March 2, 1943. A. C. BRUNS 2,312,873

THERMOMETER CASE

Filed Feb. 3, 1942

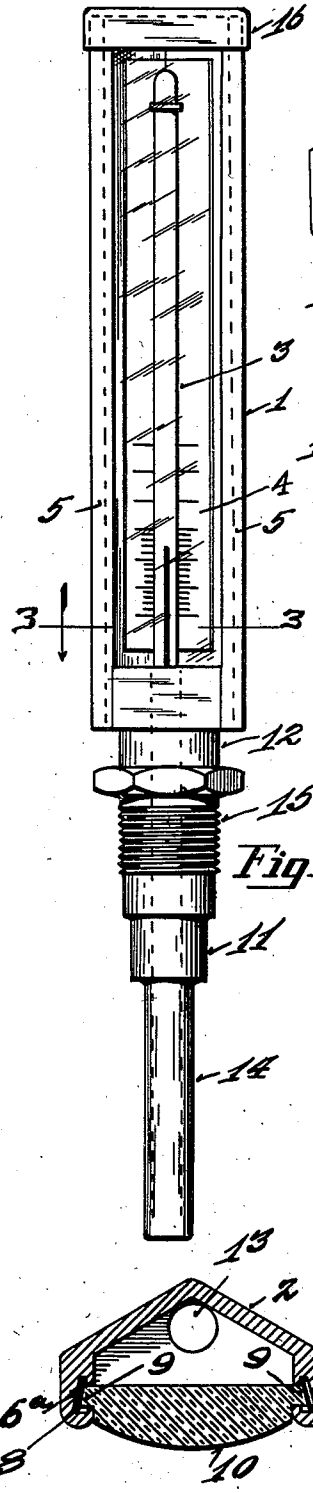


Fig. 1.

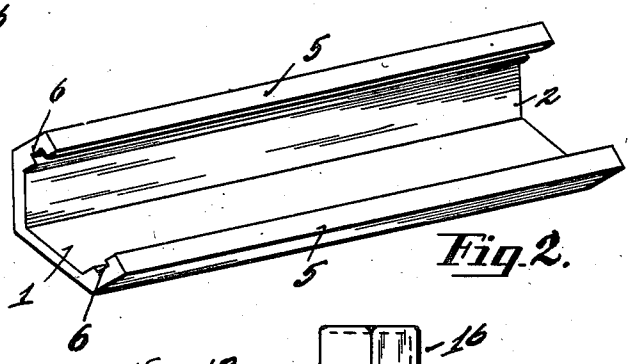


Fig. 2.

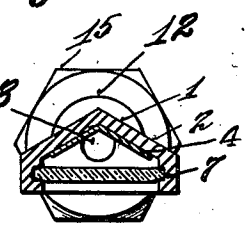


Fig. 3.

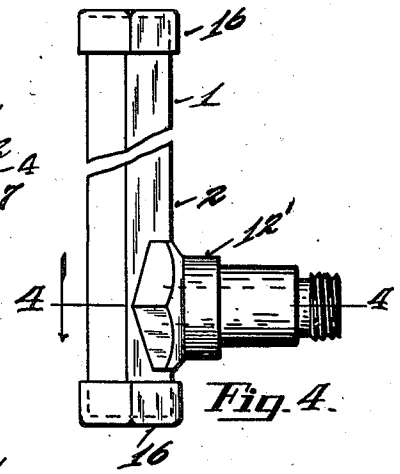


Fig. 4.

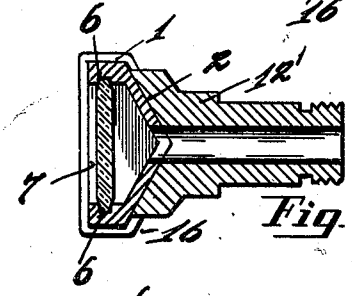


Fig. 5.

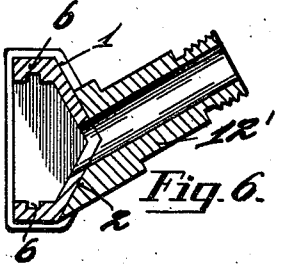


Fig. 6.

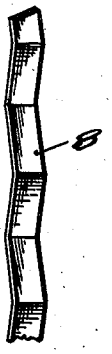


Fig. 8.

Fig. 7.

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THERMOMETER CASE

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Application February 3, 1942, Serial No. 429,413

4 Claims. (Cl. 73—374)

This invention relates to improvements in thermometer casings particularly adapted for making application of various styles of fittings, straight or angular, employed in making installations to tanks, vats, or otherwise, to housingly extend the bulb end of the capillary tube from an exterior side into the tank, the fittings facilitating in making an installation and to provide for convenient removal for cleaning.

The prevailing method has been to construct the casing with an extended boss at the lower end thereof through which the bulb end of the capillary tube is projected and to which the fittings for mounting the casing are coupled, as a cast or otherwise formed integral unit, limiting the casing to a definite thermometer length size and necessitating the provision of a separate light or lens holding frame applied over the open face of the casing, either removably or hingedly secured thereto.

An object of the invention is to produce a thermometer casing for any selective length size, cut from bar stock of uniform and determined cross-section, providing a V-form of rear wall and a pair of opposing parallel side walls, each having a longitudinal channel or groove in its inner side for the reception of a light plate or lens to provide a transparent slidably removable closure for the front side of the casing.

Another object of the invention is to produce the body portion of the thermometer casing of a selected length size from bar stock of determined cross-sectional configuration, and universal for either straight or angular mounting by the application of a fitting into the lower end thereof for a straight mounting, or upon the rear side for an angular mounting, the body capped at its upper end for straight mounting and both ends for an angular mounting thereon, and adaptable for slidably mounting a light plate or lens therein to provide a transparent and removable face closure for the body.

Another object is to provide for yieldingly and compressively binding the opposite longitudinal margins of the lens or transparent cover plate against adjoining surfaces of the body to produce a sealing joint and reduce breakage of the glass closure, incident to shocks or jars imposed upon the casing.

Other features and advantages of the improvement will be more fully set forth in the description of the accompanied drawing, in which:

Figure 1 is a front elevation of the improved thermometer casing embodying a fitting at its lower end for making a straight mounting.

Figure 2 is a perspective view of the casing body and representative of a section cut from bar stock for a selected size length thermometer.

Figure 3 is a section on line 3—3, Figure 1.

Figure 4 is a broken side elevation of the improved casing illustrating a fitting applied to the rear side thereof for making an angular mounting.

Figure 5 is a section on line 4—4, Figure 4.

Figure 6 is a cross-section similar to Figure 5 with the fitting applied at a different angle.

Figure 7 is a cross-section of a modified form of casing body.

Figure 8 is a perspective view of a section of a yielding pack strip employed for frictionally binding the lens within the channels or grooves of the casing body.

The drawing discloses the thermometer casing particularly of a type having a fitting or shank extending from its lower end and for making either a straight or side angle mounting to a container, the fitting to extend through a wall of the container, adapting the thermometer for indicating the temperature of the interior or the contents thereof, although the use of the casing is not limited to such type and may be employed for other types or styles requiring a sturdy enclosure for the capillary tube.

The general practice heretofore followed for thermometers requiring a sturdy casing structure has been to make the same as a cast or forged product, necessitating individual patterns and castings for each size and style of shank extension, and including separate frames for a glass cover attached to the casing by various modes, likewise special for each size of thermometer casing.

The present improvement provides a casing body structure universal for all sizes and styles and for each selected length is cut from bar stock having a common cross-sectional configuration throughout, and for each selected length of casing, is open at both ends. The stock bar, in its particular cross-section form, is manufactured by extrusion or other conventional methods for making bar materials, offering low cost production, accuracy, and a smooth and high quality surface finish.

Referring to the drawing, Figure 2 illustrates a section of bar stock cut to a given size of thermometer casing body 1, and generally is of channel form in cross-section with the web portion of the rear wall 2 of acute angled form of divergently inclined, with the apex projected outwardly, following a general design for thermometer cas-

ing, to provide greater depth centrally of the body for the reception of the capillary tube 3 disposed in the angle thereof, and to position the scale plate or plates 4 fixed to the inner side of the rear wall angularly to the tube.

The opposing side walls 5—5 of the channel for the full length of the body or bar stock from which it is cut, each in its inner side, is provided with a longitudinal groove 6, the groove in the opposing walls lying in registry for slidingly interposing a transparent plate or lens 7. The cross-sectional configuration or shape of the grooves may be variously modified. A second design of dove tail or T-form 6a is illustrated in Figure 7. The dove tail or T-form of groove has its base wall inclined outwardly in cross-section, the inclination serving with the aid of a flexible binding strip 8 bearing against a correspondingly inclined or beveled edge of a flanged end 9 of a lens 10 engaged into the groove 6a, binding the lens within the body against chatter and compressing the flange of the lens outwardly into sealing contact with the adjacent surface of the body to prevent sediment infiltration through the joint. The lens, being yieldingly sustained within the body, will be less subject to breakage, as the flexible binding strip cushions the lens from shocks to which the casing may be subjected. The cross-sectional configuration of the lens holding grooves provides for confining the flexible strip therein upon removal of the lens. The strips are removed longitudinally or lengthwise of the groove, and as illustrated in Figure 8, are bent to zig-zag form longitudinally, and preferably made of a flexible non-corrosive material.

In employing a lens type of transparent front closure plate, double magnification of the mercury column is obtained when the capillary tube is of a cross-sectional form to obtain magnification.

The lower end of the body, as illustrated in Figure 1, for a straight tubular shank extension or fitting 11 for encasing the bulb end of the capillary tube 3 and providing a mounting for the thermometer, is preferably of sectional form, the detail of which, however, may be comparable to various conventional designs and methods of application to a container to extend the same into the interior through an aperture in the wall thereof. For the straight type of thermometer the shank or mounting fitting is provided with a head section 12 having its forward end of a cross-sectional shape conforming to that of the channel of the body to interfit therewith and provide a plane front side lying flush with the front ends or face sides of the side walls 5—5 of the body.

The head section is brazed or permanently secured within the body and provides a base closure for the lower end thereof, and has a bore 13 extending therethrough for the reception of the capillary tube 3. A casing section 14 for housing the bulb end of the tube is screw-threaded upon the outer end of the head section and is arranged to confine a gland or coupling nut 15 rotatably upon the head section 12 for mounting the thermometer to a bushing or other form of connection extending through and lining an aperture in the wall of the container and fixed thereto.

The upper open end of the body is sealed by a flanged cap 16 telescopically engaged over the end of the body and frictionally binding therewith, or the cap may be provided with a spring clip to latch it in place. It is obvious that various methods may be employed for removably fixing the cap to one or both ends of the body. In the latter instance, as shown in Figure 4, the body is provided with a lateral shank extension or mounting fixture for making an angular connection to a container or tank.

To provision the case for making an angular connection, the head section 12' of the mounting fitting has its forward end formed to match with the contour of the rear wall 2 of the case body, as shown in Figures 5 and 6, and to extend the head or shank section 12 at any degree of angle from the rear side of the body to which it is brazed or otherwise permanently secured.

The body of the case, therefore, for either the straight or angular types of thermometers, is universal in structure and of the same cross-sectional dimension and configuration throughout its length, and serves for all of the different length sizes by merely cutting the same to a selected length from the bar stock, and with the transparent face closure slidably engaged within the body, it is likewise cut to a length requisite for a definite size of case, which can be readily replaced when broken, and eliminates the need for separate door or closure casings.

Having described the invention, I claim:

1. A thermometer case, comprising: a body of channel form for its full length providing a pair of opposing side walls, the walls each within its inner side face having a groove therein and longitudinally thereof for interposing and laterally confining a transparent front closure plate for the case, the groove having an angular base wall and a transparent plate having its longitudinl margins engaged in said grooves with the edges thereof angled correspondingly with the relative base of the groove, and a binding strip interdisposed between said angular surfaces of said groove and plate for yieldingly mounting the plate within the body and compressively urging the same into sealing contact therewith.

2. A thermometer case, comprising: a body of channel form providing a pair of opposing side walls, the walls each within its inner side face having a groove therein, longitudinally thereof, for interposing and laterally confining a transparent front closure plate for the case, a transparent closure plate having its opposite longitudinal edges respectively engaged in said grooves, the grooves and edges of the plate having relatively parallel surfaces inclined to the planar axis of the plate, and a flexible binding strip interposed between said surfaces for yieldingly mounting and binding the plate within the body and compressively urging the plate into sealing contact therewith.

3. A thermometer case, comprising: a body of channel form for its full length providing a pair of opposing side walls, the walls each within its inner side face having a groove therein and longitudinally thereof for interposing and laterally confining a transparent front closure plate for the case, a transparent closure plate having its opposite longitudinal edges respectively marginally engaged in said groove, and a flexible binding strip respectively interposed in the groove and bearing against the plate edge for yieldingly mounting and binding the plate within the body and compressively urging the same into sealing contact therewith, the groove being of a cross-sectional configuration to confine the strip laterally therein upon removal of the plate.

4. A thermometer case comprising a body cut to a desired length from bar material of channel form having a rear wall and a pair of opposing

side walls and being uniform in cross-section for its full length, said side walls each having a longitudinal groove in its inner face side for slidingly receiving and laterally confining a transparent front closure plate for the body, a tubular fitting having a head portion of a contour corresponding to the internal cross-section of the channel body telescoping within one end portion of the body to provide a bottom closure and mounting of the case, the bore of the fitting being adapted to receive a part of the capillary tube of a thermometer when mounted within the case, and a cap removably fitted on the upper end of the body forming a top closure of the case.

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