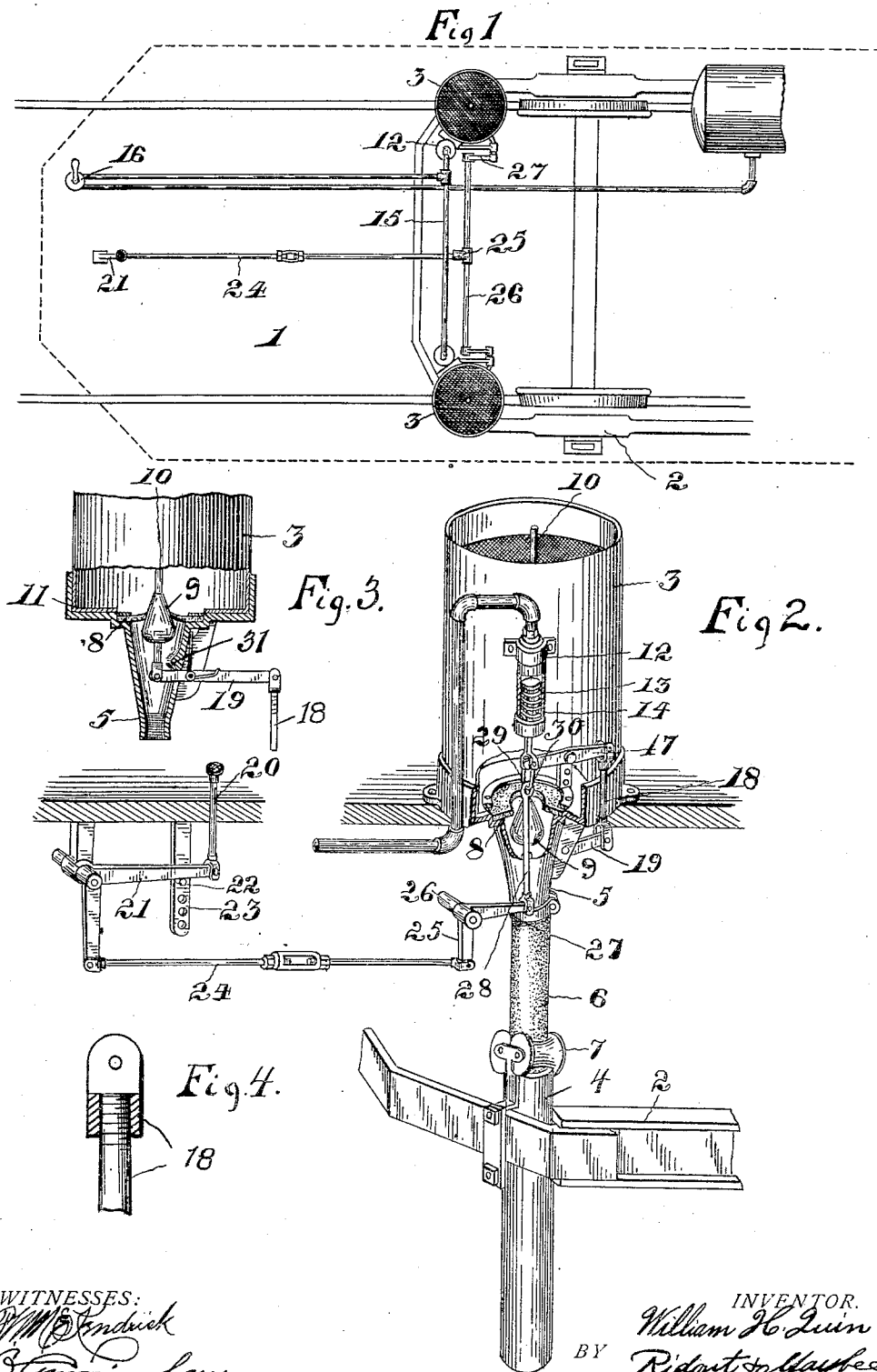


W. H. QUIN.
 SANDER FOR ROLLING STOCK.
 APPLICATION FILED JULY 24, 1908.

929,877.

Patented Aug. 3, 1909.



WITNESSES:
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UNITED STATES PATENT OFFICE.

WILLIAM H. QUIN, OF SWANSEA, ONTARIO, CANADA.

SANDER FOR ROLLING-STOCK.

No. 929,877.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed July 24, 1908. Serial No. 445,167.

To all whom it may concern:

Be it known that I, WILLIAM H. QUIN, of Swansea, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Sanders for Rolling-Stock.

My invention relates particularly to sanders for use on double truck street cars, and my object is to devise a sander which will not only be reliable under all conditions but which will deliver the sand at all times directly on the rails and in front of the wheels.

In double truck cars the swinging of the trucks in passing around curves gives the car body a lateral movement relative to the rails. As it is necessary that the sander be carried by the car body it frequently happens with ordinary sanders that the sand is not dropped upon the rails but falls at one side or the other, and thus its effect is lost. I overcome this difficulty by supporting the delivery tubes from the truck frames in such a manner that their outlets are always above the rails, the sand receptacles being supported on the car body and arranged to deliver to the delivery tubes at all service positions of the trucks relative to the car body.

Figure 1 is a diagrammatical plan view showing part of a car installed with my sander. Fig. 2 is a perspective view, partly broken away, of one of the sanders. Fig. 3 is a sectional detail, partly broken away, showing particularly the construction of the valve. Fig. 4 is a detail sectional view of a connecting rod adapted to adjust the amount of opening of the valve.

In the drawings like numerals of reference indicate corresponding parts in the different figures.

1 represents a car body and 2 a portion of a truck. On the car body are supported the sand receptacles 3 immediately in front of the wheels of the truck, and directly over the rail when the trucks are running on a straight piece of track. Immediately below each receptacle I suitably secure to the truck a delivery tube 4.

As has already been stated, the truck and car body have a lateral movement relative to one another, and it is necessary therefore to provide means for delivering sand from the receptacle to the tube under these conditions. For this purpose I secure to the

discharge spout 5 of the receptacle a flexible tube 6. This is preferably suction hose of a well known type in which a coiled wire is incorporated in the process of manufacture, and which therefore does not readily collapse under pressure. This flexible tube passes well down into the delivery tube, and as the delivery tube and receptacle swing relative to one another the flexible tube draws in and out of the delivery tube and bends to one side or the other between the discharge spout and the upper end of the delivery tube.

In order to guide the tube and ease the friction I journal at the upper end of the delivery tube two friction rollers 7. These are preferably flanged or concave, as shown, so that all the rubbing friction of the flexible tube is in contact with rotatable surfaces. This arrangement gives excellent results in practice, as under all conditions the delivery of the sand is directly on the rail in front of the wheel. I have also provided very simple and effective means for controlling the discharge of the sand.

It will be seen, particularly on reference to Figs. 2 and 3 that there is secured in the bottom of the sand receptacle a diaphragm 8 of rubber, or other flexible material, having a central opening. Controlling this opening is a conical plug 9 preferably entering the opening from the under side. This plug is secured to a rod 10 suitably guided within the receptacle 3. Above the diaphragm, and in contact therewith, is located an annular metal ring 11 which supports the diaphragm and takes a large proportion of the weight of the sand contained in the receptacle from the diaphragm. It is evident that by moving the plug 9 an annular opening of any desired size may be made for the passage of the sand. At the same time, owing to the flexible nature of the diaphragm and the tapered shape of the plug, an effective closure is provided which it will be practically impossible to clog with sand, or small stones.

The plug may be operated in various ways. I prefer, however, to arrange for its operation both mechanically and pneumatically. For its pneumatic operation I provide an air cylinder 12, provided with the usual piston and piston rod 13. The piston is normally retracted by a spring 14 within the cylinder.

15 is an air pipe leading to a valve 16 controlling the admission of air thereto. This valve may, if desired, be an emergency air brake valve whereby the sander may be operated simultaneously with the emergency operation of the brakes.

The piston rod 13 is connected with one end of a suitably fulcrumed lever 17, the other end of which is connected by the connecting rod 18 with one end of a suitably fulcrumed lever 19. The other end of this lever 19 is connected with the rod 10 to which the plug 9 is connected. Thus when air is admitted to the cylinder the plug 9 is drawn down and sand allowed to flow into the delivery tube.

For mechanical operation I provide at the car platform a foot plunger 20, which is pivotally connected with the long arm of the bell crank lever 21, suitably fulcrumed below the car platform.

A bracket 22 is provided adjacent to this lever, which bracket is provided with a series of holes, into any one of which a pin 23 may be inserted to adjustably limit the movement of the lever. The other arm of this bell crank lever 21 is connected by means of the connecting rod 24 with the crank arm 25, secured to the shaft 26, which will be suitably journaled beneath the car body. This shaft is also provided with a crank arm 27 for each sander. Each of these crank arms is connected by a connecting rod 28 with one of the levers 17. Thus by depressing the foot plunger the lever 17 may be rocked and the sander operated as before.

The mechanical operating means will be ordinarily employed, pneumatic operating means being generally used for emergency purposes, in which case a larger flow of sand will commonly be desired. Provision must therefore be made for the operation of the device pneumatically without interfering with the mechanical means, and for a further movement of the sander by the pneumatic means after the plug has been partially opened by the mechanical means. For this purpose the connection between the connecting rod 28 and the lever 17 is preferably by means of a link 29, which passes through a slot 30 formed in the connecting rod 28. This will allow a further movement of the lever 17 after it has been partly moved by a pull on the connecting rod 28, or in any case will allow of the lever rocking independent of the connecting rod.

It will be seen therefore that I have devised simple and effective means for controlling the flow of the sand as well as for conveying it to the desired spot.

I prefer also to provide means for adjusting the opening movement of the plug, and for this purpose I form the connecting rod 18 in two parts screwed together. By dis-

connecting this rod and screwing the parts in or out the rod may be shortened or lengthened and the range of opening of the plug thus varied.

It will be noted on reference to Fig. 3 that just above the slot in the sander through which the lever 19 passes there is formed a lip 31 which serves to project inwardly any sand which might otherwise pass out through the said slot.

What I claim as my invention is:—

1. A car body and a sand receptacle carried thereby, in combination with a truck and a delivery tube carried thereby, a flexible discharge tube connected to the receptacle and sleeved within the delivery tube, and friction rollers journaled one at each side of the upper end of the delivery tube.

2. A car body and a sand receptacle carried thereby, in combination with a truck and a delivery tube carried thereby, a flexible discharge tube connected to the receptacle and sleeved within the delivery tube, and concave friction rollers journaled one at each side of the upper end of the delivery tube.

3. A sand receptacle; and a valve therefor, in combination with mechanical means for opening said valve and pneumatic means for opening said valve, the mechanical means being adapted to permit the pneumatic means to open the valve wider than the mechanical means after the valve has been partly opened by the mechanical means.

4. A sand receptacle; and a valve therefor, in combination with mechanical means for opening said valve and pneumatic means for opening said valve, and means for varying the degree to which said mechanical and pneumatic means may open said valve.

5. A sand receptacle; and a valve therefor, in combination with mechanical means for opening said valve and pneumatic means for opening said valve and means connected with said pneumatic opening means adapted to automatically close the valve when the same is not positively held open by said pneumatic or mechanical means.

6. A sand receptacle; a flexible diaphragm at the bottom of the receptacle having an opening therein; a tapered plug adapted to close the said opening; and means for moving said plug to open and close the opening.

7. A sand receptacle; a flexible diaphragm at the bottom of the receptacle having an opening therein; a tapered plug adapted to close the said opening; an annular metal plate above the diaphragm; and means for moving said plug to open and close the opening.

8. A sand receptacle; a flexible diaphragm at the bottom of the receptacle for an opening therein; a tapered plug adapted to close the said opening from below; an air cylinder; a spring retracted piston therein; a

piston rod secured to the piston; and means forming an operative connection between the piston and the plug.

9. A sand receptacle having an opening
 5 in its bottom, a tapered plug adapted to close the said opening from below; an air cylinder outside of and adjacent to said sand receptacle; a spring retracted piston therein; a piston rod secured to the piston;
 10 and means including a lever system forming an operative connection between the piston rod and the plug.

10. A sand receptacle having an opening
 15 in its bottom; a tapered plug adapted to close the said opening from below; an air cylinder; a spring retracted piston therein; a piston rod secured to the piston; and

means forming an operative connection between the piston rod and the plug, said means being adjustable to vary the move- 20
 ment of the plug relative to the movement of the piston.

11. A sand receptacle; a flexible diaphragm at the bottom of the receptacle having an opening therein; a tapered plug 25
 adapted to close the said opening from below; an annular metal plate above the diaphragm; and means for moving said plug to open and close the opening.

Toronto, Ont., July 20th 1908.

WILLIAM H. QUIN.

Signed in the presence of—

JOHN G. RIDOUT,

F. W. MCKENDRICK.