

July 8, 1930.

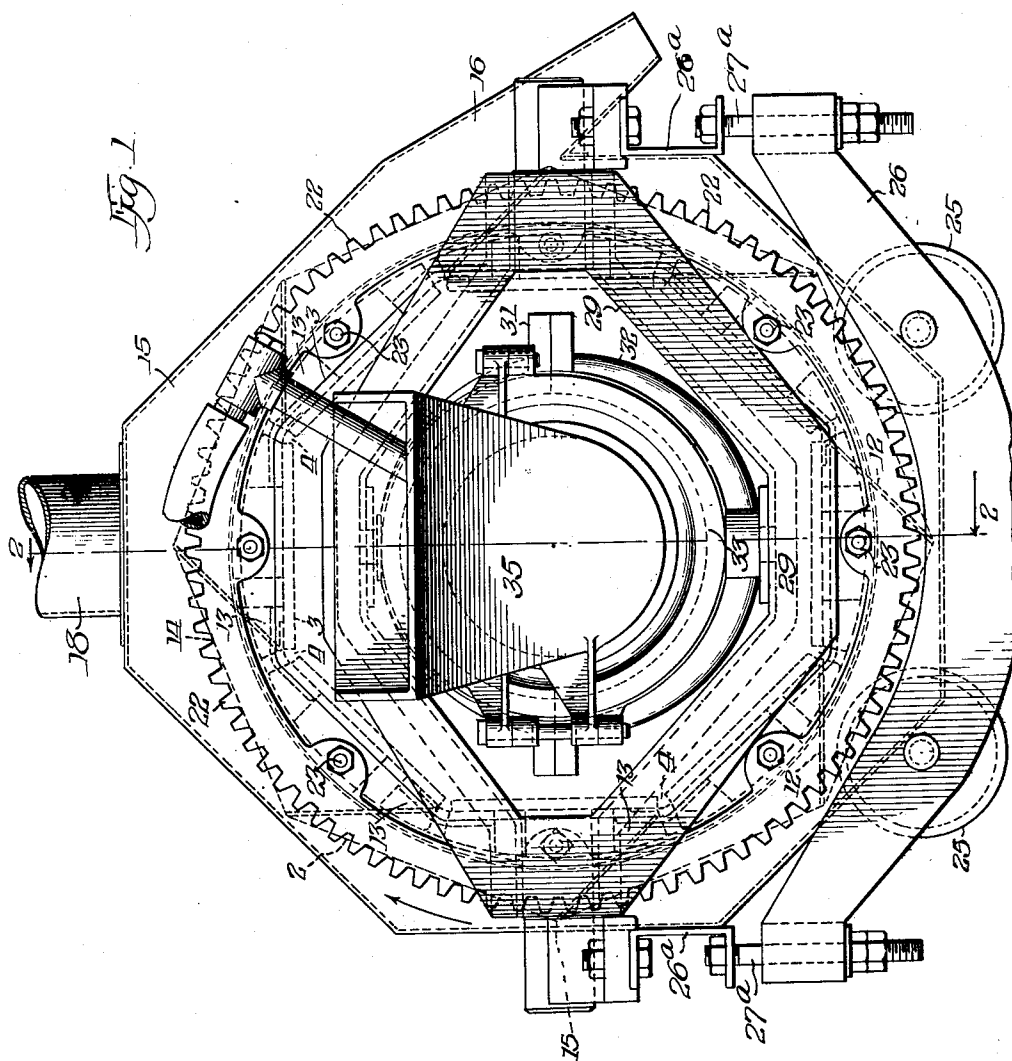
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1,770,013

REVOLVING BARREL SAND BLAST MACHINE

Filed March 24, 1926

7 Sheets-Sheet 1



Witness:
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Inventor
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By *A. Miller Ruffin* Atty.

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REVOLVING BARREL SAND BLAST MACHINE

Filed March 24, 1926

7 Sheets-Sheet 2

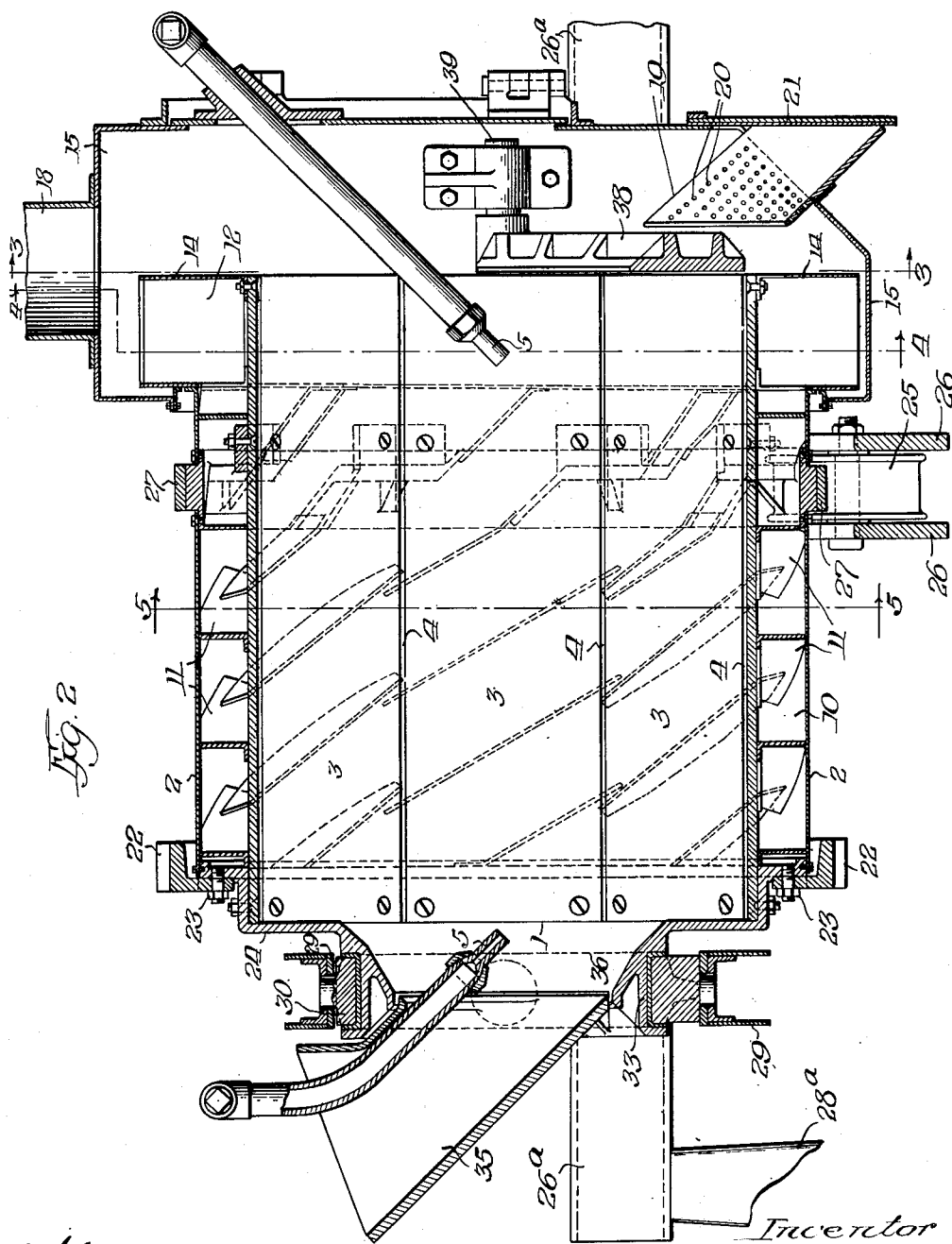


Fig. 2

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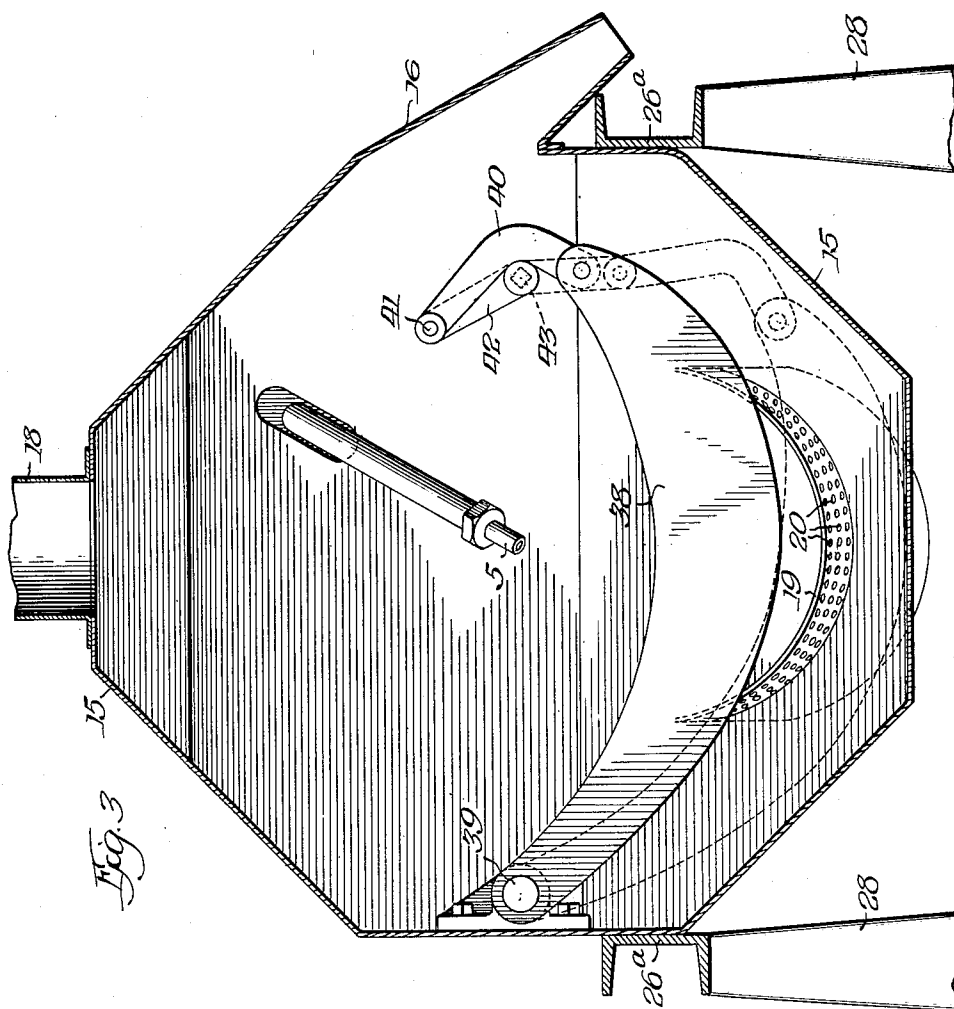
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REVOLVING BARREL SAND BLAST MACHINE

Filed March 24, 1926

7 Sheets-Sheet 3



Witness:

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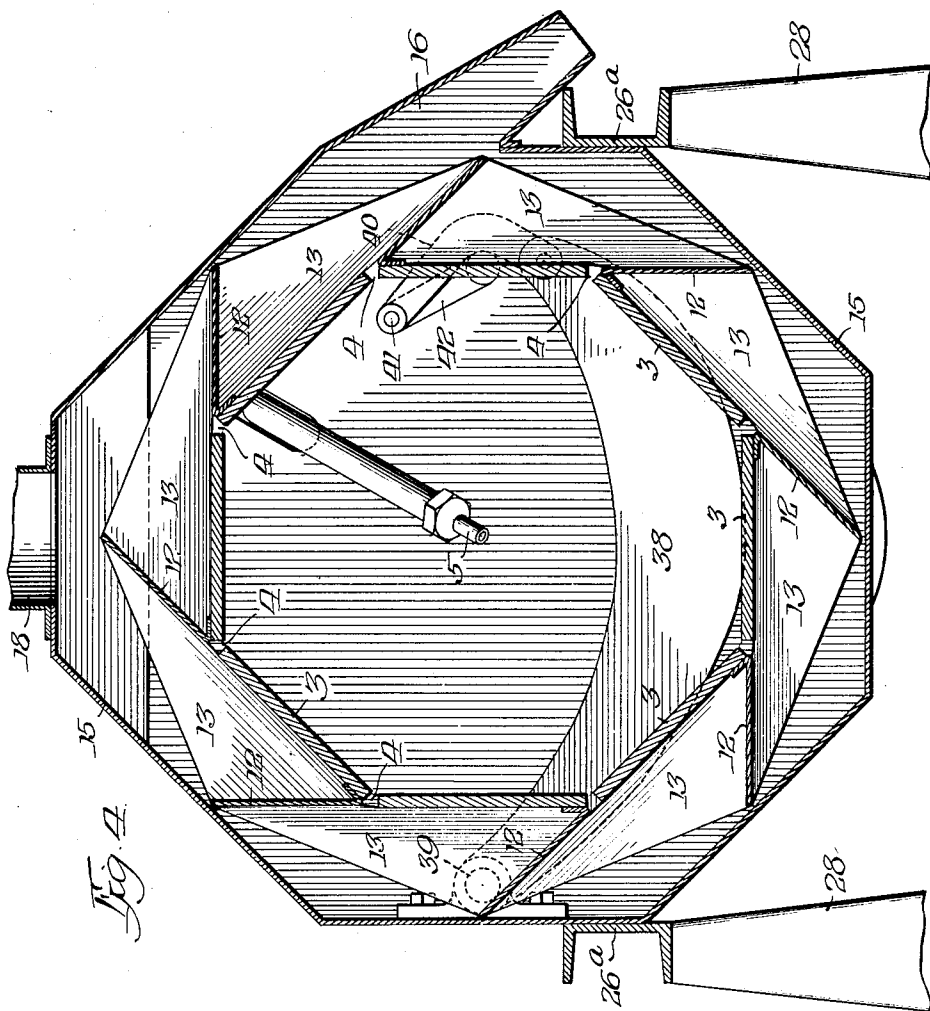
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REVOLVING BARREL SAND BLAST MACHINE

Filed March 24, 1926

7 Sheets-Sheet 4



Witness:
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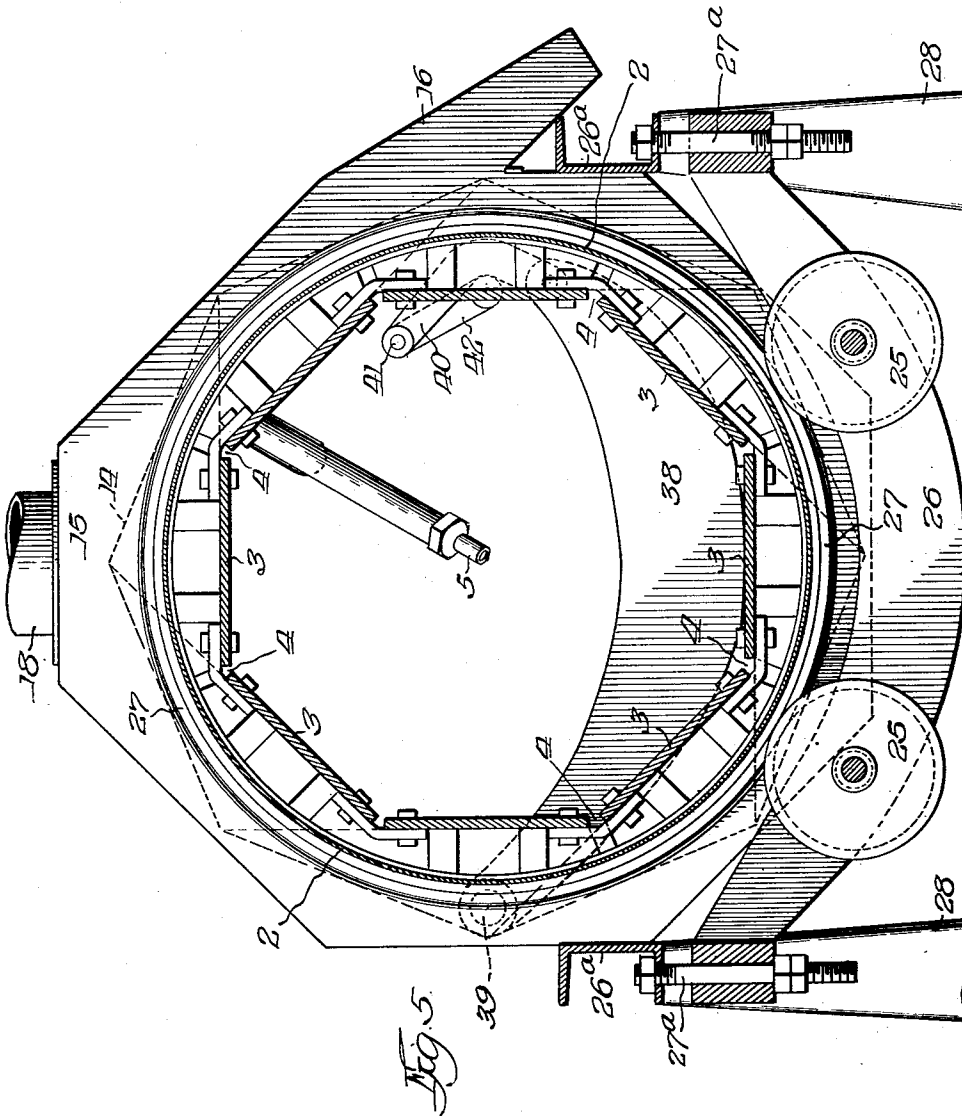
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REVOLVING BARREL SAND BLAST MACHINE

Filed March 24, 1926

7 Sheets-Sheet 5



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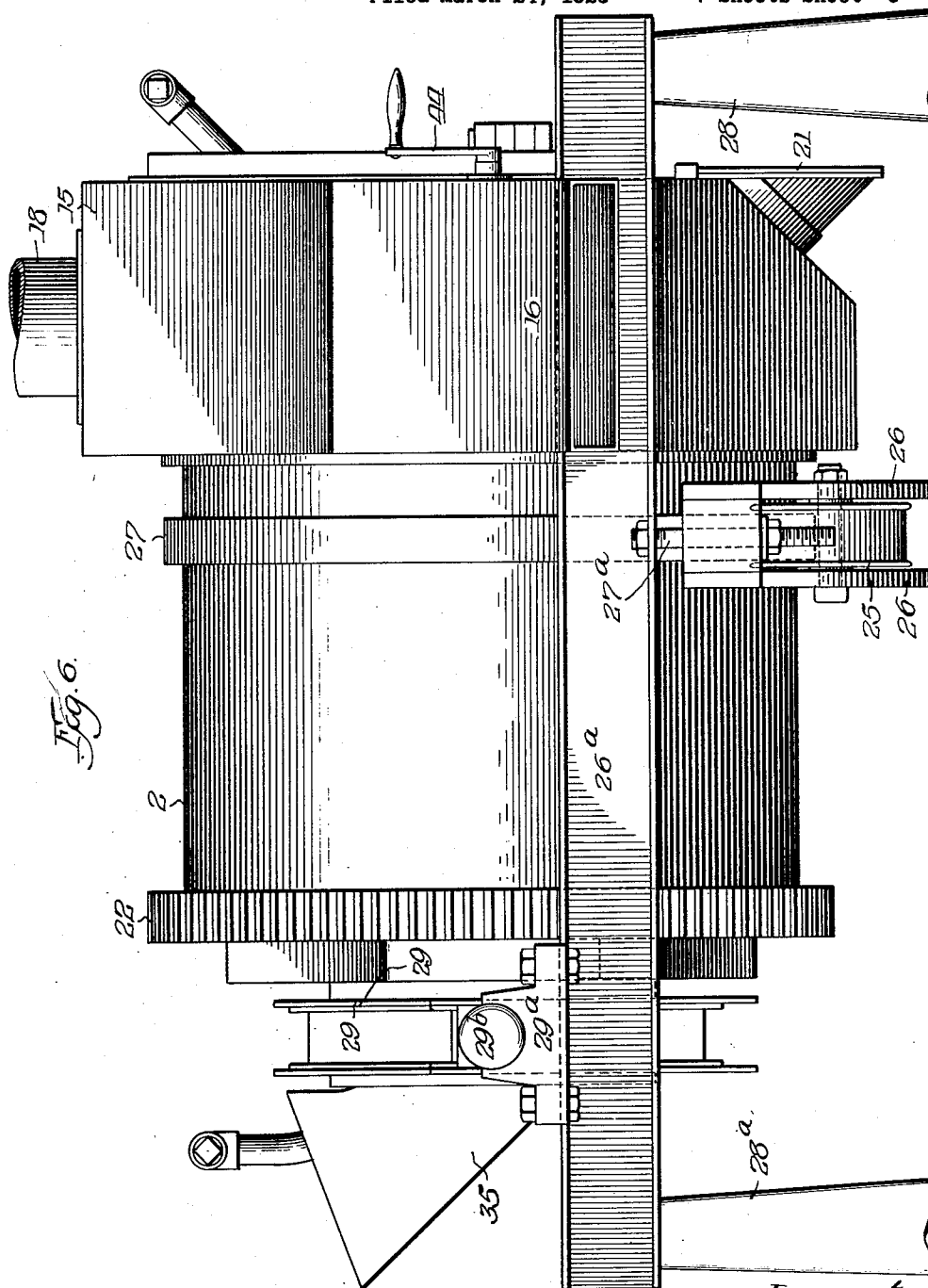
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REVOLVING BARREL SAND BLAST MACHINE

Filed March 24, 1926

7 Sheets-Sheet 6



Witness:

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UNITED STATES PATENT OFFICE

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REVOLVING-BARREL SAND-BLAST MACHINE

Application filed March 24, 1926. Serial No. 96,905.

My invention relates to revolving barrel sand blast machines.

One of the objects of the invention is to provide a simple, practical and efficient construction of machine of the class specified.

Another object of the invention is to provide a machine in which the sand blasting may be carried on continuously as long as desired, so that it will not be necessary to stop the machine in order to fill and empty it.

Another object of the invention is to permit continuous batch operation, as well as continuous sand blasting, without stopping the barrel.

Another object of the invention is to arrange for the ready and quick loading and unloading of the machine while it is in operation.

Another object of the invention is to permit the capacity of the machine to be varied, so that it will hold a greater or less number of articles to be treated, as may be desired.

In the accompanying drawings Fig. 1 is an end view of a revolving sand blast machine embodying my invention;

Fig. 2 is a vertical section of the same taken on line 2—2 in Fig. 1;

Figs. 3, 4 and 5 are cross sections taken on lines 3—3, 4—4 and 5—5, respectively, in Fig. 2;

Fig. 6 is a side elevation of the machine; and

Fig. 7 is a fragmentary side elevation partly in section.

Referring to the drawings, I show a machine involving a rotary barrel comprising inner and outer shells or casings 1 and 2, respectively. The outer shell or casing 2 is preferably of cylindric form, as shown in Fig. 5. The inner shell or casing may be formed by a plurality of parts or sections 3—3, which may be flat plates arranged to form a polygonal figure, such for example, as an octagonal casing, as best shown in Figs. 4 and 5. Between the members 3—3 there are spaces or slots 4—4, and these form crevices or openings through which sand may escape from the interior of the barrel after it has been used for blasting purposes, sand

blast nozzles 5—5 being shown at the opposite ends of the barrel.

In the space or chamber 10 between the inner and outer casings 1 and 2, there are arranged means such as vanes 11—11, for shifting the sand laterally or axially toward one end of the barrel. Thus sand passing through the slots 4—4 for the time being at the bottom or lower portion of the barrel, will be caught by bottom vanes 11—11 and lifted and shifted laterally or axially as said vanes rise due to the barrel rotation, and will then fall to other vanes and so be shifted to the right hand end of the barrel, referring to Fig. 2.

The right hand end of the barrel is provided with a series of blades 12—12, secured to members 3—3 so that these members 12—12 will form pockets or receptacles 13—13 (Fig. 4), immediately above the barrel slots or crevices 4—4, and these pockets 13—13 rotate in a casing 15 having a discharge nozzle 16. Thus sand moved or shifted to the right hand end of the barrel will fall into and accumulate in these pockets or recesses 13—13, and as the barrel rotates these pockets 13 will rise one after another and will carry sand upwardly and then as each pocket 13 starts downwardly, will discharge sand downwardly and out through spout 16. Casing 15 preferably has an upwardly extending chimney or duct 18 through which the dust and the like may pass or be drawn.

As an arrangement for rotating the barrel I provide a gear 22 which may be secured by bolts 23 to a head 24 at the other end of the rotary barrel, said gear 22 being understood to be in mesh with a power driven driving pinion (not shown).

For supporting the barrel and permitting its rotation I show a pair of rollers 25—25 which may be mounted upon and between supporting beams 26, the barrel being provided with an annular track 27 adapted to travel on said rollers 25. The yoke 26 is supported by beams or channels 26^a—26^a through bolts 27^a—27^a, the beams 26^a resting on supports 28—28^a, whereby the barrel and particularly the right hand end thereof (Fig. 2) may be adjusted and raised and lowered by

adjusting nuts on bolts 27^a—27^a. The other end of the barrel is preferably supported by a yoke 29 pivotally mounted on beams 26^a through bearings 29^a, said yoke 29 having an annular guideway 30 formed by arms 31 and 32, within which guideway an annular hub or trunnion 33 on the barrel head 24 fits and turns. By means of pivotal mounting 29^a—29^b, and vertically adjustable yoke 26, the barrel may be more or less tilted vertically so that its axis will incline more or less to beams 26^a and to the horizontal.

Thus it will be seen that the sand blasting operation may be carried on by the discharge of the sand blast nozzles 5—5 into the rotating barrel and upon the articles more or less on the bottom of the same, and that the used sand will fall through the slots 4—4 and be shifted to the right hand end of the barrel (Fig. 2) and be carried upwardly and then discharged downwardly so that it may be conveyed to the sand blast machine and used again in the sand blast nozzles.

This type of machine with this general system for returning sand for further use is to a certain extent disclosed in my application Serial No. 400,656, filed August 2, 1920, for sand blast machines, and also in the application of Raymond H. Moore and myself, Serial No. 686,234, filed January 14, 1924, for sand blast machines.

In accordance with my present invention I am enabled to use this machine continuously without necessitating a stoppage of the machine in order to load and unload it. In this way I may sand blast articles of the same kind indefinitely by a continuous sand blasting operation, feeding said articles in and taking them out without stoppage, and may also do what is called "batch" sand blasting without stopping,—that is sand blast different batches of articles, each batch being different kinds of articles without necessitating the stopping of the machine and without having the different kinds of articles commingled.

To this end I show a hopper 35 at the left hand or feed end of the machine, referring to Fig. 2, which hopper 35 is adapted to receive articles to be treated or sand blasted and to convey them into the interior of the inner casing 1 through tubular hub 36 opening into the interior of the barrel. Furthermore, the other or right hand end of the barrel (Fig. 2) is preferably made entirely open so that castings or articles may readily roll out of it. For temporarily closing the lower part of this right hand or delivery end of the barrel, a swinging gate 38 is shown, and this is pivoted at 39 (Fig. 3) so that it may swing up and down to more or less close the delivery end of the barrel, as shown in Fig. 2. The other or free swinging end of the gate 39 is provided with swinging means, as for example, a link 40 pivotally connected at 41 to another link 42, which is provided with a

square shaft 43 adapted to take a handle 44 (Fig. 6) whereby the swinging end of said gate 38 may be adjusted more or less vertically. Thus for batch blasting, for example, the gate 39 may be swung up so as to close the delivery end of the barrel sufficiently to hold a certain number of articles in the barrel and thereby insure their being sand blasted. When the operation is over the gate 38 may be lowered, thereby completely opening the delivery end of the barrel and permitting said articles to fall out of the open delivery end of the barrel. They may then be taken away and the gate 38 again elevated and another batch of articles put in. These may be treated as the preceding batch and then the delivery end of the barrel opened and they may be taken out and the barrel again closed and another batch put in, and so on. To secure proper delivery the barrel may be tilted more or less axially as previously described, so that the requisite inclination for the delivery of the articles may be secured.

The barrel is also provided with means by which it may be partially closed to a greater or less degree for continuous sand blasting, as by providing it with a plurality of rings 46—46, which are secured in place one within the other by bolts 47—47. These rings will always retain a certain number of articles within the barrel and so continuous blasting may take place by feeding articles in the feed end and allowing them to fall out of the delivery end, some of them always remaining in the barrel and being blasted.

The number of rings 46—46 applied to the delivery end of the barrel may be varied as desired in order to vary the number of articles which may be retained in the barrel. Four such rings are shown (Fig. 7), but this number can be more or less varied in accordance with the results sought to be obtained.

For "batch" blasting, these rings 46—46 will ordinarily be omitted and the adjustable gate 38 alone used for controlling the delivery of castings from the barrel, this arrangement being shown in Fig. 2. On the other hand, for continuous blasting the gate 38 will ordinarily not be used, but will be lowered to its lowermost position, as shown in Fig. 7, and only the rings 46 used to partially close the delivery end of the barrel. Under certain circumstances if desired, it is obvious that both rings 46 and gate 38 may be used.

The castings when delivered from the barrel may tumble upon an apron or delivery chute 19 located opposite the delivery end of the barrel and from this chute they may pass through a door 21 to the floor or some receptacle by which they may be taken away. The apron 19 is preferably provided with apertures 20 to permit any sand that may escape with the castings to fall back into the casing 15 and into pockets 13.

It will be understood that changes and modifications may be made without departing from the spirit of the invention.

What I claim is:

5 1. A sand blast machine having a rotary sand blast barrel one of whose ends is provided with an article outlet, in combination with means for varying the size of said outlet, said means comprising annular members adapted for attachment to the discharge end
10 of the barrel to more or less close the opening thereof.

2. A sand blast machine having a rotary sand blast barrel one of whose ends is provided with an article outlet, in combination
15 with means for varying the size of said outlet, said means comprising annular rings adapted for attachment to the discharge end of the barrel to more or less close the opening thereof, and means for securing said rings
20 to the discharge end of the barrel.

3. A sand blast machine having a rotary sand blast barrel one of whose ends is provided with an article outlet, in combination
25 with means for varying the size of said outlet, said means comprising a swinging gate one of whose ends is pivotally mounted and the other of whose ends is provided with means for vertically swinging said gate.

30 4. A sand blast machine having a rotary sand blast barrel one of whose ends is provided with an article outlet, in combination with means for varying the size of said outlet, said means comprising a swinging gate one
35 of whose ends is pivotally mounted and the other of whose ends is provided with means for vertically swinging said gate, said last mentioned means comprising a pivoted arm and a link pivotally connected with said arm
40 and also with said gate.

In witness whereof, I hereunto subscribe my name this 3rd day of October, A. D., 1925.

ELMER A. RICH, Jr.

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