

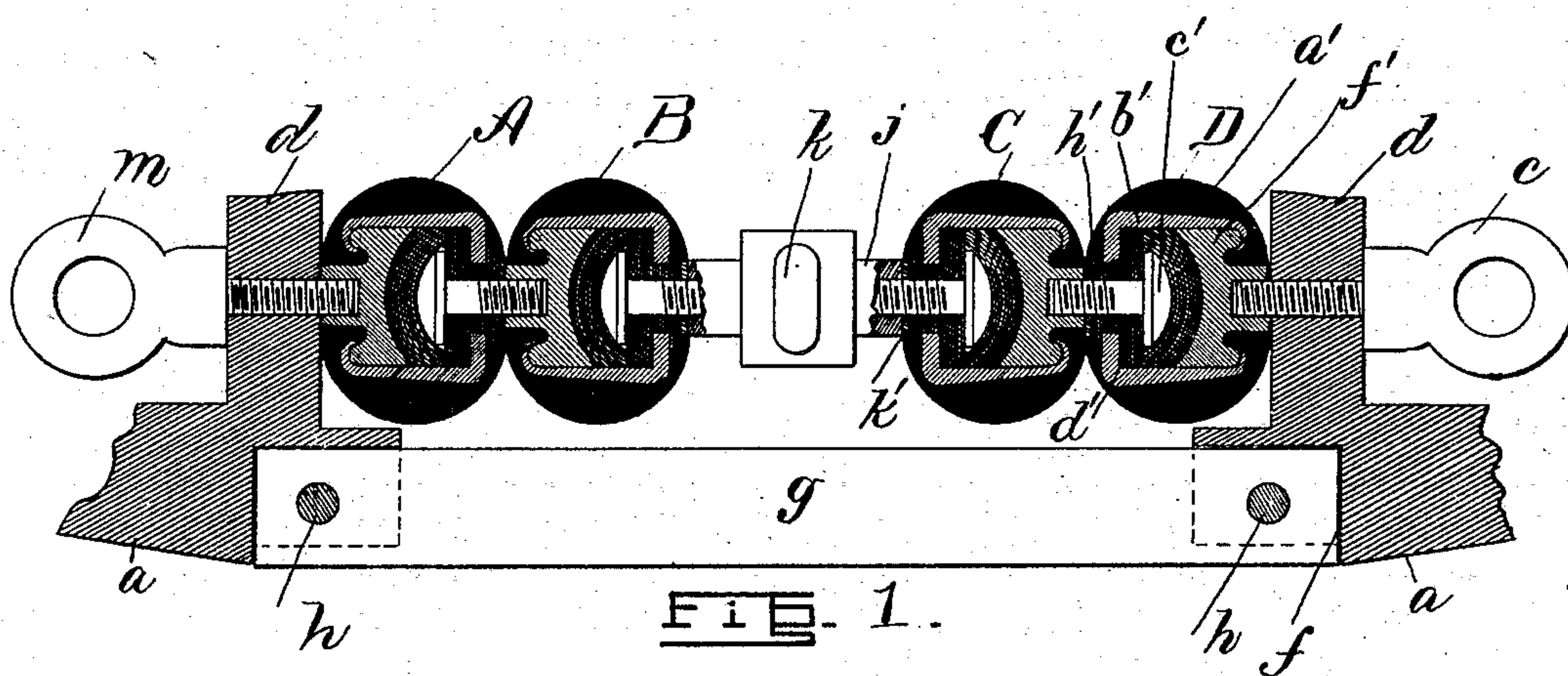
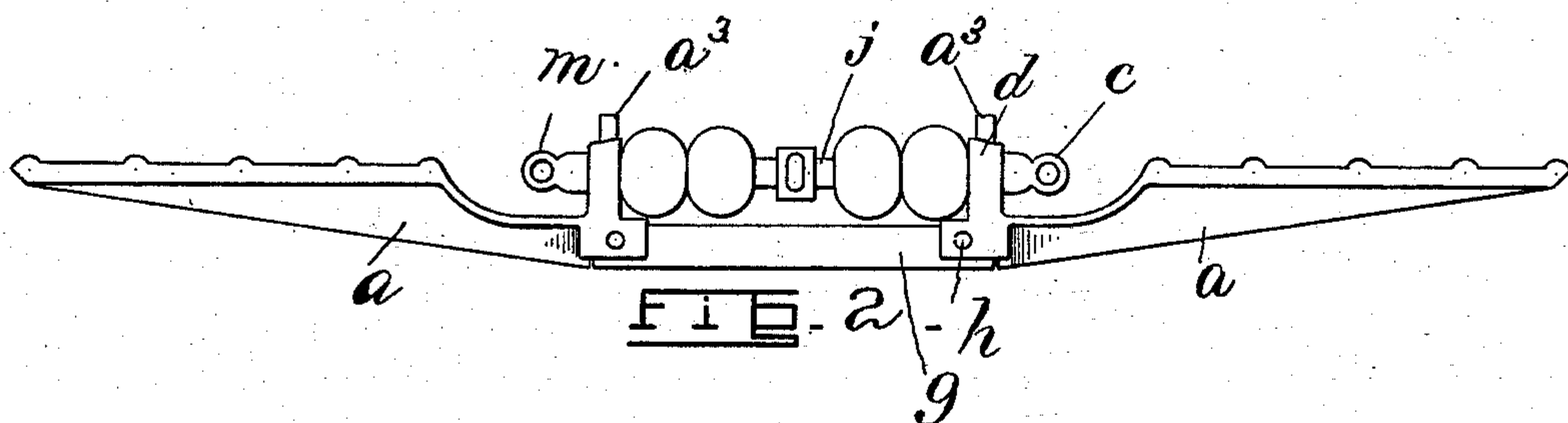
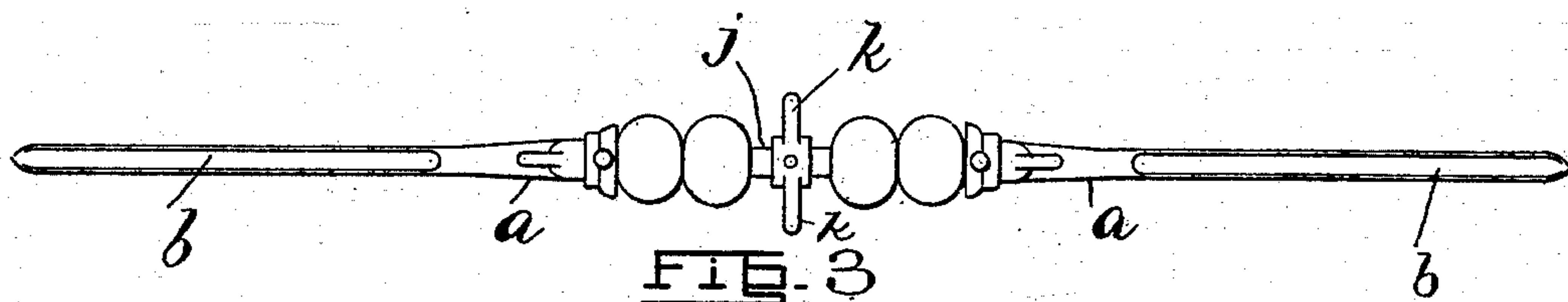
(No Model.)

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L. McCARTHY.  
SECTION INSULATOR.

No. 503,749.

Patented Aug. 22, 1893.



WITNESSES

Arthur F. Randall,  
Robert Wallace.

INVENTOR.

Louis M. Carthy,  
by Macrod Calver & Randall,  
his Attorneys,

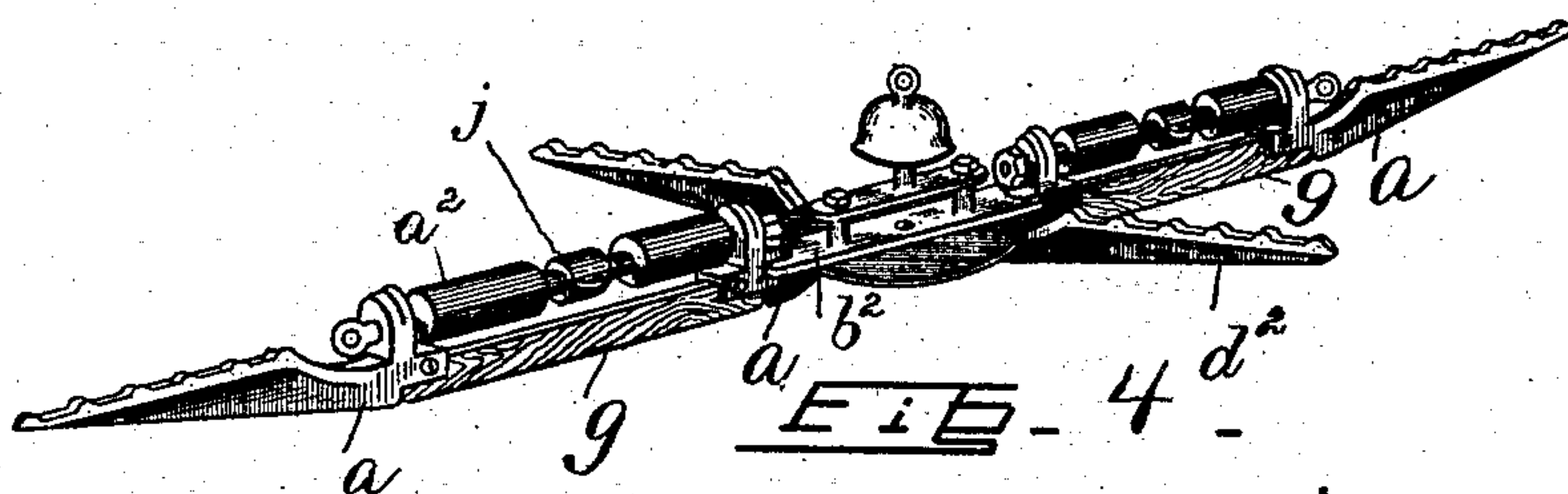
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# UNITED STATES PATENT OFFICE.

LOUIS MCCARTHY, OF BOSTON, MASSACHUSETTS.

## SECTION-INSULATOR.

SPECIFICATION forming part of Letters Patent No. 503,749, dated August 22, 1893.

Application filed April 15, 1893. Serial No. 470,444. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS MCCARTHY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Section-Insulators, of which the following is a specification, reference being had therein to the accompanying drawings.

10 In the overhead construction of electric railways it is found desirable that the trolley wire or overhead conductor should be divided into sections, each section of the conductor being supplied with the current by means of a wire or wires which are known as "feeders." 15 The sections of the trolley wire require to be wholly insulated one from the other and at the same time so connected that the trolley may pass easily from one section to the adjacent section. 20

My invention has for its object to provide a section insulator by the use of which these results may be obtained.

25 My device embraces certain peculiarities of construction which are hereinafter fully set forth and the novel features of which are pointed out in the claims which are appended hereto and made a part hereof.

30 In the drawings to which reference is made in the following description Figure 1 is an elevation partially in section of the central portion of my improved insulator. Fig. 2 is a side elevation of the whole device. Fig. 3 is a top or plan view thereof. Fig. 4 is a 35 modification showing the invention as applied to an angle crossing.

My device comprises two end portions *a* with which the proximate ends of the sections of the trolley wire are connected, one end of a 40 section of the trolley wire being placed in the groove *b* and firmly secured therein by solder or in any other well-known manner and the extreme end of the wire being fast to an eye-bolt *c*. The shank of the eye-bolt *c* passes 45 through a stud or upright projection *d* which is preferably integral with the part *a*. The end of the part *a* underneath the projection *d* is recessed as shown at *f* Fig. 1 to receive one end of the tie piece *g*, which is bolted 50 therein as shown at *h*. The end of the piece *g* may be secured between lugs which project from the part *a* instead of being placed in a

recess like that shown at *f*. The tie-piece or connection *g* serves as a track upon which the trolley wheel may pass from one of the 55 metallic portions to the other and must be of non-conducting material as will be clear. To this end I prefer to use wood for this purpose although any other non-conducting material of sufficient strength may be employed. The 60 metallic parts *a* must be firmly secured together so that the sections of the trolley wire will not part under strain. To effect this object and obtain a strong connection of high insulative quality is the purpose of that portion 65 of the device which lies between the uprights *d* and which I will now describe. The portion of the device referred to embraces four distinct insulators which are joined together and which are marked A, B, C, and D. 70 The precise number of insulators employed is not material although I prefer the number shown for the best results. Two of these insulators are placed at either end of a central connection *j* which is provided 75 with laterally extending lugs or projections *k* provided preferably with eyes to which a cross wire may be secured if desired. Each of the insulators A, B, C and D are alike in construction. Referring now to the insu- 80 lator D it comprises an outer mass of insulating material *a'* which is applied in a plastic condition and molded around the exterior of the insulator, or two of the insulators may be secured together and the mass of insulating 85 composition applied to both of them as shown at *a'* Fig. 4. This outer covering is not essential but I prefer to employ it. Each insulator comprises a case of metal *b'* within which is placed a headed connection *c'* the project- 90 ing shank of which is screw threaded as shown. The connection *c'* is first provided with a series of sheets of mica *d'* which are strung on the shank thereof and the connecting piece is then placed inside the shell *b'* and another 95 series of sheets of mica placed over the head thereof, said head being preferably curved as shown. A cap or follower *f'* is then placed within the top of the case *b'* and the top or upper edge of the walls of the case is bent 100 over the cap under pressure, the cap being crowded into the case as the edges thereof are bent over it, solidifying the mica insulation and at the same time turning over the



edges of the case so that the cap is securely held in the position in which it is left by the pressure which is brought to bear upon it. The cap  $f'$  is provided with a screw socket into which the shank of the eye-bolt  $c$  is screwed. A series of sheets of mica are placed around the shank of the connecting piece  $c'$  in the aperture in the bottom of the case  $b'$  and another series of sheets of mica shown at  $h'$  are strung on the shank of the connecting piece and a metallic washer  $k'$  is then screwed on the shank of the connecting piece and serves to hold the mica on the shank firmly in place. The projecting end of the connection  $b'$  is then screwed into the socket in the cap of the next succeeding insulator C which is preferably of the same construction as the insulator D and the connecting piece of the insulator C is in turn screwed into a threaded socket in the end of the central connection  $j$ . The position of the insulators A, B on the other end of the connecting piece  $j$  is reversed but their construction is in other respects the same as that already described, the insulator A receiving the threaded shank of the eye-bolt  $m$  which passes through the projection  $d$  on the part  $a$  at the opposite end of the insulator. By this means a very strong and durable section insulator is obtained which is of high insulative quality. The exterior covering of molded material  $\alpha'$  serves to protect the insulation from the weather and to increase its efficiency.

In the modification shown Fig. 4, the plastic composition or exterior covering is as already described carried over the insulation lying at each end of the central connecting piece  $j$  and for the purposes of an angle crossing the insulator is made in the form of a double section insulator; a plate or strip of metal  $b^2$  being inserted between the portions thereof and having secured thereto by a central pivot or bolt, a plate to which the trolley wire, which is carried across the line of the other trolley wire, is secured by means of the parts  $d^2$  in the well known manner. This angle crossing is substantially the same as the angle crossings now in use with the exception of the employment of the insulation which I have previously described.

At  $a^3$  Fig. 2 bosses or projections are shown which are provided for the purpose of securing a water shed or covering of well known construction which is not shown but which serves to protect the insulator from rain or snow.

What I claim is—

1. A section insulator for electric conductors comprising metallic portions to which the proximate ends of the conductor sections are secured, a tie-piece of non-conducting material for the passage of the trolley wheel, an insulated connection extending between the metallic end portions, said insulated connection comprising a series of insulators each of

which consists of a metallic case, a connecting piece placed therein and having a screw threaded shank, a cap having a screw threaded socket and insulating material whereby said connecting piece is insulated from said case and said cap, the insulators being connected together by having the shank of one inserted into the socket of the next inner one substantially as set forth.

2. A section insulator for electric conductors comprising metallic end portions, a tie-piece of non-conducting material for the passage of the trolley wheel, screw threaded bolts  $c, m$ , to which the proximate ends of the conductor sections are secured, and an insulated connection between said bolts comprising insulators connected with the bolts and a central portion joining the insulators and provided with threaded sockets, each insulator consisting of a metallic case, a connecting piece placed therein and having a screw-threaded shank, a cap having a screw-threaded socket, and insulating material whereby said connecting piece is insulated from said case and said cap, the threaded stems of the bolts and connecting pieces entering the sockets aforesaid, substantially as described.

3. A section insulator for electric conductors comprising metallic end portions to which the proximate ends of the conductor sections are secured, a tie-piece of non-conducting material for the passage of the trolley wheel, projections  $d$  on said end portion, screw bolts  $c, m$ , in said projections, and an insulated connection between said bolts  $c, m$ , said insulated connection consisting of a central portion  $j$ , and one or more insulators at each end of said central portion, substantially as and for the purposes set forth.

4. The combination with the angle crossing plate  $b^2$  of two section insulators, one at either end of said plate, each of said section insulators comprising metallic portions  $a$ , one connected with said plate and the other with the end of the conductor section, a tie-piece of non-conducting material for the passage of the trolley wheel, said tie-piece being secured between said metallic portions  $a$ , an insulated connection extending between said metallic portions and secured thereto by screw bolts, said insulated connection comprising two or more insulators each of which consists of a metallic case, a connecting piece placed therein and having a screw threaded shank, a cap having a screw threaded socket and insulating material whereby said connecting piece is insulated from said case and said cap, substantially as set forth.

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

LOUIS MCCARTHY.

Witnesses:

WM. A. MACLEOD,  
ROBERT WALLACE.