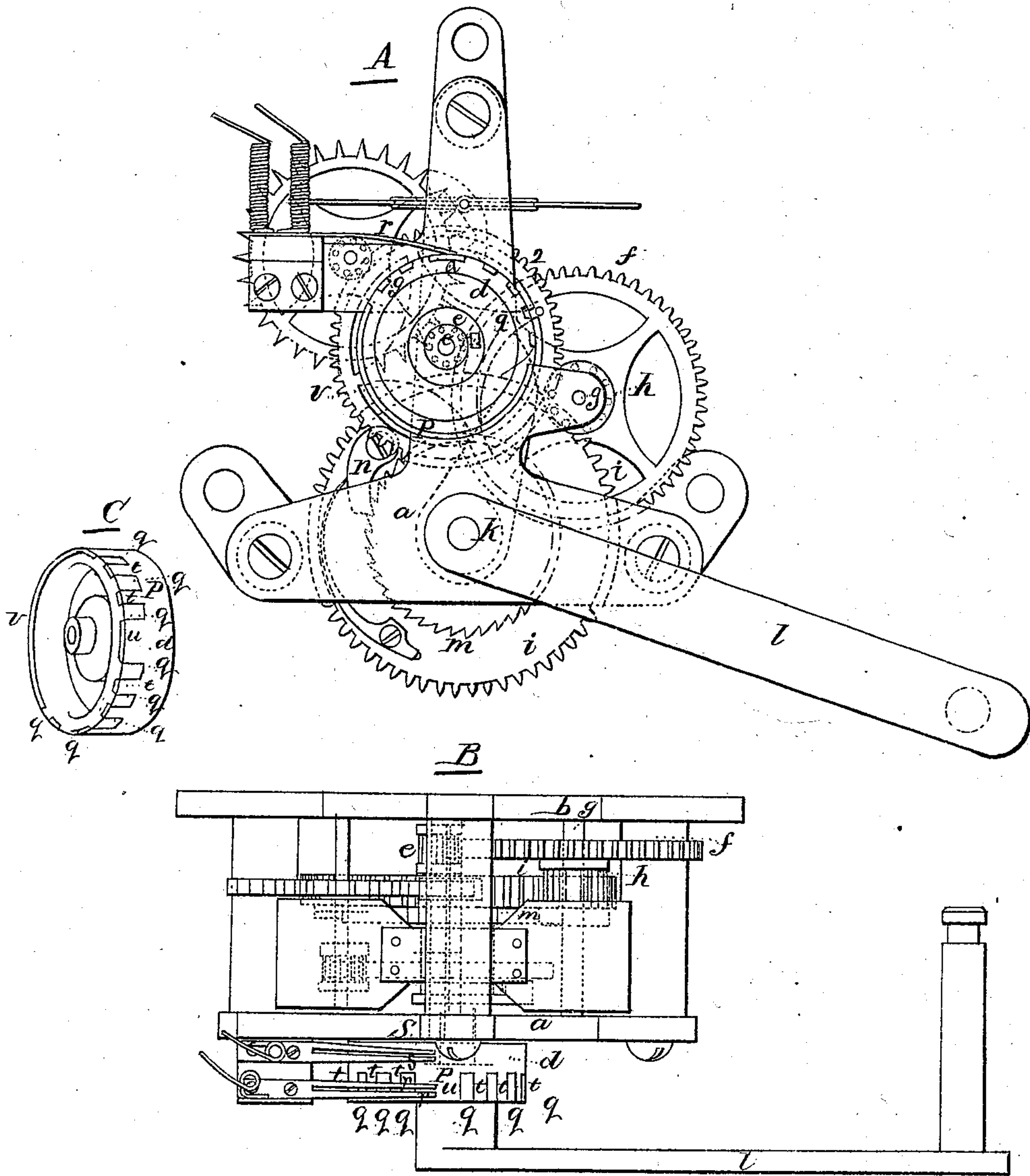


M. G. CRANE.

SIGNAL BOX MECHANISM FOR FIRE ALARM TELEGRAPH.

No. 98,352.

Patented Dec. 28, 1869.



Witnesses:
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Letters Patent No. 98,352, dated December 28, 1869.

IMPROVEMENT IN SIGNAL-BOX MECHANISM FOR FIRE-ALARM TELEGRAPHS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, MOSES G. CRANE, of Newton, in the county of Middlesex, and State of Massachusetts, have invented an Improvement in Signal-Box Mechanism for Fire-Alarm Telegraphs; and I do hereby declare that the following, taken in connection with the drawings, which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practise it.

In constructing signal-boxes for fire-alarm telegraphs, it has been customary, up to the time of my invention, to use a hand-turned or an uninsulated circuit-wheel, rotation of which would operate a key or a lever, to break and close the circuit, thereby effecting communication with the central station, or giving the alarm.

The object of my invention has been to make a self-operating signal-box, the mechanism of which being set by any unskilled person, would automatically operate an insulated circuit-wheel; and

My invention consists in combining, with a train of gears, to be operated by a spring or weight, an insulated circuit or signal-wheel, having insulated spaces, which act, in connection with spring-fingers, connecting with the main circuit-wires, to automatically and alternately break and close the circuit, as the wheel is rotated by stress of the spring or weight.

The drawings represent a gear-train for a signal-box, embodying my invention.

A shows a front elevation of the mechanism.

B, a top view thereof.

C, a view of the circuit-wheel, detached from the train.

a b denote two pillar-plates, in which are journaled the shafts of the several wheels composing the train, one shaft, *c*, of which bears the insulated circuit-wheel *d*, this shaft carrying a pinion, *e*, meshing into and driven by the teeth of a gear, *f*, on a shaft, *g*, which shaft carries a pinion, *h*, driven by a gear, *i*, on the driving-shaft *k*, said shaft *k* having an arm, *l*, upon which the weight is hung to drive the shaft *k*, and, through the intermediate gears, the shaft *e* and its circuit-wheel, the driving-shaft being, however, actuated by a spring, if desirable.

The gear *i* is loose upon its shaft, the arm *l* moving upward without imparting motion to the gear, but imparting motion to the gear when moving downward, by means of a ratchet-wheel, *m*, fixed to the shaft,

and a spring-pawl, *n*, fixed to the gear, the ratchet slipping against the gear in one direction, and driving the gear in the opposite direction.

The circuit-wheel is, preferably, formed of hard rubber, surfaced by a metal ring, *p*, in which ring are series of breaks, *q*, by means of which one of the sets of circuit-fingers, *r*, which bear upon the wheel, is thrown out of connection with the fingers, *s* of the other set, the rubber or insulating-material extending up to the surface of the wheel, and the fingers resting directly against the same, or a recess being made at the break, so that the ends of the fingers are not in contact with the wheel when opposite a break, or sections of insulated metal being left running across the wheel, for both sets of fingers to rest upon at a break.

The number of breaks corresponds to the number of the station; that is to say, if the station be 53, there are five breaks *q*, to correspond with the first number, (each two adjacent breaks being separated by a narrow tongue of metal, *t*, or otherwise,) and then three breaks, similarly separated from each other, and separated from the five by a longer space of metal, *u*, the long blank space *v*, between the extreme breaks, causing the long interruption between the successive transmissions of the signals. Each time the wheel, in rotating, brings one of the breaks against the ends of the circuit-fingers, the circuit made by the two fingers or sets of fingers *r s*, and the main circuit-wires, is broken, and the signal-bell at the main office is struck, the circuit being again closed when the fingers connect, by resting upon the same metal, and the wheel is automatically rotated, and continues automatically to thus cause transmission of the signals until the weight runs down, or the stress of the spring is spent, the train, in normal position, being free from the stress of the weight or spring, the mechanism being set for action, by the person sending the signal, when a fire occurs.

I claim, in combination with a signal-box mechanism of a fire-alarm telegraph, an insulated circuit-wheel, (for breaking and closing the circuit,) automatically and continuously rotated by the stress of a spring or weight, exerted through a suitable train of gearing, substantially as described.

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