To all whom it may concern:

Be it known that I, JAMES HOGAN, of Chicago, Illinois, have invented certain new and useful Improvements in Automatic Air-Sanding Devices, of which the following is a specification.

This invention relates to a device adapted to be placed in a sand box and arranged to be operated by air pressure, to discharge sand from said box into a guide pipe or conduit.

The object of the invention is to obtain a device which will automatically close to prevent the backward movement of air or air and sand, when for any reason the discharge pipe or conduit becomes closed between said device and the discharge end of said pipe.

A further object is to obtain a device of the kind named which is compact in form, of few parts, which is economically made, and not liable to break or get out of order.

A further object is to obtain a device the shell of which is made in two parts, which are easily separable, and one whereof can be removed from the sand box, or other chamber wherein the device is installed, without requiring the air supply tube or pipe to be broken or disengaged.

Additional objects are disclosed by this specification and the claims.

I have illustrated a device embodying this invention in the drawing forming a part hereof, in which—

Figure 1 is a vertical sectional view of said device; Fig. 2 is a perspective, and Fig. 3 is a side elevation of a modification of the base of the device.

A reference character applied to designate a given part indicates said part throughout the several figures of the drawing.

The device comprises a two part shell; A being applied to the representation of the base, and B the representation of the upper part of said shell. Base A is provided with internal screw threads C which are engageable with corresponding, (but external) screw threads on the sub-base (b) of the upper part B; and with the internal screw threads D which are engageable with ordinary pipe threads. On the under side of table a of said base A, and integral with said table, there is illustrated an abutment, (A'), through which extends the air inlet E; and F is an air inlet pipe from a source of compressed air supply, which is secured to the inlet end of inlet E. Upper part B of the two part shell comprises the sub-base b, the cylindrical part b', and the connecting posts, or standards b'', b'''. In post or standard b'' there is contained the passage-way G; and in sub base b there is an annular groove, H, which registers with the inlet 35 E when the two parts of the shell are joined together in operative position, (as in Figs. 1 and 2). Passage way G communicates at its upper end with the piston chamber I in the cylindrical portion of part B, and said passage way G, annular groove H and air inlet E form the air inlet to said piston chamber. In standard or post b''' there is contained the passage way J. Passage way J extends through the sub base b, and is adapted to discharge air from the piston chamber I into the main passage way K of base A.

L is a short pipe or conduit, which is secured at its inlet end, in the discharge end of passage way J. This pipe (L), is not essential to the operation of the device; but the function of the passage way J being to discharge air, under pressure, to the pipe which is connected to base A by screw threads D, I prefer to extend said passage way a short distance into said pipe. The discharge of air, under pressure, as above set forth tends to draw sand through the space M between sub base b and cylindrical part b', (when valve N, about to be described, is open), and to force said sand through main passage way K and into the pipe which is attached to base A. Sub base b is provided with an aperture therethrough and n is a valve seat to said aperture.

N is a valve which co-acts with valve seat n.

O is the stem to valve N. Stem O is illustrated as consisting of a bolt having head O', at one end thereof, and the external screw threads O'' at the other end; said screw threads engaging with corresponding threads in valve N and with threads in lock nut O'''.

P is a movable piston in piston chamber I, and p is a hollow hub to piston P.

Q is a stationary partition in cylindrical part b' which is provided with a central aperture through which hub p is movable, and Q' is a movable partition, or disk, against the upper surface of which the lower
end of said hub contacts. When air under pressure is admitted to piston chamber I the piston P is forced down and thereby disk Q', is forced down against the upper end of spring R. The lower end of spring R rests on shoulder r, and the forcing down of disk Q' is, therefore, against the resiliency of spring R. The upper face of the disk Q' presses valve stem O upward, (said disk coming in contact with the shoulder on the under side of head O'), thereby yieldingly holding the valve N closed to its seat n. When the disk Q' is forced down by piston P valve stem O is not forced down therewith, but said stem and valve N may then fall, by gravity, from seat n; and in case the device is mounted in a sand box so that said stem is vertical said valve will move from its seat. T is the head of piston chamber I.

To permit the device to be placed in a sand box with stem O in other than a vertical position the small spring S is put on said stem, with the lower end thereof on valve N and the upper end pressing against the under side of disk Q'. Spring S tends to maintain valve N and disk Q' in constant relation with each other; but said spring is of light tension, and when the sand flowing through said valve N becomes clogged in main passage way K, or in the pipe connected thereto, and the pressure in said main passage way is slightly above normal air pressure, said valve is, by said pressure, forced to its seat n, against the resiliency of said spring S. A backward flow of air, or air and sand, through the aperture having said valve seat n thereon, and through the space or aperture M between the sub base b and the cylindrical part b' into the sand box where the device is installed, is prevented. X, (Fig. 1.), illustrates the bottom of a sand box.

In the modification which is illustrated in Fig. 3, the outlet of main passage way K is arranged so that a pipe attached to the base (lettered A'), and communicating with said passage way, is in a horizontal plane. In other respects the construction of base A' is similar to the construction of base A.

The operation of the device is:—Air is admitted, under pressure, through the air inlet to the piston chamber I, piston P is forced down, spring R is compressed, valve N moves from its seat, and sand flows through the device and through the pipe attached to base A. At the same time some of the air in piston chamber I flows thence from passage way J, and tends to obviate pressure in main passage way K, by accelerating the flow of sand therefrom. When, if at all, the pressure in said main passage way rises above normal the valve N is thereby seated, as described.

The purpose of disk Q is to prevent sand getting into the lower end of piston chamber I. It will be observed that screw U (which closes the upper end of passage way J) also serves to regulate the size of the short passage way k in or through the wall of the piston chamber I, (said short passage way forming a part of the air outlet from the piston chamber) so that the quantity of air flowing from the outlet through passage way J does not cause the 75 pressure in said chamber to be materially diminished.

By the construction which is herein illustrated and described all the movable parts of the device are contained in the upper part (B) and said upper part may be removed from base A and from the sand box in which the device is installed, without disengaging the air supply pipe F from said base, and without disengaging said base from the bottom of said sand box. This removal of part B may be required by reason of wear, or because the movable parts have become inoperative or injured, from any cause.

I claim:—
1. An automatic air sanding device comprising a two part shell consisting of a base and an upper part separably joined, said base having a main passage way there through and an additional passage way adapted to form an air inlet, and said upper part having a sub base, provided with a valve seat, a piston chamber, a partition arranged to form the bottom of said piston chamber, said partition provided with an aperture, and connections joining the walls of said piston chamber and said sub base in spaced relation to each other, and said sub base provided with an annular passage way adapted to communicate with said air inlet in said base, a passage way in one of said connections communicating with said annular passage way and with said piston chamber and a passage way in an additional one of said connections communicating with said piston chamber and with said main passage way in said base, means to restrict said last named passage way in said connection, in combination with the valve adapted to co-operate with said valve seat, means to yieldingly hold said valve seat, a movable piston, and connections between said piston and said yieldingly holding means arranged so that forward movement of said piston renders said means inoperative.

2. An automatic air sanding device comprising a two part shell consisting of a base and an upper part separably joined, said base having a main passage way there through and an additional passage way adapted to form an air inlet, and said upper part having a sub base, provided with a valve seat, a piston chamber, and connec.
tions joining said sub base to the walls of said piston chamber in spaced relation, said sub base provided with an annular passage way adapted to communicate with said air inlet in said first named base when said upper part and said base are joined, a passage way in one of said connections communicating with said annular passage way and said piston chamber and a passage way in an additional one of said connections communicating with said piston chamber and with said main passage chamber, and adapted to form an air outlet from said piston chamber, means to restrict the flow of air through said air outlet, in combination with a valve adapted to co-act with said valve seat, means to yieldingly hold said valve to said seat, a piston in said piston chamber, a connection between said piston and said yieldingly holding means to render said holding means inoperative on the forward movement of said piston.

2. In an automatic air sanding device comprising a cylindrical part provided with a piston chamber, a table and standards to maintain said cylindrical part and said table in spaced relation, said table provided with an aperture and a valve seat to said aperture, the combination of a valve arranged to co-act with said seat, a piston in said chamber provided with a hollow hub, a stationary partition provided with an aperture through which said hollow hub is movable, a movable disk adjacent to said partition and adapted to contact with the end of said hub, a stem to said valve, said movable disk provided with a central aperture and said stem movable in said aperture, a head to said stem, said head adapted to enter said hollow hub and of larger cross section than the cross section of the central aperture in said movable disk, and a spring on said table adapted to move said movable disk to seat said valve, said piston and disk arranged so that forward movement of said piston moves said disk to render said spring inoperative relative to the seating of said valve, and means to yieldingly maintain said disk and valve in spaced relation.

3. In an automatic air sanding device, the combination of a two part shell provided with means to separately join said parts, and said parts provided with air inlets which are adapted to register when said parts are joined, and to discharge air under pressure into a piston chamber in one of said parts, a piston chamber, a valve seat, a valve to co-act with said valve seat, a piston in said chamber, and a connection between said valve and said piston so that forward movement of said piston is operative on said connection to permit said valve to move from said seat, and means to yieldingly hold said valve seated when said piston is retracted from its forward position, and a restricted air passage way to discharge air from said piston chamber, independently of the position of said valve, to the discharge side of the valve.

4. An automatic air sanding device comprising a two part shell consisting of a base and an upper part separably joined, said base having a main passage way therethrough and an additional passage way adapted to form an air inlet, and said upper part having a sub base provided with a valve seat, a piston chamber, and connections joining the walls of said piston chamber and sub base, and said sub base provided with an annular groove adapted to register with said air inlet, a passage way in one of said connections communicating at its lower end with said annular groove and at its upper end with said piston chamber, and a passage way in an additional one of said connections communicating at its upper end with said piston chamber and at its lower end with said main passage way, in combination with a movable piston in said piston chamber, a movable disk, a valve to co-act with said valve seat, a valve stem to said valve, a spring between said sub base and said disk and a connection between said valve stem and said disk to yieldingly hold said valve to said seat by said spring, said piston operatively connected to said disk to retract said spring by the forward movement of said piston and thereby release said seating of said valve by said spring.

JAMES HOGAN.

Witnesses:

D. H. GOLDSMITH,
CHARLES TURNER BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."