

907,740.

A. G. CLARK.  
SWITCH BOX.  
APPLICATION FILED APR. 18, 1908.

Patented Dec. 29, 1908.  
2 SHEETS—SHEET 1.

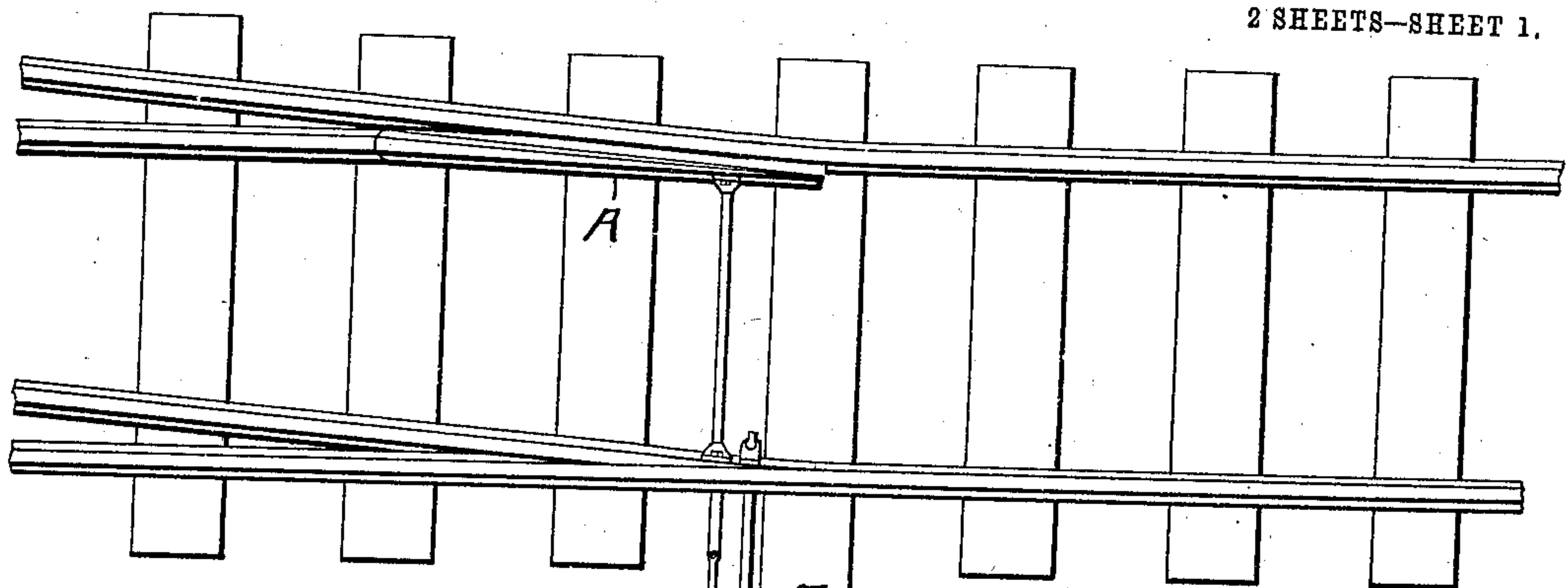


Fig. 1.

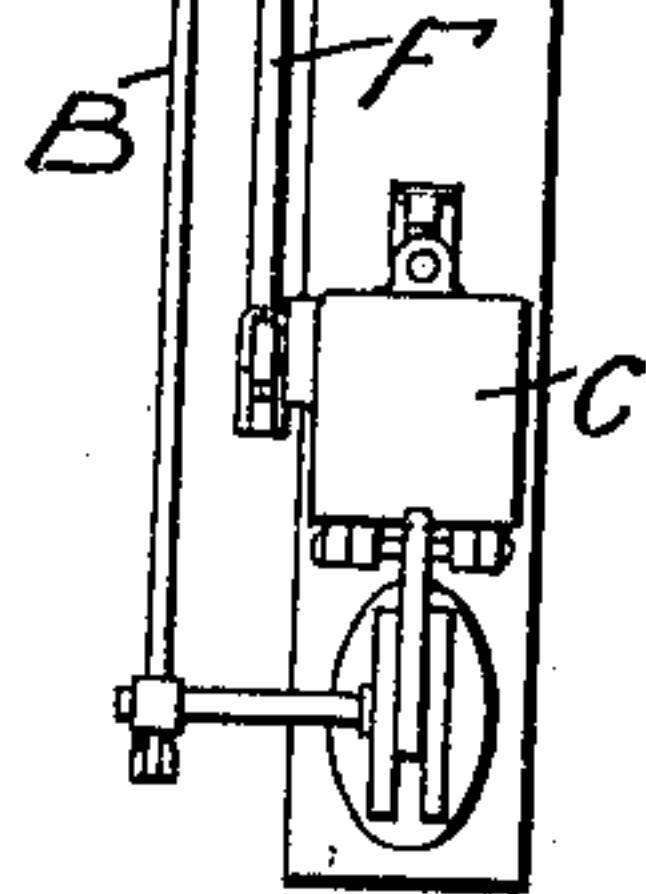


Fig. 2.

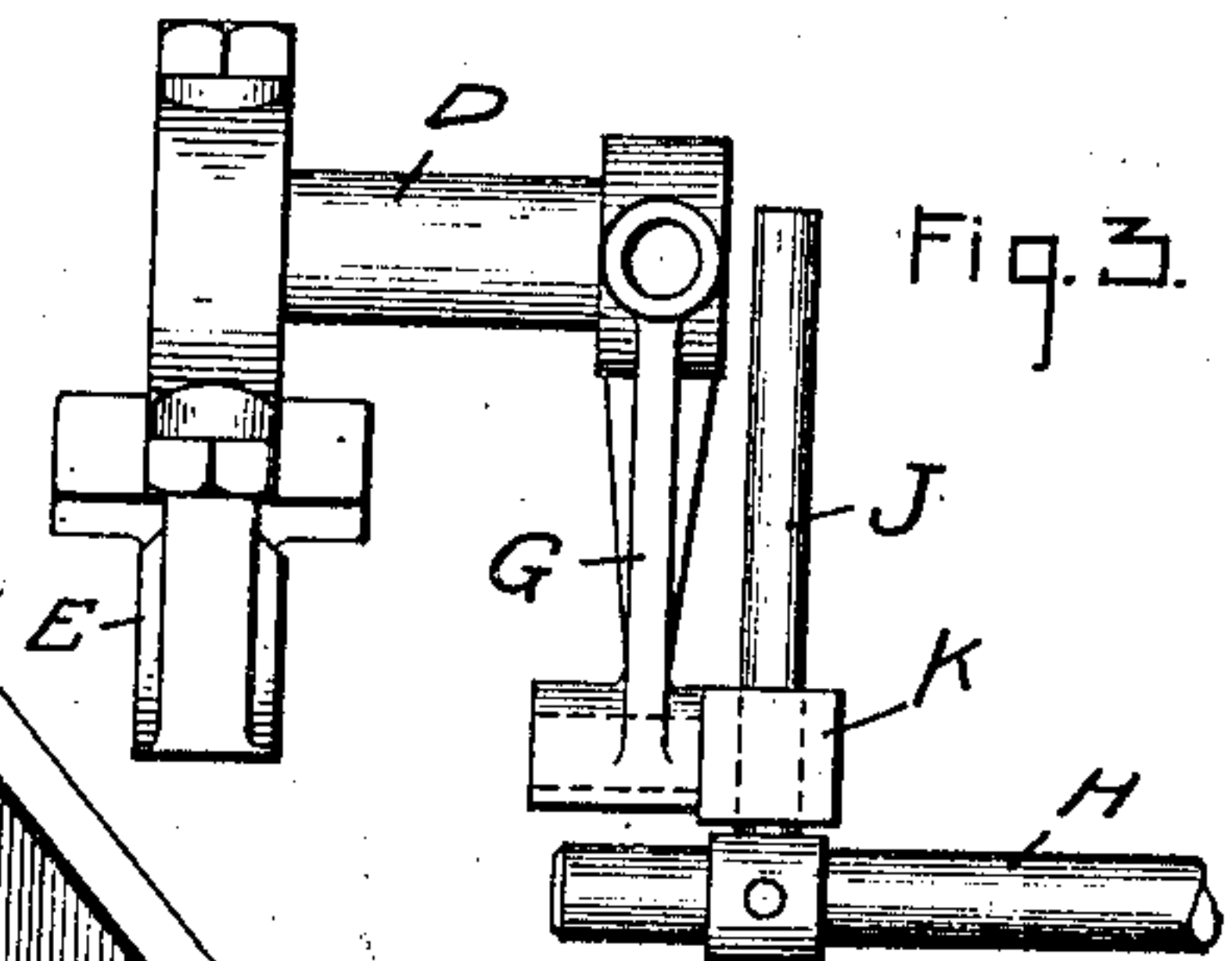
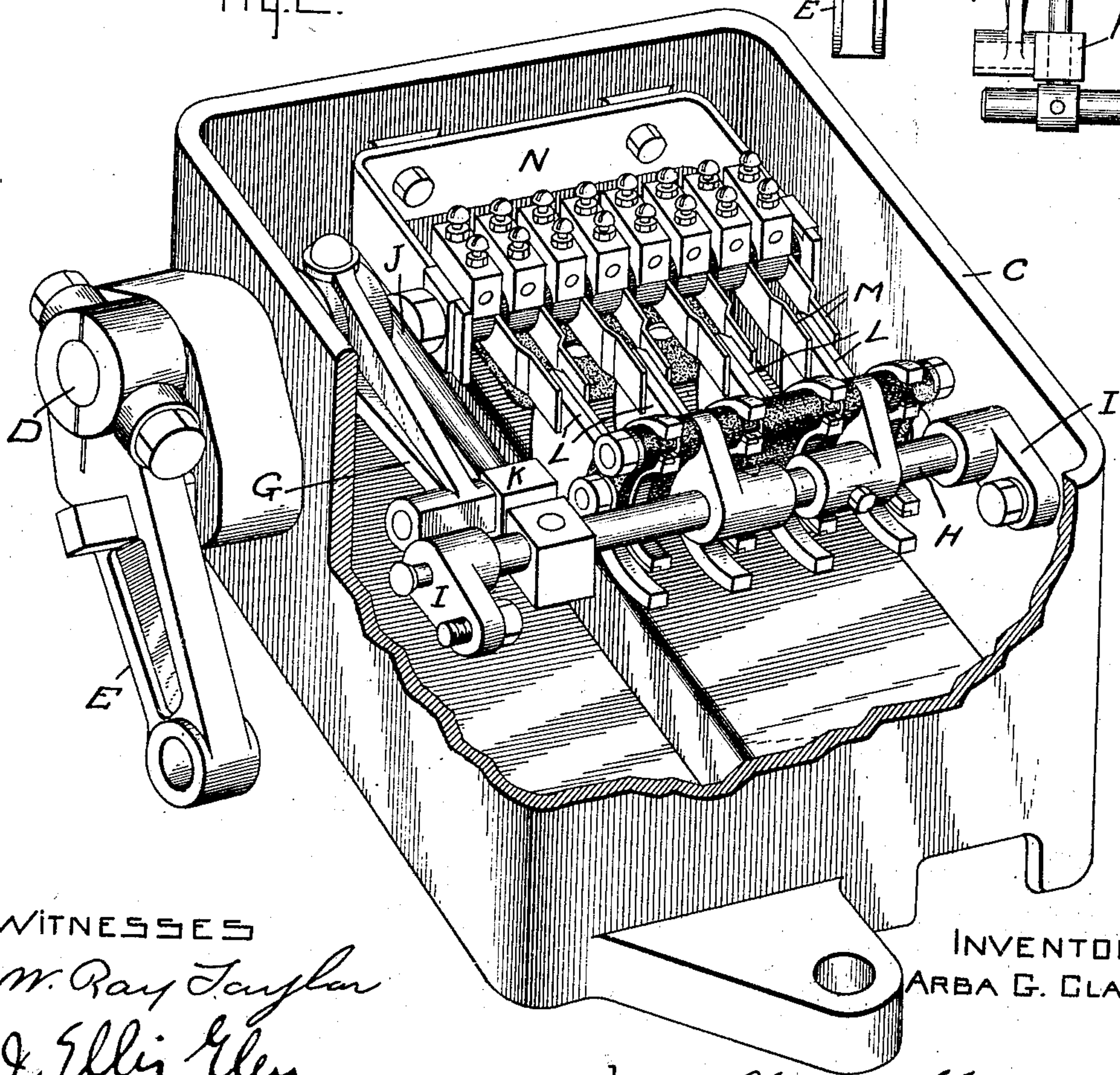


Fig. 3.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

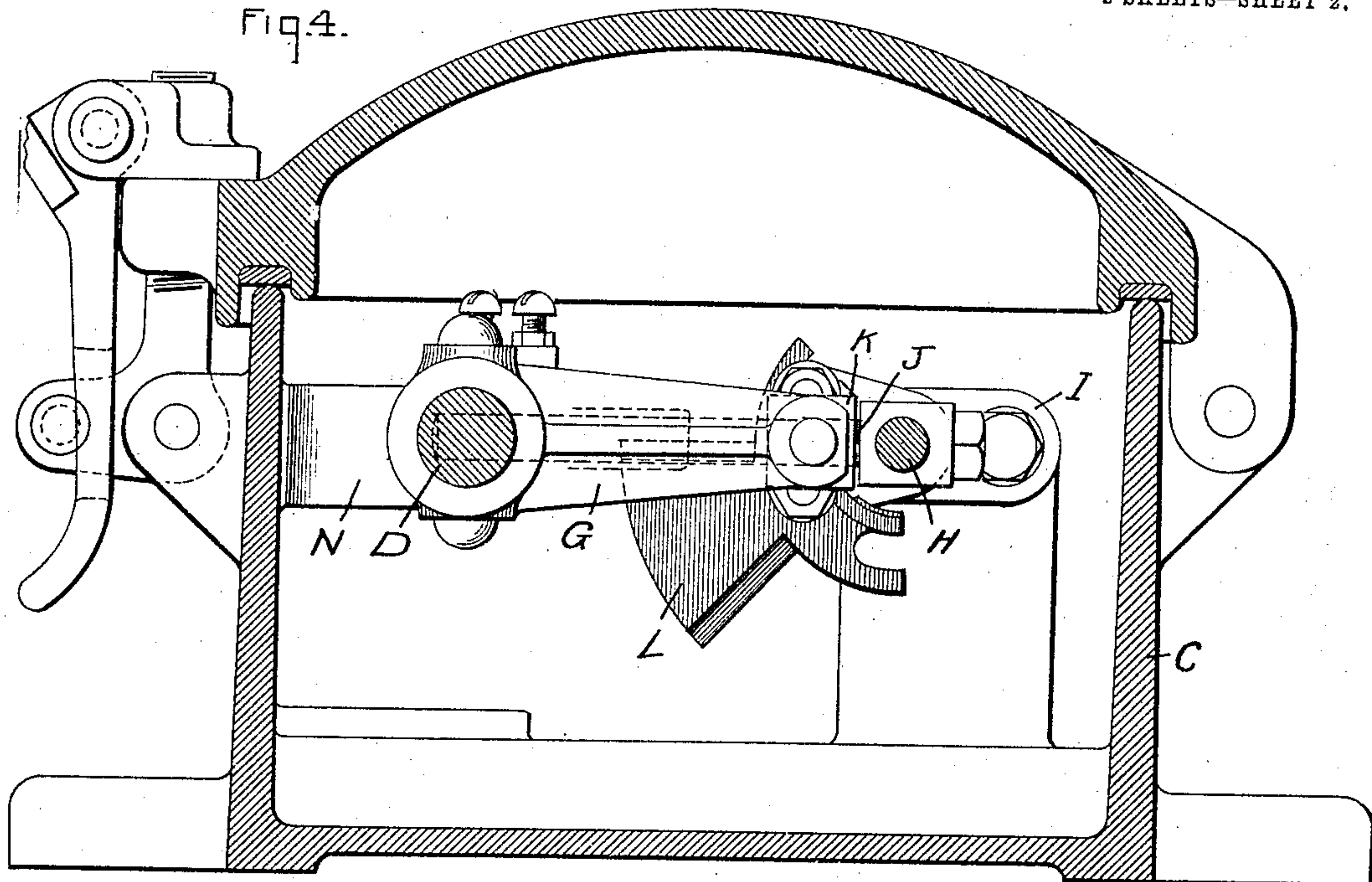
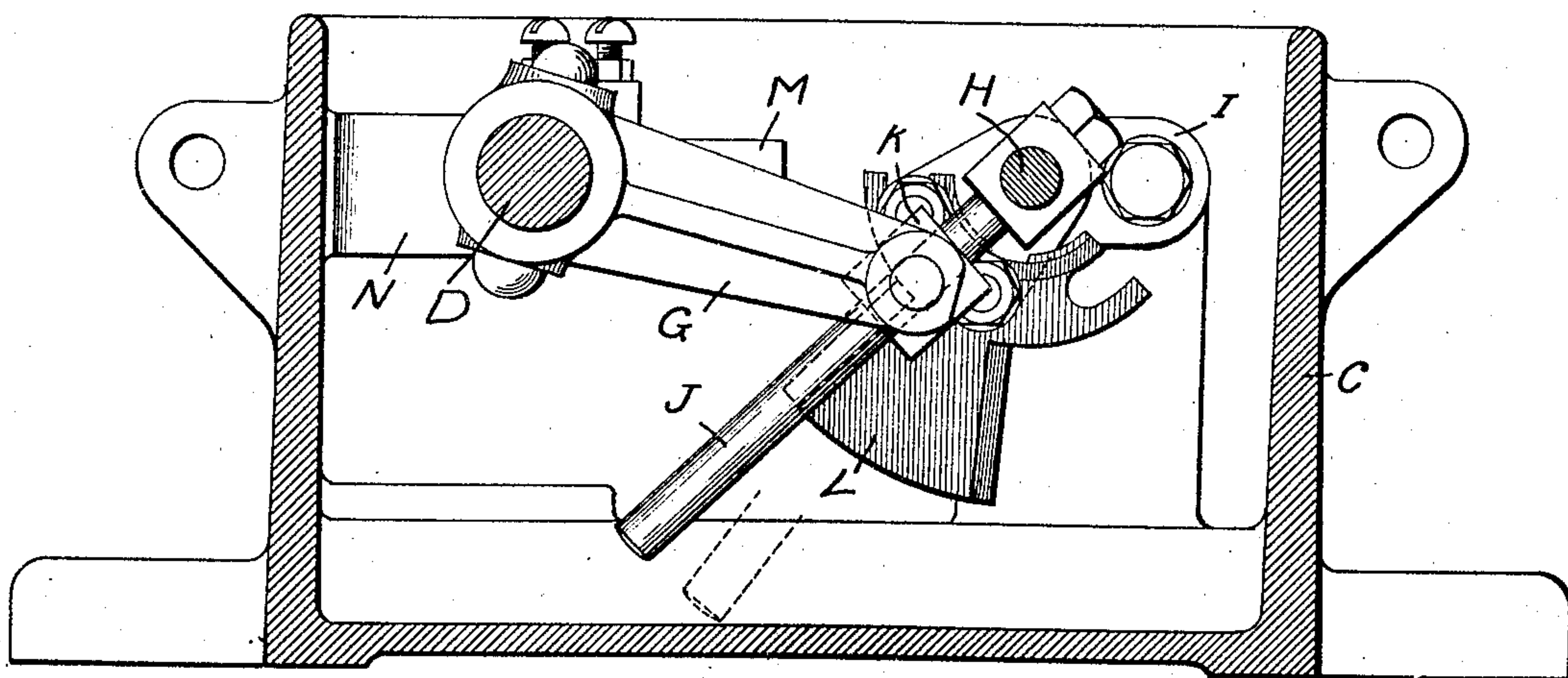


Fig. 5.



WITNESSES

*M. Ray Taylor.*

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INVENTOR

ARBA G. CLARK.

by *Alfred Davis*

ATTY



# UNITED STATES PATENT OFFICE

ARBA G. CLARK, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY,  
A CORPORATION OF NEW YORK.

## SWITCH-BOX.

No. 907,740.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed April 18, 1908. Serial No. 427,943.

To all whom it may concern:

Be it known that I, ARBA G. CLARK, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Switch-Boxes, of which the following is a specification.

My invention relates to switch-boxes for use with track-switches, and its object is to provide a novel form of switch-box, simple in construction and reliable in operation.

As is well understood in the art, it is customary, in connection with block-signal systems, to employ switch-boxes, connected to the track-switches, comprising electric contacts arranged to control the signals or switch indicators when the track-switch is thrown. It is ordinarily desirable that the electric switch-contacts should be actuated upon the movement of the track-switch through a small part of this range, and for this reason the actuating member for the switch-contacts should be given a considerable movement by a small movement of the track-switch.

My invention comprises, in a switch-box, a member connected to and moving with the track-switch, a shaft, switch-contacts actuated thereby, and a link of variable effective length connecting said member and said shaft, the effective length of the link being small when the member is moving at right-angles to the axis of the link, whereby, as will hereinafter be explained, a slight movement of the member produces a great angular movement of the shaft.

My invention will best be understood by reference to the accompanying drawings, in which—

Figure 1 shows a track-switch provided with a switch-box; Fig. 2 shows a perspective view, with the casing partly broken away, of a switch-box arranged in accordance with my invention; Fig. 3 is a detail view; Fig. 4 shows a cross-sectional side elevation of the switch-box, with the parts shown in normal position; and Fig. 5 is a similar view, with the parts in the position they occupy when the track-switch has been slightly moved.

In the drawings, A represents the track switch, and B its actuating-rod.

C represents the casing of the switch-box,

in which is journaled a shaft D. This shaft is provided with a crank E, which is connected to a rod F, which, in turn, is connected to the track-switch, so that when the track-switch is moved, the shaft D is rocked.

G is a second crank on the shaft D, the end of which extends close to shaft H, which lies parallel to shaft D, and is journaled in suitable bearings I in the casing C.

J represents a pin rigidly secured to shaft H and passing through a hole in the block K, which is pivoted on the end of crank G. When the shaft D is rocked, its movement is transmitted to shaft H by the block K rocking and sliding on the pin J. The pin J thus forms a link, the effective length of which varies in different positions of crank G. The shaft H carries a number of insulated contacts L, which are adapted to engage stationary contacts M, which are carried by and insulated from a bracket N secured to the casing C.

The operation of the switch box will be obvious from the above description. The parts normally stand in the position shown in Fig. 4. If the track-switch is moved very slightly in such a direction as to cause crank G to move downward, pin J, and consequently, contacts L are caused to assume the positions shown in Fig. 5. It will be seen that in Fig. 4 the pin J forms a very short link between the crank G and shaft H, and that the movement of the block K, which forms the connection between crank G and pin J, is at right-angles to the axis of pin J, so that a very slight movement of crank G produces a great angular movement of shaft H, thereby giving a rapid and wide break between contacts L and contacts M. A further movement of the track-switch and a consequent further downward movement of contact J produces only a slight movement of pin J, the extreme position of this pin being shown in dotted lines in Fig. 5. In this position of the pin a slight movement of crank G produces practically no movement of the pin, but merely slides the block K along the pin.

By properly shaping the crank E and the contacts L, as shown in the drawings, the switch box is made reversible,—that is may be adapted for either right-hand or left-hand connection to the track-switch. A portion of the bottom of the casing is preferably



raised, as shown in the drawings, in order that the leads to the stationary contacts M may conveniently be led under the box.

What I claim as new and desire to secure by Letters Patent of the United States, is

1. A switch-box for use with track-switches, comprising a member connected to and moving with the track-switch, a shaft, switch contacts actuated thereby, and a link of variable effective length connecting said member and said shaft, the effective length of said link being small when said member is moving at right-angles to the axis of said link, whereby a slight movement of said member produces a great angular movement of said shaft.

2. A switch-box for use with track-switches, comprising a member connected to and moving with the track-switch, a shaft, contacts carried on and insulated from said shaft, stationary contacts adapted to be engaged thereby, and a link of variable effective length connecting said member and said shaft, the effective length of said link being small when said member is moving at right-angles to the axis of the link, whereby a slight movement of said member produces a great angular movement of said shaft.

3. A switch box for use with track-switches, comprising a member connected to and moving with the track-switch, a shaft, switch-contacts actuated thereby, and a link connecting said member and said shaft and having a sliding engagement with one of them, whereby the effective length of said link varies in different positions of said member, and the point of connection between said member and said link being close to the axis of said shaft in one position of said member, whereby a slight movement of said member from said position produces a great angular movement of said shaft.

4. A switch-box for use with track-switches, comprising a member connected to and moving with the track-switch, a shaft, contacts carried on and insulated from said shaft, stationary contacts adapted to be engaged thereby, and a link connecting said member and said shaft and having a sliding engagement with one of them, whereby the effective length of said link varies in different positions of said member, and the point of connection between said member and said link being close to the axis of said shaft in one

position of said member, whereby a slight movement of said member from said position produces a great angular movement of said shaft.

5. A switch-box for use with track-switches, a casing, two parallel shafts journaled in said casing, a crank on one shaft connected to the track-switch, a second crank on said shaft extending close to said second shaft, a link of variable effective length connecting said second crank and said second shaft, and switch-contacts actuated by said second shaft.

6. A switch-box for use with track-switches, a casing, two parallel shafts journaled in said casing, a crank on one shaft connected to the track-switch, a second crank on said shaft extending close to said second shaft, a link of variable effective length connecting said second crank and said second shaft, contacts carried on and insulated from said second shaft, and stationary contacts adapted to be engaged thereby.

7. A switch-box for use with track-switches, a casing, two parallel shafts journaled in said casing, a crank on one shaft connected to the track-switch, a second crank on said shaft extending close to said second shaft, a link connecting said second crank and said second shaft and having a sliding connection with one of them, whereby the effective length of said link varies in different positions of said second crank, and switch-contacts actuated by said second shaft.

8. A switch-box for use with track-switches, a casing, two parallel shafts journaled in said casing, a crank on one shaft connected to the track-switch, a second crank on said shaft extending close to said second shaft, a link connecting said second crank and said second shaft and having a sliding connection with one of them, whereby the effective length of said link varies in different positions of said second crank, contacts carried on and insulated from said second shaft, and stationary contacts adapted to be engaged thereby.

In witness whereof, I have hereunto set my hand this 16th day of April, 1908.

ARBA G. CLARK.

Witnesses:

BENJAMIN B. HULL,  
HELEN ORFORD.