

No. 746,069.

PATENTED DEC. 8, 1903.

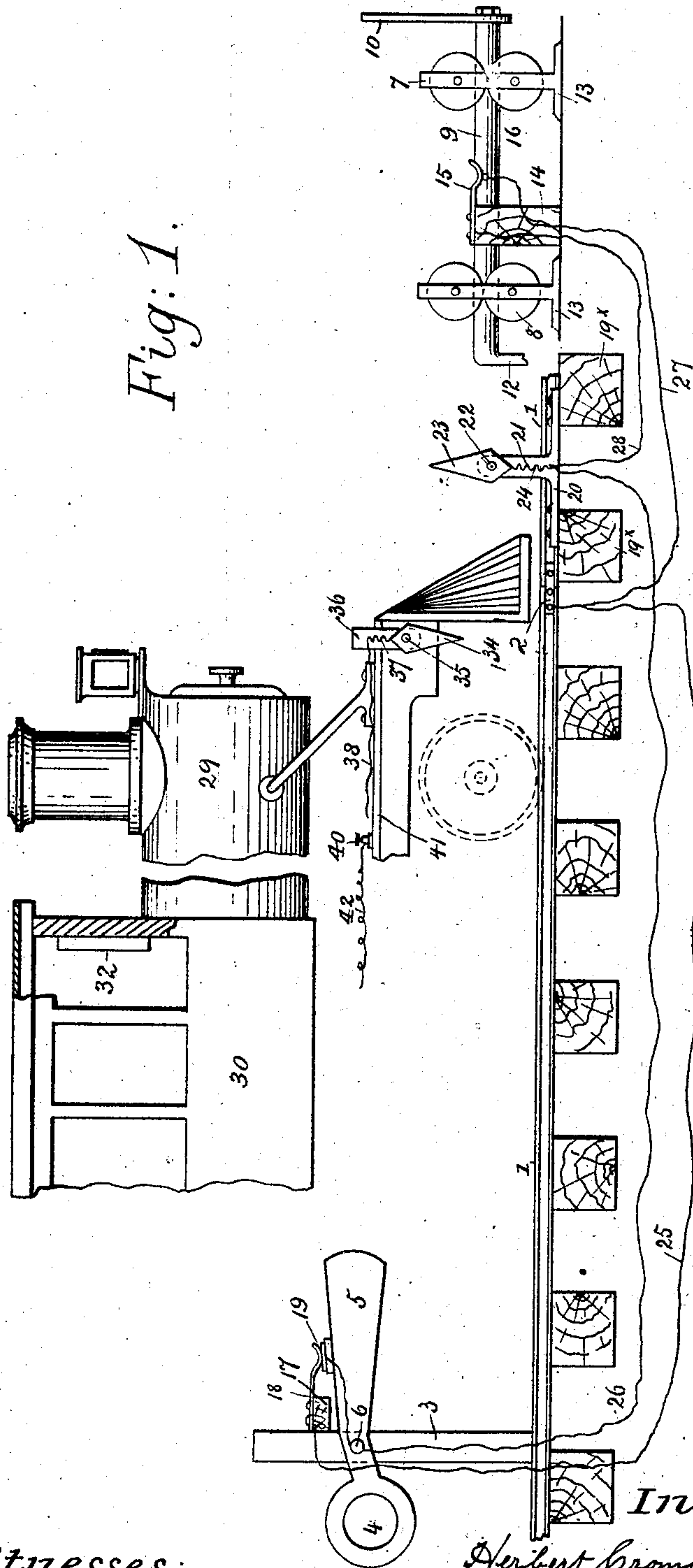
H. C. GILES.
ELECTRICAL SIGNALING DEVICE.

APPLICATION FILED APR. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig: 1.



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His Attorney.

Witnesses:

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John Stone M. Elhorne

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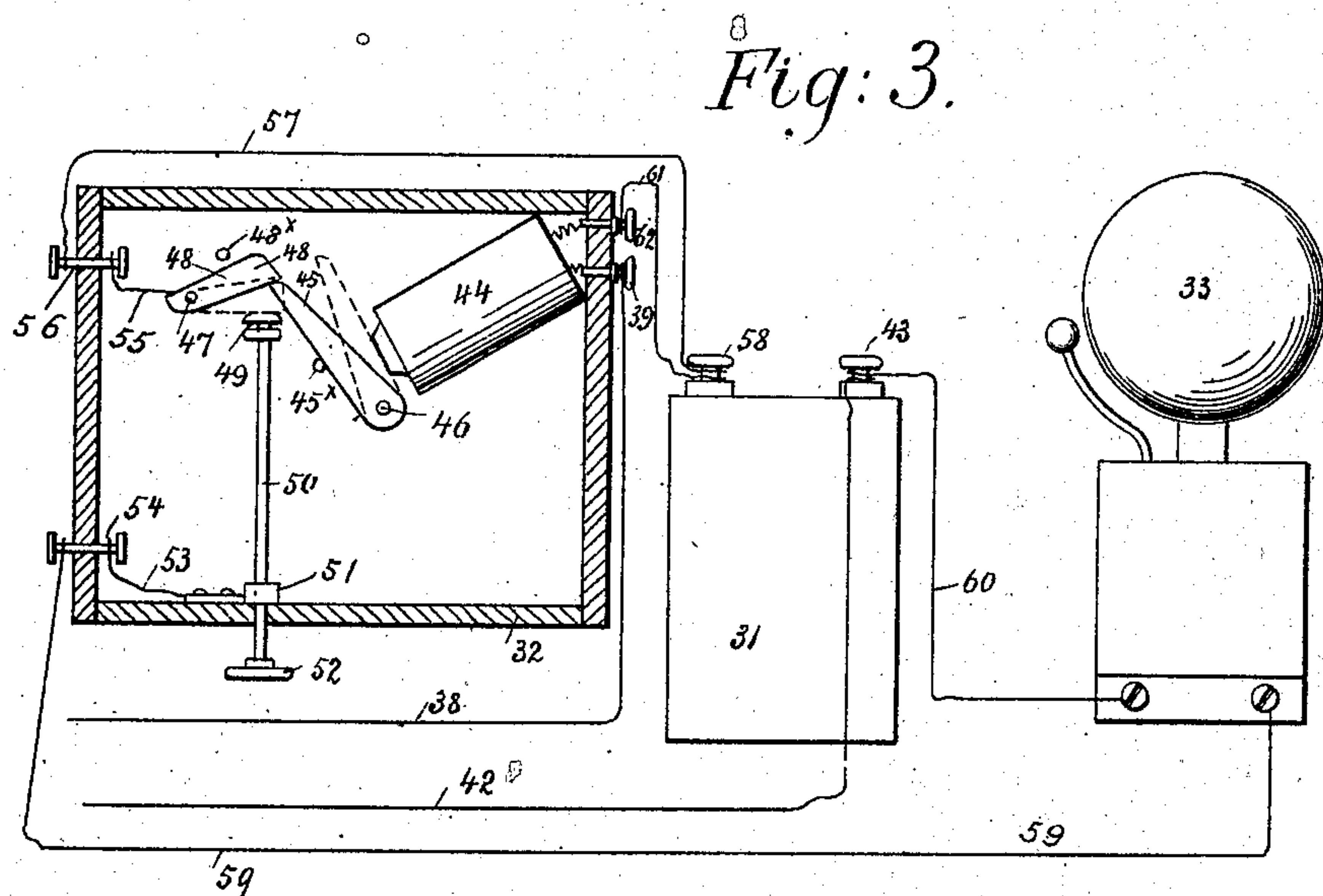
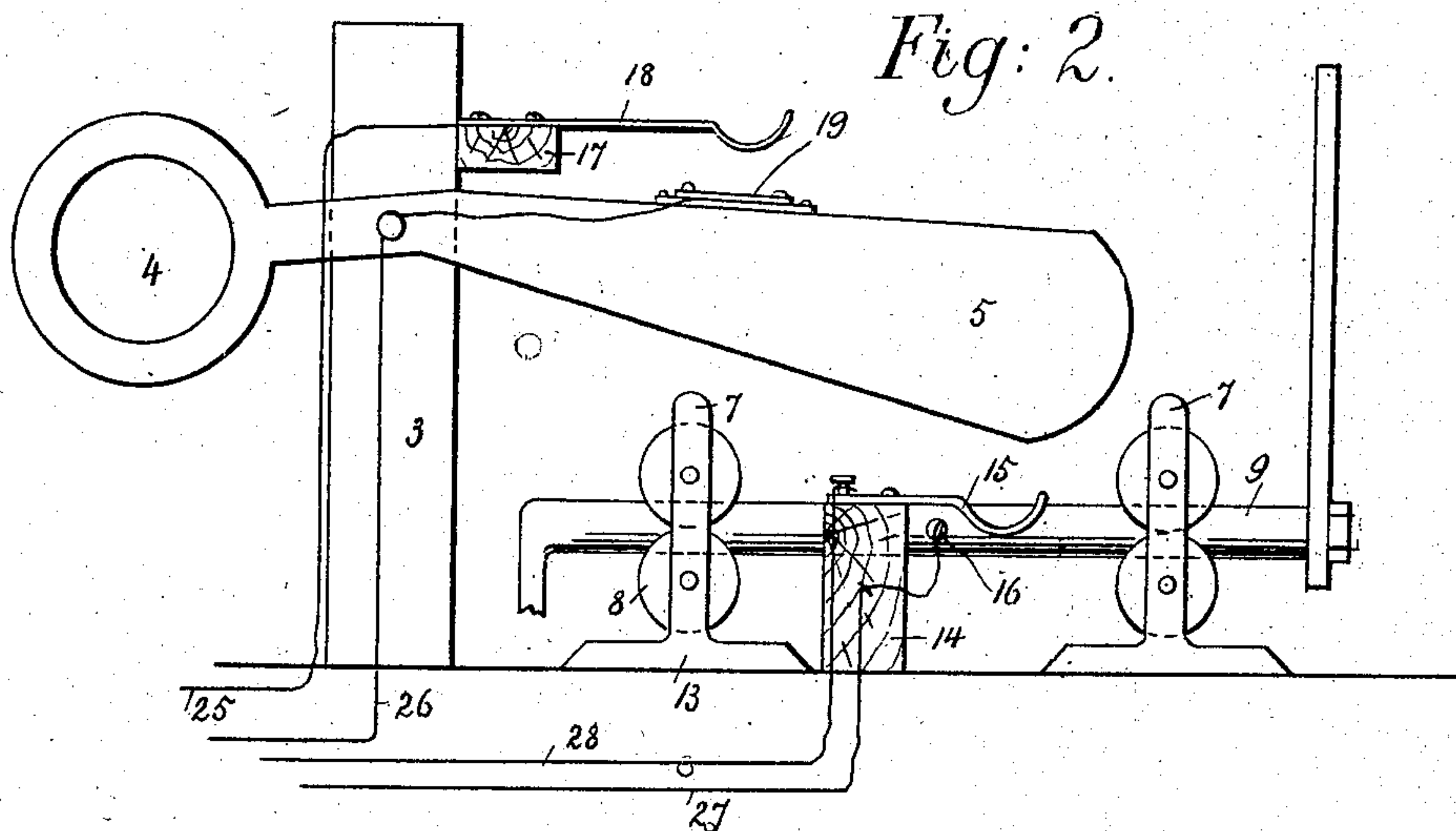
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

HERBERT CROMWELL GILES, OF NEW YORK, N. Y.

ELECTRICAL SIGNALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 746,069, dated December 8, 1903.

Application filed April 24, 1903. Serial No. 154,148. (No model.)

To all whom it may concern:

Be it known that I, HERBERT CROMWELL GILES, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Electrical Signaling Devices, of which the following is a full, clear, and exact specification.

My invention relates to electrical signaling devices especially applicable for use in connection with railway signaling and is designed as a safeguard against accident, to give audible warning to the engineer or fireman, if for any reason the visual signals now generally employed are not regarded when set or for any cause fail of their purpose.

The invention consists, in general terms, of means whereby when a train approaches an open switch or the block-signal is up an electric circuit will be completed and cause an audible alarm in the engine-cab to be operated.

More specifically, the invention consists of a pivoted contact-bar secured to or near the track adapted to make a sliding contact with a pivoted contact-bar depending from the front portion of the engine, electrical connections from the track and track contact-bar to the switch-bar and to the post and arm of the block-signal target, electrical connections from the engine contact-bar and engine-truck to an electric battery, alarm means, such as a bell, and means for operating and discontinuing the operation of the same, and details of construction and combinations of parts hereinafter more fully described, and particularly pointed out in the claims.

In the following specification I have described my invention as being employed in connection with a switch-bar and block-signal arm, but it is obvious that its uses are not limited to such connection, and it is within the spirit of my invention to give it a wider and more general application by excluding from the circuit either or both these elements and including other devices therein.

The invention is illustrated in the accompanying drawings, wherein like figures of reference indicate like parts throughout the several views.

Figure 1 is a side elevational view of a section of track, a portion of an engine thereon,

with parts broken away, a block-signal, and a switch-bar for operating a switch and signal-lamp. Fig. 2 is a side elevational view of the switch-bar and its supports and the signal-target in positions different from those in which these parts are shown in Fig. 1. Fig. 3 is a front elevational view, with cover removed, of the box containing the means for making and breaking the alarm-circuit.

Referring to the drawings, 1 1 are sections of rail secured together by fish-plate 2. At the side of the track is the block-signal, of ordinary construction, consisting of the standard 3, to which the target 4, having an arm 5, is pivoted at 6. The target of the signal is operated by the passage of the train over the rails in a manner well known and not requiring detailed description.

The means for operating the switch and signal-lamp (not shown) consist of standards 7, carrying rollers 8, between which the switch-bar 9 travels.

10 is the hand-lever for advancing and retracting the switch-bar.

12 is the connection between the switch-bar and the switch and signal-lamp.

Extending upward from the base-plate 13 of one of the standards 7 is a block 14, to the upper face of which is secured a contact piece or tongue 15, adapted to contact with a pin 16 or the like on the switch-bar when the latter is retracted.

Secured to the standard 3 is a block 17, to which a contact piece or tongue 18, similar in construction to 15, is fastened. Upon the arm 5 of the target 4 a metal plate 19 or the like is screwed or otherwise attached, adapted to make contact with the tongue 18 when the arm is up.

At the side of the track 1 and mounted upon cross-ties 19^x or in other suitable manner is a transverse support 20, having an upwardly-projecting arm 21. Pivoted near the upper end of the arm 21 at 22 is a bar 23, preferably arrow-shaped. The bar 23 may be constructed of metal, but I have found it more advantageous to construct the bar of wood and supply it with a metal sheathing. Extending from the lower point of the bar 23 to the transverse support 20 is a spring 24, designed to normally keep the bar 23 pointing upward. A lead-wire 25 runs from the tongue

18 to the fish-plate 2, a similar wire 26 from the plate 19 to the spring 24, a similar wire 27 from the pin 16 to the fish-plate 2, and a similar wire 28 from the tongue 15 to the spring 21.

The engine 29 has the usual cab 30, within which are the battery-box 31, the box 32, containing the means for making and breaking the alarm-circuit, and the alarm 33, here shown as an electric bell of ordinary construction.

Near the front end of the engine-truck and to the rear of the fender is secured a contact-bar 34, similar in shape and construction to the bar 23. The bar 34 is pivoted at 35 to a block 36 and is caused to point normally toward the ground by the action of the spring 37, fastened to one end of the bar 34 and to the block 36. Leading from the spring 37 a conducting-wire 38 passes to a binding-post 39 in the side of the box 32, and from a binding-post 40 on the truck 41 of the engine a conducting-wire 42 passes to a binding-post 43 of the battery-box 31.

The box 32 contains the means for making and breaking the alarm-circuit, these means consisting of a coil of wire 44, which becomes a magnet when energized and attracts the armature 45, pivoted to the box 32 at 46. A pin 45^{*} limits the motion of the armature 45. Held within the box 32 on a pivot 47 is a small lever 48, the point of which rests upon the end of the armature 45 when the latter is not attracted by the magnet. When the support of the armature 45 is withdrawn from the lever 48, the latter drops upon a knob 49 upon the upper end of a rod 50, projecting upward through a sleeve 51 in the box 32. The rod 50 is supplied with a knob or handle 52 at its lower extremity. Within the box 32 a wire connection 53 runs from the sleeve 51 to a binding-post 54 and connection 55 from the lever 48 to a binding-post 56. On the exterior of the box 32 a conductor 57 is run from the post 56 to a post 58 of the battery-box, and a conductor 59 leads from the post 54 to the bell 33. To complete the circuit, a wire 60 is run from the bell 33 to the post 43 of the batteries, and a connection 61 is made between the post 58 on the battery-box and a binding-post 62, connected with the magnet 44.

The operation of the invention is as follows: Assuming that it is desired to give the "stop-signal" to an oncoming train, the switch-bar 9 is retracted, thereby causing the tongue 15 and pin 16 to contact, opening the switch and turning the signal-lamp 7². As the train passes the block-signal the arm 4 thereof is moved upward and contact between tongue 18 and plate 19 is established. In this position there is a break in the circuit at the bar 23. As the train approaches the switch and reaches the bar 23 the latter and bar 34 will contact and glide upon each other and complete the circuit, thus energizing the coil 44 and causing it to attract the armature 45, whereupon the lever 48 will drop upon knob

49 and close the circuit to the bell 33 and ring the same. The current may be readily traced. Starting at the post 43 of battery 31 the current passes to the post 40 on the truck through the car-wheels to the fish-plate 2, where it divides, one branch passing through wire 25 to the tongue 18, plate 19, down conductor 26, to the contact-bar 23. The other branch passes along conductor 27 to pin 16, tongue 15, down conductor 28, through bar 23, where the branches unite and pass through bar 34, spring 37, wire 38, to coil 44, through post 62, conductor 61, to post 58. This completes the primary circuit, and the secondary or alarm circuit may be traced from post 58 through wire 57 to post 56, lever 48, down rod 50, to post 54, through wire 59 to bell 33, and through wire 60 to the battery at binding-post 43. When the secondary circuit between the box 32 and the bell is made, the bell will continue to ring until the circuit is broken by pushing the rod 50 upward and allowing the armature 45 to drop under the lever 48 and hold the latter away from rod 50.

It will be understood that it is not essential to my invention that both the block-signal and switch-bar be included in the circuit, as either may be omitted without materially affecting the operation of the invention, the circuit being complete if but one of these elements is included.

From the construction above described it is apparent that when a train is approaching an open switch and the engineer should have overlooked the visual directions to stop the alarm will at once go off and give warning either to the engineer or to the fireman, or both, and such alarm will continue in operation until stopped by pressing upward the rod 50 and breaking the alarm-circuit. This form of signal is therefore a safeguard of the most positive kind.

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

1. In a device of the kind herein described the combination of an engine or other vehicle carrying a contact-piece, rails or tracks upon which said vehicle travels, a contact-arm near said tracks, an alarm within the vehicle, and means for operating the alarm when the contact-piece and arm contact, said means comprising an electric battery, a vertically-movable rod in circuit with the alarm, said rod when moved upwardly being adapted to break the circuit, a lever adapted to contact with the movable rod and complete the circuit to the alarm, and a pivoted armature designed to hold the lever out of contact with the rod when the alarm-circuit is broken, substantially as described.

2. In a device of the kind herein described means for operating the alarm comprising a secondary circuit consisting of an electric battery, a vertically-movable rod surrounded by a sleeve in circuit with an alarm, a lever pivoted above said rod and normally out of con-

tact therewith, and means for causing said lever to contact with the rod and complete the circuit to said alarm, said rod when moved upwardly being adapted to break the circuit, substantially as described.

3. In a device of the kind herein described means for operating the alarm comprising a secondary circuit consisting of an electric battery, a movable rod surrounded by a sleeve in circuit with an alarm, a lever pivoted above said rod and means for causing said lever to contact with the rod and complete the circuit

to said alarm, said means consisting of a wire-coil, becoming a magnet when energized, and an armature normally holding said lever and rod out of contact, but permitting them to contact when the armature is attracted by the magnet, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HERBERT CROMWELL GILES.

Witnesses:

ETHEL C. SMITH,

HELEN ELOISE MCELHONE.