

No. 670,380.

Patented Mar. 19, 1901.

J. F. BJURLUND.

CURRENT INTERRUPTER IN CONDUCTING RAIL CONTACT SYSTEMS.

(Application filed Sept. 26, 1900.)

(No Model.)

Fig. 1.

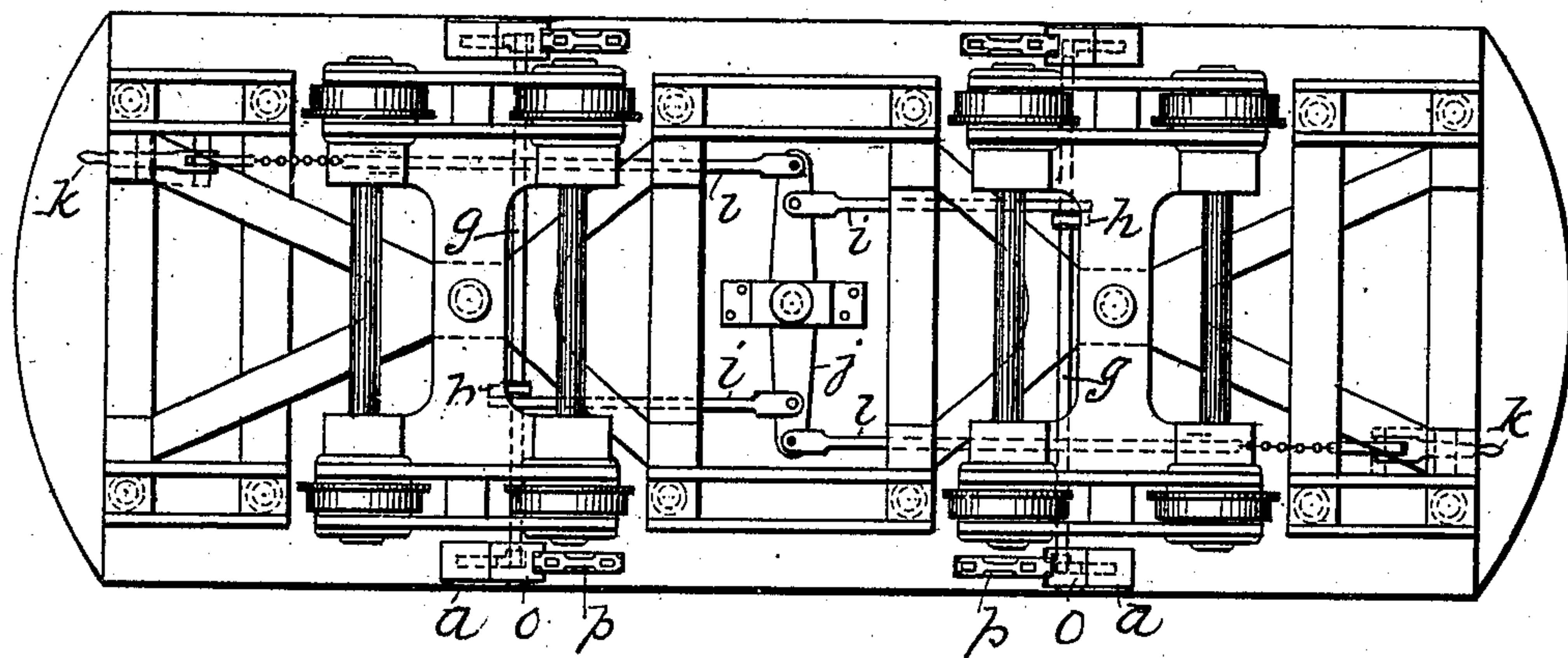


Fig. 2.

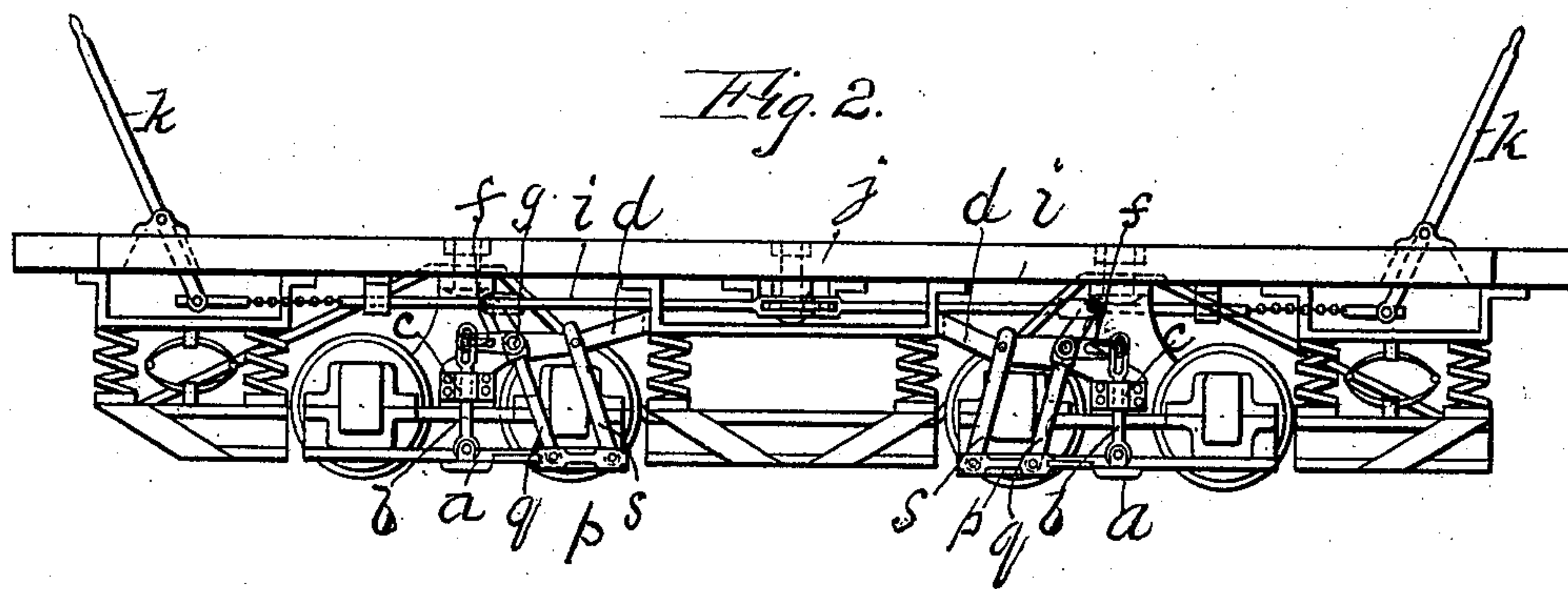
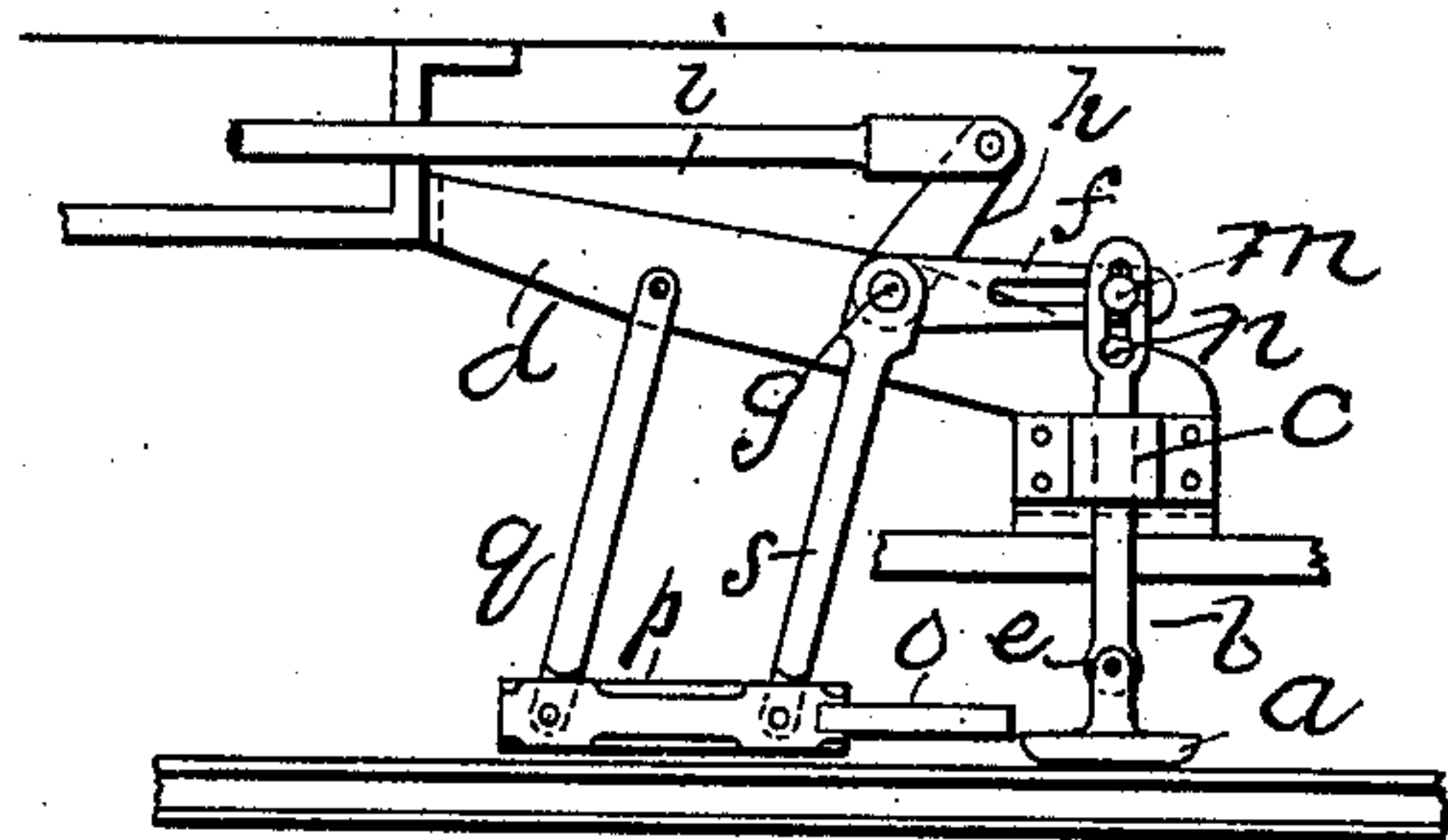


Fig. 3.

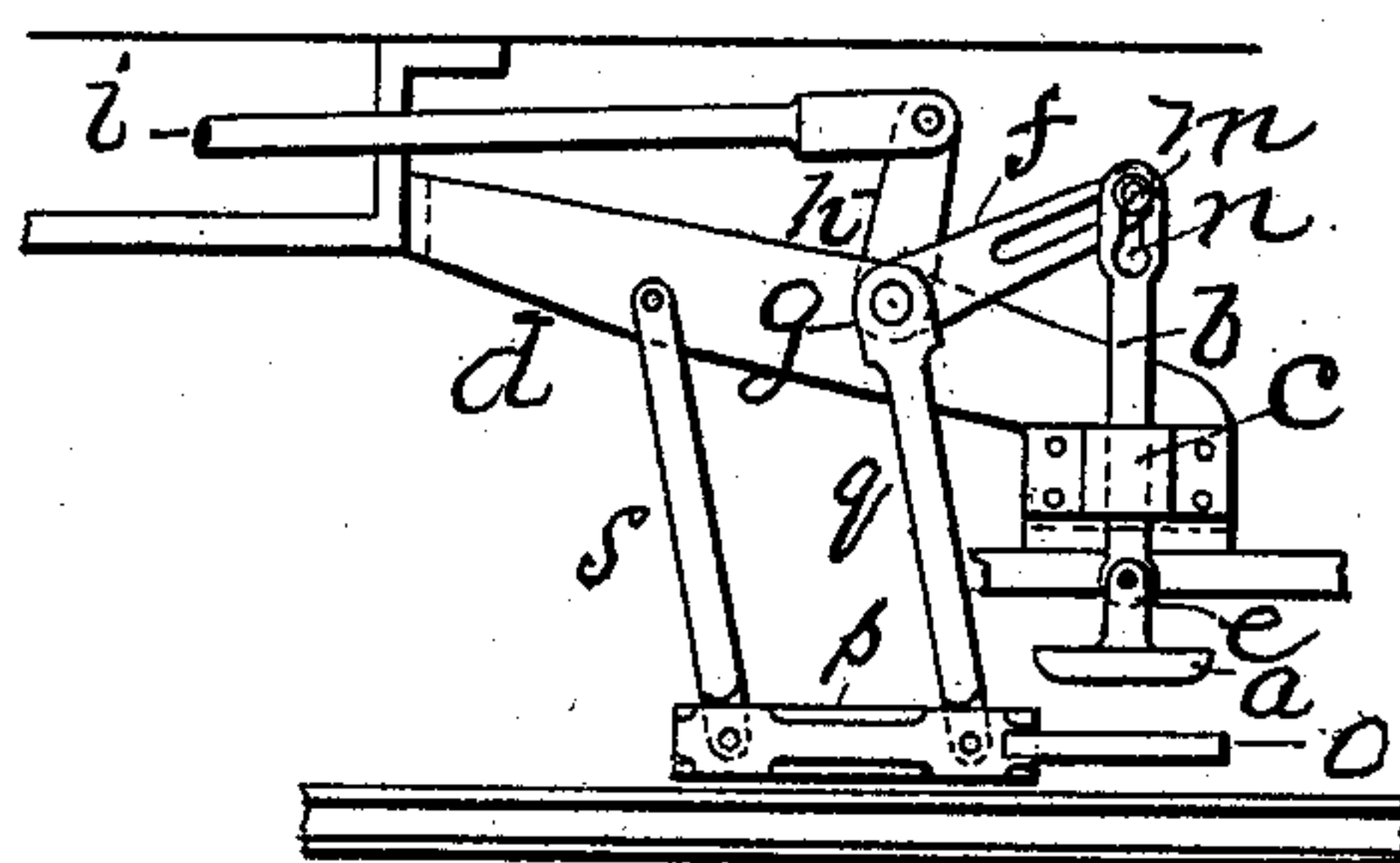


WITNESSES

L. Almquist.  
C. Sedgwick.

A

Fig. 4.



A

INVENTOR

John F. Bjurlund  
by C. P. Thayer ATTY



# UNITED STATES PATENT OFFICE.

JOHN F. BJURLUND, OF RICHMOND HILL, NEW YORK, ASSIGNOR OF ONE-HALF TO JOSEPH S. MORISON, OF SAME PLACE.

## CURRENT-INTERRUPTER IN CONDUCTING-RAIL-CONTACT SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 670,380, dated March 19, 1901.

Application filed September 26, 1900. Serial No. 31,139. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. BJURLUND, a citizen of the United States of America, and a resident of Richmond Hill, borough of Queens, city and State of New York, have invented certain new and useful Improvements in Current-Interrupters in Conducting-Rail-Contact Systems, of which the following is a specification.

My invention consists of improved means for interrupting the electric current between the conducting-rail and the contact-shoe and preventing the current from following the shoe through space when lifted for breaking the circuit, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of a car inverted and equipped for taking the electric current by the third-rail system and provided with current-interrupters in accordance with my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a detail in side elevation of the contact-shoe and interrupting apparatus with the shoe in contact with the conducting-rail. Fig. 4 is a detail in side elevation of the contact-shoe and interrupting apparatus with the shoe lifted out of contact and the interrupter in the position for cutting off the current.

A represents the conducting-rail, and *a* contact-shoes for gliding along the rail as the car runs to take the electric current from the rail for transmission to the motors, as usual. Said motors and the conducting-wires are not shown, being unnecessary to a proper understanding of the invention to be hereinafter claimed.

The contact-shoes are suspended from the car over the rail A for making and breaking contact, as usual—for example, by a staff *b*, arranged to slide in a guideway *c*, mounted on a part of the car, as bracket-arm *d*, to the lower ends of which staff the shoe is pivoted at *e* in any suitable insulated joint, said staff being jointed at the upper end to an arm *f* of a rock-shaft *g*, to an arm *h* of which a rod *i* is connected, said rod being connected to a lever *j*, with which hand-levers *k* are connected by rods *l*, suitably arranged for enabling the motorman to control the contact-shoes at will.

The staffs *b* are connected to arms *f* by a stud *m* of each arm and a slot *n* of the staff, allowing the staff to rise and fall as the rails may vary on the surface without obstruction by the arms *f*, as would be the case if the joints were rigid. The slots *n* are enlarged at the lower end to admit the heads of the studs *m* in a well-known contrivance for ready connection and disconnection. With the shoes thus or in any other way mounted I provide a current-interrupter of non-conducting material, as *o*, in any suitable contrivance for being automatically and quickly thrust into the space between the rail and the shoe when the shoe is lifted, and thus positively interrupt the current and prevent the present objectionable continuation of the current through space into the shoe even when raised to a considerable height, and thus materially interfering with the prompt control of the car. The means which I have thus represented in this case for so operating the interrupters consists of an interrupter-supporting staff *p*, suspended by parallel bars *q* *s*, one of which is pivoted to bracket-arm *d* and the other is keyed to rock-shaft *g*, so as to swing toward shoe *a* when said shaft is operated to lift the shoe, said bars being pivot-jointed with staff *p*. The relation of the interrupter apparatus to the shoe is such that the interrupter normally rests with its free end in close proximity to one end of the shoe and in a slightly higher level than the shoe when the shoe is in contact with the rail. The parallel bars *q* *s* are longer than the arm *f*, so that the range of movement of the interrupter is greater than the movement of the shoe. Therefore when the shoe is raised a suitable height to clear the interrupter the latter is thrust forward between the shoe and the rail a distance sufficient to cut the field of current between the rail and shoe and promptly and totally interrupt the current.

The bars *s* and *q* will consist wholly or partly of non-conducting material to prevent communication of the current with the metallic parts of the car structure.

It is manifest that various contrivances of apparatus may be employed for thus operating the interrupter, and I do not limit myself to the special contrivances represented for the purpose.

What I claim as my invention is—

1. The combination with the contact-shoe  
and means for actuating it for making and  
breaking the circuit with the conducting-rail,  
5 of an interrupter for the electric current, and  
means connected with the contact-shoe-actu-  
ating mechanism for thrusting the interrupter  
between the contact-shoe and rail to interrupt  
the current when the shoe is withdrawn from  
10 the rail, and for withdrawing said interrupter  
when the shoe is placed in contact with said  
rail.
2. The combination with the contact-shoe

and the rock-shaft and lever mechanism for  
operating it, of an interrupter for the electric 15  
current, and means for thrusting it between  
the shoe and the rail and withdrawing it there-  
from connected with the rock-shaft, and be-  
ing operative through the instrumentality of  
the shoe-operating lever. 20

Signed at Richmond Hill, New York, this  
21st day of August, 1900.

JOHN F. BJURLUND.

Witnesses:

JOHN W. MAGEE,  
ERNST FRIEDRICH.