

G. S. SHUTE.

Electric and Thermostatic Fire-Alarms.

No. 150,090.

Patented April 21, 1874.

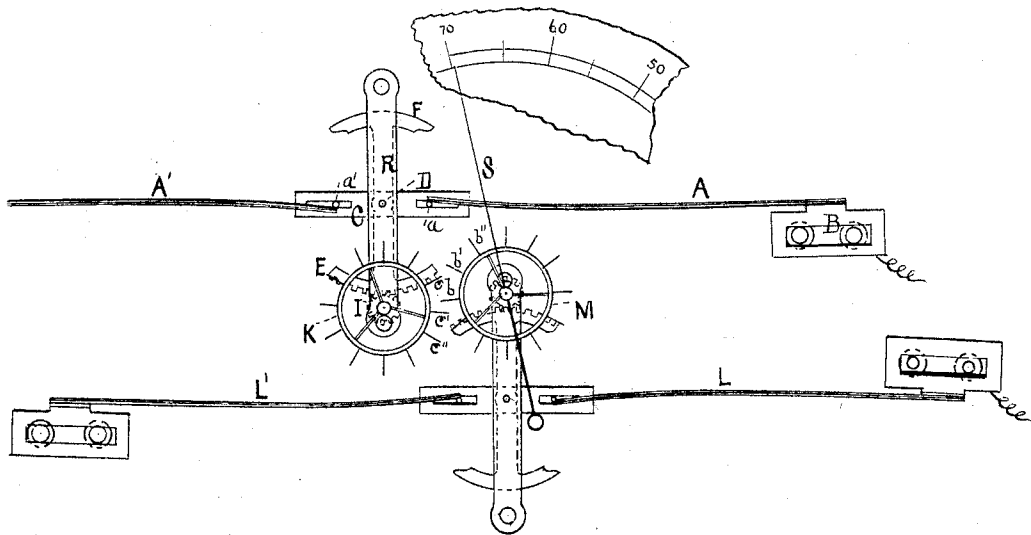


Fig. 1.

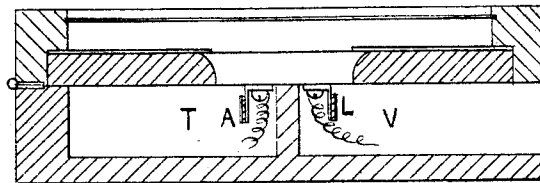


Fig. 2

Witnesses

Frank W. Parker

John J. Bateman

Inventor

George S. Shute

William Edison Att'y

UNITED STATES PATENT OFFICE.

GEORGE S. SHUTE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELECTRIC AND THERMOSTATIC FIRE-ALARMS.

Specification forming part of Letters Patent No. **150,090**, dated April 21, 1874; application filed January 3, 1874.

To all whom it may concern:

Be it known that I, GEORGE S. SHUTE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Fire-Alarm, of which the following is a specification:

The nature of my invention consists, first, in the combination of a pair of compound thermal bars with an indicating device to produce a thermometer; second, in combining two sets of these bars, (one set being more sensitive than the other,) each set being insulated and connected with devices so arranged that in case one set of bars is moved by heat more than the other set a metallic connection will be made between the two, and an electric alarm will be acted upon; but if both sets are moved equally by heat, as would take place upon a gradual change of temperature, then no connection will be made.

Figure 1 represents in plan the moving parts of my invention. Fig. 2 is a section, showing the arrangement of the case in which the device is held.

Let A and A' represent the thermal bars, which are made in the well-known manner, by uniting two strips of metal side by side, the metals having different constants of expansion. These are attached at their outer ends to the case by means of any suitable device, as B, for instance, Fig. 1. The inner ends of these bars A and A' are provided with downwardly-projecting pins *aa'*, which pass through slots made in the cross-arm C, Fig. 1. This cross-arm C is hung on a pivot, D, which pivot has attached to it an arm, (represented by dotted lines at R,) which arm has at one of its ends a segment-gear, E, and at the other end a balance, F. The segment-gear E acts upon a pinion, I, which is attached to the wheel K. The metals in the thermal bars A and A' are so arranged that in case of expansion or contraction by heat the bars act in concert to give motion to the cross-arm C, and through it the arm R, segment E, and wheel K. The thermal bars L and L' are arranged and supplied with adjuncts precisely like those described above, although the bars L and L' are made

lighter than the bars A and A', so that they will be more sensitive to a sudden change of temperature. I attach to one of the wheels K or M a pointing-hand, S, which, moving over a graduated arc, will indicate the sensible temperature. These two wheels, K and M, are provided with projecting spurs, *b b'*, &c., and *c c'*, &c., placed at equal spaces around their perimeters, the wheels being so set that at ordinary temperature of the atmosphere the spur of one wheel—*b'*, for instance—will be between two spurs, *c c'*, of the wheel K, touching neither, so that if both wheels revolve equally the spurs of one will not touch the spurs of the other; but in case one wheel revolves faster than the other, then the spurs of one wheel will contact with the spurs of the other, and thus start the electric alarm.

The case is arranged as shown in Fig. 2, with an inclosed apartment, T, in which the thermal bars A and A' are placed. The other apartment, V, is open to the air, so that in case of fire the rods L L' will be first exposed to heat, and, by expanding more rapidly than the rods or bars A and A', will cause the spurs of the wheel K to overtake the spurs of the wheel M, and thus make the connection necessary to give the electric alarm.

By arranging two thermal bars, as A and A', to act in unison with each other upon the same indicator, and by setting them so that as springs they act against each other to keep the cross-arm C steadily in place, I obtain a result which cannot be obtained by a single thermal bar acting against a spring or other device for keeping the cross-head C fixed and without "lost motion."

By my device the instrument can be made very sensitive, and yet move with firmness when acted upon by the least variation of temperature. Thus it may be seen that my use of two thermal bars, A and A', is more than a mere duplication. They act in the capacity of steadying-springs as well as thermostats.

I claim as my invention—

1. The combination of the thermal bar A,

the cross-head C, and the thermal bar A', all arranged to operate together substantially as described, and for the purpose set forth.

2. The combination of the thermostat A A', the circuit-closer *b b' c c'*, and the thermostat L L', one series of the thermostats being placed in an inclosed and the other in an ex-

posed space, all operating together substantially as described, and for the purpose set forth.

GEORGE S. SHUTE.

Witnesses:

WILLIAM EDSON,
FRANK G. PARKER.