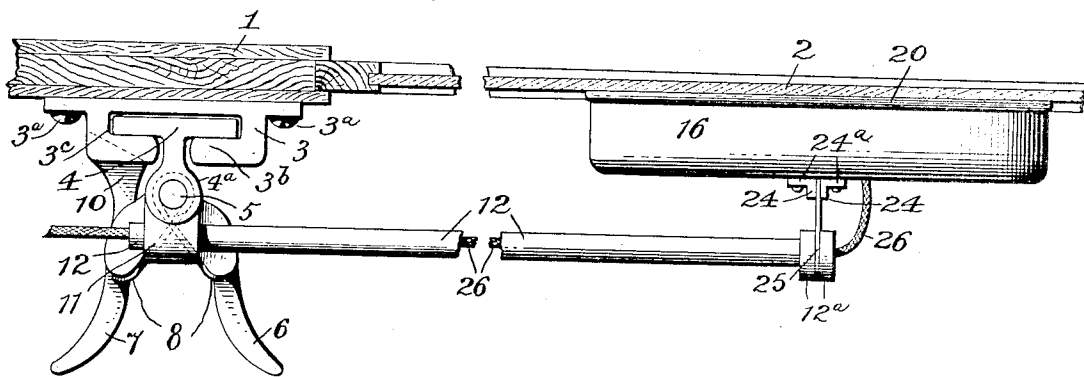
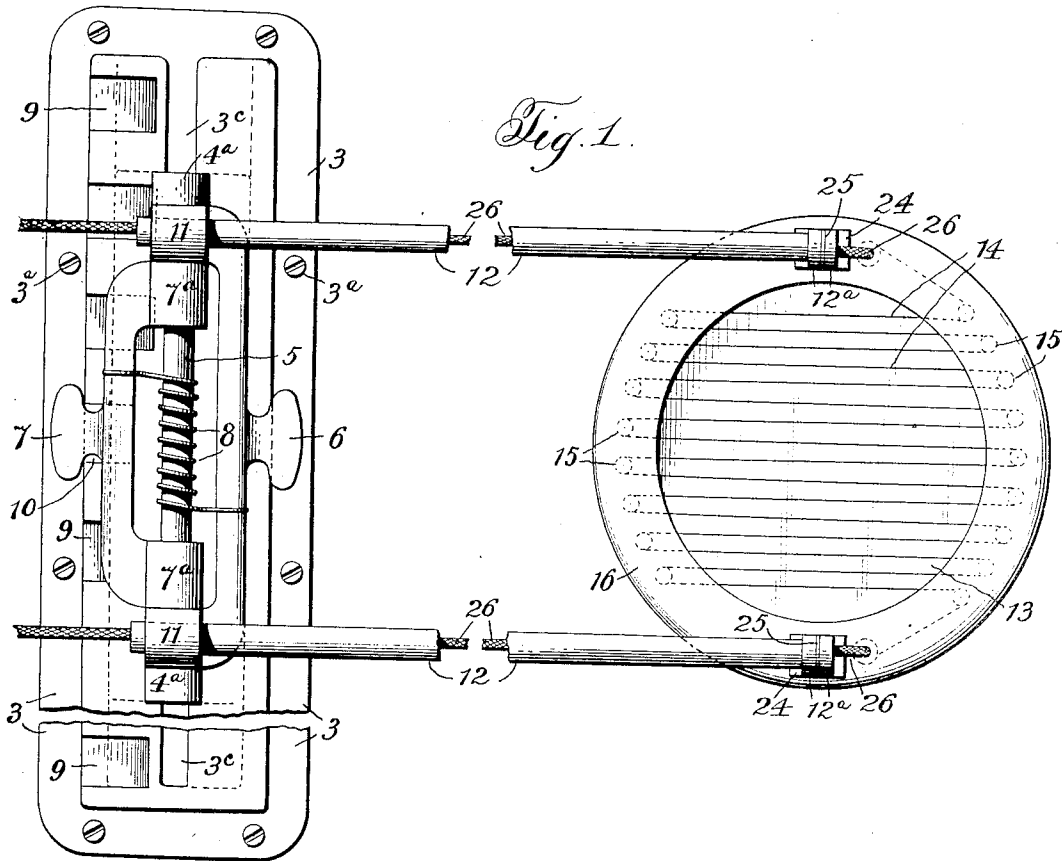


973,089.

Patented Oct. 18, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS-SHEET 2.

Fig. 3.

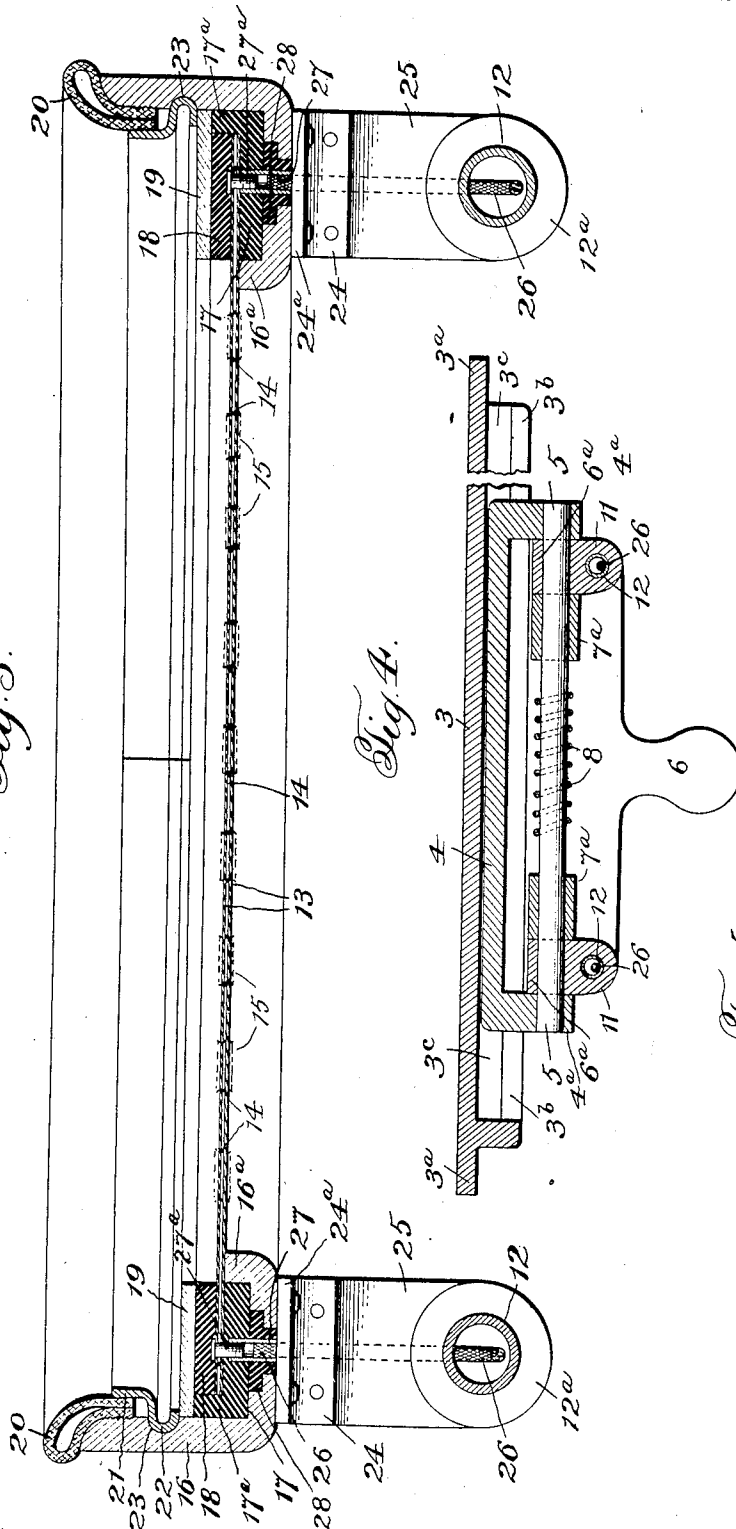


Fig. 4.

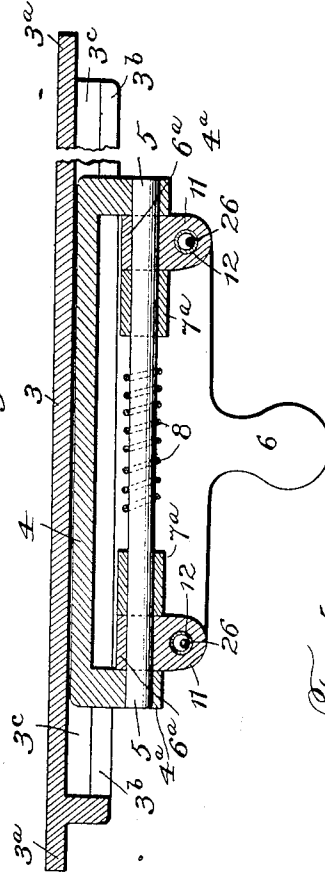
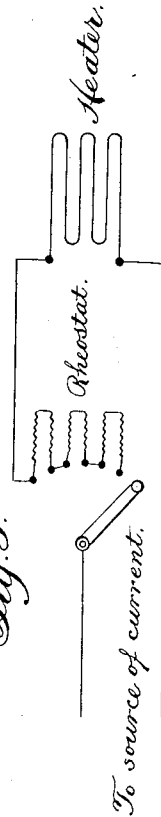


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ELECTRIC HEATER.

973,089.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed October 11, 1909. Serial No. 522,019.

To all whom it may concern:

Be it known that I, HENRY C. WALTER, a citizen of the United States, residing at Wilkinsburg, in the State of Pennsylvania, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

The present invention relates to an electric heater and supporting attachment therefor, and more particularly to such a heater adapted to be applied to the window of an electric railway car or the like.

It is a matter of common knowledge that it is a source of constant annoyance and inconvenience to a motorman to have his view through the front window of his car marred by the accumulation of sleet, snow or the like, especially during the fall and winter months, and that innumerable accidents have occurred for this very reason, and while the present invention contemplates a heater applicable to a wide range of uses, it is primarily designed for use in connection with car or other windows, the object being to provide a heater which may be applied to the outer surface of the window pane, thereby protecting a part of the pane from contact with sleet, etc., by covering that portion of the pane and presenting its own heated surface to the action of the sleet, etc. The result of such a construction is that the operator will at all times have a clear surface of the pane through which to observe ahead, the make up of the heater itself being such as to offer substantially no obstruction to the view of said operator.

The invention also includes a heater of the character just stated which may be readily positioned on, and removed from, a car window, together with a novel form of attaching means adapted to be applied to the window frame.

Further, the invention comprises means whereby the heater when once applied may be quickly adjusted relative to the window pane, thereby adapting the position of the heater to the height of the motorman or operator.

Other novel improvements in the details of construction and arrangement of parts will be more particularly pointed out hereinafter in the description, and for a clear understanding of the latter, reference is directed to the accompanying drawings forming a part hereof, and wherein a con-

venient embodiment of the invention which has proven satisfactory, is shown for a purpose of illustration.

In the drawings, Figure 1 is a front elevation of the attachment removed from the window; Fig. 2 is a top plan view of the attachment applied to the window frame, a part of the window frame and pane being shown in section, and cut away; Fig. 3 is an enlarged sectional view of the heater itself; Fig. 4 is a sectional detail view of the adjusting shoe, and Fig. 5 is a diagrammatic view of the heater regulating means.

Referring now more particularly to the drawings, wherein like reference numerals refer to corresponding parts throughout the several views, the numeral 1 designates a portion of the ordinary window frame of a car having the usual window 2 for protecting the motorman and at the same time allowing him to see ahead. Adapted to be applied to the frame 1 is a main or base support 3 for the heater to be hereinafter described. The base support 3 is preferably of elongated substantially rectangular formation and may be secured to the frame by screws 3^a or other removable attaching devices. The support 3 has oppositely disposed elongated overhanging flanges 3^b on its upper surface, conveniently integral therewith thereby forming a runway or guide 3^c for the reception of a shoe 4 which may take the form of an inverted T, the horizontal flanges thereof underlying the flanges 3^b, thereby preventing accidental separation of the shoe from the main or base support 3, it being noted however that the shoe is adapted to slide longitudinally along the guide or runway 3^c. Extending between upright supports 4^a at the ends of the shoe 4 and secured thereto by soldering or the like, is an elongated shaft 5, and sleeved upon said shaft for rotary movement are collars 6^a carried at the respective ends of a handle or grip member 6. An auxiliary handle 7 is provided, the same being also sleeved upon the shaft 5 through the medium of collars 7^a which are also loose on the shaft whereby the handle 7 is free to rotate about the axis of the shaft and toward and from the cooperating handle or grip member 6. A spring 8 mounted on the shaft and secured at its respective ends to the handles 6 and 7 tends to exert outward pressure on the movable handles to hold the handles nor-

mally separated. Extending throughout a greater portion of the length of one of the flanges 3^b, that one adjacent the handle 7 are a series of notches or receiving recesses 5 9 and projecting downwardly from the handle 7 is a lug or engaging member 10 adapted to fit into any of said receiving recesses according to the position of the shoe and thereby lock the shoe in various positions on the support 3. The parts 11 which may be extensions of the sleeves 6^a, as shown, have an aperture therethrough adapted for the reception of elongated supporting rods in the form of metallic tubes 12, the said tubes 15 fitting tightly in the apertures and secured in any desired manner as by soldering.

The electric heater proper comprises a sheet of mica or a plurality of such sheets 13 as shown, and a connected heating wire 14 as shown. The mica sheets are conveniently secured together by rivets 15 arranged at suitable intervals thereabout, which said rivets constitute an advantageous means of support for the heating wire, the latter being coiled thereabout in any desired manner. The mica sheets and the inclosed wire, the coils of which are separated one from another as shown admit of a substantially unobstructed view for the operator, and one 30 which is easy on the eyes. A metallic member 16, substantially cup-shaped in form constitutes a convenient body support for the heater which latter rests on an insulating washer or rim 17 fitted in the base of the support 16, which latter has an overhanging flange 16^a engaging over the inner edge of the washer. Another insulating washer or collar 18 rests against the inner face of the heater and within a peripheral flange 17^a of 40 the washer 17. A metallic plate 19 is arranged to protect the insulating washer 18. A buffer, conveniently of bent rubber formation 20 extends about the periphery of the body support 16 and extending inwardly 45 therefrom is arranged to engage against the window pane to afford a tight joint between the heater and pane and protect the latter against shocks. All of the parts comprising the heater, washers 17 and 18, protecting 50 plate 19 and rubber cushion 20 may be held in position on the body support 16 by a split annular ring 21 having a beaded edge 22 adapted to be sprung into an annular recess 23 in the body support 16 when the parts 55 will be locked against separation.

Secured at oppositely disposed points on the body support are the connecting instrumentalities for the tubes 12, and they being the same in both instances, a description of 60 one will suffice for the other.

24 are oppositely disposed angle bars secured at their feet 24^a to the body support 16, and fitted between the upright portions of said bars is a flat steel spring member 25 65 projecting outwardly from the heater a con-

siderable distance and having at its outer end an aperture for the outer end of the tubes 12. The tubes 12 may have flanges or washers 12^a on opposite sides of the spring 25 whereby they are secured in position. If 70 washers are used the end of the tubes may be struck up to retain the washers in place.

The conductors 26 receive their electrical supply in any convenient manner as for instance from the source of electrical supply 75 for the car, and passing through the tubes 12 connect with terminal 27 fitted in the washer 17 and surrounded by the insulated bushing 28. The terminal of the heater designated as 27^a fits into said terminal 27 as is obvious. 80

In Fig. 5, I have shown in a diagrammatic manner, a convenient means for regulating the heater, the same including a regulating rheostat connected in series with the heater. This regulating means may be placed in any 85 convenient place in the motorman's cab.

The parts being thus constructed and arranged, the operation may be briefly set forth as follows: The main support 3 is applied to the window frame in the desired position by the screw members 3^a. It will be 90 observed that both of the handles 6 and 7 are rotatably mounted on the shaft 5, and the action of the spring 8 is to force both handles outwardly or to separate the same. 95 Since the heater is carried by the tubes 12, and these tubes have a supporting connection with a part connected to the handle 6, the spring in forcing the handle 6 outwardly will at the same time force the heater inwardly into contact with the window pane, any irregularity in the window pane being 100 taken care of by the spring connection 25 interposed between the heater and the supporting tubes 12. Now when it is desired 105 to adjust the heater vertically or to position the same in accordance with the height of the motorman, whereby the heater will be in front of his eyes, the motorman grasps the handles 6 and 7 pressing the same toward one another, with the result that the locking lug 10 carried by the handle 17 is released from the recess 9 of the supporting plate 3, and the heater is moved slightly outward from engagement with the pane. 115 In this position the shoe 4 with the connected handles, tubes 12, and heater is free for vertical adjustment, and when the desired position is assumed the motorman releases the handles 6 and 7 when the locking lug 10 120 will engage with the receiving recess 9, thereby supporting the parts in adjusted position.

The action of the heater, the same being applied to the outer surface of the window 125 pane as described, is to present its own heated surface to the action of the sleet, and since it covers a portion of the window pane, that portion of the pane will at all times provide a clear and unobstructed view for the motor- 130

man. Again the transparent body portion of the heater being constructed as described, and the heating wires 14 being comparatively thin, and separated from one another as shown, the eyes of the operator will not be injured.

What I claim is—

1. In an electric heater for car windows and the like, a body part comprising a sheet of mica and a connected resistance coil, and means for attaching the heater to the window, whereby it will lie against the usual pane thereof.
2. In an electric heater adapted to be applied to a car window of usual construction, a heater with means for supporting the same directly in front of the window pane, the heater comprising a transparent protecting body part and an inclosed electric heating coil.
3. In an electric heater for car windows and the like, a body part formed of mica, an inclosed heating coil, electrical connections for said coil, and means for applying the heater to the front surface of the window pane.
4. In an electric heater for car windows and the like, a body part comprising a sheet of mica and a connected resistance coil, and a support for removably applying the heater to a window frame.
5. In an electric heater, two sheets of mica, a heating coil extending between the sheets, means for securing the sheets together, said means constituting means for retaining the coil in place, and means for supporting the heater in front of a car window or the like.
6. In an electric heater, of the character described, the combination of two sheets of mica, an interposed heating coil, means for securing the sheets with the inclosed coil in place, and a peripheral protecting ring.
7. In an electric heater adapted to be applied to a car window or the like, a heating coil, a covering sheet, and a yieldable buffer adapted to engage the window pane and space the heating coil therefrom.
8. In an electric heater of the character described, the combination of a base support adapted to be applied to a window or the like, a heater for the window, and an adjustable connection between the support and heater whereby the heater may assume different positions relative to the window.
9. In an electric heater of the character described, the combination of a base support adapted to be applied to a window or the like, a guide or runway on said base, a heater, an arm connected to the heater, and said arm being adjustable along said guide to position the heater relative to the window.
10. In an electrical heater of the character described the combination of a support

adapted to be applied to a window frame, a heater adapted to rest on the window pane, and a yieldable connection between the heater and support.

11. In an electric heater attachment of the character described, the combination of a base support adapted to be applied to a window frame or the like, a heater adapted to engage the outer surface of the window pane, an arm connected to the heater and projecting outwardly to a point adjacent the base support, and an adjustable connection between the arm and the base support.

12. In an electric heater attachment of the character described, the combination of a base support adapted to be applied to a window frame or the like, a heater adapted to engage the outer surface of the window pane, an arm connected to the heater and projecting outwardly to a point adjacent the base support, an adjustable connection between the arm and the base support permitting the heater to be raised and lowered, and means for holding the frame and the heater carried thereby in an adjusted position.

13. In an attachment of the character described, a support, a heater adapted to engage over the front surface of the window pane, and a part movable with the heater adapted to move back and forth on the support, and means to hold the heater in adjusted position on the support.

14. In an attachment of the character described, a support adapted to be applied to a window frame, a guide on the support, a shoe slidably engaging said guide, an electric heater having a connection with said shoe, and means for moving the shoe relative to the guide.

15. In an attachment of the character described, a support adapted to be applied to a window frame, a guide on the support, a shoe slidably engaging said guide, an electric heater having a connection with said shoe, means for moving the shoe relative to the guide, and means for holding the shoe in adjusted position.

16. In an attachment of the character described, a support adapted to be applied to a window frame, a guide on the support and a series of locking recesses on the support, a shoe for slidably engaging said guide, an electric heater, a part carried by the heater and connected to said shoe, and a spring pressed member adapted to engage said locking recesses to hold the shoe and the heater carried thereby in adjusted position.

17. In an electric heater attachment for car windows, a support adapted to be applied to the frame of the car window, an arm projecting from the support and extending over the window pane, a spring arm

carried by the first mentioned arm, a heater adapted to engage the pane and a connection between the spring arm and heater.

18. In an electric heating attachment for car windows or the like, a heater, means for detachably applying it to the window pane, and a transparent protecting sheet of mica interposed between the window pane and heater, substantially as and for the purpose described.

19. A portable and removable heating attachment for car windows of ordinary construction employing a pane of glass, comprising a heating coil, two transparent sheets of mica arranged on opposite sides of the coil, and a supporting bracket adapted to be applied to the window frame.

20. A portable heating apparatus for window panes of ordinary construction comprising a heater adapted to be placed adjacent to one surface of the window pane, and means whereby said heater may be adjustably supported to occupy various positions

relative to the window pane, substantially as and for the purpose described.

21. In an apparatus of the character described, a heater adapted to be applied to a car window or the like, said heater being considerably smaller than the window pane and adjustable over the surface of the pane so as to be positioned opposite the eyes of the operator.

22. An apparatus to be applied to a window having a glass pane comprising an electric heater arranged in front of the window pane and an interposed sheet of mica between the heater and pane, the mica constituting a protecting medium for the pane, and a transparent sight area.

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

HENRY C. WALTER.

Witnesses:

W. F. SHROYER,
WILBUR SHROYER.