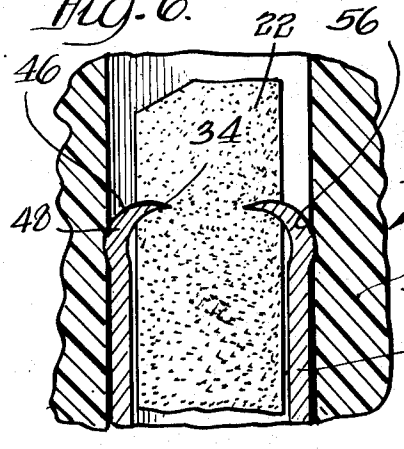


Fig. 7.

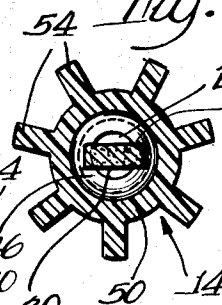
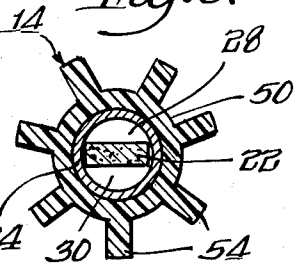


Fig. 8.



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3,231,924

MARKING DEVICE

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5 Claims. (Cl. 15—563)

The present invention relates to a novel marking or coloring device, and more specifically a novel device of the type including a container for a quantity of marking or coloring fluid and a marking element or a wick extending from the container through an opening for applying the fluid to a desired surface.

Marking devices of the type contemplated herein generally include a wick-like marking element formed from felt or other self-supporting absorbent material and disposed so as to extend through an opening in a bottle or container. While certain of the heretofore proposed structures have functioned generally satisfactorily, difficulties have been encountered in assembling the parts of prior devices and in securing the marking or wick-like element in a manner promoting the free flow of fluid from the wick-like element while at the same time assuring proper contact between the wick-like element and the marking fluid or marking fluid retaining means within the container.

An important object of the present invention is to provide a novel marking device of the above described type which is constructed so as to enable the marking or wick element to be retained securely and in a predetermined manner while promoting the free flow of marking fluid through the wick-like element.

A more specific object of the present invention is to provide a novel marking element of the above described type having a body of absorbent material for retaining marking fluid within a container, which device is constructed for facilitating assembly of a marking or wick-like element with the container and for securely retaining the wick-like element in firm engagement with the body of absorbent material for promoting transfer of fluid from the absorbent material to the wick-like element.

A further object of the present invention is to provide a novel marking device of the above described type which may be manufactured and assembled quickly and economically.

Still another important object of the present invention is to provide a novel marking device of the above described type having a container and closure therefor constructed for providing a releasable seal therebetween in a manner which permits the closure or cap to be repeatedly removed and replaced and which substantially precludes evaporation of the marking fluid when the closure or cap is assembled with the container.

Other objects and advantages of the present invention will become apparent from the following description and the accompanying drawings wherein:

FIG. 1 is a side elevational view showing a marking device incorporating features of the present invention;

FIG. 2 is a view showing the marking device with the cap or closure removed and positioned for accomplishing a marking operation.

FIG. 3 is an enlarged vertical cross sectional view of a marking device incorporating features of the present invention;

FIGS. 4 and 5 are fragmentary sectional views respectively showing successive steps in a method of assembling the marking or wick-like element with the container of the device;

FIG. 6 is a further enlarged fragmentary sectional view showing structural features in greater detail;

FIG. 7 is a sectional view taken along line 7—7 in FIG. 3; and

FIG. 8 is a sectional view taken along line 8—8 in FIG. 3.

Referring now more specifically to the drawings, wherein like parts are designated by the same numerals throughout the various figures, a marking device **10** incorporating features of the present invention is shown in FIGS. 1 and 3 and comprises a container **12** and a removable closure or cap **14**.

The container **12** is of one-piece seamless construction and is formed from metal which is extruded to provide a cylindrical body **16** and a transverse bottom wall **18**. A body of absorbent material **20** is disposed within the cylinder **16** for retaining a quantity of marking fluid or ink. A wick-like marking element **22** formed from felt or other suitable self-supporting absorbent material is disposed with the lower end thereof in firm engagement with the body **20** of absorbent material and an opposite end thereof extending above the upper end of the container. Thus when the cap **14** is removed, the marking device may be used for applying ink or coloring fluid to a workpiece in the manner shown in FIG. 2.

After the body **20** of absorbent material is inserted into the cylinder **16** during the assembly of the marking device, an upper end portion of the cylinder is reduced in diameter to provide an elongated generally cylindrical neck section **24** joined to the remainder of the cylindrical body by a tapering section **26**. The internal diameter of the neck section **24** is similar to a major transverse dimension of the wick or marking element **22**. As shown best in FIGS. 7 and 8, the wick or marking element **22** preferably has a generally rectangular cross sectional configuration which is such that the wick element substantially traverses the neck section **24** in one direction while leaving air passageways **28** and **30** at opposite sides of the wick.

In order to insure proper operation of the marking device, it is desired that the wick or marking element **22** be retained in firm engagement with the body **20** of absorbent material whereby to promote free transfer of ink or marking fluid from the body **20** to the wick-like marking element. At the same time, the wick-like element must be secured in a manner which leaves the passageways **28** and **30** substantially open so that during dispensing of the ink or marking fluid air can enter the container for equalizing the air pressure and promoting the free flow of fluid. In accordance with a feature of the present invention the container **12** is formed for securing the wick or marking element **22** firmly against the body **20** of absorbent material and so as to leave the air passages open. In addition the construction is such that the wick-like element may be secured rapidly and economically.

As shown best in FIG. 4, the neck like section **24** of the container is initially formed so that it is of substantially uniform diameter and so that an outer side and end surface **32** is bevelled for providing a relatively sharp terminal edge **34**. After the neck section **24** has been formed in this manner, the wick-like element **22** is inserted through the neck portion so that a lower end **36** of the wick-like element which is preferably pointed is pressed against and at least partially embedded in the body **20** of absorbent material. Then the upper end of the neck section **24** is axially engaged and swaged by a die **38**.

The die **38** which may be mounted on and actuated by any suitable punch press apparatus or the like comprises an elongated tubular section **40** having an internal diameter closely similar to but slightly greater than the external diameter of the neck section **24** as shown in FIGS. 4 and 5. The tubular section **40** merges with a bore **42**

which provides clearance for the wick-like marking element and an annular tapering surface **44** is formed at the junction between the sections **40** and **42**. The surface **44** is inclined at an angle of about thirty degrees with respect to the longitudinal axis of the die and is formed with a rounded or concave configuration.

When the die **38** is moved from the position shown in FIG. 4 into ingagement with the neck section as shown in FIG. 5, the curved annular surface **44** initially engages the upper terminal edge **34** and the bevel surface **32** of the neck section and causes the upper end portion of the neck section to curl inwardly as shown in FIG. 5 and also as shown in FIGS. 3 and 6 for providing an annular inturned flange **46**. It will be observed that a free marginal portion of the flange **46** projects substantially in a plane generally perpendicular to the axis of the wick-like or marking element **22** and the sharp terminal edge **34** is substantially embedded in the opposite narrow edges of the wick-like element. This construction assures positive and secure anchoring of the wick-like element **22** against longitudinal movement whereby a wick-like element is maintained in aggressive engagement with the body **20** of absorbent material.

It is further important to note that when the upper end of the neck section **24** is swaged and curled, the previously mentioned clearance between the dies section **40** and the neck enables an annular portion **48** of the neck section immediately adjacent the flange **46** to be deflected radially outwardly. In other words, the annular portion **48** is formed to provide an annular bead around the neck section which bead is substantially located at the extreme upper end of the neck section. This bead aids in securing the cap member and providing a seal in the manner described below.

The cap member **14** is formed from a tough resilient material and is preferably formed from a plastic such as polyethylene or nylon. The cap member includes elongated central generally cylindrical portion **50** having an internal diameter substantially the same as the external diameter of the neck section **24** and less than the external diameter of the annular bead **48**. The cylindrical section **50** of the cap has a length sufficient to provide clearance for the upper end of the wick or marking element **22** and a transverse wall **52** is formed integral with the cap body **50** for closing the upper end thereof. A plurality of longitudinally extending and radially projecting ribs **54** are formed integral with the cap body **50** and extend substantially throughout the length thereof for facilitating holding and turning of the cap member and for reinforcing the body **50**.

When the cap is assembled with the container as shown best in FIGS. 3 and 6, the body **50** closely surrounds the neck section **24** and firmly engages the annular bead **48**. Since the diameter of the bead **48** is greater than the normal internal diameter of the cap body **50**, the cap body is resiliently deformed around the annular bead and is continuously and aggressively urged against the bead for providing an air-tight seal. It is to be noted that this seal is located substantially at the extreme upper end of the neck section so as to minimize the volume of the air chamber within the cap and minimize any tendency of the ink or coloring fluid to evaporate. Furthermore it has been found that there is a tendency for the ink or coloring fluid which has evaporated into the air chamber in the cap to condense on the exposed outer wall of the neck section and the aforementioned location of the seal between the bead **48** and the cap prevents any of the evaporated fluid from condensing on the radial sides of the neck section. In other words, any of the fluid which may condense on the container will be located on the exposed axially facing surface of the end flange **46**. This feature not only minimizes loss of the ink or marking fluid, but also maintains the neck section in a clean condition so as to minimize any possibility of the ink or marking fluid staining the hands of a person using the device.

While the resiliency of the plastic or other material from which the cap **14** is formed causes the cap to engage the bead **48** aggressively, the bead **48** will cause a complementary groove **56** to be impressed in the wall of the cap body member **50**. The groove **56** and bead **48** provide a mechanical interlock between the cap and the container **12** which positively prevents the cap from being accidentally loosened from the container. It has been found that this construction substantially prevents the cap from being removed merely with a straight axial pull and generally requires rotation of the cap relative to a container as well as an axial pull on the cap in order to remove the cap from the container.

While the preferred embodiment of the present invention has been shown and described herein, it is obvious that many structural details may be changed without departing from the spirit and scope of the appended claims.

The invention is claimed as follows:

1. A marking device comprising: a container including a body portion and an elongated tubular metal neck section having predetermined internal and external diameters; a body of fluid retaining material in said body portion; an elongated wick-like marking element having predetermined major and minor transverse dimensions and extending through said neck portion, said marking element having an inner end in engagement with said marking fluid retaining material and an outer end projecting beyond said neck section, said neck section including a substantially continuous annular inturned flange presenting an inwardly facing annular terminal edge having a diameter substantially less than said major dimension and greater than said minor dimension, said edge being embedded in opposite edges of said wick-like element, said neck section including an axially limited annular radially outwardly projecting bead immediately adjacent to and merging directly with said flange, said bead having a maximum diameter greater than said predetermined exterior diameter of said neck section; and a cap comprising a tubular body of resilient material removably telescoped over said neck section, said tubular cap body having an internal diameter similar to said external diameter of said neck section and less than said maximum diameter of said bead and sealingly engaging said bead immediately adjacent said flange.

2. A marking device comprising: a one piece extruded metal seamless container comprising a cylindrical body portion having a relatively large diameter and a reduced elongated tubular neck section having predetermined internal and external diameters; a body of marking fluid absorbing and retaining material in said body portion; an elongated wick-like marking element having a generally rectangular transverse cross-sectional configuration and predetermined major and minor transverse dimensions, said major transverse dimension being similar to said predetermined internal diameter of said neck section, said minor dimension being substantially less than said predetermined internal diameter, said marking element having an inner end in engagement with said marking fluid retaining material and an outer end projecting beyond said neck section, said neck section including a substantially continuous annular inturned flange presenting an inwardly facing annular terminal edge having a diameter substantially less than said major dimension and greater than said minor dimension, said edge being embedded in opposite edges of said wick-like element, said neck section comprising an axially limited, radially outwardly projecting annular bead immediately adjacent to and merging directly with said flange and having a maximum diameter slightly greater than the external diameter of said neck section; and a cap member removably telescoped over and sealingly engaging said neck section, said cap member being formed of resilient material and having an internal diameter similar to the external diameter of

said neck section and less than said maximum diameter of said bead whereby to sealingly engage said bead.

3. A marking device, as defined in claim 2, wherein said cap comprises a substantially cylindrical internal surface and annular groove means in said surface to matably receive said bead.

4. A marking device, as defined in claim 3, wherein said cap is molded in one piece from tough resilient plastic material and the exterior of which comprises a plurality of circumferentially spaced axially extending and radially outwardly projecting ribs.

5. A marking device comprising: a container including a body portion and an elongated tubular metal neck section having predetermined internal and external diameters; a body of fluid retaining material in said body portion; an elongated wick-like marking element having predetermined major and minor transverse dimensions and extending through said neck portion, said marking element having an inner end in engagement with said marking fluid retaining material and an outer end projecting beyond said neck section, said neck section including a substantially continuous annular inturned flange presenting an inwardly facing annular terminal edge having a diameter substantially less than said major dimension and greater than said minor dimension, said edge being embedded in opposite edges of said wick-like element, said neck section including an axially limited annular radially outwardly projecting bead immediately adjacent to and merging directly with said flange, said bead having a maximum diameter greater than said predetermined exterior diameter of said neck section; and a cap comprising a tubular body of resilient material removably telescoped over said neck section, said tubular cap body having an internal diameter similar to said external diameter of said neck section and less than said maximum diameter of said bead and sealingly engaging said bead immediately adjacent said flange, said tubular cap body having a bore whose length is sufficiently greater than the exposed portion of said marking element to pass a substantial surface beyond said bead when said cap is fitted onto said container in closing relationship therewith.

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CHARLES A. WILLMUTH, *Primary Examiner.*