

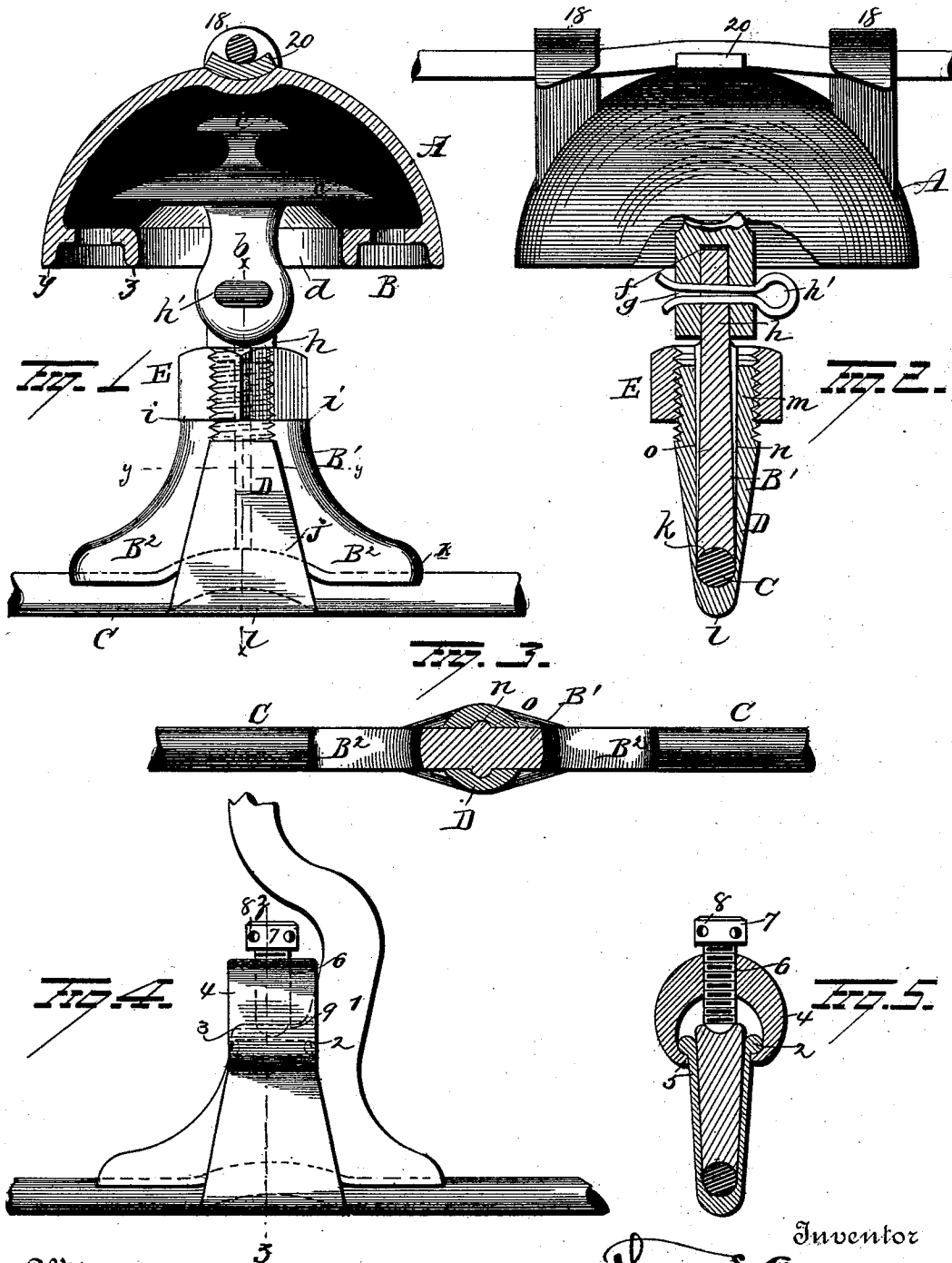
(No Model.)

2 Sheets—Sheet 1.

**T. E. ADAMS.**  
**HANGER FOR TROLLEY WIRES.**

No. 464,411.

Patented Dec. 1, 1891.



Witnesses  
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G. F. Downing

Inventor  
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H. A. Symmon.

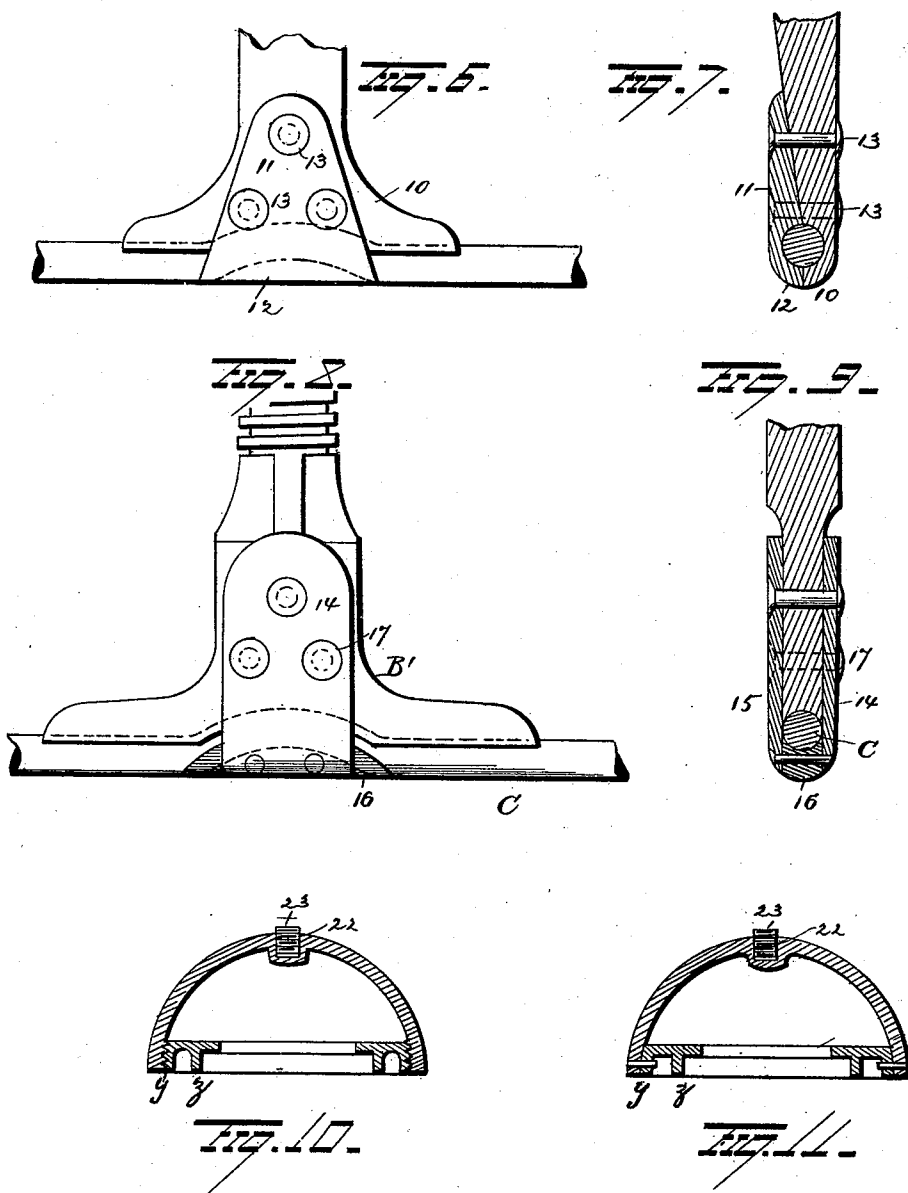
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By his Attorney  
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# UNITED STATES PATENT OFFICE.

THOMAS E. ADAMS, OF CLEVELAND, OHIO, ASSIGNOR TO THE BRUSH  
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## HANGER FOR TROLLEY-WIRES.

SPECIFICATION forming part of Letters Patent No. 464,411, dated December 1, 1891.

Application filed July 17, 1890. Serial No. 359,084. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS E. ADAMS, a citizen of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hangers for Trolley-Wires; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in hangers for trolley-wires of an electric railroad, and has for its object to produce an improved hanger of such construction that the trolley-wire shall be effectually insulated from the cross or span wire.

A further object is to so construct the hanger that the trolley-shoe traversing the trolley-wire will not be deviated from its line of travel.

A further object is to produce a hanger constructed in such manner that the parts or sections thereof may be easily and quickly assembled.

A further object is to produce a hanger for trolley-wires having a removable clip for securing said wire to the hanger.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of my improvement partly in section. Fig. 2 is a sectional view on the line  $xx$  of Fig. 1. Fig. 3 is a sectional view on the line  $yy$  of Fig. 1. Fig. 4 is an elevation of a modified form of the invention. Fig. 5 is a view on the line  $zz$  of Fig. 4. Fig. 6 is an elevation of another form of hanger. Fig. 7 is a view on the line  $ww$  of Fig. 6. Fig. 8 is an elevation of another form of the invention. Fig. 9 is a view on the line  $vv$  of Fig. 8. Figs. 10 and 11 are views of modifications of the insulator-shell.

A represents a hollow metallic shell having a shank  $b$  located therein, said shank being provided with two flanges or plates  $c$ , one above the other. The shell is closed by means of a plate  $B$ , from which flanges  $Y$   $Z$  depend,

and which may be of any suitable material. The flanged shank  $b$  is preferably cast in a core in the shell  $A$  in a manner similar to that of casting the clapper in a sleigh-bell. The core is then removed through an opening  $d$  in the plate  $B$  and insulating material forced or run in the shell and made to envelop the upper portion of the shank  $b$  and flanges  $c$  of the shank and insulate the same from the shell, the flanges or plates  $c$  producing in the insulating material a double canopy.

Instead of making the shell  $A$  and plate  $B$  of a single piece of metal, they may be made in two parts, as shown in Figs. 10 and 11. As shown in Fig. 10, the shell  $A$  is provided anteriorly with screw-threads adapted to receive similar screw-threads in the periphery of the plate  $B$ , whereby said plate  $B$  may be removably attached to the shell; or, if desired, the plate  $B$  may be secured to the shell by means of pins, as shown in Fig. 11, or by means of solder.

The shell  $A$  is provided on its top with hooks 18, by means of which the device may be supported by a cross-wire. The top of the shell is recessed for the reception of a wedge or key 20, whereby the shell will be maintained in position on the cross-wire by means of said wedge. As shown in Figs. 10 and 11, the top of the shell may be provided with a screw-threaded recess 22 for the reception of a screw 23, adapted to bear at its top on the cross-wire. The lower end of the shank  $b$  projects downwardly from the center of the shell  $A$  and is bifurcated at its lower end to produce a slot or recess  $f$ , the arms producing said recess having a perforation  $g$  made in them at right angles to the slot or recess  $f$ . Inserted loosely in the slot or recess  $f$  is a stem  $h$  of a bracket or hanger  $B'$ , secured to said stem by means of a removable key  $h'$ , said hanger being made with arms  $B^2$ , which terminate at the base of the stem  $h$  in shoulders  $i$ . The lower edge of the bracket or hanger  $B'$  is provided with a recess  $j$ , and made in said lower edge of the bracket or hanger and extending from end to end thereof is a groove  $k$ . A trolley-wire  $C$  is inserted in the groove  $k$ , and at the center of the bracket or hanger said trolley-wire is forced into and made to neatly

fill the recess *j*. A clip or strap D is made to embrace the bracket or hanger B' and wire C, said strap being provided at its center with a thickened portion *l*, adapted to fill the depression in the wire at the center of the bracket or hanger, whereby a straight unbroken path is produced for the trolley. The ends of the clip or strap D extend upwardly parallel with the side faces of the bracket or hanger B' and terminate at their upper ends in proximity to the shank *b* in screw-threaded portions *m*. An internally screw-threaded nut E is adapted to screw upon the portions *m* of the bracket or hanger and rests at its bottom on the shoulders *i* of said bracket or hanger. By means of this nut E the strap or clip may be tightened and made to hold the trolley-wire securely to the bracket or hanger B.

In order to prevent lateral movement of the strap or clip D on the bracket or hanger B', said bracket or hanger is provided on opposing faces with tongues *n*, adapted to enter grooves *o* in the inner faces of the clip or strap D.

In the form of my invention shown in Figs. 4 and 5 the bracket or hanger B' is provided with a curved shank 1, the upper ends of the clip or strap D terminating in flanges 2 in proximity to the shoulder 3, formed by the shank 1. Placed over the shoulder 3 is a yoke 4, having inwardly-projecting flanges 5, adapted to receive the flanges 2 of the clip or strap D. The yoke 4 is provided in its center with a screw-threaded perforation 6 for the reception of a similarly-threaded bolt 7, the head of which is provided with a series of sockets or perforations 8 for the reception of a suitable tool by means of which to operate it. The lower end of the bolt 7 bears in a socket 9 in the shoulder 3 of the bracket or hanger B', so that when said bolt is screwed down the trolley will be securely clamped to the bracket or hanger B'.

In the form of the invention shown in Figs. 6 and 7 the bracket or hanger B' is extended downwardly at its center and made to produce a lip 10, adapted to extend one-half way around the trolley-wire, as most clearly shown in Fig. 7, and thus produce one half of the clip, the other half of the clip being formed by a plate 11, having a lip 12. The plate 11 is secured to the bracket by means of removable rivets or screws 13.

In the modification shown in Figs. 8 and 9 the shank of the bracket or hanger B' is screw-threaded to enter the shank *b*. The clip or strap D in this form of the invention is composed of two plates 14 15 and a central block 16, secured to the lower ends thereof and adapted to fill the depression in the trolley-wire. The plates 14 15 are detachably secured to the bracket by means of bolts or screws 17.

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

1. In an insulator, a shell having insulating material therein, said shell being closed by a plate having flanges depending therefrom, substantially as set forth.

2. In an insulator, the combination, with a shell constructed in such manner as to be closed by a plate having depending flanges and insulating material in said shell, of a stem embedded at one end in the insulating material in the shell and projecting at its other end beyond the flanged plate, substantially as set forth.

3. In an insulator, the combination, with a metallic shell and insulating material adapted to fill said shell, of a shank, and flanges or plates projecting from said shank and embedded in the insulating material in the shell, substantially as set forth.

4. In an insulator, the combination, with a metallic shell and insulating material adapted to fill said shell, of a shank, flanges or plates projecting from said shank and embedded in the insulating material, and hooks on said shell adapted to receive a supporting-wire, substantially as set forth.

5. In an insulator, the combination, with a metallic shell, of insulating material in said shell, a flanged shank embedded in said insulating material, hooks on said shell for the reception of the wire or stringer, and a wedge or key inserted beneath the wire or stringer and adapted to prevent the escape of the hooks on the shell from the wire or stringer, substantially as set forth.

6. The combination, with an insulator, of a hanger for supporting a trolley-wire loosely connected with said insulator, the loose connection between said insulator and hanger being removable, substantially as set forth.

7. The combination, with a hanger, of a removable clip adapted to embrace said hanger and secure a trolley-wire thereto, and a nut adapted to secure the free ends of said clip, substantially as set forth.

8. The combination, with a hanger having a recess in the center of its lower edge and a groove in said lower edge extending from end to end of the hanger, of a clip for securing a trolley-wire in said recess and groove, said clip being detachably secured to the hanger, substantially as set forth.

9. The combination, with a hanger having shoulders near its top, of a clip for securing a trolley-wire to said hanger, said clip having screw-threaded upper ends and a nut to receive said screw-threaded ends and adapted to bear on the shoulders on the hanger, substantially as set forth.

10. The combination, with a hanger, of a clip detachably connected thereto, having grooves on its inner face, and tongues on the hanger to enter said grooves, substantially as set forth.

11. The combination, with the shank of an insulator having a recess in its lower end, of a hanger having a stem to enter said recess, a key to connect the stems of the insulator

and hanger together, and a clip for securing a trolley-wire to the hanger, said clip being detachably connected to said hanger, substantially as set forth.

5 12. In an insulator, a metallic shell the lower part whereof forms more than one canopy around an opening, substantially as set forth.

10 13. In an insulator, the combination, with a metallic shell, of a shank and insulating material therein, and flanges on said shank embedded in the insulating material, so that said insulating material will form more than one canopy around said shank, substantially  
15 as set forth.

14. In an insulator, the combination, with a shell having a closed lower end having more than one flange and insulating material in said shell, of a shank having flanges embed-  
20 ded in the insulating material in the shell, substantially as set forth.

15. In an insulator, the combination, with a metallic shell and a shank therein and insulated therefrom, of a canopy secured to the

lower part of the shell, substantially as set 25 forth.

16. In an insulator, the combination, with a metallic shell and a shank therein and insulated therefrom, of a canopy removably secured in said shell, substantially as set forth. 30

17. The combination, with a hanger grooved at its end for the reception of a trolley-wire, said end being also provided with a depression to receive the trolley-wire, of a clip adapted to embrace said hanger and secure the  
35 trolley-wire thereto, said clip having a thickened portion adapted to fill the depression in the trolley-wire where said wire enters the depression in the hanger, substantially as set forth.

40 In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

THOMAS E. ADAMS.

Witnesses:

A. B. CALHOUN,  
W. A. PALLANT.