No. 629,857. Patented Aug. 1, 1899.

L. A. HOERR.

TRACK SANDING APPARATUS.

(Application filed Jan. 23, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

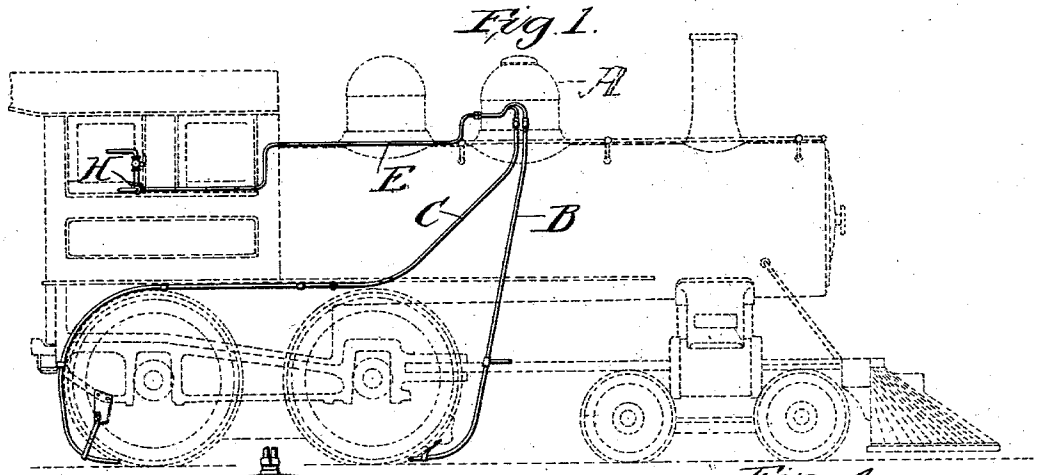


Fig. 2.

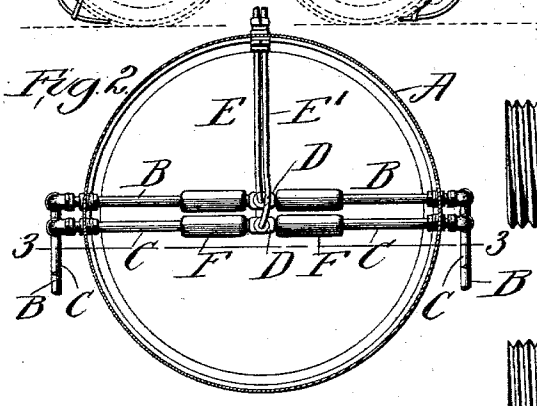


Fig. 4.

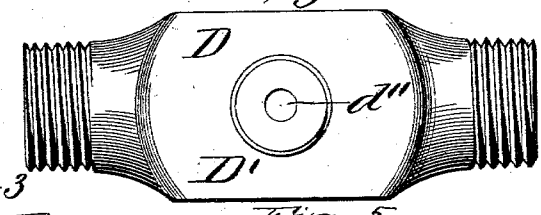


Fig. 5.

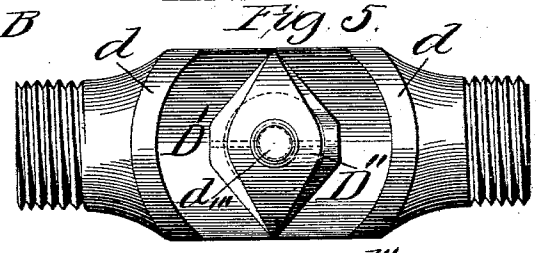


Fig. 3.

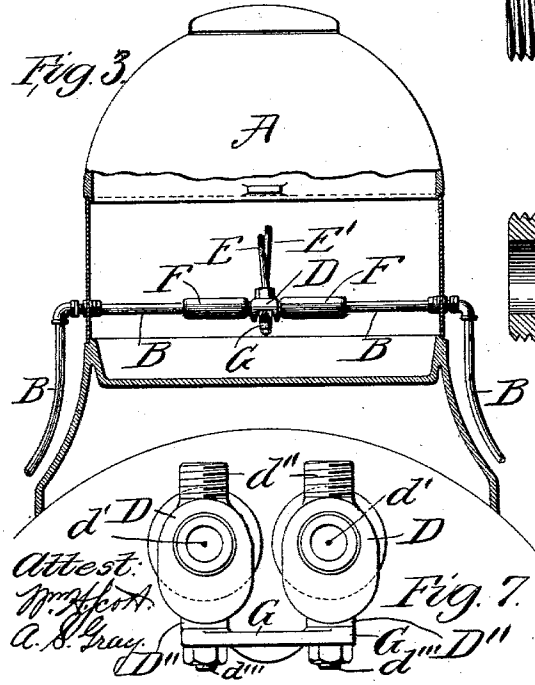


Fig. 6.

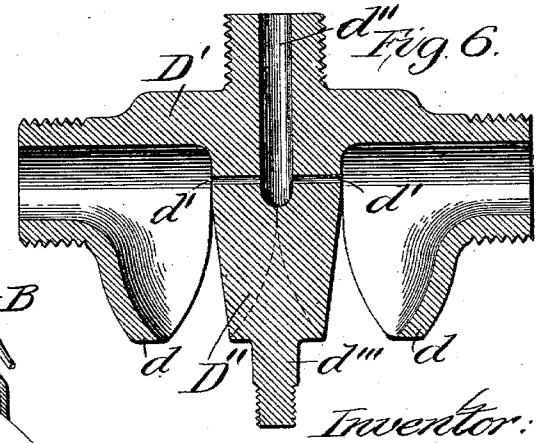


Fig. 7.

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No. 629,857. Patented Aug. 1, 1899.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 8.

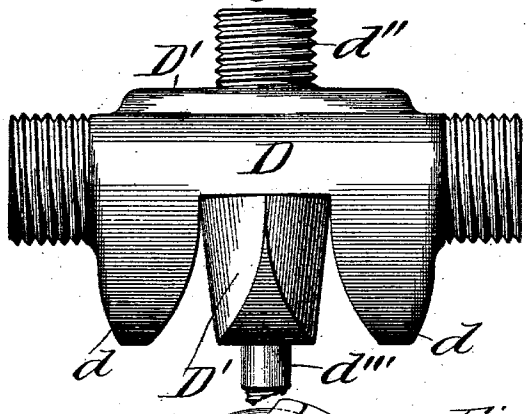


Fig. 9.

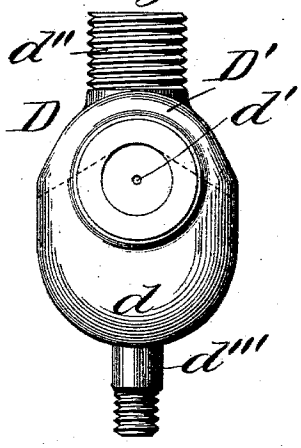


Fig. 10.

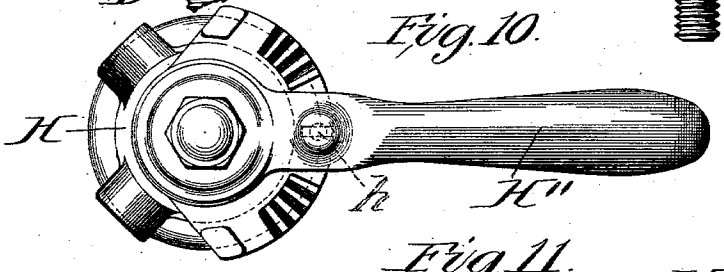


Fig. 11.

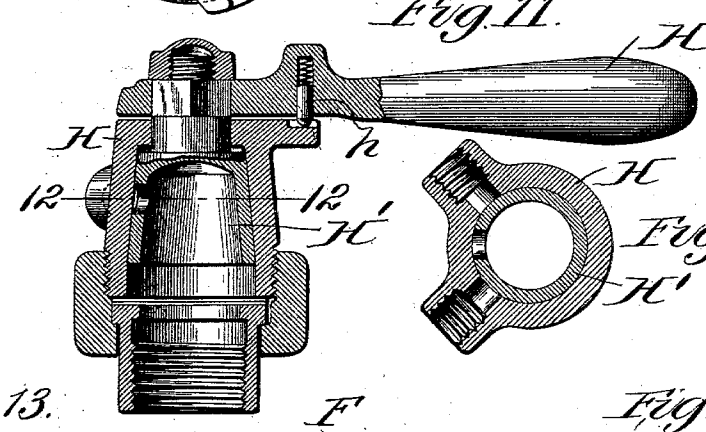


Fig. 12.

Fig. 13.

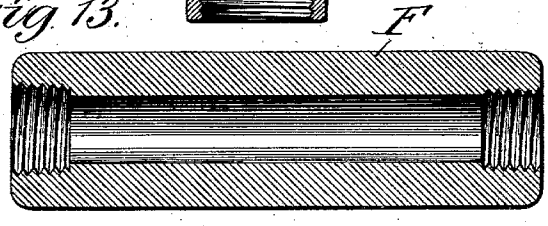
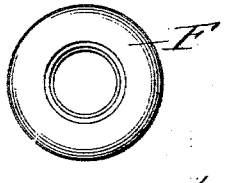


Fig. 14.



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No. 629,857. Patented Aug. 1, 1899.

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TRACK SANDING APPARATUS.

(Application filed Jan. 23, 1899.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 15.

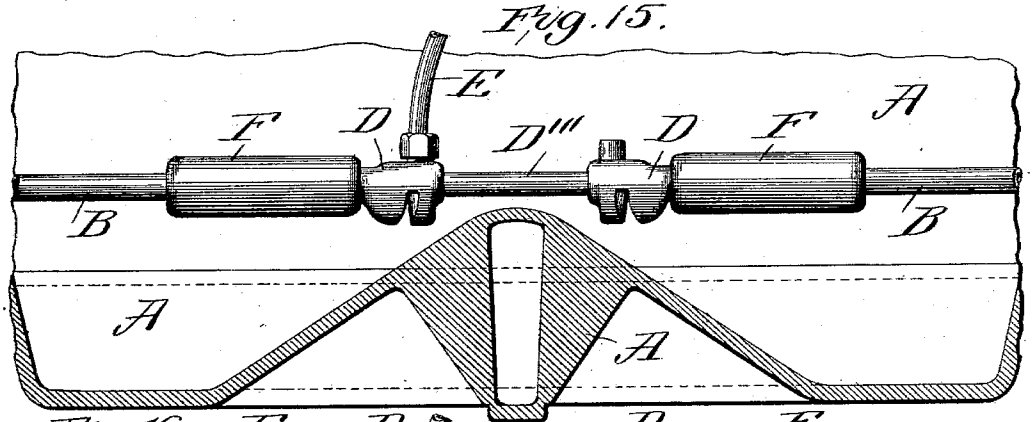


Fig. 16.

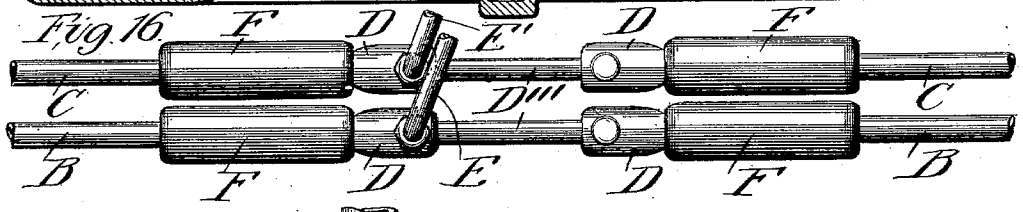
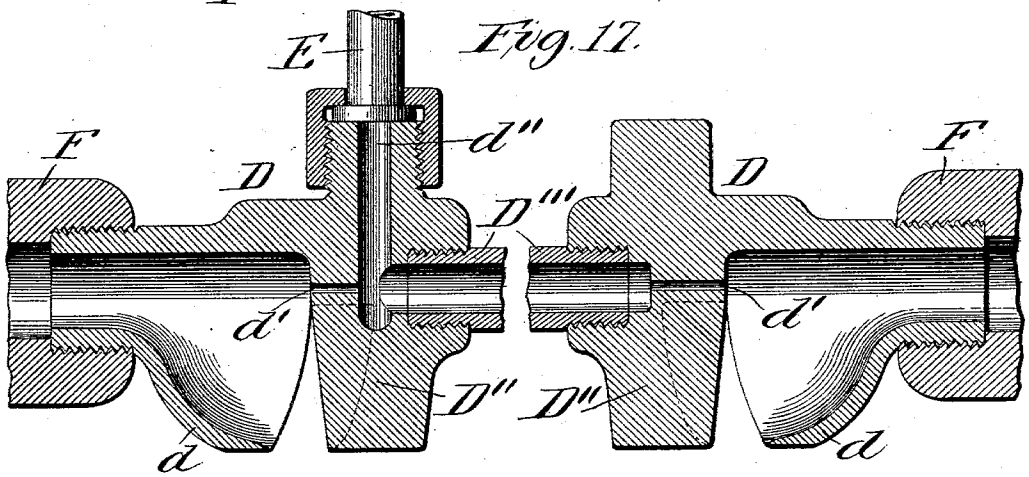


Fig. 17.



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UNITED STATES PATENT OFFICE.

LOUIS A. HOERR, OF ST. LOUIS, MISSOURI.

TRACK-SANDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 629,857, dated August 1, 1899.

Application filed January 23, 1899. Serial No. 703,136. (No model.)

To all whom it may concern:

Be it known that I, LOUIS A. HOERR, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Track-Sanding Apparatus, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view illustrating my improved sanding apparatus in position on a locomotive. Fig. 2 is a horizontal sectional view of the sand-box, showing my improved apparatus in position therein. Fig. 3 is a partial sectional view of the sand-box, taken on line 3 3 of Fig. 2. Fig. 4 is a top plan view of a casting through which compressed air is introduced to siphon the sand out of the sand-box in opposite directions. Fig. 5 is a bottom plan view of said casting. Fig. 6 is a longitudinal sectional view of the same. Fig. 7 is an end elevational view showing the manner of coupling a pair of said castings together. Fig. 8 is a side elevational view of said casting. Fig. 9 is an end elevational view of the same. Fig. 10 is a top plan view of the engineer's valve for controlling the pressure through the siphon. Fig. 11 is a vertical sectional view through said engineer's valve. Fig. 12 is a cross-sectional view through said valve on line 12 12 of Fig. 11. Fig. 13 is a longitudinal sectional view of a short section of pipe used in connection with my improved siphon, the walls of which pipe are thickened for the purpose of lengthening the life of the same. Fig. 14 is an end elevational view of said pipe. Fig. 15 is a sectional view through the bottom portion of the sand-box, wherein a cone is present for delivering the sand to the ordinary valve-controlled sand-delivery pipes, showing my improvement in the form a divided casting with a suitable connection between. Fig. 16 is a top plan view of the same, representing the manner of delivering sand to the front and back drivers; and Fig. 17 is a longitudinal sectional view showing said divided casting and the manner of connecting the two for the purpose of delivering air-blasts in opposite directions in each.

This invention relates to a new and useful improvement in track-sanding devices for railway-locomotives, the object being to provide a device of the character described which will be simple and effective and one which is within immediate control of the engineer.

The invention consists in details of construction and arrangement of the several parts comprising my apparatus, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, A indicates the sand-box, of usual construction, in which the dry sand to be delivered to the rails is placed.

B indicates a sand-delivery pipe, whose end terminates above the rail, said pipe entering into the lower portion of the sand-box.

C indicates a sand-delivery pipe, which I will call the "rear" delivery-pipe, whose end terminates above the rail and which pipe enters into the lower portion of the sand-box. These pipes B and C are duplicated on each side of the box and lead to each rail to deliver sand to both rails, so that the engine will be enabled to grip the rails while going in either direction.

D indicates a casting, which is shown more clearly in Figs. 4 to 9, said casting forming practically a coupling, to each end of which one of the pipes B or C is connected. In practice there are two of these castings for the pipes B and C, and as each is practically a duplicate of the other I will describe but one. This casting D consists of a body portion formed with a nipple or threaded boss, preferably on its upper side, to which is connected a pressure-supply pipe E. The ends of the casting are suitably threaded to receive short sections of pipe F, whose walls are thickened for the purpose of lengthening the life thereof, as the active sand immediately under the force of the blast is liable to wear out a pipe of ordinary thickness in a comparatively short length of time. It is into the outer ends of these sections F that the sand-delivery pipes proper are connected, they passing out of each side of the box to their respective rails. As shown in Fig. 1, the sand-delivery pipes B lead down so as to deliver their sand between the front drivers and the rails on each side, while the rear delivery-

pipes C are carried back behind the rear drivers, so as to deliver sand therebetween and the rails on each side.

To return to the description of the casting D, the casting is formed with two concavo-convex curtain-walls near each end and extending downwardly therefrom, between which walls, which I will mark *d* in the drawings, is left an open space, so that the sand from the sand-box will fill the hollow portion of the casting as high or nearly as high as the bore of the sections F. Depending from the bridge-wall or hood D′ of the casting is a central partition D″, which in transverse section is substantially diamond-shaped, as shown in Fig. 5. This leaves sufficient clearance between this central partition and the curtain-walls on each side thereof for the admission of sand within the casting and also affords sufficient body of metal to enable the boring of the blast-holes to be sufficiently long to give a definite direction to the blast of air which is introduced into the casting at right angles to these blast-openings. The blast-openings are designated as *d′* and open in opposite directions, preferably axially in line with the bore of the sections of pipe F, while pressure from the pipe E supplies compressed air to these blast-openings through an opening *d″* in the casting, as shown in Fig. 6.

In order to hold the castings together, there being usually two in the sand-box, one for the front and the other for the rear sand-delivery pipes, I preferably project a stem *d‴* from the central partition, which receives a connecting-piece G, the lower extremities of said stems being threaded to clamp said cross connecting-pieces in place and firmly hold the castings together. The object of this is to prevent the castings from turning when the several pipes with which they coöperate and which have threaded connections are being screwed into place. A pair of these castings D being coupled together, as shown in Fig. 7, a pipe E leads from one of them—say the one designed to deliver sand to the front sand-delivery pipes—and a pipe E′ leads from the other of said castings or that one designed to deliver sand to the rear sand-delivery pipes. These two pipes E and E′ extend rearwardly into the cab of the engine and connect to a valve-casing H at different points circumferentially, as shown in Fig. 12. Into the bottom of this valve-casing H leads a pipe from some suitable source of air-supply—say from the main reservoir of the air-brake system—which is not shown.

H′ indicates a plug-valve formed with a suitable port and operating in casing H, said valve having a handle H″ arranged on its upper end, whereby when said handle is turned pressure may be delivered to one or the other of the castings in the sand-box at the will of the engineer.

To graduate the supply of sand and at the same time indicate to the engineer the amount of sand being supplied to the rails through either the front or the back sand-delivery pipes, I prefer to form a notched segment on the casing H, with which coöperates a spring-pressed pin *h* in the handle H″. The operation of this valve, it is believed, will be thoroughly understood from the foregoing description.

I am aware that there is in use a sander in which a coupling has two branches so arranged in the sand-box—each of said branches receiving air-pressure—that a blast of air is delivered in opposite directions in either or both at will to supply air to either or both the front and back drivers. In this construction the opening in the wall of the casting through which the sand is admitted to be forcibly ejected into and through the sand-delivery pipes is located practically in the bottom of the casting, or, more strictly speaking, to one side of the bottom, the length of this opening being coincident with the length of the double nozzle which projects air in opposite directions out through the ends of the casting. By having this opening continuous from experiments I have made with this sanding device it is my judgment that the oppositely-directed blasts with continuous pipe counteract each other, with the result that little or no benefit is gained, in that the sand, being porous, will admit air to the casting and the counteracting blasts will have no definite or positive effect on sand located approximately midway the length of the double nozzle, from which point the effect of these oppositely-directed sand-blasts on the sand gradually increases until the ends of the nozzle are reached, at which points the blasts have their greatest effect. Again, if one nozzle is choked the other is practically inoperative in drawing air through the continuous pipe, which is open at both ends to the atmosphere. Under full pressure by the use of the construction above described about four pounds of sand will be delivered through the pipes per minute.

By the use of the construction shown in Figs. 4 to 9, inclusive, it will be noticed that the concavo-convex curtain-walls with a space between permit a large volume of sand to get within the hollow portion of the casting while there is no pressure passing through the nozzles and that when pressure passes through the nozzles it is oppositely directed from each side of a partition-wall which extends clear across the opening or space between the curtain-walls. This blast taken on either side not only affects the sand located thereunder, but sand being permitted to enter the hollow casting from the sides and bottom will likewise be forced outwardly, the diamond-shaped partition readily accommodating the sand in this movement. There being no continuous pipe-opening, the blasts of air cannot counteract nor modify each other, and if one blast is closed or choked the other will operate independently. Each delivery-pipe is independ-

ent, having one end open to the atmosphere and the other opening into a bell-shaped chamber at one side of the partition-wall.

By actual experiment I have been able to eject about eight pounds of sand per minute by the use of my invention.

In Figs. 15 to 17 I have shown a construction wherein the casting is divided practically about midway its central partition-wall, so that a siphon is located at each side of the sand-box. These partition-walls are bored with the blast-openings, as usual, and a pipe D''' used to connect the two openings together and also secure the castings in position. By this means a single supply-pipe is necessary to furnish air to both castings. The operation of the construction shown in Figs. 15 to 17 is the same as that ascribed to the device illustrated on Sheets 1 and 2 of the drawings; but the divided casting shown on Sheet 3 is susceptible, as shown in Fig. 15, of being located on each side of the conically-shaped bottom of the sand-box, and if it is desired to locate the divided castings lower in the box their connecting-pipes D''' can be bent over the conically-shaped bottom, as is obvious.

It will be noted that the construction of the hollow conical-shaped plug-valve, which I have termed the "engineer's valve," is such that the pressure constantly holds it to its seat, and the operation of manipulating the valve will so grind it that a perfect fit is insured at all times.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a sanding device, the combination with a sand-box, of delivery-pipes for the sand entering into the lower portion of said box, the outer ends of said pipe being located in juxtaposition to the rails, and a casting interposed between the ends of said delivery-pipes within the sand-box, said casting consisting of a body portion provided with curtain-walls depending from the ends thereof, said curtain-walls being separated some distance apart to leave lateral and bottom spaces therebetween, a depending central partition-wall located intermediate said curtain-walls, and air-ducts formed through said central partition for forcing the sand within the lines of the curtain-walls into and through the delivery-pipes; substantially as described.

2. In a sanding device, the combination with a sand-box, of delivery-pipes for the sand entering into the lower portion of said box, the outer ends of said pipe being located in juxtaposition to the rails, and a casting interposed between the ends of said delivery-pipes within the sand-box, said casting consisting of a body portion provided with curtain-walls depending from the ends thereof, said curtain-walls being separated some distance apart to leave lateral and bottom spaces therebetween a depending central partition-wall located intermediate said curtain-walls, air-ducts formed through said central partition for forcing the sand within the lines of the curtain-walls into and through the delivery-pipes, a valve for admitting and shutting off pressure to and from said air-ducts, said valve being located within the cab of the engine, and suitable pipe connections between said valve and said casting; substantially as described.

3. The combination with a sand-box, of front and back delivery-pipes which enter the lower portion of said box, castings to which said delivery-pipes are connected, a connection G between said castings, curtain-walls depending from said castings, central partitions intermediate said curtain-walls, nozzle-openings formed in said central partitions and terminating at the faces of said partitions, pressure-supply pipes leading to said nozzle-openings, and a valve for controlling pressure through said pipes; substantially as described.

4. The combination with a sand-box, of front and back delivery-pipes which enter into the lower portion of said box, castings intermediate the ends of said delivery-pipes, said castings consisting respectively, of a body portion having curtain-walls depending from the ends thereof, which walls are separated some distance apart to leave lateral and bottom spaces therebetween, a depending partition-wall located intermediate said curtain-walls, which partition-wall is formed with a thickened middle portion and provided with air-passages, pipes leading to said casting and communicating with the air-passages in their respective central partition, and means for regulating the pressure in said pipes; substantially as described.

5. The combination with a sand-box, of front and back delivery-pipes which enter into the lower portion of said box, castings intermediate the ends of said delivery-pipes, said castings consisting respectively, of a body portion having curtain-walls depending from the ends thereof, which walls are separated some distance apart to leave lateral and bottom spaces therebetween, a depending partition-wall located intermediate said curtain-walls, which partition-wall is formed with a thickened middle portion and provided with air-passages, pipes leading to said casting and communicating with the air-passages in their respective central partitions, means for regulating the pressure in said pipes, said means consisting of a valve comprising a suitable casing formed with a notched segment, a hollow plug-valve in said casing which is seated by pressure, a handle for operating said valve, and a spring-pressed pin on the handle for cooperating with the notches on said segment for determining the registration of the ports

of the valve with the ports in the valve-casing; substantially as described.

6. The herein-described casting consisting of a body portion threaded at each end, curtain-walls depending from said casting near the ends thereof, a partition-wall which is diamond-shaped in cross-section, said partition-wall being intermediate said curtain-walls, nozzle-openings in said partition-wall, which nozzle-openings terminate at the faces of the thickest portion of said partition-wall, a bore with which said nozzle-openings connect, means on said casting for the attachment of a pressure-supply pipe through said bore, and a pressure-supply pipe; substantially as described.

7. The herein-described casting, comprising a body portion D, having curtain-walls D', depending therefrom, and near each end thereof, said curtain-walls being separated some distance apart to leave lateral and bottom spaces therebetween, a depending partition-wall located intermediate said curtain-walls, which partition-wall is diamond-shaped in cross-section, said partition-wall being provided with air-passages; substantially as described.

8. In a sanding apparatus, the combination with a pair of castings, each comprising a body portion, from which depend curtain-walls and intermediate partition-walls, said partition-walls being formed with air-passages, and a cross connecting-piece arranged on the lower ends of said partition-walls; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 18th day of January, 1899.

LOUIS A. HOERR.

Witnesses:
F. R. CORNWALL,
WM. H. SCOTT.