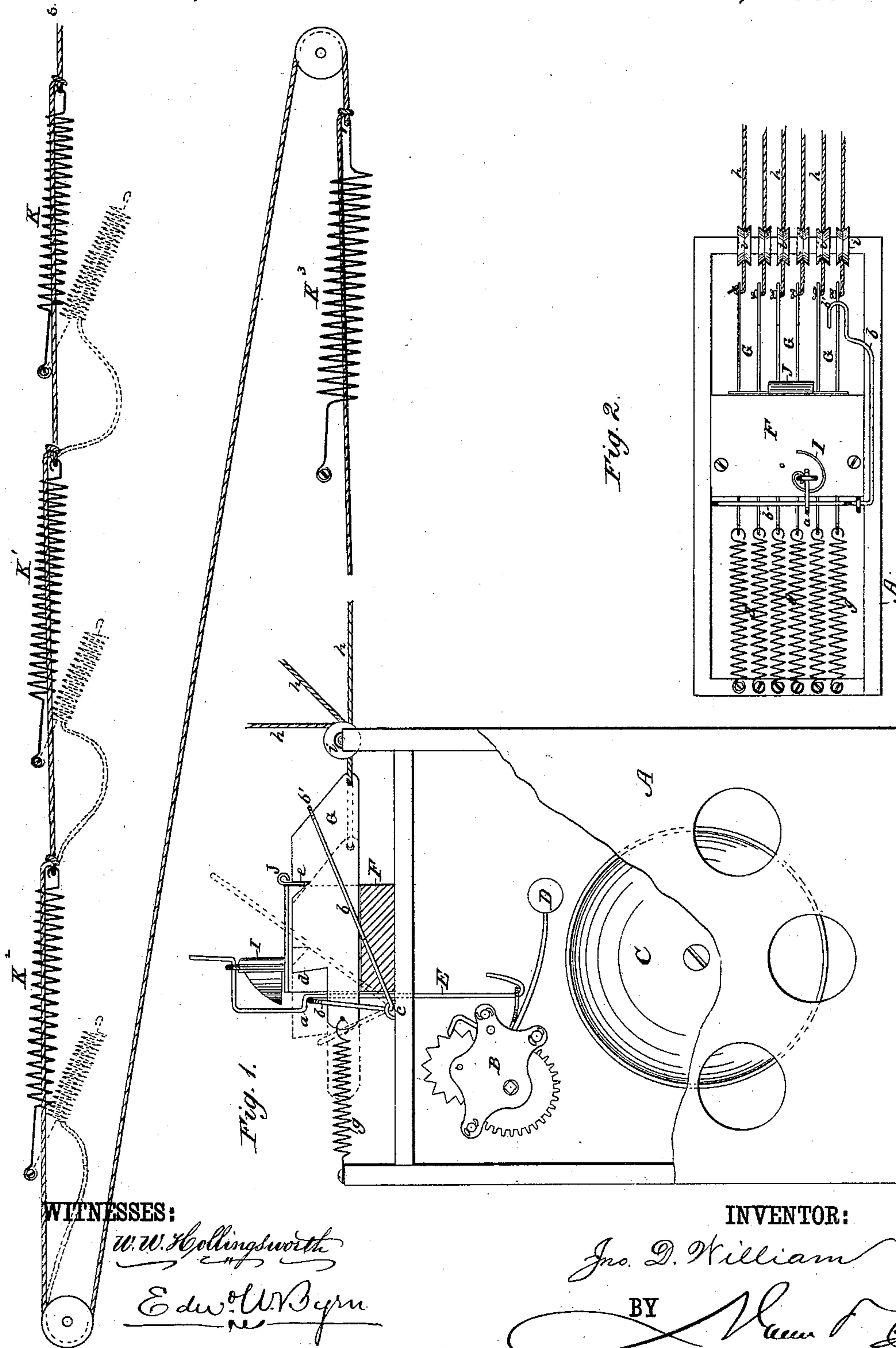


J. D. WILLIAM.
Fire and Burglar Alarm.

No. 210,386.

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IMPROVEMENT IN FIRE AND BURGLAR ALARMS.

Specification forming part of Letters Patent No. **210,386**, dated November 26, 1878; application filed October 12, 1878.

To all whom it may concern:

Be it known that I, JOHN D. WILLIAM, of Rising Sun, in the county of Ohio and State of Indiana, have invented a new and Improved Burglar and Fire Alarm; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side elevation of the alarm-instrument, partly in section, the cord and re-enforcing springs being shown attached. Fig. 2 is a plan view.

My invention is an improvement upon that form of burglar and fire alarm in which a clock mechanism is set going and made to ring a bell from the movement of a tripping device which is released when one of a number of cords running to the various parts of a house is burned by fire or disengaged by the entrance of a burglar. I have found that the springs which are attached to the several cords for moving the tripping device when the cord is slackened cannot in practice be made sufficiently strong to overcome the friction of a long line of cord and give that quick and positive movement to the connected piece of cord when the circuit is broken to make the device operate. In overcoming this difficulty I employ a series of re-enforcing-springs along the line of the cord, so that when the spring at the alarm mechanism is put under tension the cord is carried to a given point and connected to one of the re-enforcing springs, then to another point, and attached to another re-enforcing spring, and so on, so that when a break occurs at any point in the cord the re-enforcing-spring nearest to the break takes up the slack between it and the break and gives the slack to the next succeeding section of cord, and the next spring takes up the slack of the second section of the cord and gives it to the next, so that the work of taking up and carrying the slack throughout the circuit is done by the re-enforcing springs, leaving the spring attached to the alarm only to take up the slack of the last section, which it quickly does. By this means the alarm may be placed at any point in the house, and the cord carried any distance up around the flues about the roof, or away to a barn or outhouse, the slack caused by a break being transmitted

any distance by the agency of the re-enforcing-springs positively and instantaneously.

The improvement also consists in the particular construction and arrangement of the tripping devices of the alarm, as hereinafter more fully described.

In the drawing, A represents a suitable case, in which is contained a clock-gear, B, and a bell, C, the hammer D of which clock mechanism is attached to the escapement and extended to striking contact with the bell, as usual. E is a rod or wire attached loosely to the escapement, extended upwardly through the case, and bent at *a* to form a catch. When the rod is held up the escapement is prevented from operating, and when said rod is down the escapement is free to move and sound the alarm.

To hold the rod up a cranked or double-bent rod, *b*, is pivoted at *c*, so that its bow rests beneath the catch *a* of the rod. To trip this bow from the catch, I arrange in the slotted guide-piece F a series of slides, G, having shoulders *d* and notches *e*. To one end of these slides I attach a corresponding series of springs, *g*, while to the other ends are attached the several cords *h* passing around pulleys *i*, and extending to the various parts of the house. Now, when the cords are all attached to their respective points and the springs *g* are under tension, the shoulders *d* of the slides are drawn away from the bowed and pivoted bar *b*. When, however, any one of the cords is severed by fire or the entrance of a burglar, the spring *g*, operating the slide attached to that cord, brings forward said slide, and as its shoulder *d* advances it strikes the bowed bar *b*, deflects it on its pivots from beneath the catch *a* of the rod E, and this, falling of its own weight, releases the escapement, which sounds the alarm.

To render the device inoperative in the daytime, and to prevent the accidental sounding of an alarm, a pivoted cam, I, is located upon the slotted guide-piece F, and is arranged to be thrown under the upper bend of the rod E, to prevent the latter from descending and releasing the alarm mechanism. A detachable stop-plate, J, is also provided, which is adapted to be slipped into the notches *e* of the slides, to permit any number of them to be used and the rest thrown out of gear, as may be desired.

The arrangement, as so far described, it will

be seen, provides only for the sounding of an alarm by the severing or slacking of the cords. To sound an alarm by a pull upon the cord, I extend one of the ends of the bowed bar *b* obliquely upward and bend it over the beveled end of the slides *G* at *b'*. A pull upon the slides with this arrangement, it will be seen, throws this end *b'* upward, and, by deflecting the bowed portion *b*, removes it from beneath the catch *a* of the rod *E*.

As many of the cords *h* and corresponding devices may be employed as there may be points to protect. In extending them, however, so as to relieve the strain upon the springs of the alarm from the work required to pull in the slack, I employ, at suitable intervals along the circuit of the cord the re-enforcing springs *K*, which I prefer to make in spiral form, one end being provided with an eye for attachment to a stationary object, and the cord passing through the spiral coils and attached to an eye at the other end. Now, in carrying the cord to distant points or about winding circuits, where the friction of the severed cord would be too great to be overcome by the springs *g* at the instrument, I place these springs *K* along the line of the cord, the springs being attached by one of these eyes to any immovable object, and serving as a support for the cord, which, being under tension through its entire length, stretches the springs. Now, if a break occurs at *s*, for instance, (see Fig. 1,) the nearest spring *K* immediately takes up the slack and gives it to the next section of cord, the slack in which is taken up by the next spring *K'* and transmitted to the next section, and so on until it reaches the instrument, the springs of which are only required to take up the slack of the first section of cord. This provision enables me to carry the cord to any desired distance, and through any tortuous circuit, the springs *K* doing the double duty of supporting the cord and taking up the slack.

Among some of the applications of my invention, I propose to extend the cord around barns and outbuildings as a protection against robbers. I may also wind it about the chimney-flues and extend it through the floors or over the roofs. The cord may also be arranged in the hem of the carpet around the fire-place, so that the burning of the same would sound an alarm. The devices may also be applied variously to windows and doors, and by the aid of guide-pulleys may be carried to any point.

In making use of my invention, I may, as a safe-guard against the gnawing of the cord by rats or mice, use wire instead of cord, and attach one end of the wire to the armature and the other to the body of a permanent magnet, which magnet, when it becomes heated, loses its magnetism, and by releasing the armature allows a break to be made.

With respect to the re-enforcing spring *K*, I do not confine my invention to the spiral form, as any other form may be employed on the same general principle.

In defining this feature of my invention with greater distinctness, however, I would state that I am aware that a series of detectors, (each a complex device) has been arranged along the line of cord, and adapted to give the slack of one section of cord to the next detector, and so on to an annunciator, with a view to obviating the necessity of more than one cord.

I am also aware that several independent and distinct sections of cord have been connected by a pulley and weight so as to cause the loosening of one section to disengage the next. I do not know, however, that a single continuous cord has been re-enforced along its length by a series of springs, each of which constitutes one single and whole device, that both serves the purpose of transmitting the slack and supporting the cord, and to this single device I limit this feature of my invention.

Having thus described my invention, what I claim as new is—

1. The combination, with the line of cord or wire, of the re-enforcing-springs *K*, fixed to said line at one end and to an immovable object at the other, substantially as and for the purpose described.

2. The slides *G*, having beveled ends, in combination with the rocking bar *b*, having extension *b'*, the rod *E*, with a catch, *a*, and the alarm mechanism, substantially as described.

3. The slides *G*, held under a tension and provided with notches *e*, in combination with the guide-piece *F* and the detachable stop-plate *J*, as and for the purpose described.

The above specification of my invention signed by me this 3d day of October, 1878.

JOHN D. WILLIAM.

Witnesses:

EDWD. W. BYRN,
CHAS. A. PETTIT.