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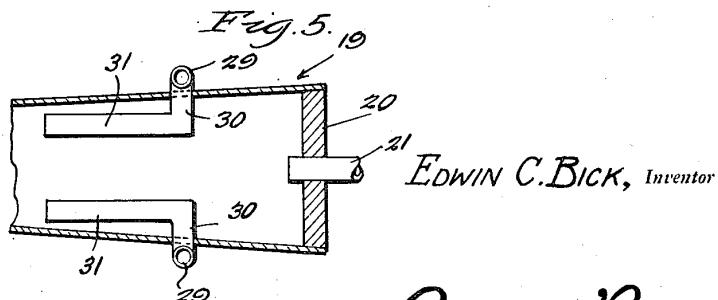
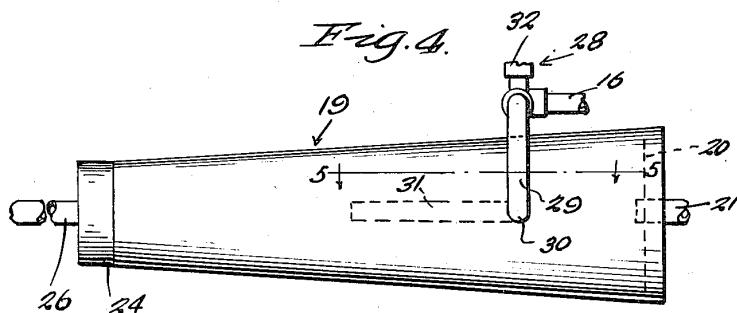
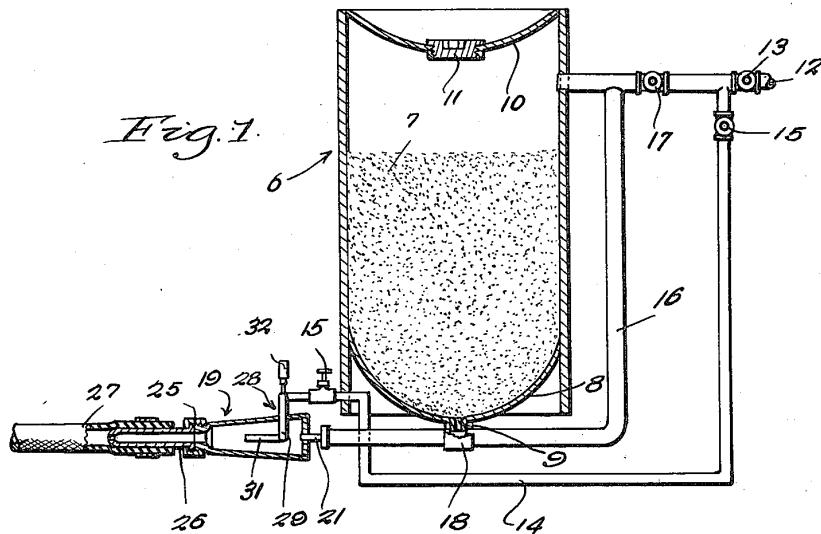
E. C. BICK

2,388,818

REGULATING AND REDUCING ADAPTER FOR SAND BLAST MACHINES

Filed Oct. 10, 1944

2 Sheets-Sheet 1



By *Clarence A. O'Brien*  
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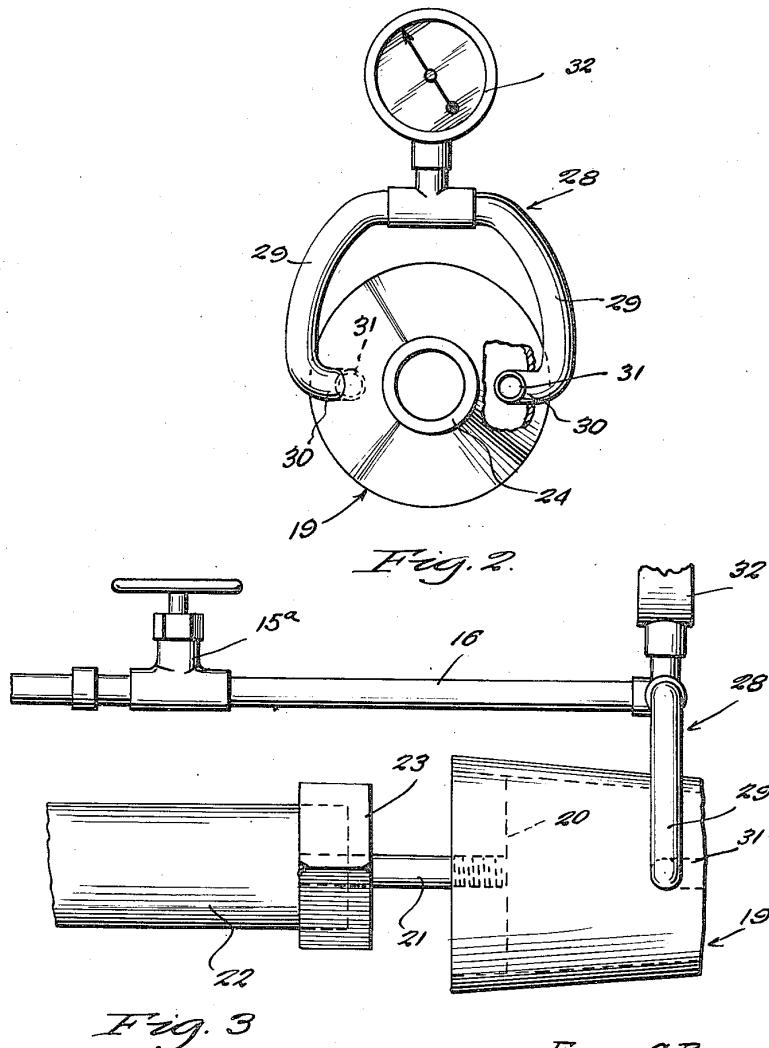
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REGULATING AND REDUCING ADAPTER FOR SAND BLAST MACHINES

Filed Oct. 10, 1944 2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,388,818

### REGULATING AND REDUCING ADAPTER FOR SANDBLAST MACHINES

Edwin C. Bick, Los Angeles, Calif.

Application October 10, 1944, Serial No. 558,034

3 Claims. (Cl. 51—8)

This invention relates to sand blasting machines, and has more particular reference to a novel and improved structure characterized principally by a special adapter to which a delivery hose is connected, said adapter serving to satisfactorily regulate and reduce air and sand blasts issuing therefrom.

In carrying out the principles of the invention, it is my aim to generally improve upon prior known constructions in the same category and to do so through the medium of a simple and expedient assemblage of parts, all of said parts coordinating their proportionate functions in more satisfactorily handling air and sand streams.

More specifically, novelty is predicated upon a tapered adapter unit mounted adjacent the discharge of the sand-containing and delivery hopper, said adapter serving to accommodate the delivery hose and having selectively usable valved pipe lines connected therewith in such a way as to permit the lines to be used singly and collectively, this depending on the results desired.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a view partly in section and partly in elevation showing a complete assemblage constructed in accordance with the principles of the instant invention.

Figure 2 is an enlarged end elevation of the hose end of the adapter, this showing the valved air supply line and especially constructed air jet nozzles connected therewith.

Figure 3 is a fragmentary elevational view showing the adapter and associated sand and air delivery conduits connected therewith.

Figure 4 is an elevational view of the adapter per se.

Figure 5 is a horizontal fragmentary section taken approximately on the plane of the line 5—5 of Figure 4.

Referring now to the drawings by distinguishing reference numerals, and particularly to the general assemblage seen in Figure 1, it will be observed that the container 6 is adapted to be filled with sand 7 and therefore constitutes a supply and gravity-type delivery hopper. It has a semi-spherical bottom 8 with a discharge neck 9 and a concaved, disc-like top 10 with a filler plug 11.

At the upper right in Figure 1, the numeral 12 designates the air supply pipe or line, this coming from the compressor (not shown). This line is provided with a regulating and cut-off valve 13 of appropriate construction. It leads into the upper chamber of the sand hopper above the normal level of the sand for purposes of supplying air thereto and to facilitate forcing sand through the discharge or outlet 9. The numeral 14 designates a suitably-shaped air supply line or pipe, this being connected with the main line 12 adjacent the valve 13 and being provided with a cut-off and control valve 15. A similar complementary and somewhat larger pipe 16 constitutes a by-pass for a limited supply of air, and this has associated therewith a cut-off and regulating valve 17. The horizontal branch of the by-pass is connected with the sand discharge line by a suitable union or coupling 18.

Reference being had now to Figure 4, it will be observed that the adapter device, the important phase of the invention, is denoted, as a unit, by the numeral 19. It is a hollow tapered casing having a plug 20 fitted into its larger end. This plug serves to accommodate a reducing pipe 21 from the sand delivery pipe 22. An appropriate fitting 23 affords a connection between the parts 21 and 22. The opposite end, that is, the discharge end of the adapter, is appropriately constructed, as at 24, to accommodate a coupling 25 which serves to attach a nipple 26 in place. The nipple serves to accommodate the discharge hose 27, which leads to the work (not shown). I now call attention to the means connecting the air line 14 to the adapter at a point outwardly of the sand pipe connection 21. This means is in the form of a yoke 28 which, as shown in Figure 2, has suitably curved branches 29 with lateral bends 30 piercing diametrically opposite sides of the adapter, the inner terminals thereof being of L-shaped form to provide spaced parallel jets or air nozzles 31 (see Fig. 5) leading toward the discharge nipple. As seen in Figures 2 and 3, there is a valve 15a in this air line adjacent the yoke, and said yoke is also provided with an appropriate pressure gauge 32.

It is evident that the main air supply comes from a compressor and is fed into the device by way of the delivery line 12. The valve 13 serves to either regulate the flow or to cut it off, as desired. The valve 15 is the air supply to the sand reducer adapter device 19, this controlling the air fed through the air pipe or line 14, and from the latter by way of the yoke 28 into the adapter. The valve 15a coacts with the valve 15, the two



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valves being thought necessary, under certain circumstances, to obtain the desired regulation and adjustment. The valve 17 regulates the air supply into the sand hopper 6 and also into the bypass 16, which part is connected to the hopper and also to the adapter device.

By closing the valve 15, all air and sand go to said blast hose for heavy cleaning. By closing valve 17, the flow of sand can be reduced for cleaning of fine materials or for very fine work.

By closing the valve 17, the hose 21 can be used to blow away any sand left on the work, the air then coming through the line 14, with the valve 15 open, and feeding through the air nozzle 31 into the adapter, and then into the hose.

By regulating and adjusting the two valves 15 and 17, any amount of sand wanted in the hose can be had, that is, from no sand at all and all air to all the sand and air which can be fed into the hose with both valves open. The adapter can thus be utilized as a mixing chamber for air and sand, the respective valves being regulated according to the discretion and experience of the operator in order to ascertain the desired results. It is not the purpose here to attempt to cover every phase of the operation, since I am interested in the construction herein shown and described.

This mixing adapter will mix all kinds of liquids, including steam, air and sand, and miscellaneous small abrasives for cleaning purposes and small mixing jobs.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

## I claim:

1. In a structural assemblage of the class described, a container constituting a sand-holding and delivery hopper, a valved compressed air pipe connected with said hopper to force sand therefrom, the hopper being provided at its lower end with a discharge for the sand, a by-pass pipe having a vertical branch connected with the compressed air pipe and having a horizontal branch

connected with said sand discharge, a single valve in said compressed air pipe adjacent said by-pass to permit air to circulate through the main compressed air pipe into the hopper, and a predetermined portion to circulate around and through the by-pass, and a reducing adapter provided with a delivery hose, the adjacent end of said by-pass being connected with said adapter, and a direct air supply pipe connected by a valved connection with said compressed air supply line and also connected at its opposite end with said adapter, this by way of a yoke-like device having branches piercing and entering diametrically opposite sides of the adapter and terminating in nozzles to feed air in a direction toward the discharge end of said adapter.

2. As a new article of manufacture, a mixing adapter for a sand blast structure of the class described comprising a tapered hollow shell having a hose connected to one end, and a valved air and sand delivery pipe connected to its opposite end, together with a pair of parallel nozzles on the interior of said adapter, external branch pipes connected with said nozzles, and a valved air supply line connected with said branch pipes.

3. In a structural assemblage of the class described, a sand-containing and delivery hopper, a valved compressed air pipe connected to the upper portion of said hopper to introduce air under pressure and force sand from the hopper, the latter being provided at its bottom with a discharge for said sand, a by-pass pipe connecting and communicating with the compressed air pipe at one of its ends, the intermediate portion of said pipe being connected with said sand discharge, a regulating valve also mounted in said compressed air pipe, this for coaction with the by-pass to permit air to circulate through the main compressed air pipe into the hopper and a predetermined portion to circulate around and through the by-pass, and a reducing adapter shell provided with a sand discharge and delivery hose, the adjacent end of said by-pass being connected with said adapter shell, a direct air supply pipe connected by way of a valved connection with said compressed air supply pipe and also connected with said adapter, and means connecting the last-named end of said direct air supply pipe embodying nozzles on the interior of the adapter shell to feed air in a direction toward the discharge end of said shell.

EDWIN C. BICK.