Aug. 10, 1926.

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F. M. HILGERINK

CLEANING NOZZLE

Filed Oct. 31, 1923

Fig. 1.

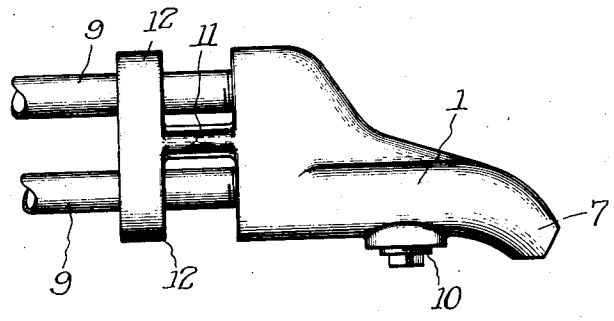


Fig. 2.

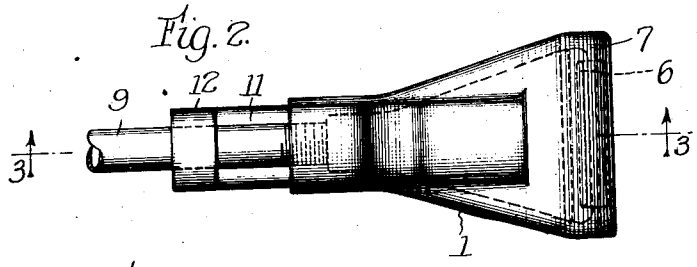


Fig. 3.

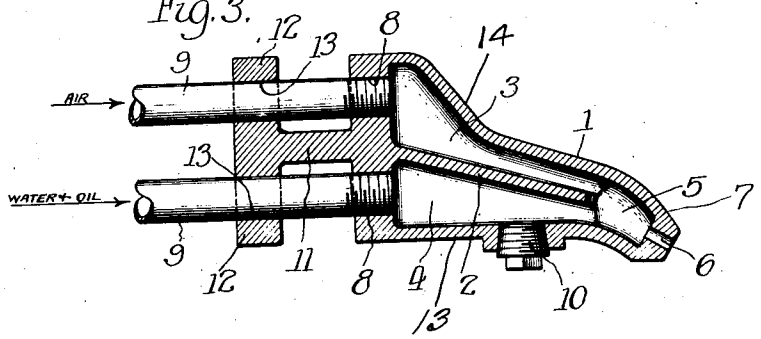
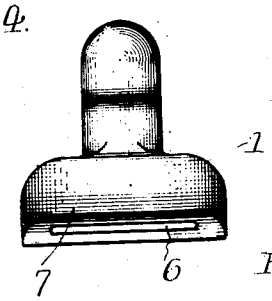


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CLEANING NOZZLE.

Application filed October 31, 1923. Serial No. 671,893.

The present invention relates to cleaning nozzles.

More particularly, the present invention relates to cleaning nozzles such as are used for conveying cleaning liquid to relatively inaccesible places, as for instance, the parts of a locomotive. It has been common practice to use mechanism for such purposes which comprises a nozzle for mixing air and cleaning fluid, which nozzle is mounted upon the ends of elongated pipes carrying said air and cleaning liquid. In order that the cleaning nozzle may be readily manipulated it has been common practice to provide supply pipes of as small weight as will serve the purpose and difficulty has been encountered by reason of lack of rigidity in the cleaning structure.

An object of the present invention is to provide a cleaning nozzle and connections therefor which will be rigid though light in construction.

A further object is to provide a structure which will combine rigidity with ease of manipulation.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view in side elevation of one embodiment of the invention;

Figure 2 is a top plan view of the structure shown in Figure 1;

Figure 3 is a sectional view taken on the plane indicated by the line 3—3 of Figure 2; and

Figure 4 is an end elevation of the structure illustrated in the preceding figures.

The numeral 1 indicates a cleaning nozzle, which nozzle is provided with a diaphragm 2 on the interior thereof, which diaphragm separates the nozzle into two elongated passageways 3 and 4, which passage-ways 3 and 4 communicate with the mixing chamber 5. Said mixing chamber 5 communicates with the discharge opening 6 in the end portion 7 of the nozzle 1. The end portion 7 and the discharge opening 6 may be of flared shape laterally of the nozzle, whereby a flat stream is projected from the opening 6.

The rear wall of the nozzle 1 is provided with a pair of apertures 8, 8 which may be screw threaded for the reception of the pipes 9, 9. One of said pipes 9 will communicate with the passage-way 3 and may supply air to said passage-way. The other of said pipes 9 will communicate with the passage-way 4 and may supply water and oil or other cleaning fluid to the passage-way 4. The bottom of the nozzle 1 will be provided with a removable plug 10 for cleaning purposes.

Connected with the rear wall of the nozzle 1 is the web 11 which forms the support for the pair of braces 12, 12. Each of said braces 12, 12 is provided with an aperture 13 for receiving one of the pipes 9, 9. Each of pipes 9, 9 will be more or less closely engaged by the braces 12, 12, whereby to reduce shaking of the nozzle relative to said pipes 9, 9 to a minimum. Each of the braces 12, 12 will serve as an abutment, not only for preventing shaking, but for preventing sagging of the nozzle relative to the pipes 9, 9. It will be noted that a nozzle is provided having a main body portion which has a lower floor portion 13, said floor portion being substantially flat throughout the greater part of its length. From the end portion 7 extends an upwardly curved wall 14 terminating in the rear wall of the nozzle, which upwardly curved wall forms with the partition 2 the converging passageway 3. It will thus be seen that I have provided a nozzle in which the oil and water mixture is directed straight to the nozzle outlet, and that the air is directed to the oil and water mixture in such a way that abrupt turns in the air stream are avoided. Due to the flat bottom 13, abrupt turns in the flow of oil and water are also avoided. By reason of the structure illustrated, therefore, a rigid structure is provided which serves the purpose for which it is intended with great effectiveness. By reason of the fact that the parts are reinforced, as described, said parts may be considerably elongated and, though made of light weight, will not unduly sag or shake in service. It will be noted that the partition 2 extends forwardly to such an extent that the mixture of water and oil from the passageway 4 and the air from passageway 3 occurs just before the ejection of the stream from the nozzle. The nozzle is particularly adapted for use in the cleaning of locomotives, inasmuch as it provides a stream comprising a mixture of oil and water, the oil being reduced to a colloidal suspension by the action of the stream of air thereon just before the ejection of the stream from the nozzle. In order that this may be

done most efficiently, it is desirable that the colloidal suspension of oil and water be applied to the surface to be cleaned as soon after such suspension is formed as is possible. It is for this purpose that the elongated partition 2 is provided in the body of the nozzle which separates the stream of air from the stream of oil and water until the moment of ejection. Attention is directed to the structure of the body part which is elongated horizontally at its forward portion and elongated vertically at its rear portion. Attention is also directed to the downward turning of the upper and lower walls of the end 7 of the nozzle, the purpose of this feature being to direct the stream against the parts of the locomotive to be cleaned when the pipes 9 are held at an angle to the horizontal, as is customarily done.

Though a preferred embodiment of the present invention has been described in detail, it will be clear to those skilled in the art, that many modifications may be made without departing from the spirit of the invention. It is intended in this patent to cover all such modifications that fall within the scope of the appended claim.

What is claimed is:

In a cleaning nozzle, in combination, in an integral casting, means providing a housing for the mixture of cleaning media, said housing being closed at its rear end by a wall in substantially a single plane, a division member within said housing extending forwardly from said rear wall to a point adjacent the exit from the nozzle, said wall being provided with orifices for the reception of fluid conveying pipes, bracing means for said pipes, said bracing means comprising a supporting portion extending outwardly from the wall at a point between said orifices, and a bracing wall substantially parallel to said rear wall and provided with corresponding apertures for the fluid conveying pipes.

Signed at Chicago, Illinois, this 26th day of October, 1923.

FRANK M. HILGERINK.