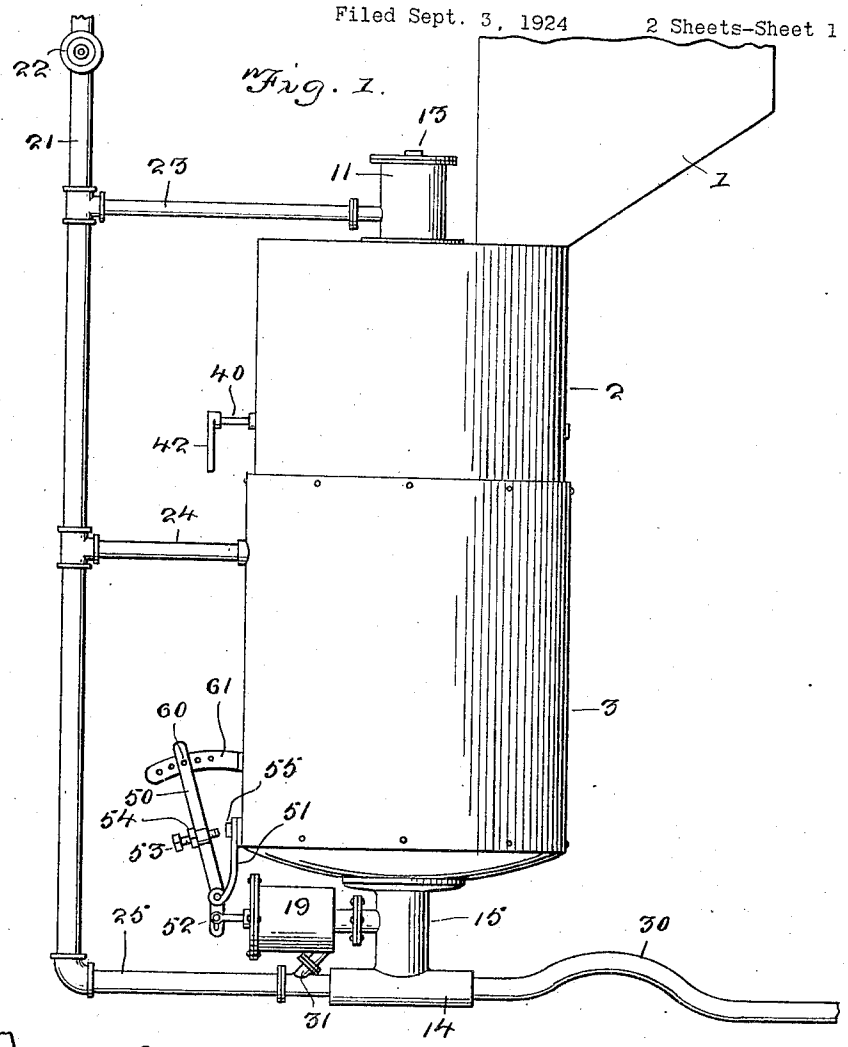
May 18, 1926. 1,585,549

W. JORGENSEN

SAND BLAST APPARATUS

Filed Sept. 3, 1924 2 Sheets-Sheet 1

Fig. 1.



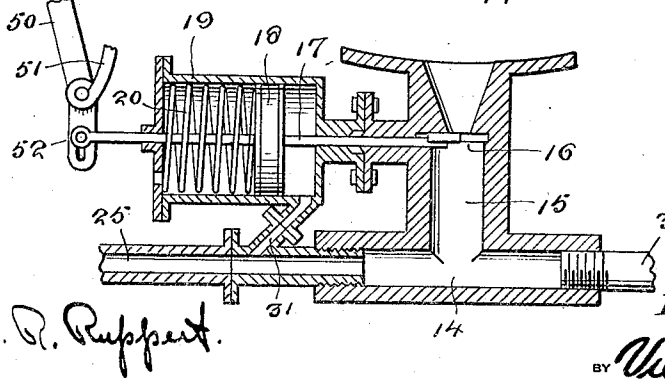


Fig. 3.

E. R. Ruppert.

WITNESS:

W. Jorgensen
INVENTOR

BY Victor J. Evans

ATTORNEY

May 18, 1926.

1,585,549

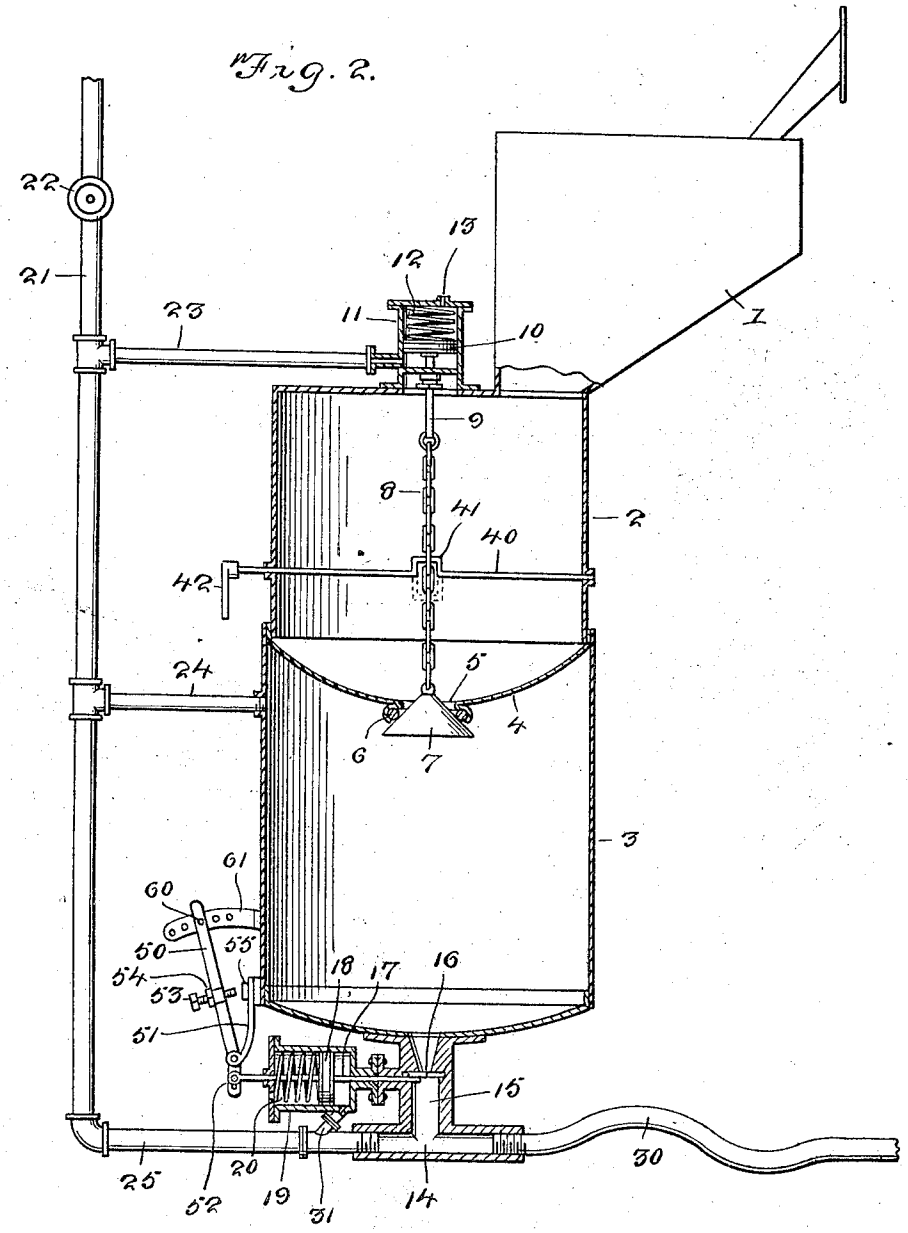
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Filed Sept. 3, 1924

2 Sheets-Sheet 2

Fig. 2.



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UNITED STATES PATENT OFFICE.

WESLEY JORGENSEN, OF CINCINNATI, OHIO.

SAND-BLAST APPARATUS.

Application filed September 3, 1924. Serial No. 735,664.

My present invention pertains to sand blast apparatus, and has for its object to provide improved and practically advantageous automatic control means for the sand valves of the apparatus.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, forming part of this specification:—

Figure 1 is an elevation of a sand blast apparatus of positive pressure type embodying the preferred embodiment of my invention.

Figure 2 is a vertical section of the same.

Figure 3 is an enlarged detail section showing the means for controlling the gate valve of the apparatus.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

I show in Figures 1 and 2 a sand separator 1 arranged to supply sand to a storage tank 2, the said tank 2 being arranged above and adapted to supply sand to a blast tank 3.

A diaphragm 4 is arranged between the tanks 2 and 3 and is provided with a central aperture 5 and a valve seat 6 about the same, a conical valve 7 is arranged to move upwardly and downwardly toward and from the said seat and is connected to a cable 8 which, in turn, is connected to the rod 9 of a piston 10 in a cylinder 11 that surmounts the tank 8. It will be noted here that the piston control for the valve 7 is above the tank 2 and consequently out of the sand which is materially advantageous. The cylinder 11 contains a coiled spring 12 which is disposed above the piston 10; and it will also be noted that the cylinder 11 is provided in its upper head with a vent 13.

Disposed below and connected with the tank 3 is a mixing chamber 14, and arranged to control the conduit 15 between the tank 3 and the chamber 14 is a gate valve 16, Figures 2 and 3. The said gate valve 16 is movable horizontally and is connected to the rod 17 of a piston 18 in a horizontally disposed cylinder 19, the said piston being backed by a spring 20.

At 21 is a pipe adapted to be connected with an appropriate source of compressed air supply (not shown) and valved at 22. The said pipe 21 is provided with branches 23, 24 and 25, the branch 23 being connected with the cylinder 11, the branch 24 leading into the upper portion of the tank 3 and the branch 25 being connected with the mixing chamber 14 at one side thereof. The other side of the mixing chamber 14 is connected with a conduit 30 which may be a hose or the like and which is adapted to be used in the direction of the sand blast to the point or points of use. A branch pipe 31 leads from the portion 25 of the pipe 21 to the cylinder 19.

In the preferred embodiment of my invention, I prefer to employ in the tank 2 a rock shaft 40 having an intermediate crank 41 in connection with cable 8 and also having an end crank 42, the latter being exterior of the tank 2.

I also prefer to employ a lever 50 in conjunction with the gate valve 16, the said lever 50 being fulcrumed on a bracket 51 and being connected at 52 to the rod 17 of piston 18. At 53 the lever 50 is provided with a screw adapted to be adjustably fixed in the lever by a lock nut 54. Said screw 53 is adapted to bring up against abutment 55 on the bracket 51, and in this connection it will be noticed that the lever and its appurtenances thus far described form a means of throttling the sand gate 16 and making it possible to govern the amount of sand passing into the mixing chamber 14. In other words the extent to which the sand gate 16 can be opened depends on the position of the screw 53 which constitutes a stop for said gate. I would also have it understood that the rock shaft 40 and the hand lever 50 provide for the manual operation of the valves when necessity arises, it being noticed in this connection that when the lever 50 is hand operated a pin 60 may be employed in connection with a fixed arcuate and apertured arm 61 to adjustably fix the lever 50 in the position desired.

In the practical operation of my novel apparatus after the tank 3 is filled with sand from the storage tank or bin 2, the valve 22 is opened for the supply of compressed air to the apparatus. At this time a portion of the air under pressure will pass through the branch 23 in the cylinder 11 and cause the piston 10 to move upwardly and will also cause the valve 7 to close against the seat 6 which latter is preferably in the form of a rubber ring. The air under pressure will also pass through the branch 24 into the upper portion of the tank 3 and

hence a pressure of air will be built up in said tank 3. The air under pressure will also pass through the branches 25 and 31 into the cylinder 19 and by acting against the piston 18 will move the gate valve 16 toward the left so that sand will pass from the tank 3 to the mixing chamber 14. The spring 20 back of the piston 18 will be compressed after a certain low pressure is opposed to the resistance of the spring, and in consequence of this there will be a passage of air through the hose or other conduit 30 before the gate valve 16 begins to open. The said gate valve 16 will be entirely open and the spring 20 will be entirely compressed to the extent permitted by the screw 53 at a predetermined pressure figured to be the lowest for employment in the apparatus. From this it follows that the machine will operate efficiently at various pressures.

I would also have it understood that when the valve 22 is closed to shut down the apparatus or to permit of the apparatus being supplied with sand, the apparatus exhausts through the hose or other conduit 30 so that all pressure in the cylinder 19 is released and the gate valve 16 is closed by the expansion of the spring 20; also the air in the tank 3 is released and the valve 7 is opened.

Manifestly in the event of anything happening to interfere with the automatic operation described, the apparatus can be operated through the medium of the crank 42 and the hand lever 50.

I have specifically described the construction and relative arrangement of parts in the preferred embodiment of my invention in order to impart an exact understanding of said embodiment. I would have it understood, however, that the scope of my invention is defined by my appended claim within which changes may be made without departure from my invention.

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

In sand blast apparatus, tanks arranged one above the other, a diaphragm between said tanks and having an aperture and also having a valve seat, a cylinder above the upper tank, a valve opposed to said valve seat, a piston in the cylinder and connected with said valve, means for supplying compressed air to said cylinder, means for supplying compressed air to the upper portion of the lower tank, a mixing chamber disposed below and connected with the lower tank, a valve for controlling communication between the lower tank and the mixing chamber, a cylinder, a piston in said cylinder and connected with the last-named valve, a means for opening the last-named valve, and means for supplying said cylinder with compressed air for the opening of the valve, in combination with a hand lever connected with the last-named piston, adjustable means on said lever for limiting the opening of the last-named valve, and manually operable means connected with the first-named valve.

In testimony whereof I affix my signature.

WESLEY JORGENSEN.