

UNITED STATES PATENT OFFICE.

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AUTOMATIC FIRE-ALARM, ALSO APPLICABLE TO SPRINKLERS.

No. 836,746.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed February 23, 1906. Serial No. 302,563.

To all whom it may concern:

Be it known that we, JAMES FIDDES and JOHN FORDYCE WATT, subjects of the King of the United Kingdom of Great Britain and Ireland, and residents of Aberdeen, in the county of Aberdeen, Scotland, have invented certain new and useful Improvements in Automatic Fire-Alarms, also Applicable to Sprinklers, of which the following is a specification.

This invention relates to improvements in automatic fire-alarms actuated by the expansion of a metal wire, the said improvements being also applicable to sprinklers of the expansion type.

In the specification of Letters Patent No. 788,199 is described the application to fire-alarm apparatus of equalizing-plates to which are attached the ends of the expanding wires.

In order now to increase the sensitivity of the apparatus and to permit the use of shorter detector-plates, there is employed under the present invention a double arrangement of wires, affording an increased leverage, without, however, complicating the construction of the apparatus.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation showing the application of two wires, one of which supports the weighted lever, while the object of the other wire is to increase the expansion effect. Figs. 2 and 3 are side and sectional end elevations respectively, of a modified construction, Fig. 3 being to a larger scale. Figs. 4 and 5 are like views to Figs. 2 and 3 and illustrate a further modification.

In the arrangement shown in Fig. 1, near one end of the equalizing or detector plate *a* is pivoted a rod *b*, and at the other end of the plate are secured hooks *c*. Two copper or like wires *d d'* connect the hooks and the ends of said rod, the fulcrum *b'* of which rod may be located nearer one end than the other.

The weighted lever *e* is supported by the wire *d*, and on its release fractures a frangible tube *f*, closing the outlet for air or fluid under pressure—as, for instance, described in the specification aforesaid.

On normal rise of temperature the plate and wires *d d'* expand more or less equally; but on sudden rise of temperature the wires instantly dilate, and as the weighted lever *e* pulls on one wire *d* only the rod *b* is turned on its fulcrum *b'*, thus lessening the distance between the ends of said wire *d*, which thus sags very considerably at its center, so as to release

the lever *e* to actuate the alarm. The wire *d'*, which does not support the lever, may, if desired, be more or less rigid. Alternatively the wires may be secured at both ends to pivoted rods, or a single wire having its ends connected to the extremities of one such rod and doubled around a guiding-support at the other end of the plate might be used.

In the construction shown in Figs. 2 and 3 the wires *d d'* are arranged one in front of the other and are connected to (by solder or the like) or bear on different points of the pin *p*, supporting the weighted lever *e*. With this arrangement the outer wire *d* tends to raise the outer end of the pin *p*, and the inner wire *d'* tends to depress the inner end of said pin *p* against a stop. On sudden expansion of the wires the pin *p* is tilted and the lever *e* released. The stop referred to is afforded by a rigid arm *h*, Figs. 3 and 5, having a point or sharp edge bearing against said pin, so as to prevent the same from rising, and serving as a fulcrum, on which said pin can easily tilt.

In the construction shown in Figs. 4 and 5 the wires *d d'* are arranged to cross one another and are connected to the ends of a tube or rod *d²*, the ends of the tube thereafter having connected to them a single length of wire *d³*, which has attached to it the pin *p* for supporting the weighted lever *e*.

If desired, a single continuous length of wire arranged in zigzag fashion may be used in conjunction with the tube or rod *d²*.

It will be evident that the above-described arrangements are equally applicable for operating an electrical alarm or for operating the sprinkler-actuating lever of a fire-extinguishing system such as described in the specifications of Letters Patent Nos. 786,491 and 784,669, or a lever forming a member of both an alarm and a fire-extinguishing system.

The arrangement when applied to a fire-extinguishing system differs in principle from the apparatus described in the specification of Letters Patent No. 804,305, wherein a wire is led around pulleys and on expansion lowers a weight an amount equal to the expansion of the wire. According to the present invention a very slight dilation of the wire gives a very considerable sag at the center from which the weight is supported, and this mechanical advantage is further multiplied by virtue of the double arrangement of wires, as will be understood.

Having now described our invention, what

we claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with a metallic plate of a rod pivoted at one end of said plate, a pair
5 of wires each having one end connected to one end of said rod and the other end connected to the opposite end of said plate, a weighted lever, and a pin detachably supporting said lever from one of said wires and
10 arranged to automatically release said lever on undue rise of temperature, substantially as described.

2. The combination with a metallic plate of a rod pivoted at one end of said plate, the
15 fulcrum of said rod being nearer one end than the other, a pair of wires each having one end connected to one end of said rod and the other end connected to the opposite end of said plate, a weighted lever detachably sup-

ported from one of said wires, and a frangible
20 device arranged to be fractured on undue rise of temperature, substantially as described.

3. In a fire-alarm, in combination, the metallic plate *a*, the rod *b* pivoted to said plate, hooks *c* at the opposite end of said plate, the
25 wires *d d'* each having one end connected to said rod *b* and the other end connected to one of said hooks, and the weighted lever *e* detachably supported by said wire *d*, substantially as described.

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In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES FIDDES.

JOHN FORDYCE WATT.

Witnesses:

WALLACE FAIRWEATHER,
JOHN ARMSTRONG, Junr.