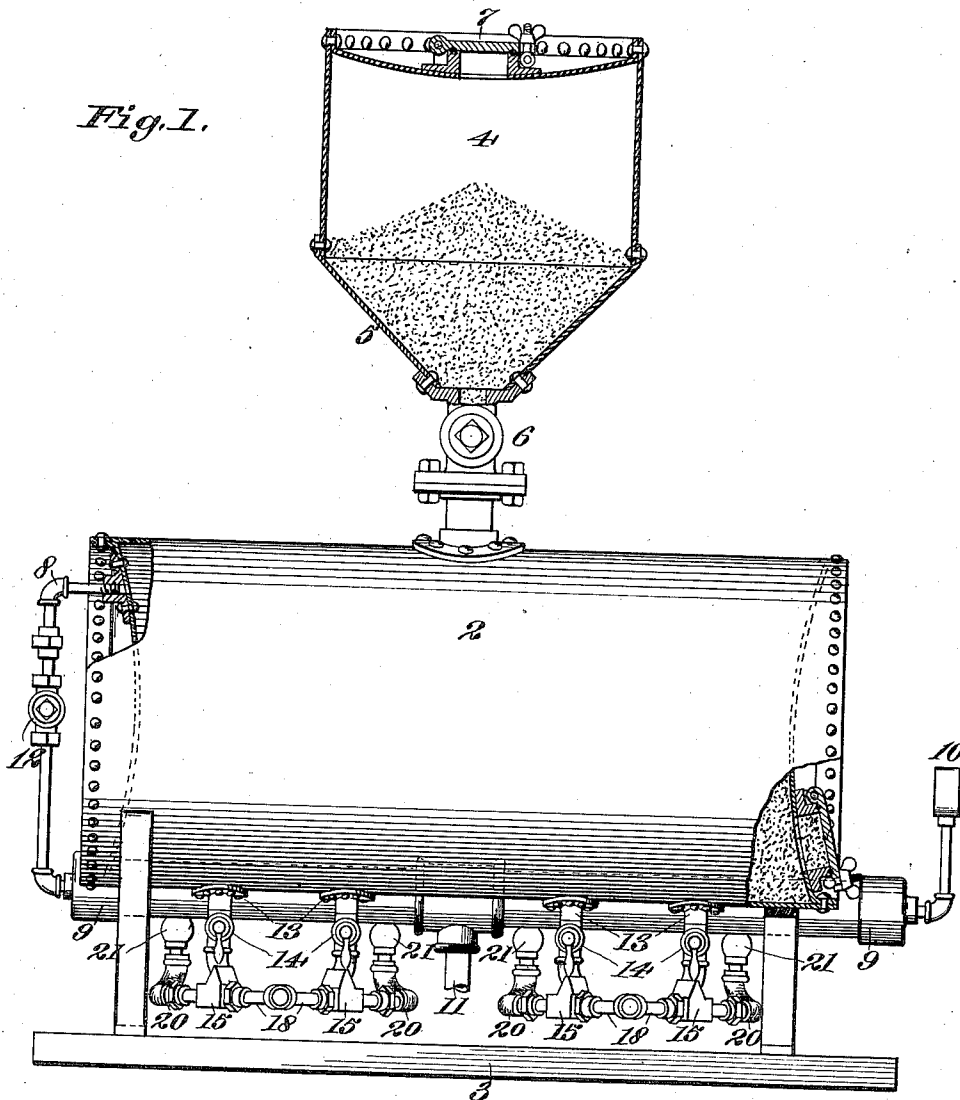


J. C. MYLES & H. GIRVIN.
SAND BLAST.
APPLICATION FILED NOV. 23, 1910.

1,038,781.

Patented Sept. 17, 1912.
2 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

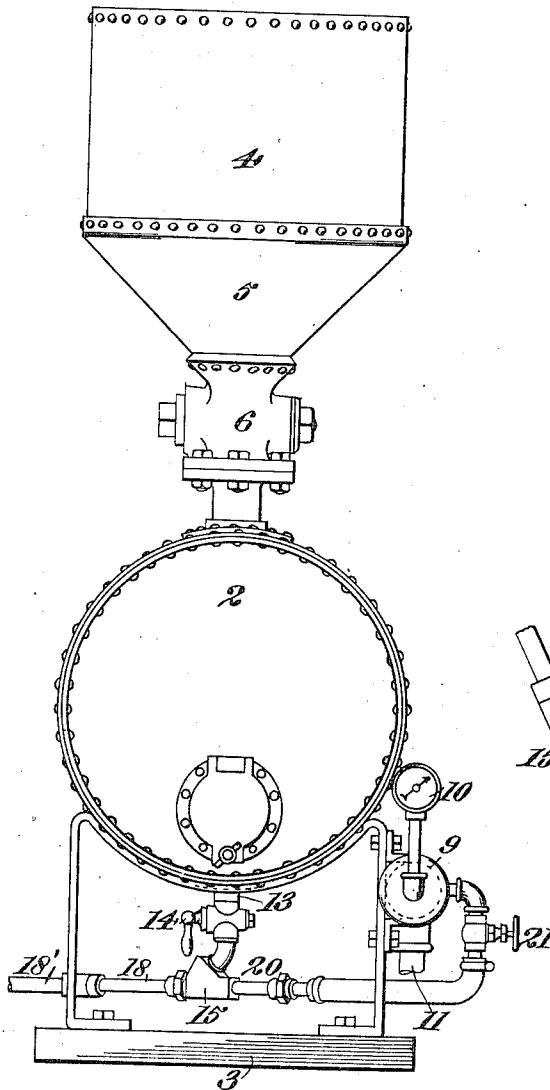


Fig. 3.

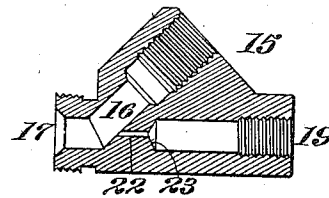


Fig. 4.

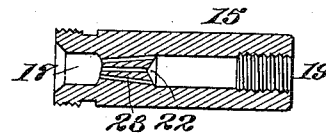
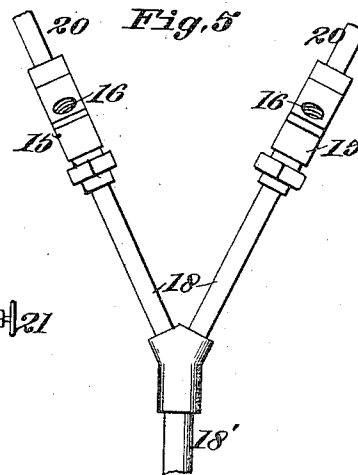


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES C. MYLES AND HAROLD GIRVIN, OF SAN FRANCISCO, CALIFORNIA.

SAND-BLAST.

1,038,781.

Specification of Letters Patent.

Patented Sept. 17, 1912.

Application filed November 23, 1910. Serial No. 593,807.

To all whom it may concern:

Be it known that we, JAMES C. MYLES, a citizen of the Dominion of Canada, and HAROLD GIRVIN, a citizen of the United States, both residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Sand-Blasts, of which the following is a specification.

This invention relates to sand blasts.

The object of our invention is to provide a sand blast embodying means operative to increase the efficiency of the transmission of the sand and air to the place of operation; to increase the height at which the sand and air may be effectively used above the main sand tank; to provide a horizontally disposed sand tank with means for automatically supplying sand to the tank while the apparatus is in use; and principally to provide in combination with a sand containing tank one or more mixing heads or guns especially designed to withstand the wear and to be conducive to the highest efficiency in the mixing and discharging of sand and air.

The invention consists of the parts, details of construction, and the combination of parts as more fully hereinafter described in the accompanying drawings, in which—

Figure 1. is a side view of the apparatus in partial section. Fig. 2. is an end view of the apparatus. Fig. 3. is a central longitudinal section through the gun. Fig. 4. is a vertical central section of the same. Fig. 5. is a plan view of the tube connection.

In the present embodiment of our invention we employ preferably a horizontal cylindrical tank 2 supported in any appropriate manner upon a skid or frame 3, and at the highest point and approximately midway its length there is connected to the tank a superposed supplementary hopper or tank, which in the present instance is shown as a vertically disposed cylinder having a conical bottom 5 and between which and the uppermost surface of the main sand tank 2 is interposed a suitable valve 6. The auxiliary tank 4 is provided at its crown with a suitable trap or cover 7 which may be opened to allow sand to be charged in the auxiliary tank 4, and when closed is adapted to hermetically seal the chamber 4. By opening the valve 6 the sand from the auxiliary tank 4 is allowed to flow in suitable quantities into the horizontal main

tank 2 in which it naturally and automatically spreads or flows to assume an approximately even surface which is exposed to the pressure of air led to the tank A through a suitable pipe or other connection 8 made with one of the end heads of the tank 2 adjacent the top of the tank.

The conductor 8 by which air under pressure is supplied to the tank 2 is connected at its end to what we term an auxiliary air head or chamber 9 which is provided with the pressure gage 10 and may be connected as by a pipe 11 with any suitable source of air supply not shown. If desired a valve 12 may be mounted at any suitable point between the auxiliary air head 10 and the tank 2 to control the discharge of air from one to the other. It will be seen by the provision of this means of supplying air under pressure to the tank 2 that the sand will be subjected to the desired pressure and will flow downwardly through the bottom of the tank past suitable connections 13 and controlling valves 14 thereon into what we term guns 15, which we preferably make of hardened steel for the purpose of increasing their life and durability. Manifestly there may be as many of the discharge connections 13 and guns 15 as the work in hand or the size of the apparatus may require, the sand flowing into the guns 15 through inclined ducts 16, the lower ends of which communicate with the chambers 17 formed in the front ends of the guns.

For the purpose of forcibly conveying the sand from the guns 15 and into suitable conveying tubes or pipes 18, the rear end of each of the guns is provided with the duct 19 which are threaded for connections 20 with the auxiliary air head 9 and in which connections are interposed suitable controlling valves 21. By opening valves 21 air under pressure is conveyed through the connections 20 into the rear end chamber 19 of the guns 15, and the air is preferably reduced to small streams or jets by being forced through small perforations 22 made through the center wall or diaphragm 23.

For the purpose of protecting the walls of the chambers 17 of each of the guns from wear to the greatest possible extent we have found that it is beneficial to make one of the holes 22, as the center one, substantially axial with the chamber 17 and to slightly incline the other holes 22 so that their axes will intersect at a point somewhat in front

of the central orifice 22. By this peculiar and special location the air in the chamber 19 passing through the jet openings, picks up the sand in the chamber 17 and instead of thrusting it against the internal walls of the chambers 17, tends to converge the volume of sand centrally of the chamber by reason of the convergence of the several ducts 22, and thereafter the sand will be forced through the connection 18 to the point of the discharge.

We have found that the efficiency of the apparatus is greatly increased by converging a plurality of the connections 18' from pairs of guns 15 into suitable connections 18 as indicated in Fig. 5 which discharge into a common sand conveying flexible tube or pipe 23 by which the sand is conveyed to the place at which it is to be applied. By this means the combined volume of sand and air from the plurality of guns 15 which lead into the connection 18' is conveyed to the place of operation through a single tube 23, whereas heretofore it has been the common practice to convey sand from the sand tank, wherever it may be located, to the place of operation through two separate and distinct pipes, one for conveying air under pressure and one for conveying a volume of sand. We have found, by actual practice, that we are able to lift and apply sand, with the degree of force necessary, efficiently at as much as a height of 75 feet above the main hopper sand tank 2.

During the practical operation of the sand blast the operator will open the valve 6 as sand is withdrawn from the main tank 2 and allow the same to be recharged from the upper tank 4. Having allowed the contents of the tank 4 to run into the main tank 2, the valve 6 is closed and the cover 7 may be opened and the new charge of sand

put into the auxiliary tank 4 and the cap 7 again closed hermetically sealing the tank 4, and when the valve 6 is again opened the pressure of air in the main tank and the auxiliary tank 4 will be equalized.

As before stated, the bottom of the filling tank is constructed in the shape of an inverted cone causing sand to flow freely to the center and completely enter the tank 2, thus avoiding the accumulation of sand which becomes damp from the condensation of the compressed air.

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

1. A gun for sand blast apparatus having a mixing chamber, a sand passage having an inclined wall leading into said mixing chamber, an air chamber, and needle holes leading from said air chamber into said mixing chamber through the inclined wall of the sand passage.

2. A gun for sand blast apparatus having a mixing chamber, a sand passage substantially the diameter of said mixing chamber and being provided with an inclined wall, an air chamber, and needle holes leading from said air chamber to said mixing chamber through the inclined wall of said sand passage, said needle holes being convergent and having their axes intersecting at a point substantially coincident with the axis of said mixing chamber.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JAMES C. MYLES.
HAROLD GIRVIN.

Witnesses:

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GEO. PIEFGRAS.