

No. 659,605.

Patented Oct. 9, 1900.

L. H. DES ISLES.
ELECTRIC THERMOSTAT.

(Application filed Jan. 10, 1900.)

(No Model.)

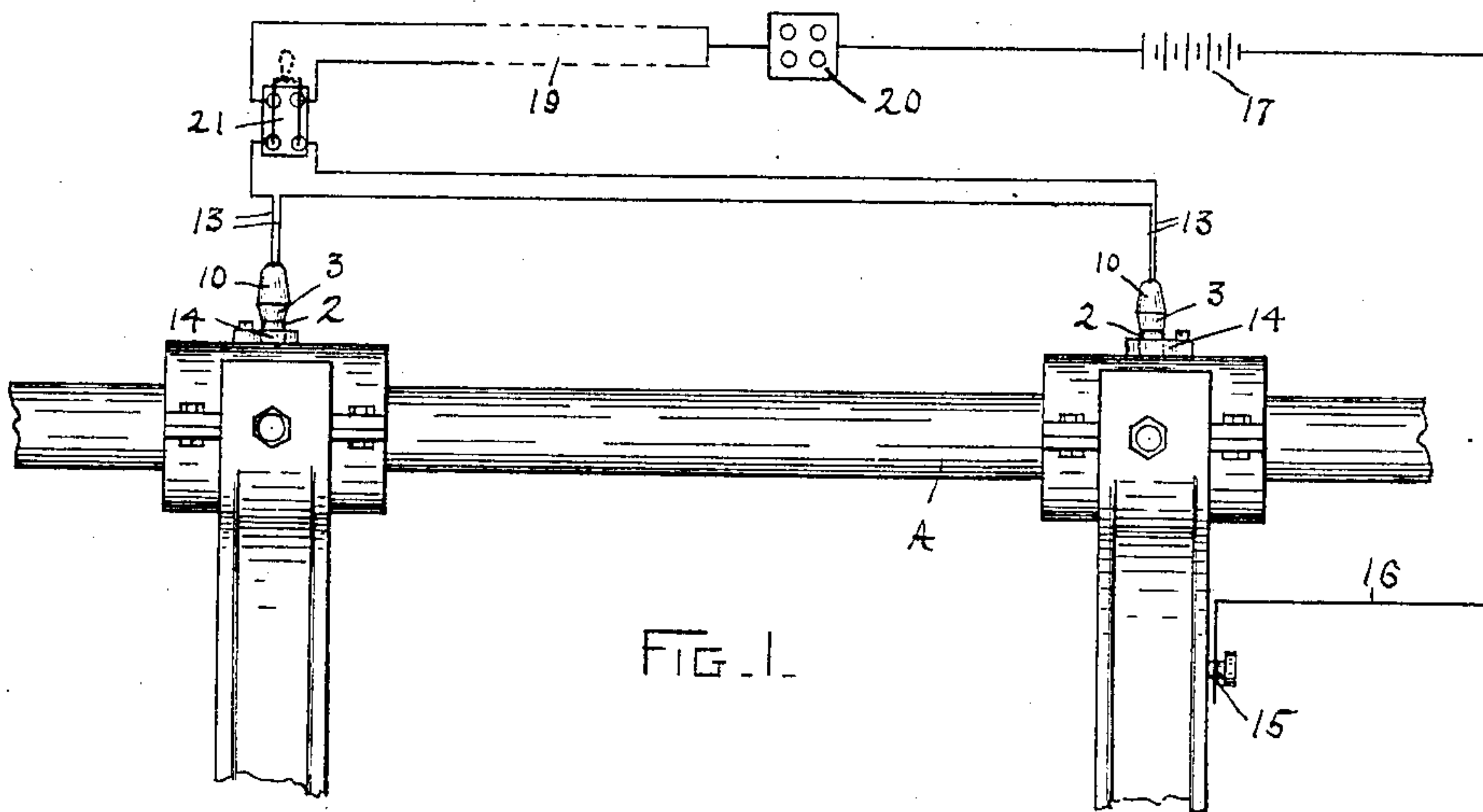


FIG. 1.

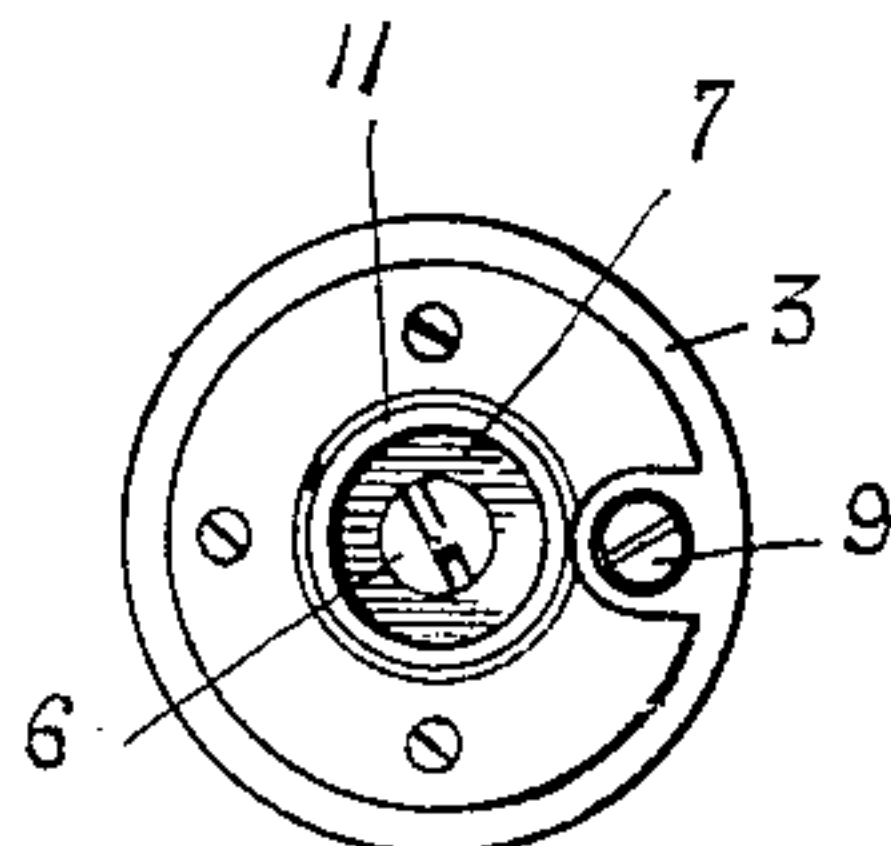
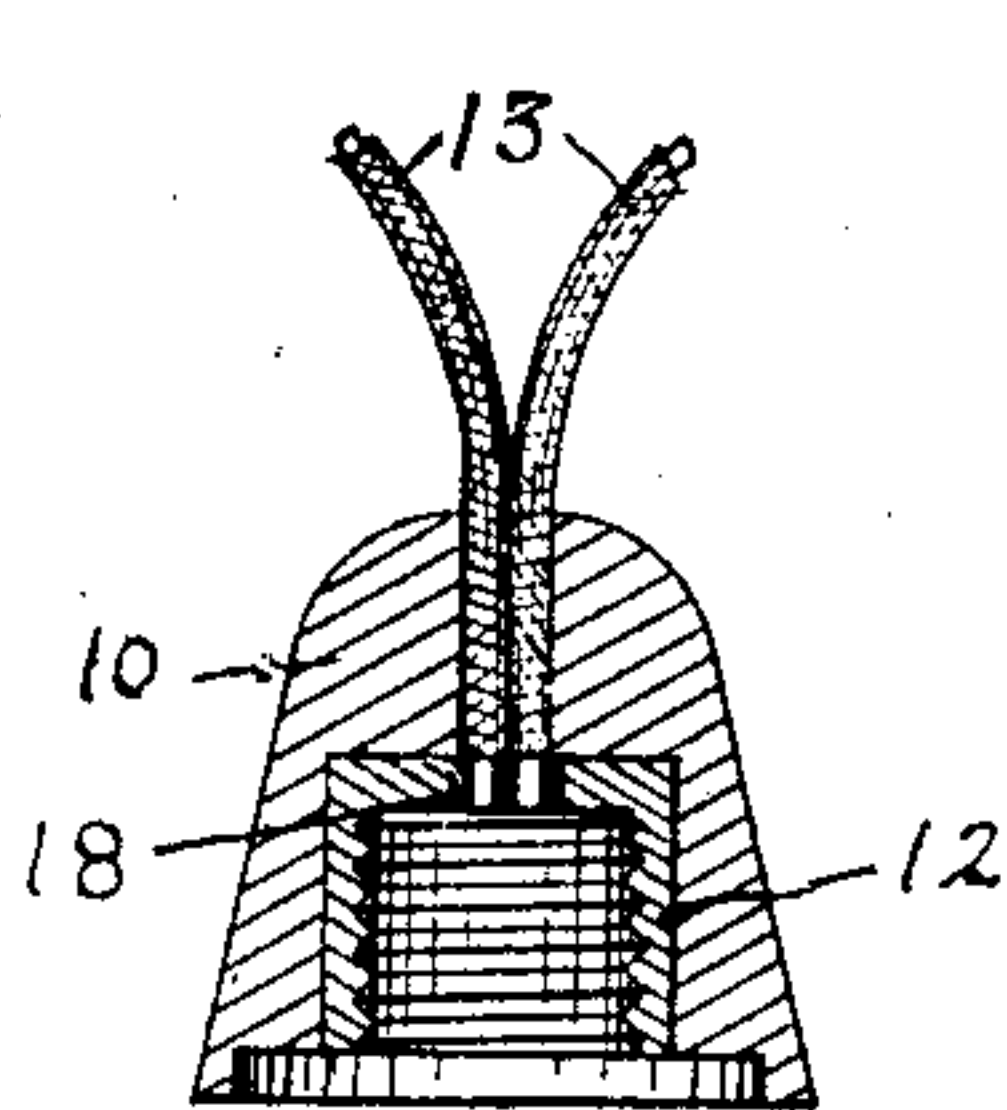


FIG. 3.

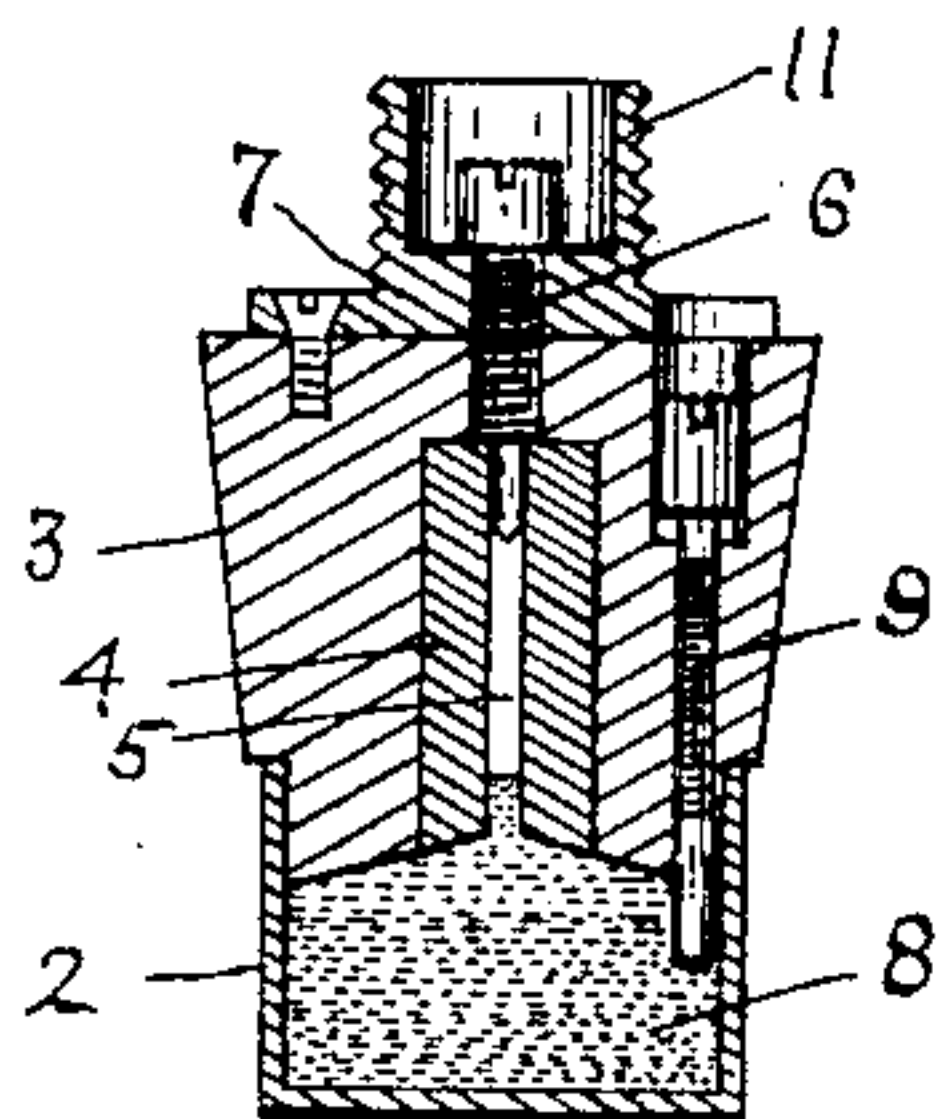
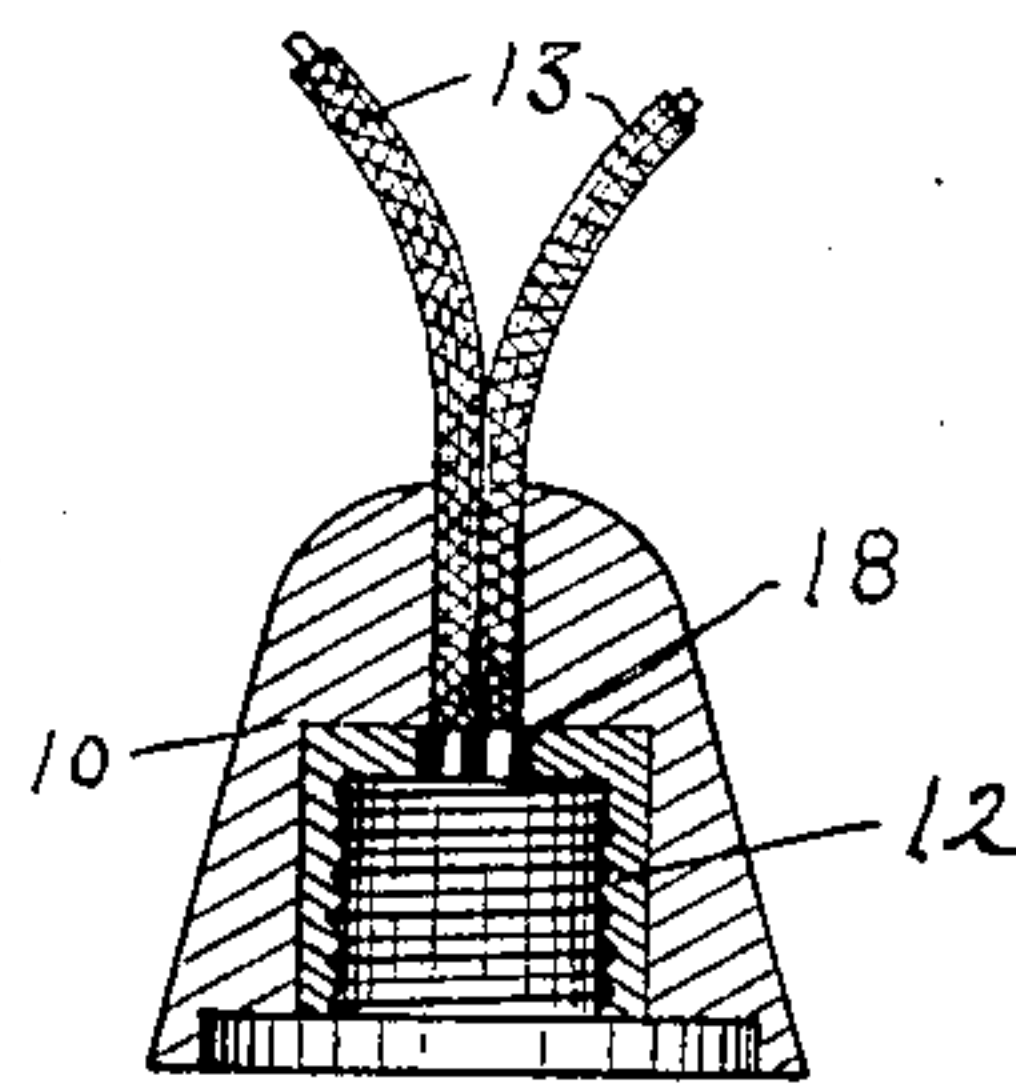


FIG. 2.

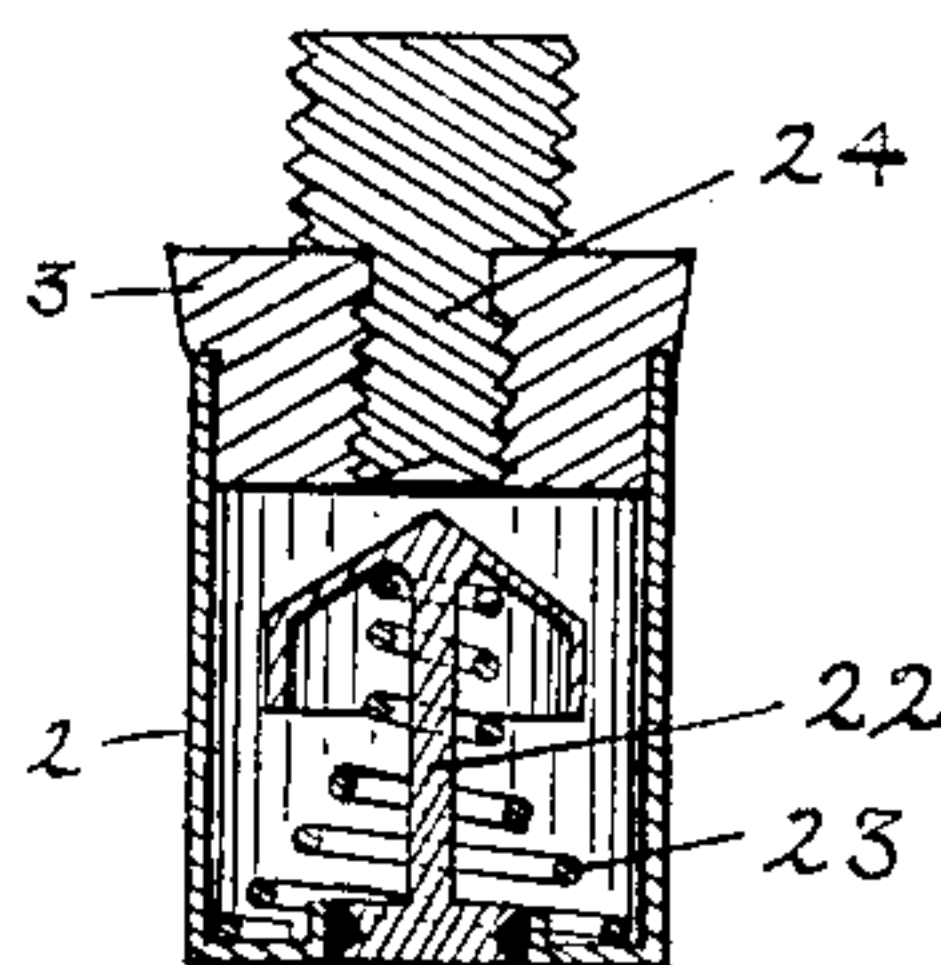


FIG. 4.

WITNESSES.

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ELECTRIC THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 659,605, dated October 9, 1900.

Application filed January 10, 1900. Serial No. 1,018. (No model.)

To all whom it may concern:

Be it known that I, LEONARD H. DES ISLES, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electric Thermostats, of which the following is a specification.

My invention relates to electric thermostatic devices of the kind commonly known as "journal-alarms," which are applied to journal-bearings and serve to give an automatic alarm whenever said bearings become unduly heated. These devices as hitherto constructed have been provided with two external terminals through which an electric alarm-circuit is completed by the operation of the device; but such devices when used as journal-alarms have been found objectionable in that said terminals are not infrequently short-circuited by accidental contact with a piece of metal or other conducting substance in the hands of the attendant in charge of the machine to which the device is applied or by coming in contact with some part of the machine itself, thus causing a false alarm to be given. This objection is especially applicable to "mercurial journal-alarms," so called—such, for example, as shown in Letters Patent of the United States Nos. 466,865 and 475,340 for automatic electric heat-alarms, granted, respectively, January 12, 1892, and May 24, 1892—which alarms comprise in their construction a metallic casing containing mercury in contact with one of the terminals and will therefore be short-circuited by a contact made between the other terminal and any part of the machine to which the device is applied. My present invention provides a journal-alarm which is free from the objection above described, and my preferred form of which is adapted to be connected to an ordinary thermostatic alarm system and testing apparatus in such manner that its condition and efficiency may be subjected to thorough tests when desired.

A journal-alarm embodying my invention is shown in the accompanying drawings, in which—

Figure 1 is an elevation of a portion of a machine having two of my alarms applied thereto and connected to an alarm system, the

latter being shown diagrammatically and in part only. Fig. 2 is a central vertical section through one of said alarms, certain of the parts being separated from each other. Fig. 3 is a plan view of the lower portion of the alarm shown in Fig. 2. Fig. 4 is a central vertical section of a journal-alarm embodying my invention, but provided with a thermostatic device operating on a different principle.

In constructing my improved journal-alarm I employ a metallic cup similar to those shown in the patents above referred to, which cup itself constitutes one of the terminals through which the alarm-circuit is completed by the operation of the device. Said device accordingly has but one other terminal which is wholly contained within it and from which insulated connections permanently secured thereto extend out through the body portion of the device. Thus in Fig. 2, 2 represents a metallic cup completely closed at its top by a plug or cover 3, made of insulating material, preferably vulcabeston. A glass tube 4, having a capillary bore 5, extends upward from the bottom of said plug into its body, and a metallic screw 6 is inserted in the top of said plug, as shown, with its point extending a short distance into said bore 5. I prefer to insert the screw 6 through a metallic cap 7, said cap and screw being thus kept in electrical contact with each other. The space within the cup 2 below the plug 3 is completely filled with mercury 8, the quantity of which is such that when the device is heated to the degree of temperature at which it is desired to have an alarm given said mercury will by its expansion be forced up the bore 5 of the tube 4 into contact with the point of the screw 6, and thus close an electrical circuit through the cup 2 and cap 7. For the purpose of adjusting the device to act at any desired temperature I employ a screw 9, set into the plug 3 sufficiently far to be out of contact with the cap 7 and projecting at its lower end into the body of mercury, so that by turning said screw the height of the mercury in the tube 4 or below it may be accurately regulated. The cap 7 is completely enveloped and protected from outside contact preferably by means of a cap 10 of insulating material made readily detachable

from the plug 3 by screw-threading the upwardly-projecting portion 11 of the cap 7 and providing a correspondingly-threaded socket 12, set into the cap 10. This socket 12 is
 5 made of metal, and hence practically forms a part of the inclosed terminal of the device, and to said socket are soldered insulated connections 13, leading out through the cap 10, the insulation on said connections being carried within said cap to the socket 12, so that
 10 it will be impossible to short-circuit the connections 13 and the cup 2 from the outside of the device. My alarm device as thus constructed is inserted at its lower end within a
 15 hole drilled in the bearing to which it is applied or within a socket 14, secured to said bearing, thus bringing the metallic cup 2 into electrical contact with the same. The alarm-circuit to be closed through the device thus
 20 includes the machine A, to which it is applied and to any convenient point of which, as at 15, a wire 16 is secured, which leads to a battery 17, to which also the connections 13 lead, an alarm-bell or similar device (not
 25 shown) being included in the circuit. Any desired number of journal-alarms thus constructed may be applied to a machine and connected in parallel, so that upon the completion of the alarm-circuit through any one
 30 of them in the manner above described an alarm will be given.

The connections 13 shown in the drawings consist of two similar insulated wires, the bared inner ends of which are soldered, as at
 35 18, into a hole formed in the socket 12. My journal-alarm is thereby adapted to be included in and tested with one of the floor-loops 19 of an ordinary thermostatic alarm system, including an annunciator 20 and a
 40 testing apparatus, (not shown,) since if the contact of either of the wires 13 with the socket 12 becomes imperfect a break will be indicated upon testing the circuit in which the device is included. Either wire 13, how-
 45 ever, so long as its connections are complete, will suffice for the giving of an alarm. The connections from the journal-alarms on each machine when there are several machines on one circuit should be led into the floor-loop
 50 through a switch 21 in order that upon opening that switch which stops the ringing of an alarm the hot bearing may thereby be readily located. Although I prefer to employ two of the wires 13, as above described, it will be
 55 obvious that my journal-alarm will be entirely operative for giving an alarm although provided with but one wire 13, and I do not consider my invention to be limited to the use of two such wires.

60 It will be seen that by means of my invention I have simplified the construction of journal-alarms such as above referred to by omitting one of the terminals heretofore contained within the same and that I have also
 65 produced a device which cannot accidentally be short-circuited. Furthermore, the attaching and wiring of the device are simplified by

using a removable cap 10, which may be screwed onto the cap 7 after it and its connected parts have been applied to the machine. 70

I prefer to make the cavity which contains the mercury somewhat dome-shaped, as shown in Fig. 2, as I have found that when thus constructed the mercury is less likely to be retained in the bore of the tube 4 than in the
 75 prior constructions above referred to, in which this tendency has been found objectionable.

It will be obvious that my invention may be applied to thermostatic devices which operate otherwise than by the expansion of
 80 mercury. For example, in the construction shown in Fig. 4 the cup 2 has a hole formed in its bottom, in which is normally secured by fusible solder the lower end of a contact-piece 22, which is provided with a spring 23,
 85 arranged to force it upward, when released, into contact with a metallic plug 24, fixed in the insulating-plug 3. This construction is analogous to that shown in Letters Patent of the United States No. 630,671, granted to me
 90 August 8, 1899, for an electric thermostat; but in said patented device the contact-piece engages, when released, with two terminals, and hence the device is liable to be short-circuited in the manner hereinbefore described.
 95 By omitting one of said terminals I obtain the advantages above set forth and also make it necessary to establish a contact at but one point instead of two, thus lessening by one-half the chances of a defective contact. 100

I claim as my invention—

1. A journal-alarm comprising in combination a metallic cup adapted to be secured to a journal-bearing in electrical contact therewith, a body portion of insulating material closing said cup and completely inclosing a metallic terminal, insulated connections permanently secured to said terminal and leading therefrom out through said body portion, and means contained within said cup
 105 adapted when sufficiently heated to establish electrical connection between said cup and terminal. 110

2. A journal-alarm comprising in combination a metallic cup adapted to be secured
 115 to a journal-bearing in electrical contact therewith, a body portion of insulating material closing said cup and made in two parts detachably secured together, a corresponding two-part metallic terminal contained and
 120 completely inclosed within said body portion, insulated connections leading from said terminal out through said body portion, and means contained within said cup adapted when sufficiently heated to establish electrical
 125 connection between said cup and terminal.

3. A journal-alarm comprising in combination a metallic cup, a body portion of insulating material closing said cup and completely inclosing a metallic terminal, two insulated conducting-wires independently connected to said terminal and leading therefrom out through said body portion, and means contained within said cup adapted when suffi- 130

ciently heated to establish electrical connection between said cup and terminal.

4. A journal-alarm comprising in combination a metallic cup adapted to be secured
5 to a journal-bearing, a plug 3 of insulating material closing said cup, a metallic terminal secured to said plug, an insulating-cap detachably secured to said terminal and completely enveloping the same, two insulated
10 conducting-wires independently connected to said terminal and leading therefrom out

through said cap, and means contained within said cup adapted when sufficiently heated to establish electrical connection between said cup and terminal.

In testimony whereof I have hereunto subscribed my name this 5th day of January, 1900. 15

LEONARD H. DES ISLES.

Witnesses:

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E. D. CHADWICK.