

(No Model.)

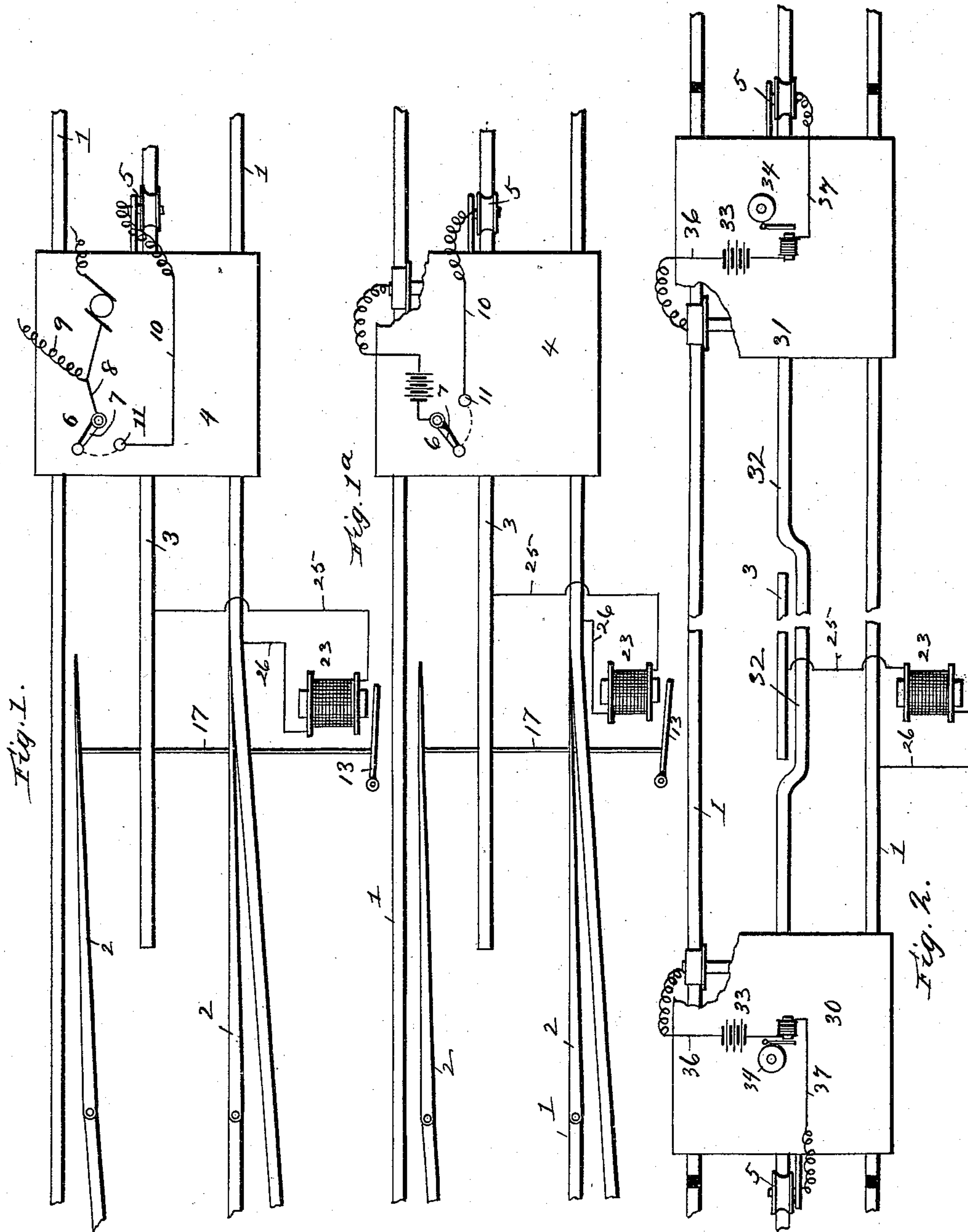
2 Sheets—Sheet 1.

J. DUTREY.

ELECTRICAL SWITCH OPERATING AND SIGNAL APPARATUS.

No. 552,053.

Patented Dec. 24, 1895.



witnesses:

C. Raeder  
N. P. Matthews.

Inventor

J. Dutrey  
By James J. Shelby  
Attorney

2 Sheets—Sheet 2.

## ELECTRICAL SWITCH OPERATING AND SIGNAL APPARATUS.

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Fig. 3.

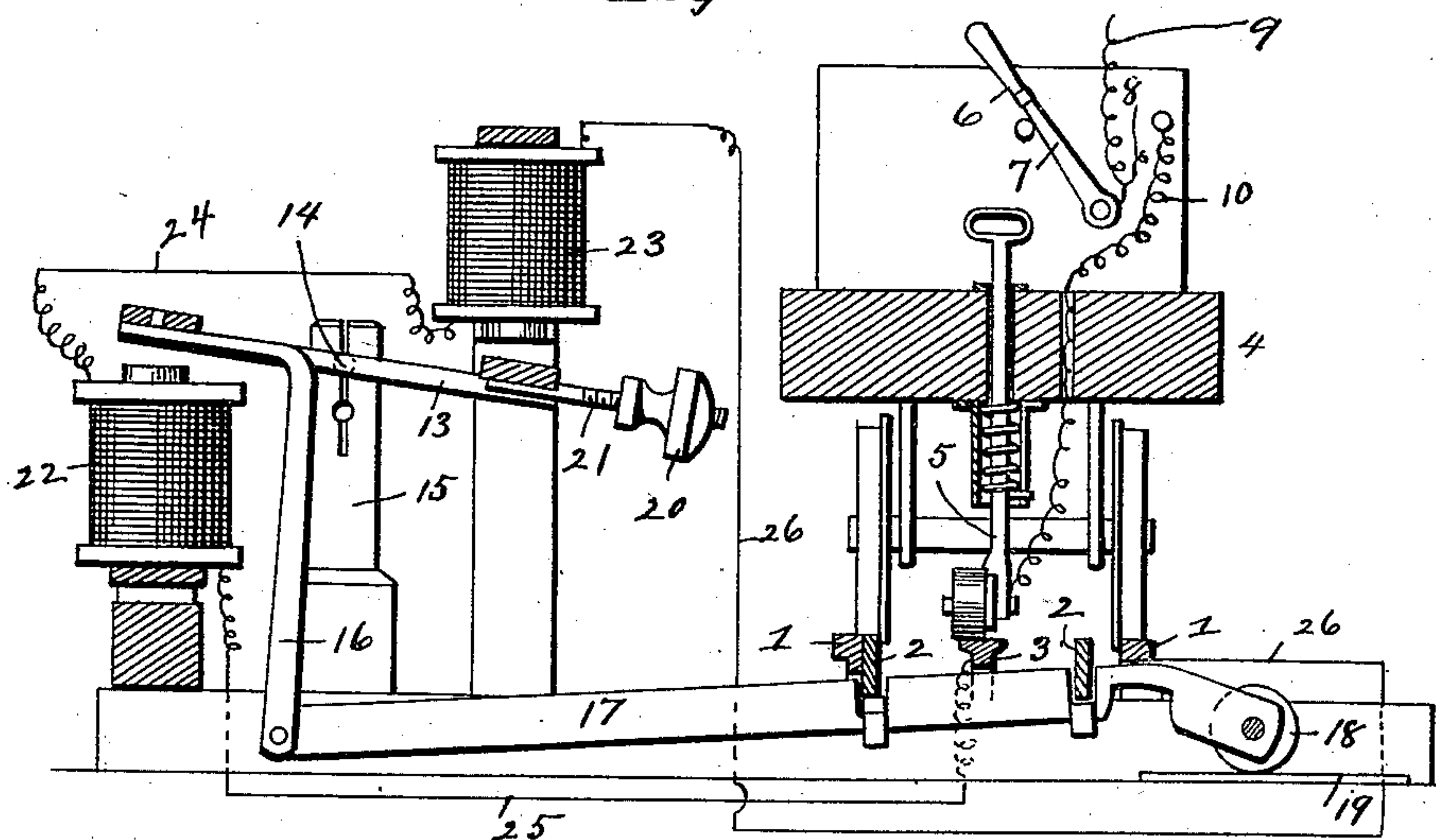


Fig. 4.

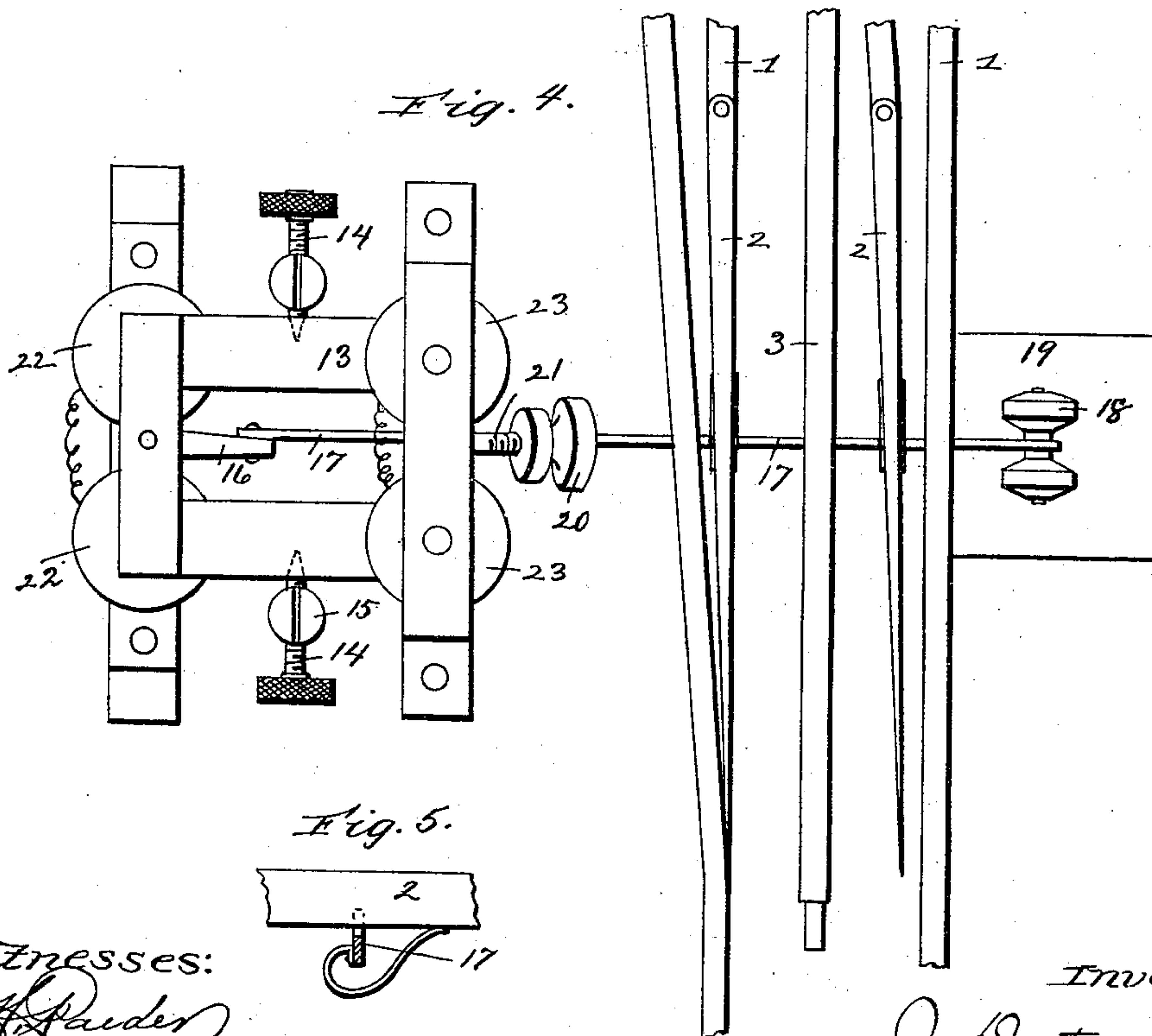


Fig. 5.

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# UNITED STATES PATENT OFFICE.

JUSTIN DUTREY, OF NEW ORLEANS, LOUISIANA.

## ELECTRICAL SWITCH-OPERATING AND SIGNAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 552,053, dated December 24, 1895.

Application filed May 25, 1895. Serial No. 550,669. (No model.)

*To all whom it may concern:*

Be it known that I, JUSTIN DUTREY, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Electrical Switch-Operating and Signal Apparatus; and I do 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.

My invention relates to improvements in electrical switch-operating and signal apparatus, and its novelty and many advantages will be fully understood from the following description and claims when taken in connection with the annexed drawings, in which—

Figure 1 is a diagrammatic plan view illustrating a portion of a railway-track and turn-out, together with my improved switch-operating apparatus and an electric car equipped with devices through the medium of which an electric current may be shunted when desired through the electromagnets of the switch-operating mechanism to throw the switch. Fig. 1<sup>a</sup> is a diagram of a modification. Fig. 2 is a diagrammatic plan view illustrating a block or section of a railway-track including a turn-out, together with my improved switch-operating mechanism and two locomotives equipped with devices through the medium of which an electric current may be shunted through the switch-operating mechanism when desired, and also equipped with the signal apparatus which is adapted to apprise the engineer of each train of the presence of the other on the block or section. Fig. 3 is a transverse section taken through the turn-out or switch and the switch-operating mechanism with the switch in its normal position, and Fig. 4 is a detail plan view of the switch-operating mechanism. Fig. 5 is a detail view.

Referring by numerals to said drawings, and more particularly to Figs. 1, 3, and 4 thereof, 1 indicates the main-track rails of a railway.

2 indicates one or more switch rails or points.

3 indicates an auxiliary rail which is preferably arranged between the rails 1 at a sufficient distance from the switch rails or points 2.

4 indicates an electric trolley-car which is, in addition to the usual overhead trolley, (not illustrated,) provided on its under side with the vertically-adjustable spring-pressed trolley 5, designed to engage the auxiliary track 3, and is also provided with the circuit-closer 6, comprising the movable contact 7, connected by wire 8 with trolley-wire 9, and the contact 11, connected by wire 10 with the trolley 5, and 13 indicates the armature-lever of the switch-operating mechanism, through the medium of which the switch-points are moved as presently described. The said armature-lever 13, which is disposed horizontally, is fulcrumed at an intermediate point of its length on two screws 14, mounted in posts 15, and it is provided with the arm 16, as shown. This arm 16 is connected by a rod 17 with the switch-points 2, and in order to render the movement of the said rod 17 and the switch-points more easy, I extend the rod beyond the switch-points and provide it with one or more rollers 18, (see Fig. 3,) which are designed to travel on the plate 19 and sustain the weight of the switch-points, so as to permit of them being very easily moved. Said rod 17 is also provided with springs 17<sup>a</sup> to hold the switch-points up level with the other rails.

The armature-lever 13, and consequently the switch-points 2, are normally held in the positions shown in Fig. 3 by the weight 20, which is adjustably fixed on a threaded rod 21, extending from one end of the armature-lever; and said armature-lever and also the switch-points are moved, when it is desired to have a car go on the siding, through the medium of the electromagnets 22 23. (Better shown in Figs. 3 and 4.) The electromagnet or electromagnets 23 are arranged on a switch-support beneath one end of the armature-lever 13, and the electromagnets 23 are arranged upon a similar support above the opposite end of said armature-lever, and by virtue of this it will be seen that the said electromagnets when energized will operate in conjunction to rock the lever and throw the switch-points, and therefore a comparatively-weak current of electricity may be utilized to throw and hold the switch in one position, which is a desideratum.

The two pairs 22 23 of electromagnets are



connected by a wire 24, and the magnets 22 are connected by a wire 25 with the auxiliary rail 3, while the magnets 23 are connected by a wire 26 with one or both main track-rails 1.

5 By reason of this it will be seen by reference to Fig. 1 that when a car comes over the auxiliary rail 3, and the motorman lowers the trolley 5 to engage with said rail 3, and closes the circuit-closer 6, the shunt-current will

10 pass from the trolley-wire 9, which may be connected to the motor (not illustrated) in the ordinary manner through wire 8, contact 7, wire 10, trolley 5, rail 3, wire 25, electromagnets 22, wire 24, electromagnets 23, and

15 wire 26 to the rails 1, which are utilized as return-conductors, and consequently the armature-lever 13 will be rocked and the switch-rails will be moved to close the main track and open the turn-out, and will be held in such

20 position so long as the trolley 5 is in engagement with rail 3, and when the trolley passes off said rail 3 they will be returned to their normal illustrated position by the weight 20. For the above-mentioned reasons the rail 3

25 should be made long enough and should be so arranged as to enable the car to pass onto the switch-rails before its trolley leaves the rail 3.

When it is desired to use my improvements

30 in conjunction with cars other than electric cars, such cars may be equipped with batteries from which the electromotive force to throw the switch may be taken, as shown in the diagram, Fig. 1<sup>a</sup>.

35 Referring to Fig. 2 of the drawings, 1 indicates the main-track rails of one block or section, 2 indicates the switch-rails, which are connected to armature-lever 13 in the manner before described, and 30 31 indicate two

40 locomotives on a single track.

In organizing my improved switch-operating and signal apparatus, I arrange an auxiliary rail 3 in the manner before described and provide in addition to the same a rail or

45 conductor 32, which is insulated from the rail 3, and passes the same as shown, and equip each locomotive with a battery or other electric generator 33 and with an incandescent electric light or other visible or audible signal 34, which is electrically connected with

50 the battery. The generator 33 of each locomotive is electrically connected by a wire 36 with one or more of the traveling-wheels, and the light or bell 34 of each locomotive is likewise connected by a wire 37 with a trolley 5,

55 similar to that before described, which bears and travels upon the intermediate rail or conductor 32, and is also designed to bear and travel upon the auxiliary rail 3.

60 From the foregoing it will be seen that when two locomotives 30 31 are traveling upon the same track in one block or section and the trolleys 5 are in engagement with the track 32, a complete electric circuit will be formed and

65 the current, with the arrangement of wires better shown in Fig. 2, will flow from battery 33 of locomotive 31 through wire 36, loco-

tive-wheels, track-rails 1, wire 36, battery 33, signal 34, wire 37, and trolley 5 of locomotive 30, rail or conductor 32, and trolley 5, wire 70 37, and signal 34, of locomotive 31. When the circuit is thus completed the lamps 34 in the cabs of both locomotives will be lighted, or if bells be used they will be sounded, so as to apprise the engineer of each locomotive of the

75 presence of the other and enable him to take the proper precautions to avoid a casualty.

When it is desired by the engineer of a locomotive, such as 30 or 31, to pass the switch

80 without changing the position of the same, it is simply necessary for him to raise the trolley 5 while the engine passes over the rail 3. When, however, it is desired to change the position of the switch, the engineer leaves the trolley 5 in its normal depressed position,

85 so as to enable it to engage and travel over the track 3. When this is done and the trolley 5 engages the said rail 3, the current will pass from the generator 33 through wire 36, traveling-wheels, rails 1, wire 26 electromagnets 23, wire 24, electromagnets 22, wire 25, rail 3, trolley 5, wire 37, and signal back to generator 33, and energizing the said magnets 22

90 23 will throw the switch and hold it in the manner before described while the trolley 5

95 remains in contact with the rail 3.

It will be appreciated from the foregoing that, while very cheap and simple, my improvements are reliable in operation and are not likely to get out of order, which is an

100 important advantage, as is obvious; and it will also be appreciated that the switch apparatus may be applied with equal facility and advantage to a street or steam railway.

I have in some respects specifically described the construction and relative arrangement of the parts of my improved apparatus, in order to impart a full, clear and exact

105 understanding of the same, but I do not desire to be understood as confining myself to such construction and arrangement, as such changes or modifications may be made in practice as fairly fall within the scope of the invention.

Having described my invention, what I

115 claim is—

1. In an electric switch operating apparatus, the combination of the main track rails, turnout rails, a switch point or points, an armature lever fulcrumed at an intermediate

120 point of its length, a connection between said armature lever and the switch point or points, an electro magnet disposed so as to enable it when energized to draw one end of the armature lever in one direction, another electro

125 magnet disposed so as to enable it when energized to draw the opposite end of the armature lever in the opposite direction, and a suitable means for energizing said electromagnets, substantially as specified.

130

2. In an electric switch operating apparatus, the combination of the main track rails, turnout rails, a switch point or points, an armature lever fulcrumed at an intermediate



point of its length, a connection between said armature lever and the switch point or points, an electro-magnet disposed so as to enable it when energized to draw one end of the armature lever in one direction, another electro-magnet disposed so as to enable it when energized to draw the opposite end of the armature lever in the opposite direction, a weight connected with one end of the armature lever and adapted to normally hold said lever and the switch point or points in one position, substantially as specified.

3. In an electric switch operating apparatus, the combination of the main track rails, turnout rail, a switch point or points, an auxiliary rail 3, an armature lever fulcrumed at an intermediate point of its length, a connection between said armature lever and the switch point or points, an electro-magnet disposed so as to enable it when energized to draw one end of the armature lever in one direction, another electro-magnet disposed so as to enable it when energized to draw the opposite end of the armature lever in the opposite direction, an electrical connection between said electro-magnets, an electrical connection between one of said magnets and one of the main track rails, an electrical connection between the other electro magnet and the rail 3, and a car carrying a contact device for engaging the main track rail and a contact device for engaging the rail 3, and having said contact devices electrically connected with a source of electro motive power, substantially as and for the purpose set forth.

4. In an electric switch operating apparatus, the combination of the main track rails, turnout rails, a switch point or points, an auxiliary rail 3, an armature lever fulcrumed at an intermediate point of its length, a connection between said armature lever and the switch point or points, an electro-magnet disposed so as to enable it when energized to draw one end of the armature lever in one direction, another

electro-magnet disposed so as to enable it when energized to draw the opposite end of the armature lever in the opposite direction, an electrical connection between said electro-magnets, an electrical connection between one of said magnets and one of the main track rails, an electrical connection between the other electro magnet and the rail 3, a rail 32, arranged in line with the rail 3, and having the portion passing said rail 3, and insulated therefrom, a car carrying a contact device for engaging the main track rail, a contact device 5, for engaging the rails 32, and 3, an electric generator electrically connected with the contact device for engaging the main track rail, an electrical signal connected with the generator and an electrical connection between said signal and the contact device 5, all substantially as specified.

5. In an electric switch operating apparatus, the combination of the main track rails, turnout rails, a switch point or points, the armature lever fulcrumed at an intermediate point of its length so as to rock in a vertical plane and having the arm 16, the rod connecting the said arm and the switch point or points and carrying a roller adapted to travel on a base, a weight connected with one end of said armature lever and adapted to return it and the switch point or points to their normal position and normally hold them in such positions, an electro magnet disposed below one end of the armature lever, an electro magnet disposed above the opposite end of the armature lever, and a suitable means for energizing said electro-magnets to rock the armature lever and throw the switch point or points, substantially as specified.

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

JUSTIN DUTREY.

Witnesses:

D. I. DOWERS,  
GABRIEL FERNANDEZ.