

(No Model.)

3 Sheets—Sheet 1.

G. SMITH.

ALARM SIGNAL FOR RAILROAD CROSSINGS.

No. 335,643.

Patented Feb. 9, 1886.

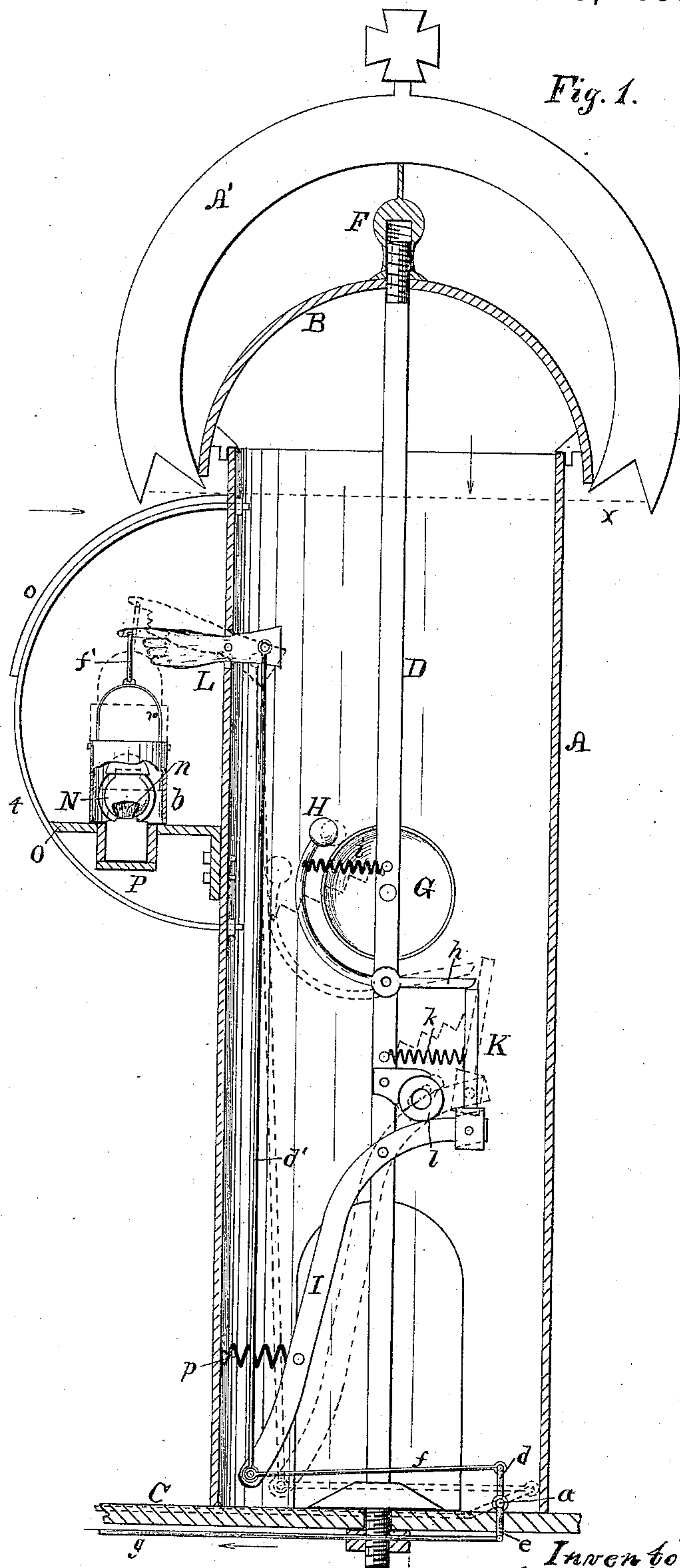


Fig. 1.

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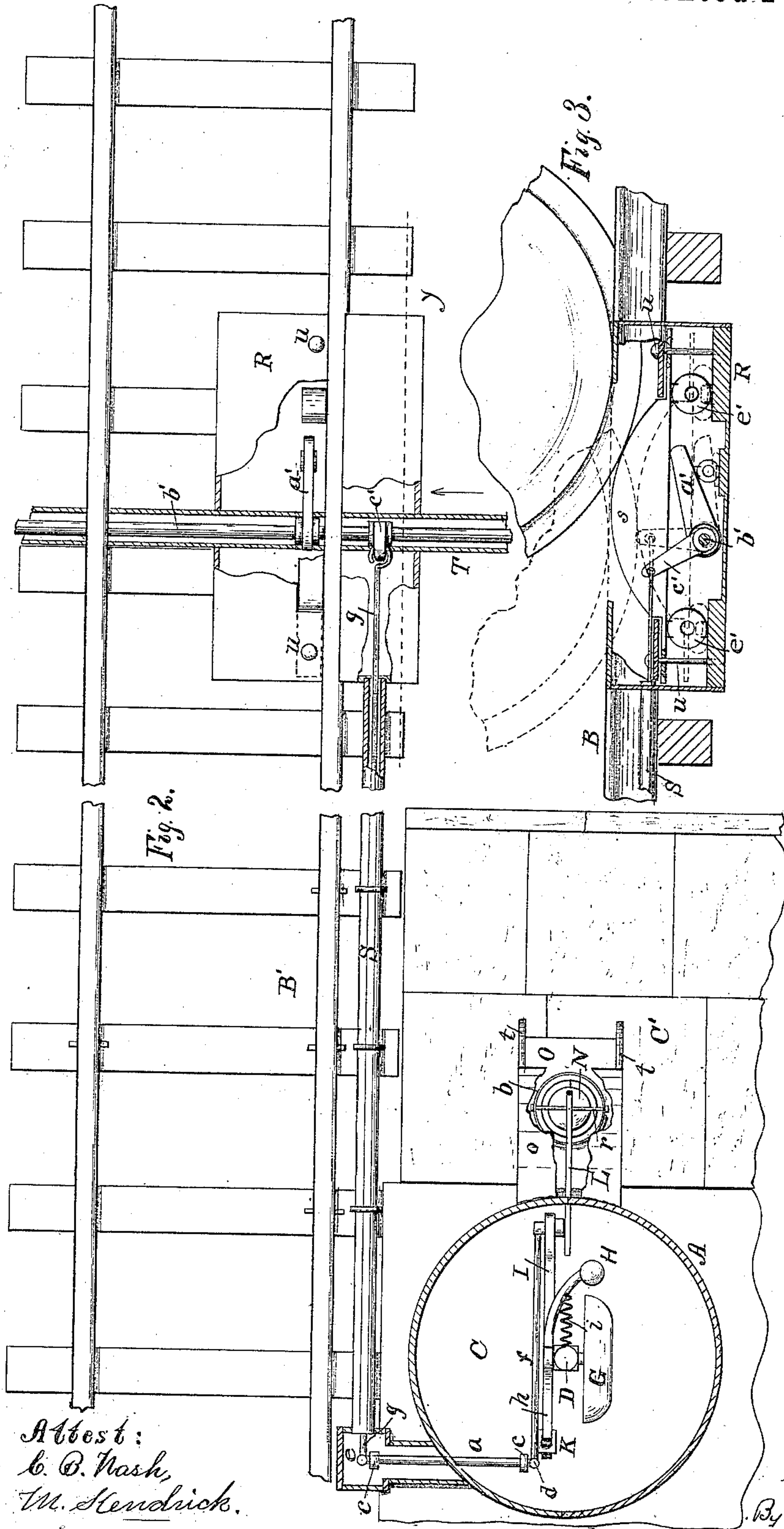
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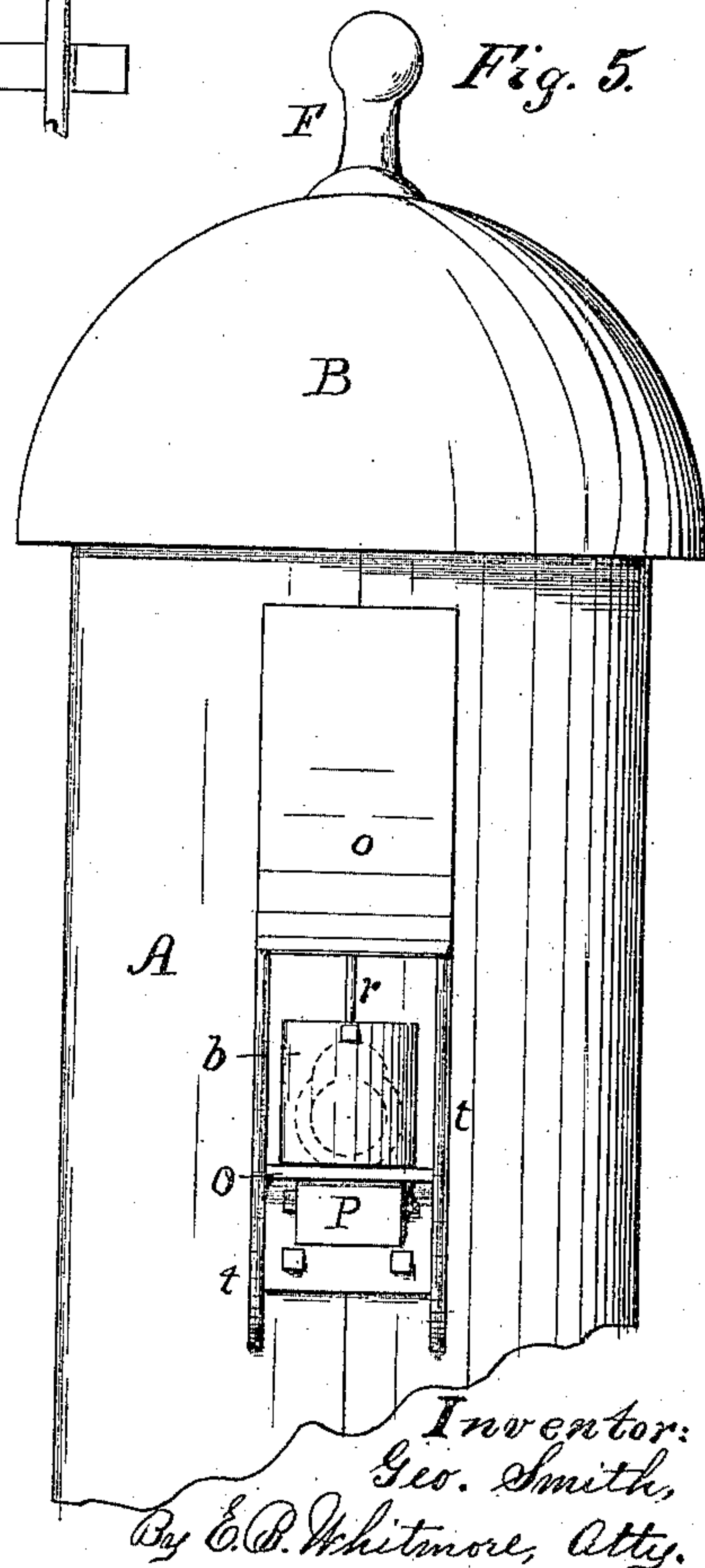
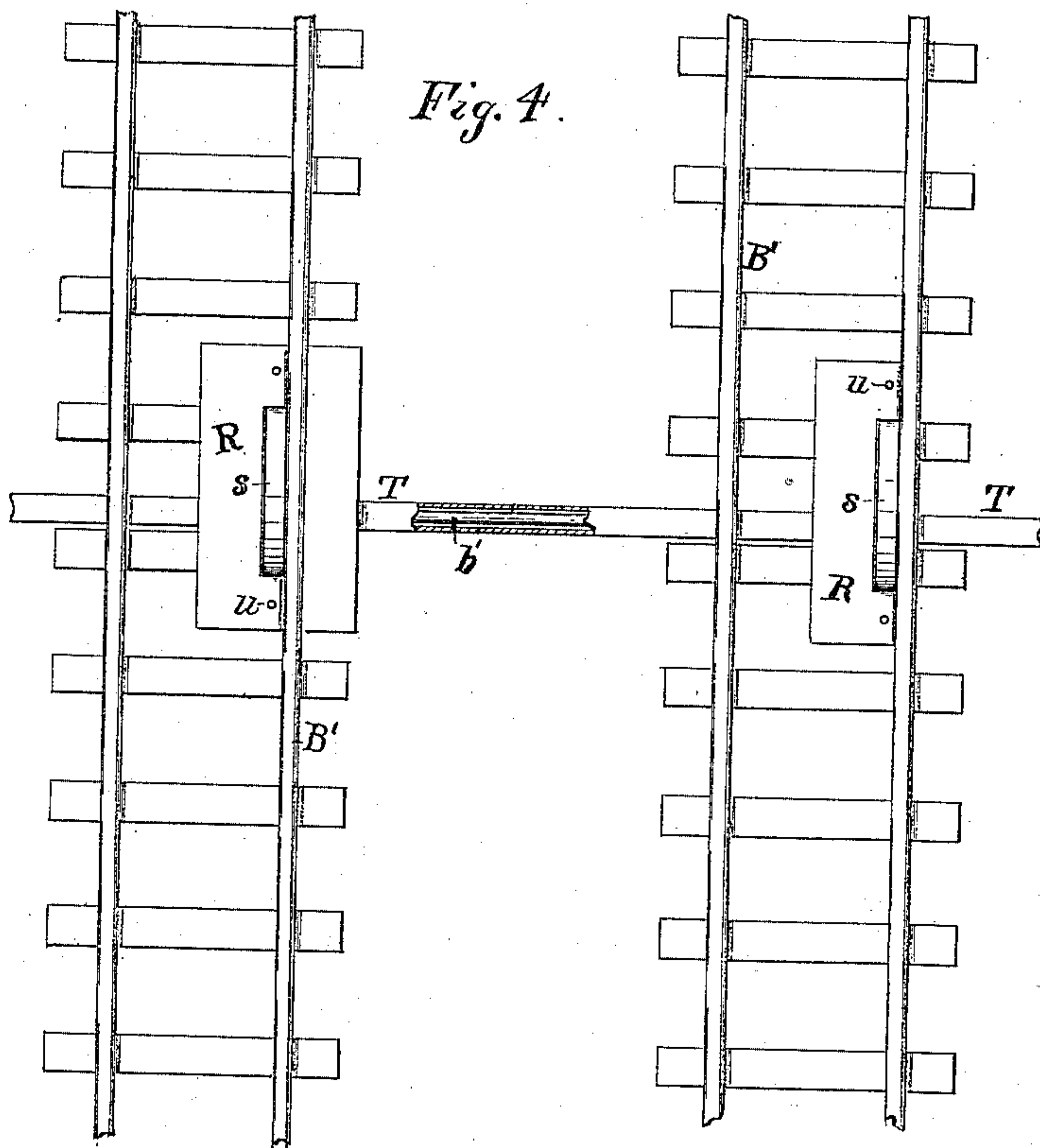
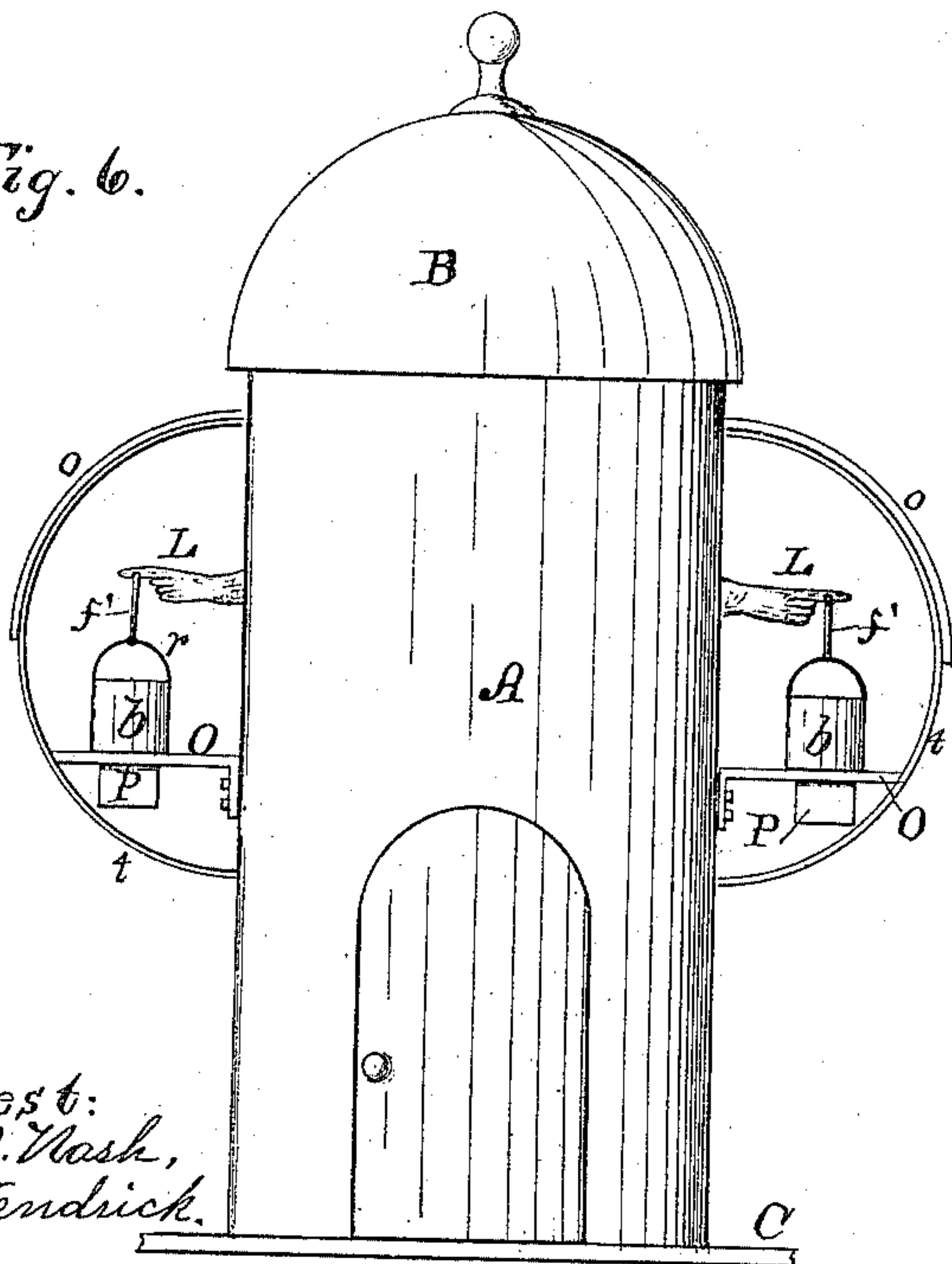


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE SMITH, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO
WILLIAM H. O'KANE, OF SAME PLACE.

ALARM-SIGNAL FOR RAILROAD-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 335,643, dated February 9, 1886.

Application filed September 25, 1885. Serial No. 178,129. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SMITH, of Rochester, in the county of Monroe and State of New York, have invented a new and useful
5 Improvement in Alarm-Signals for Railroad-Crossings, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

The object of my invention is to produce an
10 alarm-signal for railroads to be placed at road-crossings and to be operated by the wheels of an approaching train.

This signal consists in both ringing a gong and alternately displaying and covering from
15 view a light, so that by both sight and sound a person may be apprised of the approach of the train. The part acted upon by the wheels of the train to sound the alarm is placed near a rail of the track at any desired distance from
20 the crossing to be guarded, and connected with the alarm mechanism at the crossing by wire or small cable.

This alarm I design to make double, the parts being duplicated in the tower or inclosure, and the parts of the device acted upon by
25 the wheels placed about equally either way from the crossing, so the alarm shall be sounded by a train approaching from either direction. Where there are several parallel tracks, I design also to have the part acted upon by the
30 wheels multiplied correspondingly in number, associating one with each track, so that the approach of a train upon any track will be announced at the crossing by the alarm, the
35 said parts passed over by the wheels being connected with each other, and all operating through the same connecting-wire to give the alarm at the tower.

This invention is fully set forth hereinbelow,
40 and more particularly pointed out in the claims.

Referring to the drawings, Figure 1, Sheet 1, is a central vertical section of the shell of the alarm-tower and some other parts, showing the gong, signal-lamp, levers, connections, &c., parts being shown in two positions
45 by full and dotted lines; Fig. 2, Sheet 2, a plan of the track and tower, the latter being transversely sectioned, as upon the dotted line *x* in
50 Fig. 1, the tube for the connecting-wire, box

for inclosing the rock-shaft, and some other parts being also horizontally sectioned, and parts being broken away to uncover parts beneath; Fig. 3, a side sectional elevation of the box or inclosure containing the rocker-arms
55 and other parts, showing the rail and a wheel in contact with the movable crown-piece, showing also in dotted position the wheel slightly advanced and pressing beneath it the crown-piece, also showing the rocker-arms and
60 some other parts in two positions by full and dotted lines, the box being vertically sectioned, as upon the dotted line *y* in Fig. 2, and viewed as indicated by the arrow; Fig. 4, Sheet 3, a plan of a portion of two adjacent
65 parallel tracks, showing a crown-piece as applied to each with the connecting rock-shaft, a part of the box or covering for the latter being broken away to uncover said rock-shaft; Fig. 5, a side elevation of the upper part of
70 the tower, viewed as indicated by arrow in Fig. 1, drawn to show more fully the shelf holding the lamp and the covering therefor, and Fig. 6 a rear side elevation of the tower, viewed in a direction opposite to that in which
75 Fig. 1 is seen, drawn to show the entrance-door of the tower, and the latter provided with alarm-lights at two opposite sides thereof, one of which is manipulated by a train approaching from either direction, Figs. 4 and 6 being
80 drawn to a reduced scale.

Referring to the parts, A is the shell of the tower, which is preferably made of sheet or plate iron, and cylindrical in form, being covered by a projecting dome or roof, B, also of
85 sheet-iron. The tower stands upon a plank or iron platform or floor, C, and the dome, cylindrical part, and said floor are held together by means of a strong vertical central bolt, D, which is screw-threaded at both ends,
90 the upper end entering a threaded socket in the knob F at the apex of the dome, and the lower end passing through the floor, with a tightening-nut beneath. Most of the interior parts are secured to the vertical bolt which
95 forms a support therefor.

G is a gong, and H a hammer therefor, which is operated by means of a bent lever, I, and finger K.

L is a lever, which may be in the form of a
100

human hand, turning on a horizontal pin fixed in the shell of the tower, to the outer end of which lever is connected a jacket or screen, *b*, for the lamp *N*. At its inner end this lever *I* is connected with the lower end of the lever *L* by a rod, *d'*, so that a motion of said lever upon its fulcrum will move the lever *L* and cause the latter to raise the jacket *b* above the light, or lower it, so as to obscure the light, as the case may be.

a is a horizontal rock-shaft resting in bearings *c*, secured to the floor *C* within the tower, said shaft being provided at one end with an upward-projecting arm, *d*, and at the other end with a similar downward-projecting arm, *e*. The arm *d* is joined to the lower end of the lever *I* by a connecting-rod, *f*, while the arm *e* is connected to the wire *g* leading to the apparatus, placed upon the track some distance away, to be acted upon by the wheels of an approaching train, described farther on.

The rod of the hammer *H* is bent and pivoted to the bolt *D*, and provided with a horizontally-projecting part, *h*, in position to be acted upon by the finger *K*. The finger *K* at its lower end is enlarged and formed with an eye, in which to receive the upper end of the lever *I*, to which it is pivoted, and is so fitted to said lever that it is not permitted to incline to the left of a perpendicular, as appearing in Fig. 1, but may incline slightly to the right, as shown in dotted lines.

From the construction of parts shown it will be seen that if the wire *g* be pulled in the direction indicated by the arrow the rock-shaft *a* will be turned in its bearings, causing the lever *I* to assume the position shown in dotted lines. This causes the finger *K* to press upward against the part *h* of the hammer, carrying the latter to the position also shown in dotted lines. The outer end of the part *h* is beveled where it is touched by the finger *K*, so that when the latter has forced the hammer sufficiently far away from the gong said finger will slide off the end of the part *h*, allowing the spring *i* to bring the hammer suddenly back against the gong to sound the same. When the pull upon the wire *g* ceases and the lever *I* assumes its normal position, (shown in full lines,) the spring *k*, attached to the finger *K*, will draw the latter back to its normal vertical position, (shown in full lines,) with its upper end just under the part *h*, ready to repeat its action thereon.

The lever *I* is assisted to assume its normal position, when drawn therefrom, by the action of a buffer or rubber cushion, *l*, secured to the bolt *D*. A spring, *p*, may be attached to said lever, also, if desired, with its opposite end secured to the side of the tower, to further assist in bringing the lever *I* back to its normal position, in which the light is covered and the hammer raised off the bell.

When the lever *I* is drawn to the position shown in dotted lines, it tilts the lever *L* to the position also shown in dotted lines, which raises the jacket *b* sufficiently high to expose

to view the flame *n* of the lamp. The lamp rests upon a support or shelf, *O*, projecting out from the side of the tower, which shelf may be formed with a cavity or depression, *P*, in which to receive the lower part of the lamp, for the double purpose of holding said lamp to its exact place upon the shelf and to bring the flame of the lamp near the surface of the shelf upon which the jacket rests when down, so that the latter will need to move but a short distance up or down to alternately expose to view and cover said flame. The shelf, as shown, is stayed by rods *t*, curved, and having their ends secured to the tower, and the lantern may be protected by a roof or awning, *o*, secured to the rods *t*.

The jacket *b* is a simple cylindrical shell of sufficient diameter and length to cover the lamp, provided with a bail, *r*, which is connected to the lever *L* by a rod or wire, *f'*. When in its normal or lower position, said jacket stands vertical, with its lower end resting upon the surface of the shelf.

The part of the device attached to the track and operated by the wheels of the train is shown in Figs. 2, 3, and 4. A crowning-piece, *s*, is held longitudinally near the inner surface of one of the rails, in position to be encountered by the flanges of the wheels, which latter, when they pass over said crowning-piece, press it vertically downward, the latter being immediately raised again by springs beneath it, the vertical bolts *u* forming guides for its upward and downward movement. A rock-shaft, *b'*, held transversely beneath the rails of the track, is provided with an arm, *a'*, in position to have its outer upwardly-inclined end in contact with the under surface of said part *s*, so that when the latter is forced down by the wheels, as stated, it will force the arm downward and cause the rock-shaft to turn through a short distance in its bearings. Another arm, *c'*, is also secured rigidly to the rock-shaft, forming substantially a right angle with the arm *a'*, to the outer end of which arm *c'* is connected the wire *g*, above mentioned, joined to the arm *e* of the rock-shaft *a* within the tower, (shown in Fig. 1,) the arm *c'* acting on the outside of the rail. Now, it will be understood that when the arm *a'* is carried downward by the crown-piece *s*, from the action of a wheel, it will cause the arm *c'* to pull upon the wire *g* and simultaneously strike the gong in the tower and lift the jacket *b*, so as to cause the flame of the lamp to be seen.

The crown-piece rests upon cushions *e'*, of india-rubber, which immediately lift said crown-piece after a wheel passes it, allowing the spring *p* and buffer *l* within the tower to bring the lever *I* back to its normal position, above described, and put the jacket and gong-striking mechanism again in position to be operated upon when the next wheel of the approaching car encounters the crown-piece. From this it will be seen that the gong will be struck and the flame of the lamp exposed to view and again covered once for every wheel

of the train that passes over the crown-piece, and that in consequence the gong will continue to sound and the light flash during the whole time the train is passing over said crown-piece.

The arms a' and c' of the rock-shaft b' and other parts are inclosed from snow and other extraneous matter in a box, R, which reaches both ways from and beneath the rail. The wire g , connecting the arms of the two rock-shafts, is passed through a pipe, S, secured to the face of the ties D' of the track, parallel with the rail outside thereof, and out of the way of the spike-heads. The tower is preferably set near the track, so that the lamp shall overhang the sidewalk C' of the street.

In Fig. 1 but one set of alarm apparatus is shown within the tower; but it is intended, if necessary, to duplicate the lamp and other parts and connect each set of the alarm mechanism with a crown-piece, one of which being placed upon the track at a distance either way from the tower to announce the approach of a train coming from either direction.

A crown-piece, s , with its accompanying parts, may be placed next a rail, each, of any number of parallel tracks, as shown in Fig. 4, all joined by an elongated rock-shaft, b' , so that a train on either track will announce its approach at the tower through a single wire connection, g . The rock-shaft, when lengthened to pass under several parallel tracks to connect with various crown-pieces, is to be inclosed in a box or covering, T, to shield it from ice, snow, ballast, &c.

The wire g , being inclosed in the tube or pipe S, is completely protected from ice, snow, or other substances that would be liable to injure it or otherwise impair its usefulness.

If thought desirable, a tower may be located on either side of the street at the crossing near the track, each containing a single set of alarm apparatus, one being connected with a crown-piece located upon the track in one direction from the crossing, and the other connected with a similar device located on the track in the other direction. These devices may be placed

at any distance desirable from the crossing—as a quarter of a mile, a half-mile, &c.—so as to give timely notice of the approach of the train to persons at the crossing.

The alarm given by this device is of two kinds, one being addressed to the eye and the other to the ear of persons near, so that it answers equally well for persons that may be deficient in either sight or hearing.

The dome of the tower may be, if desirable, surmounted by a sign-board, A' , upon which words of caution to passers by may be printed.

What I claim as my invention is—

1. In an alarm device for railroad-crossings, in combination with a rocker-arm and a support, D, a lever, I, connected with said rocker-arm and provided with a finger, K, a spring, k , for said finger, gong G, and hammer H for the gong, spring i for the hammer, and projecting part h from the hammer, to be encountered by the finger K, substantially as shown and described.

2. In railway-signals, the combination of an inclosure or house, A, and contained central post or support, D, a rocking arm or lever, I, pivoted to said post, a rocking lever, L, resting partly within and partly without said inclosure and pivoted to the wall thereof, a lamp with its support, a tie, d' , for said levers I and L, and jacket b for said lamp connected with said lever L, substantially as described.

3. In an alarm device for railroad-crossings, a floor or base-piece, inclosure A, and a cover for said inclosure, in combination with a central tie-bolt for the whole, substantially as described.

4. In a railroad alarm device, a support, D, in combination with a lever, I, buffer l for said lever, finger K connected with the lever, spring k for said finger, gong G, and hammer H for the gong, with actuating-rod for said lever I, substantially as described.

GEORGE SMITH.

Witnesses:

E. B. WHITMORE,
J. L. REYNOLDS.