

(No Model.)

3 Sheets—Sheet 1.

H. J. SCHMITT.
AUTOMATIC RAILWAY SIGNAL.

No. 600,323.

Patented Mar. 8, 1898.

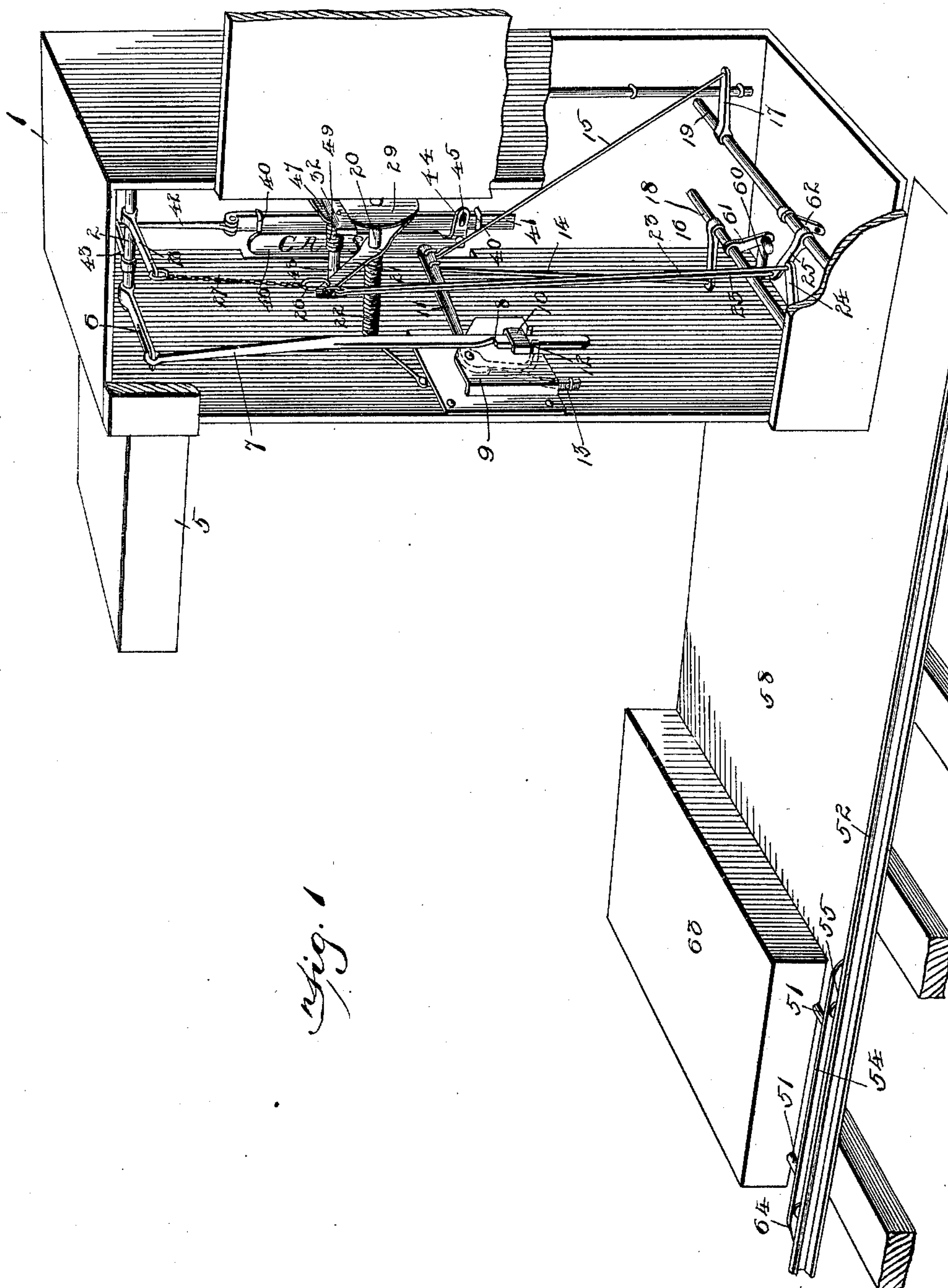


Fig. 1

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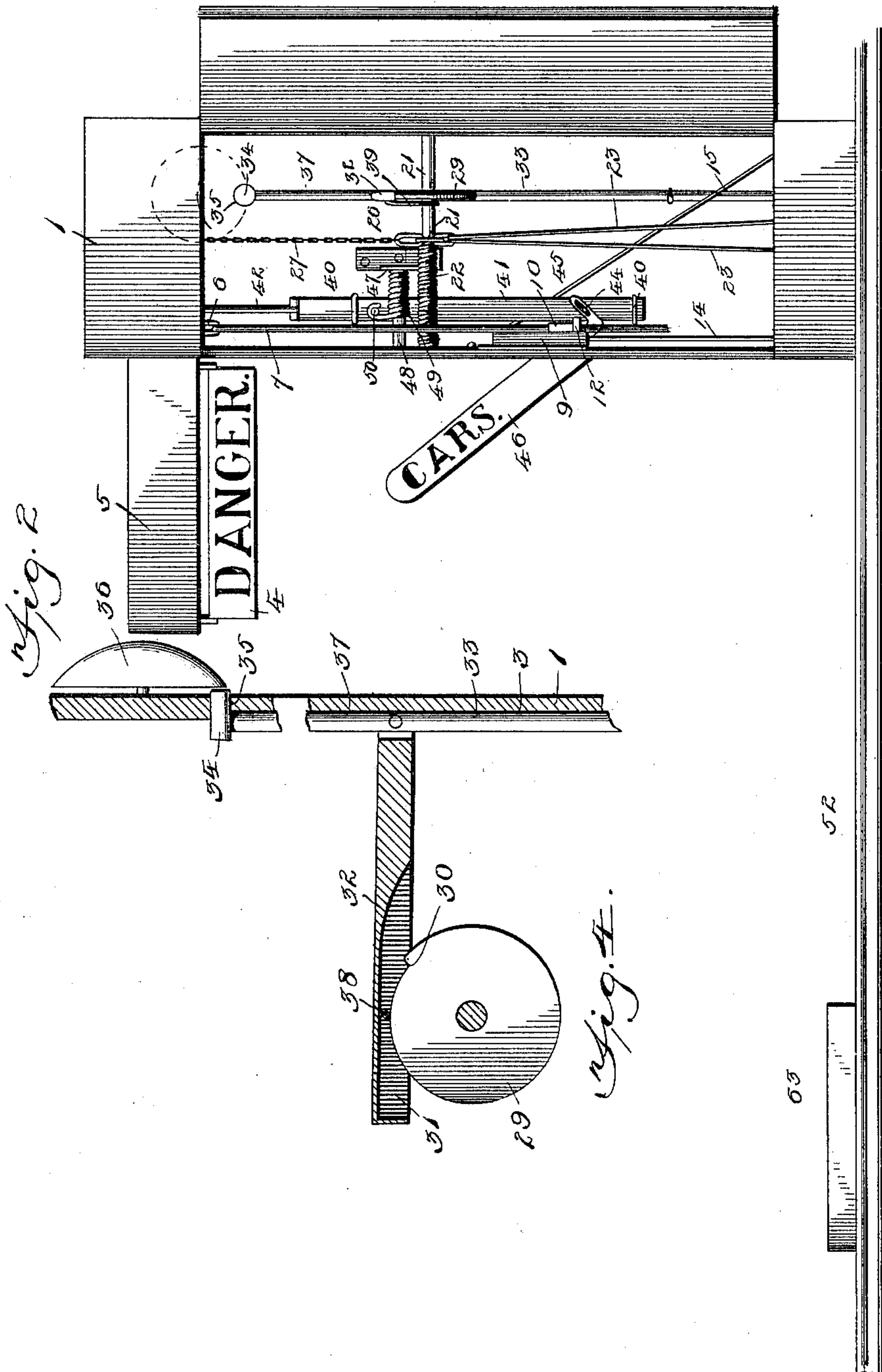
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Witnesses

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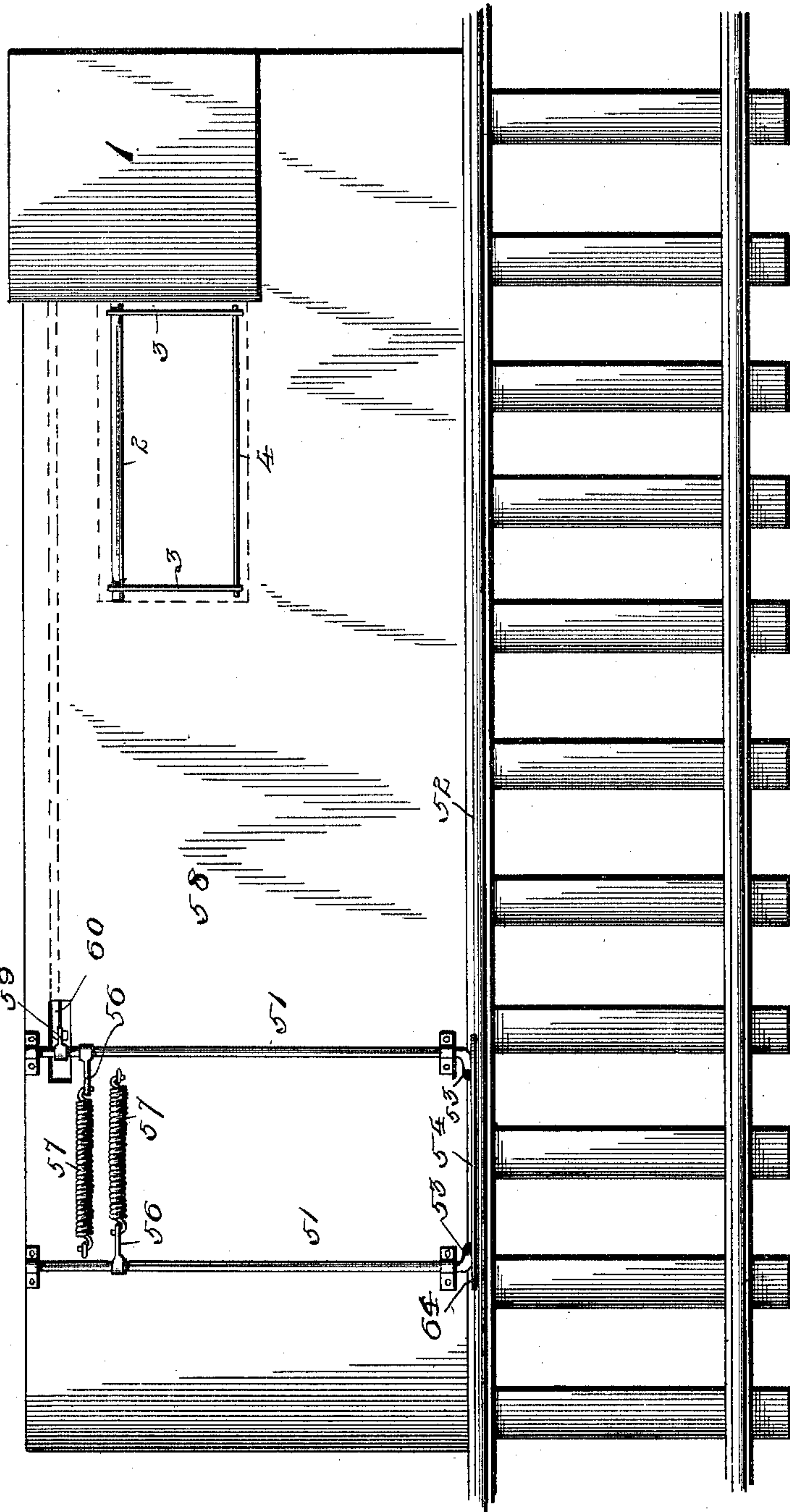


Fig. 3.

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UNITED STATES PATENT OFFICE.

HENRY J. SCHMITT, OF DEWAR, IOWA.

AUTOMATIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 600,323, dated March 8, 1898.

Application filed May 3, 1897. Serial No. 634,961. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. SCHMITT, of Dewar, in the county of Black Hawk and State of Iowa, have invented certain new and useful Improvements in Automatic Railway-Signals; 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 automatic railway-signals; and the object of the same is to provide a signal which is operated by the wheels of the train to give warning of the approach of the same.

The invention consists in the novel features of construction hereinafter fully described and claimed, and illustrated by the accompanying drawings, in which—

Figure 1 is a perspective view of the invention, the mechanism being illustrated in position to be tripped by an approaching train. Fig. 2 is a side elevation showing the mechanism after the same has been tripped by the train. Fig. 3 is a top plan view, the casing for protecting the tripping mechanism being removed and the casing for protecting the signal being shown in dotted lines. Fig. 4 is a detail view illustrating the manner of sounding the alarm.

Referring to the accompanying drawings, 1 indicates the casing which incloses the signal mechanism, the same being situated adjacent the crossing. Journaled to the upper end of the casing and projecting therethrough is a shaft 2, having the arms 3 fixed thereon on the outside of the casing. Pivoted between these arms is the sign-board 4, upon each side of which is painted the word "Danger." Surrounding the side and top of the shaft and signal carrying arms is the protecting-casing 5. The danger-signal is normally hidden from view within this casing, as will appear from Fig. 1.

Secured to the shaft 2, upon the interior of the casing, is the slotted arm 6, within the slot of which is pivoted the downwardly-extending rod 7, which is formed with a notch 8 adjacent its lower end. Secured to the side of the casing 1 is the latch-casing 9, having the guide 10 on its outer side, through which

the rod 7 extends and is adapted to move. Intermediately pivoted within this casing 9 is the bell-crank lever 11, having its lower end bent at right angles to form a latch 12, which is adapted to engage the notch 8 of the rod 7. A spring 13, secured at one end within the casing 9, bears at its opposite end against the latch 12, and against the tension of this spring the latch is moved. Secured at one end to the opposite end of the bell-crank lever 11 are the rods 14 and 15, which extend downward to the lower end of the main casing 1 and have their opposite ends pivoted, respectively, to the oppositely-extending arms 16 and 17, which are secured to the shafts 18 and 19, journaled in the lower end of said casing.

Journaled within the casing 1, intermediate the ends thereof, is the shaft 20, having the operating-lever 21 secured thereon intermediate its ends. To one end of this lever is secured one end of a spring 22, which is coiled about the shaft 20 and has its opposite end secured to the casing. Pivoted to the opposite end of the lever 21 are the downwardly-extending pull-rods 23, which are pivoted at their lower ends to the oppositely-extending arms 24 and 25, which are secured, respectively, to the shafts 18 and 19. Also loosely secured to the lever 21, at the same end thereof as the rods 23, is the link 26, to the upper end of which is attached one end of a chain or cord 27. The opposite end of this chain or cord is attached to one end of an arm 28, which is secured at its opposite end upon the shaft 2 at the upper end of the casing.

Fixed upon the shaft 20 is the disk 29, which is formed with a notch 30 in its periphery. The upper periphery of this disk moves within the groove 31 of an arm 32, which is secured at one end to a spring-rod 33. The lower end of this rod is secured to the casing 1, while upon its opposite end is the hammer 34, which is adapted to project through the perforation 35 in the front wall of the casing and engage a gong 36. The casing is grooved at 37, which groove receives the hammer-rod 33. Extending through the groove 31 of the arm 32 is a pin 38, which is engaged by the notched disk 29 when the same is rotated. For holding the arm 32, normally engaging the periphery of

the disk, I provide the spring 39, which is secured at one end to said arm and projects beneath the shaft 20 at its opposite end.

Secured to the inner side of the front wall 5 of the casing 1 are the guides 40, and movable vertically through these guides is the rod 41. The upper end of this rod 41 is connected by a lever 42 with an arm 43, which is secured at its inner end to the shaft 2 at the upper end 10 of the casing. Secured to the rod 41 adjacent its lower end is the pin 44, which projects through a slot 45, formed in the inner end of a sign-board 46, which is pivoted to the casing and projects therefrom, the word 15 "Cars" being painted on each side thereof. Secured to the casing adjacent the rod 41 is a bracket 47, and connecting this bracket with the side wall of the casing is a rod 48, about which is coiled a spring 49, which bears at one 20 end upon a pin 50, projecting from the sliding rod 41. The opposite end of this spring is attached to the bracket. The tendency of this spring is to normally hold the sliding rod 41 lowered within its guides, which, by reason of 25 its engagement with the sign-board bearing the word "Cars," serves to normally hold the latter raised within the casing.

As illustrated in Fig. 1, the mechanism is in its normal position, the sign-boards being 30 hidden from view.

For operating the above-described mechanism I provide the rods 51, which are journaled transverse the track 52, two of said rods being 35 situated on opposite sides of the crossing and at any desired distance therefrom. The inner ends of each pair of rods are bent upward and inclined toward each other at 53, one of the rods being pivoted to one end of the tripping-plate 54. The other rod 51 works in a slot 55 40 at the opposite end of the tripping-plate, and by reason of this construction the wheels of the car are prevented from striking a heavy blow.

Adjacent the opposite ends of the rods or 45 cranks 51 are secured the arms 56, to which are attached one end of the coiled springs 57, the opposite ends of said springs being attached to the base 58, to which the levers are pivoted. Depending from one of the cranks 50 51 is an arm 59, to which is pivoted one end of the operating-lever 60. The opposite end of this lever 60 is pivoted to an arm 61 upon the shaft 18. It will be understood that this tripping mechanism is duplicated on the op- 55 posite side of the crossing, the operating-rod being pivoted to the arm 62, secured to the shaft 19. Suitable casings or boxes 63 protect the tripping mechanism from the elements.

60 The operation of my invention is as follows: The wheels of the approaching train meet the inclined surface 64 at the forward end of the tripping-plate and depress said plate, which causes the operating-lever 60 to 65 be drawn upon, as will be understood. This movement of the operating-lever causes the shaft 18 to rotate, said movement being im-

parted to the intermediate shaft 20, causing the same also to partially rotate. This movement of the shaft 20 effects the upward 70 movement of the sliding rod 41, which throws the sign-board bearing the word "Cars" outward and displays the same. Through the medium of the connection between the shaft 20 and the upper shaft the latter is rotated, 75 which swings the sign-board bearing the word "Danger" downward and displays the same, at the same time moving the notched rod 7 downward until its notch engages the latch 12. In this position the mechanism is re- 80 tained until the same is tripped by the train passing over the tripping-plate on the opposite side of the crossing. The rotation of the shaft 20 causes the disk 29 to move forward the grooved arm 32, which draws back the 85 hammer. By reason of the engagement of the notch of the disk with the pin of the arm said arm is raised and released from the disk after it has been drawn forward, so that the hammer is released and the gong sounded, 90 thus warning persons approaching the crossing that the train is near. When the tripping-plate on the opposite side of the crossing is depressed, the opposite operating-lever 60 is drawn upon, which rotates the shaft 95 19, and by reason of its connection with the bell-crank lever 11 draws the latch out of engagement with the rod 7, which unlocks the mechanism and permits it to return to its 100 normal position.

It will be understood that the operating-rods 60 might be extended several blocks, so that the signal would be operated by the train quite a little time before it approached the crossing. The device may be operated by 105 trains approaching in either direction, as will be readily understood.

Having thus described the invention, what is claimed as new is—

1. The combination with a casing, of a rock- 110 shaft journaled therein and projecting at one end through the casing, a signal pivoted to swing between arms on the projecting end of said shaft, an overhanging casing covering said signal in its normal position, a mechanism for operating the shaft to display the signal, levers connected with said operating mechanism and extending to opposite sides 115 of the crossing, cranks suitably journaled to which the opposite ends of the operating-levers are pivoted, tripping-plates pivoted to the ends of said cranks, said plates being adapted to be engaged and depressed by the wheels of the car, and means for returning the cranks to their normal position, substan- 120 tially as set forth.

2. The combination of a casing, a shaft journaled in the upper end thereof and projecting from the same, a signal carried by the extended end of said shaft, an intermediately- 130 pivoted shaft, a connection between the first-named shaft and the latter, shafts journaled to the lower end of the casing, operative connections between the intermediate shaft and

the last-named shafts, a rod connected to the upper shaft, a latch adapted to engage its lower end to hold the signal displayed, connections between the latch and the lower shafts, and a tripping mechanism situated on opposite sides of the crossing for displaying the signal and disengaging the latch therefrom when the opposite side of the crossing has been reached, so that the signal will be withdrawn from view, substantially as set forth.

3. The combination of a casing, a shaft journaled therein, a notched disk carried by said shaft, a rod secured at one end within the casing and provided with a hammer at its opposite end, a gong with which the hammer is adapted to engage, a grooved arm extending from the hammer-rod, a pin extending there-through, with which the notched disk is adapted to engage, a spring for holding the hammer normally out of contact with the gong, shafts journaled in the lower end of the casing, connections between the operating-shaft and said shafts, a tripping mechanism for operating the shafts to cause the hammer to engage the gong, and means for returning the mechanism to its normal position, substantially as set forth.

4. The combination with a casing, a shaft journaled at the upper end thereof, a signal carried by the shaft, a connection between the upper shaft and the latter, shafts journaled at the lower end of the casing, connections between the same and the intermediate shaft, a rod pivoted to the upper shaft and provided with a notch adjacent to its lower end, a latch pivoted to the casing and adapted to engage the notch of the sliding rod, connections between the latch and the shafts at the lower end of the casing, and a tripping mechanism for operating the signal and releasing the same as the train approaches and leaves the crossing, substantially as set forth.

5. The combination of a casing, a shaft journaled in the upper end thereof, a signal carried thereby, a sliding rod within the casing, a connection between the rod and the upper shaft, a second signal pivoted to the casing and having its inner end engaged by the sliding rod, a rod pivoted to the upper shaft and having a notch adjacent its lower end, a latch adapted to engage the notch of said rod, shafts journaled in the lower end of the casing, connections between the latch and the shafts, an intermediate shaft, connections between the same and the lower shafts, a connection between the intermediate shaft and the upper shaft, and a tripping mechanism adapted to operate the signal mechanism, substantially as set forth.

6. The combination with a casing, a shaft

journaled in the upper end thereof and projecting therethrough, a signal carried by said shaft, an intermediate shaft, connections between the upper shaft and the intermediate shaft, shafts journaled in the lower end of the casing, connections between the intermediate shaft and the lower shafts, a sliding rod movable within the casing, a signal operated by said rod, a connection between the rod and the upper shaft, a latch mechanism for holding the signals displayed, connections between the latch mechanism and the lower shaft, a rod secured at one end within the casing and having a hammer upon its opposite end, a gong which is adapted to be engaged by the hammer, an arm secured to the hammer-rod, a disk upon the intermediate shaft adapted to engage the arm, and a tripping mechanism for operating the signal mechanism for displaying the signals and releasing the same as the train approaches and leaves the crossing, substantially as set forth.

7. The combination of a casing, a shaft journaled in the upper end thereof and projecting therethrough, arms secured at one end to the shaft, a signal carried by the free end of the arms, an arm secured on the shaft within the casing, a rod pivoted thereto and having a notch adjacent its lower end, a guide through which said rod is adapted to extend, an intermediately-pivoted lever having one end adapted to engage the notch in the rod, a spring secured to the casing and bearing against the latch, shafts journaled in the lower end of the casing, connections between the latch-lever and the same, an intermediate shaft, an arm intermediately secured thereto, a connection between the arm and the upper shaft, connections between the arm and the lower shafts, a rod movable in guides upon the inner side of the casing, a pin carried by said rod, a signal having its end slotted to receive said pin, a hammer-rod secured at one end to the casing and provided with a hammer at its opposite end, a gong adapted to be engaged by the hammer, an arm extending from the hammer-rod, a disk upon the intermediate shaft engaging the arm and operating the hammer, means for returning the intermediate shaft to its normal position, a connection between the sliding rod and the upper shaft, and a tripping mechanism for operating the signal mechanism, the parts operating substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HENRY J. SCHMITT.

Witnesses:

CHARLES W. CHOPENING,
FRANK J. SCHMITT.