

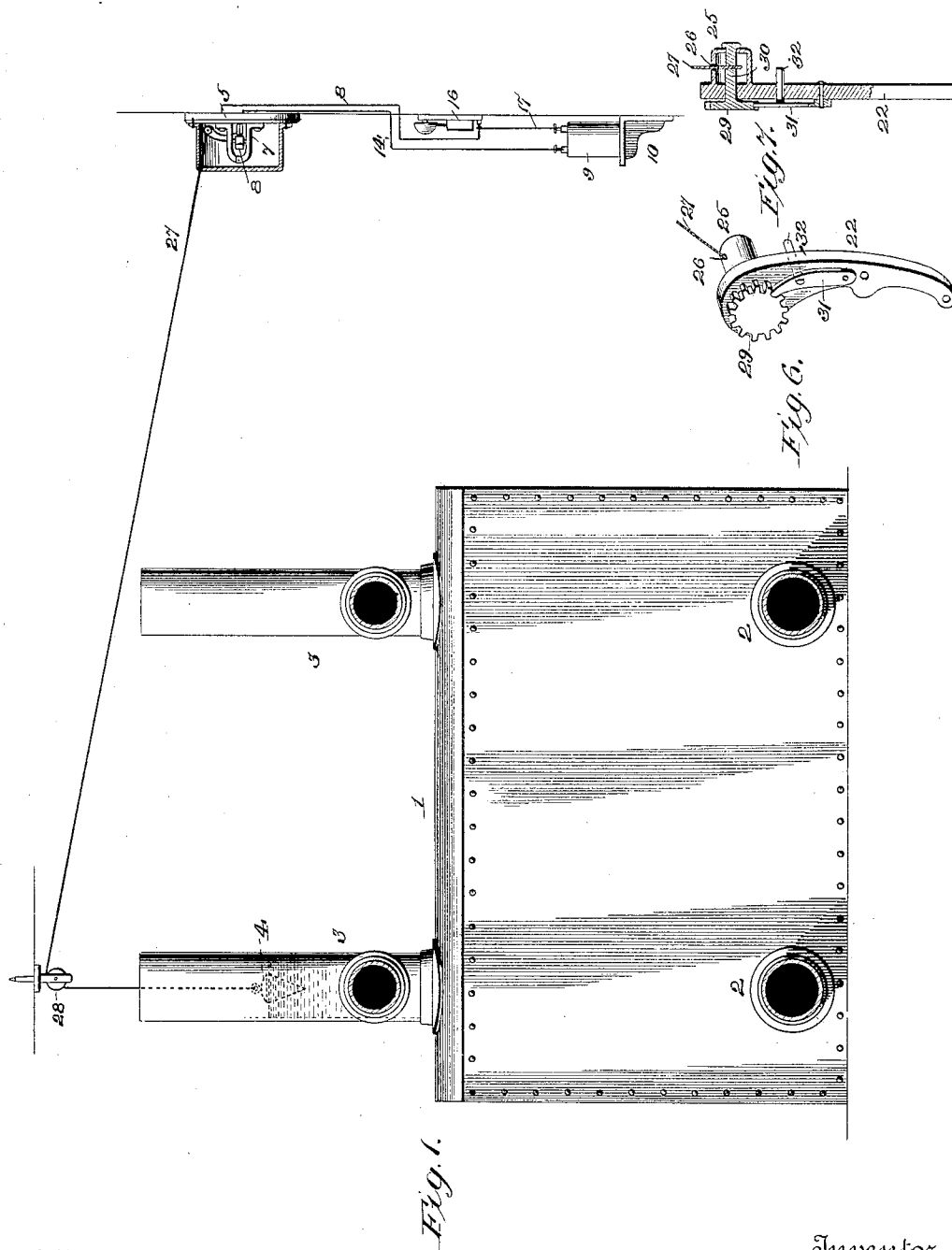
(No Model.)

2 Sheets—Sheet 1.

W. E. DOWNING.
ALARM DEVICE.

No. 596,989.

Patented Jan. 11, 1898.



Witnesses
Jos. L. Stack
Victor J. Evans

Inventor
William E. Downing
By *John Wedderburn*
Attorney

(No Model.)

2 Sheets—Sheet 2.

W. E. DOWNING
ALARM DEVICE.

No. 596,989.

Patented Jan. 11, 1898.

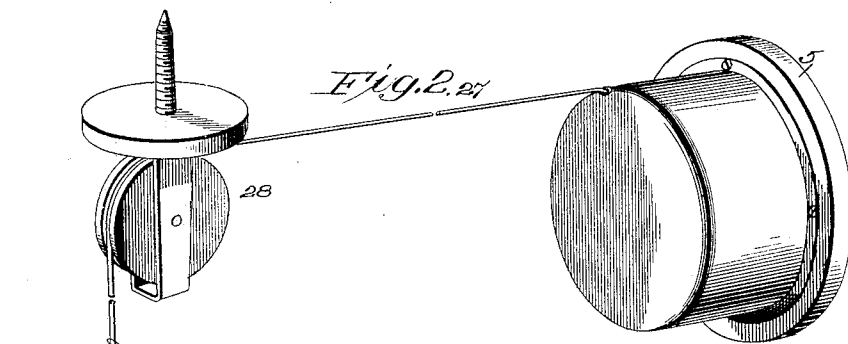


Fig. 3.

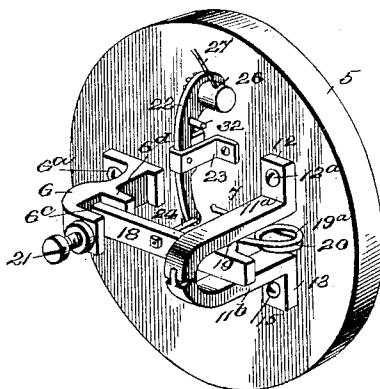


Fig. 4.

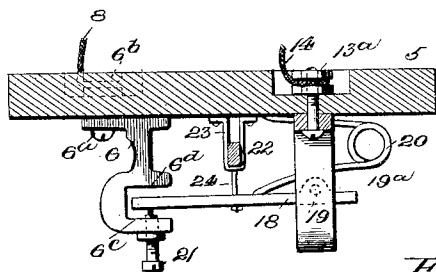
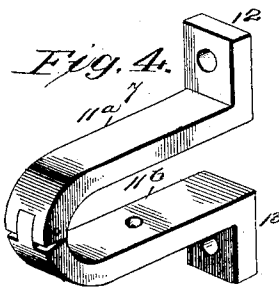
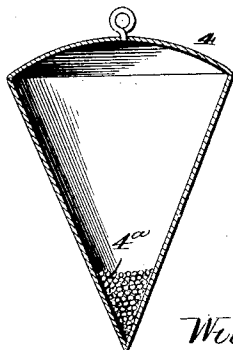


Fig. 5.



Witnesses
Jos. C. Stark.
Victor J. Evans

Inventor
William E. Downing
By John Wedderburn
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM EDWARD DOWNING, OF DES PLAINES, ILLINOIS.

ALARM DEVICE.

SPECIFICATION forming part of Letters Patent No. 596,989, dated January 11, 1898.

Application filed April 20, 1897. Serial No. 632,916. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EDWARD DOWNING, a citizen of the United States, residing at Des Plaines, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Alarm Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in alarm devices, and has for its object the production of an electric alarm apparatus adapted especially for application to greenhouses or nurseries to indicate that the temperature of the heating apparatus has fallen below a predetermined degree, the device also giving an alarm when the bursting of a hot-water pipe occurs.

To the accomplishment of this end my invention consists of an alarm device embodying certain novel details of construction, combinations, and arrangements of parts, as will be hereinafter more fully described, and specifically set forth in the appended claims.

In the accompanying drawings, Figure 1 is an elevational view showing my invention applied to a hot-water-circulating boiler and in position for use. Fig. 2 is a detail perspective view of the parts of the alarm. Fig. 3 is a detail perspective view of the contact device. Fig. 4 is a perspective view of one of the binding-posts. Fig. 4^a is a sectional view of the same. Fig. 5 is a sectional view of the float. Figs. 6 and 7 are detail views of the lever.

Like numerals designate corresponding parts throughout the several figures of the drawings.

Greenhouses and conservatories are ordinarily heated by hot water passing from a boiler through circulating-pipes extending around the building. My invention contemplates the provision of mechanism designed to sound an alarm when the temperature falls below a predetermined degree and is designed to be connected with the vent-pipes of the boiler in such manner that the water therein, lowering by the decrease of heat, causes the alarm to sound.

Referring to the drawings, the numeral 1

designates the boiler, 2 the hot-water-circulating pipes extending therefrom, and 3 the vent-pipes projecting upward from the boiler. These vent-pipes are invariably partially filled with water from the boiler, which rises and falls therein according to the heat generated.

In accordance with my invention I provide a float 4, of conical form, made hollow and preferably constructed of copper or brass, for the reason that these metals are not affected by steam or hot water. This float is placed within one of the vent-pipes 3 and floats upon the water therein. The float may be weighted with shot 4^a.

The contact device comprises a base 5, adapted to be secured to the wall and provided with binding-posts 6 7. The binding-post 6 is secured to the base by a screw 6^a and nut 6^b, to which an electric-circuit wire 8 is attached, said wire extending to and being connected with one of the poles of a battery 9, supported upon a suitable wall shelf or bracket 10. The other binding-post 7 is arch-shaped and consists of two sections 11^a 11^b, connected by a hinged joint at the center, each section being formed with a foot 12 13, the former having a screw 12^a passing there-through and confined by a nut and washer 13^a, between which a circuit-wire 14 is clamped, the other foot being secured by a screw 15. The circuit-wire 14 extends to and is connected with one pole of an alarm-bell 16, the other pole of the alarm-bell being connected with the battery by another circuit-wire 17.

A contact-plate 18 is provided with pivots 19, journaled in openings in the two sections of the arch-shaped binding-post 7 and has its free end projecting into a slot formed by the lower plates 6^c 6^d on the upper end of the binding-post 6. A spring 19^a has one end secured to the base-block and the other end bearing against the under side of the contact-plate and formed with an intermediate coil 20, and this spring serves to normally force the free end of the contact-plate against the upper plate end 6^c of the binding-post 6. A regulating-screw 21, of insulating material, works in the threaded opening in the said plate 6^c and normally serves to hold the contact-plate out of contact with the said plate 6^c, and also serves as a means for regulating

the extent of the movement of the said contact-plate. The free end of the contact-plate is adapted to contact with the lower plate 6^d of the binding-post 6 to complete the circuit.

5 A lever 22 is fulcrumed to a bracket 23, rising from the base-plate, and has its inner end connected with the contact-plate by means of a link 24. The outer end of this lever is provided with a lateral chamber extension 25,

10 provided with an opening 26 for entrance of a cord or wire 27, which passes over a pulley 28 on the wall or ceiling and is connected with an eye on the float 4. 29 is a ratchet-wheel mounted on a shaft 30, which extends through

15 the said chamber extension and has bearing in openings in said lever and chamber-wall. The end of the cord or wire 28 is connected with said shaft and is adapted to be wound thereon to take up any undue slack in the

20 wire. A spring-metal pawl 31 is secured to the lever on the same side as the ratchet-wheel and is adapted to gear therewith to hold the said wheel and shaft immovable. The pawl is provided with a pin 32, projecting

25 through a hole to the opposite side of the lever. By pressing on this pin the pawl may be released from engagement with the ratchet-wheel. The construction and arrangement of these parts are such that when the water

30 in the vent-pipe 3 lowers by the decrease of heat the float 4 lowers with it and draws upon the cord or wire 27 and operates the lever 22, with the result that the free end of the contact-plate is forced down against the tension-

35 spring into contact with the plate 6^d of the binding-post 6, thereby completing the circuit and causing the alarm-bell 16 to sound. By adjusting the regulating-screw 21 or increasing or diminishing the length of the cord

40 or wire it will be seen that the alarm device may be regulated to give an alarm at any desired temperature.

A cover 33 is secured to the base-plate 5 and incloses the alarm mechanism and is provided with an opening 34 for passage of the

45 cord or wire 27.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

50 1. In an alarm device of the type described, the combination of a float, a battery and alarm

device in circuit, a contact device interposed between the said float, battery and alarm device and comprising a base having two binding-posts in circuit with said battery and alarm, a contact-plate pivoted to one binding-post and adapted to contact with the other post, a spring to normally maintain the contact-plate out of contact, a pivoted lever to move the contact-plate against the tension of the spring, and a cord or wire connection between the said lever and float, substantially as described.

55 60

2. In an alarm device of the type described, the combination of a float, a battery and alarm device in circuit, a contact device interposed between the said float, battery and alarm device, and provided with two binding-posts in circuit with said battery and alarm, one of said binding-posts having an arch consisting of two pivoted sections, a contact-plate pivoted in said arched binding-post and adapted to contact with the other binding-post, a spring bearing against the under side of the contact-plate to force it into contact with the latter binding-post, a lever adapted to draw the free end of the said plate down against the tension of the spring, and a cord or wire connection between the said float and lever, substantially as described.

65 70 75 80

3. In an alarm device of the type described, the combination of a float, a battery and alarm device in circuit, a contact device interposed between the said float, battery and alarm device and comprising a base having two binding-posts in circuit with said battery and alarm, a contact-plate pivoted to one binding-post and adapted to contact with the other post, a pivoted lever having one end connected with the contact-plate and the other end thereof provided with a ratchet-wheel and winding-shaft, a pawl adapted to engage said ratchet-wheel, and a cord or wire connection between the said float and winding-shaft, substantially as described.

85 90 95

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM EDWARD DOWNING.

Witnesses:

E. J. MEYER,
F. FÜLLE.