

UNITED STATES PATENT OFFICE.

JOHN HENRY WATTERS, OF ANNISTON, ALABAMA.

TRACK-SANDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 691,993, dated January 28, 1902.

Application filed August 14, 1901. Serial No. 72,075. (No model.)

To all whom it may concern:

Be it known that I, JOHN HENRY WATTERS, a citizen of the United States, residing at Anniston, in the county of Calhoun and State of Alabama, have invented a new and useful Track-Sanding Device, of which the following is a specification.

My invention relates to certain improvements in track-sanding devices, and has for its principal object to construct a device of this character which may be used for sanding the rails both in front and in rear of the locomotive driving-wheels.

A further object of the invention is to render the device adjustable, so as to feed any desired quantity of sand, and to so construct it as to render it capable of use both as a gravity and jet feed.

A further object of the invention is to provide for the reduction of the strength of the air-blast when feeding under air-pressure in order to avoid the destructive properties of the resultant sand-blast.

A further object is to construct a device which may be attached to any sand-box having either one or two feed-openings and to enable it to be attached to either side of the locomotive without any change or alteration in construction.

With these and other objects in view the invention consists in the novel construction hereinafter more particularly described, shown in the accompanying drawings, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a track-sanding device constructed and arranged in accordance with my invention. Fig. 2 is a similar view showing a modification in which one of the air-jets and the inner tube are removed for the purpose of enabling the device to feed by gravity from a single sand-box connection. Fig. 3 is a detached perspective view of the removable inner tube.

Like numerals of reference indicate corresponding parts throughout the various figures of the drawings.

1 designates a box or casing approximately rectangular in general contour and preferably formed of a single piece of cast metal cored

out to form an inner chamber 2 of the character shown.

In the upper portion of the box or casing are two threaded openings 3 and 4, adapted for connection with the two feed-pipes leading from the sand-box, or if the sand-box be supplied with but one connecting feed-pipe the opening 3 will be closed by a plug 5 and the feed-pipe connected with the threaded opening 4. Immediately below and in the same vertical plane with the opening 3 is a threaded opening 6, from which leads a discharge-pipe 7 of any suitable length and adapted to convey the sand to a point immediately in front of one of the locomotive driving-wheels. At a point above the threads of the opening 6 is an annular seat 8, in which may be placed one end of a removable tube 9, the opposite ends of which are of corresponding size and shape, so that either end may be seated without danger of its being wrongly placed in position. The inner tube 9 may be removed when necessary by unscrewing the plug 5 and drawing the tube out through the opening 3. Extending around the inner tube 9 is a chamber formed by an enlargement of the chamber 2 at this point, and between this chamber and the opening 4 the area of the main chamber is reduced and the lower wall thereof is inclined, as at 10, in order not to retard the flow of the sand toward the opening 6.

At one end of the box or casing, at a point under the feed-opening 4, is a horizontally-disposed air-nozzle 11, adapted to a threaded opening 12, which will permit of the adjustment of the nozzle to a greater or less distance within the chamber 2, and thus increase or decrease the area of sand exposed to its action. The nozzle when adjusted is locked in place by a nut 13.

It has been found that where a jet of air is forced through a contracted nozzle into a sand-chamber a cutting sand-blast is formed, which quickly wears away the inner walls of the chamber or such other parts against which its force may be directed, and to overcome this difficulty I counterbore the end of the nozzle, so as to form an enlarged chamber 14, in which the air after passing the contracted opening 15 may expand to an extent sufficient

to partly destroy its direct force, the chamber being sufficiently long to permit a quite considerable degree of expansion of the air before admitting it to the sand-chamber.

5 The center of the nozzle 11 is in a plane slightly above the upper end of the removable tube 9, and the air-blast will act on the body of the sand beyond the end of the nozzle and will force the sand over to the upper open
10 mouth of the tube, from whence it falls by gravity through the discharge-pipe 7. The angle of rest assumed by the sand fed through the pipe 4 will be approximately that shown by the dotted line 17, and by adjusting the
15 air-nozzle 11 to a greater or less distance within the chamber 2 the quantity of sand exposed to its action may be governed to any desired extent.

Should the air fail and a gravity-feed be de-
20 sired, the tube 9 is removed, and the sand will flow by gravity from the opening 4 out through the discharge-pipe 7, or the sand-feed pipe leading from the sand-box may be connected directly to the opening 3 and per-
25 mit of a straight vertical flow of the sand through opening 3 and pipe 7. The air tube or nozzle 11 may under some circumstances be entirely removed and the opening 12 closed by a plug 18, as shown in Fig. 2.

30 In order to provide for a sand-feed to the rear of a driving-wheel, one end of the casing 1, preferably at a point immediately under the air-nozzle 11, is made in the form of an ejector-nozzle 20, extended out from the body
35 of the casing for a distance sufficient to permit the sand to flow into such nozzle without discharging by gravity therefrom.

Arranged concentrically with the nozzle 20 is an air-nozzle 21, screwed into an opening
40 in the casing and adapted to convey a blast of air through the ejector-nozzle and by the creation of partial vacuum at this point induce the flow of sand from the chamber. The air-nozzle opening has a vertical portion 22,
45 provided with a threaded opening in the bottom of the box or casing for the reception of an air-supply pipe 23, the location of the opening in the bottom of the box or casing permitting of the attachment of the air-tube on
50 either side of the locomotive, and so avoiding the necessity of making right and left handed castings, such as would otherwise be required if the nozzle connection were arranged on the side of the casing.

55 In the bottom of the box or casing 1 and in vertical alinement with the feed-opening 4 is a threaded opening 25, adapted to be closed by a removable plug 26, so that in the event of any clogging of the sand the removal of
60 the plug will permit access to this portion of the box or casing.

With a device constructed as herein shown and described connections may be made with
65 any existing type of sand-box and any desired feed may be had, either by gravity or under the influence of an air-jet, while owing to the arrangement of the threaded openings

access may be had to all portions of the interior chamber for the removal of any sand or gravel which may cake therein. 70

The device is at all times under the control of the engineer, and sand may be directed therefrom either to the front or to the rear of the driving-wheels, as may be required.

Various changes may be made in the struc- 75 ture herein described within the scope of the claims without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described my invention, what 80 I claim is—

1. A device of the class specified, comprising a box or casing having sand inlet and outlet openings, and an air-nozzle having a contracted neck and an enlarged discharge- 85 opening.

2. A device of the class specified, comprising a box or casing having sand inlet and outlet openings, and an air-nozzle having at its discharge end an elongated expansion- 90 chamber.

3. A device of the class specified, comprising a box or casing having sand inlet and outlet openings, and an air-nozzle adjustable longitudinally within said box or casing to re- 95 duce or increase the volume of sand exposed to its action.

4. A device of the class specified, comprising a box or casing having at its top two openings for feed-pipe connections, and a bottom 100 discharge-opening in vertical alinement with one of said openings, said bottom opening being arranged within the angle of rest of sand entering through the top opening with which it is not in alinement, a removable discharge- 105 tube removably seated at the mouth of the discharge-opening, and an air-nozzle arranged within the box or casing in a plane above the mouth of said discharge-tube.

5. A device of the class specified, comprising a box or casing having an inlet-opening 110 and a lower discharge-opening, a reversible double-ended tube having its opposite ends contracted in similar manner and adapted to a seat in the mouth of the discharge-open- 115 ing, whereby either end of the tube may be seated without alteration in the height of the inlet-mouth of the tube.

6. A device of the class specified, comprising a box or casing having inlet and discharge 120 openings, a removable tube seated in the mouth of the discharge-opening, and an air-nozzle carried by the casing and adjustable from and toward said tube.

7. A device of the class specified, comprising a box or casing having inlet and discharge 125 openings, a removable tube seated in the mouth of the discharge-opening, an air-nozzle carried by the casing at a point above the inlet end of said tube and adjustable from and 130 toward said tube, and means for locking said nozzle in adjusted position.

8. A device of the class specified, comprising a box or casing having an inlet-opening,

a discharge-opening arranged in the bottom of the same, a second horizontally-arranged discharge-opening, and an air jet or nozzle arranged concentrically of said horizontally-disposed opening.

5 9. A device of the class specified, comprising a box or casing having at its top two openings for feed-pipe connections, and a bottom discharge-opening in vertical alinement with
10 one of the upper openings, a horizontally-disposed discharge-opening arranged in one of the vertical walls of the box or casing and an air-nozzle arranged concentric of the horizontal opening.

10. A device of the class specified, comprising a box or casing having an inlet-opening, and an ejector discharge-opening, an air-nozzle arranged concentrically of the ejector-openings and a removable plug adapted to an opening in the casing at the rear of the ejector
20 discharge-opening.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN HENRY WATTERS.

Witnesses:

W. H. CALL,

RUSH LUTTRELL.