

No. 713,854.

Patented Nov. 18, 1902.

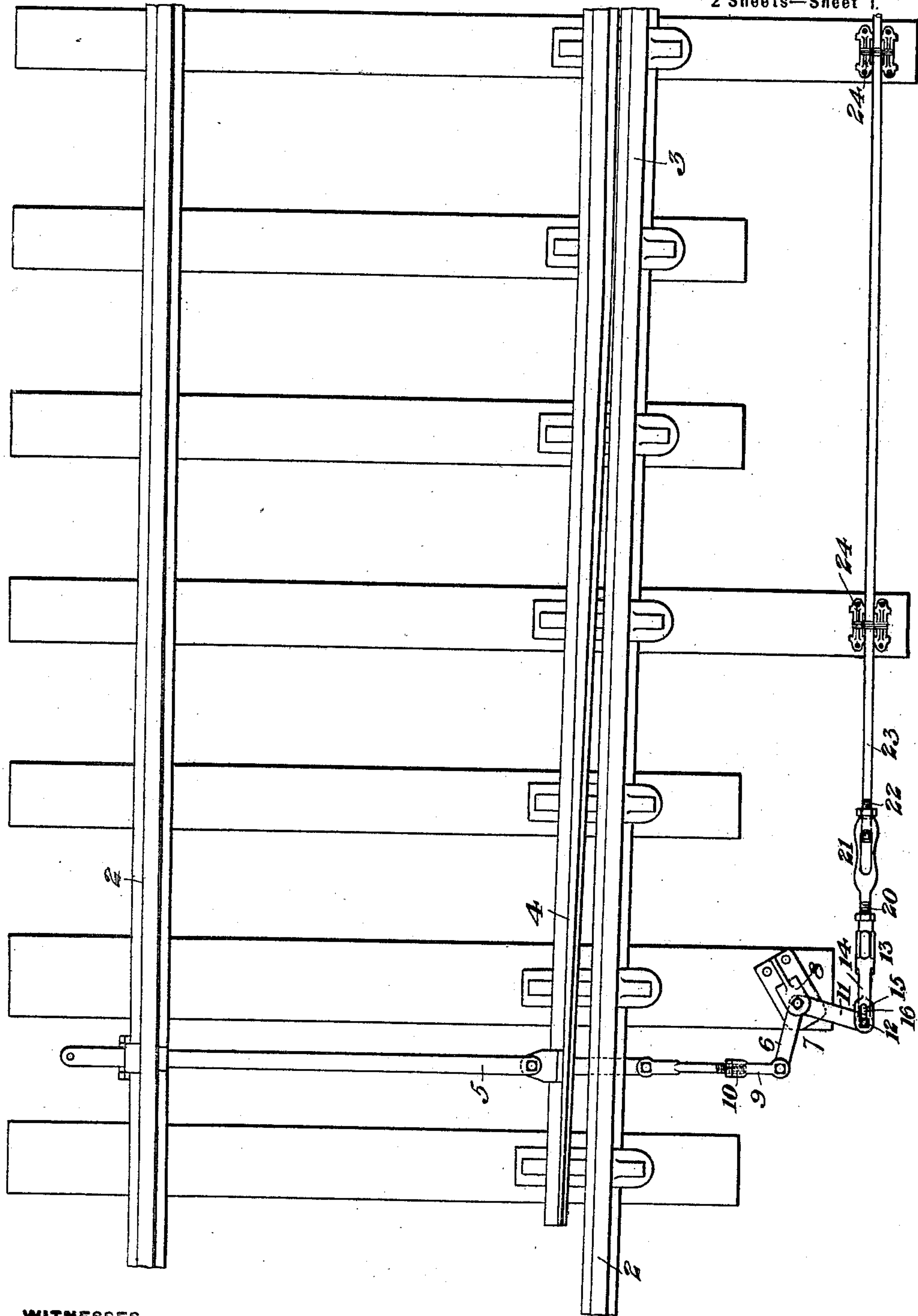
C. A. CHRISTOFFERSON.
LEVER OPERATING MECHANISM.

(Application filed July 8, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES

L. A. Christofferson
John Miller

INVENTOR

Christian A. Christofferson
by James H. Baker
his Attorney

No. 713,854.

Patented Nov. 18, 1902.

C. A. CHRISTOFFERSON.
LEVER OPERATING MECHANISM.

(Application filed July 8, 1902.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

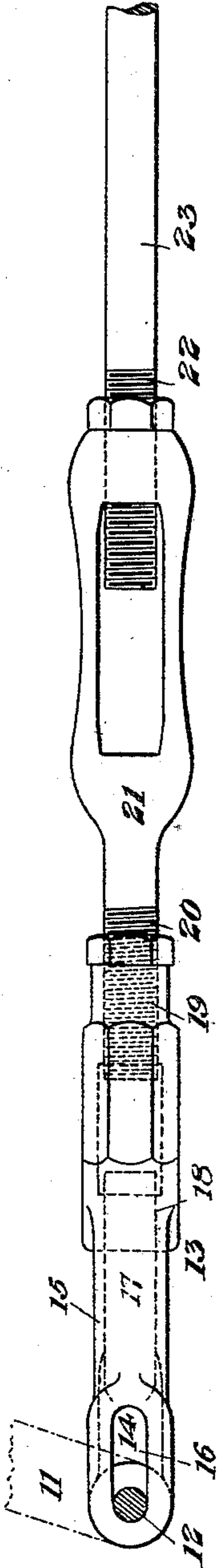
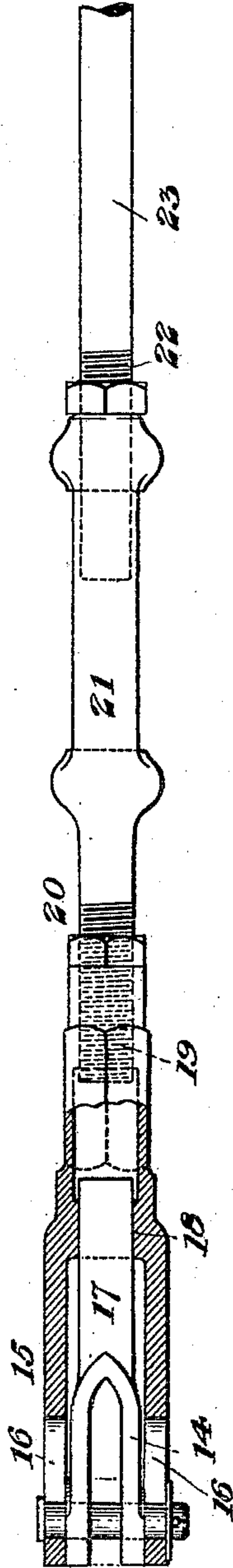


Fig. 3.



WITNESSES

L. A. Connor
John Walker

INVENTOR

Christian A. Christofferson
by James K. Parkes
his attorney

UNITED STATES PATENT OFFICE.

CHRISTIAN A. CHRISTOFFERSON, OF ST. PAUL, MINNESOTA, ASSIGNOR TO
THE UNION SWITCH & SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

LEVER-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 713,854, dated November 18, 1902.

Application filed July 8, 1902. Serial No. 114,709. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN A. CHRISTOFFERSON, of St. Paul, in the county of Ramsey, State of Minnesota, have invented a new and useful Lever-Operating Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a derail, showing my improved operating connection applied thereto. Fig. 2 is a side elevation, partly broken away, of the adjustment which I employ; and Fig. 3 is a top plan view of the same.

The object of my invention is to improve the connection between the main operating device and a switch or other railroad appliance and to provide mechanism by which the movement of said main operating device may be fully or only partially transmitted to the switch, and a further object is to provide a construction which permits the relative position of the device operated to be adjusted with relation to a fixed portion of the track or other structure without disturbing the operation of the connections.

In the drawings, 2 2 are the tracks.

3 is a derail, alongside of which is placed the single-pointed switch 4. The switch-rod 5 is connected to an arm 6 of a bell-crank lever 7, which is pivoted upon a suitable bracket 8, secured to one of the ties. A jaw 9, having a screw-threaded connection 10 with the switch-rod 5, joins the rod to the arm 6, and the adjustment thus afforded permits the switch-point to be adjusted with relation to the stock-rail, thereby compensating for the wear on the stock-rail, and thus faulty adjustment of the switch is prevented.

To the arm 11 of the bell-crank lever 7 I secure, by means of a pin 12, the operating connection 13, by which the amount of stroke given to the switch-rod 5 is regulated, and consequently the movement of the switch 4, attached thereto. This connection 13 comprises a pair of jaws 14 and 15, the former being secured to the pin 12, while the latter is provided with slots 16 16, through which the

pin 12 passes. This pin 12 also passes through the arm 11 of the bell-crank lever and secures the parts 14 and 15 thereto. The jaw 14 is provided with a short stem 17, which enters a smooth socket or bore 18, formed therein. The opposite end 19 of the bore or socket is threaded to receive the screw-threaded stem 20 of the screw-jaw 21. To the opposite end of the screw-jaw 21 is secured by a suitable screw-threaded connection 22 the main operating rod or pipe 23, which is supported in the usual carriers 24, secured to the ties. The rod 23 is operated in any of the usual well-known ways, and by its movement the switch is opened or closed. The threaded stem 20 of the screw-jaw is screwed into the threaded bore or socket 19 the desired distance, and thereby the stroke that is to be given the switch-rod and the switch connected thereto may be regulated to a nicety not heretofore possible. The slots 16 16 afford the desired amount of lost motion, so that although the stroke of the main operating-rod 23 may be considerably greater than the desired switch movement it is not effective to move the switch-rod and switch until the end of the stem 17 strikes the end of the stem 20 of the screw-jaw 21. It will thus be seen that the whole or only a small portion of the stroke of the main operating-rod may be used in manipulating the switch.

The advantages of my invention will be readily appreciated by those familiar with the operation of switches and the necessity of regulating the amount of movement of the same; also, the desirability of providing means by which the switch-point may be adjusted with relation to the stock-rail in order to take up wear. These ends I accomplish in a simple and efficient manner, and I have shown in the drawings one form of the apparatus which I believe to be best adapted to railway-switch operations; but as my invention is applicable to many uses other than the operation of railway-switches where it is desired to afford like adjustments and a greater or less amount of movement to an operated part I do not desire to limit myself to a railway-switch-operating device nor to the

exact construction and arrangement of parts, as these may be varied in many ways by the skilled mechanic; but

What I claim is—

5 1. In railway-switch-operating mechanism, the combination with the rails and switch, of a main operating connection extending longi-
tudinally of the rails, a switch-operating con-
10 nection, and an adjustable connection be-
tween the same, whereby the movement of
one of said connections may be adjusted to
give the same, or a different, amount of move-
ment, relatively, to the other, thereby con-
15 trolling the amount of movement given to the
switch.

2. In railway-switch-operating mechanism, the combination with the rails and switch, of
20 a main operating connection extending longi-
tudinally of the rails, a switch-operating con-
nection, a lever, an adjustable connection be-
tween said lever and one of said operating
connections, whereby the movement of one of
said operating connections may be given the
25 same or a different amount of movement, rela-
tively, to the other, thereby controlling the
amount of movement given to the switch.

3. In lever-operating mechanism, the com-
bination with a lever and an operating-rod,
of a movement-regulator, comprising a mem-
30 ber loosely connected to said lever, a stop on
said member, said operating-rod also being
secured thereto, and a second member secured
to the lever, and provided with means for en-
gaging the slot in the other member and with
35 a projecting portion adapted to engage the
stop on the slotted member, whereby the
amount of lost motion of said first member is
determined, and the amount of positive move-
ment of the lever is regulated.

4. In lever-operating mechanism, the com-
40 bination with the lever and an operating-rod,
of a movement-regulator between said oper-
ating-rod and said lever, comprising a slot-
ted member loosely secured to said lever, a
45 stop carried thereby, and a second member
secured to said lever by a pin which is also
adapted to engage the slot in the other mem-
ber, thereby permitting lost motion for a por-
tion of the movement of said slotted member,
50 said stop being arranged to engage said sec-
ond member after said lost motion is ended
and to move the lever positively through its
engagement with said second member, there-
by giving to said lever the desired amount of
55 motion.

5. In railway-switch-operating mechanism, the combination with the rails and switch, of
60 an operating-lever, a main operating-rod se-
cured to one end of said lever, and a switch-
operating rod to the other end, a lost-motion
connection between the main operating-rod
and said lever, whereby the opposite end of
lever may be given the same or a different
amount of movement from the main operat-
65 ing-rod, thereby controlling the movement of
the switch, and an adjustable connection be-
tween said switch-operating rod and said le-

ver, whereby the position of said switch is
uniformly maintained with reference to the
stock-rail; substantially as described. 70

6. In railway-switch-operating mechanism, the combination with the rails and switch, of
75 an operating-lever, a main operating-rod se-
cured to one end thereof, an adjustable lost-
motion connection between said main operat-
ing-rod and said lever, whereby the amount
of movement of the opposite end of the lever
is regulated, a switch-operating rod connected
to this end of the lever, and an adjustable
80 piece connecting said lever and switch-operat-
ing rod, whereby the position of said switch is
uniformly maintained with reference to the
stock-rail; substantially as described.

7. In railway-switch-operating mechanism, the combination with the rails and switch, of
85 an operating-lever, a movement-regulator,
comprising a slotted member loosely secured
to said lever, an operating connection adapted
to impart motion to said member, an adjust-
able stop carried by said member, a second
90 member secured to said lever and having a
pin which engages said stop, a stem in said
second member adapted to engage said stop
and to limit said lost motion and by said en-
95 gagement to move said lever positively dur-
ing the remainder of the movement of the
main operating connection, and a switch-op-
erating rod secured to the opposite end of
said lever, which imparts movement to the
switch; substantially as described. 100

8. In railway-switch-operating mechanism, the combination with the rails and switch, of
105 an operating-lever, a movement-regulator,
comprising a slotted member loosely secured
to said lever, an operating connection adapted
to impart motion to said member, an adjust-
able stop carried by said member, a second
member secured to said lever and having a
110 pin which engages said stop, a stem in said
second member adapted to engage said stop
and to limit said lost motion and by said en-
gagement to move said lever positively dur-
ing the remainder of the movement of the
main operating connection, a switch-operat-
115 ing rod secured to the opposite end of said
lever, which imparts movement to the switch,
and an adjustable connection between said
lever and the switch-operating rod, whereby
the switch is maintained in uniform relation
to the stock-rail; substantially as described. 120

9. In lever-operating mechanism, the com-
bination with the lever, of a main operating-
rod, and adjustable mechanism connected to
the operating-rod and loosely connected to
the lever, whereby the movement of the lever
125 may be varied so as to be equal to or different
from that of the operating-rod; substantially
as described.

In testimony whereof I have hereunto set
my hand.

CHRISTIAN A. CHRISTOFFERSON.

Witnesses:

ALF. MUNTHE,
T. A. POLLEYS.