This invention relates to a method and means for securing thermometer tubes to their bases, it more particularly relating to a method and means for the purpose of employing a stapling operation; the invention further relating to a method and means for protecting the bulb of a thermometer tube by a stapling operation.

One of the objects of the invention is to provide a method and means of the character described which will enable the thermometer tube to be secured to its base by stapling without danger of breaking the glass thermometer tube.

A further object of the invention is to provide a means for securing the tube to its base by stapling without the necessity of clinching the staple and to also provide for protecting the bulb of the tube by an unclipped staple.

A further object of the invention is to provide for securing a thermometer tube to its base by a staple which may be of a comparatively narrow width to obviate obscuring the temperature indications on the base.

In the accompanying drawings:

Fig. 1 is a side elevation of the supporting anvil of a stapling machine with a thermometer tube and its base shown mounted thereon together with the supporting standard for the anvil shown in section.

Fig. 2 is a side elevation of a modification. Fig. 3 is a plan view of a thermometer tube, its base, the staples which secure the tube to the base and the protecting device for the bulb of the tube.

Fig. 4 is a section on the line 4—4 of Fig. 3. Fig. 5 is a section on the line 5—5 of Fig. 3. Fig. 6 is a perspective view of a stapling machine to which the invention has been applied.

Referring to the drawings, 1 represents the wooden base of a thermometer tube, 2 the thermometer tube and 3 the bulb of the tube. The staples which secure the tube to the base are indicated at 4 and are formed of a comparatively narrow flat wire. The protector for the bulb of the tube is indicated at 5 and is also formed of flat wire somewhat wider than the staple 4.

The staples 4 are preferably applied to the base by a stapling machine of any well known construction so far as the staple forming, feeding and driving mechanism is concerned as is also the bulb protector 5. In Fig. 6 there is shown a stapling machine adapted to carry out the method and means embodying the invention in which 14 represents a base for the supporting standard 6 which carries the anvil 7. Mounted at the top of the standard 6 is a spool holder 15 from which a wire strand 16 is fed through a guide 17 to the ratchet feed mechanism 18 and then to the stitching mechanism 19. The devices are actuated by a motor 20 positioned on an adjustable bracket 21 to drive the staple through the motor pulley 22, belt 23 and stapler pulley 24. A foot trip 25 is provided in the base 14 to actuate the stapler when the work is positioned on the anvil 7. In Fig. 1 the supporting anvil of the stapling machine is indicated at 7 and this anvil instead of being fixed is pivotally connected to the hollow supporting standard 6 of the machine by a pivot pin 8, the anvil projecting through a slotted opening in the standard. Suitable well known means (not shown) are usually employed for adjusting the height of the anvil with relation to the stapling driving device. The anvil employed for carrying out the invention is of a yieldable character and to that end there is in the present case provided a coil spring 9 which is interposed between the inner end of the anvil below the pivotal point thereof and a head 12 on a screw 10 which is threaded into the wall of the standard, a nut 11 being provided to hold the screw in different positions of adjustment so that the tension of the spring may be adjusted. The thermometer tube and its base is laid on the anvil beneath the staple feeding and driving mechanism (not shown) and the staples 4 as well as the protector 5 driven into the base with the bight of each staple 4 in close contact with the thermometer tube so as to securely fasten it to the base.

In some cases, due to a lack of an accurate adjustment of the anvil with relation to the stapling mechanism or different thicknesses of the thermometer base, a staple may be forced against the thermometer tube, which as is well known is of a fragile character, to such an extent as to break the tube and to avoid this the anvil has been made yieldable against the tension of the spring 8, the spring being so adjusted as to hold the anvil in horizontal position during the stapling operation but to yield under undue strain caused by driving a staple into the base to such an extent that its bight will exert enough pressure upon the tube to break the tube. In other words, the resistance offered by the tube against breakage is greater than the resistance of the spring.

In Fig. 2 the anvil indicated at 7 is fixedly mounted in the supporting standard 6 and there is provided a resilient cushion 13 of any suitable material such as comparatively soft vulcanized rubber, the thermometer being laid upon this cushion which will yield sufficiently to prevent breakage of the thermometer tube during the
stapling operation when undue strain is applied
in the manner explained.

The staple 5 is made larger than the staple 4
so as not to come in contact with the bulb 3 of
the thermometer tube, this staple 5 merely acting
as a cover or enclosure for the bulb.

While there is shown as a support for the ther-
ometer tube during the stapling operation the
supporting anvil of a stapling machine, it is obvi-
ous that the staple may be driven into the wooden
base by other means than a stapling machine
with the base resting upon any suitable form of
yieldable support.

By the arrangement described it is possible to
use a staple of comparatively narrow width, the
prongs of which may be left unclenched and that
by providing a yieldable support for the ther-
ometer during the stapling operation danger of
breakage of the tube by undue pressure of the
bight of the staple upon the tube is obviated.

This method and means of securing the ther-
ometer tube to its base is simple and inexpens-
ive.

Having thus described my invention, I claim:

1. The method of securing a thermometer tube
to a base which consists in placing the base and
tube on a yieldable support, driving the prongs of
a staple into the base until the bight of the staple
embraces the tube and is in contact therewith,
the resistance of said yieldable support being less
than the resistance of said tube against breakage
by the force exerted in driving the staples to
cause the bight of the staple to embrace the tube.

2. The method of securing a thermometer tube
to a base which comprises, yieldably supporting
the base and tube in a manner such that the tube
has greater resistance against breakage by the
bight of the staple during securement of said tube
to said base by said staple than the support has
against yielding, then driving the prongs of
the staple partially into the base until the bight
of the staple embraces the tube and is in pressure
contact therewith.

3. In a mechanism for securing a thermometer
tube to a wooden base by a staple whose bight en-
gages the tube and whose prongs partially enter
the base, means for supporting the base and tube
during the stapling operation comprising a sup-
port adapted to yield by a pressure of the staple
upon the tube which would be likely to break the
tube during the stapling operation, said means
comprising a yieldable pad of soft resilient mate-
rial upon which the base and tube are placed
during the stapling operation the resistance of
which is less than the resistance of said tube
against breakage by the pressure of the staple
thereon.

4. In a mechanism for securing a thermometer
tube to a wooden base by a staple whose bight en-
gages the tube and whose prongs partially enter
the base, means for supporting the base and tube
during the stapling operation comprising a sup-
port adapted to yield by a pressure of the staple
upon the tube which would be likely to break the
tube during the stapling operation, said means
comprising a pivoted supporting anvil of a
stapling machine and a spring for holding said
anvil in operative position but yieldable under
undue pressure of the bight of the staple upon
the tube the resistance of which is less than the
resistance of said tube against breakage by the
pressure of the staple thereon.

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