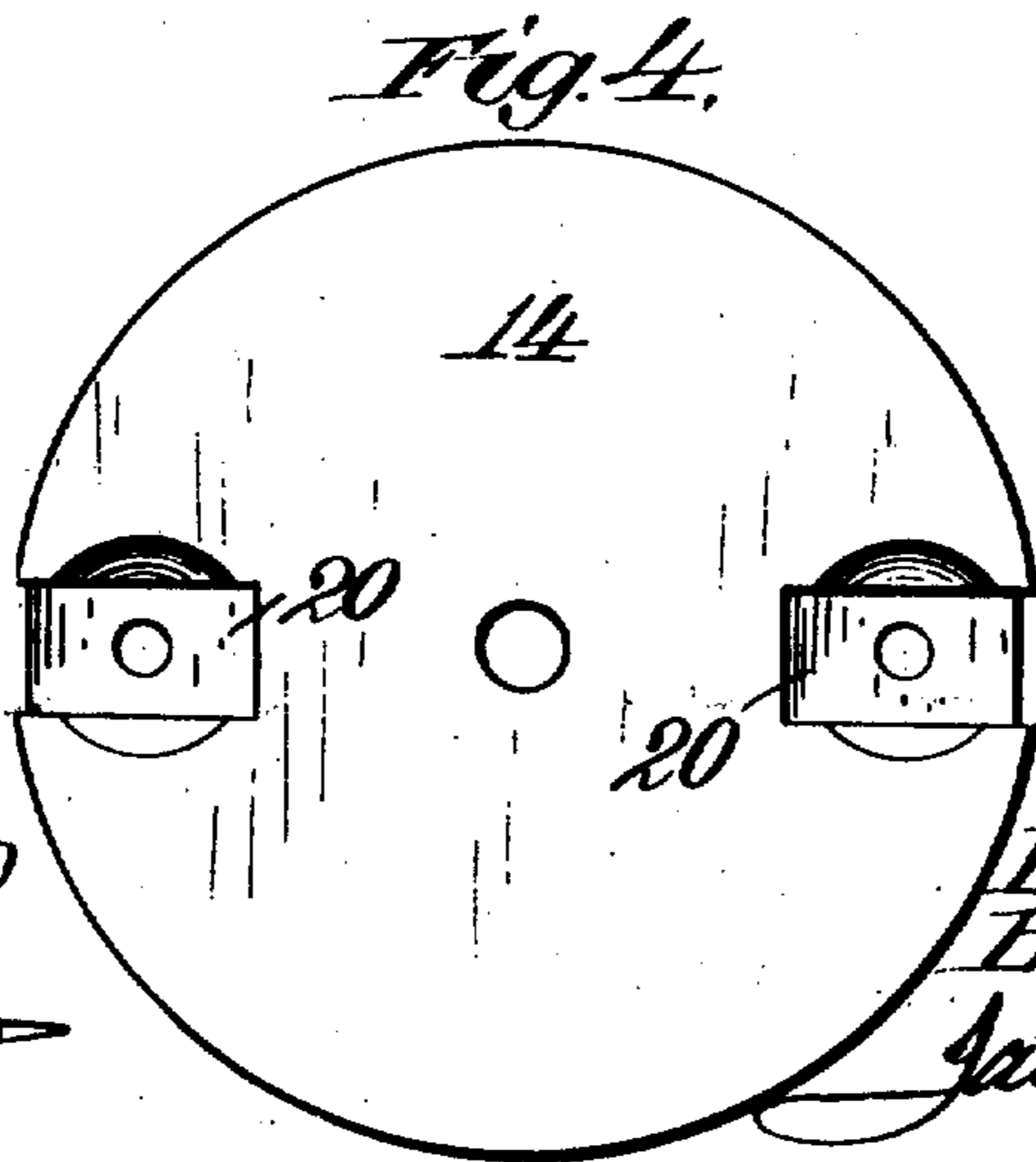
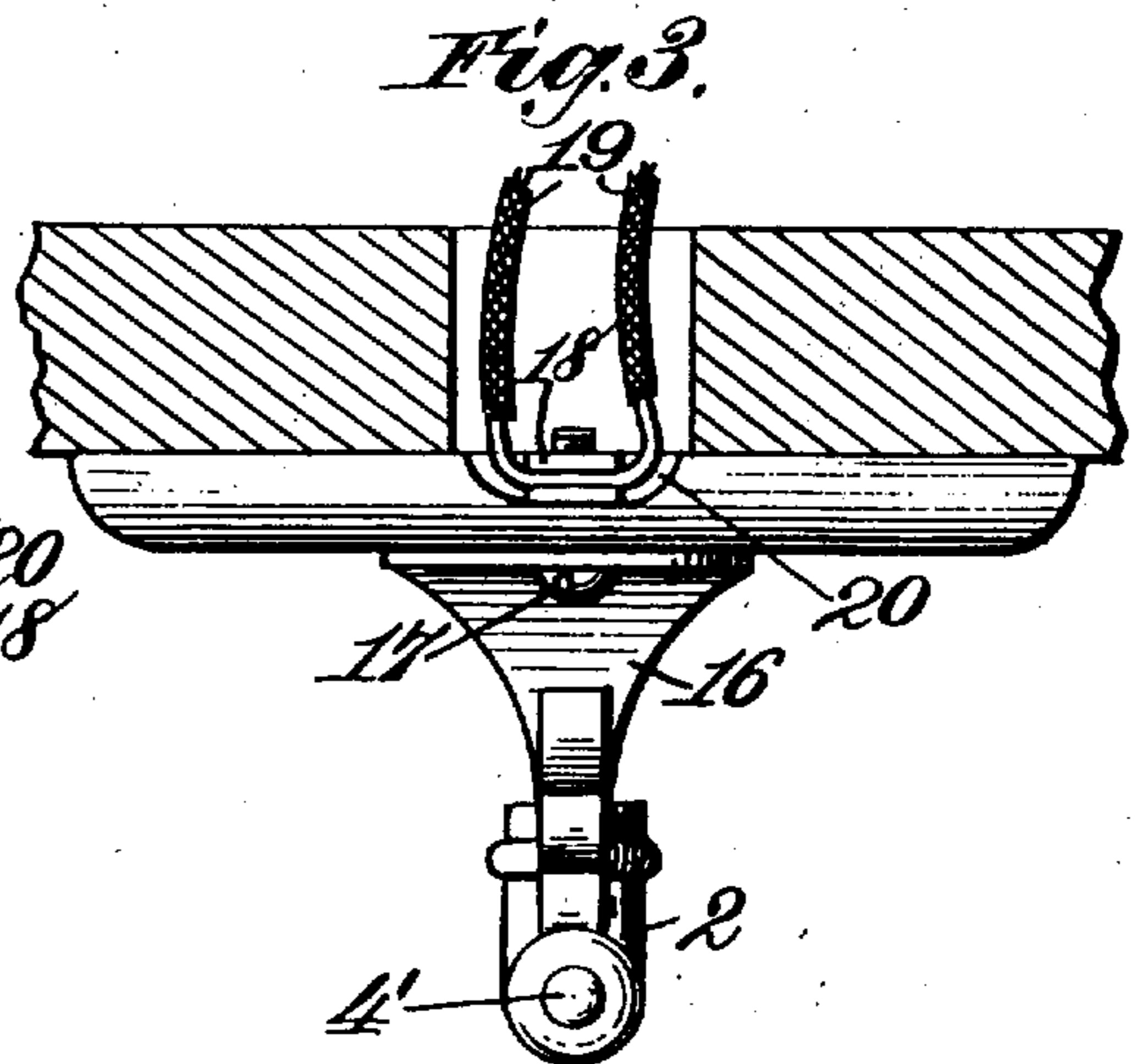
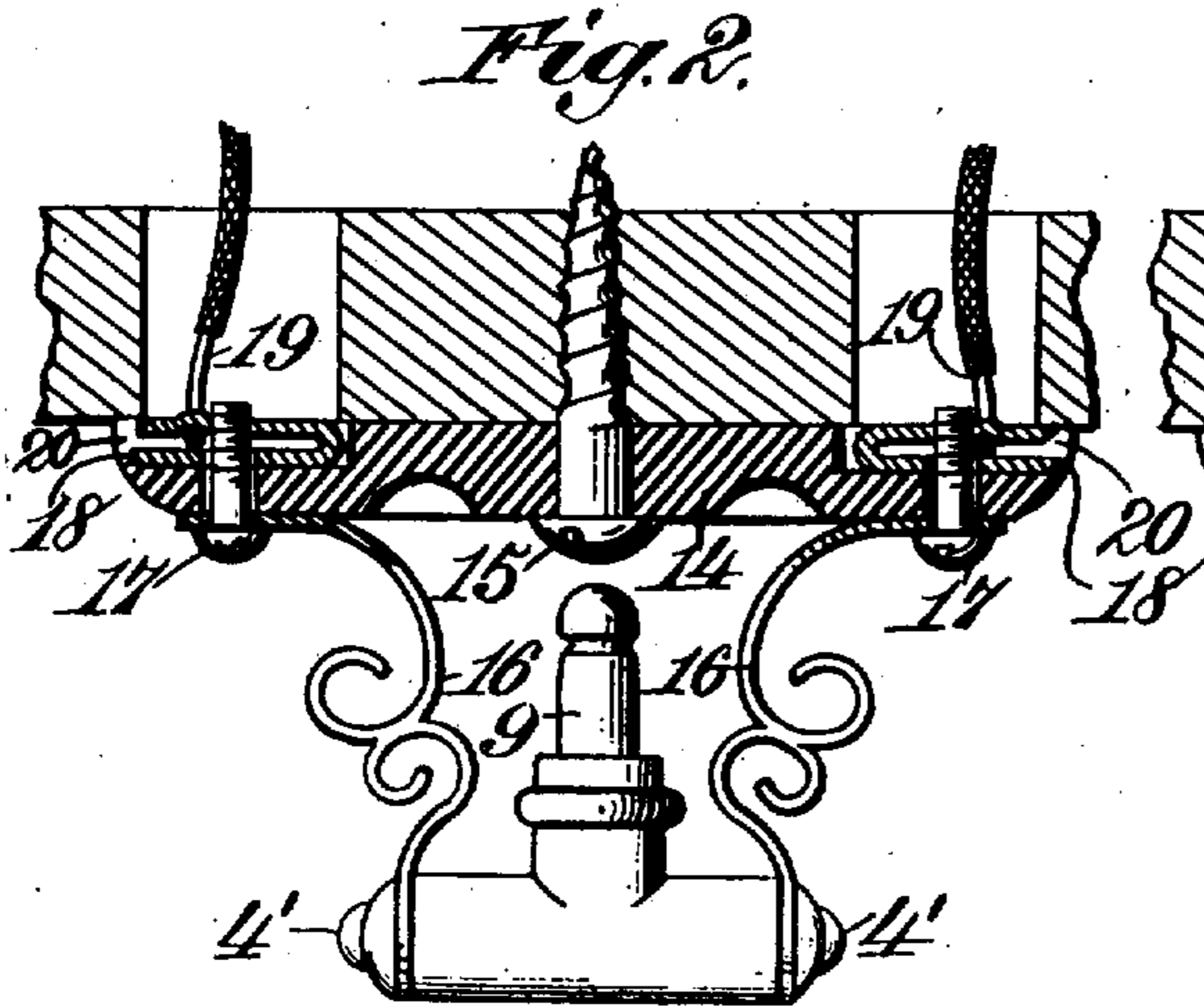
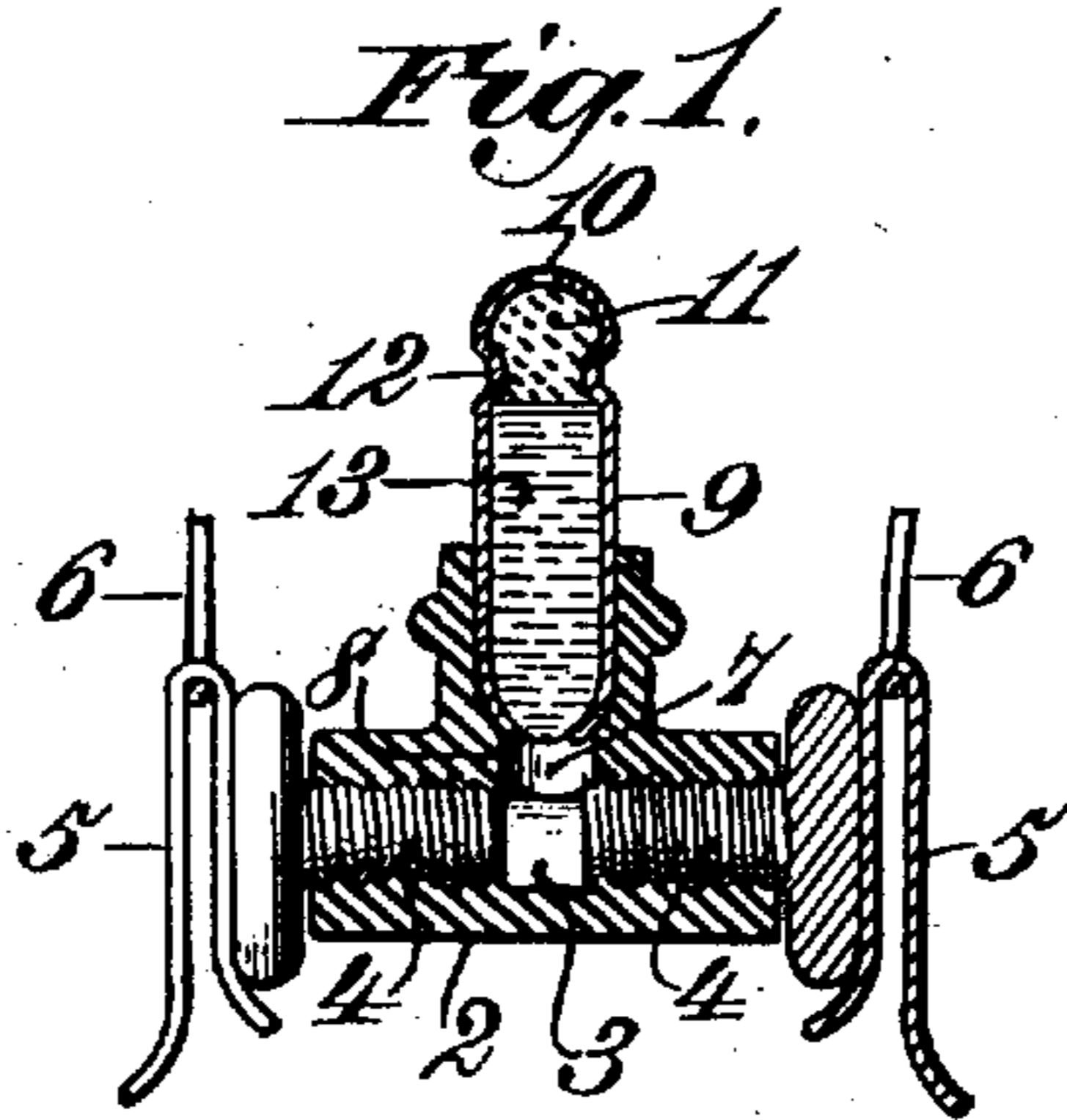


No. 847,044.

PATENTED MAR. 12, 1907.

L. H. BRITTON.  
THERMOSTATIC CIRCUIT CONTROLLING DEVICE.  
APPLICATION FILED DEC. 10, 1906.



Witnesses.  
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Atty.

# UNITED STATES PATENT OFFICE.

LOUIS H. BRITTON, OF CLEVELAND, OHIO.

## THERMOSTATIC CIRCUIT-CONTROLLING DEVICE.

No. 847,044.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed December 10, 1906. Serial No. 347,190.

*To all whom it may concern:*

Be it known that I, LOUIS H. BRITTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Thermostatic Circuit-Controlling Devices, of which the following is a specification.

This invention relates to thermostatic circuit-controlling devices.

A device involving my invention may be employed with utility in various connections, one of which is as a part of or in combination with a fire-alarm system employing a visible or audible signal, or both. The invention is of such character that when used in conjunction with such a system the circuit-controller will be caused automatically to close an electric circuit in order to sound a gong or operate some other audible signal or to light a lamp or operate some other visible signal or to secure simultaneously the action of signals of both kinds.

In the drawings accompanying and forming a part of this specification I show in detail certain effective forms of embodiment of the invention, which to enable those skilled in the art to practice said invention will be hereinafter more fully described. One of these forms of embodiment is adapted especially to an electrical circuit where the wires are not concealed, while the other is primarily intended for use in such work where the wires are concealed or hidden.

The invention is simple in its nature, can be inexpensively and readily produced, and is automatic and instantaneous in its operation.

Referring to the drawings, Figure 1 is a sectional elevation of a thermostatic circuit-controller involving my invention. Fig. 2 is a view showing said thermostatic controller in elevation and the wiring associated therewith as concealed. Fig. 3 is a cross-sectional view of the parts represented in Fig. 2, and Fig. 4 is a top plan view of the disk shown in Figs. 2 and 3. Fig. 5 is a detail view from above of the upper end of a conductor.

Like characters refer to like parts throughout the several figures of the drawings.

The device includes in its construction a body. This body may be of any suitable character. The body shown in the drawings is denoted in a general way by 2, and is represented as being of inverted-T form. This body when the device is used in a fire-alarm

system may be mounted in any desirable way, and as to this point it is not necessary to go into detail, for the same does not concern the invention. This body 2 I prefer to make of some non-conducting material, such as hard rubber, fiber, porcelain, glass, or the like. A passage, as 3, is represented as extending entirely through the horizontal portion of said T-shaped body, and into the same are fitted two contacts, as 4, which may be of any desirable character, but which are represented as consisting of screws, which are tapped into the horizontal portion of said body. The inner ends of these contacts or screws 4 are shown as separated, the space between the two being normally open. This space, however, as will hereinafter appear, is adapted to be filled or partly filled by some suitable conducting fluid, as mercury. When this latter operation takes place, such substance bridges electrically the space between the two contacts 4, so as to provide for the passage of an electric current from one contact to the other. The contacts 4, as stated, are represented as consisting of screws, and to the heads thereof are fastened in any desirable way clips, as 5, between the branches of which bared portions of wires or similar conductors, as 6, can be thrust, the clips holding such wires or conductors in operative relation with the device. The vertical portion of the T-shaped body and which when the device is in use stands upright has a passage, as 7, in communication with the passage 3. The neck connecting these two passages 3 and 7 is of less diameter than the diameter of the said passages, so as to provide within the body 2 an annular shoulder 8, the function of which will be hereinafter explained.

I have shown as set into the passage 7 from the upper open side thereof a tube, as 9, and this tube may be made from any desirable substance, such as glass or metal and glass, in order that the mercury or equivalent substance normally upheld in said tube may be visible exteriorly thereof. The particular material, however, from which said tube 9 is formed is not a matter of any consequence. There is formed in the tube 9 at some convenient place an opening. In the present case this opening is formed in the apex of the tube and is designated by 10. There is preferably between the tube 9 and body 2 and between the contacts 4 and said body an air-sealed relation in order to aid in

maintaining a vacuum in said body, which subserves an important function, in that it prevents under normal conditions the dropping of a column of mercury in the tube 9. This vacuum is normally maintained by a seal, as 11, which is adapted to close the opening 10 and which may be of any desirable fusible material—such, for example, as paraffin or some metallic alloy. The seal 11 is normally prevented from dropping by a shoulder, as 12, in the tube 9, and which may be produced by contracting the tube below its top. The tube itself may be sustained by an annular shoulder 8, to which I have hereinbefore referred, and may be narrowed or inwardly tapered at its base or lower end to prevent accidental dropping of the mercury situated immediately below the seal 11. This seal, as will be understood, may be of any desirable nature. It may be of such a character that when placed in one room it will melt or fuse at one temperature and when placed in another room will melt or fuse at a different temperature, which may be either higher or lower than the first-mentioned temperature. Under normal conditions therefore the space between the inner ends of the two contacts 4 will be open and the mercury 13 will be in the upper part of the tube 9, where it is held by virtue of the vacuum within the device, and the vacuum is maintained by the seal 11. It will be assumed that this seal 11 has been fused by a fire. The instant that the seal is fused the opening 10 is uncovered, so as to destroy the vacuum within the device and permit the mercury by gravity or automatically to enter the space between the contacts 4. This mercury, therefore, when it drops serves to bridge the normally open space between said contacts 4 to provide an electrical connection therebetween and to naturally close the circuit of which the device forms a part. I prefer to coat or cover the inner ends of said contacts with some conducting substance for which mercury has a great affinity in order to secure the quickest possible action of the device.

I have described in detail one form of embodiment of my invention. There are various other ways in which said invention may be carried into effect within the scope of my claims. For example, it is not necessary that I should employ a T-shaped body 2, nor is it necessary that I utilize screws, as 4, for contacts, nor the particular means shown—that is, the clips 5 for connecting the wires 6 electrically with said contacts—for these and other details may be considerably modified within the scope of my invention.

In Figs. 2, 3, and 4 I show a construction adapted especially for use in wiring where the latter is to be concealed, and in connection with the device shown fully in Fig. 2 I prefer to employ a disk, as 14, of some suitable non-

conducting material—as, for example, porcelain or vulcanized rubber—and which is held to a ceiling, wall, or other structure by a suitable fastening, as a screw 15, which is passed through a central perforation in said disk and which is threaded into said ceiling. The contacts of the device shown in said Fig. 2 are denoted by 4', and from the same extend conductors, as 16, which constitute supporting-brackets for the T-shaped body 2. These conductors 16 are united at their lower or outer ends in any desirable way with the contacts 4', which, it is to be understood, are equivalents of the contacts 4, hereinbefore described. The upper ends of these conductors 16 are electrically connected with screws, as 17, which in turn are electrically connected with clips, as 18, set in grooves in the upper face of the disk 14 and extending diametrically of said disk. The clips 18 are for the purpose of receiving wires 19 located above or within the ceiling, said wires 19 being passed through openings in said ceiling to the clips 18. The upper surface of the disk 14 has concavities, as 20, into which the two wires 19 can be led for passage between the branches of said clips 18, and when said wires 19 are entered between the branches of said clips 18 the screws 17, which are tapped in the upper branches of said clips, are set up, so as to cause the clips to tightly embrace the wires and to firmly mount the body 2 in position. The upper ends of the conductor 16 may have open-ended slots 16' to receive the screws 17, so that when it becomes necessary to separate the conductors from the screws it is only necessary to slightly loosen the screws and slip the conductors from off the screws.

From what has been hereinbefore stated it will be apparent that my device has a pair of contacts, a vacuum-chamber, an air-opening, a fusible seal for said air-opening, a body of conducting material normally maintained out of coöperative relation with said contacts by said vacuum and releasable by the breaking thereof on the fusion of said seal and movable at such time into position to electrically connect said contacts.

What I claim is—

1. A device of the class described having a pair of contacts, a vacuum-chamber, an air-opening, a fusible seal for closing said opening to normally preserve the vacuum in said vacuum-chamber, a body of conducting material normally maintained out of coöperative relation with said contacts by said vacuum and releasable by the breaking thereof on the fusion of said seal and movable at such time into position to electrically connect said contacts.

2. A device of the class described having a pair of contacts, a vacuum-chamber, an air-opening, a fusible seal for said air-opening, and a body of mercury normally upheld out

of coöperative relation with said contacts by said vacuum and releasable by the breaking thereof on the fusion of said seal and movable by gravity into electrical connection with said contacts.

3. A device of the class described having a pair of contacts, a vacuum-chamber, a fusible seal to normally preserve the vacuum in said chamber, and a body of conducting material normally maintained out of coöperative relation with said contacts by said vacuum and releasable by the breaking thereof on the fusion of said seal and movable when released into position to electrically connect said contacts.

4. A device of the class described, comprising a body having a vacuum-space, a pair of contacts fitted in said body and separated by said space, a tube rising from said body and containing a conducting substance normally upheld therein by the vacuum, and a fusible seal in connection with the tube for normally maintaining the vacuum, said seal when fused causing the destruction of said vacuum and releasing said conducting substance, and the latter when released being movable into the space between said contacts and serving to electrically bridge the same.

5. A device of the class described having a body and a vacuum-space, contacts fitted in said body and separated by said space, a tube fitted to the body, rising therefrom and in communication with said space, a body of mercury normally upheld in said tube by the vacuum in said space, said tube having an air-opening, and a fusible seal in the tube normally closing said opening to maintain the vacuum, the seal when fused serving to break said vacuum and thereby release the mercury to permit the latter to flow into the space between the contacts to electrically connect the latter.

6. A device of the class described, having a T-shaped body, the portions of which are horizontally and vertically disposed respectively, and are provided with passages, contacts fitted in the passage in the horizontal portion and separated from each other by a vacuum-space, a tube fitted in the passage of

the vertical portion, a body of mercury contained in said tube and normally upheld by the vacuum, said tube having an air-opening, and a seal in the tube for normally closing said opening and thus preserving the vacuum, said seal when fused causing the destruction of the vacuum and the release of the mercury, whereby the latter can gravitate into said space to electrically connect said contacts.

7. A device of the class described having a T-shaped body, the portions of which are horizontally and vertically disposed respectively, and are provided with passages, contacts fitted in the passage in the horizontal portion and separated from each other by a vacuum-space, a tube fitted in the passage of the vertical portion, a body of mercury contained in said tube and normally upheld by the vacuum, a seal in the tube for normally closing said opening and thus preserving the vacuum, said seal when fused causing the destruction of the vacuum and the release of the mercury, whereby the latter can gravitate into said space to electrically connect said contacts, and said tube having means for preventing the accidental dropping of said seal.

8. A device of the class described having a T-shaped body, the portions of which are horizontally and vertically disposed, and are provided with passages extending through the same, the body having interiorly thereof at the junction between said passages a shoulder, a tube fitted in the passage of the vertical portion and resting on said shoulder, said tube being narrowed at its base, having an opening in its apex, and an internal shoulder between its ends, a seal upheld by said internal shoulder, closing said opening and of fusible material, and a body of mercury in the tube between the seal and base.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS H. BRITTON.

Witnesses:

JOHN LEE,  
FRED J. LEOPOLD.