

(No Model.)

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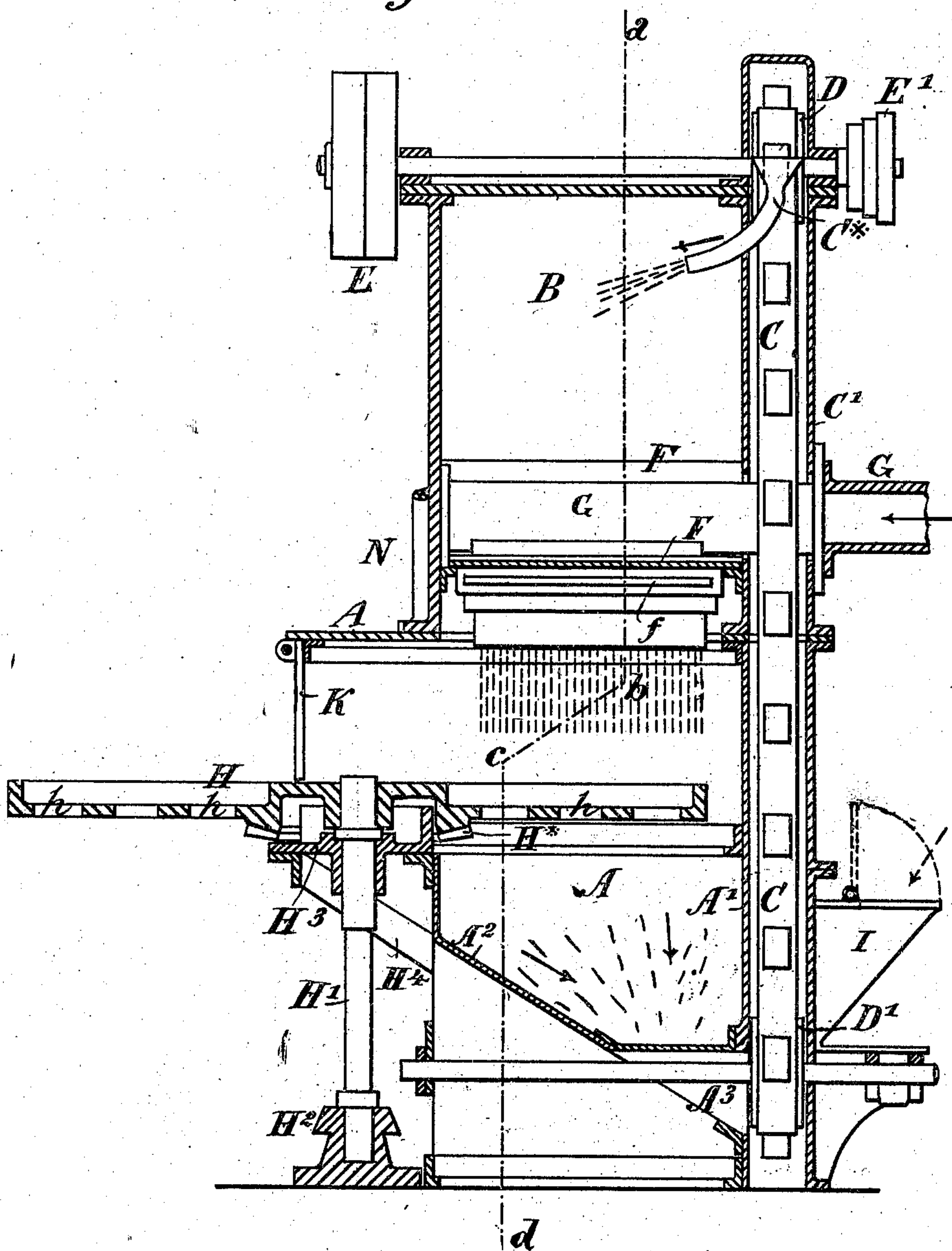
A. GUTMANN.

SAND BLAST AND APPARATUS EMPLOYED IN OPERATING BY
SAND BLASTS.

No. 573,180.

Patented Dec. 15, 1896.

Fig. 1.



Witnesses:-
J. B. Secker.
George Barry Jr.

Inventor:-
Alfred Gutmann
by attorneys
Brown & Howard

(No Model.)

4 Sheets—Sheet 2.

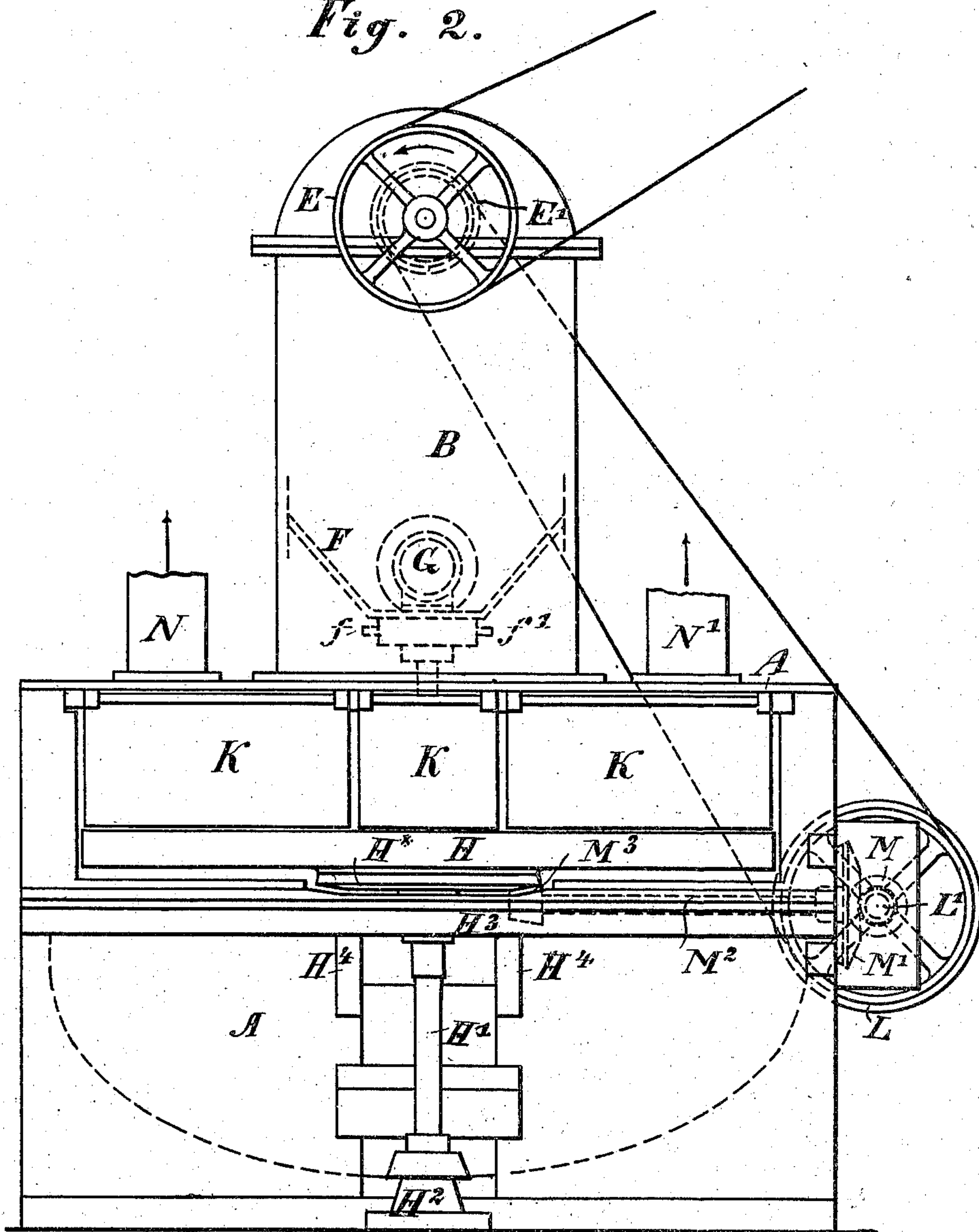
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Fig. 2.



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(No Model.)

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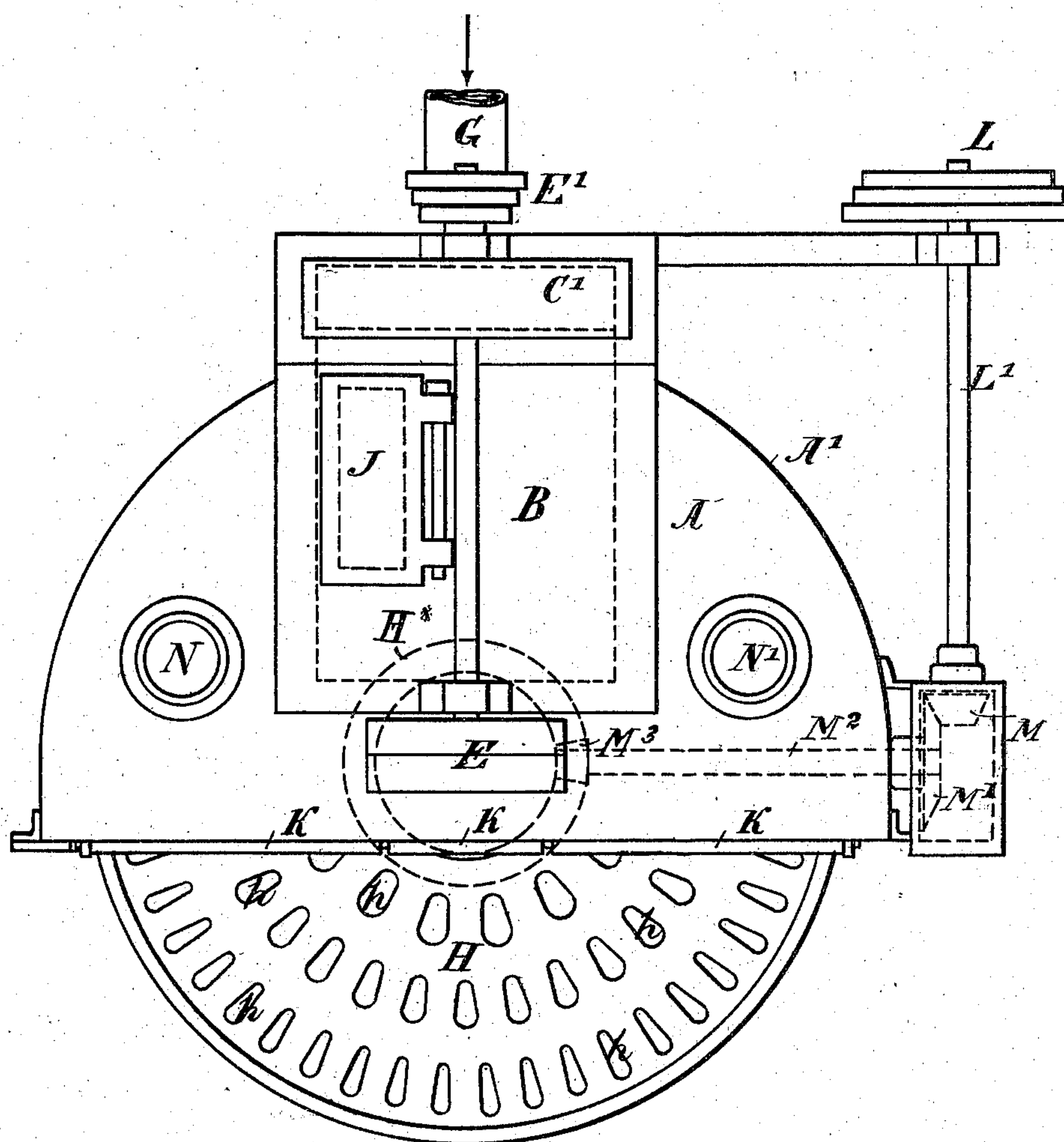
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Fig. 3.



Witnesses:-

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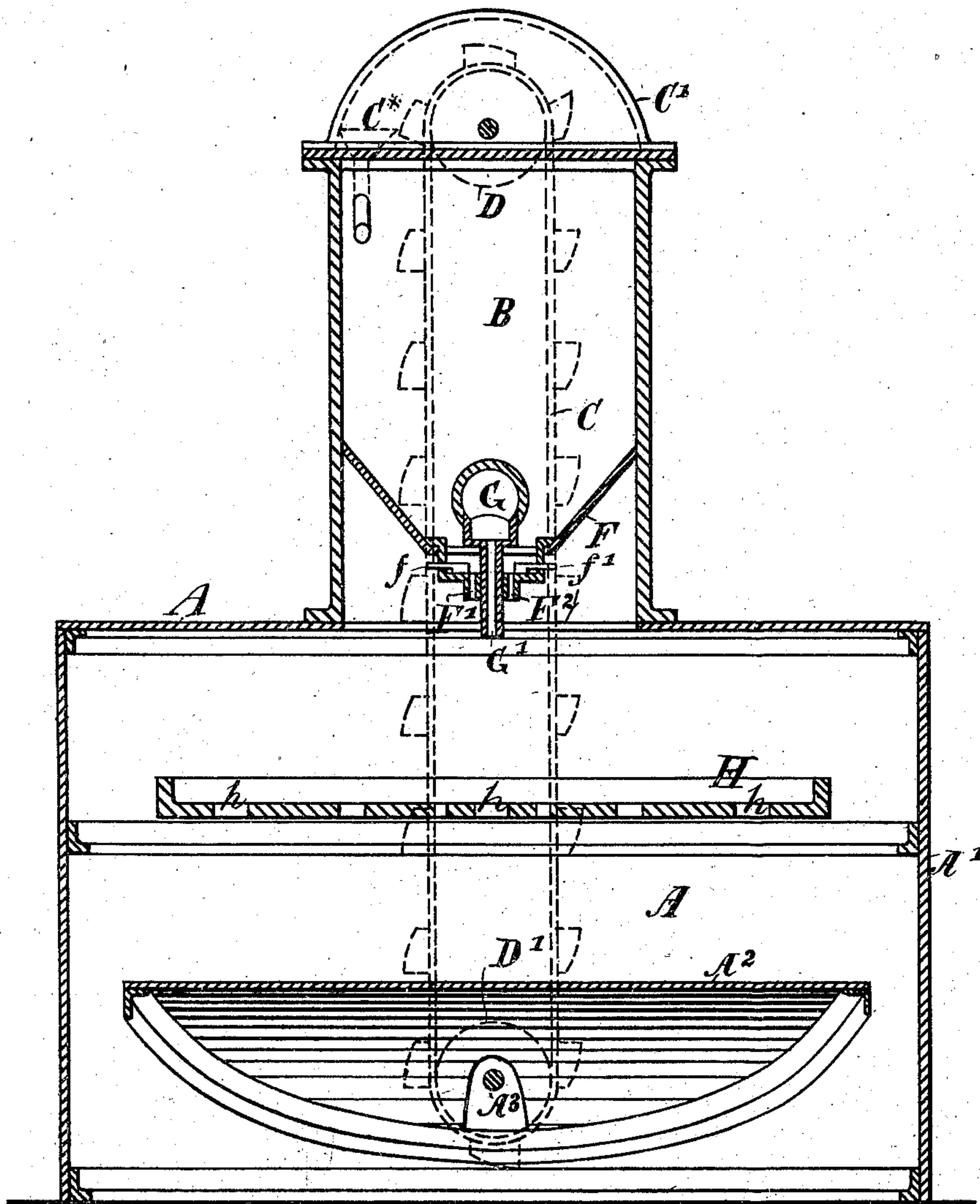
4 Sheets—Sheet 4.

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Fig. 4.



Witnesses:

J. B. Decker.
George Barry Jr.

Inventor:
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UNITED STATES PATENT OFFICE.

ALFRED GUTMANN, OF OTTENSEN, GERMANY.

SAND-BLAST AND APPARATUS EMPLOYED IN OPERATING BY SAND-BLASTS.

SPECIFICATION forming part of Letters Patent No. 573,180, dated December 15, 1896.

Application filed November 3, 1894. Serial No. 527,836. (No model.) Patented in England March 21, 1887, No. 4,217; in Belgium March 31, 1887, No. 76,784, and in Austria-Hungary August 24, 1887, No. 11,762 and No. 36,786.

To all whom it may concern:

Be it known that I, ALFRED GUTMANN, of Ottensen, in the German Empire, have invented a new and useful Improvement in Sand-Blast Apparatus, of which the following is a specification, and which has been patented in Great Britain by Patent No. 4,217, dated March 21, 1887; in Belgium, by brevet, No. 76,784, dated March 31, 1887, and in Austria-Hungary, by privilege, No. 11,762 and No. 36,786, dated August 24, 1887.

To enable others skilled in the art to make and use my invention, I will now describe it with reference to the annexed drawings, in which—

Figure 1 is a sectional side elevation of a sand-blast apparatus embodying my invention, showing the arrangement of the sand-nozzle and of the continuously or intermittently rotating table; Fig. 2, a front elevation of such apparatus; Fig. 3, a plan and Fig. 4 a transverse section in the line *a b c d* of Fig. 1.

A is a covered casing within which is the lower sand-receiver, consisting of a vessel or shell, one wall, A' , of which is cylindrically shaped, whereas the opposite wall, A^2 , is formed by an inclined plate meeting the inner side of the wall A' in a curve, as clearly shown in Figs. 2 and 4. B is a second sand-receiver of rectangular form placed above the casing A, which contains the sand-receiver A' A^2 . The sand falling from the upper receiver B in the manner hereinafter described into the lower receiver A' A^2 , thereby doing work on the objects to be treated, is continuously elevated back to the receiver B by an elevator C, formed of an endless chain or strip provided with small buckets. Such elevator is inclosed within a casing C' , placed at the outside of the sand-receivers A' A^2 , and B. The sand transported falls into a funnel C^* , provided with a tube extending to the interior of the receiver B.

Rotary motion is communicated to the upper disk D, carrying the elevator chain or strip, by a fast and loose pulley E on the upper shaft for the disk D. The lower elevator-disk D' is keyed to a second shaft passing through a covered opening A^3 in the bottom of the casing A. This lower sand-receiver

A' A^2 is separated from the upper sand-receiver B by a funnel-shaped bottom F, as clearly shown by Fig. 4, the horizontal part of such bottom being provided with two parallel slots F' F^2 , which form the nozzles for the sand passing from the upper receiver B to the lower one A' A^2 . Above and between such longitudinal slots forming sand-nozzles the blast-air pipe G is arranged, such blast-pipe being provided with an air-nozzle G' , placed between the sand-nozzles F' F^2 . By these nozzles, which may be closed temporarily or regulated by shutters f f' from outside, the sand within the funnel-shaped bottom is blown in in a downward direction. Both the air-nozzle and the sand-nozzles extend wholly or nearly so over the entire width of the upper sand-receiver B, so that a broad current of sand is ejected down to the objects to be sanded. These objects are placed on a continuously or intermittently rotating circular table H, arranged between the combined nozzles and the lower sand-receiver A' A^2 . This table H may be fixed or loosely placed on a vertical shaft H' , the lower end of which bears within a step H^2 , whereas the upper end of said shaft works in a bearing within a flanged table or disk H^3 , carried by the arms H^4 . The flange of such disk enters the hollow hub of the rotating table H. The center of this table is so arranged that one half of its face is covered by the casing A between the upper and lower sand-receivers A' A^2 , and B, whereas the other half protrudes from such casing, such construction allowing the placing thereon of the objects to be treated by the sand-blast. By the continuous rotation of the table H in the manner hereinafter described the objects under treatment are continuously carried or fed underneath the combined air and sand nozzles F' F^2 G' , which powerfully eject the air-current with the sand against the surfaces of the objects to be treated. It will be preferable to perforate the rotating table H in the manner shown at h h in Figs. 1 and 4. The form of such perforations is clearly shown in Fig. 3. Such perforations allow the sand, after having acted upon the surfaces of the objects under treatment, to fall through into the sand-receiver A' A^2 , from which it is elevated again to the upper

receiver B. For this purpose the casing of the elevator is connected with the bottom of such receiver by a hole, through which the sand to be elevated passes.

5 The objects which have undergone the sand-blast action are evacuated from the casing A by the rotating table H and removed by the operator or attendant, who thereafter constantly supplies the said table H with fresh
10 objects to be treated.

The objects to be treated may consist of glassware for blinding them or of metal castings which are to be cleaned in a continuous manner by the action of the sand-blast.

15 If necessary, fresh sand may be supplied to the interior of the elevator-casing by a hopper I, covered by a lid and arranged near the lower disk D' of the elevator. A second lid J for the same purpose may be arranged at
20 the top of the upper sand-receiver B, as clearly shown in Fig. 3.

For closing the casing A between the nozzles F' F² G' and the rotating table H, while at the same time allowing the objects under
25 treatment to enter and exit from such casing, doors or flaps K may be arranged, such doors or flaps hanging loosely at the front edge of the casing, as shown in Figs. 1, 2, and 3, so
30 that they may swing automatically when the objects placed on the rotating table enter or exit from the casing.

The rotary movement of the rotary table H is derived from the step-pulley E' through an endless belt placed on one of the step-pulleys
35 L. The shaft L', carrying the latter pulleys, has its bearings at the side of the casing A, which includes the lower sand-receiver A' A² and the greater part of the rotating table H. On the other end of this shaft carrying the
40 step-pulleys a bevel-wheel M is keyed, engaging another bevel-wheel, M', on a second shaft M². On the other end of such second shaft another bevel-wheel, M³, is keyed, engaging a bevel-wheel H* at the under side of the rotat-
45 ing table H, which is rotated when the driving-shaft at the top of the upper receiver B is rotated.

Superfluous air in the casing A of the sand-blast apparatus is carried away in an upward direction by the conduits or tubes N N', 50 placed on the covering-plate of the said casing above the rotating table H.

The operation of the apparatus is as follows: When one-half of the rotating table H is filled with the objects to be treated, the apparatus 55 is set in motion and the blast-air pipe G over the combined nozzles F' F² G' is opened. Thus the blast-air projects the sand from above on the objects under treatment, while the objects pass underneath the combined 60 nozzles. The sand having passed the perforations within the rotating table accumulates at the bottom of the lower sand-receiver A' A² and is raised by the elevator C, which delivers the sand to the upper sand-receiver B, 65 whereupon the cycle of process is repeated. By the continuous rotation of the table H the finished objects will appear at the other side of the center of such table and are taken away for replacing them without interruption 70 to the operation of the machine by other objects undergoing the same sand-blast action.

What I claim as my invention is—

1. In a sand-blast apparatus, the combination with a rotating table H, of sand-blast 75 nozzles F' F² G' of a width corresponding approximately with the length of the radius of the table, substantially as herein described.

2. In a sand-blast apparatus, the combination with a rotating table H and sand-blast 80 nozzles F' F² G', of an upper sand-receiver B above said table and a lower sand-receiver A' A² below said table and an elevator C for retransporting the sand from the lower to the upper receiver; substantially as herein de- 85 scribed.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ALFRED GUTMANN.

Witnesses:

E. W. MUMMENHOFF,
CHAS. H. BURKE.