Oct. 20, 1931. C. W. BRISTOL 1,828,170

ADJUSTABLE ANCHORING FITTING FOR THERMOMETER BULBS

Filed April 8, 1930

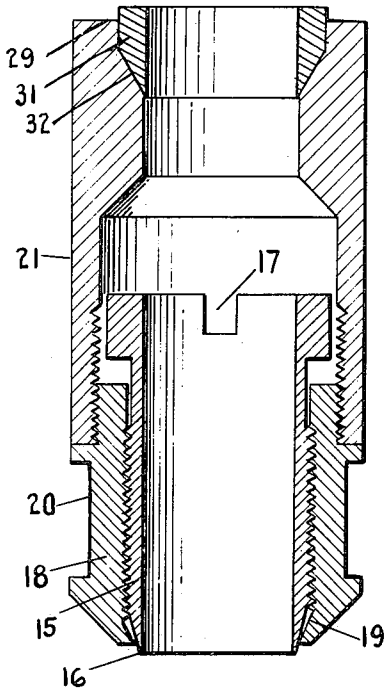
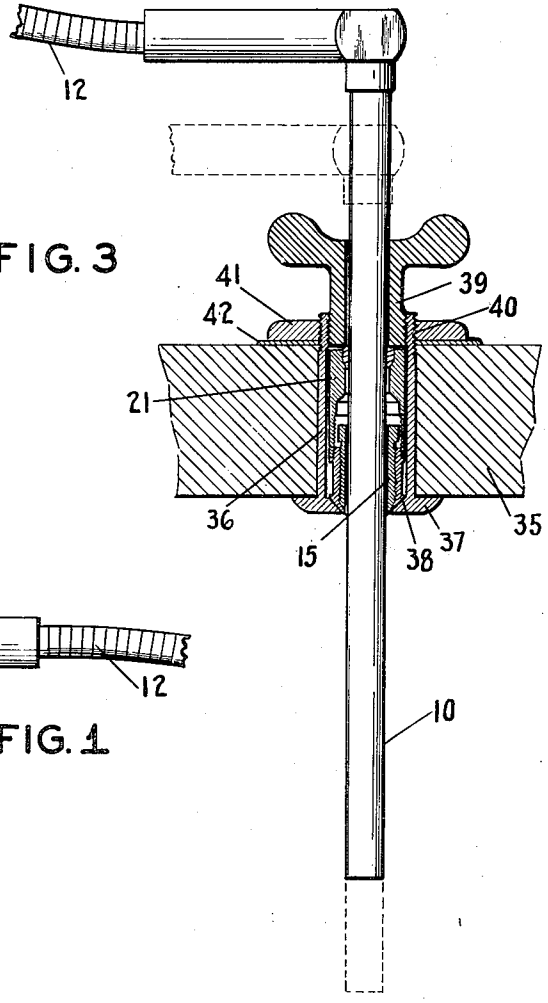


FIG. 3

FIG 2



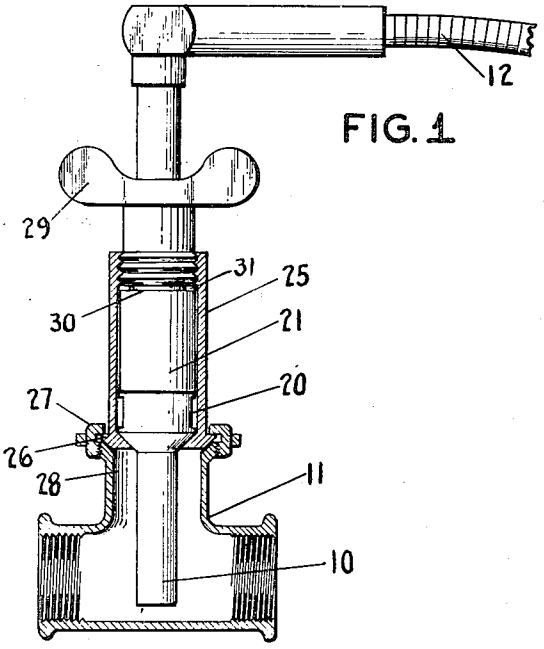


FIG. 1

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Patented Oct. 20, 1931 1,828,170

UNITED STATES PATENT OFFICE

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ADJUSTABLE ANCHORING FITTING FOR THERMOMETER BULBS

Application filed April 8, 1930. Serial No. 442,703.

The invention relates to a fitting for use with measuring apparatus, more particularly with the bulb or encased temperature responsive unit of a thermometric device which is adapted for insertion in a fluid.

Thermometer bulbs of this nature are used to a large extent in controlling the temperatures of various baths or liquids, for example in the pasteurization of milk wherein it is especially necessary that sanitary precautions be observed in the use of such thermometer.

It is the object of the invention to afford a fitting whereby the bulb portion may be adjusted to the desired length with respect to its stationary support; and to provide for this purpose, also, a fitting of sanitary construction and which may readily be cleaned and avoids formation of crevices into which foreign matter might tend to accumulate.

In carrying out the invention, there is arranged to fit slidably over the usual casing or bulb of a thermometer, for example, of the expansible gas, vapor or liquid type, a fitting which is so constructed that by taking up on a jam nut, forming a part thereof, the fitting as a whole may be tightened to the bulb at any desired position along its length. The aforesaid locking means, furthermore, is arranged for threaded engagement with a finishing sleeve also slidable over the bulb; and the fitting as a whole is then to be secured by a suitable sanitary ferrule and cap to the desired support, whereby the distance the bulb projects into a container or the like is determined.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which:

Fig. 1 is a vertical section showing the novel fitting located in a T.

Fig. 2 is a fragmentary vertical section illustrating the manner of securing the novel fitting to a wall, such as of a tank or vat.

Fig. 3 is an enlarged longitudinal section of the anchoring element and associated finishing sleeve.

Referring to the drawings, 10 designates the bulb or casing of a thermometric device such as the usual and well-known type of gas, vapor or liquid thermometer; and, as indicated in Fig. 1, the same is designed to be fitted, for example, into a T 11, the bulb having an extension as the armored tubing or the like 12 at its outer end whereby an indication of the temperature prevailing in the medium passing through the T may be had at some point remote therefrom, as is well understood.

As it is desirable, as well as necessary in many instances, that this bulb 10 be capable of projecting at different distances into a tank or fitting (as indicated by the dotted line position, Fig. 2) or is required to be adaptable to fittings of different diameters and tanks of different sizes, said bulb 10 should be adjustable relatively to the means for securing the same rigidly to such fitting or tank.

In accordance with the present invention, this is accomplished by means of a tubular anchoring element 15 having a sliding fit over the bulb 10, said element being tapered and reduced in thickness at its outer end to an extent to afford a yieldable edge 16. Said anchoring element, furthermore, is threaded between its ends and at its innermost end is adapted to receive a holding wrench, for example, in the provision of the diametrically disposed slots 17.

A jam nut 18, moreover, is adapted for threaded engagement with the intermediate portion of the anchoring element 15, fitting over its outer end; and the inside surface of said outer end of the jam nut is correspondingly tapered as at 19 to fit substantially the taper of said anchoring element. Thereby, as the jam nut is taken up by rotating it in a clockwise direction on the anchoring element and contact had between the two tapered portions 16 and 19, the yieldable edge of the anchoring element will be pressed firmly against the bulb to hold the said anchoring element thereto. To enable a sufficient force to be applied, jam nut 18 is, furthermore, provided with the diametrically opposite flats or grooves 20 for obtaining a wrench hold thereon; and the same are of such a nature as to be readily cleaned.

The jam nut 18, moreover, is threaded at its inner end to receive thereover a finishing sleeve 21 which encloses the inner ends of the anchoring element and jam nut, fitting flush to form with the latter a perfectly smooth and finished surface upon which no foreign matter can collect. In this connection, also, it is desirable to have the edge 16 of the anchoring element project slightly beyond its surrounding jam nut portion 19 so that no recess or crevice may be formed thereat; and the jam nut is beveled down substantially to said edge to afford a finished and readily cleanable surface.

In order, however, to secure the bulb in position, for example in the T 11, the entire anchoring unit embodying the anchoring element, jam nut and finishing sleeve is fitted within a cylindrical, smooth-surfaced ferrule 25 which is tapered internally at its outer end and is adapted to support thereby the outer end of the unit, said ferrule being further provided with a shoulder 26 over which fits a holding nut 27 in threaded engagement with the outer end of the inlet 28 to T 11.

Said ferrule, moreover, is internally threaded at its opposite end to receive a winged follower cap 29 which is designed to contact with the corresponding end of the finishing sleeve 21 to force the same tightly against the seat 30 of the ferrule.

It has been found desirable, also, in order to prevent any possible leakage of liquid into the holding unit to provide at its follower end about said bulb a suitable washer member 31 which may be of a soft metal, as lead. This washer is designed to fit a tapered seat 32 of the sleeve so that as pressure is exerted by the follower cap on said sleeve end and washer, the latter will tend to grip the surface of the bulb.

In Fig. 2 a slightly different manner of securing the anchoring unit is indicated, the same being shown more particularly for use in connection with a wall 35, as of a tank or like container. In this particular embodiment, the ferrule 36 is provided with a flange 37 at its outermost end and having the seat 38 for engagement with the tank end of the anchoring unit. In addition to being internally threaded at its follower end for accommodating a follower member 39, as in the previously described embodiment, it is externally threaded as at 40 and over which is fitted a nut 41 with intermediate washer 42 to secure the said ferrule tightly to the said wall, as by drawing up on said nut.

I claim:

1. A fitting for a thermometer bulb of the nature set forth, slidable longitudinally over said bulb and adapted to be anchored at any desired position along the length of the bulb, said fitting comprising a sleeve adapted to have a sliding fit over the bulb and being reduced and tapered at its outer end to an extent to afford a yieldable edge, said sleeve also being threaded between its ends, and a jam nut fitting over the outer end of said sleeve and engaging the threads thereof to press the yieldable edge against the bulb when the nut is drawn up.

2. A fitting for a thermometer bulb of the nature set forth, slidable longitudinally over said bulb and adapted to be anchored at any desired position along the length of the bulb, said fitting comprising a sleeve adapted to have a sliding fit over the bulb and being reduced and tapered at its outer end to an extent to afford a yieldable edge, said sleeve also being threaded between its ends and adapted at the inner end to receive a holding wrench, and a jam nut fitting over the outer end of said sleeve and engaging the threads thereof to press the yieldable edge against the bulb when the nut is drawn up.

3. A fitting for a thermometer bulb of the nature set forth, slidable longitudinally over said bulb and adapted to be anchored at any desired position along the length of the bulb, said fitting comprising a sleeve adapted to have a sliding fit over the bulb and being reduced and tapered at its outer end to an extent to afford a yieldable edge, said sleeve also being threaded between its ends, a jam nut fitting over the outer end of said sleeve and engaging the threads thereof to press the yieldable edge against the bulb when the nut is drawn up, said nut having a circumferential shoulder and being provided with external threads beyond said shoulder, and a finishing sleeve through which the bulb is adapted to pass and in threaded engagement with the said external threads of the jam nut and its inner edge adapted to abut the said shoulder thereof.

4. A fitting for a thermometer bulb of the nature set forth, slidable longitudinally over said bulb and adapted to be anchored at any desired position along the length of the bulb, said fitting comprising a sleeve adapted to have a sliding fit over the bulb and being reduced and tapered at its outer end to an extent to afford a yieldable edge, said sleeve also being threaded between its ends, a jam nut fitting over the outer end of said sleeve and engaging the threads thereof to press the yieldable edge against the bulb when the nut is drawn up, said nut having a circumferential shoulder and being provided with external threads beyond said shoulder, a finishing sleeve through which the bulb is adapted to pass and in threaded engagement with the said external threads of the jam nut and its inner edge adapted to abut the said shoulder thereof, a mounting ferrule adapted to support rigidly the anchoring means and bulb and having a head for engagement with the outer surface of the jam nut, and means adapted to secure the head to a support into which the ferrule is adapted to be passed.

5. A fitting for a thermometer bulb of the nature set forth, slidable longitudinally over said bulb and adapted to be anchored at any desired position along the length of the bulb, said fitting comprising a sleeve adapted to have a sliding fit over the bulb and being reduced and tapered at its outer end to an extent to afford a yieldable edge, said sleeve also being threaded between its ends, a jam nut fitting over the outer end of said sleeve and engaging the threads thereof to press the yieldable edge against the bulb when the nut is drawn up, said nut having a circumferential shoulder and being provided with external threads beyond said shoulder, a finishing sleeve through which the bulb is adapted to pass and in threaded engagement with the said external threads of the jam nut and its inner edge adapted to abut the said shoulder thereof, a mounting ferrule adapted to support rigidly the anchoring means and bulb and having a head for engagement with the outer surface of the jam nut, means adapted to secure the head to a support into which the ferrule is adapted to be passed and a follower cap for sealing the inner end of the finishing sleeve and adapted for threaded engagement with the ferrule to jam said sleeve therein.

6. A fitting for a thermometer bulb of the nature set forth, slidable longitudinally over said bulb and adapted to be anchored at any desired position along the length of the bulb, said fitting comprising a sleeve adapted to have a sliding fit over the bulb and being reduced and tapered at its outer end to an extent to afford a yieldable edge, said sleeve also being threaded between its ends, a jam nut fitting over the outer end of said sleeve and engaging the threads thereof to press the yieldable edge against the bulb when the nut is drawn up, said nut having a circumferential shoulder and being provided with external threads beyond said shoulder, a finishing sleeve through which the bulb is adapted to pass and in threaded engagement with the said external threads of the jam nut and its inner edge adapted to abut the said shoulder thereof, a mounting ferrule adapted to support rigidly the anchoring means and bulb and having a head for engagement with the outer surface of the jam nut, means adapted to secure the head to a support into which the ferrule is adapted to be passed, a follower cap for sealing the inner end of the finishing sleeve and adapted for threaded engagement with the ferrule to jam said sleeve therein, and an insert washer of relatively soft metal in the top of the finishing sleeve adapted to spread under the pressure of the follower cap for peripheral and sealing engagement with the bulb.

In testimony whereof I affix my signature.

CARLTON W. BRISTOL.