

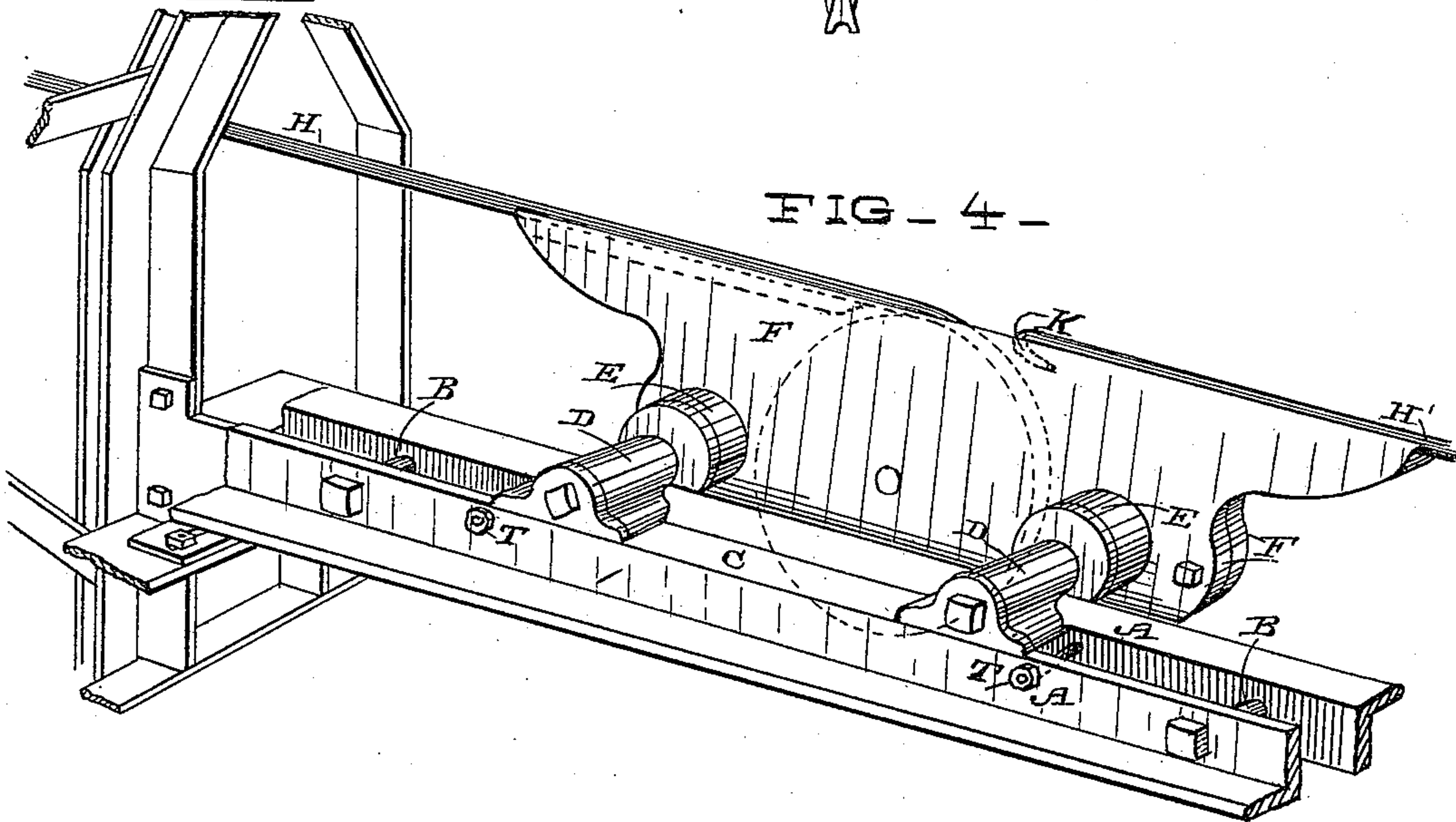
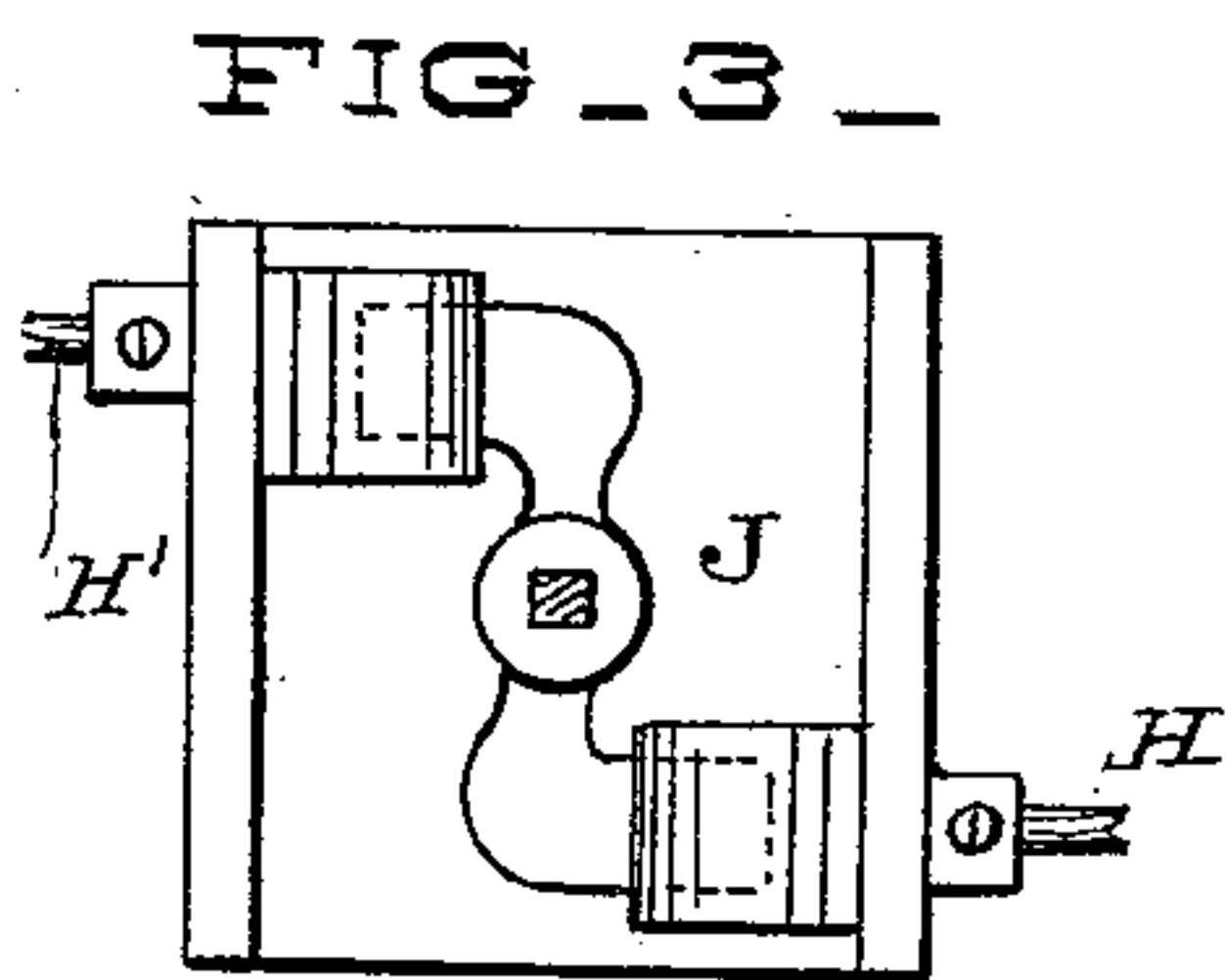
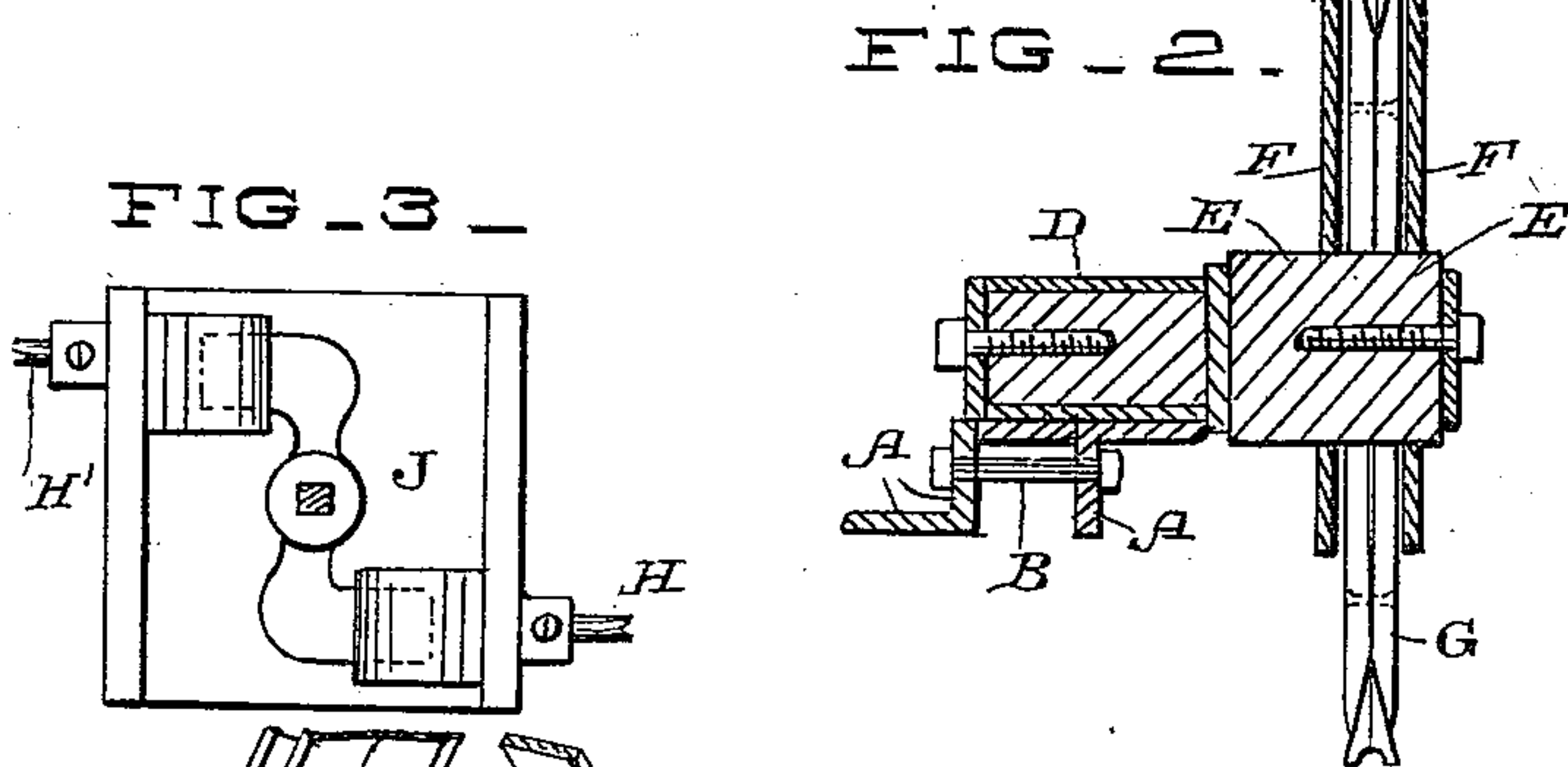
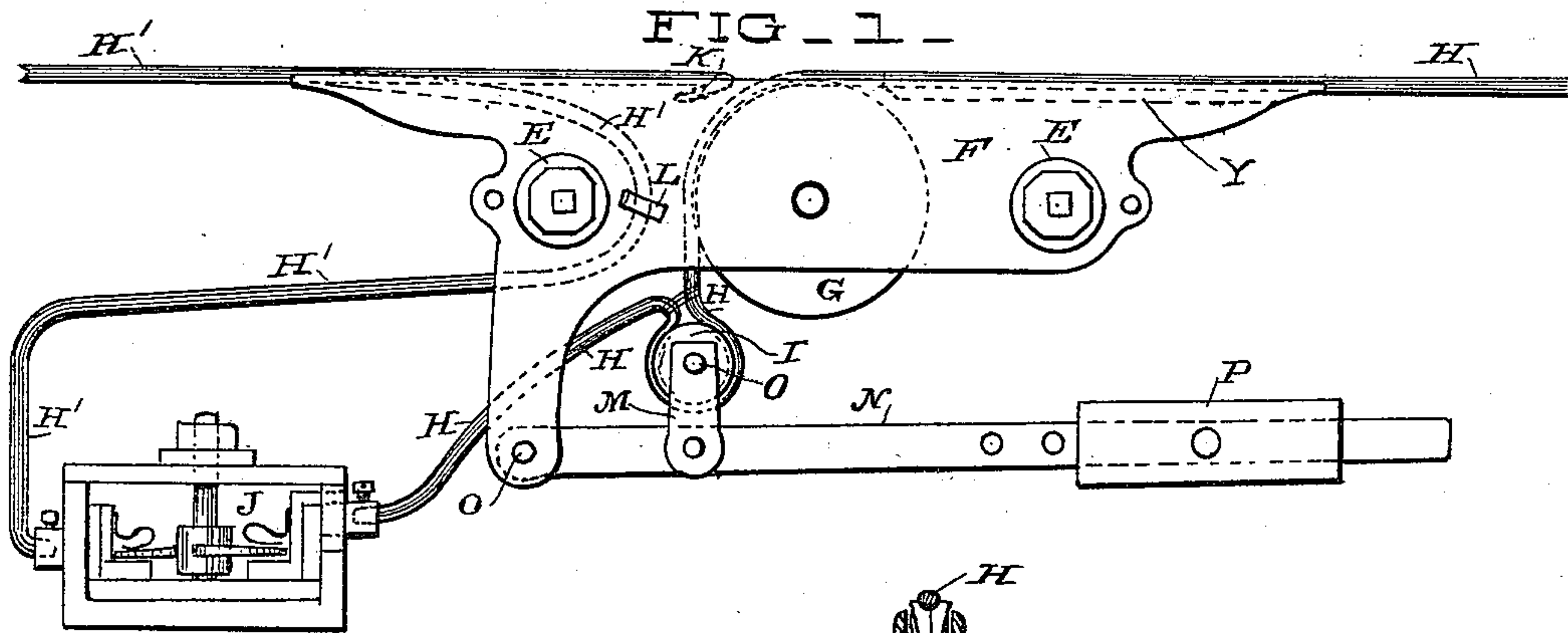
(No Model.)

B. JENNINGS.

TENSION AND CUT-OUT DEVICE FOR ELECTRIC RAILWAYS.

No. 451,326.

Patented Apr. 28, 1891.



Witnesses,  
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Attys



# UNITED STATES PATENT OFFICE.

BYRON JENNINGS, OF SAN JOSÉ, ASSIGNOR OF ONE-HALF TO JAMES BRUSIE,  
OF OAKLAND, CALIFORNIA.

## TENSION AND CUT-OUT DEVICE FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 451,326, dated April 28, 1891.

Application filed September 19, 1890. Serial No. 365,554. (No model.)

*To all whom it may concern:*

Be it known that I, BYRON JENNINGS, a citizen of the United States, residing at San José, Santa Clara county, State of California, have  
5 invented an Improvement in Tension and Cut-Out Devices for Electric Railways; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to what I call a "tension  
10 and cut-out device for electric railways."

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

15 Figure 1 is a side elevation of my device. Fig. 2 is a sectional view through the insulators. Fig. 3 is a detail of the switch or cut-out J. Fig. 4 is a perspective view.

My invention, as illustrated in the present  
20 case, is adapted for use in electric railways of that class in which the conducting-wire extends through an underground tube or tunnel having a slot in the upper part through which connection is made between a trolley-wheel  
25 which travels in contact with the wire and the motor upon the car from which the trolley is suspended.

The object of my present invention is to  
30 provide for a suitable tension of the conducting-wire, so as to maintain it approximately in a straight line and provide the proper contact between it and the traveling trolley-wheel, and a means for cutting out sections  
35 of the wire, so that it may be properly tested to see if the insulation is perfect, or to detect the point at which the grounding may have taken place.

A A are angle-iron bars forming a frame which extends between the yokes which are  
40 fixed at intervals within the tube or tunnel. These angle-iron bars support a frame C, by means of bolts which pass through the angle-iron bars and the frame C at points between two adjacent yokes. Upon the top of the  
45 frame C are the lugs D, through which pass pins or bolts, and these pins or bolts carry the insulators E.

F F are two plates lying parallel and side  
50 by side and supported upon the insulators E. Between these plates a wheel G is journaled,

so that the upper part of its periphery is approximately in line with a groove or channel which is formed between the plates and of sufficient size to receive the conducting-wire H, which extends along this channel between the  
55 plates F until it reaches the pulley G, over which it passes with a quarter-turn, thence downwardly and around the suspending insulated block I, and thence it extends, as shown, to the switch or cut-out device shown  
60 at J. The groove in the upper part of the plates F is lined with rubber or other non-conducting material Y, upon which the wire rests, and the groove in the edge of the pulley G is similarly insulated, so that the wire  
65 has no contact with the metal plates F.

The ends of the plates F opposite to where the wire H enters to pass around the pulley G are similarly grooved, and the connecting  
70 device K lying within these grooves is bent into the form of a hook, as shown at K', so as to hook into a correspondingly-shaped groove in the plates and thus give it sufficient tension and to secure the end of the wire from  
75 rising out of the groove as the trolley-wheel passes over it.

The conducting-wire H', which leads from the left end of the device F and forms a continuation of the conductor, extends to any suitable distance, such as seven or eight hundred  
80 feet, where it in turn passes over a pulley G, in the same manner as described for the wire H. This wire H' is connected in line with K, and passing between the plates F is firmly held by a clamp, as shown at L, and from thence  
85 it passes down and connects with the side of the switch mechanism opposite to the point where the wire H is connected. It will be seen from this construction that the current passing through the wire H, which is insulated  
90 from the plates F and the wheel G, must pass to the switch at J, and when the switch is turned in the proper direction it will pass through this switch, thence through the wire H', and thus continue the current unbroken; 95  
but if at any time the insulation should be found to be imperfect, or for any reason it should be found necessary to test the wires for any purpose, by turning the switch at the  
100 end of either section of the wire H H' that



portion can be temporarily cut out and tested, and if found perfect connection can be made by again connecting the switch, and the next section in like manner can be thrown out, and so on through the whole length, thus locating any fault or defect within the distance between the cut-out devices, and this distance, as before described, may be of any suitable length. In order to preserve the proper tension upon these wires H H' the insulator I, around which the wire H passes, is connected by a link or hanger M with a lever N, one end of which is fulcrumed between an extension of the plates F, as shown at O. The other end has a sliding weight P adjustable upon it, so that it may be fixed at any point to give the proper or desired tension to the wire H. The lever N and pin holding same are also insulated between the plates F at the fulcrum o. By this construction it will be seen that any elongation or contraction of a conducting-wire will be compensated by means of this tension device.

Bolts T pass through the angle-iron A A for the purpose of keeping the frame C from moving in the angle-plates.

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

1. The plates F, supported upon insulators, the pulley G, journaled between them, the conductor H, passing around the pulley, thence around an insulated hanger at I, and

a weighted lever connected with said hanger, in combination with the wire H', secured or clamped to the plates F, and the switch-box J, wherein the wires H and H' are connected or disconnected, substantially as herein described.

2. The plates F, having the insulated supports, the pulley G, journaled between them, having its periphery grooved and insulated, and the insulated channels in the plates F, in combination with the wire H, extending along said insulated channel around the pulley G, the tension device connected with said wire, and the switch mechanism with which the end of the wire is connected, in combination with the second wire H', connected with the switch mechanism clamped to the plates F and forming a continuation of the wire H, substantially as herein described.

3. The plates F, forming a connection between the conducting-wires H H', having the pulley and tension device connected therewith, the insulators E, upon which said plates are supported, and the frame C, supported by the angle-bars between the yokes in the tube or tunnel, substantially as herein described.

In witness whereof I have hereunto set my hand.

BYRON JENNINGS.

Witnesses:

S. H. NOURSE,  
H. C. LEE.