

A. ROSENBUSCH & T. W. KREITZ.
 Improvement in Combined Thermostat and Fire-Alarm
 Signal-Box.

No. 128,662.

Patented July 2, 1872.

Fig. 1.

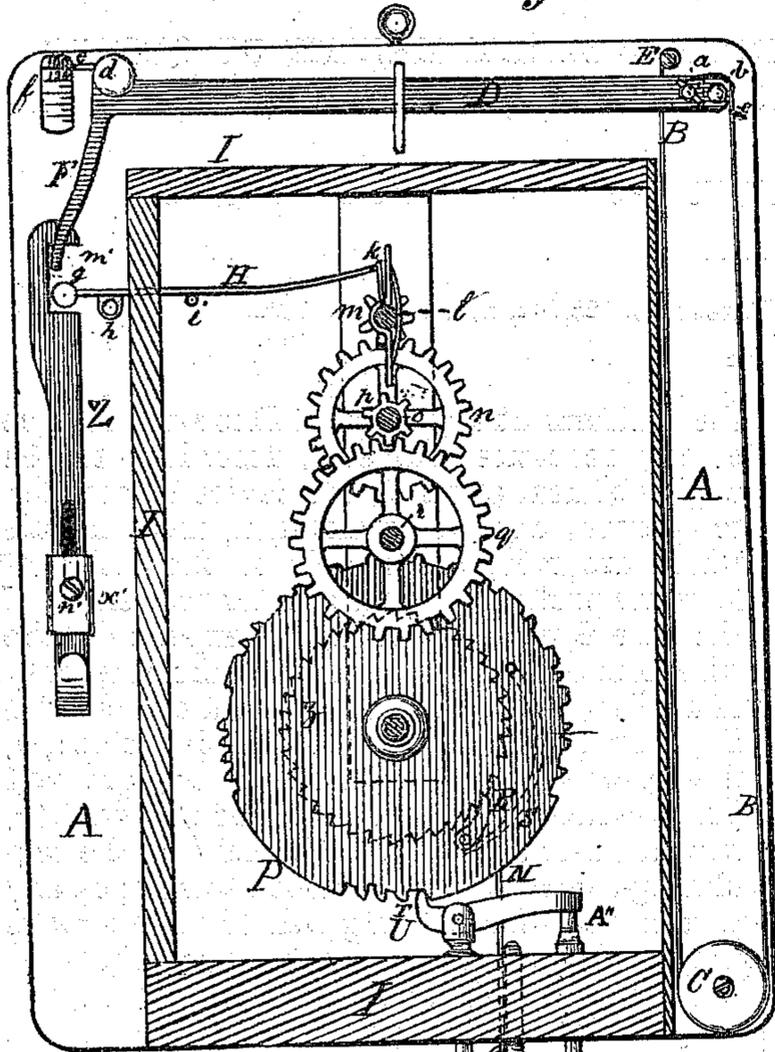


Fig. 2.

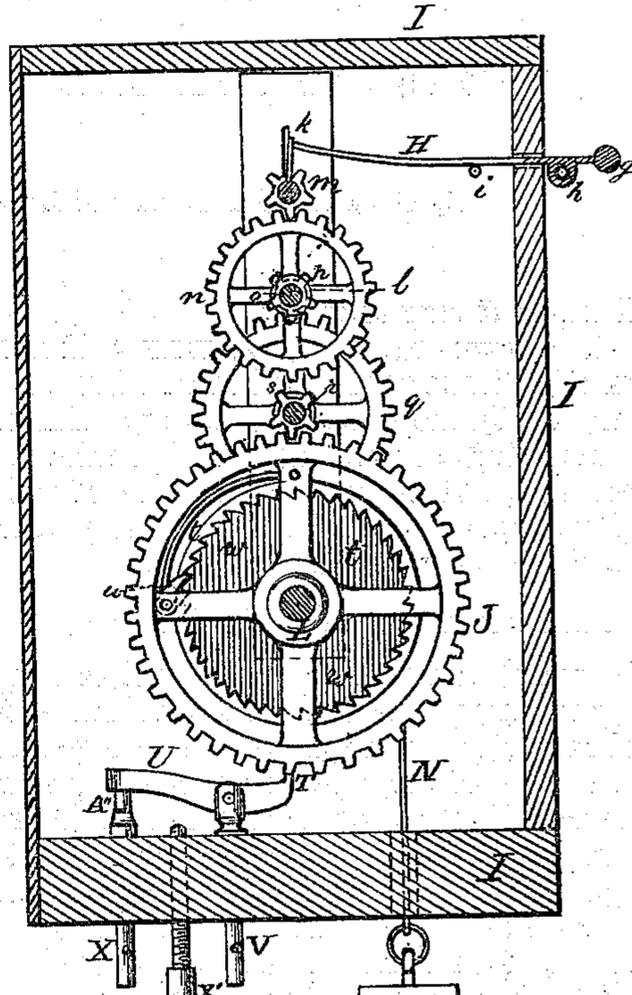


Fig. 3.

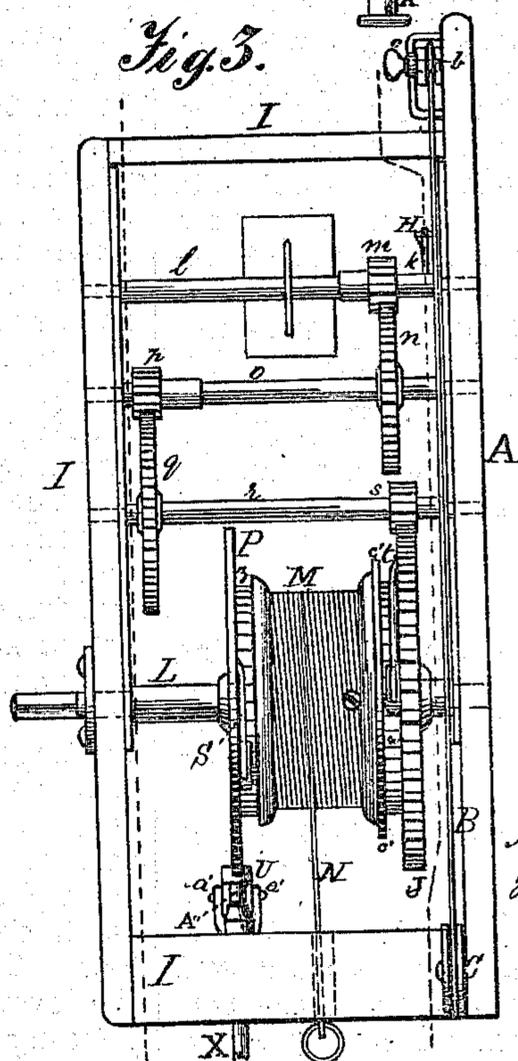
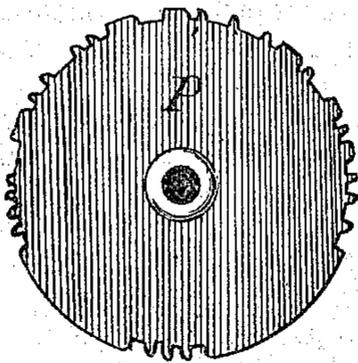


Fig. 4.



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UNITED STATES PATENT OFFICE.

ANDREW ROSENBUSCH AND THEODORE WILLIAM KREITZ, OF QUINCY,
ILLINOIS.

IMPROVEMENT IN COMBINED THERMOSTATS AND FIRE-ALARM SIGNAL-BOXES.

Specification forming part of Letters Patent No. 128,662, dated July 2, 1872.

To all whom it may concern:

Be it known that we, ANDREW ROSENBUSCH and THEODORE WILLIAM KREITZ, of the city of Quincy, Adams county, Illinois, have invented certain new and useful Improvements in Fire-Alarm Indicators, of which the following is a specification, reference being had to the accompanying drawing.

Nature and Objects of the Invention.

The invention pertains to the application of the expanding power of heat to automatic telegraphing, and is instanced in the present case as applied to operating a telegraphic fire-alarm. The invention relates to an alarm-indicator, the operation of which is effected through the expansion of a wire or other agent by the heat of the fire, the presence of which the device is intended to announce, such action of the wire or agent operating to depress a lever, thus permitting the gravity of a weight to cause the revolution of a properly-notched disk, the movement whereof operates a striker acting upon telegraphic wires connecting the device with the place at which the alarm is to be announced, the disk being so arranged that in revolving it operates the striker so as to indicate upon the wire telegraphic signals and symbols, the indicator being further provided with an auxiliary slide, whereby the mechanism sustaining the gravity of the weight is freed, and the alarm may be communicated through the operation of the weight, causing the movement of the disk and consequent action of the striker.

Description of the Accompanying Drawing.

Figure 1 is a view of a device embodying the elements of the invention, being a vertical longitudinal section through the line V' V' of Fig. 3. Fig. 2 is a view of the same, being a similar section through the line I' I' of Fig. 3. Fig. 3 is a side view of the same device. Fig. 4 is a detached view of the disk.

General Description.

A is a platform of requisite dimensions, and suitably provided with means for being suspended on its longitudinal center of gravity. Upon one side of the platform A is placed the wire B, in such manner that it does not touch

the platform at any point. This wire may be of any requisite diameter, according to the degree of heat at which the device is intended to operate; and, as to material, those metals which are most susceptible to the action of heat are preferred. The greater the length of the wire B the more readily it expands. The wire B is secured at one end to the extremity of a screw or pin, *a*, near one end of the lever D, whence it passes over a rounded block, *b*, thence downward to and over the grooved pulley-wheel C; thence it extends upward to, and its other end is secured firmly to, the regulating-screw E. It is obvious that, upon any part of the wire B being heated or otherwise expanded, its tension upon the end of the lever D is diminished, and consequently, as the weight of the lever preponderates greatly at its end opposite that to which the wire B is secured, such heavier end must descend as the wire is expanded by heat or otherwise relaxed. The regulating-screw E is intended to fix the tension of the wire B upon the lever D, and also to tighten or relax the wire, thus affording a greater or less extent of surface below the lever, upon which the heat may operate; accordingly the greater the tension of the wire the less susceptible it becomes to the action of the heat, and vice versa. The lever D is pivoted to the platform A by the pivot *c* at that end thereof at which the wire is attached, the rounded block *b* intervening between the platform and lever to prevent these parts coming in contact and allow the lever to oscillate freely. The opposite end of the lever is provided on its upper edge with a weight, *d*, so as to give the lever a downward action at this end. On the outer surface of this weight is provided a finger or pointer, *e*, immediately below which, and fixed upon the platform, is the scale *f*, properly graduated; thus, as the wire is tightened or relaxed by regulating the screw E, the pointer *e* indicates, respectively, a higher or lower mark on the scale *f*, and consequently that the device is set to operate at a greater or less degree of heat. The lower edge of the weighted end of the lever is provided with the standard F, depending at right angles to the lever, its lower end being in close relation to or touching the upper surface of the lever H. In case these

parts are separated the distance between them should be such that when the wire B is heated to the degree of operation as indicated by the pointer *e*, the standard F may have the necessary depression. The lever H is pivoted to the platform A in such manner as to vibrate clear thereof, and at one end is provided with the weight *g*, adjacent to, and between which and the pivot *h*, the lower extremity of the standard F impinges upon the lever H, the pivot *h* being so placed that the gravity of the lever preponderates on that side thereof opposite the weighted end. Adjacent to the pivot *h* is placed the rest *i*, to prevent the lever swinging too far downward. The extreme end of the lever H extends until it comes in contact with the pin *k* placed on the rear end of the shaft *l*, and at right angles thereto. The shaft *l* works in bearings in the case I and platform A, and is provided with a pinion, *m*, which engages the spur gear-wheel *n* on the shaft *o*, which works in bearings in the case and platform, and has on its outer part a pinion, *p*, which engages a spur gear-wheel, *q*, on the shaft *r*, working in bearing in the case and platform, and having on its inner part a pinion, *s*. The shafts *l* or *r*, with their pinions and gear-wheels, are intended to render the movement of the device even and regular, and may, under certain conditions, be dispensed with. It is obvious that the pin *k* may be used upon the shaft L or disk P, in a manner similar to that shown in the present instance, by placing the lever H and its adjuncts lower down on the device. The pinion *s* engages the spur gear-wheel J mounted on the shaft L, and provided with the spring *t* operating the pawl *u*, which acts upon the ratchet-wheel *w*, so that the device may be wound up without moving the wheel J, but which wheel does move in conjunction with the drum M when the device is in operation. Between the ratchet-wheel *w* and the drum M is provided a thin disk of metal to retain the pawl *u* in its proper position. The drum M is provided with a ledge or guard at each end, and has attached to it one end of a wire or cord, N, which passes downward through an aperture in the case I, its lower end being secured to a weight, *x*, of requisite gravity. The disk P revolves upon the shaft L, adjacent to the ratchet-wheel Z, and is provided with a spring, S, operating a pawl, R, which acts upon the ratchet-wheel *z*, so that, though the disk P may be rotated independently of the drum M, yet, when the latter is moved, the disk P revolves; or the disk P may be secured directly against the drum M or on the shaft L. The striker U is pivoted between the jaws *a'*, at the end of the wire V, which is connected with the telegraphic wire, and has on the upper surface of the end adjacent to its pivot the studs T, the point of which impinges upon the general circumference of the disk P. The striker is so pivoted that its weight preponderates at the end opposite the stud T, and has upon the lower surface of this end a head, A'',

which, when the point of the stud T enters an indentation on the circumference of the disk P, falls upon the insulated telegraph-wire X, connecting the device with a battery and reading apparatus at the point where the alarm is to be announced. The radius of the disk P is such that in revolving its general circumference impinges upon the point of the stud T. This circumference is so arranged that as the disk P revolves it operates the striker in such manner as to cause the head A'' to rise from or strike upon or remain in contact with the wire X, giving telegraphic symbols corresponding to the indentations and elevations upon the periphery of the disk. Thus, as the disk revolves, at every elevation the striker U is raised and the circuit is broken; consequently a space occurs equal to the length of the curve of the particular elevation on the disk in contact with the point of the stud T. At every indentation the striker falls, the circuit is established, and, consequently, a line or point is formed equal to the extent of the bars of the particular indentation on the disk P, into which the point of the stud T enters. It is thus obvious that the disk P may be so arranged as to communicate any desired names or numbers to the place with which the device is connected by wires V and X. The ratchet-wheels *w* and *z*, drum M, and disks *c'* and *z* have common centers at which they are rigidly secured to the shaft L, the outer part of which projects through the case I, and is provided with an angular shoulder upon which a key or crank may be fitted to wind up the device. It is obvious that the device may be operated in a manner analogous to the foregoing by the employment of any agent susceptible to the expansive action of heat, it being only necessary to depress the weighted end of the lever H, which frees the pin *k*, thus allowing the gravity of the weight *x* to operate the device; hence, a tube filled with any liquid or quicksilver may be placed upon the platform in such position that one of its orifices stands immediately above the weighted end of the lever H; this tube being of siphon shape and so filled that upon its being heated a portion of its contents will pass over the siphon and fall upon the lever H, thus depressing its weighted end and allowing the device to operate; or a piece of metal may be secured above the weighted end of the lever H, which, upon being heated, shall expand so as to depress such end and produce the above-mentioned effect. Instead of a weight and a cord, as in the present instance, a coiled spring may be employed to effect the revolution of the shaft L. To the end that the invention may be operated without the action of heat, the platform A is provided with the slide Z, working vertically in the strap *x*, through which and a slot in the slide passes a pin, *n'*. The lower end of the slide is provided with a hook or other suitable means of operating it, the upper end having a recess, *m'*, partially inclosing the weighted end of the lever H; thus, by draw-

ing down the slide, the end of the lever is depressed and the operation of the invention proceeds, while a contrary movement of the slide Z forces up the weighted end of the lever H, bringing its opposite end in contact with the pin *k*, thus stopping the operation of the device. In order that when the device is being wound up the reverse action of the disk P may not move the striker U, there may be provided a screw, X', which passes upward through the lower surface of the case I, its upper end coming directly below the lower surface of the striker at a point intermediate between its pivot and hammer; this screw being so arranged that when it is screwed up it elevates the weighted end of the striker, and when screwed down does not come in contact therewith.

Operation.

Suspend the device so that the weight *x* may descend the full length of the cord or wire N and as near the ceiling of the apartment as practicable attach the wires V and X to a telegraphic wire connecting with the place at which the operation of the device is to be indicated, screw up the screw X' to avoid any telegraphic operation from the movement of the disk P, which is properly arranged to indicate the number or name of the premises wherein it is placed, the point of the stud T being in contact with that portion of the circumference of the disk, which in its revolutions precedes the indentations. Presuming the cord N to be entirely paid out, apply the key to the angular part of the shaft L, outside the case I, turn the same, thus winding the cord or wire N upon the drum M, the ratchet-wheels being so arranged that only the drum M, ratchet-wheel *z*, and disks *y* and P are rotated. Screw down the screw X'. The invention is now ready for operation. It is obvious that should a fire break out in the vicinity of the device an im-

mediate expansion of the wire B takes place; this allows the weighted end of the lever D to fall, bringing the point of the standard F down upon the weighted end of the lever H, thus elevating its opposite end, freeing the same from contact with the pin *k* and permitting the gravity of the weight *x* to cause the drum M to revolve, thus rotating the disk P, which operates the striker U, the hammer of which acts upon the wire X, thus telegraphing the number or name according to the arrangement of the disk P, which operation continues so long as the wire is heated and until the length of the cord or wire is exhausted, but ceases when the wire becomes cold or the extent of the cord or wire is reached.

Claims.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The wire B, suspending the lever D, in combination with the screw E and scale *f*, substantially as shown and described.
2. The lever H, pin *k*, disk P, striker U, and wire X in combination with the shaft L, operated by the cord or wire N and weight *x* or a spring, substantially as shown and described.
3. The combination of the lever H, pin *k*, and slide Z, substantially as shown and described.
4. The combination, with a fire-alarm indicator operating through the action of heat, of a means of operating the same manually, substantially as shown and described.

In testimony that we claim the foregoing improvements in fire-alarm indicators, as above described, we have hereunto set our hands and seals this 29th day of April, 1872.

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THEODORE WILLIAM KREITZ. [L. S.]

Witnesses:

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