

(No Model.)

E. E. KELLER.  
ELECTRIC RAILWAY TROLLEY.

No. 460,781.

Patented Oct. 6, 1891.

Fig. 2.

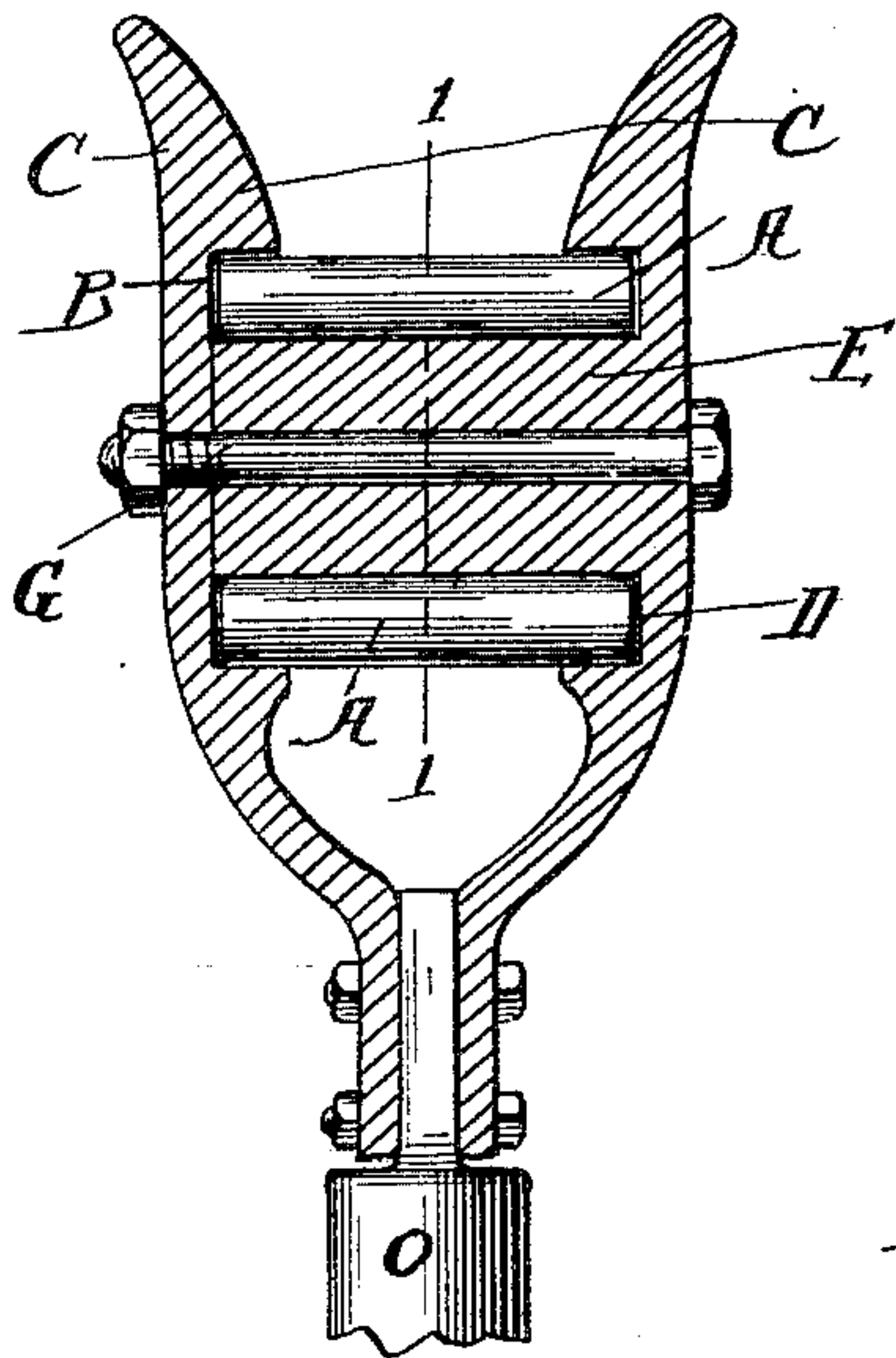


Fig. 4.

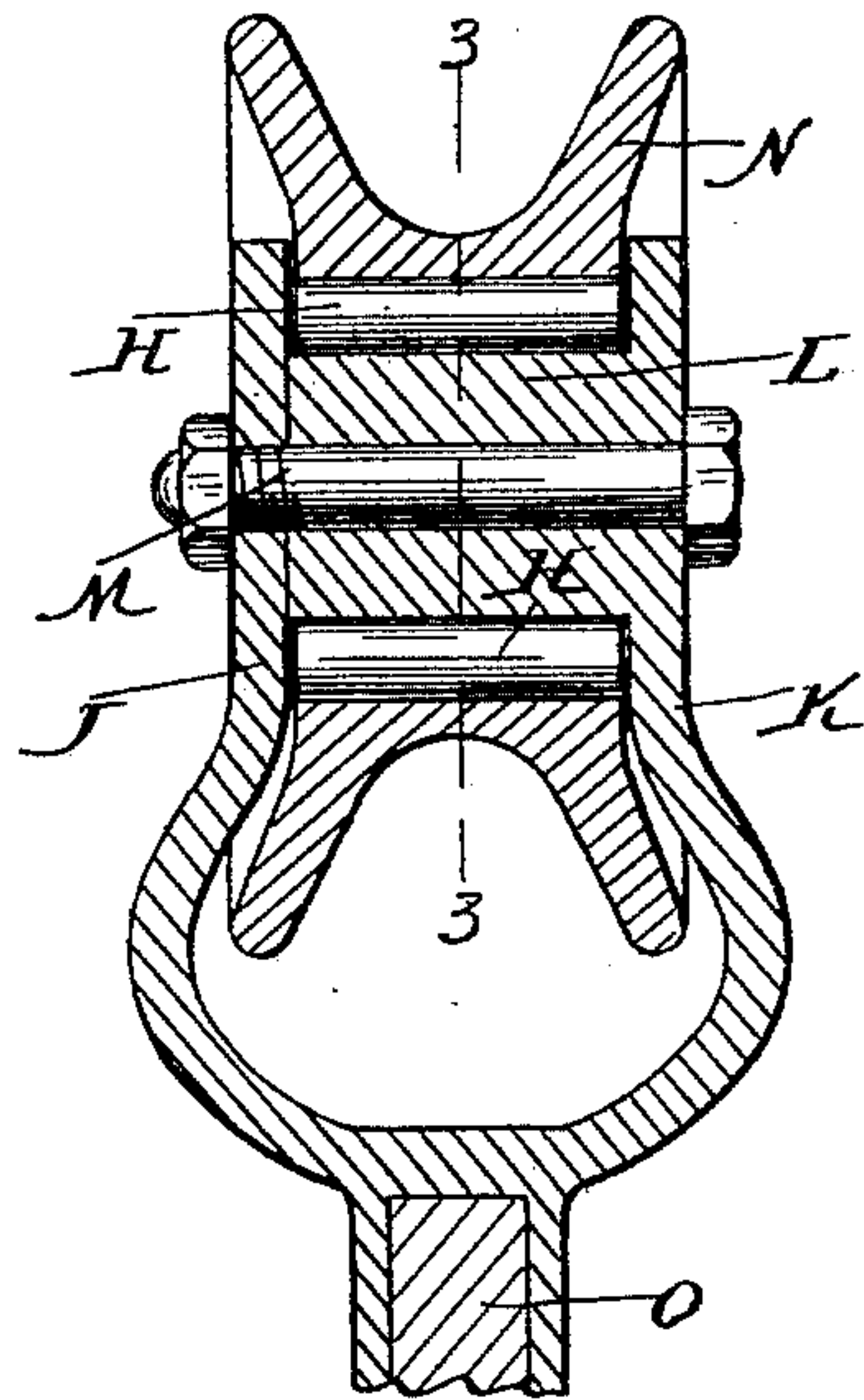


Fig. 1.  
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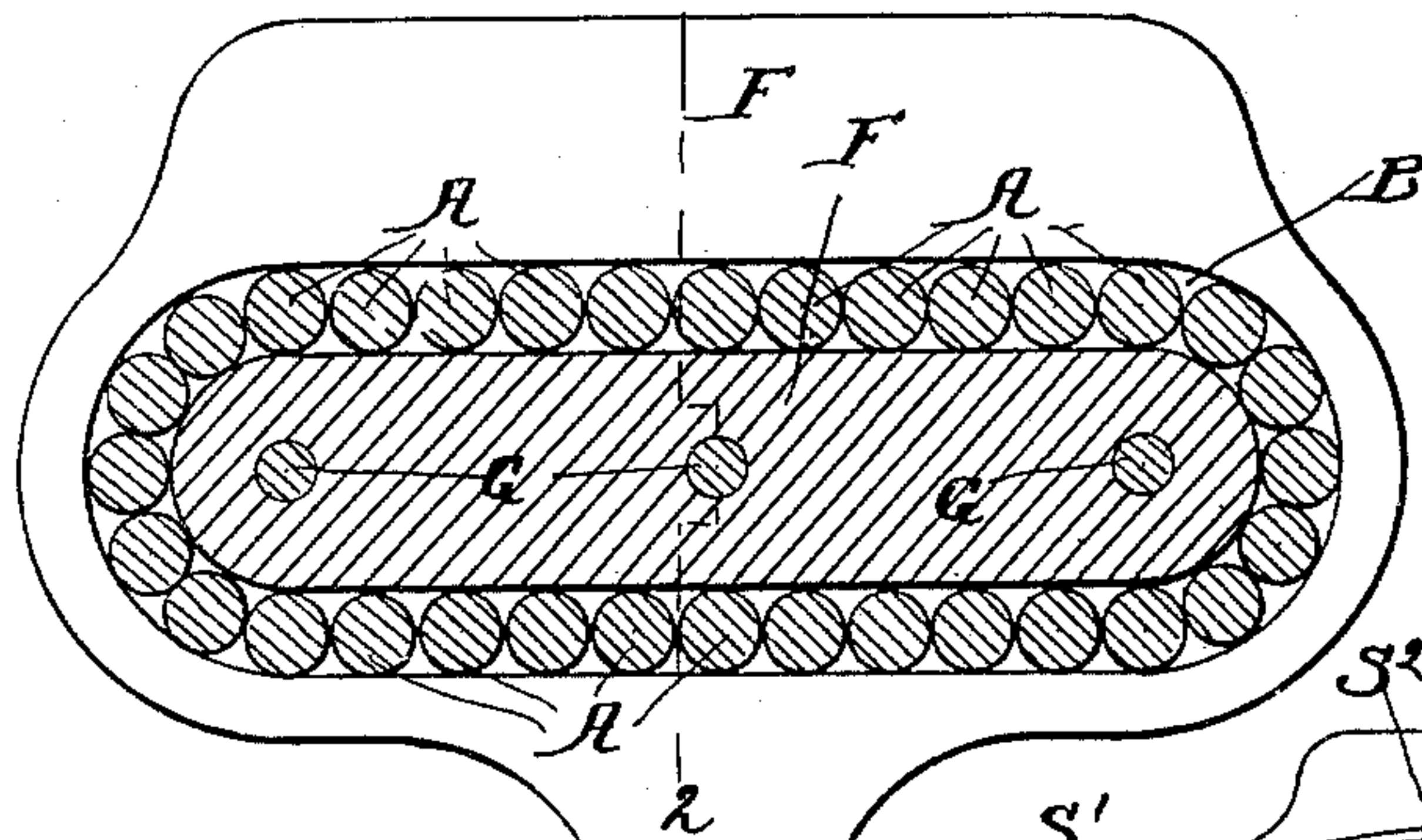


Fig. 3

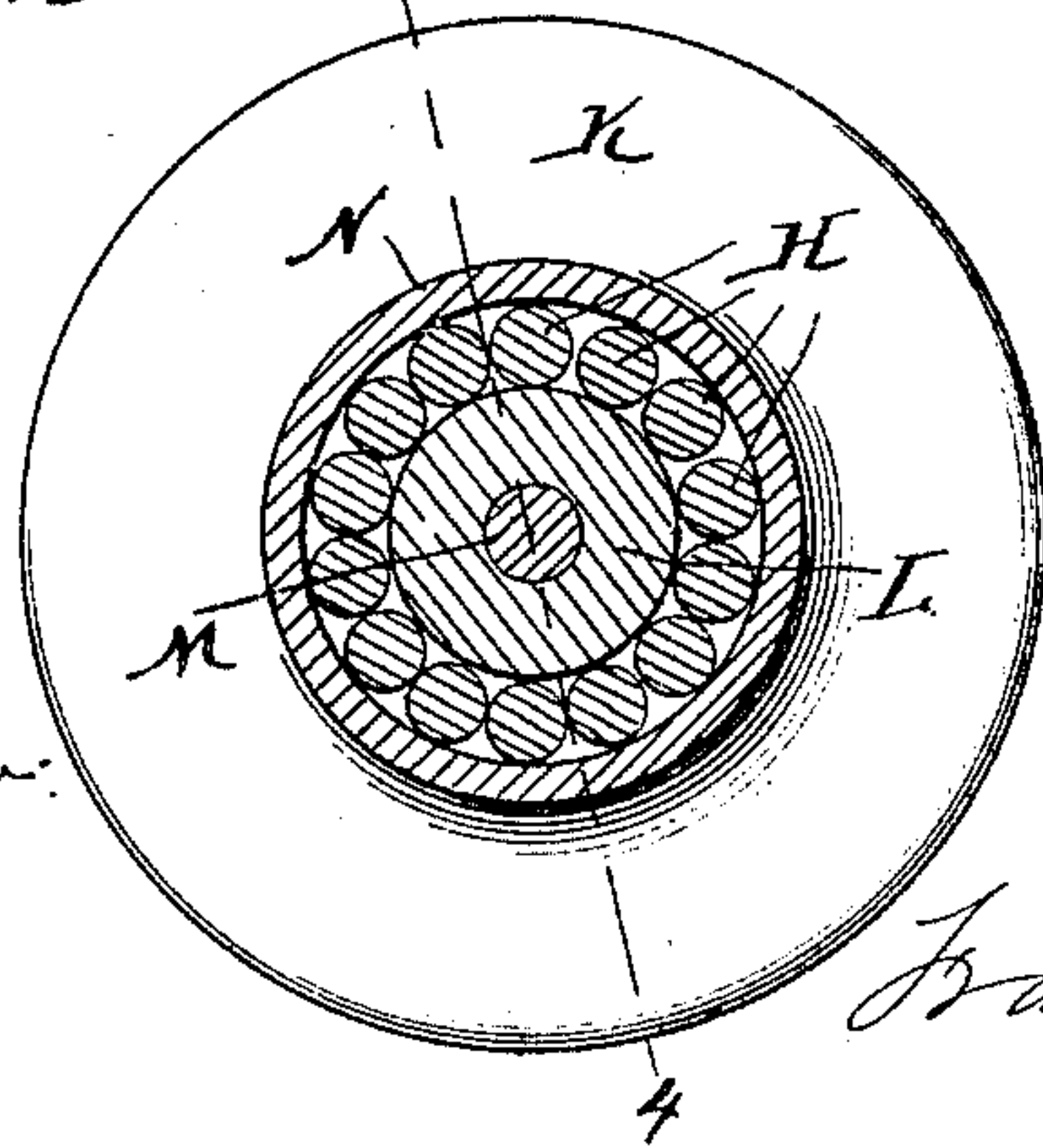
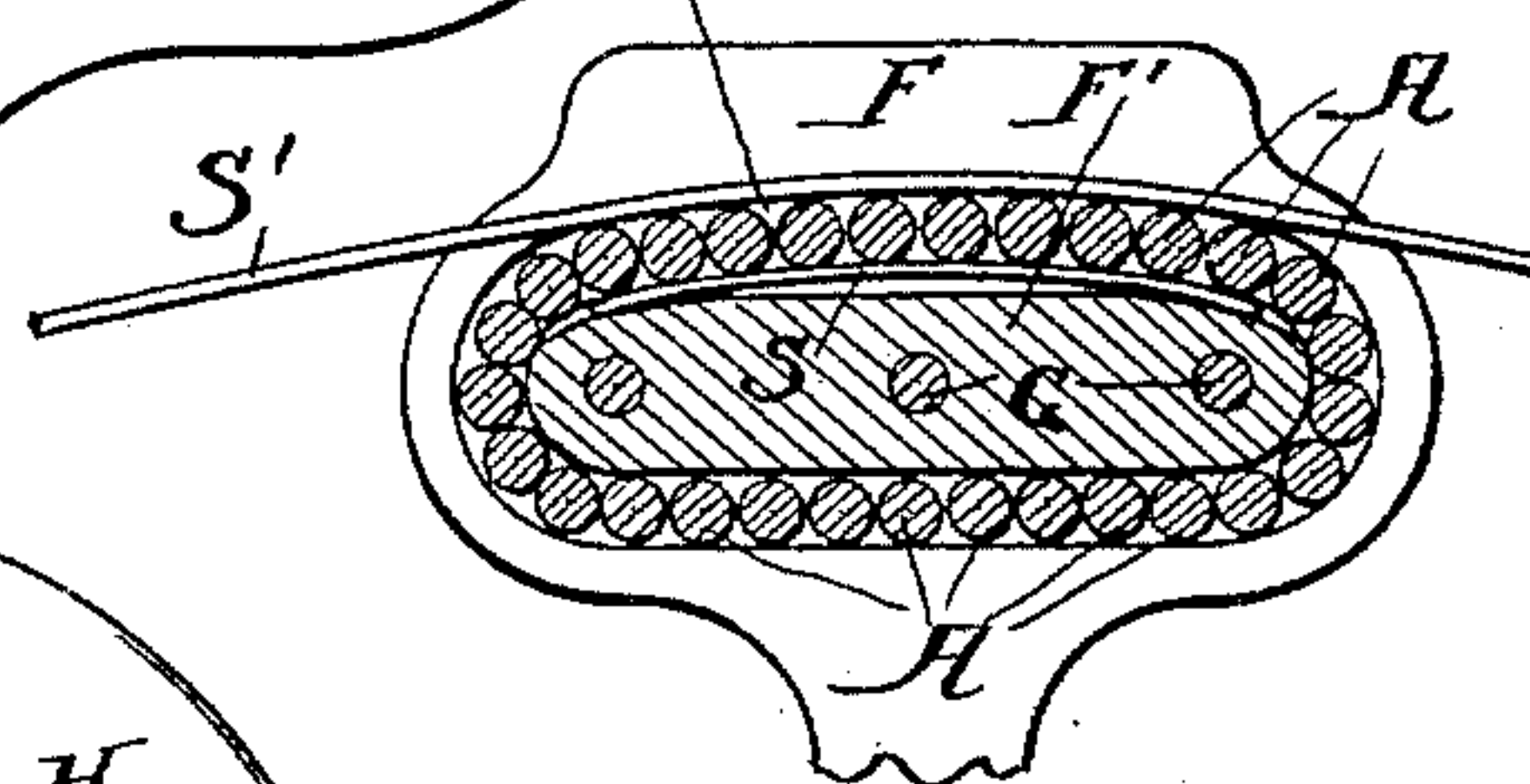


Fig. 5.



Witnessed:

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC-RAILWAY TROLLEY.

SPECIFICATION forming part of Letters Patent No. 460,781, dated October 6, 1891.

Application filed April 21, 1891. Serial No. 389,756. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL E. KELLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Trolleys, of which the following is a full, clear, and exact specification.

My invention relates to trolleys for the purpose of taking current from a conductor to a moving part—as, for example, a conductor leading to a moving motor—and has for its object to provide means for more effectually securing sufficient contact with the conductor delivering the current. It is illustrated in the accompanying drawings, wherein—

Figure 1 is a section on the line 1 1. Fig. 2 is a section on the line 2 2. Fig. 3 is a section through the line 3 3. Fig. 4 is a section on the line 4 4. Fig. 5 is a modified form of the device shown in Fig. 1. Figs. 3 and 4 are modifications of the device shown in Figs. 1 and 2.

Like parts are indicated by the same letters in all the figures.

A A are a series of rollers, whose ends project into the slot B on the side plate C and the slot D on the side plate E, as indicated in Fig. 2. The side plate E is provided with an elliptical projection F, which abuts against the side plate C.

G G are a series of bolts, which connect the two side plates together securely. Thus, when the parts are secured together the two grooves are formed about the projection F, so that the rollers are normally in close contact with and rolling upon the upper surface of the part F. The conductor leading to the moving motor, for example, is connected in any desired manner with the metallic side plates C and E, and hence of course with the rollers which rest thereon. H H are similar rollers contained between the side plates J and K. The latter plate has a cylindrical projection L, which abuts against the side plate J, and the two side plates are secured together with a central bolt M. Somewhat larger in diameter than the portion L is the grooved sleeve N, which encircles the portion L, and between which and such portion L are disposed the

rollers H H in contact with the part L and the sleeve N.

O O are the trolley-poles, to which the trolleys are secured.

S is a spring—in the form I have shown a flat upwardly-bearing spring—resting upon the upper surface of the part F, and adapted to hold the rollers upwardly in the form of an arc, as indicated in Fig. 5. In this case the slot or slots in which the rollers lie should be enlarged, as indicated in Fig. 5, as in line S<sup>2</sup>, and indicated by dotted lines in Fig. 1.

S' is the conductor-wire.

The use and operation of my invention are as follows: When the trolley shown in Figs. 1 and 2 is employed it is evident that when the trolley is brought upwardly against the conductor the same will lie across and engage a number of the rollers simultaneously, and these rollers, rolling upon the part E and engaging the conductor leading to the moving motor, will thus form a very perfect contact.

If, for any reason, contact should be broken at one or more of such rollers it is clear that it will still be made at the others, and thus sparking and breaking of circuit are avoided.

It is evident that the principle above suggested could be applied in very many ways, and by devices clearly differing from that last above described, and I have already applied the same in other very different forms of construction.

In Figs. 3 and 4 the grooved sleeve is placed exterior to the rods upon the rollers, but is simply intermediary, since the rollers are applied in the same general manner as is shown in Figs. 1 and 2. The devices shown in Figs. 3 and 4 do not of course exhibit all the features revealed in the devices of Figs. 1 and 2.

The upwardly-bearing spring permits a considerable number of the rollers to come in contact with the conductor to which the current is to be led under the circumstances. The sag of such conductors would in some instances cause them to slightly drag over the trolley if the same presented a practically flat surface, but by spring-supporting the rollers, which of course may be done in a great va-



riety of ways, the rollers will be drawn up and kept in contact with the conductor, substantially as indicated.

I claim—

5 1. In a trolley, the combination of a conductor-body connected with the part to which the current is to be led and a series of rollers in contact with such body and disposed so that two or more of them will engage the conductor which delivers the current simultaneously.

2. The combination of a conductor-body connected with the part to which the current is to be led with a series of rollers supported  
15 and rolling upon a portion of such conductor-body and disposed so that two or more of them will engage the conductor which supplies the current simultaneously.

3. The combination of a metallic conductor-body provided with an upper flattened portion and a series of rollers adapted to roll over and along such upper flattened portion, so that two or more of such rollers can be brought into contact with the conductor which supplies the current simultaneously.  
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4. In a trolley, the combination of a conductor-body with a transverse somewhat elliptical portion and a series of rollers adapted to roll over and upon such elliptical portion,  
30 so that two or more of them can be brought into contact with the conductor which supplies the current simultaneously.

5. In a trolley, the combination of a conductor-body with a transverse portion having  
35 a flattened upper surface, grooves about the extremities of such transverse portion, and rollers whose ends project into such grooves

and which roll about such transverse portion, so that two or more of them can be brought into simultaneous engagement with the conductor which supplies the current. 40

6. In a trolley, the combination of a conductor-body provided with side plates, a transverse portion projecting from one of them, a groove about the end thereof, a recess in the other in the middle of which such transverse portion is fixed, so as to make a groove about it, said transverse portion flattened on its upper side, with a series of rollers in such grooves and rolling upon such transverse portion. 50

7. In a trolley, the combination of a conductor-body connected with the part to which the current is to be led and a series of rollers in contact with such body, some of said rollers spring-supported upon the body and disposed so that two or more of them will engage the conductor which delivers the current simultaneously. 55

8. In a trolley, the combination of a conductor-body with a transverse portion having  
60 the substantially-flattened upper surface, grooves about the extremities of such transverse portions widened at the flattened surface, rollers whose ends project into such grooves and which roll about such portion, and suitable spring-supports for said rollers near to the flattened surface, so that two or more of them are brought into simultaneous engagement with the conductor which supplies the current. 65

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