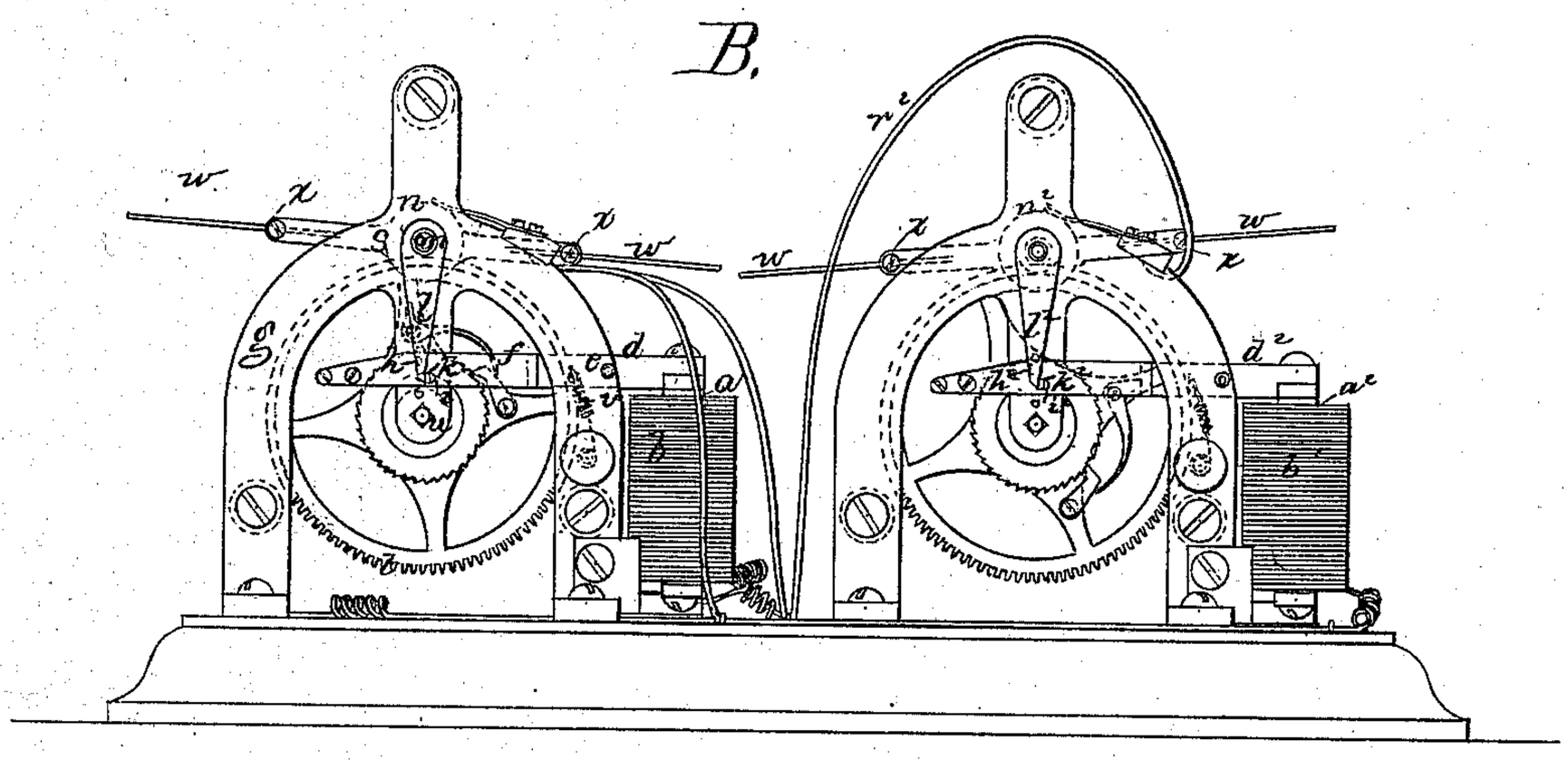
E. ROGERS.

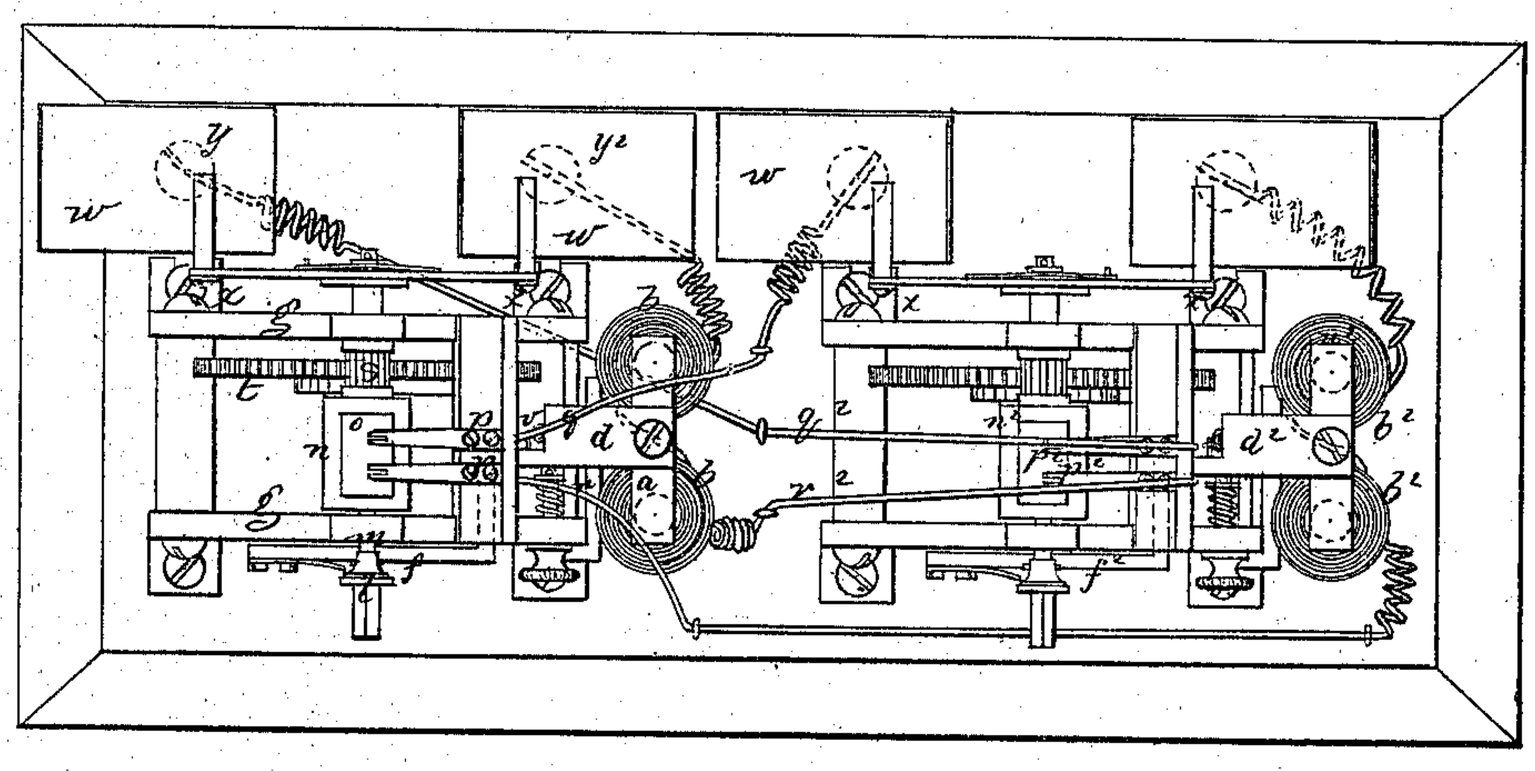
FIRE ALARM TELEGRAPH APPARATUS.

No. 104,357. Patented June 14, 1870.

B.



A.



Inventor:

Edwin Rogers

by his attys

Crosby, Halsted & Gould

Witnesses

S. B. Kidder.

M. W. Frothingham.

UNITED STATES PATENT OFFICE.

EDWIN ROGERS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN FIRE-ALARM-TELEGRAPH APPARATUS.

Specification forming part of Letters Patent No. **104,357**, dated June 14, 1870.

To all whom it may concern:

Be it known that I, EDWIN ROGERS, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Fire-Alarm-Telegraph Apparatus; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

The invention relates to the arrangement of fire-alarm-telegraph mechanism in that class of apparatus in which all the bells of the system are automatically struck from any signal-box, in contradistinction to giving an alarm from any box to a central office, from which office all the bells of the system are struck.

In my invention the several circuits are so connected that when either circuit is broken every other circuit is first broken and then closed by mechanical means, (and not merely by action of the electric fluid and magnets,) the circuit breaking and closing instrument of each circuit being operated by a weight, spring, or other positively-acting mechanism.

My invention consists, primarily, in combining with each circuit of the system a circuit breaking and closing mechanism operated by the stress of a weight, spring, or other mechanical device.

The drawing represents the wires of a system composed of two circuits connected by instruments in accordance with my improvement.

A shows the wires and instruments in plan. B is a side elevation of them.

a denotes the armature of an electric coil, *b*, of one instrument, and a^2 the armature of a similar coil, b^2, of the other instrument, the armature *a* being on the end of one arm of a lever, *d*, pivoted at *e*, whose other arm, *f*, extends back through and to the front side of a frame, *g*, as seen at B. From this arm *f* project two pins, *h i*, the pin *i* being below and on one side of the other, *h*, and the two being at such distance apart and so arranged as to allow a finger, *k*, on an arm, *l*, to slip first by one of them, and then, when the lever is moved, by the other. This arm *l* is fixed to one end of a rotary shaft, *m*, carrying a circuit breaking and closing wheel or drum, *n*, this wheel being an insulated wheel carrying on one portion of its periphery a metal plate, *o*, which, when brought under the ends of two springs, *p p*, connected respectively with two wires, *q r*, of one circuit, closes such circuit, which passes through the instrument 1, and connects with the coil b^2 of the other instrument, the coil *b* of the first instrument being connected by wires q^2 r^2 of the second circuit with the second instrument.

The shaft of the wheel *n* carries a pinion, *s*, meshing into and driven by a gear, *t*, on a shaft, *u*, carrying a drum, upon which is wound a cord having suspended to it a weight, the stress of which tends to rotate the shaft *u* and the shaft of the circuit-closing wheel geared thereto. The circuit is normally closed, the armature being drawn to its magnet, and the lever-arm *f* being raised, as seen at B. In this normal position of the mechanism the finger *k* of the arm *l* is thrown forward against the pin *i* of the armature-lever *f*. Now, if the circuit be broken, (releasing the armature from the attraction of the magnet,) the arm *f* of the lever will be drawn down by a spring, *v*, carrying the pin below the path of rotation of the finger *k*, thereby releasing the arm *l*, and allowing the circuit-wheel *n* to rotate by the stress of the weight. As the wheel rotates, the plate *o* passes from beneath the springs *p p*, and disconnects the wires *q r*, and breaks the current of which they form a part. The main-circuit wires of the instrument 1 are shown at *q r*, connecting through the screw-cups y^2 with the two poles of the battery.

The second instrument is precisely like the first, and like all the others of the alarm, (if composed of more than two circuits.) a^2 denotes the armature; b^2, the coil; d^2, the armature-lever; f^2, the long arm thereof; h^2 i^2, the two stop-pins; k^2, the finger arrested thereby; l^2, the finger-carrying arm on a shaft of a circuit-wheel, n^2, connecting and disconnecting springs p^2 p^2, connecting the main-circuit wires q^2 r^2 with the first instrument. The two circuits thus joined by the instruments (and the other circuits similarly joined, if there be more than two) are normally closed, each finger *k* or k^2 being arrested by the pin *i* or i^2 in advance of it. Now, if the circuit of the first instrument be broken, the armature *a* being released

from attraction of the magnet, the arm *f* of the lever *d* will be drawn down by its spring *v*, letting the finger *k* slip past the stop-pin *i*, (by the stress of the weight,) allowing the circuit-wheel *n* to turn, and causing the plate *o* to pass from under the springs *p p*, thereby disconnecting such springs and the circuit-wires q^2 r^2, leading therefrom. As these wires lead to the other instrument, 2, through the coil b^2 thereof, (forming part of the circuit,) their disconnection at the circuit-wheel breaks the circuit of the second instrument, causing the release of the armature a^2, and the release of the circuit-wheel arm from its stop-pin i^2 of the armature-lever, so that the circuit-wheel n^2 turns, (by the stress of the weight) and moves its plate from under the springs p^2 p^2, thus breaking the circuit of the second instrument, and so on through any number of circuits and instruments which may be embraced in the system. The first circuit having thus been broken, its circuit-wheel rotates until the arm *l* comes round to the pins again, and is stopped by its finger *k* striking the first pin *i*, (if the circuit remained broken,) and as it approaches the pins its plate *o* agains moves under and connects the springs *p p*, thereby closing the circuit of the next instrument, and the weight belonging to each instrument similarly operates its circuit-wheel, again connecting the springs thereof, thus restoring each circuit to its normal or closed condition, each finger *k* slipping past the pin *h* when the armature is drawn to the magnet, and bringing up against the next pin *i*, as before described. Thus, though one circuit may remain broken, every other circuit will be closed, or the continuity of all the rest of system will be established.

On the shaft of each circuit-wheel is a fly composed of two blades, *w w*, rotation of which insures a uniform rotary movement of the circuit-wheel, and to modify such movement I apply each blade *w* to its arm by a pin, *x*, which permits the inclination of the blade to be varied and adjusted so as to present greater or less resisting-surface, the blade retaining its position by friction.

I claim—

In combination with several circuits converging at one point, circuit breaking and closing wheels, or equivalent devices, one for each circuit, operated by weights, springs, or equivalent mechanism to break each circuit from the one first broken, and to mechanically close each circuit, though the one first broken may remain open.

Executed December 22, 1869.

EDWIN ROGERS.

Witnesses:

FRANCIS GOULD,

MOSES G. CRANE.