Nov. 3, 1925. 1,560,256

C. B. JOHNS

ELECTRICALLY HEATED SANDING NOZZLE

Filed July 14, 1925 2 Sheets-Sheet 1

Fig. 1.

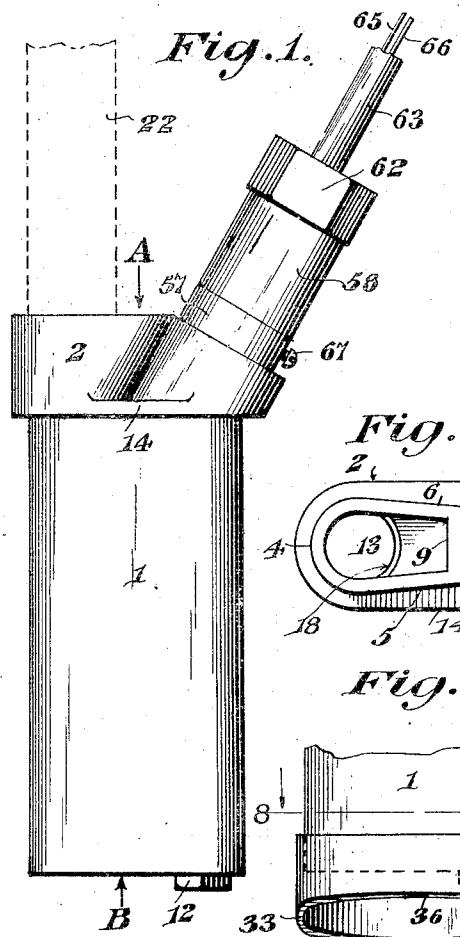


Fig. 2.

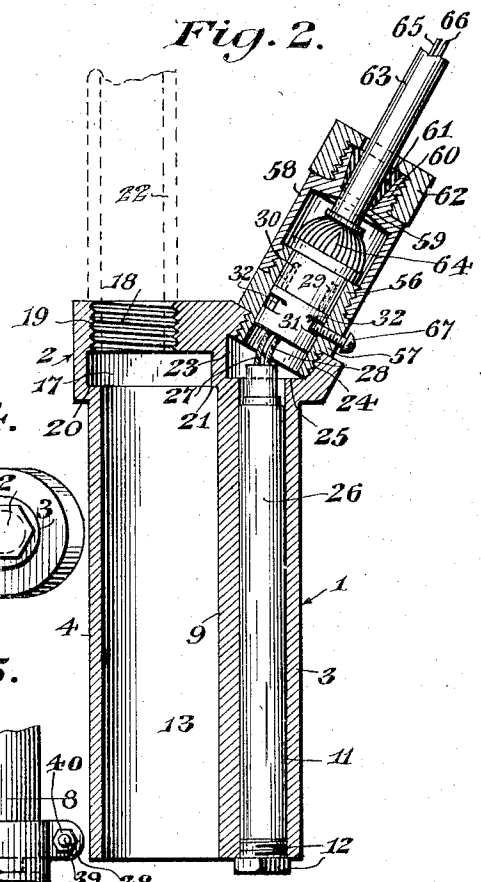


Fig. 4.

Fig. 5.

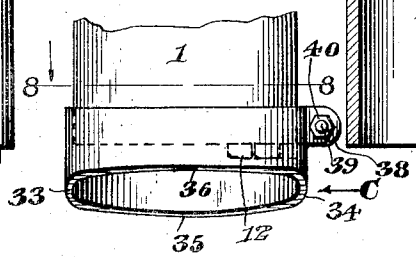


Fig. 3.

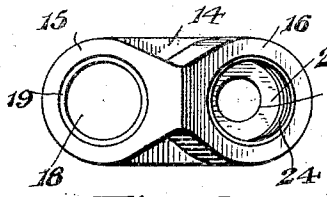


Fig. 7.

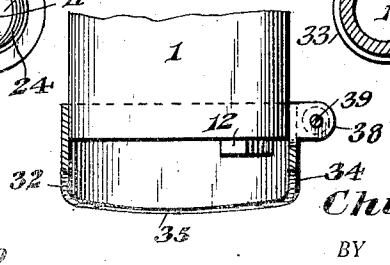


Fig. 8.

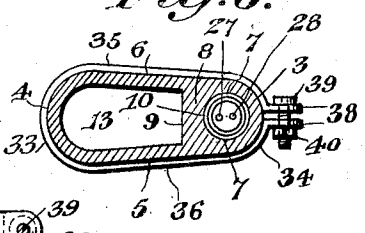
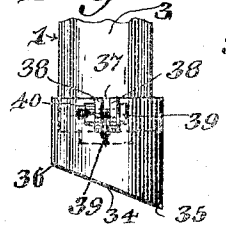


Fig. 6.



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Fig. 9.

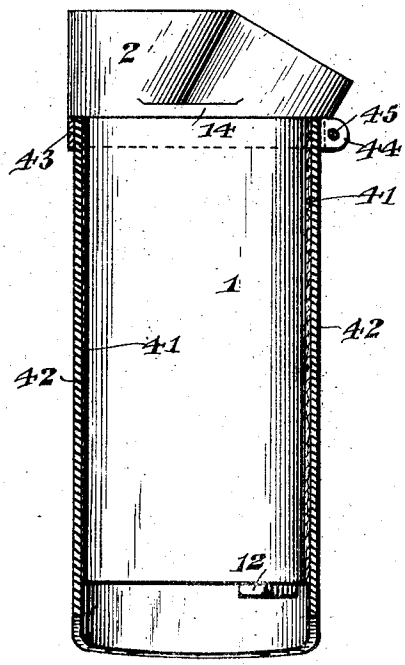


Fig. 11.

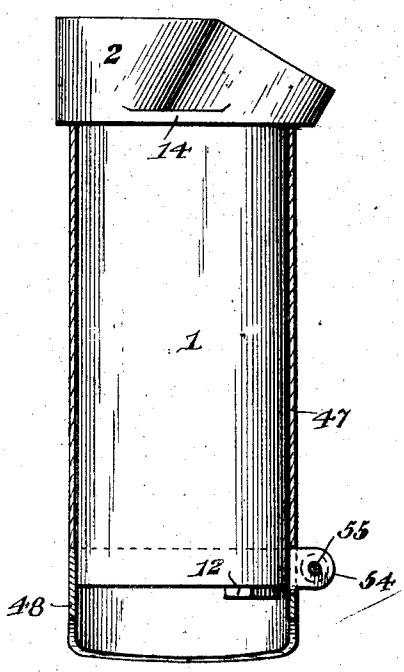


Fig. 10.

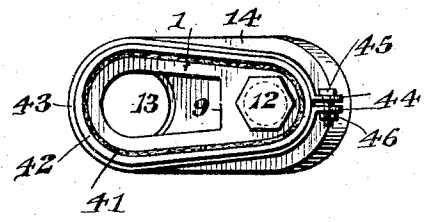
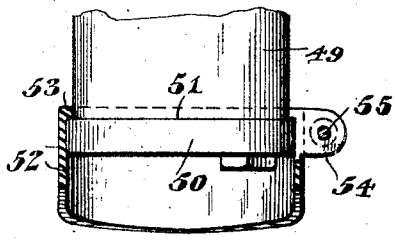


Fig. 12.



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UNITED STATES PATENT OFFICE.

CHILION BENJAMIN JOHNS, OF EBENSBURG, PENNSYLVANIA.

ELECTRICALLY-HEATED SANDING NOZZLE.

Application filed July 14, 1925. Serial No. 43,646.

To all whom it may concern:

Be it known that I, CHILION BENJAMIN JOHNS, a citizen of the United States, residing at Ebensburg, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Electrically-Heated Sanding Nozzles, of which the following is a specification.

This invention relates to an electrically heated sanding nozzle for use in connection with sand pipes employed on electric cars and locomotives, and has for its object to provide, in a manner as hereinafter set forth, a nozzle of such class for keeping the lower end of the sand pipe, as well as the nozzle body dry, thereby preventing clogging of the sand in the pipe and nozzle body, as well as the closing of the sand outlet, under such conditions insuring a free flow of sand for active purposes, especially in stormy weather.

A further object of the invention is to provide, in a manner as hereinafter set forth, a nozzle of the class referred to, provided with means for retaining the heat in the nozzle body.

A further object of the invention is to provide, in a manner as hereinafter set forth, a nozzle of the class referred to, provided with a guard for protecting the outlet end thereof from cross currents during the discharge of the sand for active purposes.

A further object of the invention is to provide, in a manner as hereinafter set forth, a nozzle of the class referred to, which may be readily attached to and removed from the lower end of the sand pipe when occasion requires.

A further object of the invention is to provide, in a manner as hereinafter set forth, an electrically heated sanding nozzle provided with means for expeditiously attaching and removing circuit conductors for the nozzle heating element when occasion requires.

Further objects of the invention are to provide, in a manner as hereinafter set forth, an electrically heated sanding nozzle, which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient in its use, conveniently installed with respect to a sand pipe, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a side elevation of an electrically heated sanding nozzle, in accordance with this invention.

Figure 2 is a vertical sectional view thereof.

Figure 3 is an end view looking in the direction of the arrow A.

Figure 4 is an end view looking in the direction of the arrow B.

Figure 5 is a fragmentary view illustrating the nozzle body provided at its lower end with a guard.

Figure 6 is a fragmentary view looking towards one side of the structure shown in Figure 5 and in the direction of the arrow C.

Figure 7 is a fragmentary view in elevation of the nozzle body, showing the adaptation therewith of the form of guard shown in Figure 5, the guard being illustrated in section.

Figure 8 is a section on line 8—8, Figure 5.

Figure 9 is an elevation of the nozzle body showing the same provided with a heat retaining means and a guard of a different form from that shown in Figure 5, the heat retaining means and the guard being shown in section.

Figure 10 is a view looking towards the lower end of the structure shown in Figure 9.

Figure 11 is a front elevation of the nozzle body, showing the same provided with a modified form of heat retaining means, the latter being shown in section, and further illustrating in connection with the nozzle body a guard of the form shown in Figure 5, the guard being illustrated in section.

Figure 12 is a fragmentary view in elevation, of a modified form of nozzle body showing the adaptation therewith of still another modified form of guard, the guard being shown in section.

In each of Figures 1 to 11, the nozzle

body is of the same construction and formed from a single casting, and which comprises a body portion 1 provided at its top with a head 2, which is offset or extends laterally from the front, rear and sides of the body portion 1. The body portion is referred to generally by the reference character 1 and is so designated, and the head is referred to generally by the reference character 2 and is so designated. The sides of the body portion 1 are indicated at 3, 4, and are rounded, as best shown in Figure 8. The side 4 is upon a greater arc than the side 3, whereby the side 4 is wider than the side 3. The front wall of the body portion 1 is indicated at 5 and the rear wall at 6, and which incline towards each other in a direction from the side wall 4. Arranged within the body portion 1, at a point between its vertical median and the side wall 3 and spaced nearer the vertical median than the side wall 3 is a lengthwise extending partition 8, having that face opposing the inner face of the side wall 4 flat throughout, as indicated at 9, and that face opposing the inner face of the side wall 3 of semi-circular contour, as at 10, and which in connection with the inner face of the side wall 3, as well as the curved portions 7 of the said walls 5 and 6, forms a lengthwise extending circular chamber 11, open at its upper end and closed at its lower end by a removable plug 12, having threaded engagement with the wall of said chamber 11.

The inner face of the side wall 4, in connection with the remaining portions of the inner faces of the front and rear walls 5, 6, and face 9 of the partition 8, forms a sand discharging passage 13 extending throughout the length of the body portion 1 and open at its top and bottom. The width and breadth of the passage 13 are materially greater than the diameter of the chamber 11. The passage 13 is permanently open at its upper and at its lower ends.

The head 2 comprises a bottom 14 having formed integral therewith a vertically disposed tubular extension 15 and a tubular extension 16, which is disposed at an acute angle with respect to the extension 15. The inner sides of the extensions 15 and 16 are formed integral with each other. The extension 15 is provided with an opening formed of two different diameters, the portion of larger diameter of which is indicated at 17, and that of smaller diameter at 18. The wall of that portion of smaller diameter is threaded, as indicated at 19. The portion 18 is eccentrically disposed with respect to the portion 17, and the latter is eccentrically disposed with respect to the passage 13. The part 17 opens into the upper end of the passage 13 and the wall of said part 17 is offset with respect to the upper end of the passage 13, thereby providing a ledge 20, which extends around the portion of the upper end of the passage 13 exteriorly thereof and which further forms a ledge 21 which extends over a portion of the top of the passage 13. The threads 19 of the wall of that part 18 of the opening in the extension 15 are adapted to have detachably connected therewith the lower end of a sand pipe 22, illustrated in dotted lines in Figures 1 and 2.

The extension 16 is formed with an opening of two different diameters and that part of larger diameter is indicated at 23 and the part of smaller diameter at 24. The part 23, as well as the part 24, is of materially greater diameter than the diameter of the chamber 11, and the upper end of the chamber 11 communicates with the part 23. Owing to the diameter of the part 23 with respect to the diameter of the chamber 11, a ledge 25 is provided which entirely surrounds the upper end of the chamber 11. The wall of the part 24 is threaded, as indicated at 25, see Figure 3, and which is adapted to have threadedly engaged therewith an element of a coupling member, to be presently referred to.

The coupling member is employed for connecting or clamping circuit connections to an electrical heating element 26, which is mounted in the chamber 11, seats on the plug 12 and extends into the part 23 of the opening in the extension 25. The heating element 26 may be of any suitable construction and includes a pair of circuit wires 27, 28, extended from the upper end thereof and attached to a pair of contact members 29, 30, carried by a circular block 31 of insulation, formed with peripheral grooves 32 for a purpose to be presently referred to. The element 26 is provided for heating the body of the nozzle, that is to say the body portion 1 and head 2, as well as the lower end terminal portion of the sand pipe 22.

With reference to Figures 5, 6, 7 and 8, the lower end of the body portion 1 has connected thereto and projecting therefrom a guard for protecting the discharge end of the nozzle. The said guard conforms in contour to the shape of the body portion 1 and is formed of any suitable material, preferably metal. The guard completely surrounds the lower end of the body portion 1 and its side walls are indicated at 33, 34, its forward wall at 35, and its rear wall at 36. The forward wall is of greater length than the rear wall and projects a greater distance from the body portion 1 than the rear wall 36. The upper portion of the side wall 34 is slitted, as at 37, and provided with a pair of opposed apertured lugs 38, through which extends a clamping bolt 39, provided with a secur-

ing nut 40. The bolt 39 and nut 40, in connection with the lugs 38, provide means for detachably clamping the guard to the lower terminal part of the body portion 1.

With reference to Figure 9, the body portion 1 of the nozzle is provided with a coating of any suitable material, as indicated at 41, to provide a non-conductor of heat for the purpose of retaining the heat in said body portion. The coating 41 extends from the head 2 to the lower edge of the body portion 1. To prevent the body portion 1 from becoming moistened or wet a guard 42 is provided and which is of a length to extend from the upper end of the body portion 1 and further to project beyond the lower end of the latter. The guard 2 is formed of resilient impervious material and is detachably mounted in position to completely enclose the coating 41. The lower portion of the guard 42 is constructed in the same manner as the guard shown in Figure 5, so that the front wall of the guard 42 will project a greater distance from the body portion 1 than the rear wall of said guard. To further secure the guard 42 in position a clamping band 43 is provided, which extends around the upper end of the guard 42, abuts against the head 2 and is provided with a pair of laterally extending apertured lugs 44, through which extends a bolt 45, provided with a securing nut 46, as best shown in Figure 10. The bolt 45 and nut 46, in connection with the lugs 44, provide means for detachably clamping the guard 42 in position.

With reference to Figure 11, the body portion 1 is provided with a coating 47 similar to the coating 41, but said coating 47 does not extend to the lower end of the body portion 1, that is to say, it extends from the upper end of the body portion 1 and terminates at a point removed from its bottom. That portion of the body portion 1, which is free of the coating 47 is adapted to have clamped thereto a guard 48 of a form similar to the guard shown in Figure 5 and for the same purpose.

With reference to Figure 12, the body portion of the nozzle is indicated at 49 and is reinforced by an enlargement 50, to provide a shoulder 51 in proximity to the lower end of said body portion. A guard 52 is detachably clamped to the lower end of the body portion 49 and said guard is of the same construction as that shown in Figures 5 and 11, with this exception that the upper end of the guard is formed with an inwardly extending flange 53, which engages the shoulder 51. The flange 53 further acts as a means in connection with the apertured lugs 54 and bolt 55 to retain the guard 52 in position.

With reference to Figures 1 and 2, a coupling device or member is employed for connecting, as well as clamping, circuit conductors in electrical engagement with the contacts 29 and 30. The said device comprises a sleeve 56 provided intermediate its ends with a peripheral rib 57, and having its periphery at each side of said rib threaded throughout. The threads at the lower end of the sleeve 56 engage with the threads 25 of the extension 16, and the lower edge of the rib abuts against said extension. The threads on the sleeve 56 above the rib 57, are engaged by an interiorly threaded cap member 58 formed at its top with an opening 59, and a peripherally threaded collar 60 having its inner diameter gradually increasing outwardly. When the cap member 58 is in position it abuts against the outer edge of the rib 57. Arranged within the collar 60 is a packing washer 61 having a tapered outer periphery. Engaging with the peripheral threads of the collar 60 is an interiorly threaded flanged nut 62, which retains the packing 61 within the collar 60. Extending through the opening 59, collar 60 and nut 62 is a casing 63, provided at its lower end with a socket forming member 64 for the reception of the contacts 29 and 30.

Extending through the casing 63 are circuit conductors 65, 66, which extend into the socket forming member 64 and terminate in contacts not shown, which are engaged by the contacts 29 and 30 when the member 64 is clamped in position by the coupling device, whereby the heating element 26 is coupled with an electrical source, not shown. The coupling device not only provides means for connecting or clamping the electrical connection in position, but further acts as a protective medium therefor. To prevent the revolving of the block 31, or rather to hold the same stationary, a set screw 67 is provided, which is carried by the sleeve 56 and is adapted to engage in one of the grooves 32 of the block 31.

An electrically heated sanding nozzle, in accordance with this invention, when active, not only provides for the heating of the body portion and head of the nozzle, but also for the lower terminal portion of the sand pipe, under such conditions keeping the said portion dry as well as the nozzle, thereby preventing the clogging and closing up of the nozzle in stormy weather, under such conditions insuring a free discharge of the sand. Furthermore, the guard protects the discharge end of the nozzle, arrests cross currents at the discharge end, and furthermore prevents the nozzle body from becoming moistened or wet. The heat of the nozzle body is retained by the non-conductive coating, thereby further assisting to keep the sand dry to prevent the clogging thereof, and it is thought that the many advantages of a sanding nozzle, in accord-

ance with this invention, can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:—

1. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage opening at each end and a heating element storage chamber parallel to and separated from said passage and closed at its lower end, and a head integral with the upper end of said body portion and provided with a pair of openings communicating respectively with said passage and chamber for the passage of sand to the former and electrical connections to the latter, the wall of that opening for the passage of sand provided with means for detachably connecting a sand pipe thereto.

2. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage opening at each end and a heating element storage chamber parallel to and separated from said passage and closed at its lower end, a head integral with the upper end of said body portion and provided with a pair of openings communicating respectively with said passage and chamber for the passage of sand to the former and electrical connections to the latter, the wall of that opening for the passage of sand provided with means for detachably connecting a sand pipe thereto, and a heat retaining coating for said body portion.

3. An electrically heated sanding nozzle comprising a body portion provided with a sand discharge passage opening at each end and a heating element storage chamber parallel to and separated from said passage and closed at its lower end, a head integral with the upper end of said body portion and provided with a pair of openings communicating respectively with said passage and chamber for the passage of sand to the former and electrical connections to the latter, the wall of that opening for the passage of sand provided with means for detachably connecting a sand pipe thereto, and a guard detachably connected to said body portion and projecting beyond the lower end thereof.

4. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage opening at each end and a heating element storage chamber parallel to and separated from said passage and closed at its lower end, a head integral with the upper end of said body portion and provided with a pair of openings communicating respectively with said passage and chamber for the passage of sand to the former and electrical connections to the latter, the wall of that opening for the passage of sand provided with means for detachably connecting a said pipe thereto, and a guard detachably connected to said body portion and projecting beyond the lower end thereof, the forward wall of said guard projecting beyond the rear wall thereof.

5. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage open at each end, an electrical heating element arranged within said body, a head integral with the upper end of said body and provided with means for connecting a sand pipe thereto for supplying sand to said passage, and means connected to said head for removably connecting thereto circuit conductors for said heating element.

6. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage open at each end, an electrical heating element arranged within said body, a head integral with the upper end of said body and provided with means for connecting a sand pipe thereto for supplying sand to said passage, means connected to said head for removably connecting thereto circuit conductors for said heating element, and a heat retaining means for said body portion.

7. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage open at each end, an electrical heating element arranged within said body, a head integral with the upper end of said body and provided with means for connecting a sand pipe thereto for supplying sand to said passage, means connected to said head for removably connecting thereto circuit conductors for said heating element, a heat retaining coating for said body portion, and a guard detachably connected to the body portion and projecting beyond the lower end thereof.

8. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage open at each end, an electrically heating element arranged within said body, a head integral with the upper end of said body and provided with means for connecting a sand pipe thereto for supplying sand to said passage, means connected to said head for removably connecting thereto circuit conductors for said heating element, and a guard connected to said body portion and projecting beyond the lower end thereof.

9. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage, an electrical heating element supported within said body portion and separated from said passage, a head integral with the body portion and provided with means for detachably connecting a sand pipe thereto for supplying sand to said

passage, circuit conductors detachably connected with said element, and a coupling device detachably connected with said head for removably connecting said circuit conductors with the body portion and further for protecting the point of connection thereof with said heating element.

10. An electrically heated sanding nozzle comprising a body portion provided with a sand discharging passage, an electrical heating element supported within said body portion and separated from said passage, a head integral with the body portion and provided with means for detachably connecting a sand pipe thereto for supplying sand to said passage, circuit conductors detachably connected with said element, a coupling device detachably connected with said head for removably connecting said circuit conductors with the body portion and further for protecting the point of connection thereof with said heat element, and means carried by the body portion for protecting the same from moisture and for retaining the heat generated by said element.

In testimony whereof, I affix my signature hereto.

CHILION BENJAMIN JOHNS.