(No Model.)

E. B. BIRGE.

FIRE ALARM BOX.

No. 303,109. Patented Aug. 5, 1884.

Fig. 1

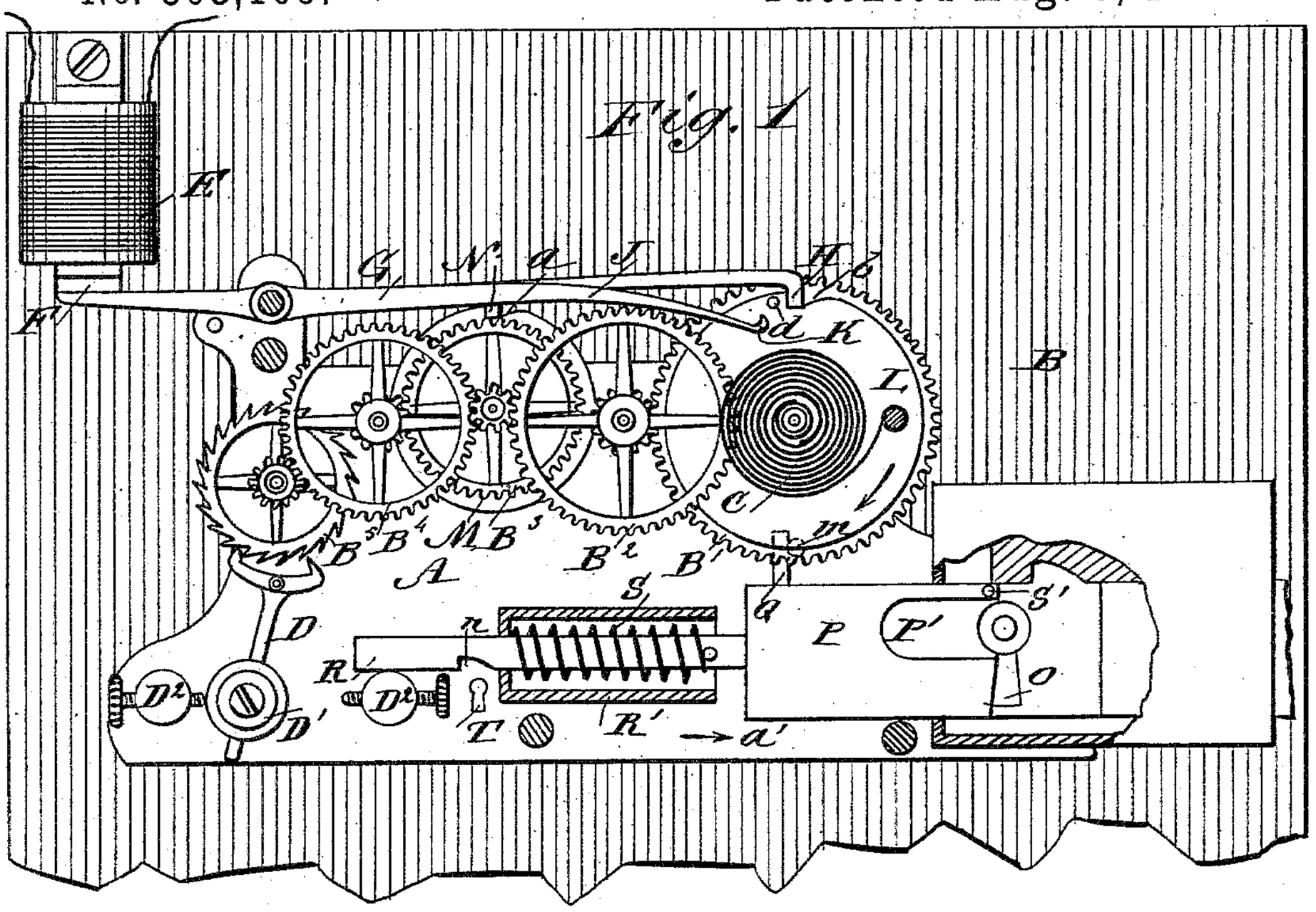


Fig. 2

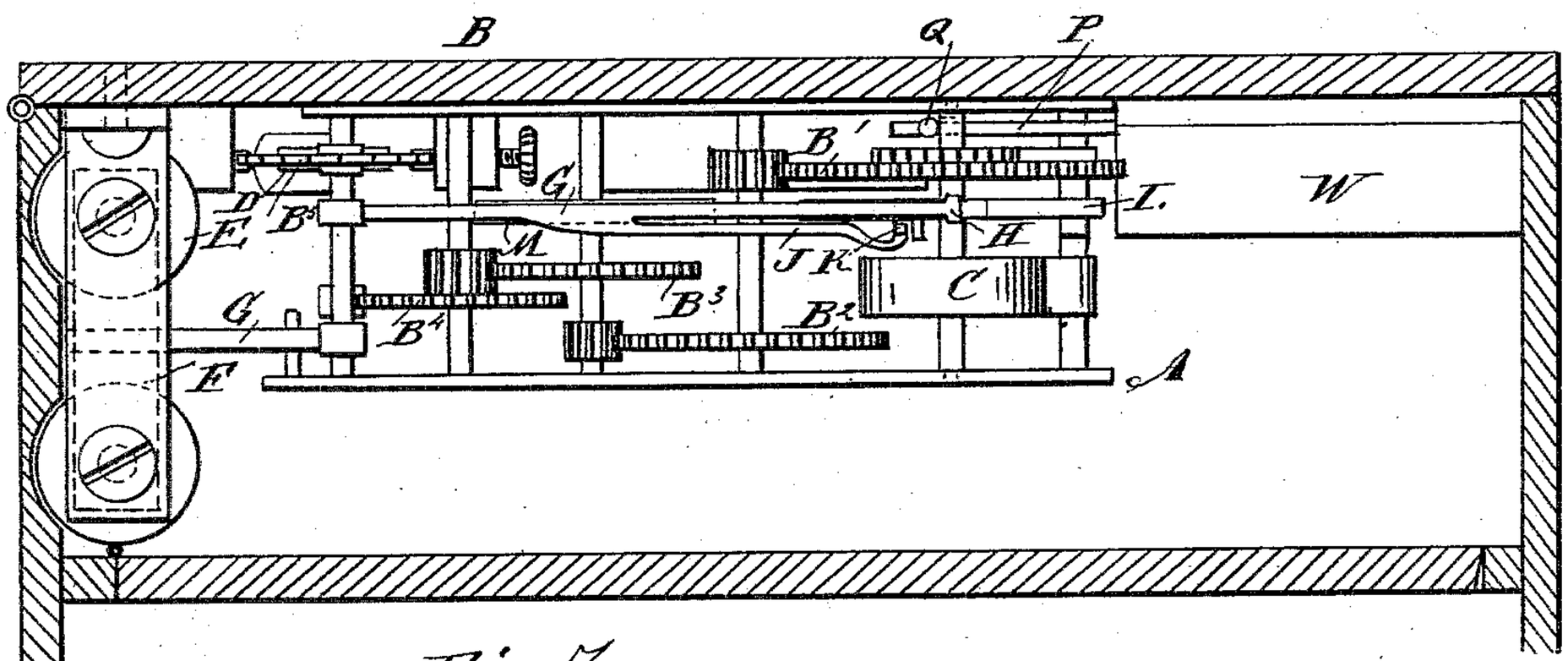
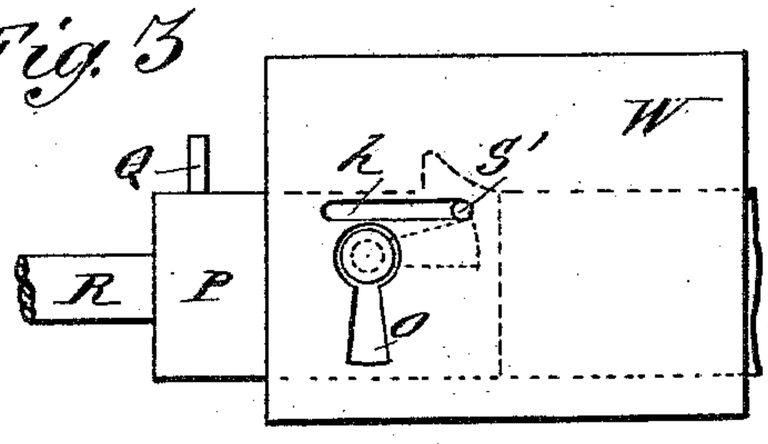


Fig. 3



WITNESSES:

C. Neveux

C. Sedgwick

INVENTOR:

E. B. Birge

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ELIAS BLISS BIRGE, OF ST. PAUL, MINNESOTA.

FIRE-ALARM BOX.

SPECIFICATION forming part of Letters Patent No. 303,109, dated August 5, 1884.

Application filed January 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, ELIAS B. BIRGE of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Fire-Alarm Boxes, of which the following is a full, clear, and exact description.

It frequently happens that fire-alarm calls are sent out from two or more boxes simultaneously, which calls interfere with each other and thus prevent either one being given distinctly at the head-quarters.

The object of my invention is to provide certain new and useful improvements in fire-alarm boxes, for the purpose of preventing alarms being sent from two different boxes at the same time, and thus avoiding interference of the calls.

The invention consists in the construction, arrangement, and combination of parts, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of the mechanism of a fire-alarm box provided with my improvements, said mechanism being secured to the inner surface of the door of the box. Fig. 2 is a sectional plan view of the same. Fig. 3 is a detail longitudinal view of the inner surface of the casing and showing the slide in position to close the key-hole.

The frame A is secured on the inner surface of the door B of the fire-alarm box, and in the said frame a train of gear-wheels, B′ B^2 B^3 B^4, and a ratchet-wheel, B^5, are journaled, which wheels are geared together by means of suitable pinions in the usual manner. A spring, C, acts on the wheel B′, which is the driver. A pallet or anchor, D, carrying a weight, D′, between two adjusting-screws, D^2, engages with the ratchet-wheel B^5. A pair of electro-magnets, E, connected with the line-wires are secured to the inner surface of the door B, and the armature F of the said magnets is secured to one end of a lever, G, pivoted in the top of the frame A, which lever has its opposite end bent downward to form a hook, H.

On the long end of the lever G, a spring prong, J, is formed, which is provided at its end with a hook, K, which projects toward a disk, L, mounted on the same shaft with the wheel B′, as is shown in Fig. 2. A disk, M, is mounted on the shaft of the wheel B^3, and the lever G is provided with a tooth, N, adapted to pass into a notch, *a*, formed in the edge of the disk M. The disk L is provided with a notch, *b*, into which the hook end H of the lever G is adapted to pass. A pin, *d*, projecting from the face of the disk L is adapted to engage with the hook K, formed on the end of the spring-arm J. The door or cover B is provided with a key-hole, O, for introducing the key to start the alarm mechanism in the usual manner, according to the alarm mechanism employed, and give the alarm. A plate P, provided at one end with a longitudinal recess or notch, P′, is held to slide longitudinally on the inner surface of the door, from the upper edge of which slide a pin, Q, projects upward which is adapted to engage with a stud, *m*, projecting from the face of the wheel B′.

To the slide P a stem, R, is secured, which passes through a casing, R′, in which a spring, S, is contained, which spring surrounds the stem R′ and rests against the cross-pin of the same, and thus presses the stem R, and the plate or slide P fastened to the same in the direction of the arrow *a*′. A pin, S′, projects from the slide P at the end of the upper shank formed by the recess or notch P′. The stem R is provided at its outer end with a notch, *n*, in its bottom edge. A key can be passed through a key-hole, T, the bit of which key is adapted to engage with the shoulder formed by the notch *n*. The pin S′ on the slide P passes through a longitudinal slot, *h*, in a casing, W, through which the bolt passes for releasing the mechanism whereby the said slide P will be guided.

The operation is as follows: Ordinarily the armature F is held to the magnets E′, but if a signal is given from any box the circuit is broken and the armature F is released and drops by its own weight, or a spring whereby the hooks or teeth H and N will be lifted out of the notches *b* and *a* in the disks L and M, respectively, thereby releasing the mechanism. The spring C uncoils and revolves the wheel B′ and the disk L on the shaft of the same in the direction of the arrow. The stud *m* acts on the stud Q, projecting upward from

the slide P in the inverse direction of the arrow *a'* until the stud *m* passes over the top of the stud Q, whereby the slides P will be released, and the spring S, surrounding the stem R, expands and presses the slide P in the direction of the arrow *a'* and over the key-hole O, thereby closing the same and preventing the introduction of a key, and at the same time forming a trap-lock and trapping the key of the box pulled until the box has sent in its alarm. If a signal or fire-alarm call is given from any one box, the key-holes of all the boxes in the circuit will be closed in the manner described, and thus the interference of signals is avoided. The edges of the disks L and M, acting on the teeth H and N, keep the long end of the lever G, raised and prevent the armature from being attracted by the magnet. When the disk L completes its revolution, the stud *m* acting, on the stud Q on the slide P, pushes the slide P in the inverse direction of the arrow *a'*, and thus opens the key-hole and adjusts the alarm-box, ready for a new call. It may happen that a key is introduced into a second box a second or two after a key has been introduced in the first box and before the slide P, in the second box mentioned, could have covered the key-hole, as the slide P does not cover the key-hole the instant that the circuit is broken; and in order to prevent the key introduced in the key-hole of the second box from acting on the bolt, I have provided the pin S', against which the bit of the key strikes, if the said key is revolved, thereby preventing the bit of the key from throwing the bolt. If, by some accident or other, the circuit should not be closed when the teeth or hooks N H arrive at the notches *a b* of the said disks M L, they would not be locked by the said hooks, and the spring C would uncoil completely. To prevent this, I have provided the arm J, having the hook K. When the armature F is dropped, the hook J, projecting toward the disk L, will be raised to such an extent that the stud *d* can engage with it and thus hold the disk L and lock the mechanism.

If the box is to be repaired or adjusted, and it is not desired to have the key-hole closed, a key is introduced through the key-hole T, the bit of which key engages with the shoulder formed by the notch *n* in the stem R, and thus holds the slide in place.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a fire-alarm, the combination, with a train of automatically-operating gearing, and a slide for closing the key-hole connected therewith and operated thereby, of a ratchet-wheel, B^5, operated by the gearing, the weighted anchor D, engaging with the ratchet-wheel, and set-screws on its opposite sides for adjusting the stroke of the anchor, substantially as set forth.

2. The combination, with a fire-alarm box, of a slide for closing the key-hole, a spring acting on the said slide, a pin projecting upward from the slide, and a pin on one of the wheels of the mechanism in the alarm-box, which latter pin is adapted to engage with the pin on the slide, substantially as herein shown and described.

3. The combination, with a fire-alarm box, of a slide for closing the key-hole, a spring acting on the said slide, a pin projecting from one of the wheels of the mechanism in the box, and the lever provided with hooks for locking the mechanism in the box, which lever carries the armature of an electro-magnet in the box, substantially as herein shown and described.

4. The combination, with a fire-alarm box, of the slide P, for closing the key-hole, a spring acting on the slide mechanism for releasing the slide, and of a stud on the outer end of the slide against which stud the bit of the key can strike, substantially as herein shown and described.

5. The combination, with a fire-alarm box, of a sliding plate for closing the key-hole, a stem on the said plate, which stem is provided with a notch, *n*, a spring, S, for holding the slide over the key-hole, and of devices for releasing the said slide automatically from the mechanism in the box, substantially as herein shown and described.

6. The combination, with a fire-alarm box, of a train of gear-wheels, a slide for closing the key-hole and adapted to be released by means of the said wheels, a pivoted lever carrying an armature at one end and provided at the opposite end with a hook, H, and with an arm, J, having a hook, K, at its end, and of the stud *d*, projecting from one of the wheels or disks, substantially as herein shown and described.

7. The combination, with the bolt of a fire-alarm box, of the spring-pressed slide P, for covering the key-hole, which slide is provided with a pin, S', and the casing W, provided with the slot *h*, within which the pin is guided in the path of the key, substantially as set forth.

ELIAS BLISS BIRGE.

Witnesses:
THOS. D. O'BRIEN,
THEO. E. PARKER.