W. W. SAWYER.

Fire-Alarm Register.

No. 164,598. Patented June 15, 1875.

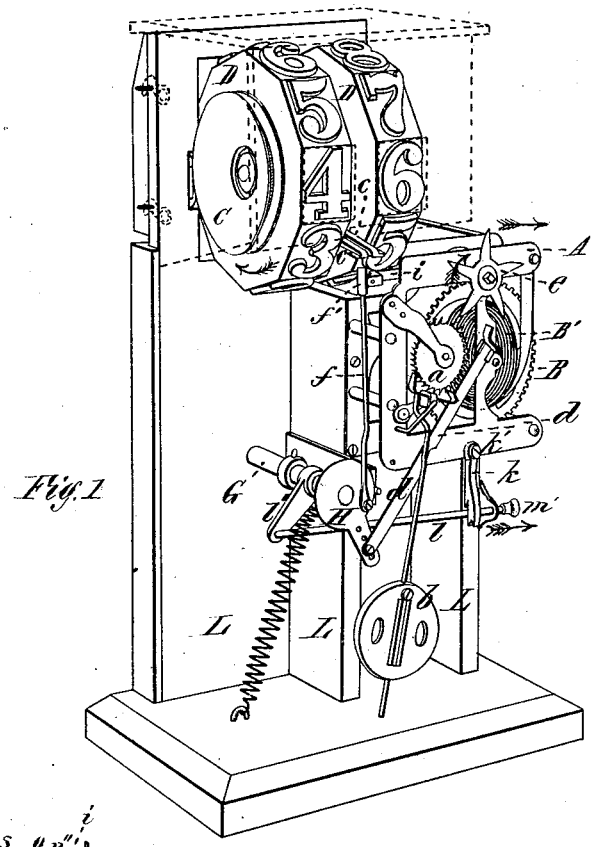

Fig. 1

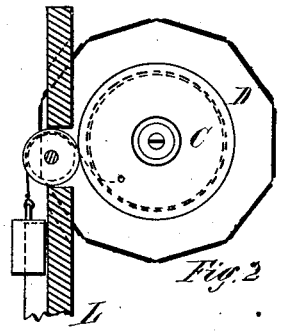

Fig. 2

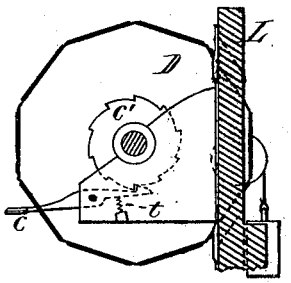

Fig. 3

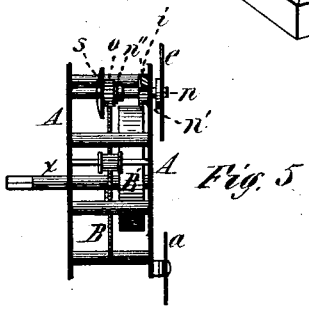

Fig. 5

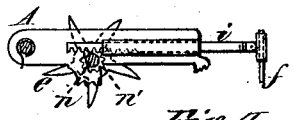

Fig. 4

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THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

WILLARD W. SAWYER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND GEORGE M. STEBBINS.

IMPROVEMENT IN FIRE-ALARM REGISTERS.

Specification forming part of Letters Patent No. **164,598**, dated June 15, 1875; application filed February 5, 1875.

To all whom it may concern:

Be it known that I, WILLARD W. SAWYER, of Springfield, in the State of Massachusetts, have invented a new and useful Annunciator for Fire-Alarm Signal-Boxes; and that the following is a full, clear, and exact description thereof.

The object of my invention is to announce to the men employed in the different fire-engine houses, and at any other desirable stations in a city, the box at which the alarm was given, so that the men may give their whole attention to getting out the fire apparatus while the alarm is being struck, and, when ready to start, a glance at the annunciator will inform them of the locality of the fire; and to this end my invention consists of one or more revolving wheels, each having upon its periphery numbers or characters, each wheel being operated by a weight and cord, or by a spring, and a pawl or catch, arranged to operate in connection with a ratchet attached to each wheel, and the pawl tripped, to permit the wheel and ratchet to rotate one tooth, by a trip-rod, having a horizontal and also a vertical motion, and operated by means of a rod connected with the gong, a rock-shaft, crank, push-rod, stop-wheel, and rack and pinion, the horizontal movement of the trip-rod being given by clock-work and pendulum, connected with the rack and pinion.

In order that the invention may be fully understood, I will proceed to describe the same, having reference to the accompanying drawing and the letters marked thereon.

Figure 1 is a perspective view of my invention. Fig. 2 is a side view of one of the annunciator-wheels. Fig. 3 is a reverse-side view of the same. Fig. 4 is a rear view of the upper portion of the clock-work frame A, showing the rack and pinion, and connection of the same with the upper end of the tripping-rod; and Fig. 5 is a side view of the clock mechanism.

L is a support, to which the clock-work frame A is attached; and this clock-work consists, merely, of a toothed wheel, B, supported on a shaft, *x*, and actuated by a mainspring, B′, or by a weight, as may be most convenient or desirable, a shaft, *n*, having thereon a toothed wheel, *o*, which gives motion to said shaft from the wheel B by the friction caused by the pressure of the spring *s* against said wheel *o*, pressing it against the collar *n″*, or by any other similar connection, so that the shaft may be rotated independently of the wheel *o* when it is desired to set the rack-bar back again, and the ordinary escapement-wheel and pendulum.

A rack-bar, *i*, is arranged in a suitable guide, with stops so disposed that said bar may have a limited horizontal motion, said bar being actuated by the small pinion-wheel *n′* on the shaft *n*, upon the outer end of which is also arranged the stop-wheel *e*. G is a rock-shaft having a projection, *l′*, to which is attached a rod, *l*, and to said shaft is also secured a crank or wrist-plate, H, to which is attached a push-rod, *d*, sliding through a suitable guide, the upper end of which push-rod is located so that when the push-rod is at rest the points of the wheel *e*, in rotating, may just pass the end of the rod; but when the rod *d* is pushed toward the wheel it will strike one of the points of the wheel and turn it back. The tripping-rod *f* is attached at the lower end to the plate H, and at the upper end to the bar *i*, in such a manner that said rod may be moved up against the pawl *c* in a vertical direction and yet be moved horizontally whenever the rack-bar *i* is moved to or fro. The wheels D may be disposed in any convenient manner upon the support L, and so arranged that they may be rotated freely in the direction indicated by the arrow, by a cord wound upon a grooved part, C, and a weight attached to the end, or by a spring, or in any convenient manner, and there may be one, two, or more of these wheels, according to the number of signal-boxes in use, or according to the number which is desired to be indicated by the wheels. On one side of each wheel D is also arranged a ratchet, *c′*, with the teeth of which one end of the pawl *c* engages to keep the wheel from revolving, the pawl being held in contact with the teeth by a spring, *t*, and the pawl *c* of each ratchet projects outward over the tripping-rod *f*, so that the latter in being moved upward will strike the end of the pawl as it passes along beneath the pawl. Each wheel D has upon

its periphery certain figures or numerals, preferably those from 1 to 9, both inclusive, with a space upon which there is no numeral, and for convenience the wheels are covered from view by a casing or box, represented in dotted lines, in Fig. 1, with an aperture, indicated in dotted lines in front of each wheel, in front of which each numeral is moved to be exposed to view.

The operation of my invention is as follows: The whole device, which is designed to be inclosed in a case, with a small door to be locked and unlocked, is placed quite near to the gong upon which the alarm is struck, so that the rod *l* may be connected with the gong-hammer. The spring B′ is wound up by applying the ordinary clock-key to the end of the shaft upon which the spring is coiled, the wheels D are turned so that the cord is wound upon them, and the weights attached thereto raised sufficiently to cause each wheel to make a revolution, the wheels being set so that the blank space is brought in front of the apertures at the point where the numerals forming the number 46 are shown in the drawing, and the pendulum is prevented from vibrating by any suitable catch device, that shown at *k* in Fig. 1 being well suited to that purpose. The catch *k*, pivoted at *k′*, is placed in a horizontal position, with its end against the pendulum, and also against a shoulder on the push-bar *d*.

As thus arranged, the first blow of the gong-hammer pulls out the rod *l* in the direction indicated by the arrow, which movement rocks the shaft G and plate H, pushing up the rod *d*, and throwing down the catch *k*, and also pushing up the tripping-rod *f* against the first or left-hand pawl *c*, the upper end of the tripping-rod *f* having first been moved to its extreme position at the left. The rod *f* quickly falls to its position again, as also does the push-bar *d*, by the reverse movement of the gong-hammer; but the first upward movement of the rod *f* against the pawl *c* released it from the ratchet-teeth of the left-hand wheel D, and the weight and cord cause said wheel to revolve a little, the pawl, however, quickly stopping it, allowing the numeral 1 to be brought into view.

When the pendulum-rod *b* is released at the first blow of the gong-hammer, the clock-work is permitted to move by the continual swinging of the pendulum, which causes the stop-wheel *e* to slowly revolve, moving the rack-bar *i*, as also the upper end of the tripping-rod *f*, slowly to the right.

The radial prongs on the stop-wheel *e* are of such length that as the wheel revolves the extreme ends of the prongs just pass by the upper end of the push-bar *d*, and may be so adjusted by the pendulum that, the push-bar remaining stationary, the clock-work will cause the wheel *e* to revolve at such speed that the prongs will pass the end of the push-bar *d* at any desired interval of time, say, two and a half seconds.

The tripping-rod being set beneath the first or left-hand pawl *c*, the first blow of the gong-hammer pushes up the push-bar *d*, the upper end of which strikes against the first prong of the wheel *e* in front of the bar, and turns the wheel back in a direction opposite to that in which it is caused to move by the clock-work; and this movement of the wheel and its shaft *n* and pinion *n′* moves back the rack-bar *i* until the upper end of the tripping-bar is directly beneath the end of the first pawl *c*. The pendulum still vibrating, the wheel *e* is caused to revolve in the direction of the arrow for two and a half seconds, when the next blow is struck, the push-bar *d* moving back the wheel *e*, rack-bar *i*, and tripping-rod *f*, as before, to a point just beneath the first pawl *c*. This will continue as long as the blows of the gong-hammer are struck at intervals of two and a half seconds, each blow of the gong-hammer tripping the left-hand pawl *c*, and permitting the wheel D to revolve one notch of the ratchet, and exposing the numerals in succession at the aperture in the case. Suppose the gong-hammer to have struck four blows at intervals of two and a half seconds. The numeral 4 will then be presented at the left-hand aperture. If the next pause between the blows be longer, however,—say, four seconds—the clock-work, moved by the pendulum, will cause the upper end of the tripping-rod *f* to be carried past the left-hand pawl *c*, and that prong of the wheel which has been in front of the upper end of the push-bar *d* will pass by the end of the push-bar, bringing another prong in front of the push-bar, and when the gong-hammer is struck after the long pause the right-hand pawl *c* is tripped and the right-hand wheel is permitted to turn and present the numeral 1 at the aperture. The rack-bar and upper end of the tripping-rod still being moved forward, and the wheel *e* revolving, the next blow of the hammer throws up the push-bar *d*, the end of which strikes the prong again and turns the wheel *e* back, and moving the upper end of the tripping-rod *f* back to a position beneath the right-hand pawl, which the rod trips in its upward movement. This will continue as long as the blows are struck at the intervals of two and a half seconds, so that if six blows are struck the numeral 6 will be exposed to view through the aperture, when, if two wheels are used the number 46 will be shown at the apertures, as shown in Fig. 1. If a long pause, of, say, four or five seconds, follows the sixth blow, the wheel *e* will be permitted to revolve, so that the prong which has been last acted upon by the push-bar will move past the end of the push-bar, and the upper end of the tripping-rod will be carried so far past the right-hand pawl *c* that the movement of the push-bar will not carry the rod back to the right-hand pawl *c*, and consequently the next and each succeeding round of the number 46 struck from the signal-box will not be indicated by the annunciator, that part of the

mechanism remaining inoperative after the first round is struck.

It will be seen from this explanation that, if an alarm is struck from signal-box No. 46, the first four blows struck give the number 4, and the next six blows give the number 6, which completes the first round, and the number 46, announcing the number of the box, and, consequently, the locality of the fire, remains exposed to view while the rest of the alarm is being struck.

As at present organized, there are but few men on duty at the different stations of a fire department, and when an alarm is struck they are all busily engaged in dispatching the fire apparatus; but, in all their haste, are required to count the strokes of the alarm. In striking some numbers, the pauses and strokes are so nearly equal that oftentimes much confusion ensues, and the engines go to the wrong locality, the men supposing they counted the number of strokes indicating the box correctly. This, of course, causes much delay, and at a time, too, at the first breaking out of the fire, when the services of the firemen are most valuable. My device obviates this confusion entirely, as after the first round is struck it is only necessary for the driver to look at the annunciator to determine the locality of the fire, without giving any attention whatever to counting the strokes.

It is evident that any desirable number of wheels D may be used, either one, or even more than two, according to the number of boxes in use, and that any arrangement of numerals may be used upon the wheels. It is also evident that the wheel *e* may have more or less prongs thereon than are shown in the drawing, so that the tripping-rod will have more or less space in which to move while operating either pawl, according to the number of the prongs on the wheel *e;* but the rapidity of movement of the tripping rod and wheel, and consequently the length of the pauses between the rounds or series of strokes, may be regulated by the length of the pendulum, by moving the ball or disk *b* up or down.

The push-rod and the tripping-rod may be operated by any other desirable mechanism without departing from the nature and scope of the invention. Instead of the rack-bar *i* and pinion *n'*, any other suitable connection may be made between the shaft *n* and the tripping-rod, so that the movement of the stop-wheel *e* backward and forward, by a rotary movement, would give a corresponding horizontal movement in either direction to the tripping-rod.

It is obvious that the clock mechanism, as well as the stop-wheel *e*, may be adjusted to move at any desired speed, to suit the strokes of the gong, whether they be struck faster or slower.

I am aware that a fire-alarm register has heretofore been made and used, as shown in patent granted October 20, 1874, to J. O. Alley, and I do not claim the same, nor any part thereof, irrespective of my construction and arrangement of the same.

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

1. The combination of the stop-wheel *e*, having prongs or projections thereon, with the push-rod *d* as a means of determining or changing the position of the tripping-rod, substantially as described.

2. The combination of the push-bar *d*, the stop-wheel *e*, the rack and pinion *i*, or equivalent connection, and the tripping-rod *f*, whereby the desired combination of numerals or characters is made upon two or more wheels, D, substantially as set forth.

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Witnesses:

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C. E. BUCKLAND.