T. L. SWEARINGEN.

SAND DISTRIBUTING APPARATUS.

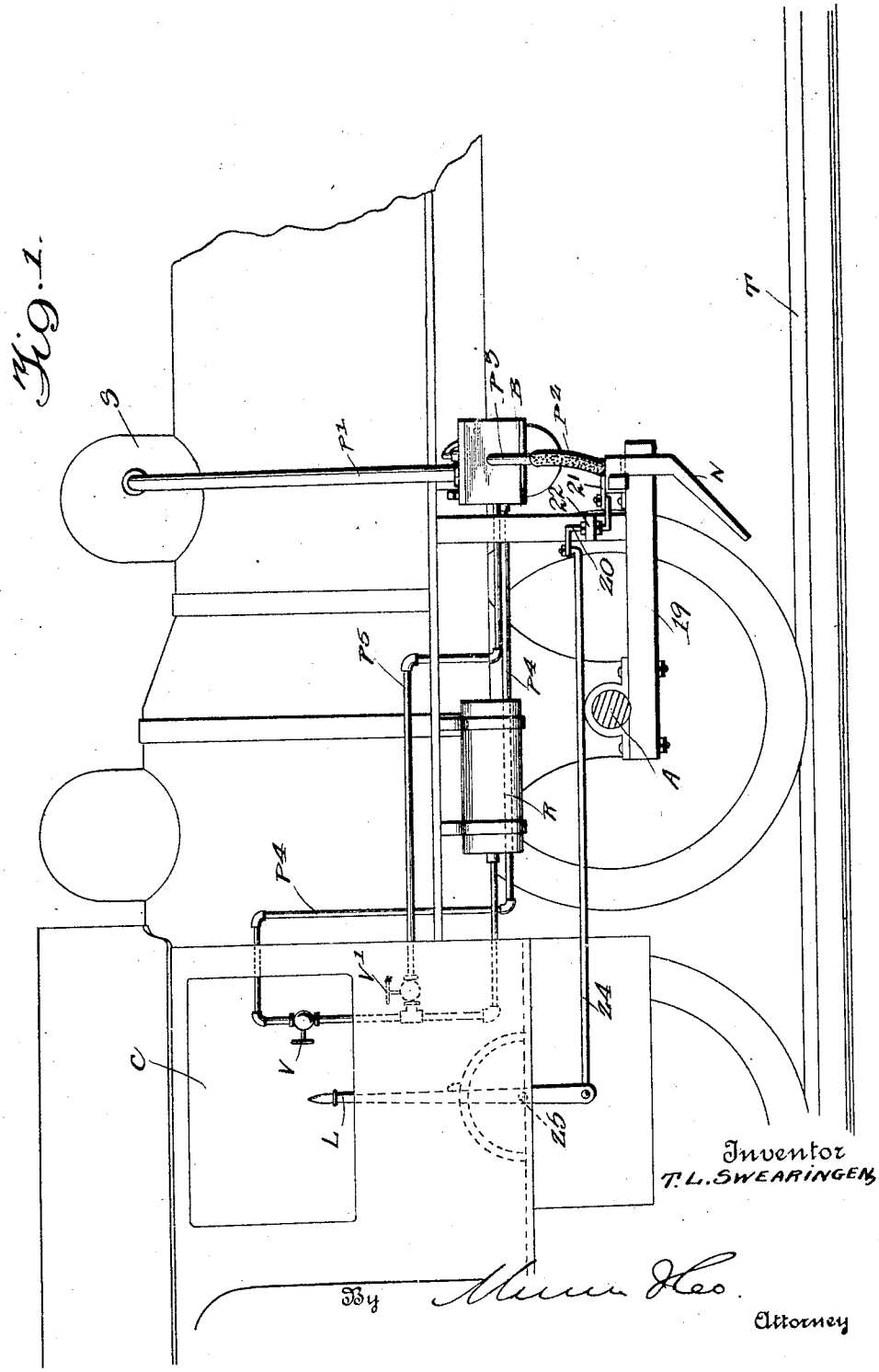
APPLICATION FILED NOV. 10, 1920.

1,403,878.

Patented Jan. 17, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



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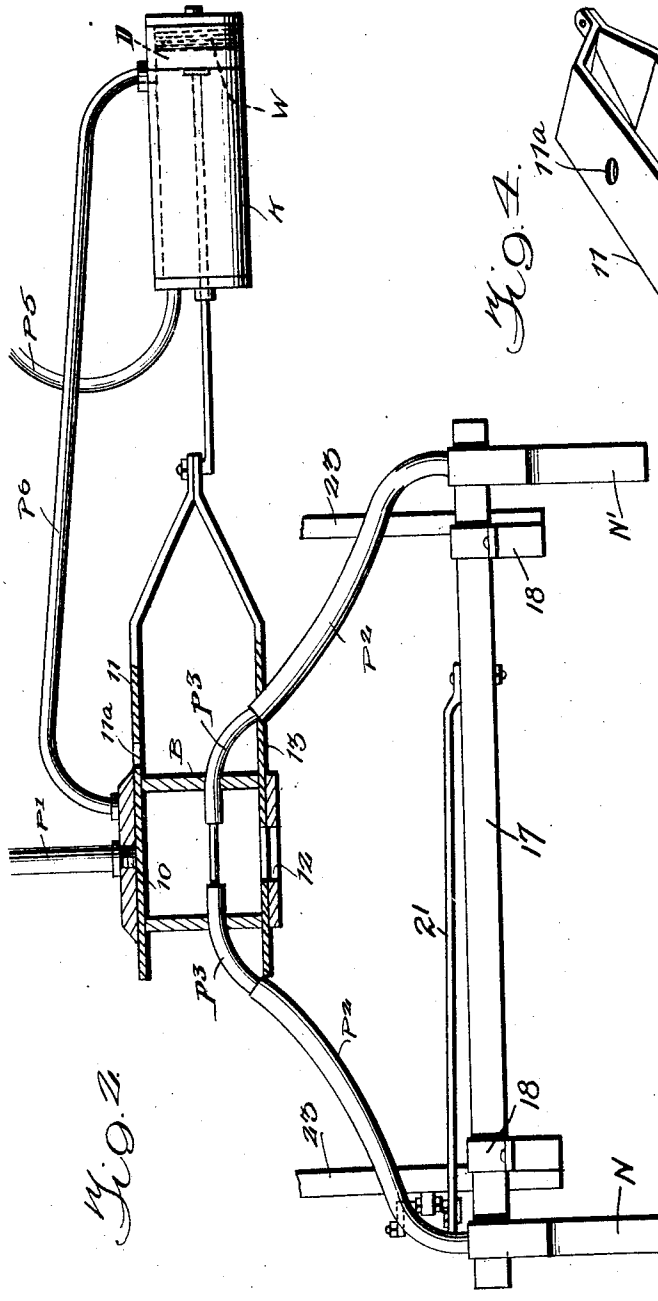


Fig. 2.

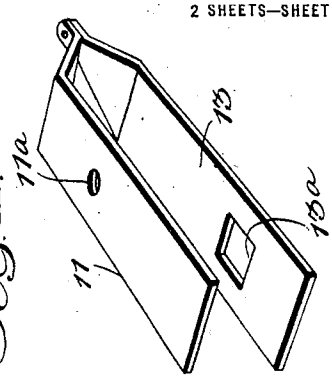


Fig. 4.

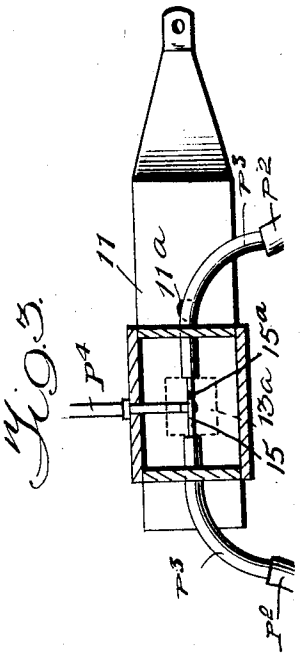


Fig. 5.

WITNESSES

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SAND-DISTRIBUTING APPARATUS.

1,403,878. Specification of Letters Patent. Patented Jan. 17, 1922.

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To all whom it may concern:

Be it known that I, THOMAS LEROY SWEARINGEN, a citizen of the United States, and a resident of Danville, in the county of Boyle and State of Kentucky, have invented certain new and useful Improvements in Sand-Distributing Apparatus, of which the following is a specification.

My invention relates to sand distributing apparatus for locomotives and a purpose of my invention is the provision of an apparatus of this character in which manually operable means is provided for shifting the distributing nozzles laterally with respect to a railway track so as to cause the nozzles to be at all times directly above the track rails and to thereby deposit the sand on the rails irrespective of the angular position of the locomotive.

It is also a purpose of my invention to provide a sand distributing apparatus having pneumatically operative means for delivering the sand to the nozzles and for effecting a cleaning of the sand conveying pipes.

I will describe one form of sand distributing apparatus embodying my invention and will then point out the novel features thereof in claims.

In the accompanying drawings:

Figure 1 is a view showing a portion of a locomotive having applied thereto one form of sand distributing apparatus embodying my invention.

Figure 2 is a view showing in front elevation the apparatus shown in Figure 1, a portion thereof being in section.

Figure 3 is a plan view of the sand distributing box with the cover removed.

Figure 4 is a detail perspective view of the slide valves shown in Figures 2 and 3.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings and particularly to Figure 1, I have here shown a conventional form of locomotive, in which C indicates the cab, A one of the driving axles, and S the sand dome. The sand distributing apparatus embodying my invention comprises a sand distributing box B to which sand from the sand dome S is supplied through the medium of pipe P′, the latter pipe extending into the top of the box as shown in Figure 1.

N and N′ designate nozzles through which the sand is deposited upon the rails of the track T (Figure 1) through the medium of flexible pipes P^2 and rigid pipes P^3. As illustrated to advantage in Figures 2 and 3, the pipes P^3 extend into the box B through the opposite ends of the latter and terminate in spaced relation to each other.

Sand from the box B is forced into the confronting ends of the pipes P^3 by means of compressed air from a reservoir tank R supported in suitable brackets at one side of the locomotive as is clearly shown in Figure 1. Compressed air from the tank R is conveyed to the pipes P^3 by a pipe P^4 which is comprised of several pipe sections arranged in the manner shown in Figure 1 so as to extend into the cab C of the locomotive. One end of the pipe P^4 extends into the box B as clearly shown in Figure 3 and is there provided with branch pipes 15 and 15^a which extend into the pipes P^3. The branch pipes 15 and 15^a are of a diameter less than that of the pipes P^3 so that their inserted ends do not completely close the confronting ends of the pipes P^3 but provide an annular space between the two through which the sand within the box B can enter the pipes P^3. This movement of the sand is effected through the medium of compressed air within the pipe P^4, which on passing into the pipes P^3 creates a suction within the box B thereby drawing the sand inwardly through the space between the branch pipes 15 and 15^a and the pipes P^3. The passage of compressed air from the reservoir tank R through the box B is controlled by a valve V which as shown in Figure 1 is disposed in convenient position within the cab for operation by the engineer.

It is to be understood that the several sections comprising the box B are not hermetically sealed so as to create a sufficiently strong suction within the box to effect the efficient ejection of the sand from the box and ultimately onto the rails of the track through the nozzles N. In the present instance, the box B is provided in its upper wall with a port 10 which communicates with the pipe P′ to effect the introduction of sand from the dome S to the box B. The port 10 is controlled by a slide valve 11 which is slidable through suitable openings formed in the box and is provided with a port 11^a which when in registration with the port 10 permits the flow of sand into the box, as will be understood. In the bottom wall of the box B, a discharge or scavenging port 12 is

formed which is controlled by a slide valve 13 slidably fitted in suitable openings formed in the box B. The slide valve 13 is provided with a port 13^a which when in registration with the port 12 permits the discharge of sand from the box. As shown in Figure 3, the valves 11 and 13 are connected at one of their ends to each other and to a piston D mounted in a cylinder K. Compressed air from the reservoir R is supplied to the cylinder K through a pipe P^5 which communicates with the pipe P^4 at a point between the valve V and the tank R. The pipe P^5 is provided with a valve V' (Figure 1) which effects a control of the passage of air in the tank to the cylinder independent of the valve V. The cylinder K communicates with the box B through a pipe P^6 in the manner shown in Figure 2 so that when the piston is moved to the right hand extreme position, communication is effected between the pipe P^5 and the pipe P^6 to supply compressed air to the box B for effecting a scavenging of the same. The piston D is biased to the left hand extreme position by means of a coiled expansible spring W arranged within the cylinder K in the manner shown in Figure 2. As will be understood, the spring serves to return the piston to its normal position after the supply of compressed air to the cylinder has been discontinued.

Referring now to Figures 1 and 2, it will be seen that the nozzles N and N' are supported upon a bar 17 mounted for longitudinal sliding movement within the bearing plates 18 supported upon beams 19 secured to the axle A. The bar 17 is operatively connected to a crank 20 through a link 21, the crank being journaled in a bearing 22 supported on vertical standards 23. The vertical standards are connected at their lower ends to the beams 19 and cooperate with the axle A in rigidly supporting the same in horizontal position. The crank 20 is operatively connected to an actuating lever L by a rod 24, the lever being fulcrumed as at 25 and adapted to be locked in any adjusted position by a conventional form of pawl and ratchet as is indicated in dash lines in Figure 1.

By this arrangement it will be seen that upon actuation of the lever L, a rocking of the crank 20 is effected through the rod 24, the crank in turn moving the bar 17 longitudinally through the link 21. Upon movement of the bar 17, the nozzles N and N' are moved laterally with respect to the track T. When the lever L is moved forwardly from the position shown in Figure 1, it will be clear that the nozzles N and N' are moved to the left as viewed in Figure 2, while when the lever is moved rearwardly from the position shown in Figure 1, the nozzles are moved to the right as viewed in Figure 2. It will thus be seen that according as the lever L is moved in one direction or the other from its normal position, the nozzles N can be moved laterally with respect to the rails T so as to occupy pre-determined position with relation thereto.

The operation of the entire apparatus is as follows:

With the valve V open, air from the reservoir tank R is supplied to the branch pipes 15 and 15^a which creates a suction within the pipes P^3 and thereby drawing the sand inwardly through the pipes where it is ultimately deposited upon the rails through the nozzles N and N'. As previously explained the box B is not air-tight thus permitting of the creation of a draft inwardly of the pipes P^3 sufficiently strong to eject the same from the box into the pipes. Should not nozzles N and N' be disposed directly above the rails of the track T for effecting the depositing of the sand directly upon the rails, the engineer can readily shift the nozzles laterally in one direction or the other by the manipulation of the lever L as has been described. This is especially advantageous when the locomotive is traversing curves as under these conditions the locomotive assumes an angular position with relation to the rails so as to displace the nozzle either to one side or the other with respect to the rails. This displacement can be readily overcome by the actuating mechanism so that the sand is at all times deposited on the rails thus eliminating the waste of the same as in the usual form of sand distributing apparatus.

Should the box B become clogged with sand so as to prevent its passage outwardly through the pipes P^3, the slide valve 13 will be moved to open position by opening the valve V' so as to supply air to the cylinder K through the pipe P^5 and thus force the piston D to the right. When the piston has reached such a position that the port 13^a is in registration with the port 12, a scavenging of the box is effected by a blast of air from the pipe P^6. It will be understood that when the valve 13 is moved to open position, such movement of the piston causes a closing of the valve 11 so that the supply of sand from the dome S to the box B is discontinued.

Although I have herein shown and described only one form of sand distributing apparatus, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention and the spirit and scope of the appended claims.

I claim:

1. A sand distributing apparatus for locomotives comprising, nozzles mounted for movement laterally of the locomotive, manually operable means for moving said noz-

zles, a box for distributing sand to said nozzles, rigid pipes extending to said box, flexible pipes connecting the rigid pipes with said nozzles, means for delivering sand to said box, and means for creating a suction within the rigid pipes to effect the withdrawal of the sand within the box into said pipes and forwardly through the same into said nozzles.

2. A sand distributing apparatus for locomotives comprising, nozzles, a box for distributing sand to said nozzles, a valve in the bottom of the box, means for supplying sand to said box, pneumatic means for delivering sand to said nozzles from said box, pneumatic means for moving said valve to open or closed position, and means operable by the last means for scavenging said box when the valve is in the open position.

3. A sand distributing apparatus for locomotives comprising, nozzles, a box for distributing sand to said nozzles, a sand dome, a pipe connecting said dome to said box, a port formed in the bottom of said box, a valve controlling the port, pneumatic means for moving said valve to open or closed position, means for closing said pipe when the valve is in the open position, pneumatic means operable by the first pneumatic means for scavenging said box when the valve is in the open position, and pneumatic means for withdrawing the sand from said box and delivering the same to said nozzles.

THOMAS LEROY SWEARINGEN.