

(No Model.)

J. L. BUCHANAN.  
ELECTRIC CONTACT DEVICE.

No. 599,891.

Patented Mar. 1, 1898.

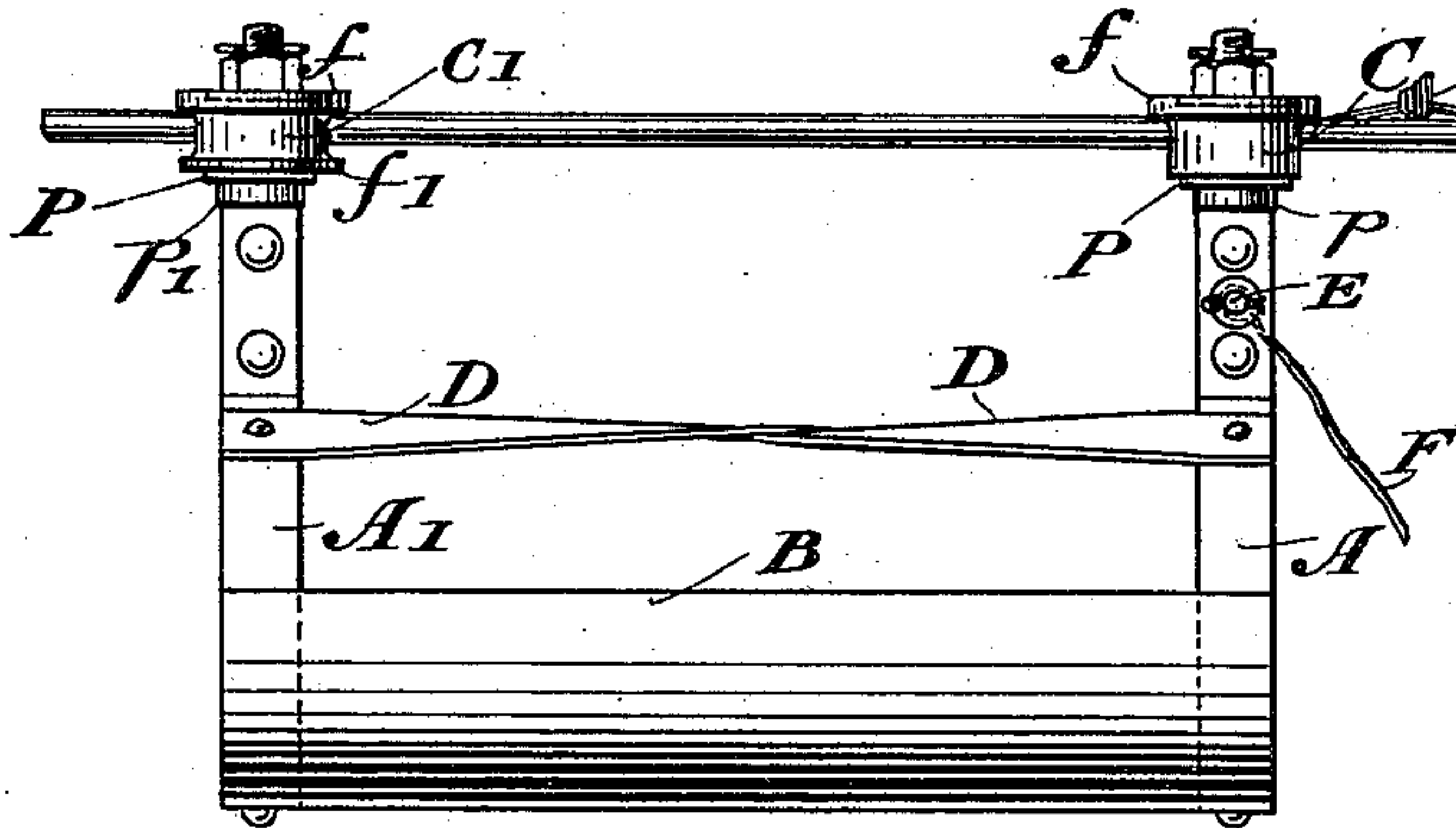


Fig. 1.

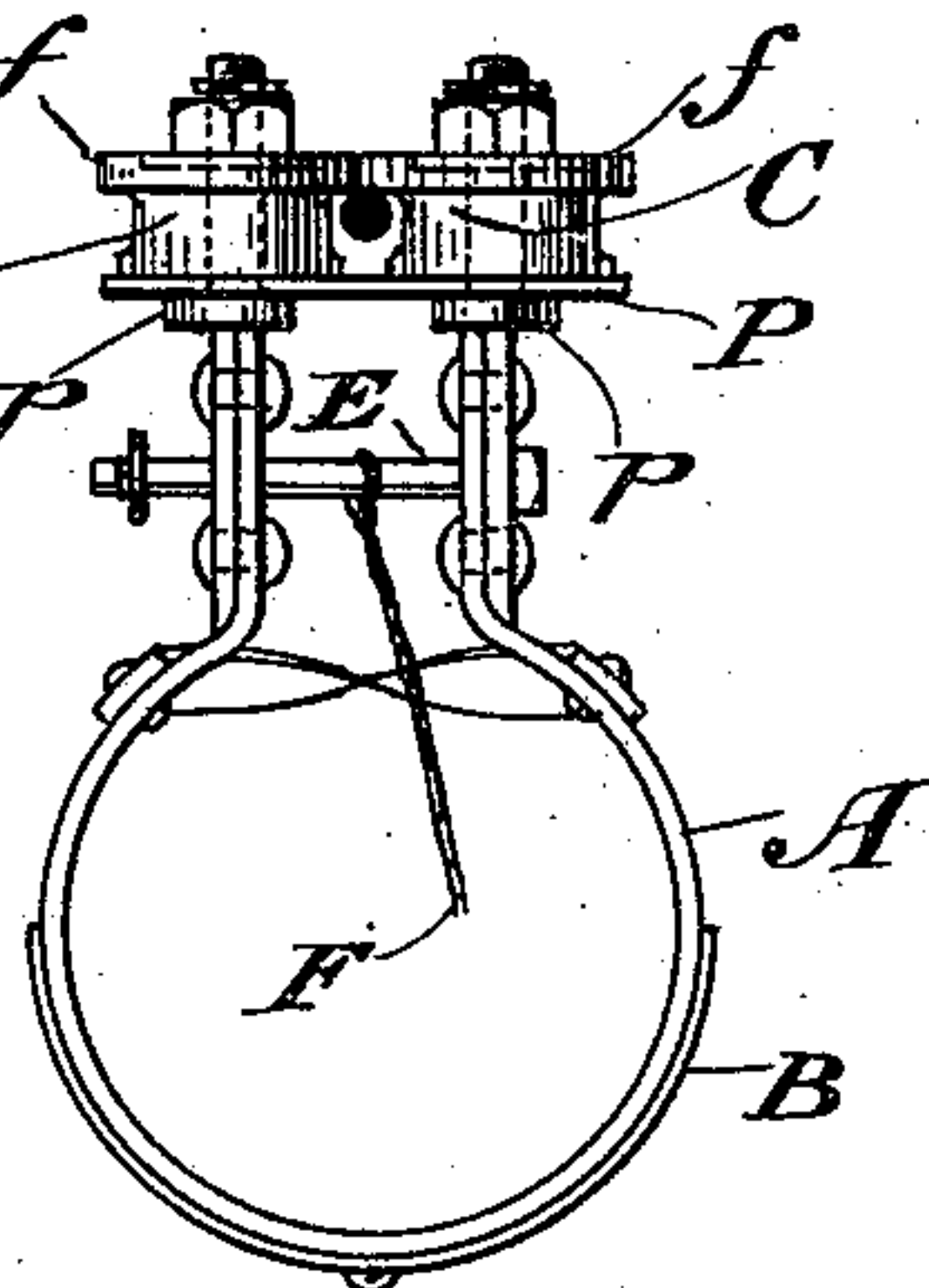


Fig. 2.

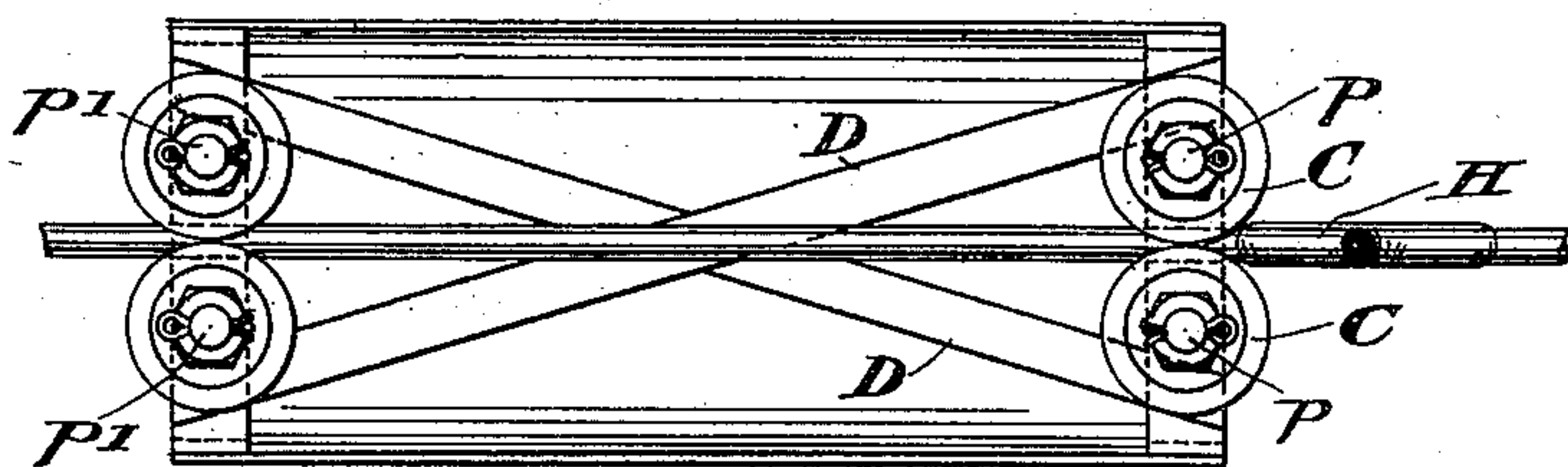


Fig. 3.



Fig. 4.

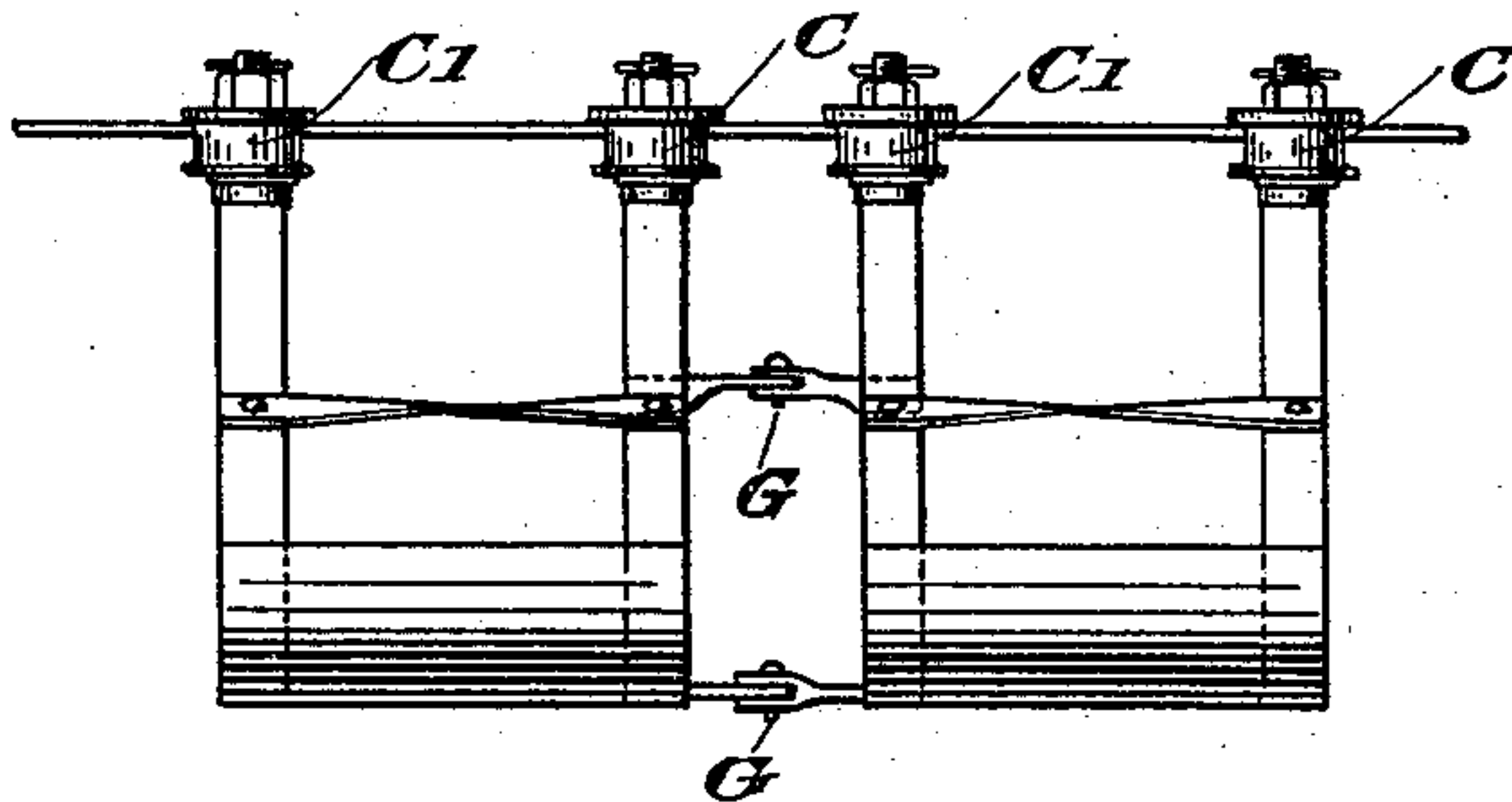


Fig. 5.

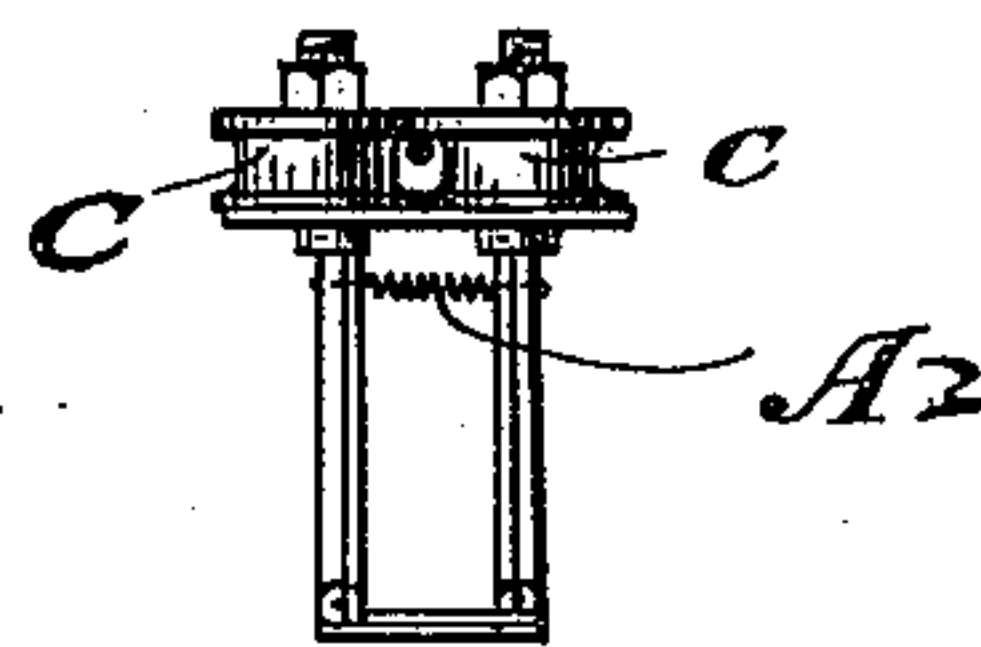


Fig. 6.

WITNESSES:

A. C. Stiff.  
M. E. Sharpe

INVENTOR

John L. Buchanan  
BY  
Richard L. Lys.  
ATTORNEY.

# UNITED STATES PATENT OFFICE.

JOHN LOWMAN BUCHANAN, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR  
TO THE STEEL MOTOR COMPANY, OF SAME PLACE.

## ELECTRIC CONTACT DEVICE.

SPECIFICATION forming part of Letters Patent No. 599,891, dated March 1, 1898.

Application filed February 4, 1897. Serial No. 622,004. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LOWMAN BUCHANAN, of Johnstown, Cambria county, Pennsylvania, have invented certain new and useful Improvements in Electric Contact De-

My invention relates to that class of contact devices adapted to engage a conductor, adapted to be drawn along said conductor by the vehicle to be propelled, and adapted to convey the current from said conductor to the vehicle.

The object of my invention is to provide a cheap, simple, and effective device adapted to make contact with the top, side, or both top and side of the conductor, adapted to pass the usual forms of conductor-hangers without leaving the conductor or losing contact therewith, and having other advantages, as will be hereinafter set forth.

To these ends my invention comprises a plurality of contact-makers having flanges adapted to lie over upon the top of the conductor and supporting the device thereon, means for holding said rollers yieldingly in position and allowing them to move away from the conductor in order that the device may pass a hanger, and means for preventing the device from climbing upwardly and becoming jammed with the hanger.

Other novel features of my invention, with their incumbent advantages, will be set forth hereinafter.

Referring to the drawings, Figures 1, 2, and 3 are respectively side, end, and top views of one form of my invention. Fig. 4 is a plan of the plate P. Fig. 5 shows a side view of a modified form of my invention. Fig. 6 is an end view of another modification thereof.

The rollers C C and C' C' are rotatable upon the vertical pins p p and p' p', respectively, secured upon the upper ends of the springs A and A'. These springs force the contact-rollers toward each other, pressing the flanges f f together.

In Fig. 1 I show the rollers C C without bottom flanges, while the rollers C' C' have the bottom flanges f' f'. Either arrangement

may be used, but I prefer to use the bottom flanges on all rollers.

The bottom flange prevents the device from climbing upwardly while passing a conductor-hanger. The plate P serves the same purpose if the bottom flanges are not used, and has the added advantage, provided the shape of the conductor-hanger should be such as to spread the wheels far enough apart to let the conductor pass between the lower flanges of the rollers, of preventing the device from lurching upwardly and locating itself with the conductor below the lower flanges. In practice, therefore, I prefer to use both the flanges f' f' and the plates P P, but in many cases either f' f' or P P would be sufficient for the purpose.

I prefer to connect the springs A A' by a sheet of metal, as B, as by such a connection I can use lighter springs and yet obtain more durability.

The bow-springs A and A', connected together as I have shown them, form a very simple means of pressing the rollers C C and C' C' toward the conductor and I am enabled to do away with the use of a large number of small springs, unless I wish to use the latter as adjusting-springs.

D D are ribbon springs which, while adding to the staunchness of the device, have the particular advantage of forcing one set of rollers together when the other set is spread by the passage therethrough of the conductor-hanger.

E is a cross-bar loosely mounted in the upper ends of the spring A A, and F is a connector secured to E and connected at its other end to a suitable part of the moving vehicle. Another bar E may be put on the other end of the device to draw it along the conductor in the opposite direction, and any suitable means may be provided for changing from one connector to the other, as desired.

The electrical connection between the device and the vehicle may be made by F or in any other suitable manner.

I prefer to pull the device, as shown, from its forward end, and I prefer to have the con-



nection between F and the device above the center thereof. In this way I am enabled to neutralize the downward pull of F by the tendency of the lower part of A to assume the oblique position of F.

In Fig. 5 I show two devices such as the one described connected together by pivotal joints G G. With some forms of hangers, switches, or frogs such a device is preferable.

In Fig. 6 I show a device similar to that of Fig. 2, except that the tension-spring A<sup>2</sup> fulfills the function of the spring A.

The operation of my improved contact device is now plain. Any obstruction in the central path of the device, such as the conductor-hanger H, will engage the flanges *ff* of the spools C C, and force the spools apart sufficiently to allow the passage therethrough of H. At the same time the lower flanges or plates, or both, will keep the spools from upward lurching. The ribbon springs D D will force the rollers C' C' to bear against each other even more strongly than before. The increased strength of the spring A, aided by the tendency of the lower part of the device to take an oblique position, prevents the rollers from pulling off the conductor.

The advantages accruing from the use of the flanges *ff* to support the device upon the conductor are great, for the pressure exerted by the springs A and A' may be regulated without considering the pressure of the spools against the sides of the wire. The wear and tear on the wire is much less than it is in the case of trolleys that grip the side of the wire, because the wire has only the weight of the trolley to support and has not the pressure of a powerful spring against it.

In the foregoing description and in the drawings I have shown the forms of my invention which I deem preferable; but I do not limit myself to the exact form of my device shown. Without departing from the scope of my invention I may have the rollers bear directly against the side of the conductor instead of, as shown, bearing only incidentally thereagainst. I may stagger the wheels instead of arranging them in couples, so that the pressure of the wheel against the conductor instead of the pressure of the flanges against each other is the means of ordinarily holding the contact device in position. Other forms of springs and means equivalent to the plates P P or the flanges *f' f'* for preventing the rising of the device will readily suggest themselves to those skilled in the art, and I do not, therefore, limit myself to those described.

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

1. In an electric trolley device, the combination of a frame and a plurality of laterally-movable rollers carried thereby and having flanges extending completely over the conductor.

2. In an electric contact device, in combination, a plurality of spring-pressed contact-makers having flanges extending over the conductor and adapted to support the device thereon.

3. In an electric contact device, in combination, a plurality of spring-pressed rollers rotatable about vertical axes on opposite sides of the conductor and having flanges extending over the conductor and adapted to support the device thereon.

4. In an electric contact device, in combination, a frame, a plurality of laterally-movable contact-makers carried by said frame at each side of the conductor, having lower flanges extending under the conductor and upper flanges extending over the conductor to support the device thereon.

5. In an electric contact device, a plurality of laterally-movable spools carried at each side of the conductor and having flanges adapted to extend over the conductor and support the device thereon, the body portions of said spools being shaped so as not to bear against the side of the conductor.

6. An electric contact device, comprising, in combination, a plurality of pairs of contact-makers having upper flanges, each pair being adapted to surround the conductor, means for yieldingly pressing the flanges of the contact-makers of each pair together above the conductor, and a common frame upon which said contact-makers are secured.

7. In an electric contact device, a plurality of bow-springs carrying at their extremities vertical pintles upon which contact-wheels are mounted, in combination with transverse plates, each of which surrounds opposite pintles and lies immediately beneath the contact-wheel.

8. In an electric contact device, the combination with the frame and the vertically-mounted rollers, of the transverse plates having elongated openings.

9. The combination, in an electric contact device, of a pair of rollers carried on opposite sides of the conductor and having flanges extending over the conductor, and a spring pressing said opposite flanges against each other.

10. In an electric contact device adapted to be carried by the conductor, a plurality of contact-makers, carried at each side of the conductor and mounted upon a common frame, means for pressing said contact-makers toward said conductor, and means, as D D, for increasing said pressure upon some of said contact-makers when others of said contact-makers are moved away from the conductor.

11. In an electric contact device, the combination of bow-springs carrying contact-makers with bars diagonally connecting said springs.

12. An electric trolley device, comprising, in combination, rollers, as C C, carried by a spring, as A, and adapted to surround the

conductor, flanges on the top of said rollers adapted to engage each other and bear on the top of the conductor, other flanges on said rollers adapted to extend under the conductor, a second set of rollers, as C' C', having similar flanges and similarly carried by another spring, as A', and means for securing said springs together.

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

JOHN LOWMAN BUCHANAN.

Witnesses:

MYRTLE E. SHARPE,  
H. W. SMITH.