

(No Model.)

3 Sheets—Sheet 2.

C. W. SHERBURNE.
TRACK SANDING APPARATUS.

No. 508,850.

Patented Nov. 14, 1893.

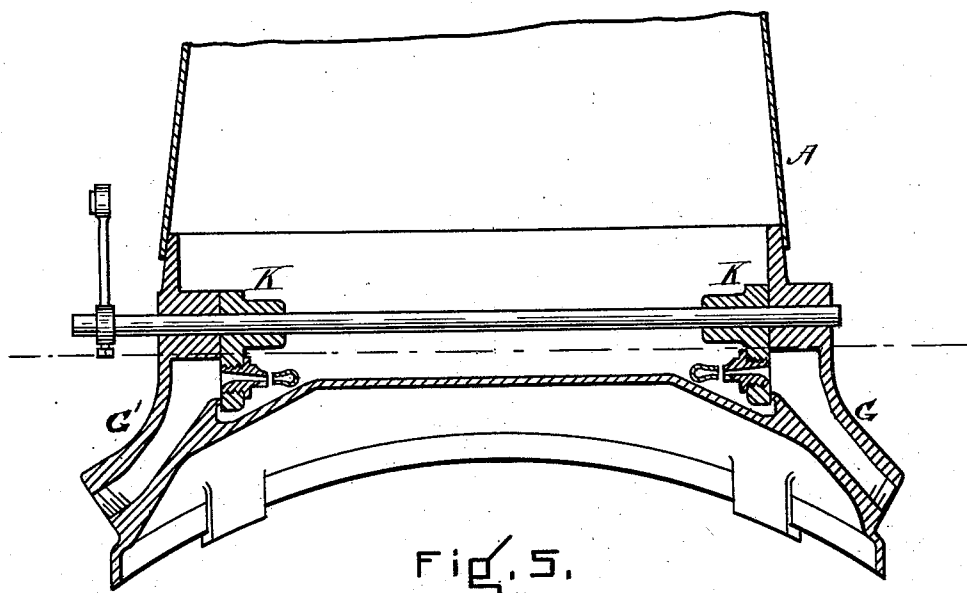


Fig. 5.

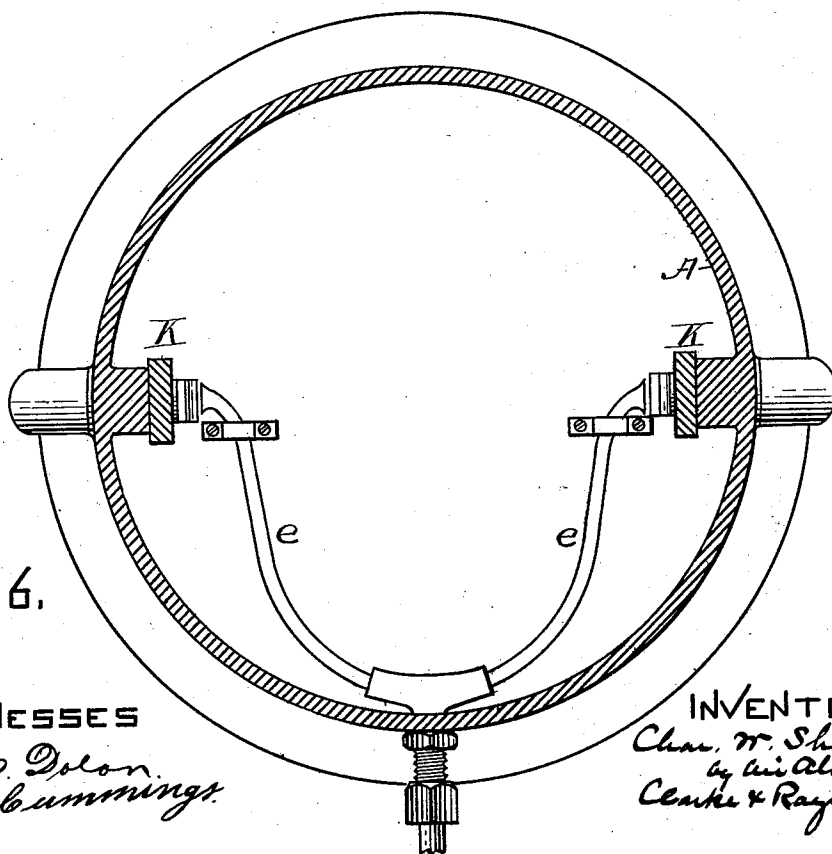


Fig. 6.

WITNESSES

J. M. Dolan.
J. H. Cummings.

INVENTOR

Chas. W. Sherburne
by *Wm. Allen*
Clarke & Raymond

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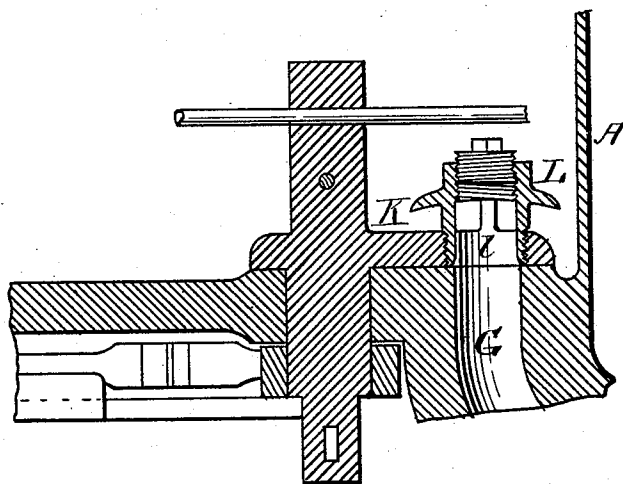


Fig. 7.

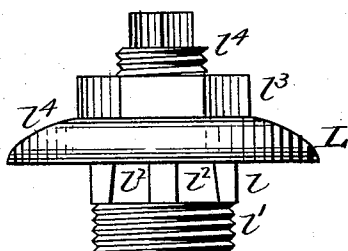


Fig. 9.

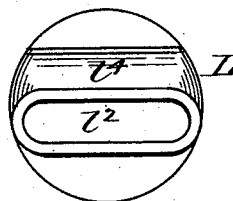


Fig. 10.

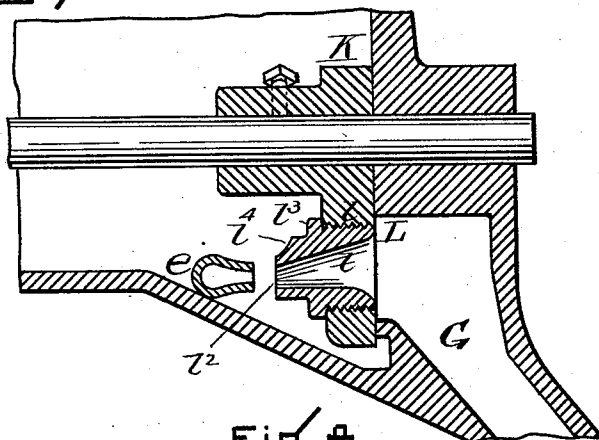


Fig. 8.

WITNESSES

J. W. Dolan.
J. W. Cummings.

INVENTOR

Chas. W. Sherburne
by atty.
Clarke & Raymond

UNITED STATES PATENT OFFICE.

CHARLES W. SHERBURNE, OF BOSTON, MASSACHUSETTS.

TRACK-SANDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 508,850, dated November 14, 1893.

Application filed July 26, 1893. Serial No. 481,519. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. SHERBURNE, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a new and useful Improvement in Track-Sanding Apparatus, of which the following is a full, clear, and exact description, sufficient to enable others skilled in the art to make and use my invention without further invention on their part, reference being had to the accompanying drawings, forming a part of this specification.

By Letters Patent No. 481,595, dated August 30, 1892, I described a combination between the air brake system and the track sanding apparatus, by which track sanding could be accomplished automatically by the air supply of the air brake system; and by Letters Patent No. 489,720, of January 10, 1893, I described a modification of this system, which was applicable to the vacuum brake as well as to the air brake, and which employed a more or less peculiar valve within the sand box proper.

By Letters Patent No. 487,496, of December 6, 1892, the sand box valve and its connection with the sand distributing pipes and with the air brake system was described and claimed.

In a pending application, filed January 3, 1893, Serial No. 457,975, still further modifications of the general idea of air driven sand distributing apparatus are shown and described.

The present application relates to improvements in the apparatus for sand distribution by means of compressed air.

In the drawings,—Figure 1 is a plan of the sand box with air pipes, sand distributing valves, and air controlling valves. Figs. 2 and 3 show an objectionable form of reducer at the coupling of the distributing air pipe within the sand box and the air supply pipe without the sand box, and Fig. 4 shows the form of reducer which I have found advantageous and indeed almost essential to use in such an apparatus as this. Fig. 5 shows a section, and Fig. 6, a plan of an attachment for applying this apparatus to the vertical swinging valve now in use on sand boxes, at comparatively small expense, and Fig. 7 is a section of the horizontal swinging valve now in use fitted with an attachment which renders

it suitable for the present employment; Fig. 9 being an enlarged elevation of the attachment shown in Fig. 7. Fig. 8 is an enlarged section of the device shown in section in Fig. 5, and Fig. 10 is an elevation of the front of the sand valve attachment and of a vertical valve through which air and sand are blown into the sanding pipes.

In the drawings, A is the shell of the present sand box.

G are the pipes which serve to distribute the sand from the sand box to and in front of the driving wheels of the locomotive.

K, Figs. 1 and 7, are the track sanding valves which connect the sand pipes G with the interior of the sand box. These valves, in Figs. 1 and 7, are shown as arranged horizontally. In Figs. 5 and 6, the valves K forming the same connection between the interior of the sand box and the interior of the sanding pipes are shown as arranged vertically. In both cases they cover the opening into the sand box of the track sanding pipes G.

In the Patent No. 487,496, of December 6, 1892, the valves which control the track sanding pipes swing upon a vertical axis and are horizontally slotted from side to side, so as to make, as described in the patent of January 10, 1893, a cover to the track sanding pipe, the edge of which extends laterally a considerable distance beyond the upper inner edge of the track sanding pipes, and to afford a passage beneath the cover from the interior of the sand box to the interior of the track sanding pipe, and also to allow the sand distributing pipes G to be opened to the sand box and permit the sand to be fed by gravity.

It will be observed that in carrying into effect my invention in the manner in which it is described in the patent referred to, it is necessary to provide a new sanding valve which involves either a new valve stem or fitting upon a valve stem and a very considerable amount of machine work, and it will also be noted that in this work the valve is to be through-bored and a screw set in to close the hole in the cover part of the valve. This involves considerable expense, and in many instances special patterns and castings. It is not an uncommon thing either to find as many as five or six different forms of sand valves on one railroad; and therefore, it is

desirable to have only one or two fittings, which can be adjusted to any form of valve. I have therefore, devised for this purpose one form of fitting suitable for application to all or nearly all horizontal swing valves and another form of fitting working on the same principle which is applicable for all or nearly all the forms of vertical swing valves. Both of these forms act on the same principle, and produce practically the same effect.

The form adapted to the horizontal valve is shown in Fig. 9. In this, L is the fitting generally. It is of mushroom form and has a hollow stem l provided at its lower extremity with a screw thread l' and pierced at its sides by windows l^2 ; it is provided with a wrench seat l^3 for driving it in place; and it has a chucking piece at its top l^4 , by which it can be applied to a lathe for the purpose of finishing the screw thread l' . This chucking piece is not absolutely necessary, but is a convenience. Immediately below the wrench seat l^3 is the roof l^4 which extends laterally a considerable distance beyond the openings l^2 to the interior of the hollow stem l . The air pipe which delivers air to this attachment when in position is as shown in Fig. 1 of the drawings, and is like the air pipe which delivers air to the valve described in former patents. It may, if desired, be slightly flattened at the end so as to deliver the air in a comparatively thin sheet instead of in a cylindrical body. If a vertical swinging valve is to be employed, as shown in Fig. 8, the fitting would have the form shown in that figure at L. There would be the same hollow stem l , and same seat for the wrench l^3 , and passage-way into the interior of the hollow stem l^2 , which passage-way would be of a somewhat elongated area, as shown in Fig. 10. The upper side of this, also marked l^4 , would prevent the sand from entering the pipes G unless urged thither by the air blast. The air blast would be derived from the pipes e of Fig. 1 which at their mouths would have the appearance very much of the pipe e in Fig. 8. This fixture then consists of a hollow stem adapted to be inserted into the sand valve and provided with a hood l^4 and with an opening into the sand box. It can be sold separately, can be applied in any machine shop where there is a drill and taps and dies for threading, and need not cause any great expense to a railroad company which shall adopt it.

Fig. 6 shows in plan very well the arrangement of the sand box when vertical valves are employed, and Fig. 5 is a vertical section of the same.

In employing this apparatus, it is necessary to use air pipes of fairly full caliber, because there are liable to be a good many turns or elbows in them, and there is also liable to be some dirt or dust in the air, so that the pipes present, if too small, an undue resistance by friction and a much greater liability to clog. It is, however, important that the quantity of

air delivered shall not be too great and that it shall not be delivered too violently. In consequence of this, it was found necessary to apply a reducer between the air valve on the cab and the air nozzles in the sand box, and in order that this reducer should be at a point where it was easy to get at and clean, it was thought best to place it at the coupling E between the air pipes e in the interior of the sand box and the air pipe E' on the exterior of the sand box; because if placed in this position, by undoing the union joint, the reducer and all beyond it could be readily cleaned out, and so a reducer of the form shown in Fig. 2 and another one of the form shown in Fig. 3 were contrived and applied. In these the air pipe leading from the air valve under control of the engineer is marked E' . The reducing coupling shown in Figs. 2 and 3 is marked B B'. This coupling was a three-armed coupling. The single stem which unites it to the air pipe E' is marked B in Figs. 2 and 3, and the branch stems which unite it to the air pipes e are marked B'. Either of the branches B or B' might be the throttling branch; but these forms shown in Figs. 2 and 3 were not satisfactory, and therefore, a form was adopted such as is shown in Fig. 4. In this E' is the air pipe leading from the air valve and having its source of supply in the brake apparatus. E is the coupling. It is composed of three branches, one of which is lettered b and connects with the air pipe E' . The other two are lettered b' and connect severally with the two air pipes e . A partition b^2 separates the two branches b' from each other, and this partition b^2 is continued into a perforated partition b^3 which is interposed between the hollow of the branch b and the hollows of the branches b' . A very small hole b^4 is made from the hollow b^3 into each of the branches b' and the pipes e and hollows of the branches are of full size. Thus it will be seen that the only chance for obstruction of the air passages on the air from the air valve to the sand valve is at the coupling E, and at that particular part of the coupling which is interposed between the cavity of the branch b and the two cavities of the branches b' , namely, in the two perforations b^4 . If one of these is obstructed, the sand on that side will fail to feed. In such case, to undo the nut E of the union joint outside of the sand box is a very simple and easy thing, and a small wire pushed through the obstructed passage b^4 will clear it out without any particular trouble.

In order that the parts of this apparatus may be properly understood, I have caused them to be lettered where they have not already been referred to as in the patent to which reference has been made.

h is the handle of the engineer's valve.

k is the end of the air valve stem.

n is the eccentric around the stem of the engineer's valve.

h^3 is the handle of the air valve which is moved by the engineer when he desires to

work the air supply valve independently of the engineer's valve.

I is the body of the air valve. The air controlling valve of this apparatus has its shell marked I and its stem marked *k*. The internal construction of this valve is shown in the pending application referred to, Serial No. 457,975. By referring to this air valve hereinafter as I *k*, it will be understood that a valve which controls the air supply is referred to without particular regard to its internal construction.

It is of great importance that the force of the air blast shall not be too great at the sand controlling valves K. A swift or violent current will not only waste sand but will unduly wear the sand controlling valve. By the expansion of the air after passing the reducer, the air blast is made gentle, although it starts with a pressure of about seventy pounds, or even more.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a track sanding apparatus operated by compressed air derived from an air brake system, the combination with the induction air pipe E' leading from the air controlling valve I *k* and in combination with said air controlling valve and the distributing air pipes *e* leading to and delivering air under the covers of the sand distributing pipes G, the reducer E, substantially as and for the purpose described.

2. In an air pressure reducer E, the combination of an induction branch *b* and one or more lateral branches *b'* separated from each

other by the partition *b*² and from the induction branch by the partition *b*³, by the separate perforations connecting the induction branch of the reducer with each respective delivery branch individually, substantially as and for the purpose described.

3. In a pressure reducer of two or more delivery branches, the combination of the individual delivery branches, each of them separated by a partition from the other delivery branches, with the induction branch by perforations which connect the induction branch with the delivery branches individually through a separating partition, substantially as and for the purpose described.

4. In a track sanding apparatus, the combination of the perforated valve K which covers the entry to the sand pipe G with a fixture having a hollow stem adapted to be applied to the perforations through the valve K, openings from said stem into the cavity of the sand box, and a horizontal cover to said hollow stem, substantially as and for the purpose described.

5. In a track sanding apparatus, a valve K in combination with a fixture L, said fixture being formed with a hollow stem, perforations *l*² leading through the walls of said hollow stem from outside to inside, and a horizontally disposed cover *l*⁴ to the cavity of said hollow stem, substantially as and for the purpose described.

CHARLES W. SHERBURNE.

In presence of—

J. M. DOLAN,

F. F. RAYMOND, 2d.