Aug. 12, 1952 T. J. LOFTUS 2,606,781

SAND PIPE DISPENSING NOZZLE

Filed May 31, 1949

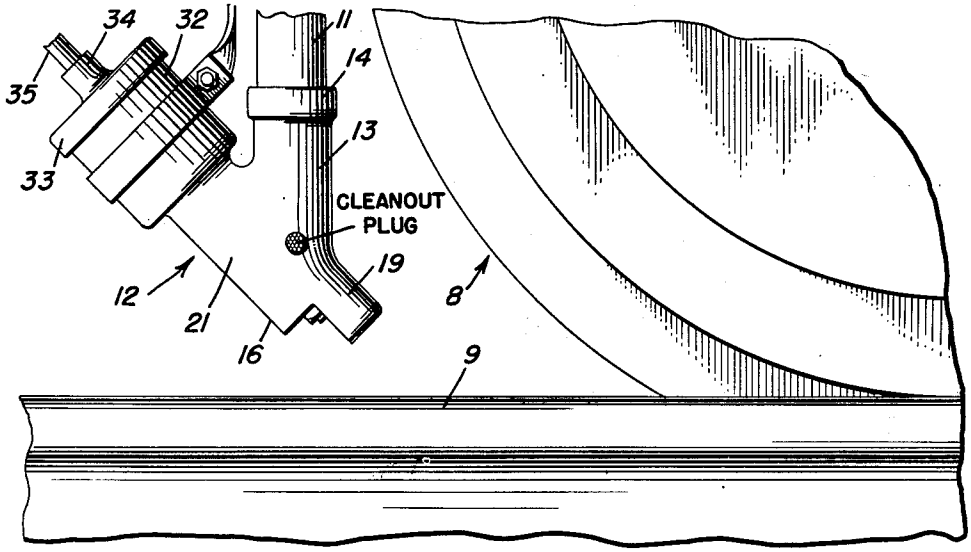


Fig. 1.

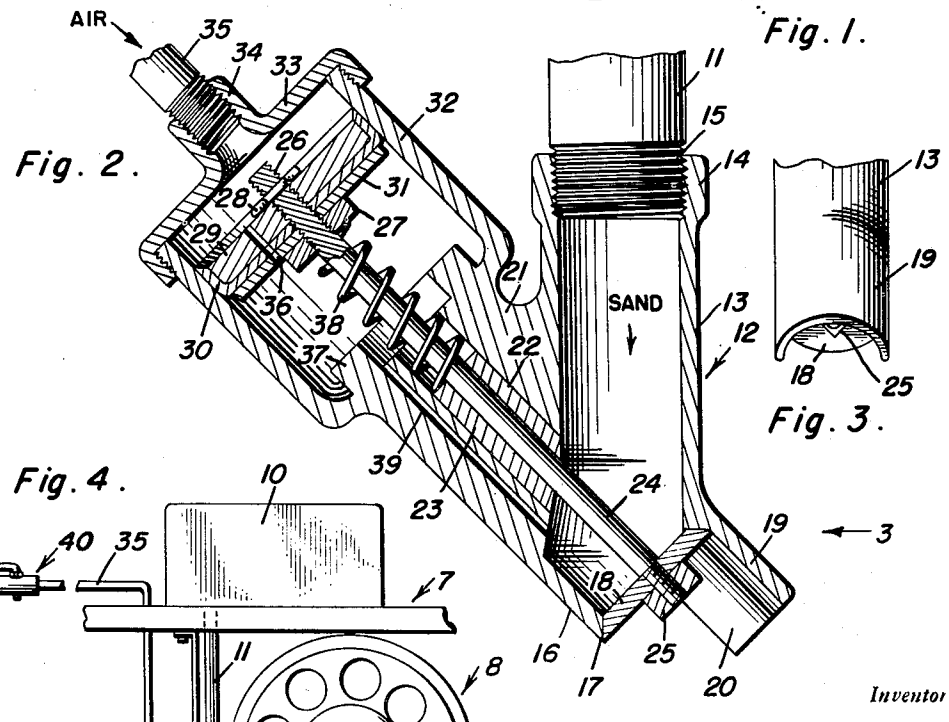


Fig. 2.

Fig. 3.

Fig. 4.

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Patented Aug. 12, 1952 2,606,781

UNITED STATES PATENT OFFICE

2,606,781

SAND PIPE DISPENSING NOZZLE

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Application May 31, 1949, Serial No. 96,173

2 Claims. (Cl. 291—41)

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The present invention relates to certain new and useful improvements in locomotive track sanders and has to do, broadly speaking, with an aptly and suitably constructed dispensing nozzle which is expressly made and designed for attachment to the discharge end of the usual sand pipe, said nozzle serving to render said sand pipe effectively operable when a charge of sand is most needed.

It is a matter of common knowledge that the supply of sand to track rails is greatly impeded and in many instances entirely cut off in cold and stormy weather. This is due to the fact that the sand becomes wet and freezes and clogs in the sand pipe and is, therefore, not deposited on the track rail when its use against slipping is critically needed. Confronted with this problem, and in an effort to resultfully solve it, I have evolved and produced a simple, practical and ever-ready safety nozzle which is attachable to the sand pipe and which functions to deliver sand with assured certainty regardless of weather conditions.

In carrying out my aims I achieve what is wanted through the instrumentality of a suitably constructed nozzle. Secondly, I provide a nozzle which is capable of resultful performance in that it embodies a novel valve arrangement and invokes the use of an air pressure actuated piston and cylinder assembly to properly control the valve.

More specifically, the stated attachment is in the form of a valved dispensing nozzle wherein the air pressure functions not only to positively control the valve but, in addition, provides an air blast communicating with the sand in a manner to prevent clogging even though the sand is either wet or frozen as the case may be.

Another object of the invention has to do with the provision of a visor-like valve shield which assists in guiding the opening and closing movements of the valve but functions, primarily, to minimize the likelihood that the valve will become icebound and locked on its seat.

Other objects and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a fragmentary elevational view showing a track rail, portion of a locomotive wheel, the sand pipe, and my improved dispensing nozzle attached to the sand pipe.

Figure 2 is a view of my improved nozzle with

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parts in section and elevation, the valve being shown closed.

Figure 3 is a fragmentary elevational view of the aforementioned shield, said view being taken in the direction of the arrow 3 on Fig. 2.

Figure 4 is a fragmentary elevational view showing the sand box and other facilities.

Referring first to Figure 4, the numeral 7 designates a portion of a locomotive or engine including a drive wheel 8 resting upon a track rail 9. The numeral 10 designates a source of sand supply, usually referred to as a sand box which, by way of a suitable valve control (not shown) delivers sand into a perpendicular sand pipe 11. Many and varied forms of dispensing heads, so-called spreading shoes and the like are customarily utilized on the discharge end of the sand pipe. When the sand is dry and weather conditions are satisfactory, the wanted sand is delivered with expected efficiency. However, when the weather is stormy and cold, or during the course of a snow storm, sand dispensing difficulties are met. As previously stated the sand may become wet and freeze and thus clog the dispensing or discharge facilities of a sand pipe. Or, snow and ice may lodge in and around the discharge end of the sand pipe, making it impossible to lay sand on a slippery track at a time when it is most needed. To cope with this problem I provide a simple, practical, reliable and satisfactory sand dispensing nozzle with requisite safety features. The nozzle is preferably Y-shaped and is denoted (see Fig. 2) by the numeral 12. The main branch 13 has a screw-threaded collar 14 detachably screwed on the threads 15 of the sand pipe 11. The lower discharge end has its bottom fashioned into an oblique chute or apron 16 and an accompanying bevelled valve seat 17 for the corresponding bevelled peripheral edge of the valve disk 18.

The numeral 19 designates the aforementioned visor-like substantially semi-circular guard or shield which projects beyond the valve and hoods over the upper half portion of same to provide an effective shield. In fact, the shield minimizes the likelihood that the valve will become icebound and locked on its seat. In addition the underside 19 of the shield constitutes a stabilizing guide for the valve when it projects to "open" position. The side branch 21 of the nozzle has a central longitudinal bore 22 which opens into the passage of the main branch 13. The bore is lined with a bushing 23 in which the valve rod 24 is reciprocable. The lower end of the valve rod is screw-threaded and provided with a nut

25 and thus is operatively connected to the valve 18. The upper end is screw-threaded, as at 26 and is provided with a nut 27 and cotter key 28 which serves to secure the piston means in place. The piston proper 29 is provided with a leather or equivalent cup 30 clamped in place by a washer 31. The piston is operable in a cylindrical cup 32 formed integral with said branch 21 and provided with a screw-cap 33. The screw-cap has an attaching neck 34 for the pressured air delivery pipe or line 35. The numeral 36 designates a passage or port which serves to deliver air and also functions as a vent. The numeral 37 designates a piston check shoulder. The piston return spring, which comes into play when the air pressure is off, is denoted by the numeral 38 and surrounds the valve rod and is anchored in a suitable socket in the branch 21. The numeral 39 designates a bore through the branch 21, which constitutes an air delivery and vent passage.

In practice the air pipe or line 35 is connected to a suitable source of air supply in the engine cab and an appropriate cut-off valve 40 is, of course, provided. Normally, and assuming that the air supply is off, the spring means 38 acts on the valve rod 24 to close the valve 18 against its seat 17. When sand is to be fed from the box 10 via the sand pipe 11 onto the track 9, it is, of course, necessary to open the valve 18. Consequently, the air is turned "on" and, flowing under pressure through the pipe or line 35 acts on the piston means against the tension of the spring means. The piston in turn acts on the valve rod 24 and opens the valve 18 in an obvious manner. When the air is turned off the valve starts to return to its closed position and passages 39 and 36 respectively in Figure 2 constitutes vents to facilitate the valve closing action. These same passages 36 and 39 in the order stated serve to supply a blast of air into the sand passage of the branch 13 to agitate the sand, to prevent clogging, and to facilitate its delivery to the trackway. The oblique angular relationship of the chute 16 and shield 19 serve, it is believed, to more effectively deposit the discharging sand on the track.

When my device is used on locomotives equipped with air sanding devices (not shown) from sand box 10 to sand pipe 11 air pipe 35 would be connected to air pipe from cab of the locomotives (not shown) leading to sand valve control, thus applying air to the device simultaneously with application of air to sanding device.

Changes in shape, size, materials and rearrangement of details and parts may be resorted to in actual practice, so long as they do not depart from the spirit of the invention or the scope of the appended claims, as is well understood.

Having described the invention, what is claimed as new is:

1. A nozzle attachment for the discharge end of a sand pipe comprising a substantially Y-shaped body having a main sand receiving and delivering branch for attachment to said sand pipe and a complemental pressured air receiving and delivering branch, corresponding ends of said branches converging into a common sand outlet, said outlet having a stationary valve seat opening directly into the atmosphere, the remaining end of said air branch having an enlarged cylindrical cup, the latter in axial alignment with said air branch, a screw-cap closing and removably mounted on the cup, said cap having a screw-threaded neck for a pressured air delivery pipe, a piston slidable in said cup, said piston in line with said neck and having an air port therein, a rod connected to said piston, a disk valve normally engaged with said valve seat, said rod being connected with and for operating said valve, a coiled return spring surrounding the rod, engaging the piston at one end and engaging a stationary part of the air branch at its opposite end, said air branch having an elongated bore parallel with said rod and opening at one end into said cup in alignment with said air port and having its opposite end disposed in alignment with and in close proximity to the interior side of said valve, whereby to force the valve open against the tension of the spring and to, at the same time, forcibly and air blast sand through the outlet when the valve is open.

2. The structure defined in claim 1, and a semicircular visor-like extension formed integral with said sand delivering branch and projecting outwardly beyond and hooding over the upper portion of said valve seat, the upper half-portion of said valve conforming in shape with and having wiping contact with the underneath surface of said extension, whereby to keep said seat free of ice and snow accumulations.

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