No. 749,716. PATENTED JAN. 19, 1904.

G. W. BRADY & L. R. JONES.

RAIL CONTACT SHOE.

APPLICATION FILED JAN. 26, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

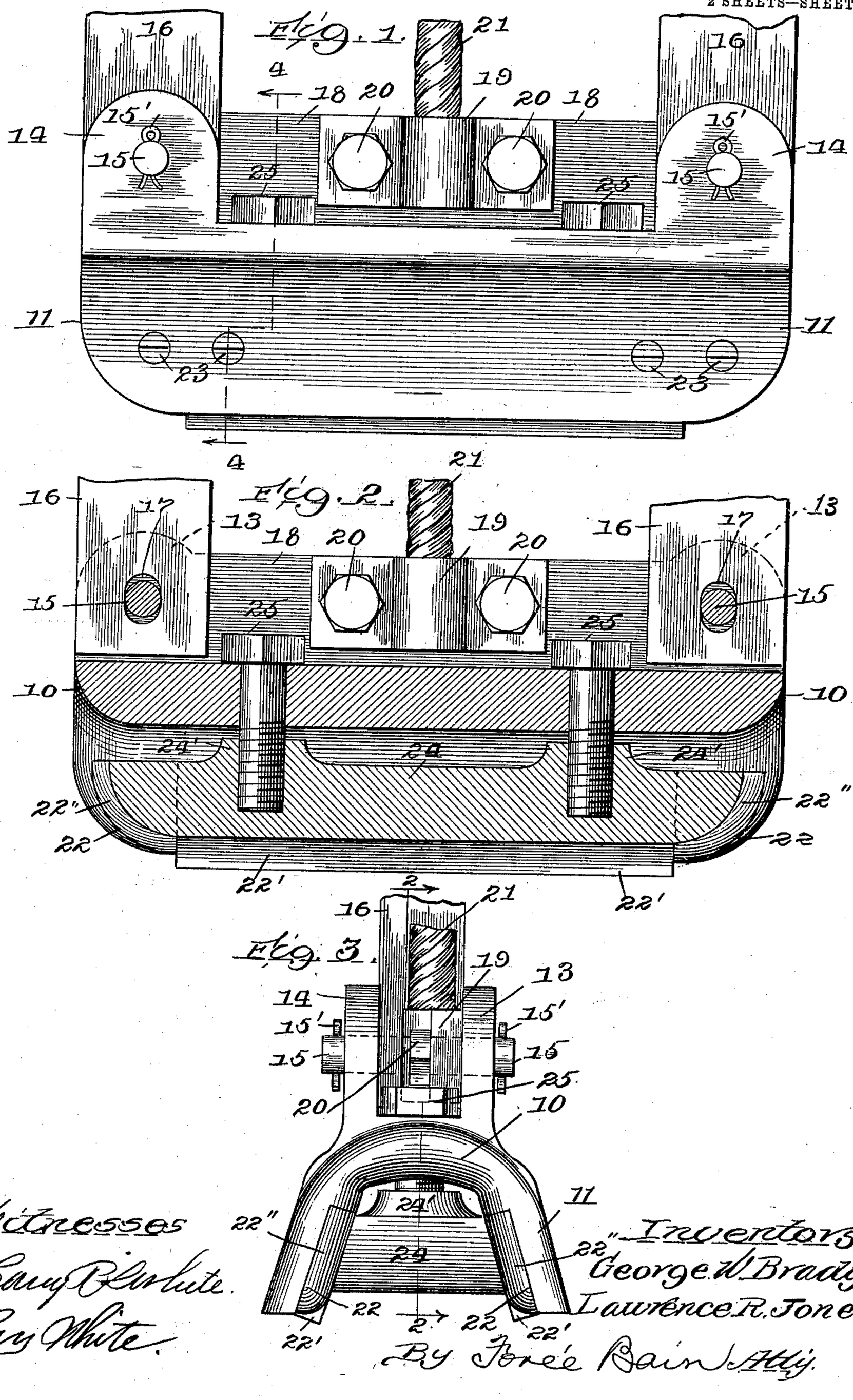

Fig. 2.

Fig. 3.

Witnesses
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By Foree Bain Atty.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

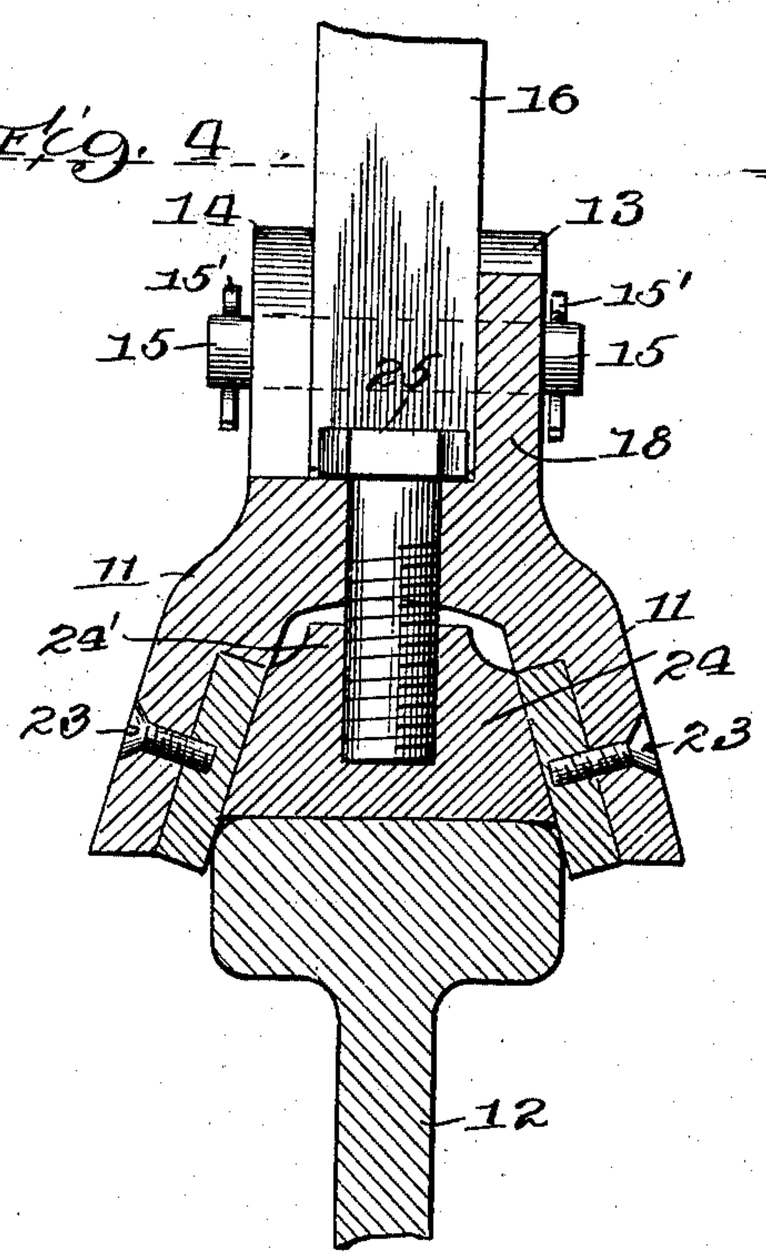

Fig. 5.

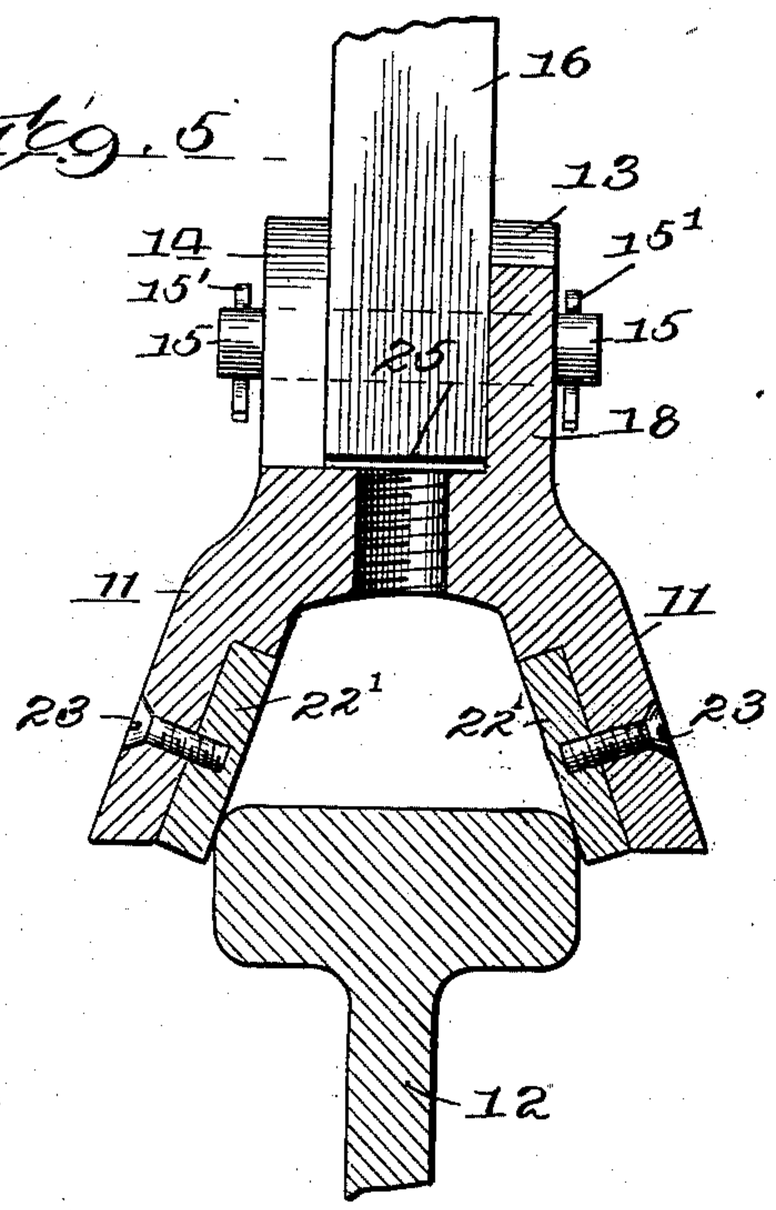

Fig. 6.

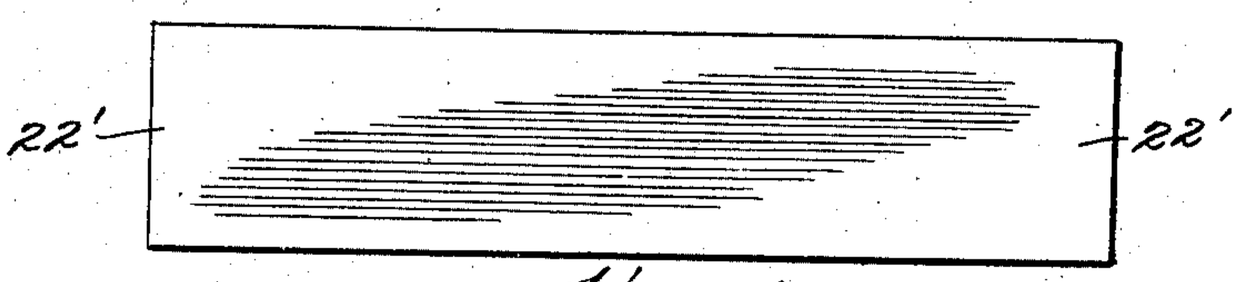

Fig. 7.

Fig. 8.

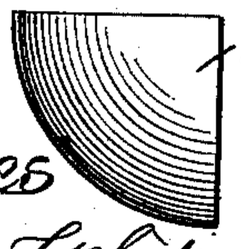

Fig. 9.

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No. 749,716. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

GEORGE WM. BRADY AND LAWRENCE R. JONES, OF WHEATON, ILLINOIS.

RAIL CONTACT-SHOE.

SPECIFICATION forming part of Letters Patent No. 749,716, dated January 19, 1904.

Application filed January 26, 1903. Serial No. 140,468. (No model.)

To all whom it may concern:

Be it known that we, GEORGE WM. BRADY and LAWRENCE R. JONES, of Wheaton, in the county of Dupage and State of Illinois, have invented certain new and useful Improvements in Rail Contact-Shoes; and we hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to contact-shoes, and more particularly to contact-shoes adapted for use in third-rail electrical railway systems.

The primary object of our invention is to provide a rail contact-shoe capable of making and maintaining efficient electrical contact with its rail under all conditions of use.

More specifically, an object of our invention is to provide a shoe of such design and construction that when employed upon sleet or moisture covered rails the shoe will make contact at the points where the least coating occurs and will remove sufficient of the ice or moisture to insure its efficient electrical contact with the rail beneath.

A further object of our invention is to so construct a rail contact-shoe that the parts subjected to the greatest wear may be readily removed and replaced.

A further object of our invention is to generally improve the construction of rail-shoes of the character described.

With a view to attaining these and further objects, which will become apparent to those skilled in the art from the following description, our invention consists in the features of construction and arrangement of parts hereinafter described, and specified in the claims.

In the drawings, wherein is illustrated an operative embodiment of our invention, Figure 1 is a side elevation of our improved contact-shoe complete. Fig. 2 is a longitudinal vertical section of the same taken on line 2 2 of Fig. 3. Fig. 3 is an end elevation. Fig. 4 is a transverse vertical section taken on line 4 4 of Fig. 1. Fig. 5 is a similar view of the shoe with the contact-block detached. Figs. 6 and 7 are respectively a side elevation and a top plan view of one of the side contact-pieces detached. Figs. 8 and 9 are respectively a side and an end elevation of one of the detachable tips forming part of a side contact-piece.

Throughout the drawings like numerals of reference refer to like parts.

10 indicates a contact-shoe body, comprising an elongated metallic member of substantially inverted-U shape in transverse section, the sides 11 thereof being divergently disposed and sufficiently spread to easily straddle a rail 12.

13 13 and 14 14 represent ears disposed in pairs upon opposite sides of lateral center of the body 10 and projecting upward therefrom. Said ears are perforated to receive pins 15, passing through apertures 17 in suitable hangers 16, fragments only of which are shown, and said pins are removably secured in place by cotter-pins 15′. The apertures 17 in the hangers 16 are preferably vertically elongated, as illustrated in Fig. 2, to allow play of the pins 15 therein. The hangers 16 are intended for connection to the car, as will be well understood by those skilled in the art.

18 indicates a longitudinal rib, preferably connecting the ears 13.

19 is a clip secured by bolts 20 to the rib 18 and affording a secure fastening means for a suitable flexible conductor 21, such as a wire cable, whose opposite end will be arranged when in use in operative association with the motor devices of the car.

22 22 indicate contact-strips removably secured to the opposing interior faces of the sides 11 of the shoe-body, as by means of screws 23. Each of said strips preferably comprises in its construction three sections—to wit, an elongated middle section 22′, preferably rectangular in form, as illustrated in Figs. 6 and 7, and quadrant-shaped tips 22″, each having its curved edge suitably rounded, as best illustrated in Figs. 8 and 9. The separated sections of the strips 22 are removably secured to the depending sides 11 of the shoe-body in suitable recesses formed therein, as by means of screws 23, so that when in position they lie flush with the inner surfaces of said sides.

24 indicates a top contact-block adapted when in place to fit snugly between the strips

22 in such position that its lower surface is somewhat above the lower edges of said strips. The block 24 is removably secured in position in the shoe, as by suitable screws 25, taking through the top of the body 10 of the shoe and into suitable reinforcing-bosses 24′, formed upon the top of the block.

The use and operation of our improved contact-shoe will be as follows: Under normal conditions of operation the shoe will be used as illustrated in Fig. 4—that is to say, with the contact-block 24 in place, so that contact is made with the rail 12, principally upon the top thereof, the body of the shoe straddling the rail, so that the side strips 22 are in light tangential contact with the head of the rail at the upper "corners" or rounded edges thereof, which join the top surface with the vertical sides of the rail-head. It will be noted that the vertical play of the pins 15, permitted by the elongation of the apertures 17 in the hangers 16, permits the shoe to adjust itself readily to slight inequalities in the height of the rail and to yield readily to permit the shoe to pass slight obstructions, such as sprung joints, this adaptability being furthered by the provision of the curved and rounded tips 22″ of the side pieces, which serve to guide the shoe smoothly over such inequalities and obstructions. If, however, the rails are coated with sleet, frost, or moisture, so that the rail is partially insulated thereby, the block 24 is removed from the shoe and the shoe used in the condition illustrated in Fig. 5.

Observation discloses the fact that however heavy a deposit of sleet or moisture there may be upon a rail of the type employed as a conductor for third-rail electrical systems there is but a slight, if any, coating upon the curved outside edges of the upper surfaces of the rail, which we term the "corners" thereof, so that our improved shoe in the condition illustrated in Fig. 5 contacts with the rail at the points where little or no accumulation of sleet or moisture has occurred. Further, the angular arrangement of the side contact-strips relative to the vertical sides of the rail-head is such that they constantly tend to chip and scrape off any accumulation of sleet or moisture which may possibly have formed at such points, as said strips constantly press with a shearing strain upon the corners of the rail under the influence of gravity. It will be noted that at these points of contact no support from beneath is afforded to the sleet or moisture by the rail, whereas upon the top of the rail the sleet or moisture is so supported and can only be removed by plowing it off. It is for this reason that the block 24 is preferably removed when the shoe is used upon sleet-coated rails, as when the block is in place the whole shoe is apt to be lifted out of contact with the rail by the accumulation of the sleet upon the flat top thereof in the path of the block. It will be further noted that the contact blocks and strips are removable and interchangeable, so that they may be readily renewed when worn.

Numerous other advantages incident to the use of our invention will become apparent to those skilled in the art and need not here be enumerated.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In combination with a conductor-rail having a head rounded at its upper corners, a rail contact-shoe comprising a body member having depending divergent sides arranged to make tangential contact with the rounded corners of the rail-head and to extend above its point of contact with the rail.

2. In a rail contact-shoe of the character described, contact members arranged for contact with corners of the rail-head, and a removable contact-block arranged between said members for contact with a flat surface of the rail.

3. In a contact-shoe of the character described, a body portion having divergent depending sides, adapted to contact with the corners of the rail, and a contact-block removably mounted in said body intermediate the depending sides thereof, and adapted for contact with the top of the rail.

4. In a contact-shoe of the character described, a longitudinally-extended body portion comprising depending divergent side pieces adapted to partially embrace the rail-head, and contact-strips carried by said side pieces adapted for contact with the upper corners of said rail-head.

5. In a contact-shoe of the character described, a body portion of inverted-**U** shape in cross-section, provided with depending sides adapted to partially embrace the rail-head, sectional removable contact-strips secured to the inner surfaces of said sides for contact with the corners of the rail, and a removable contact-block secured to said body intermediate the strips and adapted for contact with the top of the rail.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

GEORGE WM. BRADY.
LAWRENCE R. JONES.

In presence of—
JOSEPH MILLER,
Mrs. L. A. MILLS.