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MANIFOLD FOR SANDING MECHANISM

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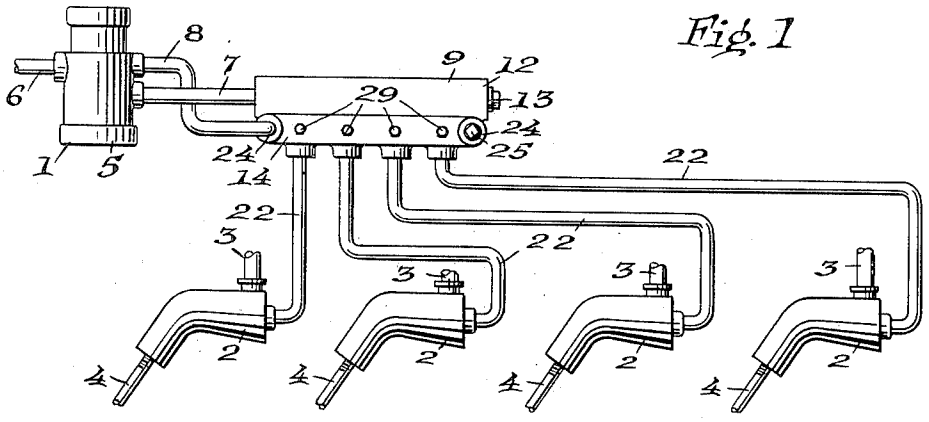


Fig. 1

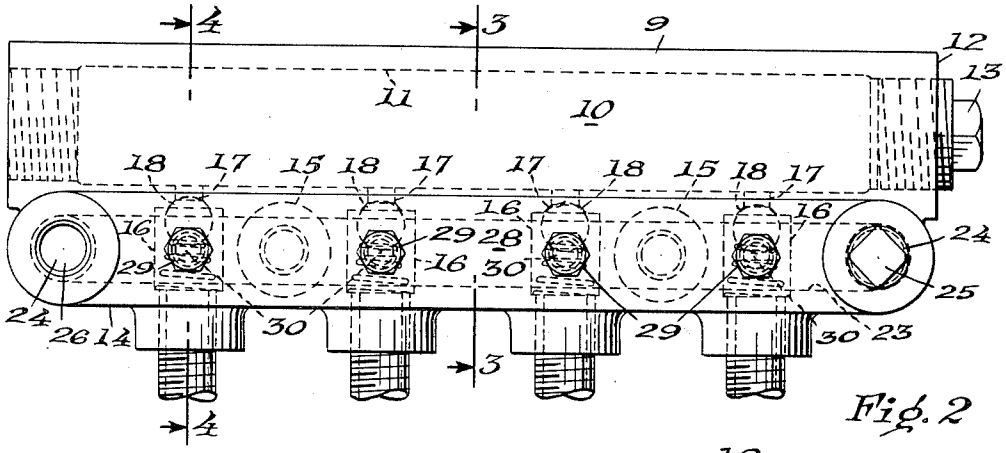


Fig. 2

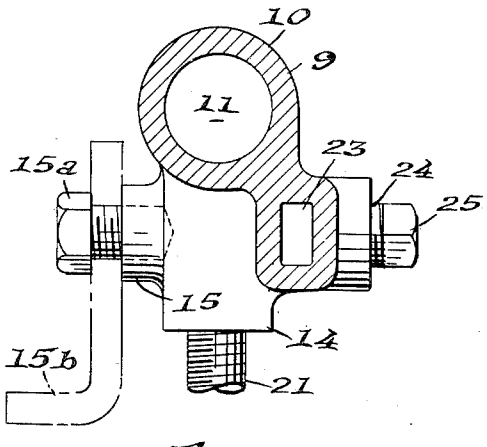


Fig. 3

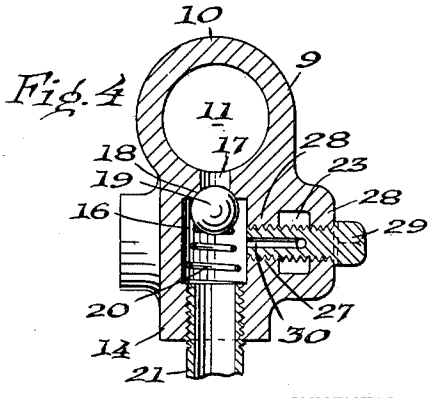


Fig. 4

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MANIFOLD FOR SANDING MECHANISM

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12 Claims. (Cl. 291—12)

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This invention pertains to a manifold for use in a sanding mechanism of a railroad engine.

An object of this invention is the provision, in a sanding arrangement or mechanism, of a manifold which will eliminate the necessity of a great amount of piping now required or employed in such sanding mechanisms.

Another object of the present invention is the provision of a manifold whereby both a cleanout blast and a sanding application of air may be dispatched through a single line to an open nozzle in a sand trap.

A further object of the invention is the provision of a manifold whereby a multiplicity of sand traps may be supplied with successive applications of cleanout and sanding air from but a single feed line leading from the manifold to the respective sand traps.

The above and numerous other objects of the present invention will become apparent to those skilled in the art to which this application appertains from the succeeding description considered together with the accompanying drawing wherein:

Figure 1 is a schematic view of a part of a sanding mechanism embodying the present invention.

Figure 2 is a front elevational view of a manifold embodying the present invention.

Figure 3 is a cross-sectional view taken along the lines 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a cross-sectional view taken along the lines 4—4 of Figure 2, looking in the direction of the arrows.

Referring now in detail to the drawing, wherein like reference characters indicate like parts, the numeral 1 is employed to designate, in a somewhat general manner, a part of a sanding arrangement or mechanism in which the present invention is employed or forms a part thereof. The sanding arrangement is illustrated more or less schematic in order to show the disposition or relationship of components thereof. As is usual in arrangements of this type there is included therein at least one sand trap 2 for each driving wheel of a railroad engine be the latter of any type. The sand trap functioning as a sand and air mixing chamber at each wheel (not shown) has leading thereto a usual sand supply line 3 and a discharge line 4 through which a mixture of air and sand is carried to the rails (not shown).

For reasons which are now apparent both a cleanout blast of air and a sanding operation of air are supplied to each sand trap; the former preceding the latter as is usual. Heretofore in a great majority of cases each sand trap had leading thereto two air supply lines, one of which conveyed a cleanout blast of air to the sand trap and another of which conveyed a sanding operation of air to the same sand trap and in a great many instances to a different location in the sand trap. By following the teachings of this application of the present invention, the usual second air feed line leading to each sand trap may be successfully eliminated thereby requiring but one or the same air feed line to convey both a cleanout blast of air and a sanding operation of air to each sand trap. This arrangement will not only conserve pipe but will greatly reduce the cost of the standing arrangement in material, labor and maintenance.

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Spaced a convenient distance from the battery or plurality of sand traps is a valve 5 which may be of the type illustrated and claimed in the United States Letters Patent No. 1,884,227 granted October 25, 1932 to William L. Ranson. This valve particularly designed for use with locomotive sanders teaches the use of a valve having leading thereinto an air supply line 6 which extends to an engine cab (not shown) and is equipped thereat with any suitable control valve (not shown). With this type of valve the operator need only operate the control valve to admit air from a source of supply to the supply line 6. The interior of this valve 5 is so arranged that a cleanout blast of air is allowed to flow through a line 7 for a short predetermined interval to be followed by a sanding operating surge of air through the line 8 alone. Thus from the one valve 5 both a cleanout blast and a sanding operation application of air is emitted.

Interposed between the valve 5 and all of the sand traps is a manifold 9 which may, for the conservation of pipe, be placed near or in the proximity to the valve 5 since the only double piping required in a sanding mechanism embodying the teachings of this application appears between these components, as clearly illustrated by the diagrammatic view in Figure 1. The manifold is a relatively simple and inexpensive article of manufacture for the work performed and many other advantages gained by the use thereof. The manifold, generally of simple casting form with additional attachments associated therewith, comprises a cylinder 10 forming a tubular or main chamber 11 continuous from end to end and having one end 12 thereof closed by a removable plug 13 to arrest the escape of

air therebeyond. Another port or end into the chamber has leading thereinto, the line 7 which, it will be remembered, conveys a cleanout blast from the valve 5. Accordingly when a cleanout blast of air is allowed to pass from the valve to the line 7 it charges the main chamber of the manifold. The manifold has, forming a part of the cylinder, a rectangular depending portion or body 14 having extending rearwardly therefrom a plurality of bosses 15 suitably tapped for the accommodation of mounting bolts 15a which removably secure the manifold to a base or supporting plate 15b (see Figure 3).

Disposed within the body of the manifold are a plurality (herein illustrated as four) of ducts 16 vertically disposed and each separated from one another but communicating through the medium of restricted drillings 17 with the main chamber. These ducts and related drillings are illustrated in longitudinal alignment but it will be clearly understood that any other arrangement or arrangements is contemplated. At the juncture of each duct and drilling there is formed a seat 18 against which a ball 19, while in normal position, is arranged to repose. Each ball is movable toward and away from its related seat and to accomplish this function each duct contains a coil spring 20 or any such resilient or yieldable element which has one end thereof in bearing relation with a related ball. The coil spring is preferred because its end helix presents a natural seat for the accommodation of the ball and thus the latter is retained poised in operable position and at all times urged against its seat 18. Threadedly associated with each duct is a nipple 21 which functions, among other things, as an abutment against which the lower end of the related coil spring bears. This arrangement blends itself well into facilitating the assembly or disassembly of the manifold because by removing a nipple from the body the spring and ball contained therein may be readily removed. Connected to a particular nipple is the single or only required communicating line 22 leading from the nipple to a distant or remote sand trap 2 so that as a cleanout blast is released from the valve 5 the air surges through the line 7 into the main chamber to pass into the plurality of drillings and displace all the balls against the force or action of the ball retaining springs. This displacement of the balls will allow the communicating lines to become charged and thus subject all the sand traps to a clean-out blast application of air. If desired or preferred the sand traps may be each equipped with an open nozzle (not shown) to more accurately direct the application of air to the sand trap. However, this last recommendation is entirely optional. It will therefore be readily appreciated from the above that but a single line is employed to convey air from the manifold to the respective sand traps employed and this single line carries not only the cleanout blast as pointed out but is also utilized to convey a sanding operation of air from the manifold to the sand traps.

This dual line function is made possible by the arrangement and construction of the manifold and toward this end the manifold body has unrelated with the main chamber, a supplemental or auxiliary chamber or compartment 23 which for the sake of compactness and simplicity of design and manufacture is arranged parallel with the main chamber. The supplemental chamber may preferably extend for substantially the entire length of the manifold having communicating therewith at the ends thereof a pair of spaced ports 24 with one of these ports desirably closed by a plug 25 to prevent the escape of air from the auxiliary chamber through this port. Leading into or communicating with the other port 26 into the auxiliary chamber is the line 8 coming from the valve and functioning as a conduit for the sanding application of air from the valve. The auxiliary chamber is therefore continuous from the port 26 to the one port 24 and upon a proper manipulation of the valve, fluid under pressure will surge through the line 8 to charge the auxiliary chamber.

Spaced at suitable or required intervals dependent upon the number of sand traps to be supplied as in the case of the drillings, there appears cross drillings 27 conveniently threaded and extending entirely through two adjacent walls 28 of the body. Disposed within the threaded cross drillings are a plurality (in this particular instance four) of jet plugs 29 each of which contain a jet opening 30 of considerably reduced cross-sectional area than the auxiliary chamber as will be understood.

The jet opening in each jet plug forms a conduit for the passage of a limited amount of air from the auxiliary chamber to the related duct and thereby a sanding operation of air is supplied to each line 22 leading to a sand trap. Thus, by use of the present manifold, both a sanding application and a cleanout blast of air may be supplied to a plurality of sand traps through the use of but a single pipe to each sand trap from the manifold.

While there is shown and described a preferred embodiment of this invention, it should be clearly understood that the illustration herein is not to be considered a limitation of the invention but merely an exemplification thereof and further that various changed and alterations in and of the illustrated structure may be made thereto without departing from the spirit of the invention and scope of the appended claims.

Having thus described this invention, I claim:

1. In a sanding mechanism of the type having a valve and a plurality of sand traps, the combination of, a manifold interposed between said valve and sand traps, dual air lines extending between said valve and manifold for respectively carrying a cleanout blast of air and a sanding application of air to said manifold, and single air lines extending between said manifold and sand traps for conveying both a cleanout blast and sanding operation of air therebetween.

2. In a sanding mechanism of the type having a valve and a plurality of sand traps, the combination of, a manifold interposed between said valve and sand traps, one line arranged to carry a cleanout blast of air from said valve to said manifold, another line arranged to carry a sanding application of air from said valve to said manifold at a different location therein, and single air lines connecting said manifold with said sand traps for conveying both the cleanout blast and sanding application of air from said manifold to said sand traps.

3. In a sanding mechanism of the type having a valve and a plurality of sand traps, the combination of, a manifold interposed between said valve and sand traps, one line arranged to carry a cleanout blast of air from said valve to said manifold, another line arranged to carry a sanding application of air from said valve to said manifold at a different location therein, and

single air lines connecting said manifold with said sand traps for conveying both the cleanout blast and sanding application of air from said manifold to said sand traps: said manifold being so arranged and constructed as to allow both the cleanout blast and sanding application of air to enter thereinto through separate ports and escape therefrom through the same port.

4. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber for the reception of a sanding application charge of air, both of said chambers leading to a plurality of ducts, and single lines communicating with said ducts for carrying both air charges to respective sand traps.

5. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber spaced from said main chamber for the reception of a sanding application charge of air, both of said chambers leading to a plurality of separated ducts, and single air lines communicating with said ducts for carrying both air charges to respective and removed sand traps.

6. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber for the reception of a sanding application charge of air, a plurality of ducts in said manifold, each of said ducts being in communication with both of said chambers, and single air lines communicating with said ducts for carrying both charges of air to respective sand traps.

7. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber for the reception of a sanding application charge of air, a plurality of isolated ducts in said manifold interposed between said chambers, each of said ducts being in communication with both of said chambers, and single air lines communicating with said ducts for carrying both charges of air to respective sand traps.

8. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber for the reception of a sanding application charge of air, a plurality of ducts in said manifold, each duct being in direct communication with said supplemental chamber and in checked communication with said main chamber, and a single air line leading from each of said ducts to carry both air charges to sand traps.

9. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber for the reception of a sanding application charge of air, a plurality of isolated ducts spaced throughout said manifold, a check valve between each duct and main chamber, each of said ducts communicating directly with said supplemental chamber, and a single air line leading from each duct to carry both air charges to sand traps removed from said manifold.

10. In a manifold for use in a sanding arrangement, the combination of, a main chamber for the reception of a cleanout charge of air, a supplemental chamber for the reception of a sanding application charge of air, a plurality of isolated ducts spaced throughout said manifold, a check valve between each duct and main chamber, a jet plug allowing a restricted amount of air from said supplemental chamber to each of said ducts, and a single air line leading from each duct to carry both air charges to sand traps.

11. In a manifold for use in a sanding arrangement, the combination of, a main chamber extending for substantially the full length of said manifold for the reception of a cleanout charge of air, a supplemental chamber extending for substantially the full length of said manifold for the reception of a sanding charge of air, said supplemental chamber being isolated from said main chamber, a plurality of disconnected isolated ducts intermittently spaced along said manifold and arranged to receive both charges of air, and a single air line leading from each duct to remote sand traps.

12. In a manifold for use in a sanding arrangement, the combination of, a main chamber extending for substantially the full length of said manifold for the reception of a cleanout charge of air, a supplemental chamber extending for substantially the full length of said manifold for the reception of a sanding charge of air, said supplemental chamber being isolated from said main chamber, a plurality of disconnected isolated ducts intermittently spaced along said manifold and arranged to receive both charges of air, a check valve between each duct and said main chamber, a jet means between each duct and said supplemental chamber, and a single air line leading from each duct to remote sand traps.

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No references cited.