

No. 835,411.

C. R. DOWLER.  
CIRCUIT BREAKING DEVICE.  
APPLICATION FILED FEB. 9, 1906.

PATENTED NOV. 6, 1906.

3 SHEETS—SHEET 1.

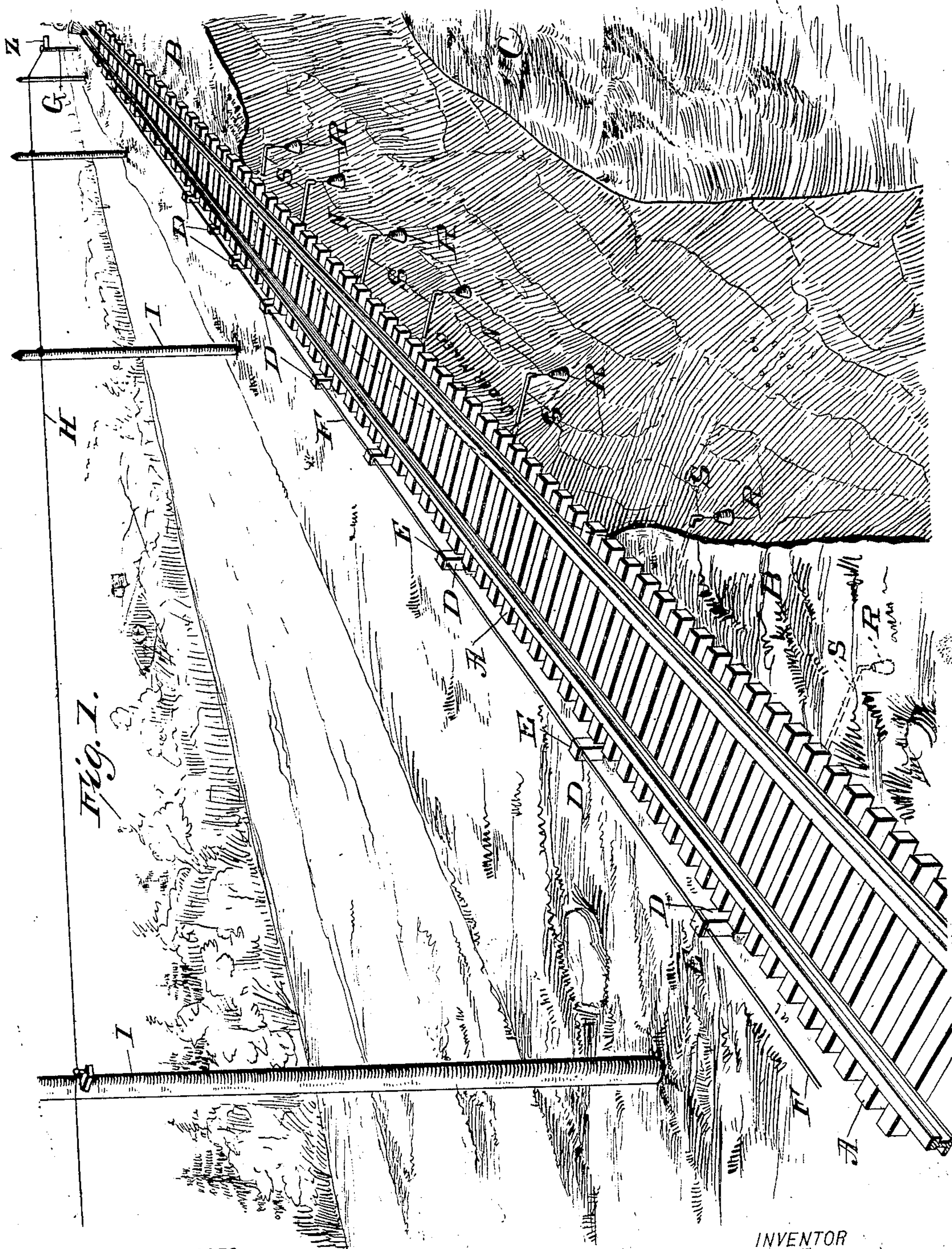


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

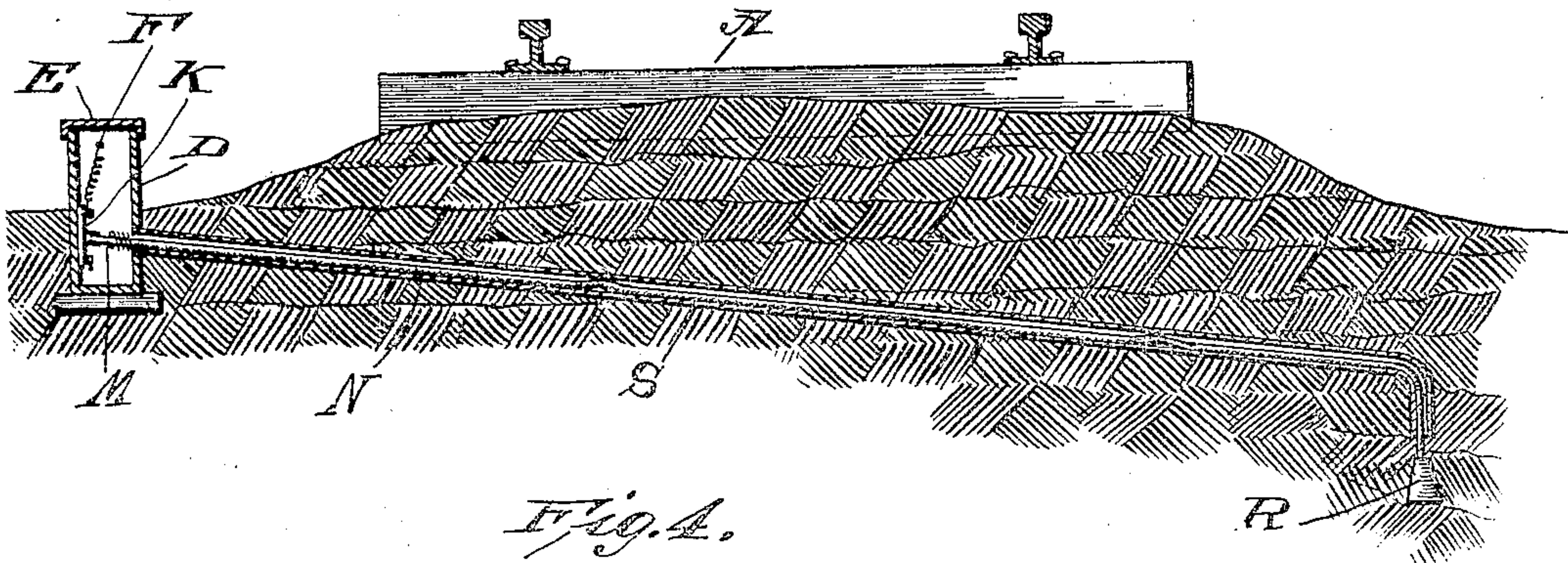


Fig. 4.

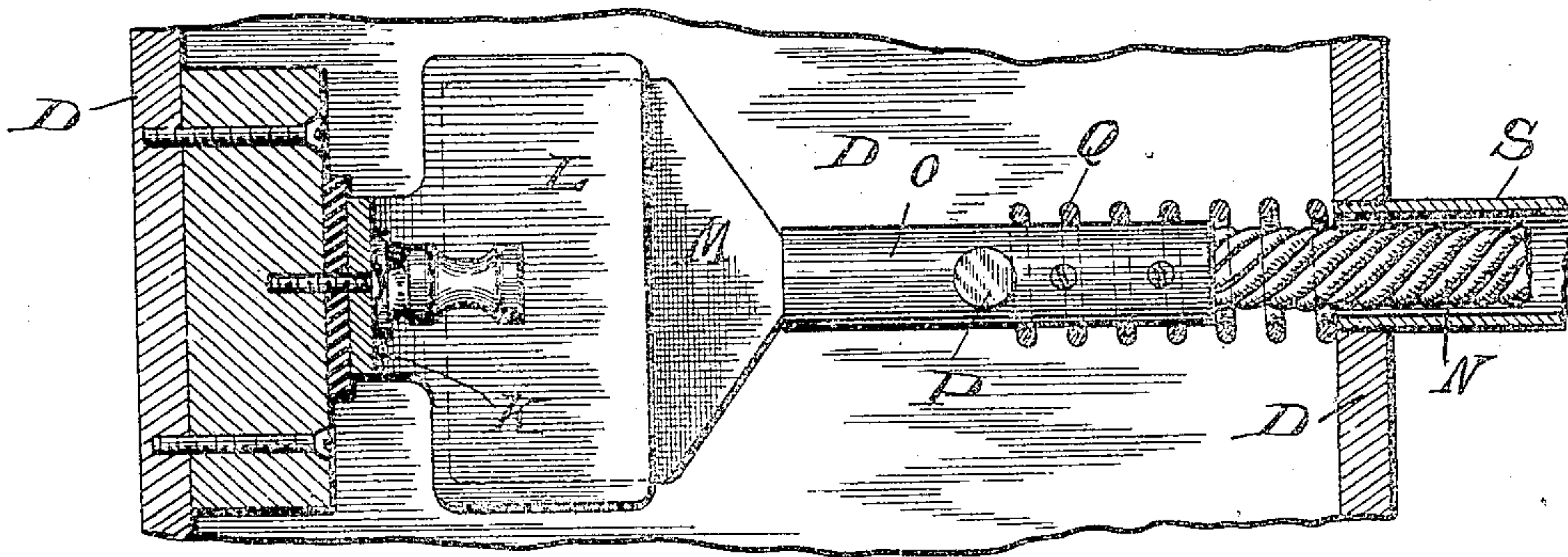


Fig. 5.

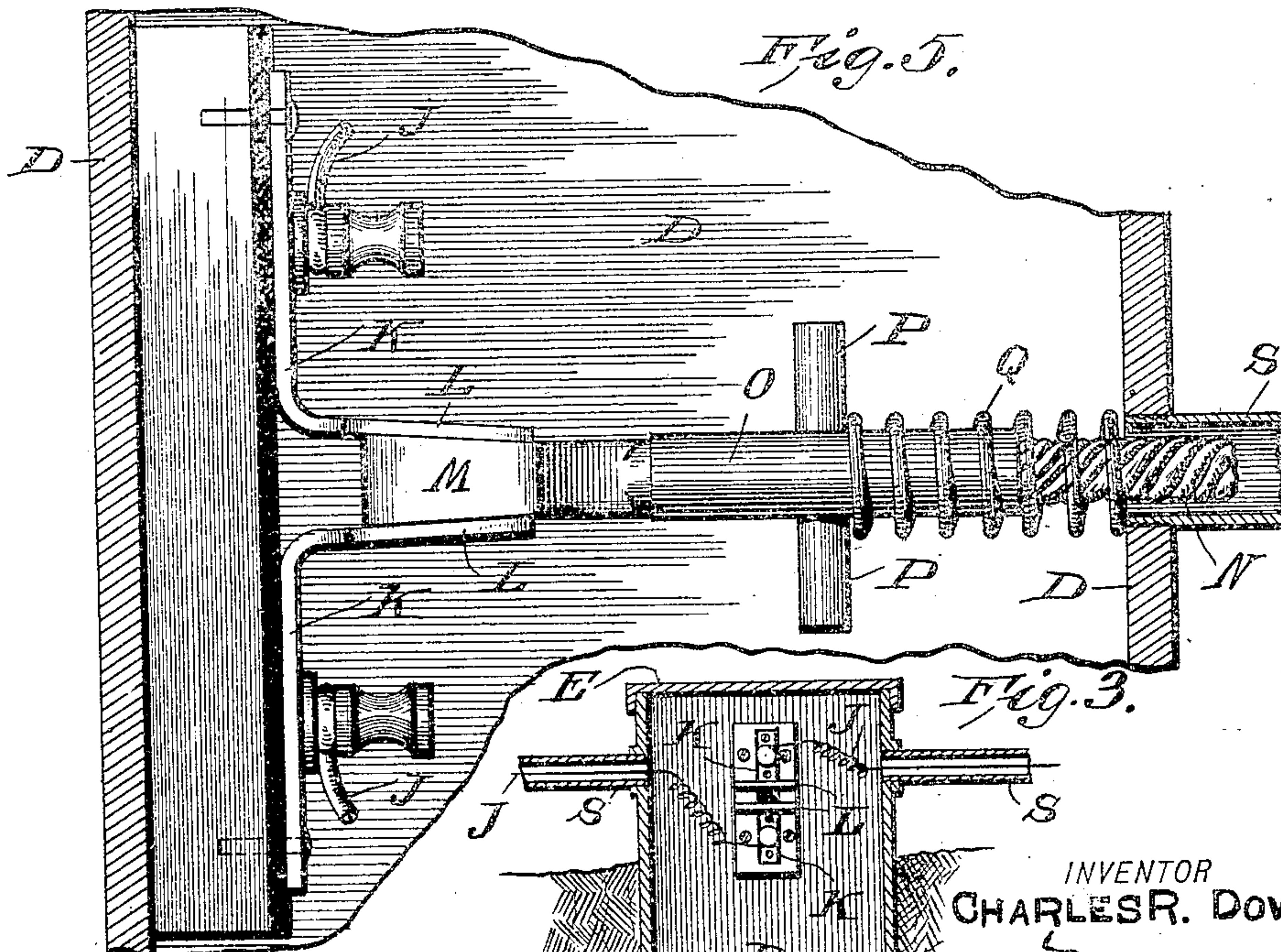


Fig. 3.

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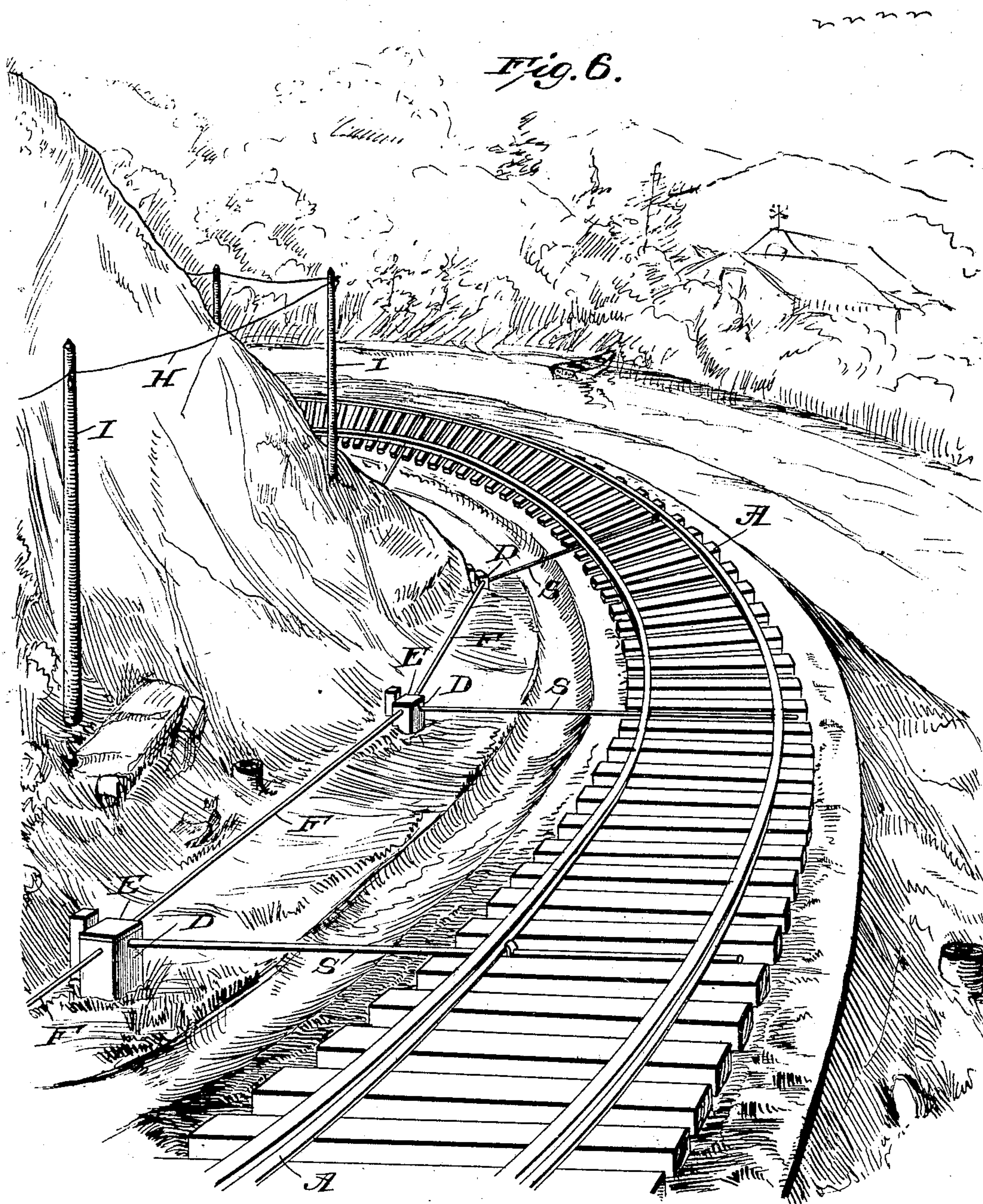
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3 SHEETS—SHEET 3.



WITNESSES:  
*E. M. Callaghan,*  
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# UNITED STATES PATENT OFFICE.

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## CIRCUIT-BREAKING DEVICE.

No. 835,411.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed February 9, 1906. Serial No. 300,241.

*To all whom it may concern:*

Be it known that I, CHARLES R. DOWLER, a citizen of the United States, and a resident of Lamar, county of Prowers, and State of Colorado, have invented a new and Improved Circuit-Breaking Device, of which the following is a specification.

The invention relates to devices of the character stated employed with electric signal-circuits having peculiar adaptability for use with railway electric danger-signals.

The invention may be generically stated as comprehending an electric circuit along railway-tracks, suitable signal devices, and means in the circuit for breaking same, the circuit-breaking devices being adapted for automatic operation, through action of peculiar means, upon undermining action or washout of the road-bed embankment or from spreading of the rails.

The following detail description of the preferred embodiment of my invention, taken in connection with the accompanying drawings, will render same fully understood.

In the drawings, Figure 1 is a perspective view in illustration of my invention. In the view the track-embankment is shown washed away, undermining the track, and the distant-signal device illustrated at danger display. Fig. 2 is a transverse sectional view. Fig. 3 is an enlarged detail sectional view showing a portion of the circuit-breaker case and the latter in top plan view. Fig. 4 is a similar view with the parts shown by Fig. 3 illustrated in side elevation, and Fig. 5 is a perspective view illustrating another form of my invention.

In the practice of my invention I employ signal devices of suitable character—such as targets, lights, or equivalent means—and locate same at desired or danger points along a railway-track, the signal devices being secured at safety display through action of closed electric circuit and adapted for automatic operation to “danger” upon production of a break in the circuit. Electric signal devices operating from “safety” to “danger” and “danger” to “safety” being broadly old and heretofore patented and inasmuch as practicable operation of the hereinafter described and claimed invention is not restricted to association therewith of any particular form or character of similar signal

means, detail illustration of a specific form of signal means set in operation through production of a break in the controlling-circuit is not deemed necessary for a full understanding of my invention.

In Fig. 1 of my drawings I have illustrated in perspective a railway-track with the embankment B thereof paralleled by a river or body of water C.

D denotes suitable cases or inclosures having removable or other suitable doors E, (see Fig. 3,) the cases being located along the opposite side of the railway-track at danger-points or opposite side thereof from the river or body of water C. The several cases D are arranged in communication through tubular passage-ways F.

G denotes a signal device of preferred character—such as a target, light, or other means—the same being located along the railway-track suitably distant from the danger-point. (Designated in Fig. 1 by an adjacent body of water C.)

It will be understood that the signal device G is electrically operated. Its circuit includes a positive or negative wire H, supported on suitable poles I, and circuit-completion wiring J, (see Figs. 3, 4, and 5,) leading through all the cases D.

I preferably employ current with the battery located in locked inclosure of the signal device G, but do not restrict myself to the use of such current nor to its location as stated.

In the cases D, I arrange separated terminals K in circuit with the adjacent ends of the wires J J. The terminals K are constructed with transverse yielding contacts L, (see Figs. 3, 4, and 5,) arranged suitably spaced apart and disposed with their free ends converging, substantially as shown by Fig. 5.

For completion of the circuits J K L, I employ a wedge-shaped plug M, (see Figs. 4 and 5,) with the same fixedly secured to one end of a cable or rope N, the cable or rope being extended into the case and provided with a suitable socket O, providing attaching means for the plug M, as will be understood.

The socket device O is made laterally extending, as by arms P or other projecting means, providing a suitable shoulder for confinement of one end of a spring Q, arranged on the rope or cable, the other end of the spring being confined by the case-wall,



through which the cable N is extended, as will be understood. The spring Q is intended for simply holding the plug M against being displaced for circuit-closing position between the contacts L.

The cable or ropes N are extended from the cases D to the opposite side of the railway-track and provided with a suitable weight R, (see Fig. 2,) the weight being embedded in the track-embankment B, next to the body of water C, and the ropes or cables are arranged in suitable tubes S, extending from the cases D and disposed transversely under the railway-track to a point at the far side of the embankment.

Now it is apparent that should the embankment be washed away, or the track otherwise undermined, substantially as shown by Fig. 1 of my drawings, that the weights R will, through connection of the cables N, pull the plugs M from circuit-closing position, between the contacts L, and since the signal device G (see Fig. 1) is held at "safety," through suitable means operating with closed circuit, as hereinbefore stated, upon production of a break in the circuit, as just described. The signal holding and setting means used by me is shown and described in my allowed application for improved signal, Serial No. 295,732.

In Fig. 6 of my drawings I have shown another form of my general idea, in which the weights R are dispensed with and the cable or ropes N connected by suitable means with the track-rail next to the cases D. This form of my invention is designed for producing a break in the circuit H J K L M of the remote signal device G upon displacement of the track—in other words, when the track is thrown out of proper alinement—through means substantially as now described.

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

1. The combination with a signal-display device, of circuit-wires extending from the display device, terminals in circuit with said wires, means adapted for completion of electric circuit between the terminals, and means embedded in the track-embankment, the embedded means being adapted for operation upon undermining action of the track for adjusting the circuit-completing means to circuit-breaking adjustment.

2. The combination with a railway-track-signal device, held at safety, by closure of suitable electric circuit and circuit-breakers in said circuit, the same being located along

the railway-track, of weights embedded in the track-embankment, the weight being arranged adapted, through their connection with the circuit-breakers, for adjusting them to circuit-breaking adjustment, upon undermining action of the railway-track.

3. The combination with a railway-track signal, held at safety through closure of a suitable electric circuit, of normally closed circuit-breakers located along the track and arranged in said circuit, means inclosing the circuit-breakers, and weights embedded in the track-embankment, the embedded weights being suitably connected with the circuit-breakers, adapting them for operation adjusting the circuit-breakers to open condition, upon undermining of their support.

4. The combination with a railway-track, of circuit-wires arranged along the track, a signal device held at safety by closed circuit through said wires, circuit-breakers employing separated contacts, a plug adapted for arrangement completing electric circuit between said contacts, yielding means adapted for holding the plug at circuit-closing position, and means embedded in the track-embankment adapted for operation adjusting the plugs to open-circuit position, upon undermining of the track-embankment.

5. The combination of a signal device held at safety through operation of closed electric circuit, circuit-breakers in said circuit, consisting of separated terminals and removal-plugs completing electric circuit between said terminals, and normally supported weights connected with the circuit-closing plugs, the weights being connected with the plugs adapted, upon removal of their support, for withdrawing them to open-circuit adjustment, substantially as described.

6. In combination, a target or other signal means, located near a railroad-track, and held at safety display by closed-circuit means, circuit-wires extending from a location along the track, liable to be undermined, or otherwise rendered dangerous, suitably-located circuit-closers arranged in the circuit extending along the track, and means whereby to break the target-circuit, employing means extending from said closers to and with attachment to suitably-supported weights, the weights being located at points in the road-embankment liable to undermining action.

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Witnesses:

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