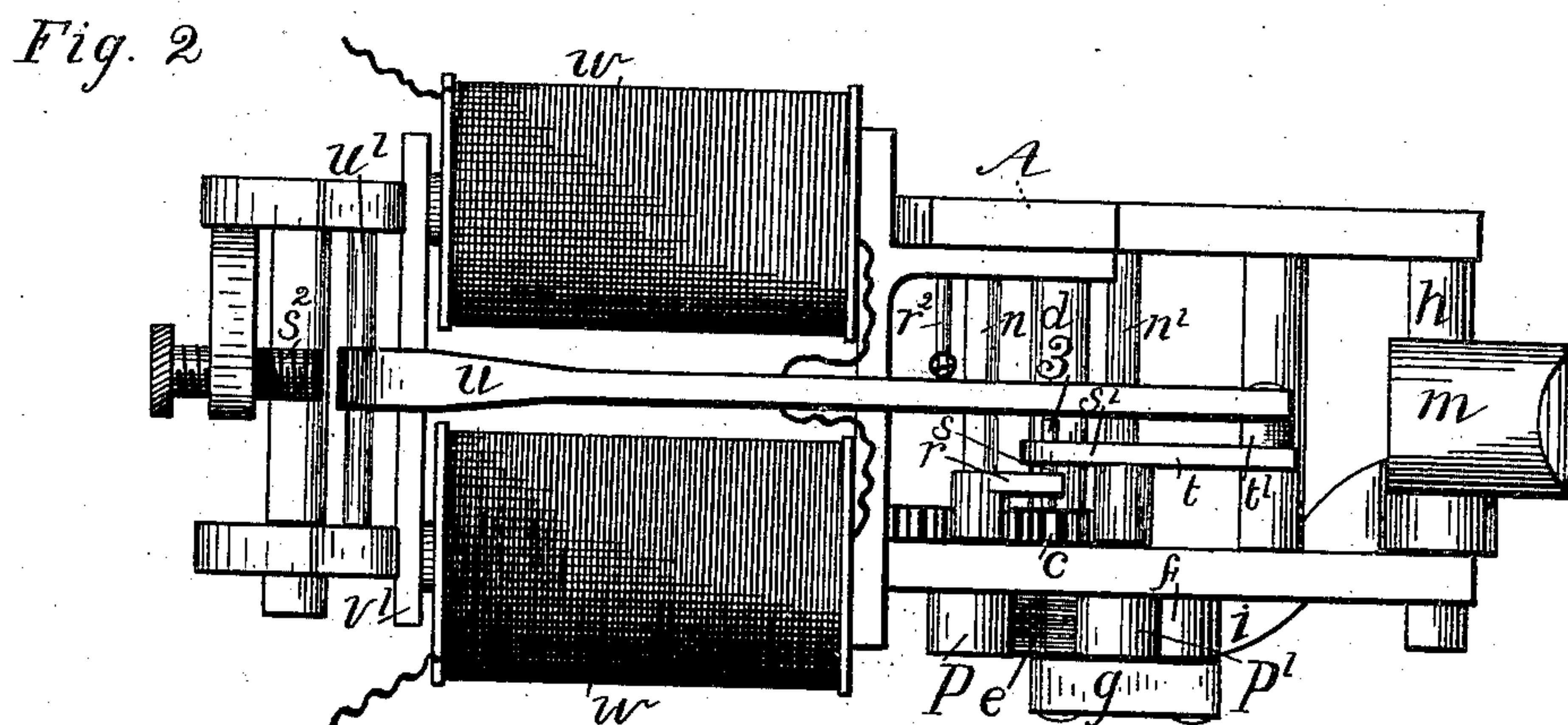
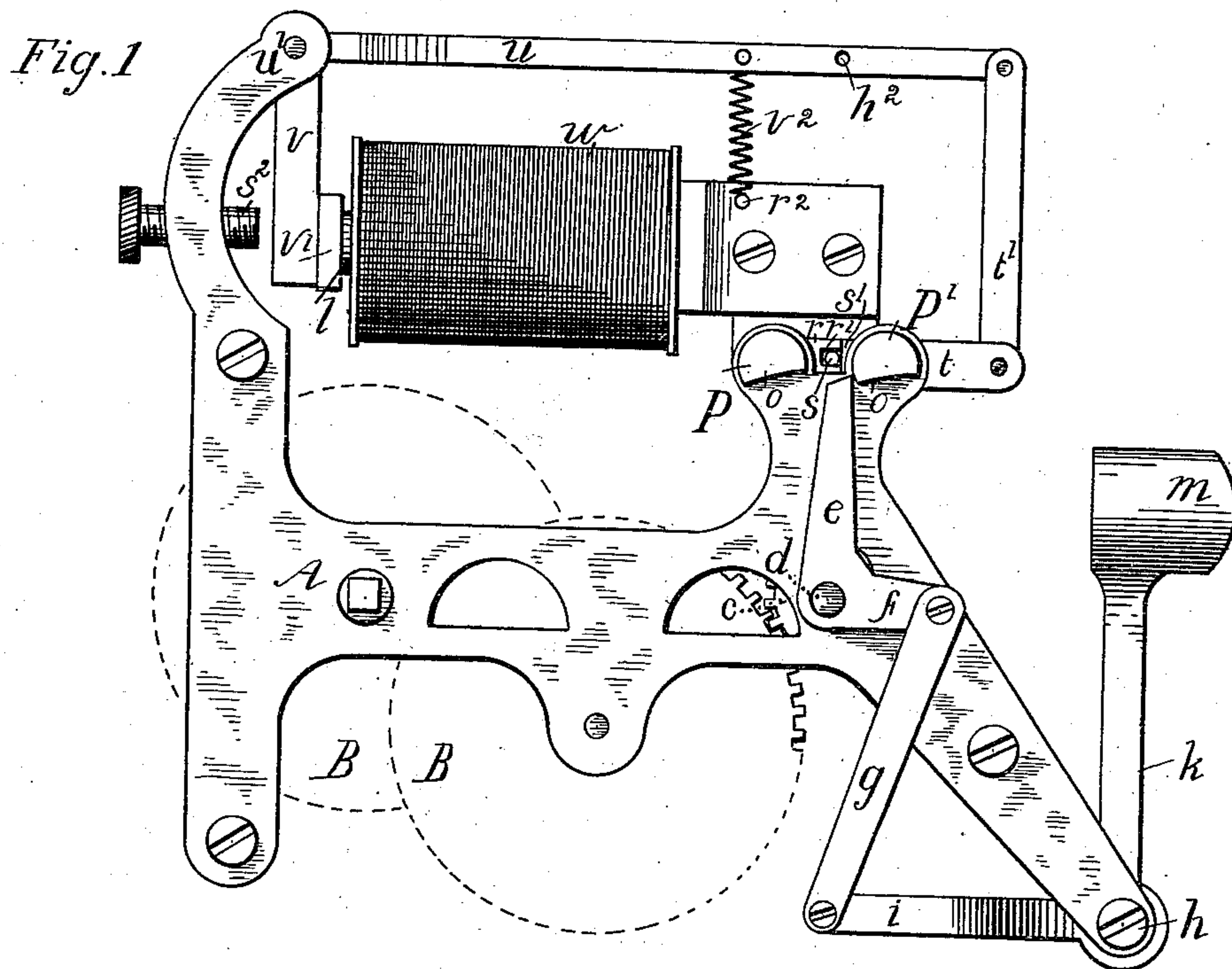


(No Model.)

C. H. HILTON.
ELECTRIC ALARM APPARATUS.

No. 334,380.

Patented Jan. 12, 1886.



WITNESSES:

George L. Barnes.
D. McCorthell

INVENTOR
Charles H. Hilton
BY
Julius Triss
ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES H. HILTON, OF NEW HAVEN, CONN., ASSIGNOR OF TWO-THIRDS
TO ELLIS B. BAKER AND ROGER D. BLISH, BOTH OF SAME PLACE.

ELECTRIC ALARM APPARATUS.

SPECIFICATION forming part of Letters Patent No. 334,380, dated January 12, 1886.

Application filed May 9, 1885. Serial No. 164,874. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HILTON, a citizen of the United States, residing in the town and county of New Haven, and State of Connecticut, have invented new and useful Improvements in Electrical Alarm Apparatus, of which the following is a specification.

My invention relates to improvements in electric alarm apparatus for signaling purposes, particularly fire-alarms. In electric alarms the bell-striking mechanism is driven by a spring and gear-train, and the strokes of the bell are controlled by suitable detent mechanism operated by the action of the armature of an electro-magnet.

My invention consists in the novel and sensitive detent mechanism hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 represents a side view of my improved electric alarm, and Fig. 2 is a plan view of the same.

A in the drawings designates a frame, in which is arranged an ordinary train of gears, B B, driven by a suitable clock-spring or equivalent device. (Not shown.) The last pinion, C, in the train of gearing is mounted upon an arbor, *d*, which projects through the frame and carries upon its end the arm *e* and crank *f*, both formed in a single piece and at right angles to each other. A connecting-rod, *g*, is attached to the crank *f*, and connects with an arm, *i*, which is fixed on an arbor, *h*, pivoted in the frame. An arm, *k*, carrying a bell-hammer, *m*, is secured on the arbor *h*, and the rotation of the gearing B B turns the crank *f* and vibrates the bell-hammer, which is arranged to strike a suitable alarm-bell. (Not shown.)

Journaled through the frame, and equidistant from the pinion-arbor *d*, are two arbors, *n n'*, having projecting heads P P' on the ends adjacent to the arm *e*. Each head P P' is cut away, so as to leave a surface, *o*, concentric with the pinion-arbor *d*, and the arm *e* is made just long enough to swing under these surfaces when they are turned concentric with the arbor *d*. If either of the pins is turned so that the surfaces *o* are not concentric with the arbor *d*, the arm *e* cannot pass them, and it will be thereby prevented from rotating, as shown in Fig. 1.

Secured on the arbor *n* is an arm, *r*, in which is a slot, *r'*. The slot receives a pin, *s*, which is fixed in an arm, *s'*, secured on the arbor *n'*, and thus connected the detent-heads are adapted to turn simultaneously in opposite directions precisely as if geared together. The arms *r s'* are secured by set-screws, and are so adjusted on the arbors that when one detent is set for the arm *e* to pass by it the opposite detent will arrest the arm, as shown.

Secured on the arbor *n'*, opposite the arm *s'*, and formed in one piece with it, is an arm, *t*, which is connected by a rod, *t'*, to a long arm, *u*, secured on an arbor, *u'*, at the top of the frame. On the arbor *u'* is another and shorter arm, *v*, which has a soft-iron armature, *v'*, fastened upon its end. An electro-magnet, *w*, is fastened to the frame in suitable proximity to the armature *v'*. A spring, *v²*, is hooked on the arm *u* and secured to a pin, *r²*, in the frame, and the spring forces the armature away from the magnet when the latter is not magnetized. A suitable set-screw, *s²*, limits the movement of the armature away from the magnet.

Constructed as above described and shown, the operation of my improved alarm is as follows: When the magnet *w* is connected with an electric circuit, and is in consequence magnetized, the armature *v'* will be attracted by the magnet, and will rest against its poles *l*, as shown, which is the normal position of the armature. With the magnet in this position the detents are so arranged that the arm *e* will pass by the detent P and rest against the detent P'. If the electric circuit is then broken, the magnet will cease to attract the armature *v'*, and the spring *v²* will then depress the arm *u* until the arm *v* rests against the set-screw *s²*. This movement of the arm *u* turns the detent P' just sufficiently to release the arm *e*. When the arm *e* is thus released, the arbor *d*, actuated by means of the spring and gearing, will turn, thereby operating the crank *f* and connecting rods or arms, by means of which a bell stroke is given. As the detent P' releases the arm *e* the detent P is at the same time turned, so as to arrest the arm *e* in its revolution, and thus the arm can make but one revolution without stopping. When the electric circuit is again restored, the de-

tent P will be moved into proper position for the arm *e* to pass by it, and the detent P' will be simultaneously moved or turned into position for arresting the arm and retaining it until
5 the circuit is again broken.

This device may be used as well with an "open" or "grounded" circuit, as with a "metallic" or "closed" circuit. When an open circuit is used, the armature *v'*, when in
10 its normal position, will be away from the poles of the magnet *w*, and the movement of the detent-pins P P' will require to be correspondingly reversed. To accomplish this, it is only necessary to hook the connecting-rod *t*
15 on the other side of the arbor *n'*. The pin *s* in the arm *s'* projects through the arm on its opposite side, as shown at 3, and when the connecting-rod *t'* is attached to that pin, and transferred at its upper end to the hole *h*² in
20 the arm *u*, the device will then be adapted for use with an open circuit.

It is evident that gears may be substituted for the arms *r* and *s'*, and pin *s* on the arbors
25 *n* and *n'*.

I claim as new and desire to secure by Letters Patent—

1. In an electrical alarm apparatus, two oscillating detent-heads supported, respectively, on arbors journaled in the frame, connected
30 by engaging rock-arms, and so adjusted that one detent is turned out of the path of the

escapement-arm of the bell-striking mechanism as the other detent is turned into the same, thereby releasing and intercepting the movement of the arm, substantially in the
35 manner and for the purpose set forth.

2. In an electrical alarm apparatus, the detent P, supported by the arbor *n*, having a slotted rock-arm, *r*, and the detent P', supported by the arbor *n'*, having rock-arms *t* and *s'*, the
40 latter being provided with pin *s*, which engages the slotted arm *r*, in combination with the escapement-arm of a bell-striking mechanism, an electro-magnet, and suitable connections for operating the rock-arms, so as to
45 vibrate the detent-heads and release the arm, substantially as described.

3. In combination, an electro-magnet with its armature, the pivoted arm *v*, supporting the armature, the spring-actuated arm *u*, the
50 connecting-rod *t'*, the arbor *n'*, having a detent-head, P', and the rock-arms *t* and *s'*, the latter being provided with pin *s*, and the arbor *n*, having the detent-head P, and the slotted rock-arm *r*, all arranged and combined substan-
55 tially in the manner and for the purpose set forth.

CHAS. H. HILTON.

Witnesses:

W. A. BEERS,
DAVID K. ANDREWS.