(No Model.) 2 Sheets—Sheet 1.

A. B. GRISWOLD & J. M. BRADBURY.

AUTOMATIC SAFETY FIRE ALARM.

No. 422,205. Patented Feb. 25, 1890.

Fig. 1.

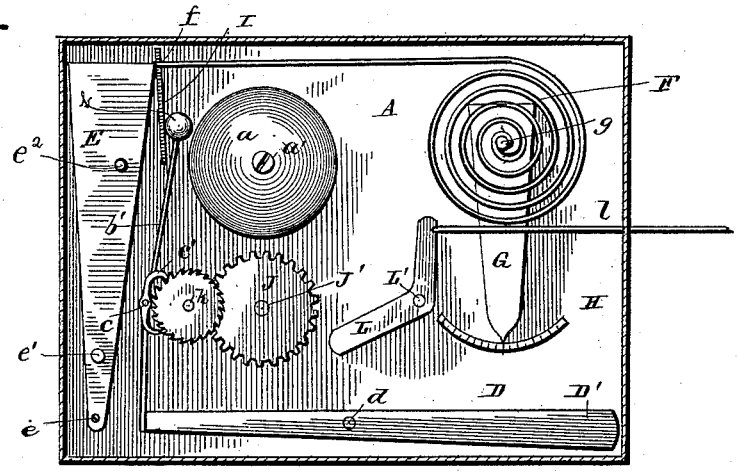


Fig. 2.

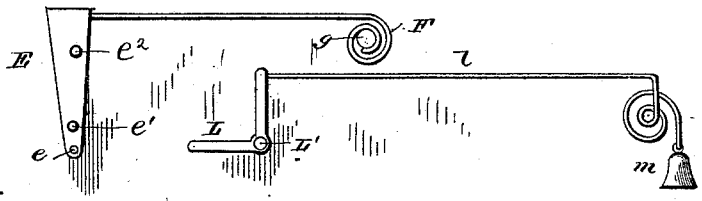
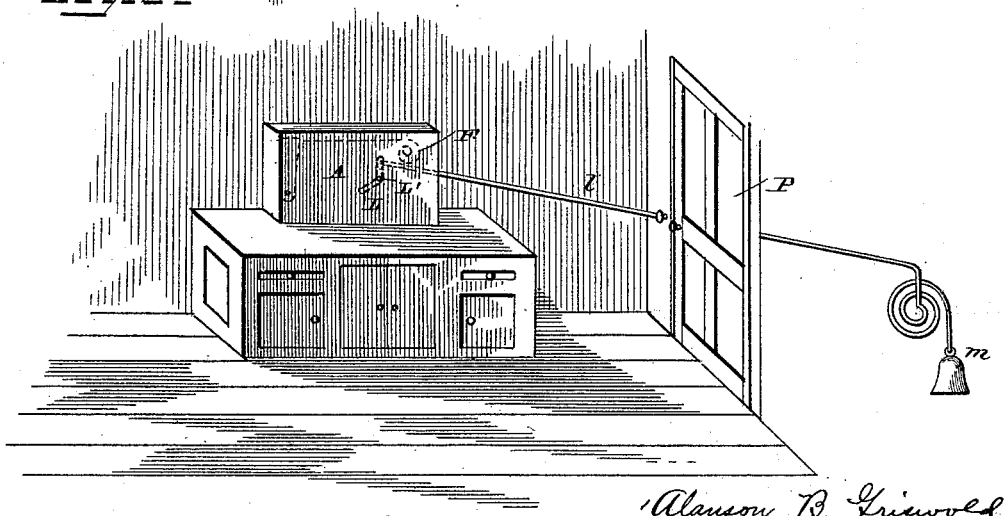


Fig. 3.



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John M. Bradbury
Inventors

By their Attorney in fact
Chas. E. Barber

(No Model.) 2 Sheets—Sheet 2.

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AUTOMATIC SAFETY FIRE ALARM.

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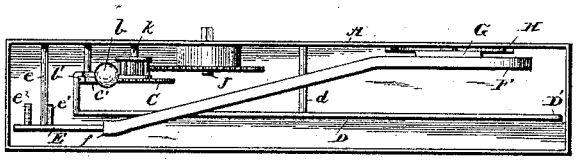
Fig. 4.



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UNITED STATES PATENT OFFICE.

ALANSON B. GRISWOLD AND JOHN M. BRADBURY, OF BUNKER HILL, KANSAS.

AUTOMATIC SAFETY FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 422,205, dated February 25, 1890.

Application filed February 23, 1887. Renewed January 24, 1890. Serial No. 337,932. (No model.)

To all whom it may concern:

Be it known that we, ALANSON B. GRISWOLD and JOHN M. BRADBURY, citizens of the United States, and residents of Bunker Hill, in the county of Russell and State of Kansas, have invented a new and useful Improvement in Automatic Safety Fire-Alarms, of which the following is so full, clear, and exact a description as will enable others skilled in the art to which our invention appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a detailed longitudinal vertical section of our improved fire-alarm, showing the mechanism in elevation which constitutes the same. Fig. 2 is a view of a modification of the same, showing it attached to a bell which is outside of the mechanism of the alarm proper. Fig. 3 is a perspective of a part of a room, showing our improved alarm set in a convenient place within the room and showing it connected to a bell outside of the room which contains the alarm. Fig. 4 is a plan view of our improved fire-alarm, the top of the casing being removed and the bell and bell-crank being omitted.

The object of our invention is to produce an effective fire-alarm which will be self-operating and which will give an alarm should a fire occur.

Another object of our invention is to produce a fire-alarm which travelers may carry conveniently with them, and one which may be put up in its operative position in any convenient place on a minute's notice without the necessity of employing any peculiar or complicated fixtures of any kind.

In order to insure positive action, and in order to have a fire-alarm which will always operate regardless of ordinary varying degrees of heat or cold and other surroundings which might affect complicated machinery or springs of any kind which might be used to operate or set off the fire-alarm, we use the surest and most positive element in mechanics in the setting-off mechanism of our device—namely, gravity.

By the use of the gravity trip-levers employed in our construction the same pressure against the outer end of the coil-spring is always maintained, and it is not affected by heat and cold, as it would be if springs or other similar mechanical devices were employed. We have, then, by the peculiar combination and arrangement of elements, as will be hereinafter fully described, a complete fire-alarm apparatus, which is always ready for use and simple in construction, and one which may be readily and easily operated by travelers or by those who are unable to avail themselves of the expensive modes of guarding against fire.

In the accompanying drawings, A designates the main casing of our improved fire-alarm. To one side of the casing A is attached the gong *a*, through the medium of a bolt or screw *a'*. This gong is operated upon by the hammer *b*, carried on a rod *b'*, which is pivoted at *c*, where it is provided with an escapement *c'*, operating on an escapement-wheel C, as is clearly shown in Fig. 1. At the lower part of the casing A is a gravity-lever D, which is pivoted at *d*, and which is heavier at one end than at the other, thus keeping the end D', as shown in the drawings, always down against the bottom of the casing when it is in its normal position. To the left and forward of the plane of this horizontal gravity-lever D is a vertical gravity-lever E, which is pivoted at *e* on a screw or bolt which extends out a considerable distance from the back of the casing, or a sufficient distance to allow the vertical lever E to drop down forward of the lever D in such a manner that the pin *e'* on the rear face of the lever E will strike the light end of the lever D in its downward movement and release such light end from engagement with the rod *b'* to give the alarm.

The gravity-lever E is pivoted slightly on an eccentric—that is to say, the pivotal point is slightly to one side of the center of gravity, and is so locked that the heavier side is toward the mechanism in the interior of the main casing A. This lever E is held in its vertical position, and the slight pressure which would be caused by the fact of its being pivoted slightly on an eccentric is resisted by the outer free end *f* of the coil-spring F,

which is secured in the main casing A on a pivotal lever or index-finger G, which latter is pivoted at *g*, and is held from being accidentally displaced by frictional contact on the pivot which supports the coil and indicator-finger G at *g*. Below the lower point of the indicator-finger G is a graduated scale H, which enables the user of the fire-alarm to adjust the outer free end *f* of the coil F to the proper position opposite the vertical gravity-lever E within the main casing A.

The cover of the casing A is removable, and can be taken off to adjust the lever G on the graduated scale, or the lever G may be placed on the outside of the rear of the box, all of which will be readily understood by those skilled in the art.

Near the outer free end *f* of the coil F the casing A is provided with a thermometric scale I, which also facilitates the nice adjustment of such outer free end. The cog-wheel J is pivoted to the interior of the casing A at J′, and is actuated by any suitable clock mechanism, (not shown,) and meshes with a wheel on the escapement-wheel arbor *k* in such a manner that as soon as the rod *b*′, which corresponds to the pendulum, is released it is allowed to vibrate. Sufficient power to overcome friction is imparted by the wheel J, which receives its power as above described.

Inside of the casing A we sometimes design to use a bell-crank L, which is pivoted at L′, and has secured to its upper end a wire *l*, which operates a bell *m*, as is clearly shown in Figs. 2 and 3. When this bell-crank is used, the same gravity-lever E, in falling strikes the horizontal lever D, and is provided with a pin e^2 on its rear face, which also strikes the lower free end of the bell-crank L, and rings the bell *m* at the same time that it sets the gong *a* to ringing inside of the case A.

The spring F may be made in any desired shape and of any desired compound or combination of metals which expand unequally when heated. We prefer, however, to make it in the shape of a coil-spring, leaving the outer free end *f* to move up and down as the coil is contracted or expanded by heat or cold. It will be understood that in this particular instance we depend upon the expansion of the metals by heat to give the alarm in case of fire.

We do not wish to be understood as limiting ourselves to the use of clock-work or any combination of levers and cog-wheels or pulleys, as an electric battery could be used just as well, and an electric bell might be used instead of the bell shown and described, which would serve the purpose of the one herein shown and described, after it had once been set off, without departing from the spirit of our invention.

We do not claim to be the inventors of the clock-work mechanism nor of electric bells, as either of these devices is old and can be bought anywhere in open market, and either might be used to secure the same general advantages in combination with our construction without departing from the spirit of our invention. This device may also be used as a burglar-alarm by attaching a simple device to the free end *f* of the coil F in such a manner that the opening of a door or raising of a window would raise such free end and release the vertical gravity-weight E, and thus give an alarm, without departing from the spirit of our invention.

Having now described our invention, what we desire to secure by Letters Patent, and what we therefore claim, is—

1. The combination of a casing containing an alarm-signal and an eccentric gravity-lever supported in a suspended position by an expanding metallic strip, with a second lever pivoted and located in front of the said gravity-lever, and which controls the alarm or signal, and which is operated by the first lever when released, all constructed and combined to operate substantially as specified.

2. The main casing provided with suitable fire-alarm mechanism and a graduated scale, in combination with an eccentrically-pivoted gravity-lever and an expanding metallic strip, which is rigidly connected with a finger G, and which supports the gravity-lever in its suspended position and holds it in that position at a point adjacent to the graduated scale, and a graduated scale for said finger G, all constructed and combined to operate substantially as described, whereby the fineness of the adjustment of the metallic strip to the eccentrically-pivoted gravity-lever may be determined, substantially as and for the purposes specified.

3. The combination of the main casing provided with the eccentric gravity-levers, the operating mechanism for the alarm, and a metallic strip mounted on a pivotal support, which is held in its normal position by frictional contact with the pivotal support, and a graduated scale and an indicating-finger, said finger being rigidly secured to the metallic strip at its supported end, and moving therewith the free end of said metallic strip, supporting in a suspended position the eccentric gravity-lever, substantially as and for the purposes specified.

4. The combination of the main casing provided with the automatic gravity-levers, the metallic expansible strip supporting one of the gravity-levers, and an alarm mechanism complete within the casing, with a secondary alarm mechanism which connects with an alarm or signal device in an adjoining apartment outside of the main casing of the alarm proper, all constructed and combined to operate substantially as specified.

5. The combination of the gravity-levers pivoted as described and supported in a suspended position by an elastic movable bar,

with mechanism for tripping the same and setting off the alarm by the expansion of the metallic strip F within the main casing, and the additional supplemental tripping mechanism for mechanically releasing it, substantially as and for the purposes specified.

In testimony that we claim the above as our invention we hereunto set our hands in the presence of two subscribing witnesses.

ALANSON B. GRISWOLD.
JOHN M. BRADBURY.

Witnesses:
PETER MENZIES,
J. E. SHUCKHART.