Dec. 27, 1927. 1,653,980

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BLOWER NOZZLE

Filed May 24, 1926

Fig. 1.

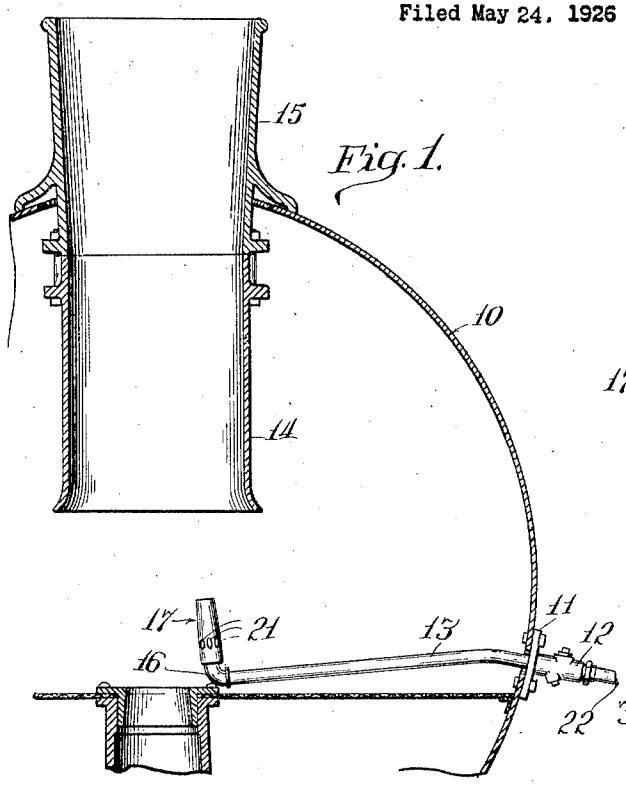


Fig. 2.

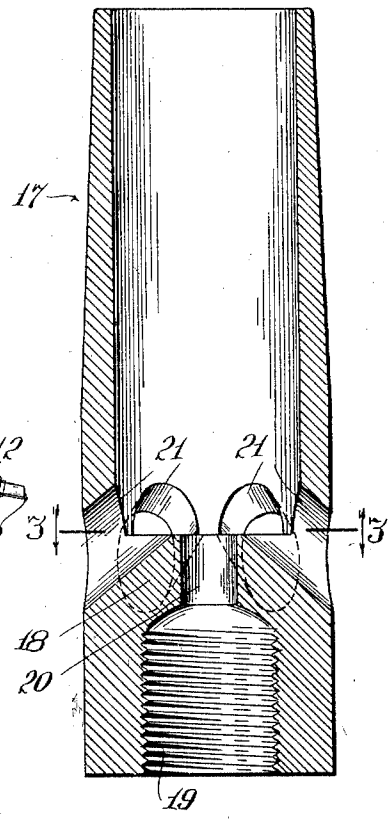
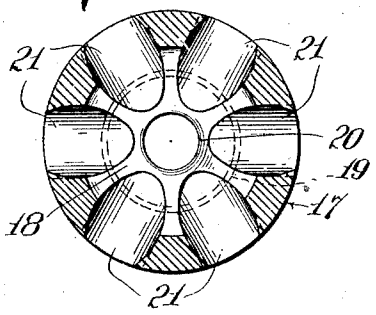


Fig. 3.



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UNITED STATES PATENT OFFICE.

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BLOWER NOZZLE.

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Our invention relates to blower nozzles for locomotives whereby proper draft through the flues and smoke box of a locomotive may be induced and maintained during the firing operation.

The purpose of our invention is to provide a construction of the character in question, the operation of which will result in a great saving of the steam supply employed in conjunction with the blower.

The objects and advantages of our invention will be readily comprehended from the detailed description of the accompanying drawing, wherein—

Figure 1 is a vertical sectional view of a portion of the smoke box of a locomotive shown provided with our improved blower nozzle.

Figure 2 is a longitudinal sectional view of our improved blower nozzle.

Figure 3 is a cross sectional view thereof taken substantially on the line 3—3 of Figure 2 looking in the direction of the arrows.

Our blower nozzle is especially intended for use during the building of the fire in the fire-box, namely before a proper steaming of the locomotive has been acquired and therefore the blower nozzle is mounted within the smoke box of the locomotive in a manner which permits external connection to be made therewith for the injection of a suitable medium under pressure, namely steam, obtained from any suitable source of supply.

In Figure 1 we show a portion of the smoke box shell 10 provided with a coupling 11 which includes a suitable valve indicated at 12; the coupling being properly secured to the smoke box shell 10 about an opening therein; the inner side of the coupling 11 being provided with a tubular member or pipe 13 of length sufficient so as to have its end disposed beneath the petticoat 14 of the smoke stack 15; the inner end of the blower pipe 13 being directed upwardly as shown at 16 in Figure 1.

Our improved nozzle shown at 17 consists of a tubular member of suitable length and dimensions as shown in Figure 2 and provided interiorly in proximity to one end with a transverse wall or partition 18 while the end of the nozzle beneath said wall or partition is interiorly threaded as shown at 19 in Figure 2. The wall of the nozzle 17 preferably increases in thickness toward the lower end thereof and thus enables the nozzle to be interiorly threaded as shown. The partition or wall 18 is centrally provided with a hole 20 of predetermined size, as for example one quarter of an inch or five-sixteenths of an inch in diameter, depending upon the size of the locomotive in connection with which the blower nozzle is employed. The side wall of the blower nozzle 17 at points coincident with the partition or wall 18 is provided with a plurality of diagonally disposed holes 21; these holes 21 being formed so as to incline upwardly and inwardly terminating interiorly at a point slightly above the partition or wall 18.

The nozzle which is screwed onto the upturned inner end 16 of the blower pipe 13 is directed upwardly beneath the skirt of the smoke stack so that the elements, for example steam, emitted by the blower nozzle 17 will be directed substantially toward the longitudinal center line of the smoke stack.

The medium usually employed in connection with blowers of the character in question is steam obtained from a suitable source of supply and conveyed to the coupling and valve 11—12 by a suitable pipe, a portion whereof is indicated at 22 in Figure 1 and which is removably secured to the valve. The steam flowing through the blower pipe 13 and discharged into the nozzle 17 through the comparatively small central opening 20, expands in the upper portion of the blower nozzle and entrains a considerable amount of air through the various air ports or holes 21; the air freely flowing into the blower nozzle by reason of the upwardly inclining disposition of the radially arranged openings 21. The mixture of steam and air is forcibly discharged through the nozzle upwardly into the smoke stack, inducing draft through the fire flues of the boiler and thereby promoting proper combustion especially during the building of the fire in the fire box of the locomotive.

With our improved blower nozzle, the draft-inducing operation is accomplished through the employment of a much less quantity of steam than has heretofore been possible, as the quantity of air admitted through the plurality of radial holes or ports 21 induced by the stream of steam issuing through the comparatively small hole or port 20 produces a mixture of air and steam which is forcibly injected into the smoke

stack in such a manner as to effect and maintain proper combustion while at the same time resulting in a great saving of steam over that heretofore necessary in blower nozzles in which steam flowing through a larger aperture than that in applicants' improved nozzle was used; our invention resulting at the same time in a more efficient blower nozzle, highly economical in the use of steam.

We have shown and described what we believe to be the simplest and best embodiment of our invention, which has been described in terms employed merely as terms of description and not as terms of limitation, as modifications are possible and may be made without, however, departing from the spirit of our invention.

What we claim is:

1. A blower nozzle for locomotives comprising a tubular member provided with a transverse interior wall of comparative thickness, said wall being centrally provided with an opening therethrough of predetermined diameter, the side walls of the member at points coincident with said transverse wall being provided with a plurality of ports arranged in a circumferential row about said central opening and inclining upwardly toward the interior of the member, said ports terminating on the interior of the member adjacent to the upper end of said central opening.

2. A blower nozzle for locomotives comprising a tubular member having a relatively thick wall at the lower end which is bored centrally to leave a transverse wall adjacent to the lower end, said transverse wall having a comparatively small central opening therethrough of predetermined diameter for effecting communication between the lower bore and the interior of the member above the transverse wall, a circumferential row of ports in the side walls of the tubular member disposed inwardly and upwardly from a point coincident with the transverse wall and terminating at their upper ends adjacent to the upper surface of the transverse wall in close proximity to the upper end of said central opening.

3. In a device of the character described the combination of a steam pipe arranged within the smoke box of a locomotive, the inner end of the pipe being disposed upwardly at a point beneath the smoke stack of the locomotive, with a tubular member having a transverse wall adjacent to the lower end, the lower end of said member having a threaded bore to receive the upturned end of said steam pipe, said bore terminating in a reduced port of predetermined diameter extending centrally through said transverse wall, while the sides of the member at points coincident with said transverse wall are provided with a plurality of radially arranged ports sloping upwardly toward the interior of the member and terminating at points adjacent to the upper surface of said transverse wall in close proximity to said port in the transverse wall.

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