

No. 668,176.

Patented Feb. 19, 1901.

H. S. GOUGHNOUR.
SWITCH STAND.

(Application filed June 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.

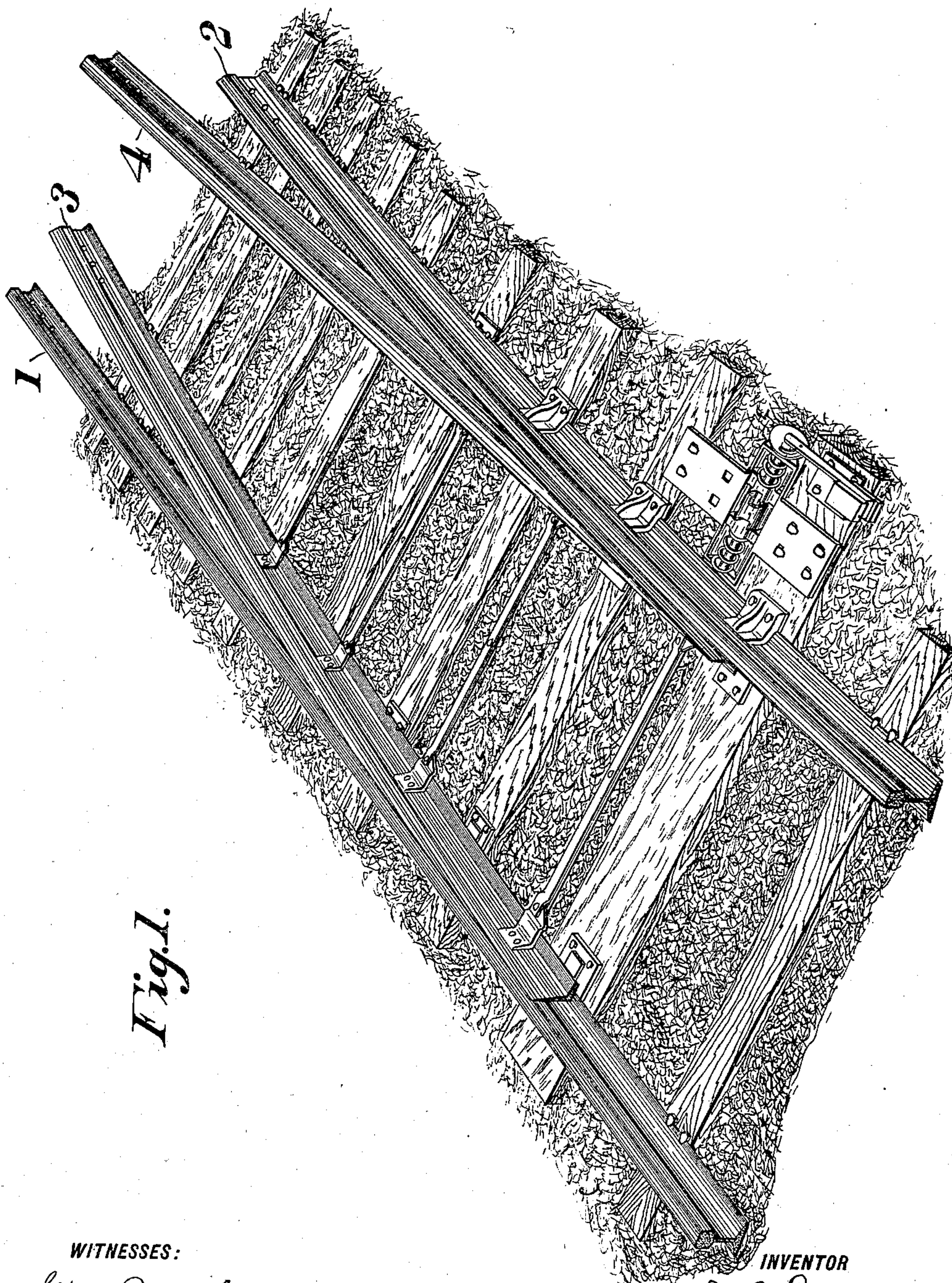


Fig. 1.

WITNESSES:

G. M. Powell
B. M. Smith

INVENTOR

H. S. Goughnour,
BY
Geo. H. Carmichael,
his ATTORNEY.

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Fig. 2.

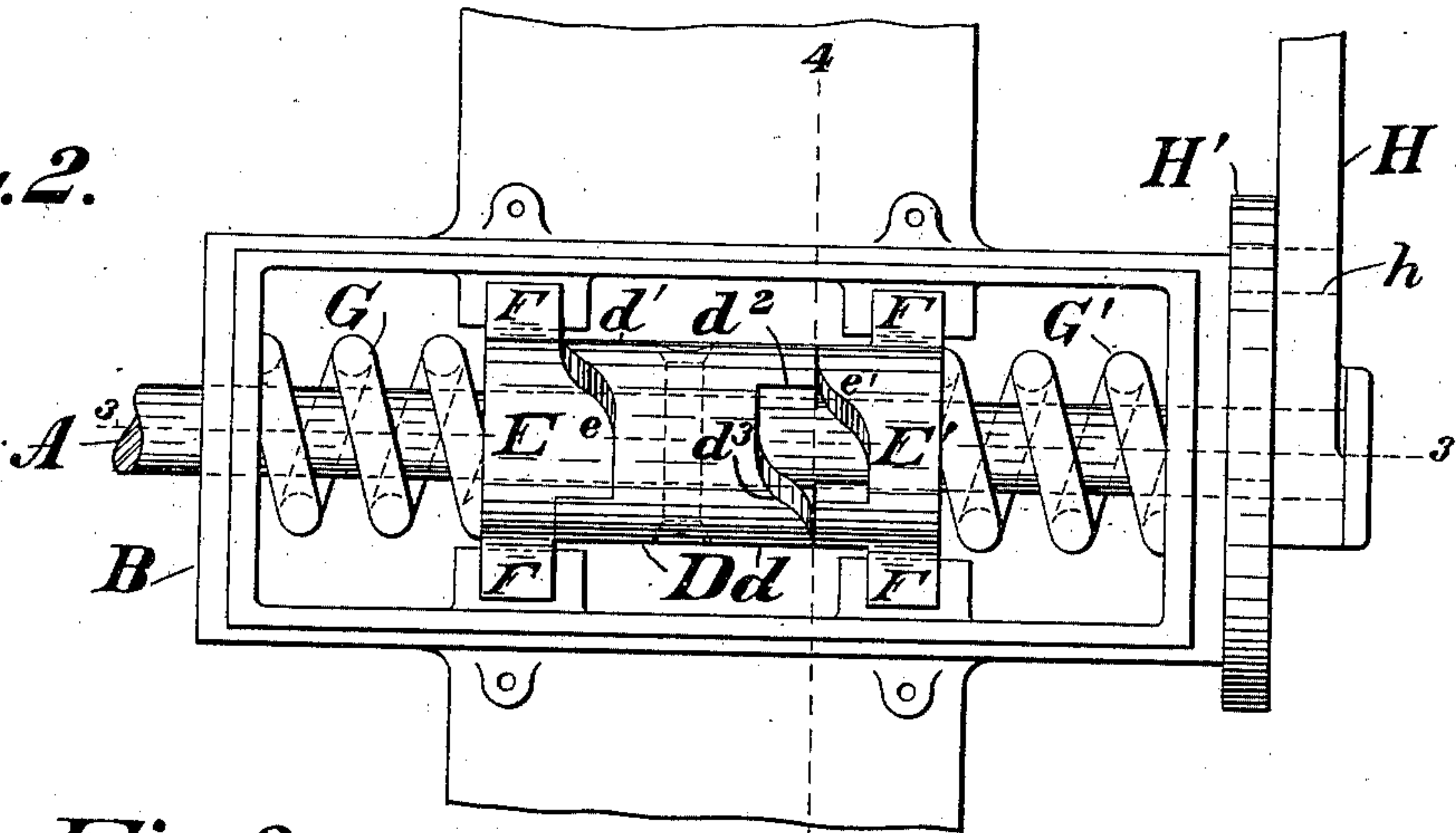


Fig. 3.

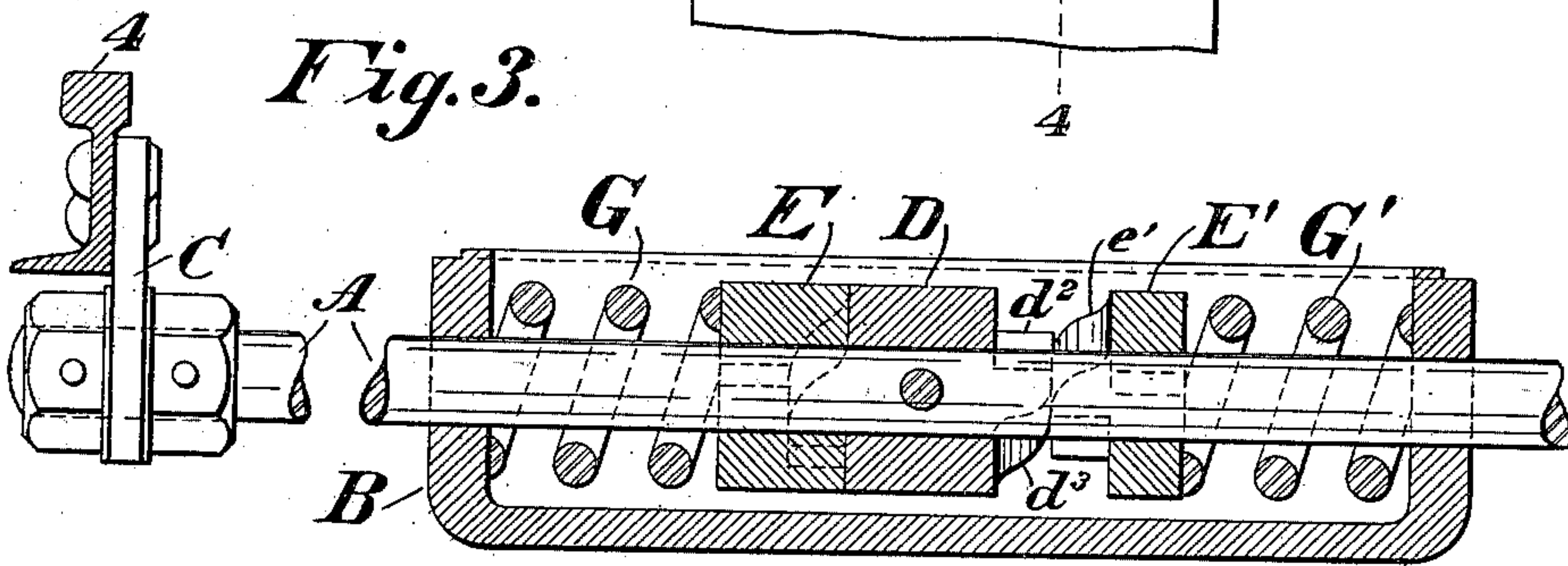


Fig. 4.

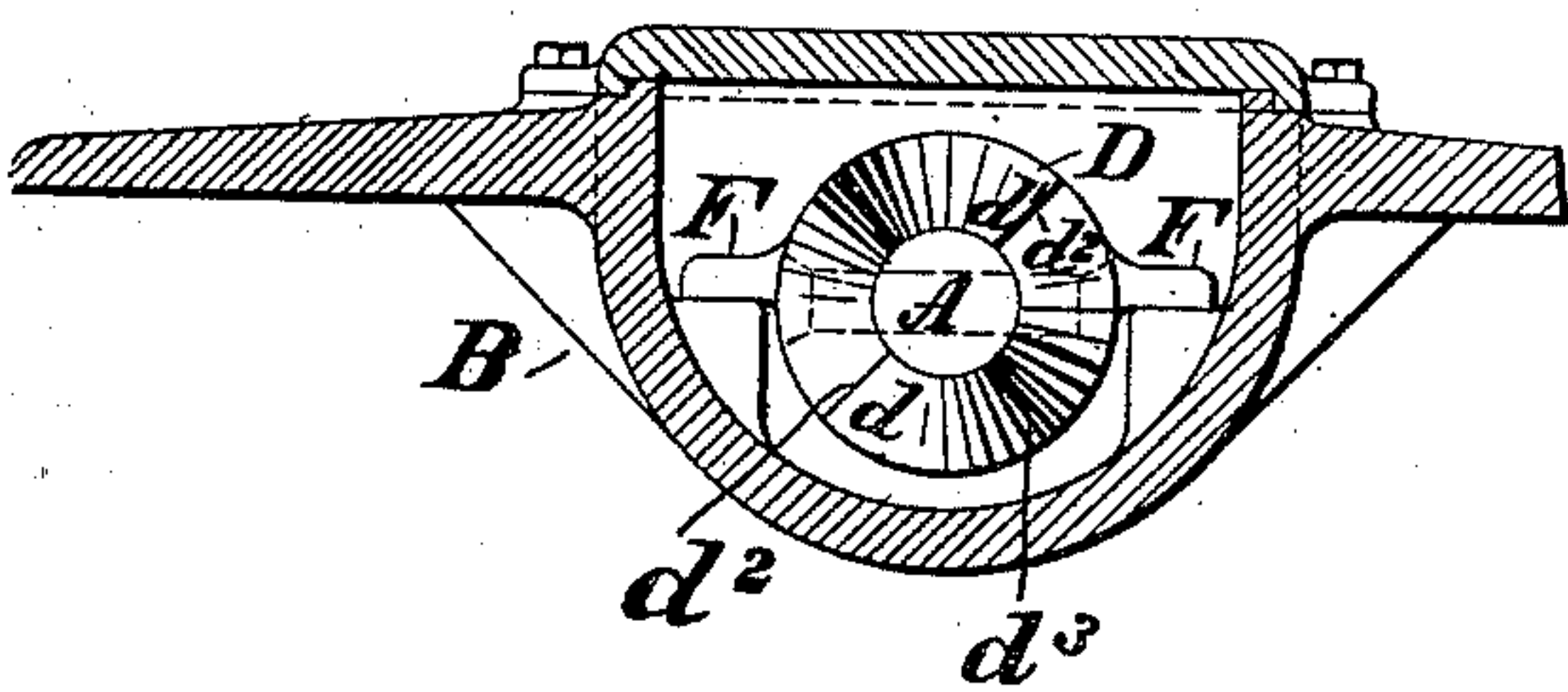
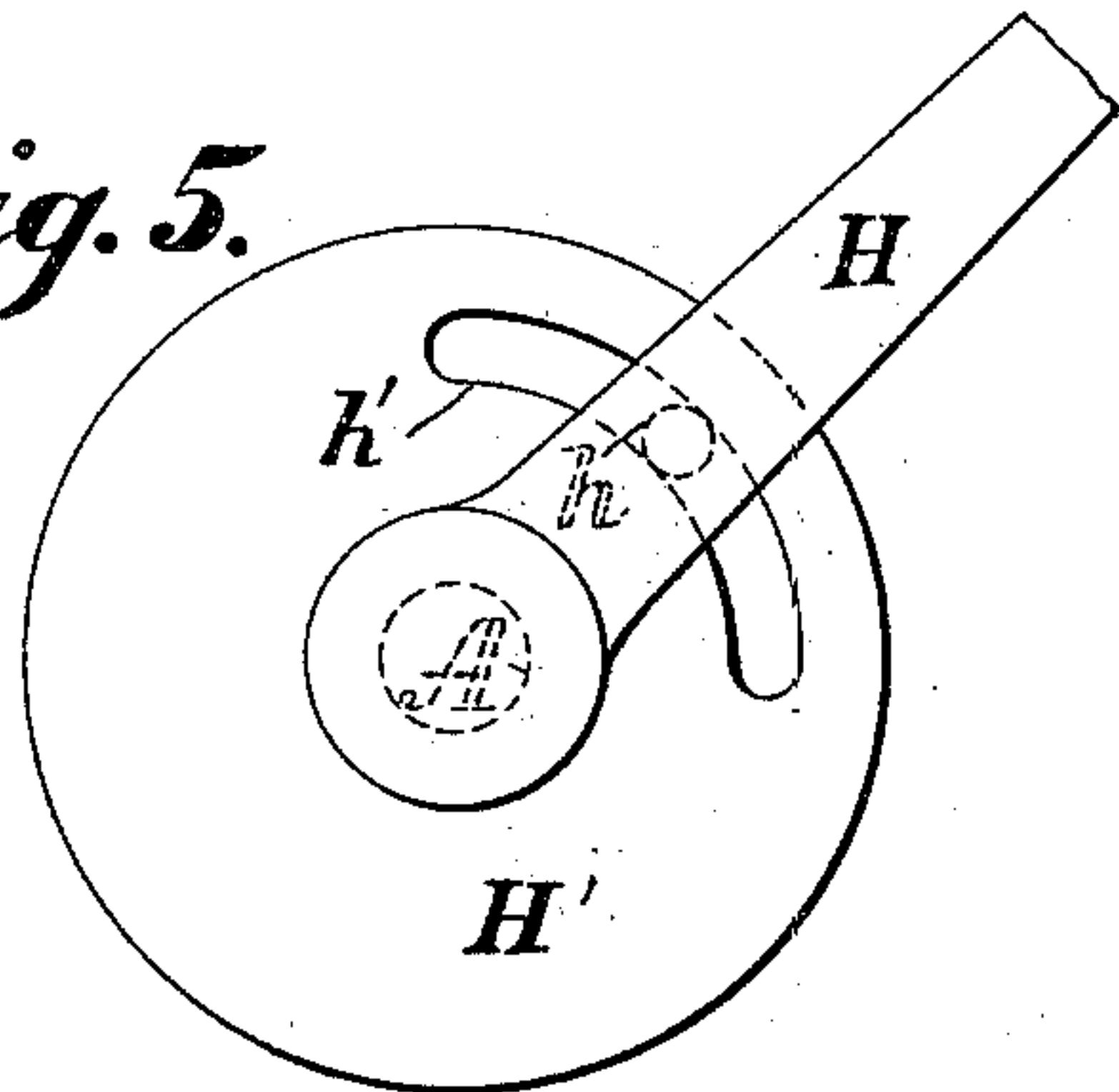


Fig. 5.



WITNESSES:
G. M. Powell.
B. M. Smith.

INVENTOR
H. S. Goughnour,
BY
Geo. H. Parmelee,
his ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY S. GOUGHNOUR, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO
THE LORAIN STEEL COMPANY, OF PENNSYLVANIA.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 668,176, dated February 19, 1901.

Application filed June 8, 1900. Serial No. 19,638. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. GOUGHNOUR, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Switch-Stands, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to certain new and useful improvements in switch-stands or ground-switch throws, and is designed to provide a construction of simple, durable, compact, and effective character whereby the switch may be operated by a movement of a lever in a direction parallel with the track-rails.

With this object in view my invention consists in the combination of a switch shaft or rod operatively connected with the movable switch-rails, an operating-lever movable in a direction parallel with the track-rails, and coöperating cam and spring devices of the novel character hereinafter described, whereby movement of the said lever effects a movement of the switch shaft or rod in a direction at right angles to the direction of movement of the lever and whereby said rod or shaft may have a movement independent of said lever when acted upon by a train trailing through the switch.

My invention also consists in the novel construction, arrangement, and combination of parts, all as hereinafter described, and pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification.

In the drawings, Figure 1 is a perspective view of a ground-switch throw embodying my invention, the upper portion of the inclosure for the cam and spring devices being removed. Fig. 2 is a plan view of the said inclosure and cam and spring devices. Fig. 3 is a longitudinal section through Fig. 2 on the line 3 3. Fig. 4 is a section through line 4 4 of Fig. 2, and Fig. 5 is an end view showing the connection between the operating-lever and the switch rod or shaft.

The numerals 1 and 2 designate the fixed track-rails, and the numerals 3 and 4 designate the movable switch-rails and which are

cross-connected in the usual manner to move in unison.

A is the switch rod or shaft, journaled in suitable bearings in a box or closure B to have both a rotary and an endwise movement and which is connected by a bracket C to the movable switch-rail 4. Fixed to the shaft A is the cam member D, formed with a cam-face at each end, which in the present instance consists of the two high portions $d d'$, whose centers are one hundred and eighty degrees apart and each of which has an abrupt drop or shoulder d^2 at one side and at the other side is led up to an inclined surface d^3 . E E' are two other cam members through which the shaft A extends loosely and which are arranged to reciprocate a limited distance on slide-seats F, the member E being to one side of the member D and the member E' upon the opposite side. Each of the members E E' has a cam-face, which is a counterpart of the contiguous face of the member D and which consists of the raised portions $e e'$.

G is a spring coiled around the shaft A and bearing at one end against the member E and at its other end against one end wall of the box or closure B. G' is a similar spring arranged between the member E' and the opposite end of the said box.

H is the operating-lever. Inasmuch as with the particular style of cams above described the rotary movement of the shaft is limited to ninety degrees it becomes necessary when such cams are used to provide for an additional ninety-degrees movement of the handle, which should preferably move from ground through one hundred and eighty degrees to ground again. For this purpose I provide the construction shown in Fig. 5, in which the lever is loosely sleeved on the end portion of the shaft A and makes connection with said shaft by means of a stud h thereon, which engages an arcuate slot h' of ninety degrees in length, formed in a plate or disk H', rigidly secured to said shaft. It will be readily seen that when moved from either position of rest the lever will turn loosely on the shaft during the first half of its movement, after which the stud h engages the end wall of the slot h' , and thereby causes the rotation of the shaft A. It will also be seen

that when the shaft is turned in one direction the inclined faces of the cam projections *d d'* of the member D, riding on the corresponding faces of the cam projections *e e'* of the member E, will tend to move the latter endwise against the spring G, and thereby tend to compress the latter. Inasmuch, however, as the spring is strong enough to overcome the resistance to endwise movement of the shaft A there will be, in effect, little or no endwise movement of the member E, but the member D and shaft A will instead move endwise in the opposite direction, and thereby throw the switch. When the lever is moved in the other direction, a similar but reverse movement of the rod A and switch is effected through the member E' and spring G'.

In case a train should trail through the switch when set in either position the only effect upon the operating mechanism will be a temporary compression of one or the other of the springs G G', and such spring will immediately after the train has passed return the switch to its previous position.

It is obvious that the particular construction and arrangement of the cams above described may be widely varied from that herein shown and described without departing from the spirit and scope of my invention; also, that other changes may be made in the details of the switch.

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

1. In a device of the character herein described, the combination of a switch rod or shaft operatively connected with the movable rail or rails of the switch, an operating-lever movable in a plane at right angles to the axis of said rod or shaft, and cooperating cam and spring devices whereby movement of said lever imparts an endwise movement of said shaft, and whereby said shaft may move endwise independently of the operation of the said lever.

2. In a device of the character herein described, the combination of a rotatable and endwise-movable rod or shaft operatively connected with the movable rail or rails of the switch, of an operating-lever movable at right angles to the axis of said rod or shaft, a cam device secured to said shaft, and cooperating cam devices whereby rotary movement of said shaft will impart endwise movement thereto, said cam devices being arranged to permit independent endwise movement of said rod or shaft.

3. In a device of the character described, the combination of a rotatable and endwise-

movable rod or shaft operatively connected with the movable rail or rails of the switch, of a cam device secured to said shaft, cooperating longitudinally-movable cam devices, springs acting on the said devices in opposition to the first-named cam device, and fixed abutments for the said springs.

4. In a device of the character described, the combination of a rotatable and endwise-movable rod or shaft operatively connected with the movable rail or rails of the switch, of a double-end cam secured to the said shaft, cooperating cams movable longitudinally on said shaft and independently thereof, springs arranged to act upon said cam devices in opposition to the first-named cam, fixed abutments for the said springs, and means for manually rotating the said rod or shaft.

5. In a device of the character described, the combination of a rod or shaft operatively connected to the movable rail or rails of the switch, of cooperating relatively fixed and movable cam devices actuated by means of said rod or shaft, and springs acting upon said cam devices.

6. In a device of the character described, the combination of a rod or shaft operatively connected to the movable rails of the switch, and cam devices whereby rotary movement of said shaft also causes an endwise movement thereof, of an operating-lever movable at right angles to the axis of said shaft, and having an operative connection with said rod or shaft during certain portions only of its throw.

7. In a switch-stand, the combination of an endwise-movable rod or shaft operatively connected with a movable member of the switch, a double-end cam fast to said shaft, a cooperating endwise-movable cam at each end of the first-named cam, a spring bearing against each of said cooperating cams, and a box or casing inclosing said cams and springs and forming fixed abutments for the springs.

8. In a switch-stand, the combination of an endwise-movable switch rod or shaft, the double-end cam member D secured to said rod or shaft, each end of said member having duplicate cams thereon, the cooperating longitudinally-movable cam members E, E', the springs G, G', and means for effecting a rotary movement of said rod or shaft.

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

HENRY S. GOUGHNOUR.

Witnesses:

BLANCHE M. SMITH,
H. W. SMITH.