

June 2, 1936.

L. F. CHANEY

2,042,982

THERMOMETER

Filed Aug. 27, 1934

FIG 1

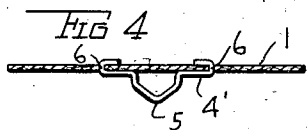
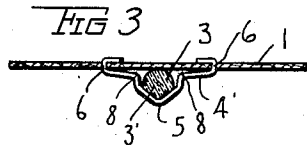
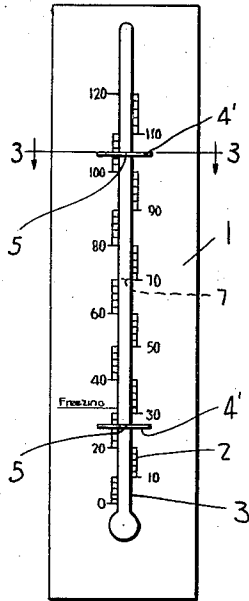


FIG 5

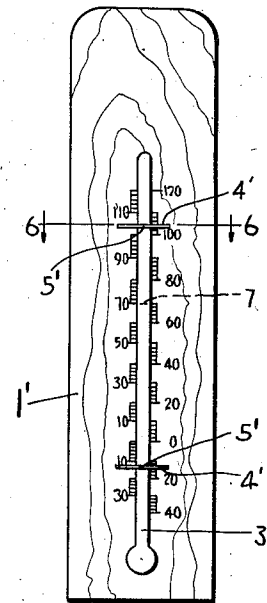


FIG 2

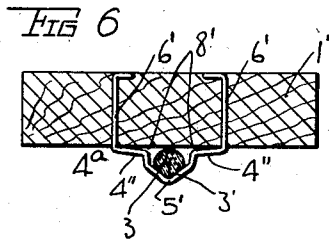
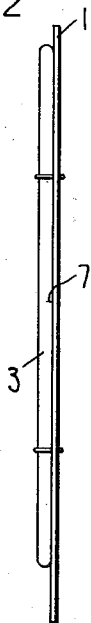
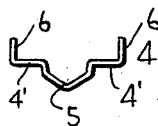


FIG 7



INVENTOR.
Lee F. Chaney
BY *Staley + Walsh*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,042,982

THERMOMETER

Lee F. Chaney, Springfield, Ohio, assignor of one-half to John L. Chaney, Springfield, Ohio

Application August 27, 1934, Serial No. 741,611

2 Claims. (Cl. 73—52)

This invention relates to improvements in thermometers, it more particularly relating to the means for securing the thermometer tube to a scale-card or other form of "back".

A great many thermometers are manufactured in which a light or heavy card-board back is employed; and in other cases a wooden or metal back is used. In any event, the usual practice is to print the desired scale directly on the back and to mount the thermometer tube thereover. It can be seen that the tube must be properly located and retained in the back in order that a correct reading of the temperature may be made.

The most generally used prior means for securing the tube to a card-board or metal back was a comparatively narrow metal band which, having some little width, partially concealed the true level of the indicating fluid at times. In order that concealment of the graduations be reduced, the ends of the sheet metal band were passed through a small opening in the center of the back directly to the rear of the location of the tube which necessitated the almost complete encircling of the tube by the band, after which the ends were passed through the opening and turned over as by clinching. Due to the necessity of employing hand labor on such operations, it was necessary to use a very flexible material which worked against obtaining a firm placement of the tube, because with the tube in place, attempts to provide a tight clinching resulted in tube breakage. Further, it was possible to roll or partially rotate the tube even when in place because of the fact that the free ends of the band were brought together in the single opening. To provide for these openings, a preliminary punching operation was made which increased the manufacturing expense.

With the wooden backs, the formerly used clips were stamped metal members, tacked or nailed to the backs, and during this operation the tube was in place. It can be seen that care had to be taken at all times to prevent breaking the tube by unduly severe clinching of the bands, or in tacking the clips to the wooden back.

One of the objects of the invention is that the improved preformed wire clips are fixed into the back, whether of cardboard, wood or metal by an operation simply and inexpensively performed wherein the thermometer tube is not employed as a form, nor is the clinching or tacking done with the tube in place, thereby reducing breakage heretofore arising from this cause.

Another object and advantage is that in the

case of the cardboard back, the former separate operation of piercing the openings through which the present bands are passed is eliminated, the wire clips having sufficient strength to permit them making their own openings, this being true also in the instance of the wooden back.

Another object of the invention is to provide a preformed metallic clip which is formed of a comparatively small diameter wire whereby a minimum amount of concealment of fluid level or graduations of the scale is made.

Another object and advantage is that since the appearance of the whole device is not marred, the ends of the clips are clinched into the back at comparatively wide spread points on each side of the center of the tube.

In the accompanying drawing:

Fig. 1 is a front elevation of one form of thermometer whose tube is secured to the back by means of the improved clips.

Fig. 2 is a side elevation of the same.

Fig. 3 is an enlarged transverse section on the line 3—3 of Fig. 1, showing in cross-section the thermometer tube in place.

Fig. 4 is a view similar to Fig. 3 except that the tube is removed.

Fig. 5 is a front elevation of a thermometer having a wooden back.

Fig. 6 is an enlarged transverse section on the line 6—6 of Fig. 5.

Fig. 7 is a detailed view of the improved clip.

Referring first to Figs. 1 to 4, inclusive, of the drawing, 1 indicates a back formed of cardboard and 2 represents a scale printed thereon. The thermometer tube 3 is of the usual construction wherein as seen in Fig. 3 the forward portion 3' is substantially V-shaped for the well known purpose of providing a magnification of the reading to be made, while the remainder of the cross-section is substantially semi-circular. As is well known, the glass tube is formed in rods for this cross-section, so that the same cross section exists in the tube from top to bottom.

Advantage is taken of the described cross-section whereby the wire clip to be described is enabled to firmly grip the tube to the back. Referring to Fig. 7 showing the improved clip 4 alone in detail, which is preferably formed of spring wire, it can be seen that in the otherwise substantially U-shaped formation a V-bend 5 is made in the center of the connecting portion 4' projecting outwardly opposite from the legs 6 of the clip.

In Figs. 5 and 6 a wooden backing 1' is shown, the clips indicated in a general way at 4' being

the same as those employed in connection with the cardboard backs with the exception that the legs indicated at 6' are longer; the V-shaped loops being indicated at 5' and the connecting portions at 4'.

The operation of applying the clips to the backs of whatever material the same is composed of is performed by a machine (not shown) carrying the wire in spool form (whereby the clips are forced by the machine into the back. In the case of the cardboard or wooden back, the legs 6 and 6' of the clip make their own openings and are sufficiently long to be clinched over on the reverse side of the back by a final portion of the operation.

It should be noted that in this operation, no use is made of the thermometer tube as a form to which to shape the clips, the tube being slipped in under the clips in a later operation. When a back is prepared to receive the tube, the appearance of the preformed clip is as seen in Fig. 4, where it will be observed that the connecting portions 4' lie snugly against the forward surface of the back. When the tube is assembled on the back, it is slipped upwardly into the V's of the clips, and since the V-bends straddle the triangular forward portion of the tube, no lateral displacement is permitted. The height of the V measured from the forward surface of the back to the V is less than the diameter of the tube measured from the rear to the apex of the triangular cross-section, whereby when the tube is forced into place, the tube is held by a considerable friction against the back, the clip springing to the extent as noted by the small spaces 8 and 8'. Figs. 3 and 6. The tube is correctly positioned with regard to the scale when a mark 7 etched on the rear of the tube at the 70 degree Fahrenheit fluid level, in the present instance, coincides with the 70 degree graduation on the scale.

It should be further noted that the comparatively wide spread position of the legs 6 and 6' of the clip in connection with the straddling of the tube by the V provide against turning of the tube, and also in the case of the paper or cardboard back, some reinforcement of the back is afforded.

In assembling thermometers on a wooden back,

the operation is practically identical, except that the legs of the clip need not penetrate entirely through the wood, although in the present drawing, clips are shown as passing through the wood and being clinched on the reverse side of the back.

Therefore, by the use of the improved clip, the cardboard, wooden or metal backs are readily prepared to receive the thermometer with no danger of breaking the thermometer tubes, together with a considerable elimination of the slow hand labor 10 heretofore necessary. As mentioned, the piercing operation of the backs is entirely obviated, and the improved clip is of greater strength and holds the tube more firmly because of the widespread position of the clinched ends in contrast to the 15 present practice where each end of the thin, flexible sheet metal band is passed through a single opening directly at the rear of the tube. Also, the wire clip is of small diameter so that no appreciable concealment of the fluid level is found. 20 Further, the operation of tacking clips on the wooden base with the tube itself in danger of being broken by the hammer is also eliminated, and while in the instance of the metal back, the thickness and hardness of the metal may prevent 25 self-piercing by the wire clip, any preliminary piercing operation necessary for the wire clip is merely the formerly used punching operation for the sheet metal bands altered to suit the wire clips.

Having thus described my invention, I claim:

1. In a device of the character described, a back, a thermometer tube, and a clip for securing said tube to said back, said clip having a central preformed portion to embrace the tube, side legs 35 to secure the clip to the back, and resilient portions connecting the central portion with said legs.

2. In a device of the character described, a back, a thermometer tube, and a clip for securing said 40 tube to said back, said clip having a central preformed V-shaped portion to embrace the tube, side legs having their inner ends bent to clinch the clip to said back, and resilient portions connecting the central V-shaped portion with said 45 legs, said resilient portions lying on the forward side of said back.

LEE F. CHANEY.