

(No Model.)

2 Sheets—Sheet 1.

L. WHEELER.
ELECTRIC SWITCH FOR RAILWAYS.

No. 541,194.

Patented June 18, 1895.

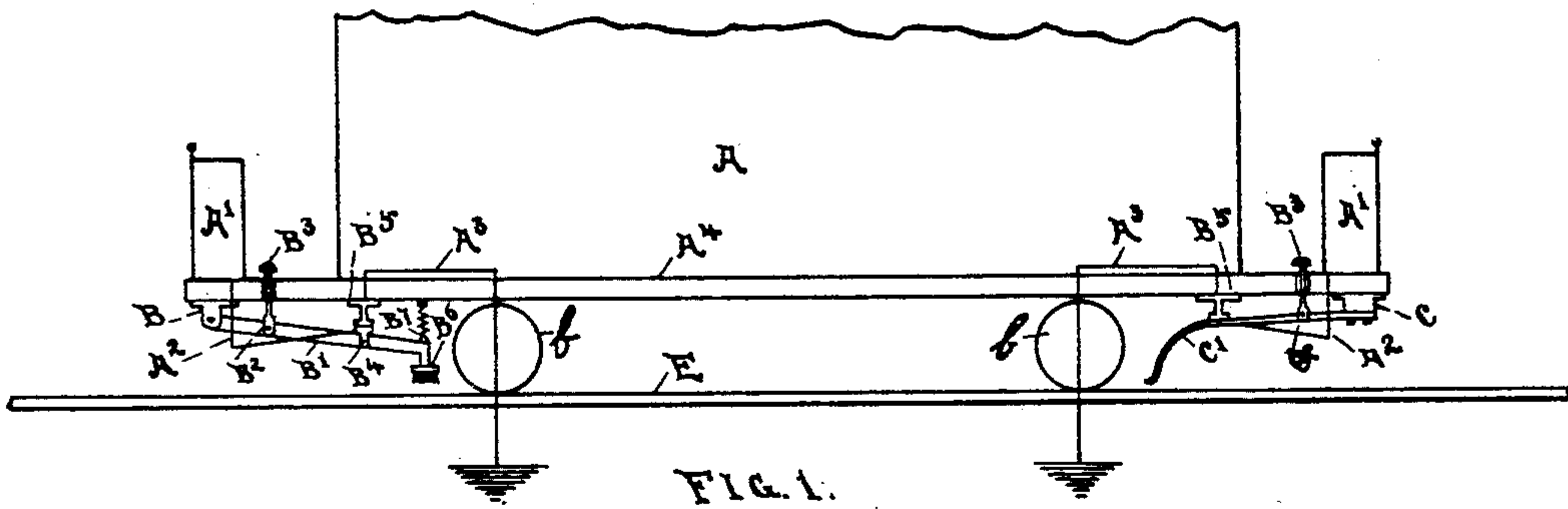


FIG. 1.

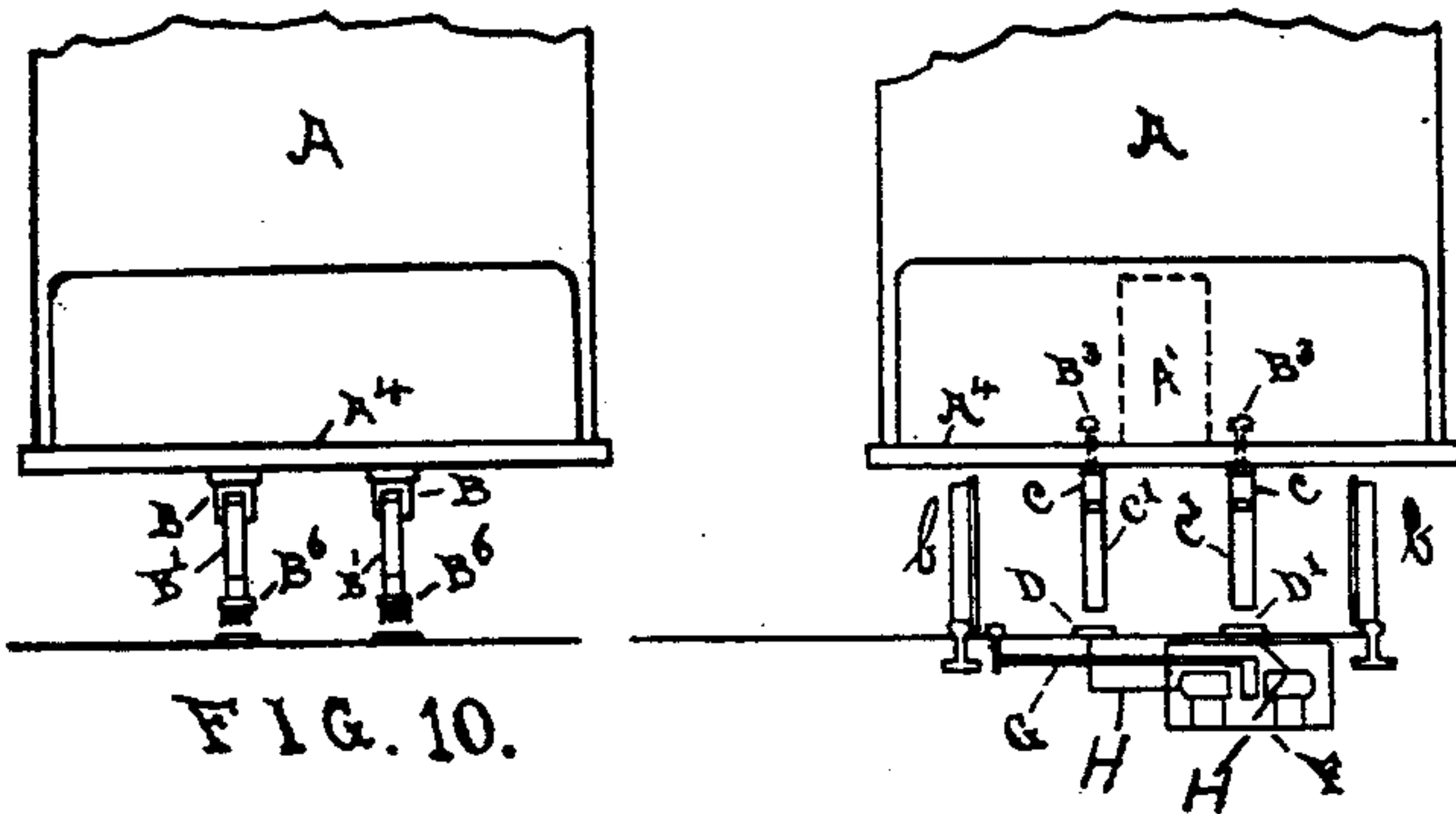


FIG. 2.

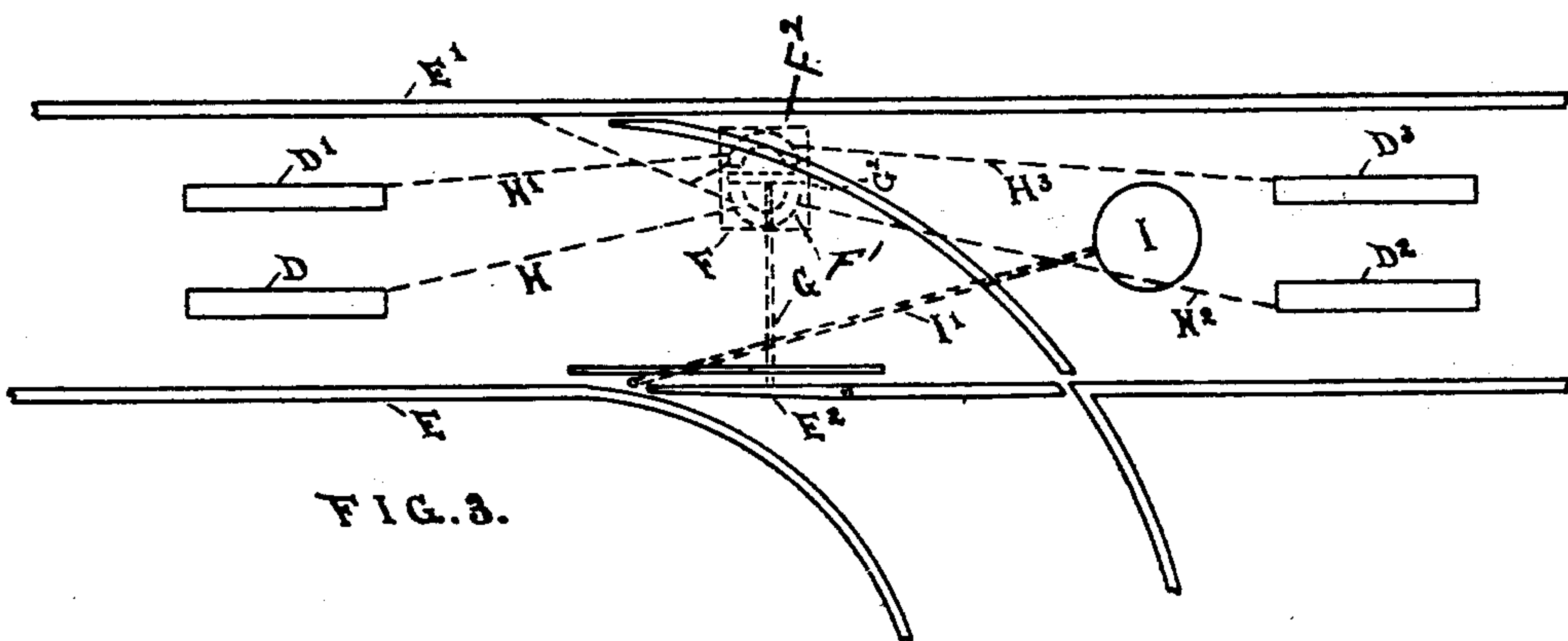


FIG. 3.

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(No Model.)

2 Sheets—Sheet 2.

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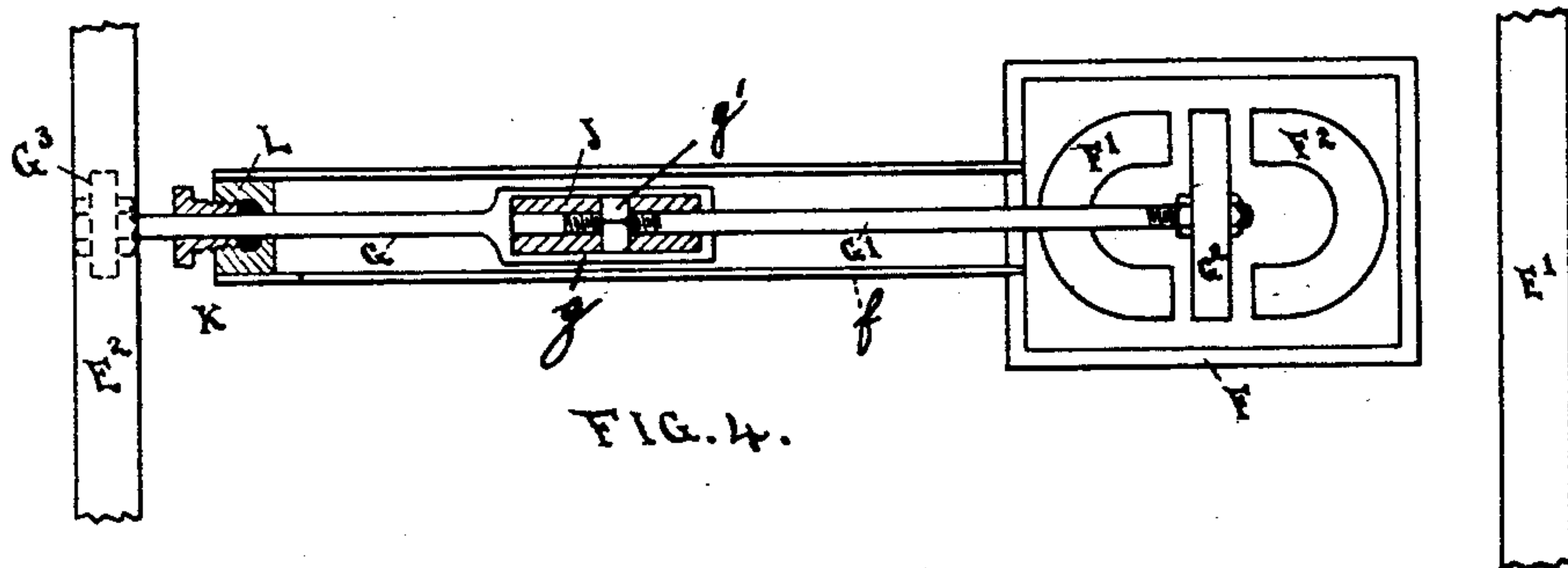


FIG. 4.

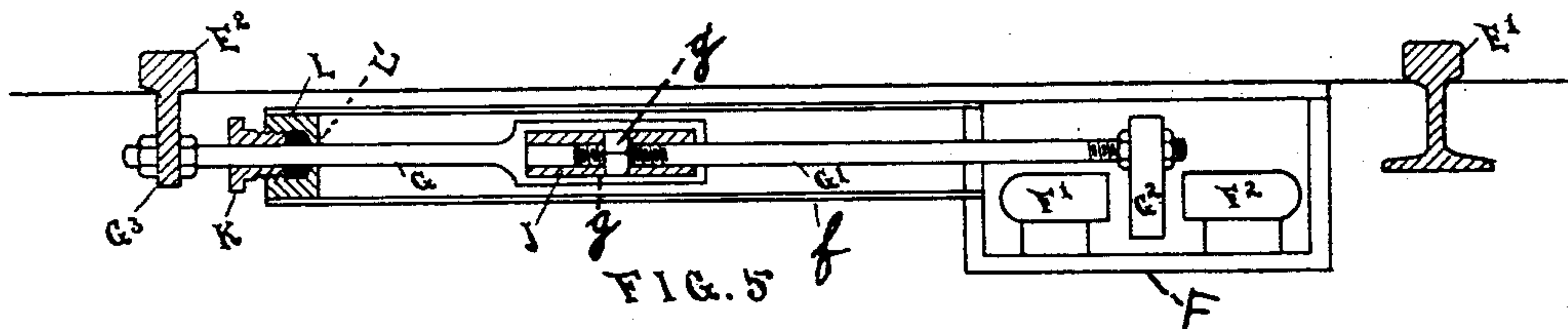


FIG. 5.

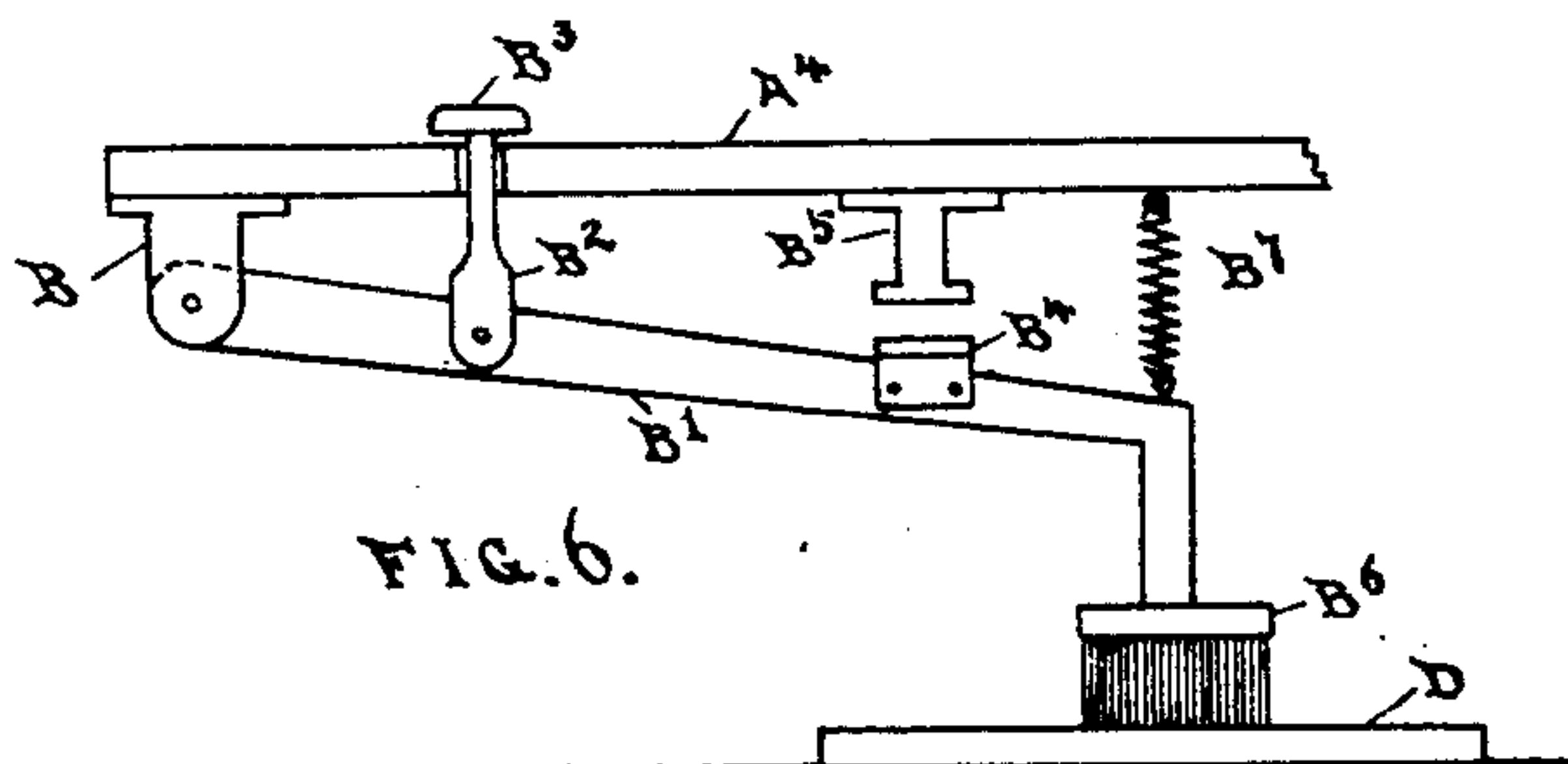


FIG. 6.

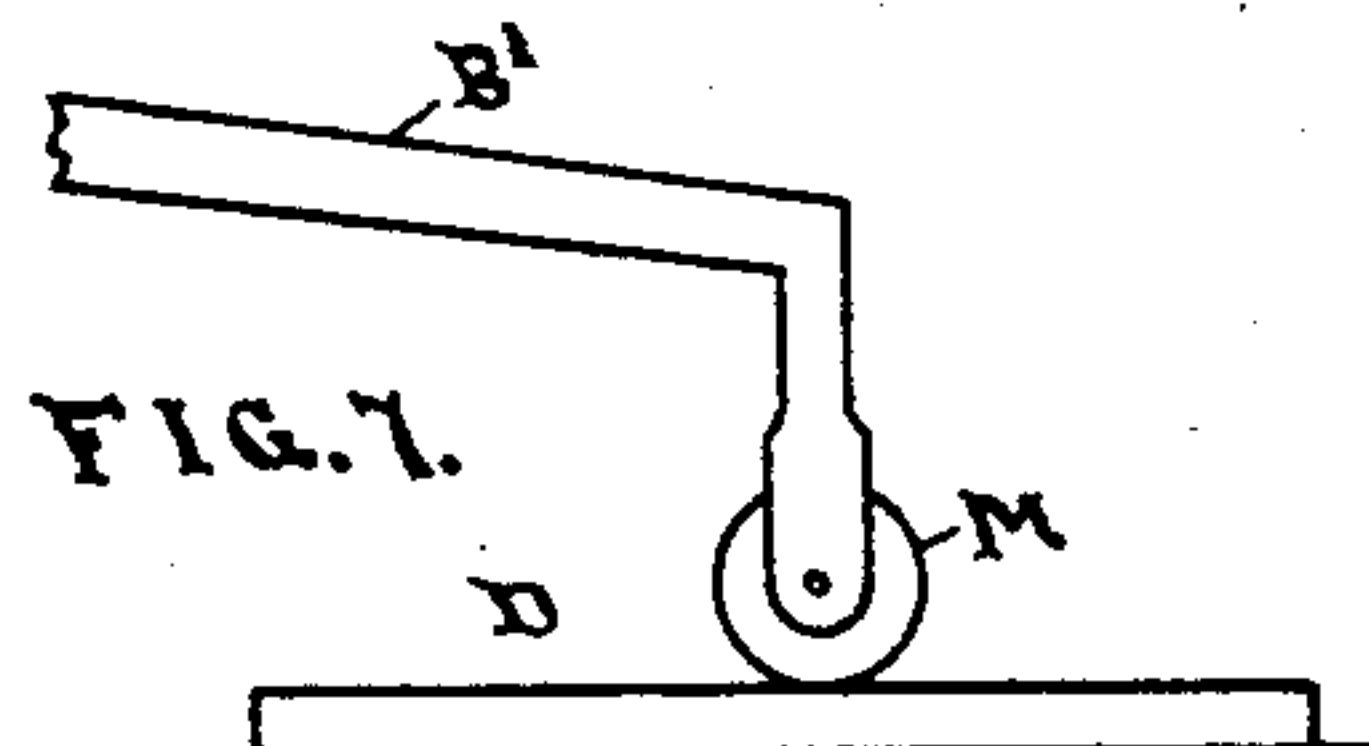


FIG. 7.

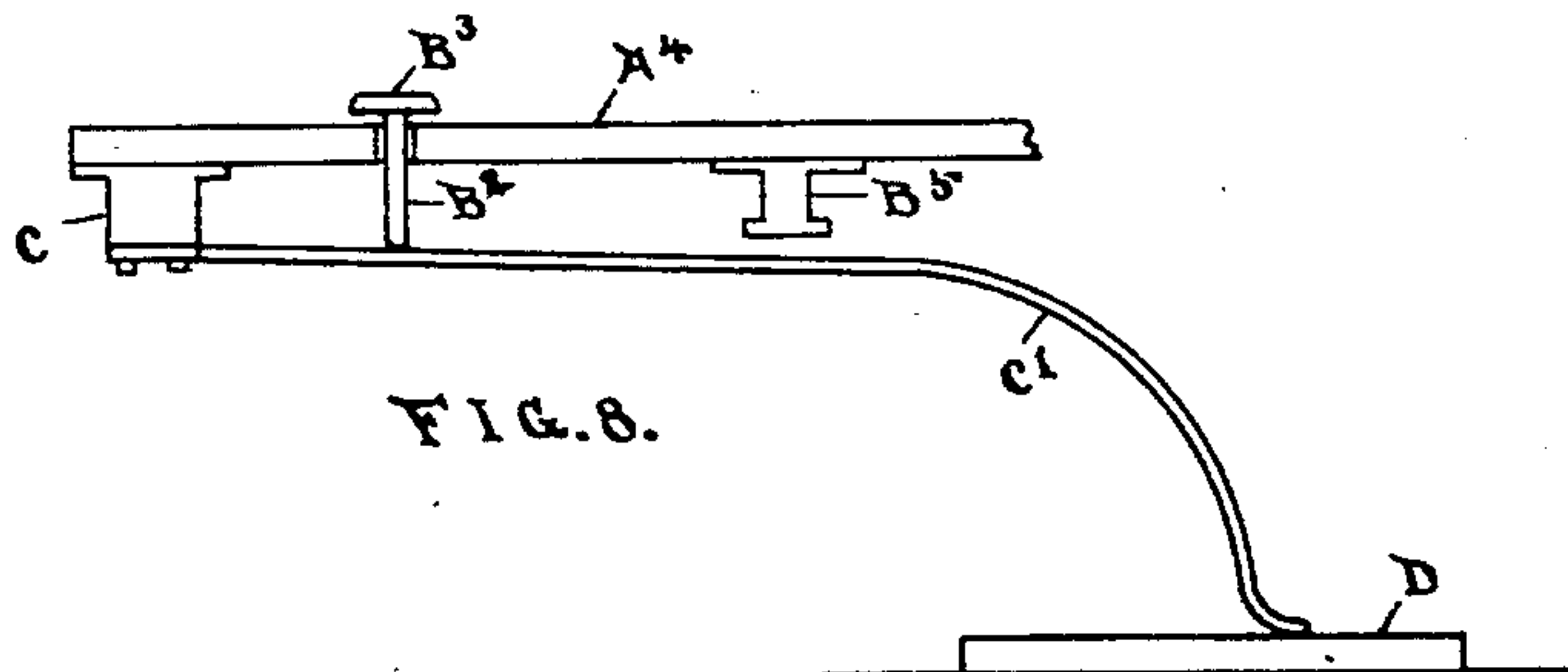


FIG. 8.

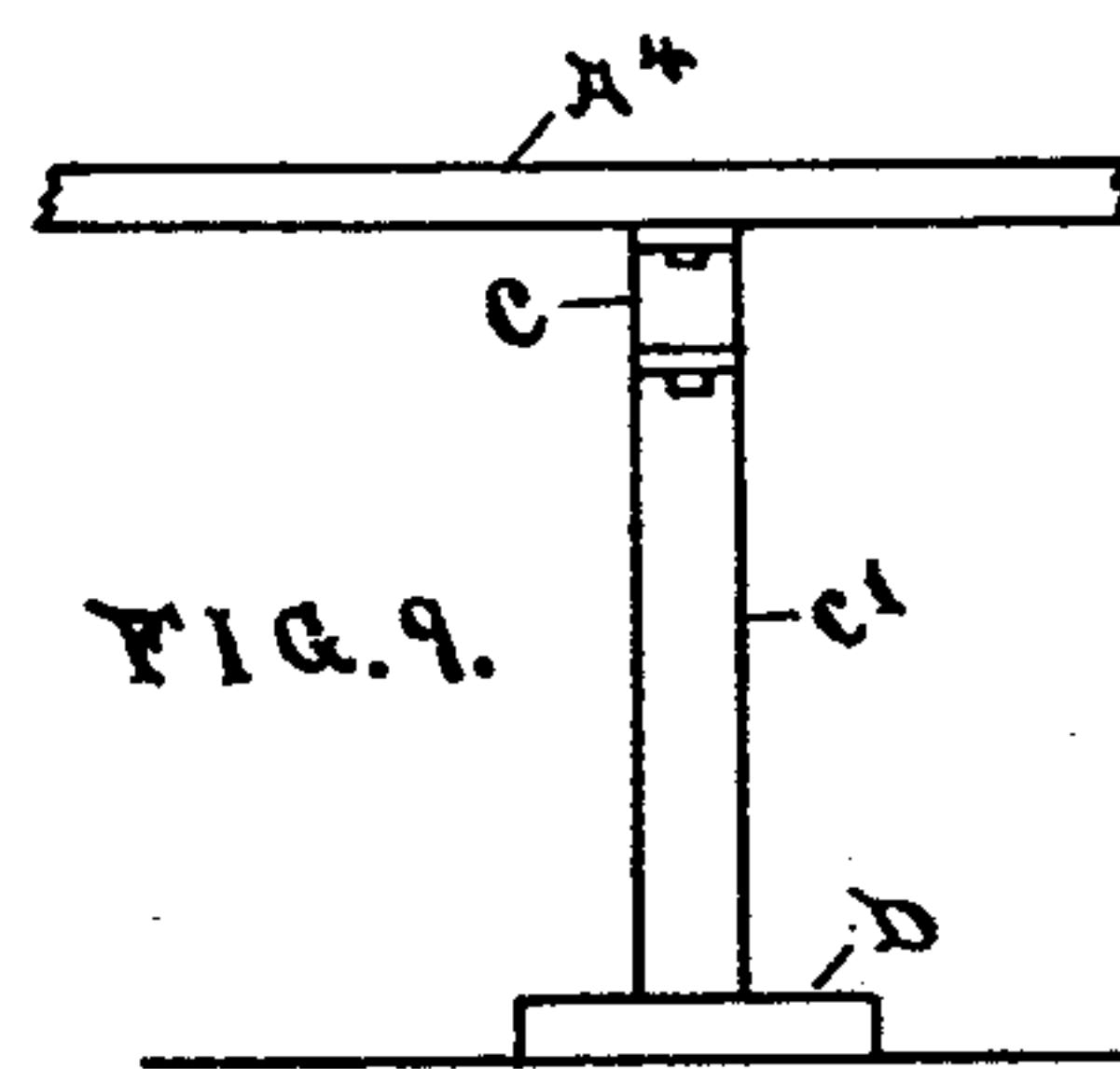


FIG. 9.

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UNITED STATES PATENT OFFICE.

LEONARD WHEELER, OF SIOUX CITY, IOWA.

ELECTRIC SWITCH FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 541,194, dated June 18, 1895.

Application filed June 8, 1894. Serial No. 513,875. (No model.)

To all whom it may concern:

Be it known that I, LEONARD WHEELER, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Electric Switches for Railways; 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to track switches for railways and its object is to provide a switch operated by electricity, under control of the driver of the car and without the use of extra overhead wires.

My invention is especially adapted to electric railways but may be used for any railway by the application of an electric battery to the car.

It is well known that the use of the ordinary switch tongue moved by a hand lever renders it impracticable for the driver's stand to be covered or vestibuled for protection from the weather, as the driver must reach over the car front to move the tongue. Moreover, valuable time is lost while the speed of the car is slackened to enable the driver to turn the switch.

With my invention the switch may be turned with the car at full speed.

Reference is now had to the accompanying drawings, in which—

Figure 1 is a side view of a section of a car, showing different means on each end of the car for connecting the current of electricity with the switch. Fig. 2 is a right-hand end view of Fig. 1. Fig. 3 is a diagrammatic view of switch-rails, showing also the false rails, magnets, wires, and lever for moving the switch-tongue. Fig. 4 is an enlarged plan view of magnets and lever, also boxes inclosing the same and sections of rail and switch-tongue. Fig. 5 is a cross-sectional view of Fig. 4. Fig. 6 is an enlarged view of lever, brush, and contact-plates shown on left-hand end of car in Fig. 1. Fig. 7 is a view of wheel which may be substituted for the brush shown in

Fig. 6. Fig. 8 is an enlarged view of spring-lever and contact-plates shown on right-hand end of car in Fig. 1. Fig. 9 is a front end view of same. Fig. 10 is a partial left-hand end view of Fig. 1.

Referring now to the illustrations in which like parts are designated by similar letters of reference, A is a section of car.

A' is the switch, or car controller, ordinarily used for regulating the supply of the electrical current.

A² is the ground or return wire of the car connecting the controller A' with the contact plates B⁵ secured to the bottom of the car, A⁴.

A³ is another section of the return wire and connects the contact plates B⁵ with the car wheels *b b*, thus communicating with the ground as shown in Fig. 1.

B B are insulated plates secured to the bottom of the car platform, one being on each side of the controller, and movably secured to each of said plates is an arm B', composed of steel or other metal having conductivity of electric current and capable of projecting diagonally downward toward the ground. An insulated foot lever B² is movably secured to each of said arms and projects upward through the floor of the platform where the motorman stands and has a foot plate B³.

B⁴ B⁴ are contact plates secured to the arms B' directly underneath the plates B⁵ and adapted to connect therewith when the arms are raised.

B⁶ B⁶ are wire brushes secured to the lower ends of the arms B' and adapted for contact with the false rails D D', &c.

B⁷ is a coil spring connecting the arm B' with the bottom of the car and adapted to hold the arm up from the rails when said arm is in its normal position.

In Fig. 9, a wheel M, having conductivity of electric current, is shown, and may be used instead of the brush B⁶ for contact with the false rails. Two of said arms, B', together with the plates, springs and levers described, are attached to each end of a car and each arm is operated independently of the other arms. When the arm B' is raised the electrical current is conveyed from the controller A' by the wire A², plates B⁴ and B⁵ and the

wire A^3 to the car wheels by means of axle bearings, as ordinarily, but when the motor-
neer presses upon the foot plate B^3 the arm
 B' is forced downward and the return cur-
rent is cut off from the car and conveyed down
the arm and brush, or wheel, to the false rail
and the switch is turned, as will be presently
described.

C' C' , Figs. 1, 2 and 8, are steel spring le-
vers which may be used for connecting the
current with the false rails instead of the arms
 B' and brushes, or wheels. These levers are
secured to the bottom of the car by means of
nuts and bolts and the insulated plates C C ,
being adapted, when raised, to press directly
against the contact plate B^5 . The contact plate
 B^4 and the coil spring B^7 are omitted. The
contact with the false rails D , D' , &c., is made
in the same manner as with the arms already
described.

D , D' , D^2 , D^3 represent false rails or steel
plates secured to the ties between the track
rails E and E' , there being two of said rails on
each side of the switch. These rails are al-
ways to be properly insulated from the track
rails.

E^2 is the switch tongue and extends some-
what below the rails to enable the switch rod
to be attached. Beneath the switch rails is a
water-tight box F containing two electro-mag-
nets F' and F^2 . Secured to the switch tongue
at the bottom portion thereof is a lever G ,
having an armature G^2 resting between said
electro-magnets.

H , H' , H^2 and H^3 are wires connecting re-
spectively the false rails D , D' , D^2 and D^3 with
the electro-magnets. When the electric cur-
rent is conveyed by the means already de-
scribed to one of the false rails, it is carried
by one of the wires to one of the electro-mag-
nets which attracts the armature and opens or
closes the switch. Thus suppose a car to be
at the left of the switch in Fig. 3, and it is de-
sired that it pass the switch upon the main
track. The switch being open, the motorneer
presses upon the foot plate at his right, the
current is broken from the car and conveyed
to the false rail D and by the wire H to the
electro-magnet F' , which attracting the arma-
ture G^2 , closes the switch.

The switch rod is inclosed within a casing
 f , connecting with the box F , and is rendered
air and water tight by means of the plug K
and the packing L and L' . Means for regu-
lating the length of the switch rod and pre-
venting a too sudden concussion of the switch
are shown in Figs. 4 and 5. The rod is com-
posed of two parts G and G' . The portion G
has an enlarged hollow part g into the center
of which is tightly fitted a nut g' . The por-
tion G' screws into said nut and may be short-
ened or lengthened as desired. The hollow
part g is filled with hard india rubber which
surrounds the nut and the rods and tends to
lessen the force of the attractive power of the
electro-magnets.

In Fig. 3 is shown a drain I' running from
underneath the switch tongue to a sink I and
adapted to carry away the water which may
settle at the switch and interfere with its free
operation.

I am aware that electrically controlled
switches are not new but I know of none pos-
sessing the advantages here set forth.

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

1. In an apparatus for the control of a
switch, the combination with a car having
conductors in communication with a source
of electric supply, of arms, possessing con-
ductivity of electric current, movably secured
beneath the car platform by means of insu-
lated plates and independently adapted to be
pressed downward upon plates secured be-
tween the track rails, said arms having com-
munication with the return current of the
car, insulated levers secured to said arms and
extending upward through the car platform,
wires connecting said arms with the car con-
troller, contact plates secured to the bottom
of said car, said arms being adapted to press
against said plates when in their normal po-
sition and to be detached therefrom when
said switch is to be turned, and wires con-
necting said contact plates and the car wheels,
substantially as described.

2. In an apparatus for the control of a
switch, the combination with a car having
conductors in communication with a source
of electric supply, of arms, possessing con-
ductivity of electrical current, movably se-
cured to the car platform by means of insu-
lated plates and independently adapted to be
pressed downward upon plates secured be-
tween the track rails, said arms having com-
munication with the return current of the
car, insulated levers secured to said arms and
extending upward through the car platform,
wires connecting the car controller with said
arms, contact plates secured to said arms and
contact plates secured to the bottom of the
car, said plates being adapted to be pressed
together when the arms are in their normal
position, wires connecting the contact plates
on the car with the wheels of the car, springs
connecting said arms and the car and adapted
to hold up said arms and press said plates to-
gether when said arms are in their normal
position and a perfect current is secured, and
brushes, having conductivity of electrical cur-
rent, secured to the lower ends of said arms
and adapted to press upon the plates situated
between the rails, substantially as described.

3. In an electric switch, the combination
with false rails, or plates, secured between
the track rails and possessing conductivity of
current and insulated from track rails, and
adapted to independently receive the current
from the car, of electro-magnets situated in a
water tight casing near the swinging rail,
wires separately connecting said false rails

and said electro-magnets so that the current
may be connected with either of said mag-
nets, an armature movably situated between
said electro-magnets, a rod connecting said
5 armature and the swinging rail, means for
lengthening and shortening said rod, hard
rubber packing for said rod to prevent too
great concussion of the switch, and a water-

tight casing for said rod, substantially as de-
scribed.

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

LEONARD WHEELER.

Witnesses:

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H. C. GARDINER.