

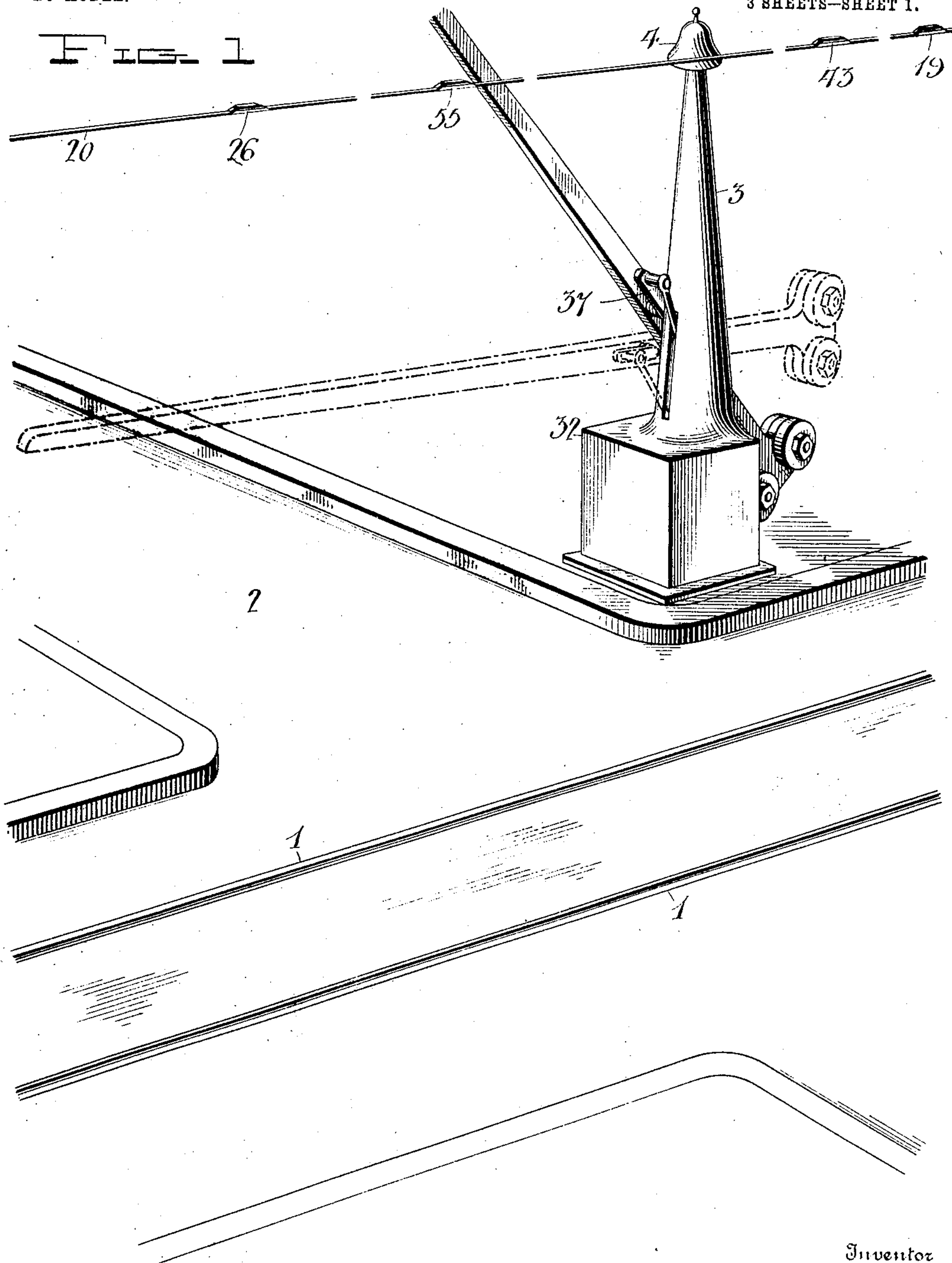
No. 765,265.

PATENTED JULY 19, 1904.

W. J. BELL.
RAILWAY CROSSING APPLIANCE.
APPLICATION FILED JULY 31, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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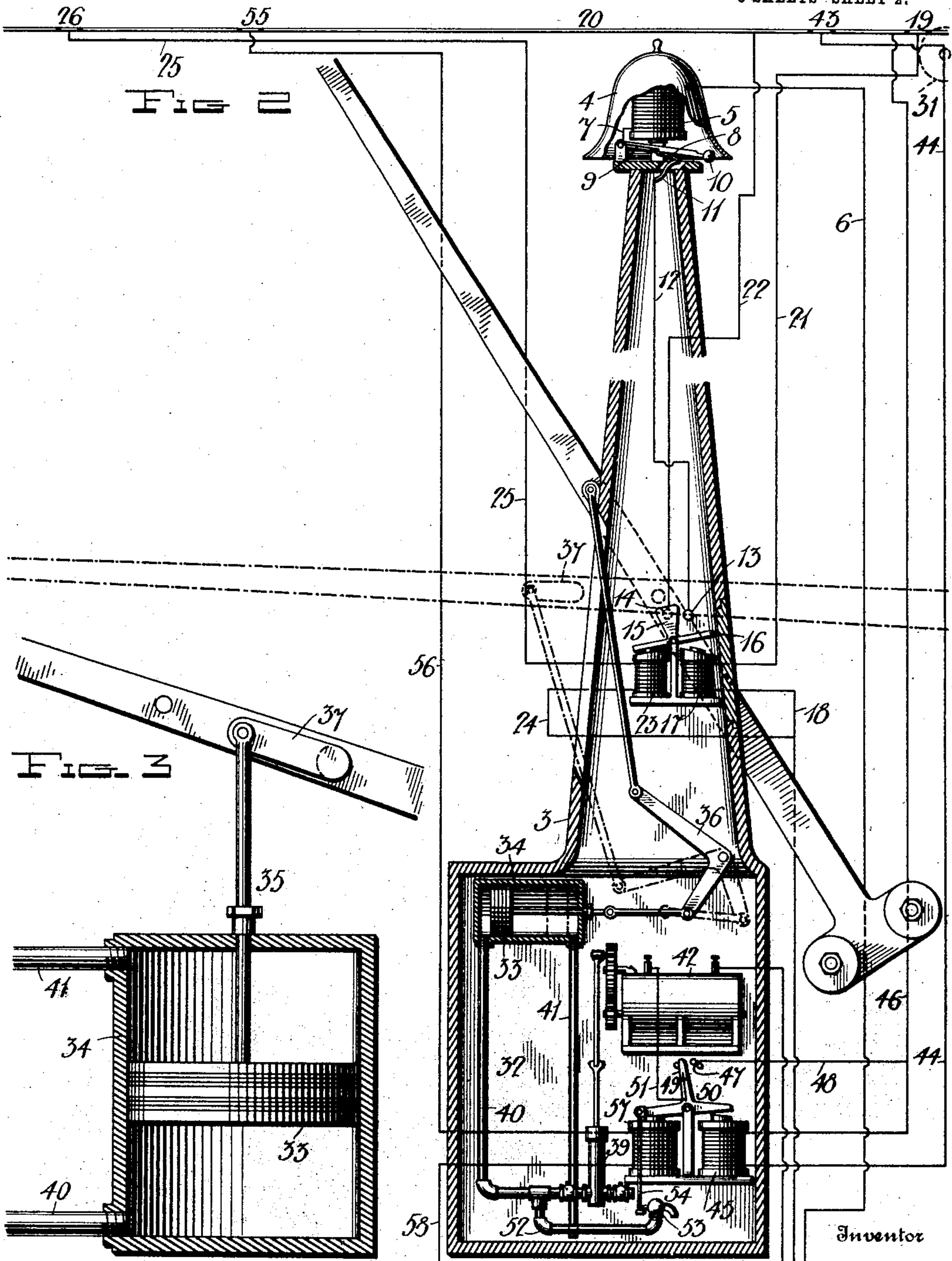
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3 SHEETS--SHEET 2.



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3 SHEETS—SHEET 3.

FIG. 4

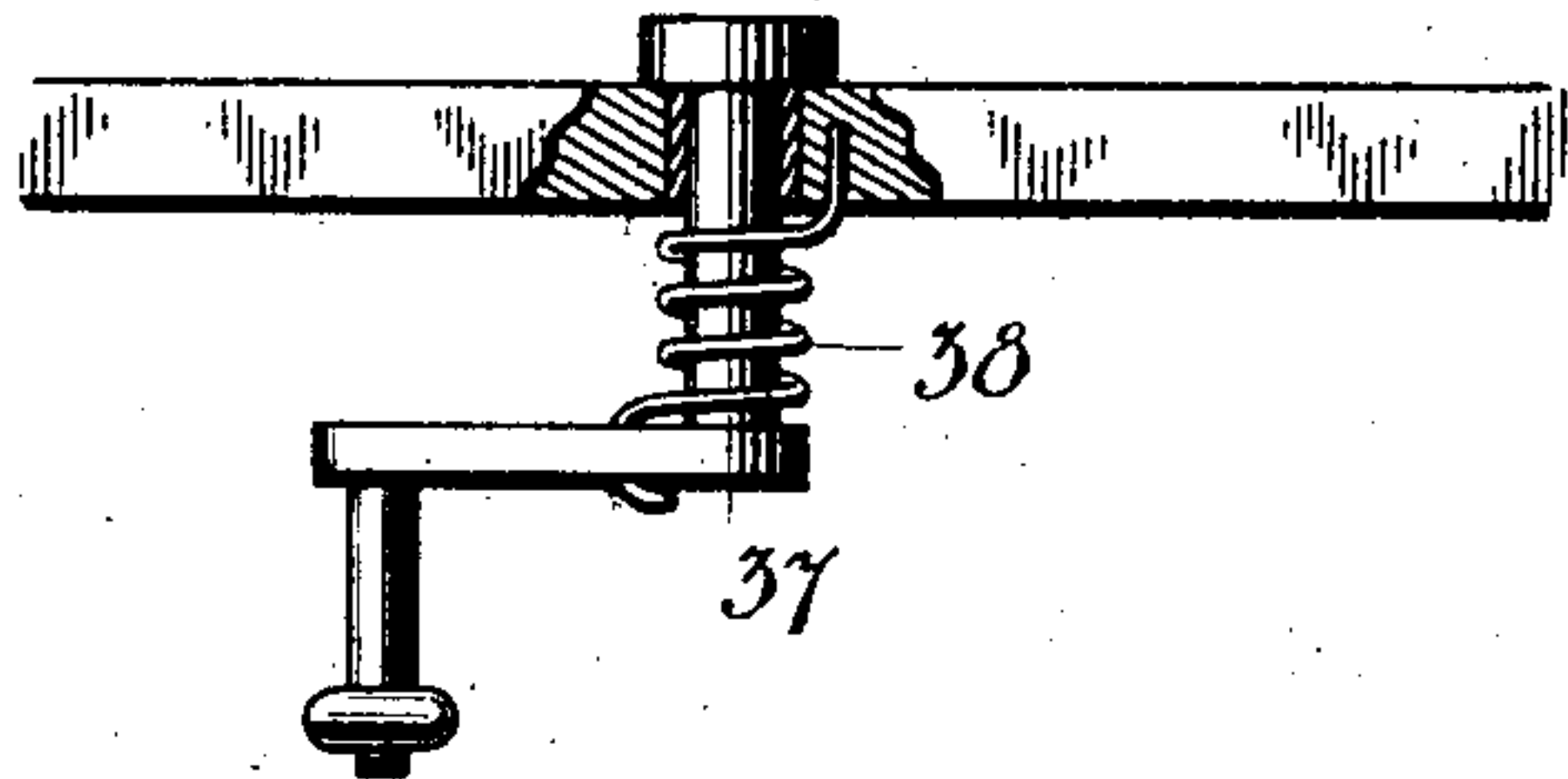
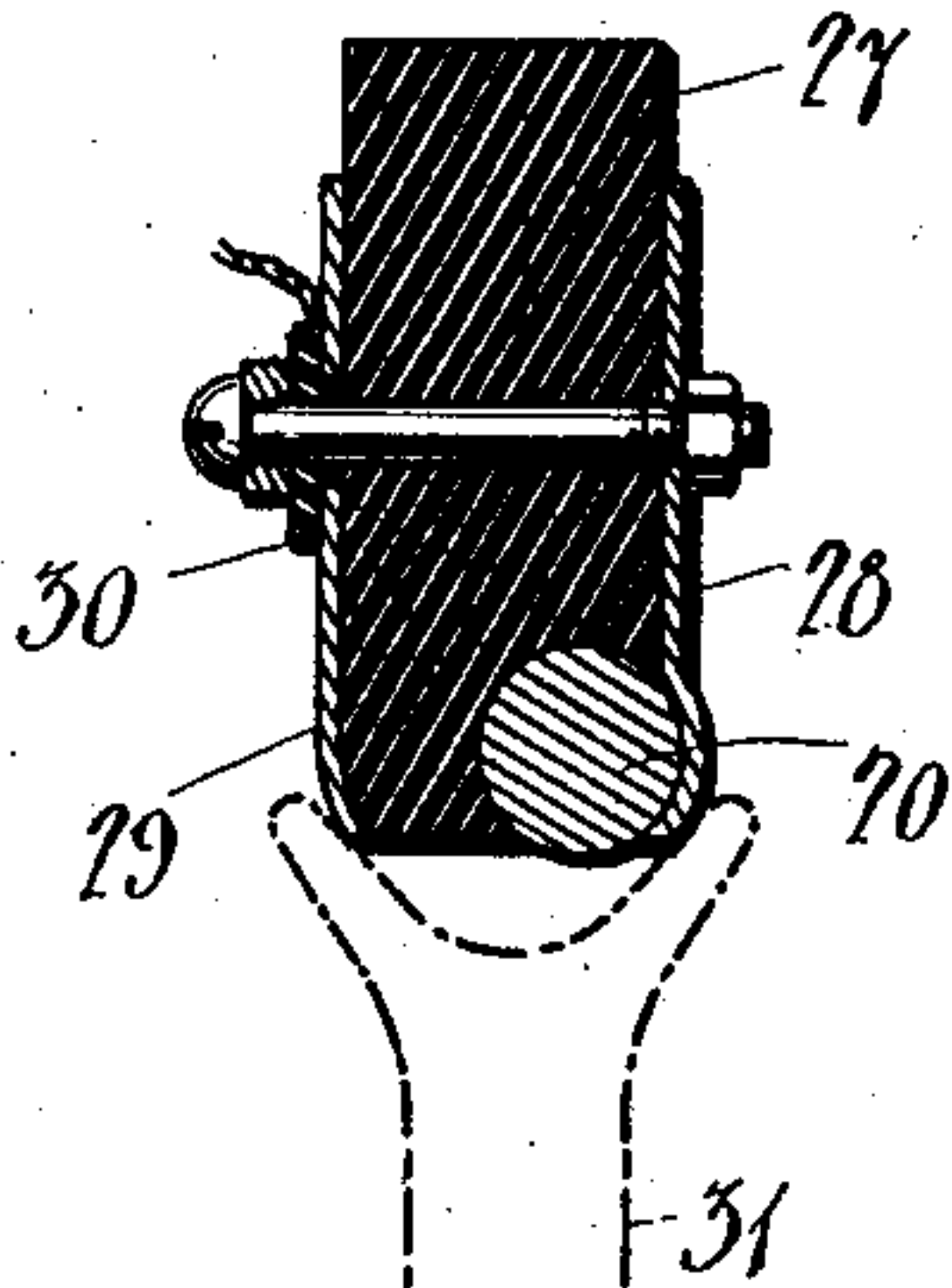


FIG. 5



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UNITED STATES PATENT OFFICE.

WALTER J. BELL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO LEON F. MOSS, OF LOS ANGELES, CALIFORNIA.

RAILWAY-CROSSING APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 765,265, dated July 19, 1904.

Application filed July 31, 1903. Serial No. 167,728. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. BELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Railway-Crossing Appliances; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to electric railway appliances, and contemplates an improved railway-gate and improved automatic means for operating the same, said gates being designed for location at the intersections of streets or roads and the railway-tracks to bar the passage of vehicles and persons when the car or train is at the intersections.

The invention in all of its details is fully and clearly set forth in the following description, and in connection with such description reference is to be had to the accompanying drawings, illustrating the invention in its preferred form of embodiment, it being understood that various modifications may be made therein without exceeding the scope of the invention defined by the concluding claims.

While I have designed and illustrated certain means as applicable to the operation of railway-gates, such specific application is not to be regarded as a limitation, it being my purpose to employ similar means for the operation of semaphore-signals and the like.

Referring to the drawings, Figure 1 is a perspective view of an electric railway appliance embodying my invention. Fig. 2 is an enlarged view, partly in elevation and partly in section, of the gate and audible signal. Fig. 3 is a modification of the gate-operating means. Fig. 4 is a further enlarged detail view showing the connecting means between the gate and operating-rod. Fig. 5 is a detail view of the insulated sections at the trolley-wire.

Referring to the drawings by numerals, 1 1 denote the railway-rails, and 2 is a street or road crossing said rails. At a point adjacent to the intersection of the street or road and

track is erected a post 3, on the upper end of which is fixed an audible signaling device, preferably in the nature of a bell 4, as distinguished from a gong, whereby certain of the operating parts which are located within the bell are protected from the elements.

5 is the bell-operating magnet, from which lead a ground-wire 6 and a wire 7, the latter being connected with a contact 8, carried by a pivoted armature 9, which also carries a hammer 10. The armature, which is elevated by the magnet 5 when the latter is energized, normally assumes the depressed position shown, and in said position the contact 8 is in engagement with a contact 11, which is connected by a wire 12 with a contact 13. Adjacent to the contact 13 is a contact 14, which is engaged by a contact 15, carried by a rock-armature 16. The armature 16 is pivoted centrally, and said contact 15 extends upwardly from the pivotal point and is weighted, whereby to maintain the rocked positions of the armature. At the armature 16 are two electromagnets, one of which, 17, is grounded by a wire 18 and is connected with an insulated section 19 on the trolley-wire 20 by a wire 21. The contact 14 is connected with the trolley-wire by a constantly-charged wire 22. The other magnet, 23, is connected to ground through a wire 24 and the wire 18, and 25 is a wire connecting said magnet with an insulated section 26 in the trolley-wire. The insulated sections 19 and 26 each consist, as shown in Fig. 5, of a block 27, of insulating material, having a recess to receive the trolley-wire, and clamping-plates 28 29, which bind the section to the wire, bolts and nuts being employed to secure the parts together. The plate 28 contacts with the trolley-wire and is therefore constantly charged. The plate 29, from which the wire 21 or 25 leads, is insulated from the trolley-wire and plate 28 by the block 27 and a disk 30. The trolley-wheel 31 engaging the plates 28 29 closes the circuit.

In operation when the trolley-wheel engages the section 19 current flows through the magnet 17, and the armature 16 is rocked to cause the contact 15 thereon to bridge the

contacts 14 and 13, whereupon current flows from the trolley-wire through the wire 22, contacts 14, 15, and 13, wire 12, contacts 11 and 8, wire 7, the coils of magnet 5, and thence
 5 by wire 6 to ground. The magnet 5 being energized, the armature 9 is vibrated, and the bell is sounded by the hammer 10. The current through magnet 17 is of but short duration; but the energization of said magnet, even
 10 for a very short period of time, is sufficient to effect the rocking of the armature 16 to close the bell-operating circuit, the rocked position of said armature being maintained by the weighted contact 15, as before stated.
 15 The bell-operating circuit is closed in advance of the operation of the gate, and to open or break said current I provide the insulated section 26, magnet 23, and connections, the section being located to be engaged by the trolley-wheel after the car or train has passed the crossing. Engagement of the trolley-wheel
 20 with said section 26 effects the energization of the magnet 23 through the wires 25, 24, and 18, the result being the retraction of the armature 16 and the interruption of the operating-circuit, and consequently the cessation of the audible signal. It will be understood that the starting, operating, and breaking circuits are established through the medium of the trolley-wheel, and this whether
 30 the car controlling current is on or off.

The gate is pivoted intermediately on the post 3 below the bell 4, and its inner end is weighted, whereby the gate is raised by the
 35 action of gravity. Toward the base of the post is a casing 32, in which is located the gate-lowering means. Said means consist of a piston 33, movable in a cylinder 34 by the action, for example, of oil under pressure, the
 40 piston having direct rod connection with the gate, as shown at 35, Fig. 3, or indirect rod connection therewith through an interposed bell-crank lever 36. To prevent jar on the parts in the lowering of the gate and to permit the
 45 raising of the lowered gate to release any object caught thereunder, I provide between the rod and the gate a crank 37 and a spring 38, as shown in Fig. 4, the crank allowing a slight range of movement of the gate independent of the rod and the spring serving as
 50 a buffer to relieve the parts of undue strain occasioned by sudden starting and stopping of the gate.

In the bottom of the casing is an oil-containing tank, and 39 is an oil-pump connected with the cylinder 34 to the rear of the piston by a pipe 40. 41 is a pipe leading from the cylinder in front of the piston to vent the cylinder of air and oil leakage. The pipe 41 discharges into the oil-tank, as shown in Fig. 2.
 60 The pump is operated by an electric motor 42, which is started and stopped by the following means:

In the trolley-wire 20 is an insulated section
 65 43, constructed and operating similarly to the

sections 19 and 26. A wire 44 leads from the section 43 to a magnet 45, the latter being also connected with the trolley-wire by a constantly-charged wire 46. A contact 47, connected by a wire 48 with the wire 46, is arranged in the path of an insulated contact 49 on a rock-armature 50, and from said contact 49 leads a wire 51 to the motor 42, the latter being grounded, as will be understood. The magnet 45 is energized during the engagement of the trolley-wheel with the section 43, and as the result the armature 50 is rocked to establish a circuit from the trolley-wire through wires 46 and 48, contacts 47 and 49, and wire 51 to the motor, whereupon the latter is operated to reciprocate the pump-piston and force oil into the cylinder 34 and against the piston 33 to lower the gate. Leading from the pipe 40 is a branch discharge-pipe 52, in which is a normally unseated or open valve 53, connected by a rod 54 with the rock-armature 50. In the described movement of the rock-armature the valve is moved to seat said valve to close pipe 52 to maintain the pressure of the oil against the piston 33.
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In the trolley-wire is an insulated section 55, similar to the sections previously described. A wire 56 leads from said section to a magnet 57, which is grounded by a wire 58. Engagement of the trolley-wheel with said section effects the energization of the magnet 57 to retract the rock-armature and interrupt the motor-operating circuit, and in such retractive movement the valve 53 is opened to allow the oil to return into the tank. Pressure against the piston 33 being removed, the gate is elevated by the action of its weight.
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The gate-controlling sections 43 and 55 are arranged intermediate of the bell-controlling sections 19 and 26. Consequently the audible signal is sounded in advance of the closing of the gate. The gate is operated through the medium of the trolley-wheel regardless of the position of the controller on the car or train.
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I do not in this application make claim to the improved audible signaling device which is operated in advance of the closing of the gate to give timely warning of the approach of the car or train, said signaling device forming the subject-matter of an application filed by me January 5, 1904, Serial No. 187,792.
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I claim as my invention—

1. In combination, a pivoted member, fluid-pressure means including a piston and an electrically-operated pump, a connection between the piston and member, electrical means including a car trolley-wheel for operating the pump-actuator, and an electrical circuit controlled by said trolley-wheel for interrupting the actuator-circuit.
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2. In combination, a railway-crossing pivoted gate elevated by the action of a weight, fluid-pressure means including a piston and an electrically-operated pump, a connection between the piston and gate, electrical means
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including a car trolley-wheel for operating the pump-motor, and an electrical circuit controlled by said trolley-wheel for interrupting the motor-operating circuit.

- 5 3. In combination, a railway-crossing pivoted gate, fluid-pressure means including a piston and an electrically-operated pump said piston connected with said gate, a motor-operating circuit including the trolley-wire and
10 a rock-armature, means for closing the operating-circuit including a magnet at said ar-

mature, an insulated section at the trolley-wire and the trolley-wheel, and means for breaking the operating-circuit including a second magnet at the armature, a second in- 15
sulated section, and the trolley-wheel.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER J. BELL.

Witnesses:

E. A. WATERMAN,
C. G. KELLOGG.