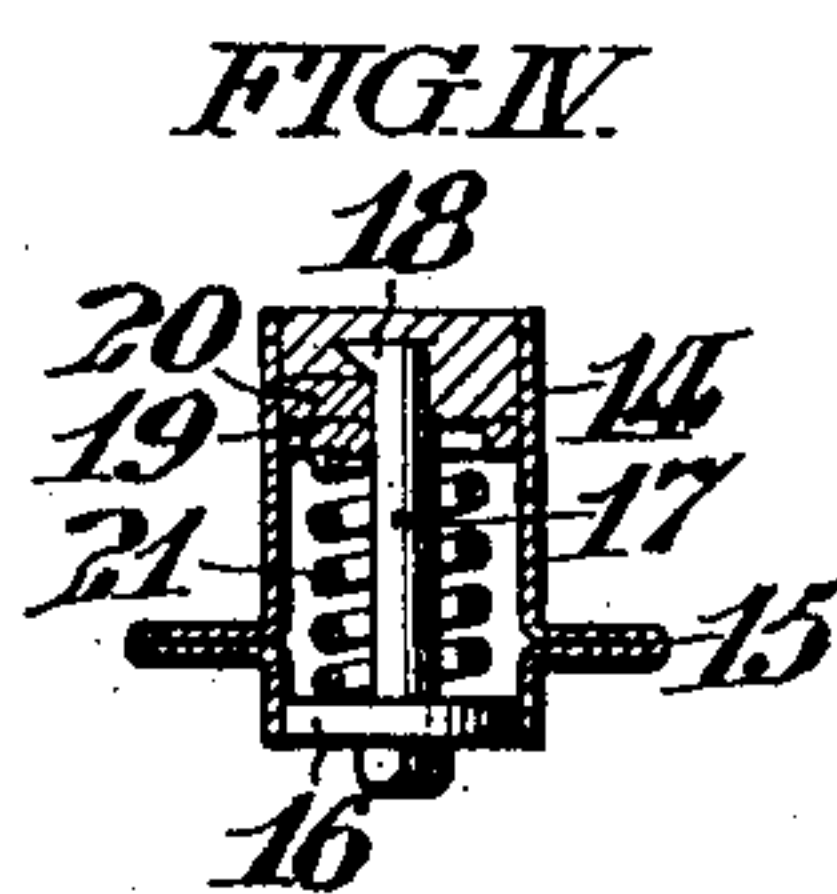
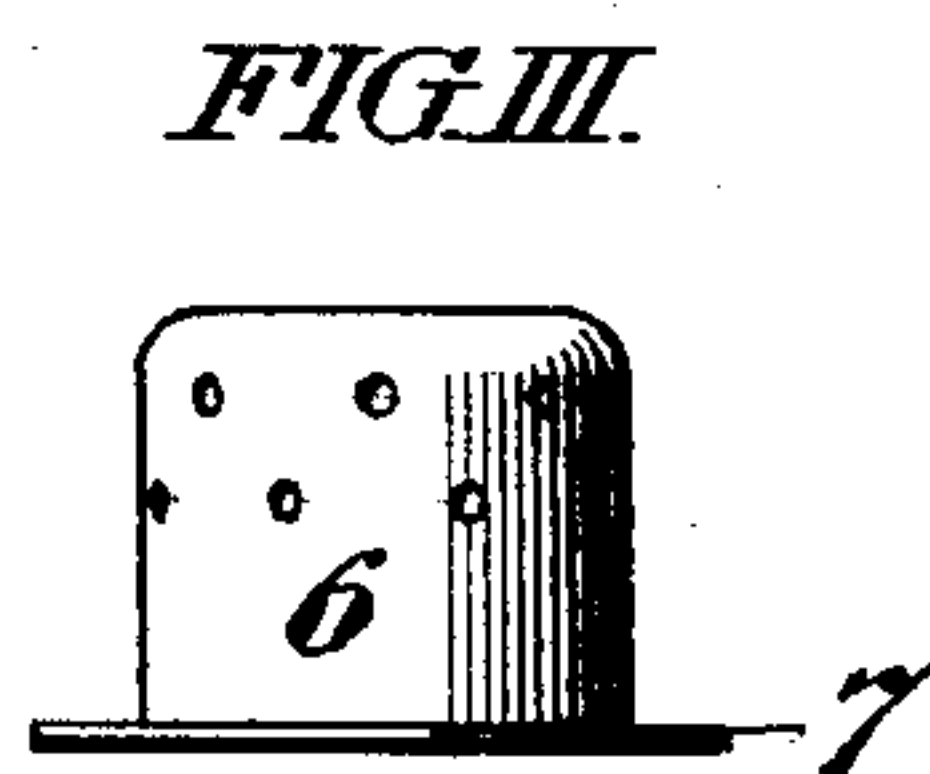
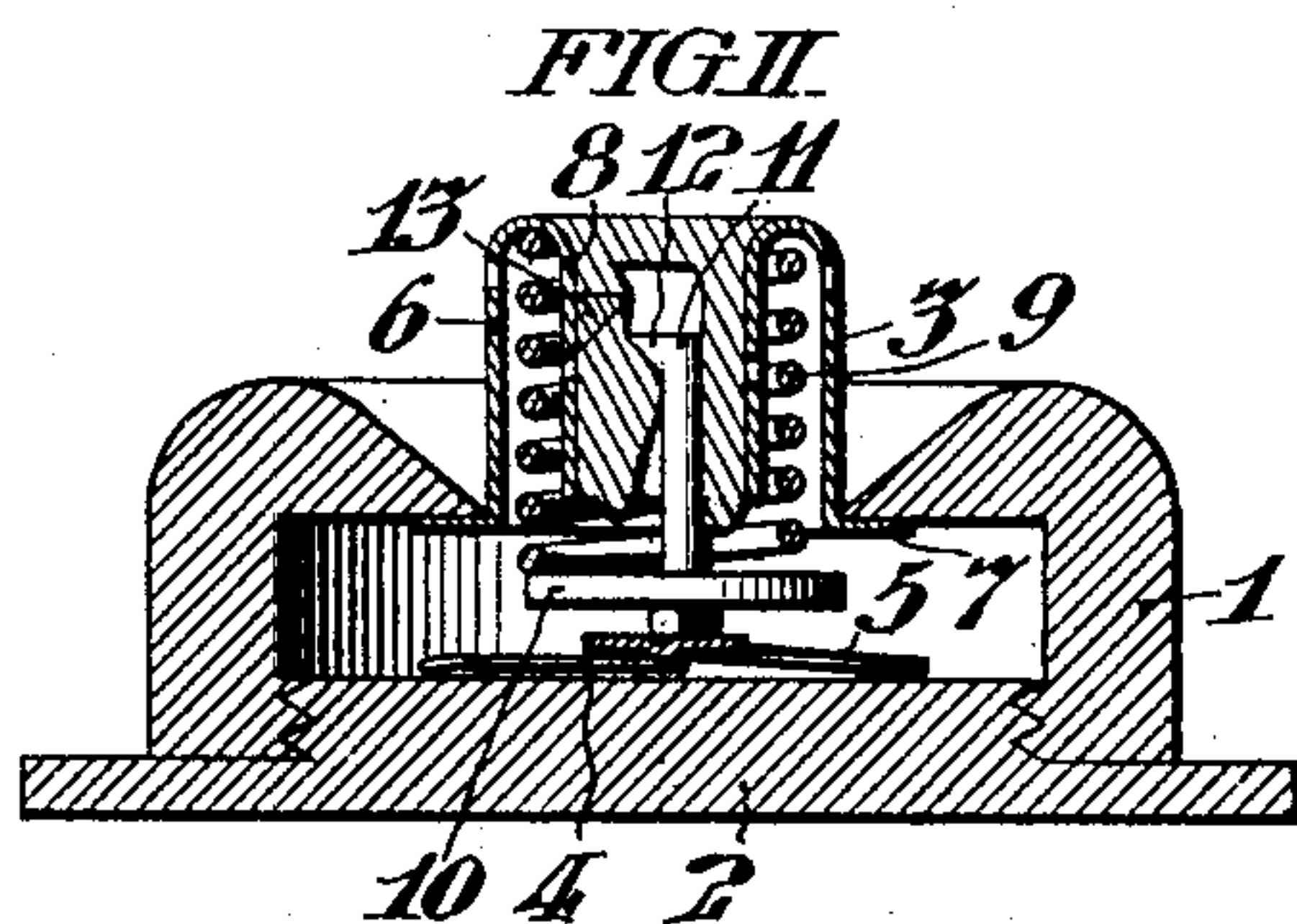
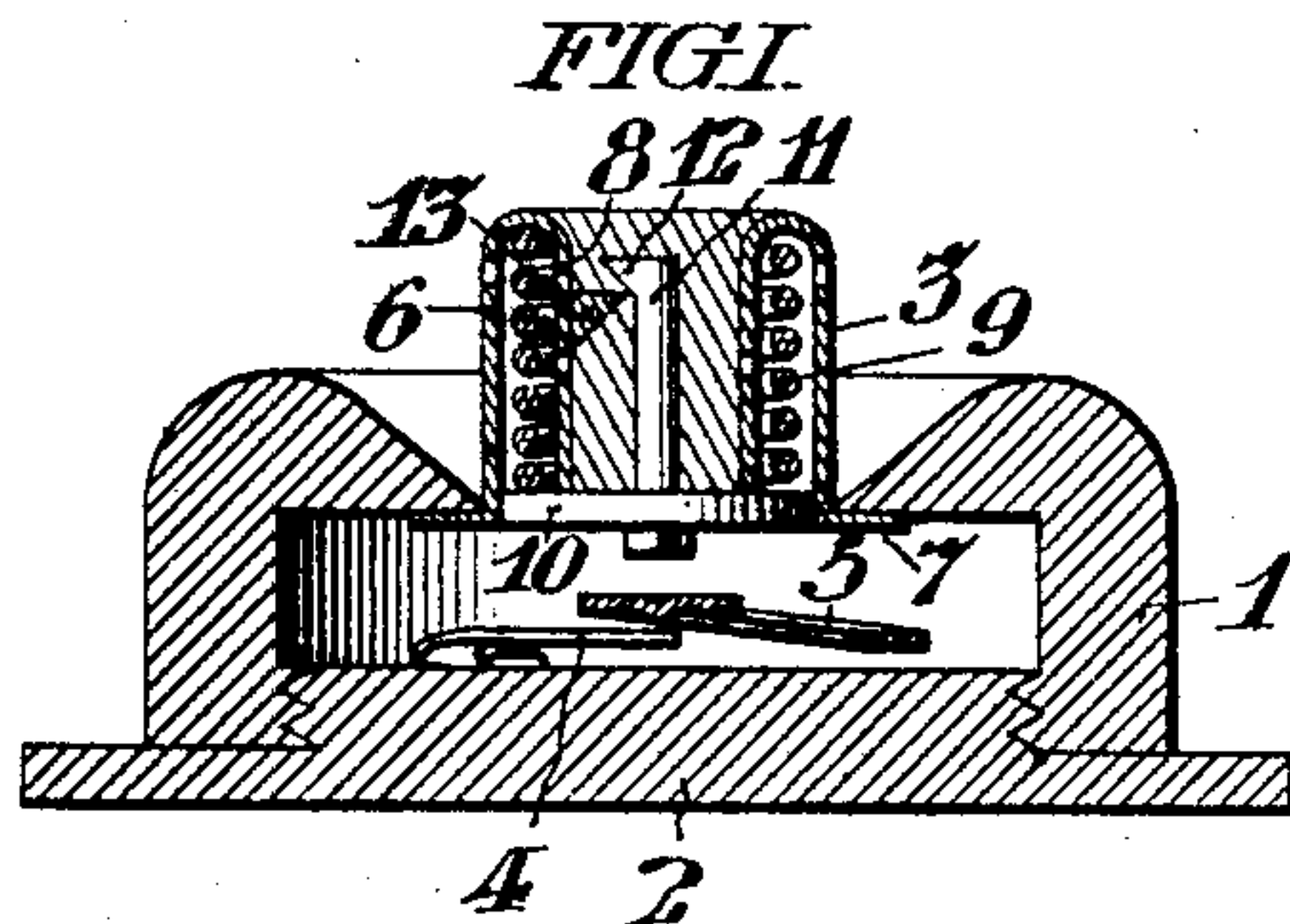


No. 771,547.

PATENTED OCT. 4, 1904.

W. E. HARMON.
THERMOSTATIC FINGER PIECE FOR PUSH BUTTONS.
APPLICATION FILED DEC. 26, 1903.

NO MODEL.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIS E. HARMON, OF MECHANIC FALLS, MAINE.

THERMOSTATIC FINGER-PIECE FOR PUSH-BUTTONS.

SPECIFICATION forming part of Letters Patent No. 771,547, dated October 4, 1904.

Application filed December 26, 1903. Serial No. 186,572. (No model.)

To all whom it may concern:

Be it known that I, WILLIS E. HARMON, a citizen of the United States, residing at Mechanic Falls, in the State of Maine, have invented certain new and useful Improvements in Thermostatic Finger-Pieces for Push-Buttons, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a thermostatic finger-piece for an electric push-button attachment, whereby upon any undue rise of the temperature of the room in which the attachment is situated the electric circuit will be automatically closed and a corresponding indication made upon the annunciator with which the push-button attachment is connected.

In my device the entire thermostatic element is comprised within the finger-piece of the push-button, the contact-points and the containing device being similar to the corresponding parts of the ordinary standard construction of push-button attachments. Consequently by the use of my invention it is possible to introduce my thermostatic finger-piece into buildings or establishments already fitted with push-buttons and annunciators without any other change than the substitution of finger-pieces embodying my invention for those already in place in the push-button attachments.

In devices of this character heretofore described the fusible piece, upon the melting of which the automatic operation of the device depends, has been inserted in such relation to the other parts that it must at all times support or resist the entire thrust of the spring inclosed in the finger-piece. This spring must have considerable strength, and consequently if the piece softens slightly, as it occasionally will at a lower temperature than that which it is intended should cause the attachment to operate, there is a gradual dislocation or extension of the spring and soon an improper operation of the device. This is very objectionable. I have overcome these objections.

To this end my invention consists, primarily, in inserting a coiled spring within the finger-piece and providing connections including a catch and fixed resistance-point by engagement

of which the main thrust of the spring is resisted and a fusible plug by which the catch and resistance-point are held in engagement, by means of which at ordinary temperatures the spring is held retracted under compression within the finger-piece, while upon any undue rise of the temperature the dissolution of the fusible plug suffers the catch to become disengaged and allows the spring to be projected from the bottom of the finger-piece, thus effecting the closing of the electric circuit in the same way as when the push-button is operated manually.

In the accompanying drawings, Figure I is a central section of a push-button attachment embodying my invention, the parts being in their normal position. Fig. II is a similar section showing the changed relation of the parts upon the melting of the fusible plug. Fig. III is an elevation of the finger-piece embodying my invention as seen by itself. Fig. IV is a central section of a modified form of finger-piece embodying my invention.

In the following specification and claims I shall use the term "push-button attachment" to cover the entire device, which is usually spoken of as a "push-button"—that is to say, the contact-points, the casing within which they are mounted, and the push-button or finger-piece by which the motion of the contact-points to close the circuit is effected. This latter element for the sake of clear distinction I am herein designating as the "finger-piece."

In the accompanying drawings the casing consists of the shell 1 and the base 2. The top of the shell is centrally perforated, so as to sustain and guide the flanged push-button 3. Mounted upon the base are the two contact-points 4 and 5 in the form of resilient metallic strips the free ends of which normally assume the position shown in Fig. I, where they are sufficiently separated to break the electrical circuit of which they form a part, but sufficiently close to each other for a slight pressure from the finger-piece above them to bring them into contact and close the circuit. With some slight variation this is the arrangement of the contact-points in the standard push-button attachments ordinarily used.

The finger-piece consists of an external cylinder 6, provided at the bottom with a flange 7. This cylinder is turned in at the top, so as to form a second or internal cylinder 8, with an annular space between the two. Within this

10 is a separable bottom for the finger-piece resting within the outer cylinder 6 in contact with the lower end of the inner cylinder. This bottom is fitted with a central spindle 11, having a projecting catch 12 at the upper end.

13 is a fixed resistance-piece in the shape of a lug or flange upon the inside of the inner cylinder projecting sufficiently to engage the catch 12 when the spindle 11 is placed in the central or upright position. (Shown in Fig. I.) Of the engaging surfaces of the catch and resistance-piece one (in this case the catch) is inclined or beveled, so that the engagement is released if the catch is free to move sideways, but otherwise maintained against endwise thrust by the spring. In this position the bottom 10 is in place and the spring 9 compressed. While the parts are in this position, a plug of fusible material is run into the interior of the internal cylinder and allowed to set therein. It thus binds the parts in the position shown, the effective portion being that which is interposed between the side of the spindle 11 back of the catch and the opposing side of the inner cylinder 8. Both the inner and outer cylinders may be perforated with small holes, the form of perforations of the outer cylinder being shown in Fig. III, for the purpose of increasing the readiness with which the fusible plug within the finger-piece is affected by the temperature of the surrounding air.

In operation any undue rise in this temperature above that which is to be ordinarily expected and provided for effects the melting of the fusible plug, allowing the spindle 11 to move sidewise, and thus disengage itself from the lug 13, whereupon the spring forces the separable bottom of the finger-piece down and accomplishes the closing of the circuit just the same as though the push-button had been pressed by hand.

In Fig. IV, I have shown a varying construction of the finger-piece. The cylinder here consists of a single shell 14, provided with a flange 15. 16 is the separable bottom, fitted, as above, with a spindle 17 and a catch 18. Near the top of the cylinder there is provided a slotted diaphragm 19, through which the end of the spindle projects. 20 is a resistance-piece with which the catch 18 engages, as shown in the drawings, when the spindle occupies its central position. 21 is the spring interposed between the bottom of the cylinder and the diaphragm. The fusible plug or compound occupies the entire space above the diaphragm and holds the parts in the position shown; but as soon as the plug melts the end of the catch of the spindle is free to disengage

itself from the lug by a sidewise motion, which it is permitted to take by reason of the length of the slot in the diaphragm.

In all cases the essential feature of my invention is the spring normally compressed within the finger-piece and which by its projection when the fusible plug melts presses the ordinary contact-pieces of the attachment together, and the catch with a fixed resistance-point, by engagement of which the thrust of the spring is at all times resisted until the melting of the plug permits a sidewise movement of the catch. It will be observed that owing to the simplicity of this arrangement the finger-piece occupies very little space and need be no larger than the ordinary porcelain or ebonite buttons employed in the common form of push-button attachments, for which it may in every case be substituted, with the result of converting the push-button system into one affording the additional protection of a thermostat in every room in which attachments are situated—that is to say, the finger-piece is universal in its nature, by which I mean that it is interchangeable with the ordinary finger-piece.

I claim—

1. A thermostatic finger-piece for a push-button attachment comprising a cylindrical shell; a spiral spring within said shell; a separable bottom for the shell; a spindle within said shell attached to the separable bottom; a catch on the spindle; a fixed resistance-piece on the inside of the shell which when in engagement with the catch on the spindle opposes the thrust of the spring; and a fusible plug whereby the catch and resistance-piece are normally held in engagement, substantially as described.

2. A thermostatic finger-piece for a push-button attachment comprising a cylindrical shell; a spiral spring within said shell; a separable bottom for the shell; a spindle within said shell attached to the separable bottom; a catch on the spindle; a fixed resistance-piece on the inside of the shell which when in engagement with the catch on the spindle opposes the thrust of the spring; an inclined edge on one of the engaging surfaces of the catch and resistance-piece; and a fusible plug whereby the catch and resistance-piece are normally held in engagement, substantially as described.

3. A thermostatic finger-piece for a push-button attachment comprising a cylindrical shell; a spiral spring within said shell; a separable bottom for the shell; a spindle within said shell attached to the separable bottom; a catch on the spindle; a fixed resistance-piece on the inside of the shell which normally engages the catch on the spindle and opposes the thrust of the spring; and a fusible plug inserted between the side of the spindle back of the catch and the opposing side of the cylindrical shell, which when it melts allows a

sidewise movement of the spindle to permit it to disengage the resistance-piece, but which until it melts maintains them in engagement, substantially as described.

- 5 4. A thermostatic finger-piece for a push-button attachment comprising a cylindrical shell; a slotted partition dividing the shell horizontally into two compartments; a spiral spring in the lower compartment of said shell;
10 a separable bottom for the same; a spindle attached to the separable bottom, and extending up through the slotted partition; a catch on the spindle above the slotted partition; a resistance-piece in the upper compartment

with which said catch engages; a fusible plug 15 situated in the upper compartment which maintains said engagement, but which by its melting allows the spindle to move sidewise in the slot, whereby the catch is disengaged and the separable bottom thrust down by the 20 spring, substantially as described.

In testimony whereof I have hereunto signed my name, at Mechanic Falls, in the State of Maine, this 21st day of December, 1903.

WILLIS E. HARMON.

Witnesses:

JAMES A. GERRY,
WM. G. MORTON.