

(No Model.)

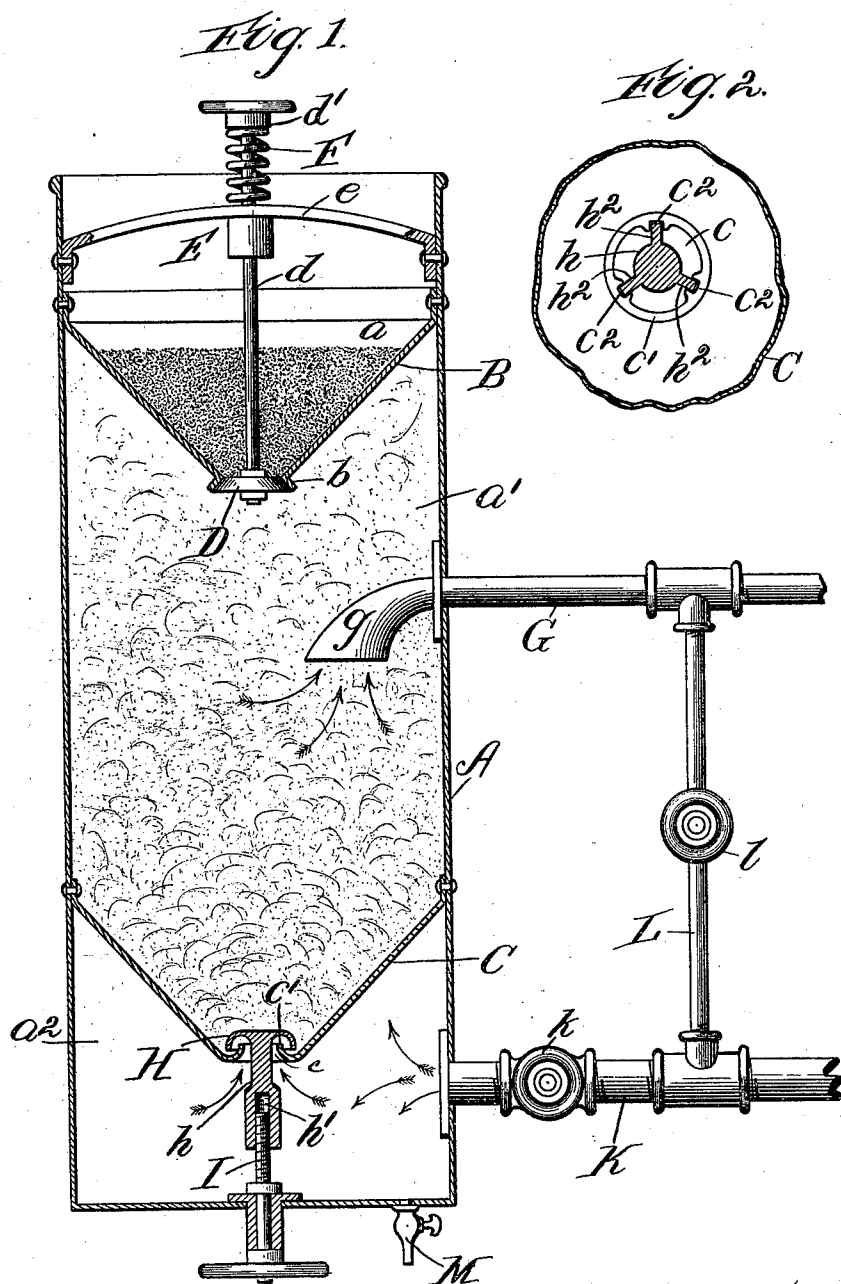
2 Sheets—Sheet 1.

J. E. PARKER.

SAND BLAST APPARATUS FOR CLEANING MOLDS.

No. 554,299.

Patented Feb. 11, 1896.



Witnesses:
A. A. Durand,
Reta M. Wagner.

Inventor:
John. E. Parker.
By. Chas. S. Page Atty.

(No Model.)

2 Sheets—Sheet 2.

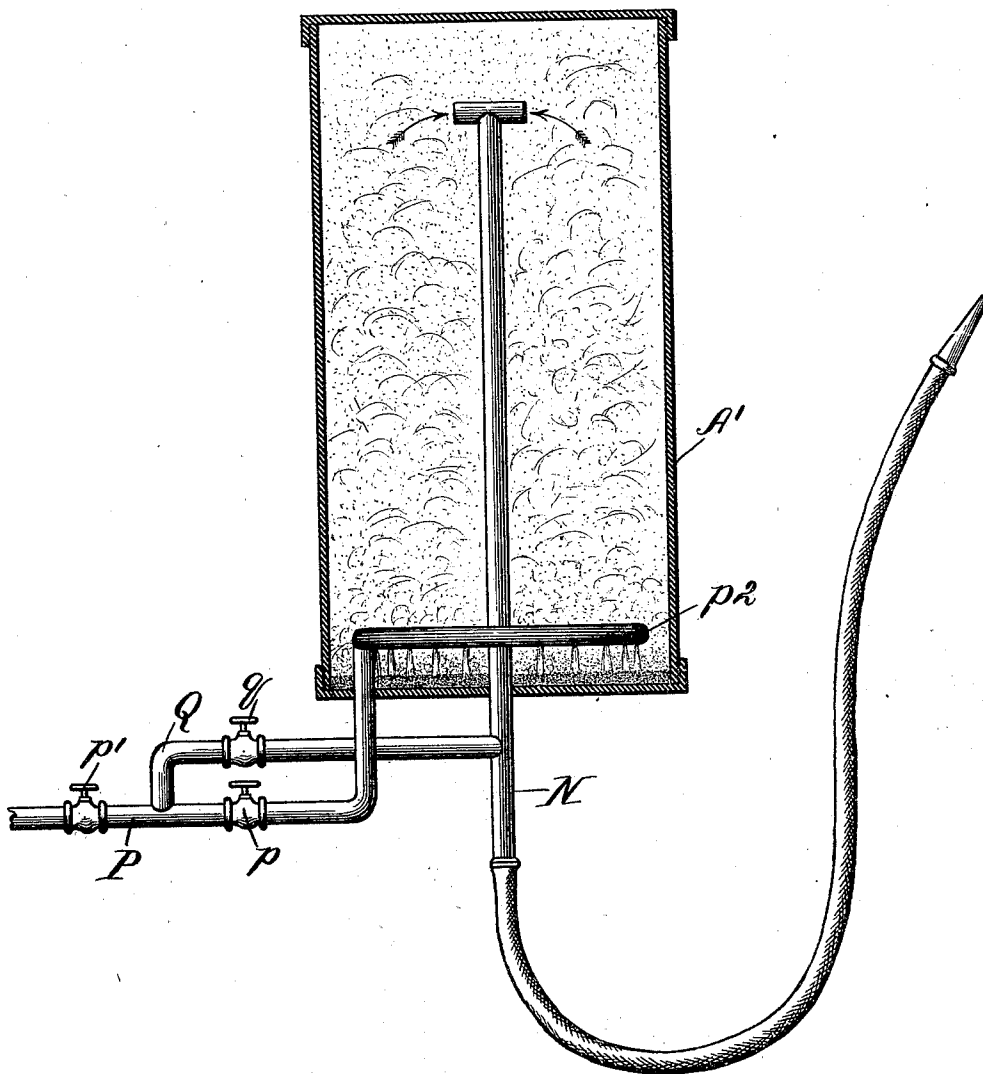
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN E. PARKER, OF CHICAGO, ILLINOIS, ASSIGNOR TO FRED W. MORGAN
AND RUFUS WRIGHT, OF SAME PLACE.

SAND-BLAST APPARATUS FOR CLEANING MOLDS.

SPECIFICATION forming part of Letters Patent No. 554,299, dated February 11, 1896.

Application filed April 30, 1895. Serial No. 547,618. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. PARKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Sand - Blast Apparatus for Cleaning Molds, of which the following is a specification.

The object of my invention, generally stated, is to provide a simple and efficient sand-blast apparatus for cleaning molds. In molding rubber goods it becomes necessary to clean the molds after each operation, and to do this by hand involves much time and labor. These molds can, however, be rapidly, effectively, and economically cleaned by a blast of finely-ground and bolted sand, it being observed that the sand must be thus ground and bolted, so as to avoid cutting the molds. The sand after being thus ground and bolted resembles meal or flour, and hence, while an ordinary sand-blast apparatus may successfully discharge a blast of coarse sand for the purpose of cutting glass and the like, such an apparatus as commonly found in use is not fitted for handling finely-ground and bolted sand, owing to the liability of the same to cake and clog. An apparatus embodying my invention is particularly designed for the use of such finely-ground and bolted sand, and as a further object I largely free the air-blast from moisture before the air-blast enters the sand. I also provide means whereby the volume of sand in the blast can be varied at will.

In the accompanying drawings, Figure 1 represents, in vertical central section, an apparatus embodying my invention, the pipes being, however, shown in elevation. Fig. 2 is a section taken horizontally through the stem *h* of the deflector *H* at a point just above the neck *c'*, which surrounds the opening in the bottom of the chamber *a'*. In this figure a portion of the bottom *C* of said chamber is shown broken away. Fig. 3 shows, in vertical central section, a somewhat different arrangement, involving, however, a modified arrangement of by-pass.

Referring to Figs. 1 and 2 of said drawings, A indicates an upright drum or casing, which is divided by partitions *B* and *C* into the three

compartments or chambers *a*, *a'*, and *a''*. The chamber *a* forms a receptacle or hopper for a supply of sand, and to such end the partition *B* is desirably made conical, so as to afford a suitable bottom for the hopper. This hopper is valved, so that from time to time a proper quantity of sand can be supplied to the chamber *a'*. As a simple arrangement, the lower portion of the partition or hopper-bottom *B* is provided with a centrally-arranged discharge-opening and flared outwardly around the same, as at *b*, so as to provide a seat for the downwardly-opening valve *D*. The stem *d* of this valve works through a bearing *E* on a cross-bar *e*, and a spring *F*, which acts to normally close the valve, is arranged between the cross-bar *e* and a shoulder *d'* on the upper end of the valve-stem. The discharge-pipe *G* extends laterally from the upper portion of the chamber *a'* and has an enlarged inlet end *g*, which opens within said chamber.

The partition *C*, which forms the bottom of chamber *a'*, is desirably conical, and is provided with a centrally-arranged opening *c* for the admission of the air-blast from chamber *a''* into chamber *a'*. The area of the passage between these two chambers can be varied by an adjustable valve or regulator, and as a matter of further improvement I provide a deflector *H*, which is also arranged to serve as such valve or regulator. This deflector overhangs the opening *c* in partition *C* and has a stem *h* which extends down through said opening. The stem of the deflector has a threaded socket *h'* in which an adjusting-screw *I* engages. The partition *C* is turned up around the opening *c* therein, as at *c'*, and said turned-up portion or neck *c'* is provided with vertical grooves *c''*, Fig. 2, for ribs *h''* on the stem of the deflector, in which way, when the adjusting-screw is turned, the deflector will be held against rotation, but will be permitted to move up or down, according to the direction in which the adjusting-screw is turned. The area of the air-passage between the upper end of the neck *c'* and the overhanging deflector can be varied by raising or lowering the latter, and the upwardly-ascending air-blast will impinge against the deflector and thereby be spread laterally, so as to

be properly diffused in the body of sand in chamber a' . The chamber a' is supplied from the hopper with a suitable quantity of sand, and the air-blast is first let into chamber a^2 from the valved supply-pipe K. The air-blast of course fills chamber a^2 , and from the latter the blast passes up into chamber a' , causing the fine sand in the latter to rise in the form of a cloud. This cloud is carried by the blast into the discharge-pipe G, from which latter the sand-blast can be directed against the molds that are to be cleaned by any suitable pipe connection and discharge-nozzle. In order to regulate the sand-blast, I provide a by-pass consisting of a pipe L connecting the air-supply pipe K with the discharge or sand-blast pipe G. The pipe L is provided with a valve l , and the pipe K is provided with a valve k , which latter is arranged between the chamber a^2 and the point at which the pipes K and L connect.

The air-blast which is directed into the apparatus through the pipe K can be varied by adjusting the cock or valve k , and by adjusting the cock or valve l a portion of the air-blast can be directly admitted into the sand-blast pipe G, so as to vary the quantity of sand in such blast.

The chamber a^2 also forms a drip-chamber to collect the moisture which accumulates upon the under side of the conical partition C. The chamber a^2 is therefore provided with a drip-cock M, which can be opened when it becomes necessary to drain off any water which has accumulated in said chamber.

Fig. 3 represents a sand-blast apparatus which is described in another application for Letters Patent of the United States, executed by me of even date herewith, and filed April 30, 1895, and serially numbered 547,619. Said apparatus involves certain details which differ in construction and arrangement from the construction and arrangement shown in Figs. 1 and 2, but it involves a modified arrangement of by-pass. In said Fig. 3 the discharge or sand-blast pipe N extends upwardly and centrally through the bottom of the drum or casing A' and has a T-shaped receiving-end portion arranged within the upper portion of the chamber within said casing. In both constructions, however—that is to say, in the constructions illustrated by both Figs. 1 and 3—the sand is placed within a closed chamber having at its bottom an air-blast inlet which is covered by the sand so as to direct the air-blast into the body of sand, and an outlet sand-blast pipe which leads from the upper portion of the chamber. It will also be observed that the blast-inlet in Fig. 1 is an annular passage, and that to a certain extent the perforations arranged in annular series in Fig. 3 form an annular inlet, the result in each case being the diffusion of the air-blast in the body of sand. I have therefore elected to incorporate all broad or generic claims in this case, and confine my special claims for such details as may be inconsistent with spe-

cial claims on the matters of Figs. 1 and 2 to my said other application.

The air-blast-supply pipe P is provided with cocks or valves p p' , and terminates in an annular pipe portion p^2 , which is arranged within the lower portion of the chamber in the casing. The annular pipe portion p^2 is arranged around the pipe N, and is perforated so as to discharge the air in jets within the body of sand. The by-pass in this construction comprises a pipe Q, which is provided with a cock or valve q , and arranged to connect the lower portion of the sand-blast pipe N with the air-blast-supply pipe P at a point between the cocks or valves p and p' .

From the foregoing it will be seen that in the apparatus shown in Fig. 1 the main chamber a' , in which the sand is contained, has an air-blast inlet at its bottom, and an outlet for the sand-blast near its upper portion, and that otherwise said chamber is closed, excepting when the valve D is opened to admit a further supply of sand. The drip-chamber a^2 is filled with compressed air during operation, and hence moisture in such air will condense upon the walls of such chamber in place of being conducted into the sand.

With further reference to a matter of construction and arrangement common to both Figs. 1 and 3, it will be seen that the main chamber into which the air-blast is introduced provides a chamber in which a body of sand, forming a supply which is gradually utilized, is primarily allowed to settle at the bottom thereof, and that the air-blast introduced at the bottom of such chamber diffuses itself in the body of sand and causes the latter to gradually rise in cloud form; also, that the outlet is arranged within the upper portion of such chamber and has a relatively small area, thereby insuring the outflow of a blast of air and sand in cloud form, it being observed that the sand employed is ground and bolted sand, resembling meal, and that it is desirable to thoroughly mix the same with the air so as to avoid its exit in lumps or compact quantities.

What I claim as my invention is—

1. A sand-blast apparatus comprising the chamber in which a body of sand constituting a supply which is gradually utilized is contained within the bottom portion of said chamber, means for admitting an air-blast at the bottom of the chamber and for diffusing such blast in the body of sand so as to cause the latter to gradually rise in cloud form; and an eduction sand-blast pipe arranged to take its supply from the sand cloud which thus rises within the chamber, at the upper portion of the latter, substantially as described.

2. A sand-blast apparatus comprising the main chamber in which the sand is contained, a sand-blast pipe leading from said chamber, a drip-chamber communicating with the main chamber, and an air-blast-supply pipe opening into the drip-chamber, substantially as described.

3. A sand-blast apparatus comprising cham-

ber a' for the purpose set forth having an opening in its bottom, a sand-blast pipe leading from said chamber, an adjustable deflector arranged over the opening in the bottom of the chamber, and means for directing an air-blast to said opening, substantially as described.

4. A sand-blast apparatus comprising a chamber in which the sand is contained, a sand-blast pipe leading from said chamber, means for introducing an air-blast into the lower portion of said chamber, and a valved by-pass connecting the said blast-pipe with the air-blast supply, substantially as set forth.

5. A sand-blast apparatus comprising a chamber a' in which the sand is contained, a sand-blast pipe leading from said chamber, an upper hopper-chamber provided with a discharge-valve, a lower drip-chamber communicating with the chamber a' through an opening in the bottom of the latter, and an air-blast-supply pipe arranged to discharge into the drip-chamber, substantially as described.

6. In a sand-blast apparatus, the chamber a' provided with a conical bottom having an opening c therein, a sand-blast pipe communicating with said chamber, the adjustable deflector H arranged over opening c and having a non-rotary but sliding stem portion engaged by an adjusting-screw, and means for supplying blast-air to the said opening, substantially as described.

7. A sand-blast apparatus comprising the chambers a' , and a^2 for the purpose set forth, a sand-blast pipe leading from the chamber a' , a valved air-supply pipe arranged to discharge into the chamber a^2 , and a valved pipe connecting the air-supply pipe with the sand-blast pipe, said chambers being connected by a passage so as to permit the air-blast entering chamber a^2 to pass into chamber a' , substantially as described.

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