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SANDBLAST APPARATUS

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Fig. 1

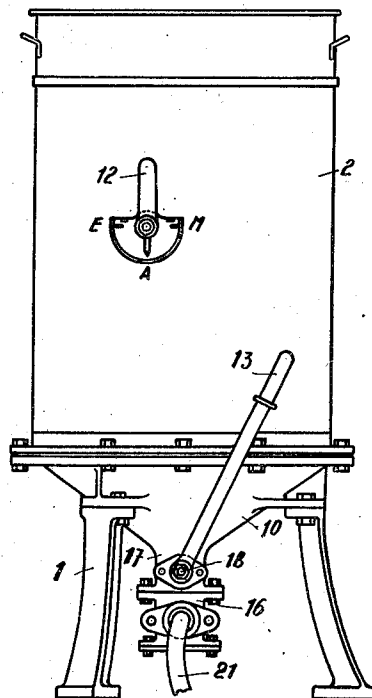
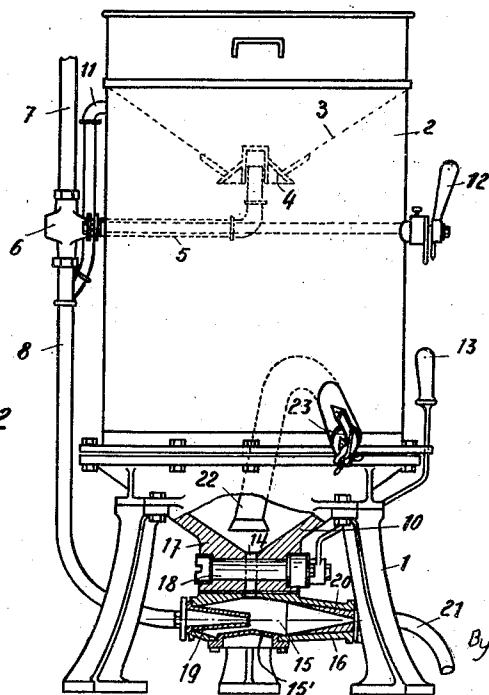


Fig. 2



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SANDBLAST APPARATUS

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1 Claim. (Cl. 51—12)

This invention has reference to sand blast apparatus, in which sand is drawn away by means of compressed air in order to obtain a stream capable of cleansing machine parts or realizing any other industrial use.

In the well known apparatus of this type, the sand contained in a receptacle under pressure runs into a mixing chamber into which the compressed air flows by creating generally eddies and whirls, which prevent to obtain a regular sand stream and necessitate a too large consumption of compressed air.

In order to avoid this inconvenience, according to the present invention, the sand is conducted into a space of the mixing chamber, which is not affected by the airstream in such a way as to be drawn into the air being relatively expended, and then to be expelled from this chamber without formation of eddies. A particularly convenient method of carrying out the invention consists in terminating the air pipe in the mixing chamber according to the vertical axis of the sand outlet passage and in causing the divergent air stream to attain the walls of the mixing chamber at the points where begins a frusto conical duct forming part of said chamber and connected to the sand delivery pipe; thus the sand is mixed to the air stream in a homogeneous manner and remains in this condition until it leaves the delivery pipe. In order further to avoid the formation of a deposit of sand in the bottom of the mixing chamber, the lower wall of said chamber is made tangent to the divergent stream of air, which escapes from the air nozzle. Other novel features of the invention will be apparent in the claims and the description of the accompanying drawing in which:

Figure 1 is an elevation view;

Figure 2 is another elevation view with a longitudinal section in the mixing chamber.

On a tripod 1 is secured in a most convenient way a cylindrical metal receptacle 2 provided inwardly at a determined height with a discharge hopper 3 receiving the sand and closed at its bottom by means of an automatic valve 4. The valve 4 is carried in a sliding way through a pipe 5 terminated externally by a three-way cock 6, to which are connected the air pipes 7 and 8, the first thereof being in relation with an air compressor, and the second leading to a mixing chamber 15, situated under the conical bottom 10 of the receptacle 2, the inner space of the latter being connected to the pipe 8, under the cock 6 by a pipe 11.

The three-way cock 6 is operated by means of a handle 12 arranged at the same side of the receptacle 2 as the lever 13 actuating upon the sand distributor, so that the operator can easily reach the two supply organs.

The bottom 10 of the receptacle 2 is centrally provided with a passage 14 connecting the receptacle with the mixing chamber 15, composed of two frusto conical sections joined at their large bases and forming a frusto-conical nozzle 16, which is affixed to a chest 17 carried by the bottom 10 and containing a stop cock 18 operated by the lever 13 in order to control the sand passage 14.

In the frusto-conical chamber 15, there penetrates axially a conical nozzle 19 connected to the compressed air pipe 8 while there is applied to the opposite frusto-conical wall a frusto-conical nozzle or duct 20 which inwardly contracts the section of this end of frusto-conical chamber 15. A flexible pipe 21, through which the stream of sand passes, extends from the outer end of the nozzle 20.

As Figure 2 shows, the outer end of the nozzle 19 is positioned approximately in the axis of the passage 14, so as to be situated slightly on the side and at the commencement of the maximum opening of the frusto-conical chamber 15. Consequently the stream of compressed air escaping from the nozzle 19 produces at the base of the passage 14, when the latter is uncovered by the stop cock 18, a depression causing the sand to fall regularly into the mixing chamber 15, without provoking therein air eddies and whirls, which are prejudicial to a normal working of the sand blast apparatus. Moreover the air flowing out from the nozzle 19 expands in the mixing chamber 15, thus giving to the sand and air mixture a homogeneity, which is maintained to the delivery pipe 21 owing to the fact that the duct 20 constricts the cross sectional area of this end of the chamber 15.

Finally the deposit of sand in the bottom of the mixing chamber 15 is prevented by shaping the part 15' thereof tangentially to the divergent air stream escaping from the nozzle 19.

For working, the operator removes the handle 12 from the off position A to the working position M (Figure 1) so as the compressed air comes at the same time in the pipe 5 to lift up the valve 4 and in the pipe 8 to enter the mixing chamber 15 in order to be mixed with the sand escaping from the receptacle 2.

If the passage 14 of said receptacle is ob-

structed, it may be easily cleared as follows: after closing the cock 18, the handle 12 is removed in the position E (Figure 1) in which the compressed air is sent only into the mixing chamber 15, and the cover 23 of a curved tube 22 terminating in said chamber above the passage 14 is taken off. By opening then the cock 18, compressed air is suddenly sent into the passage 14 so that the obstruction materials are thrown back out of the receptacle 2 by means of the tube 22.

In order to avoid when the three-way cock 6 is wholly closed that the air remaining in the receptacle 2 and mixed with dust passes in the pipe 5 and from there in the cock 6 by wearing out the same, compressed air escapes by the pipe 11 and flows directly into the pipe 8 without traversing the cock 6.

I claim:

20 In a sand blast apparatus, a sand receptacle

having at its lower part a regulated passage, a sand and air mixing chamber communicating with the passage, said mixing chamber being composed of two frusto-conical sections joined at their large bases at the axis of the sand passage, a horizontally disposed air nozzle closing one end of the chamber and extending into the mixing chamber and terminating approximately in the plane of the vertical axis of the sand passage, a frusto-conical duct arranged against the inner wall of the mixing chamber at the end opposite the air nozzle, a delivery pipe extending from said duct, the inner end of said duct being situated in said mixing chamber at the point where divergent air stream escaping from the air nozzle reaches the inner wall of the mixing chamber, the lower part of said mixing chamber being made tangent to the said divergent air stream.

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