

No. 719,395.

PATENTED JAN. 27, 1903.

A. G. WARREN.  
WASHER FOR SAND BLAST APPARATUS.

APPLICATION FILED MAR. 30, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

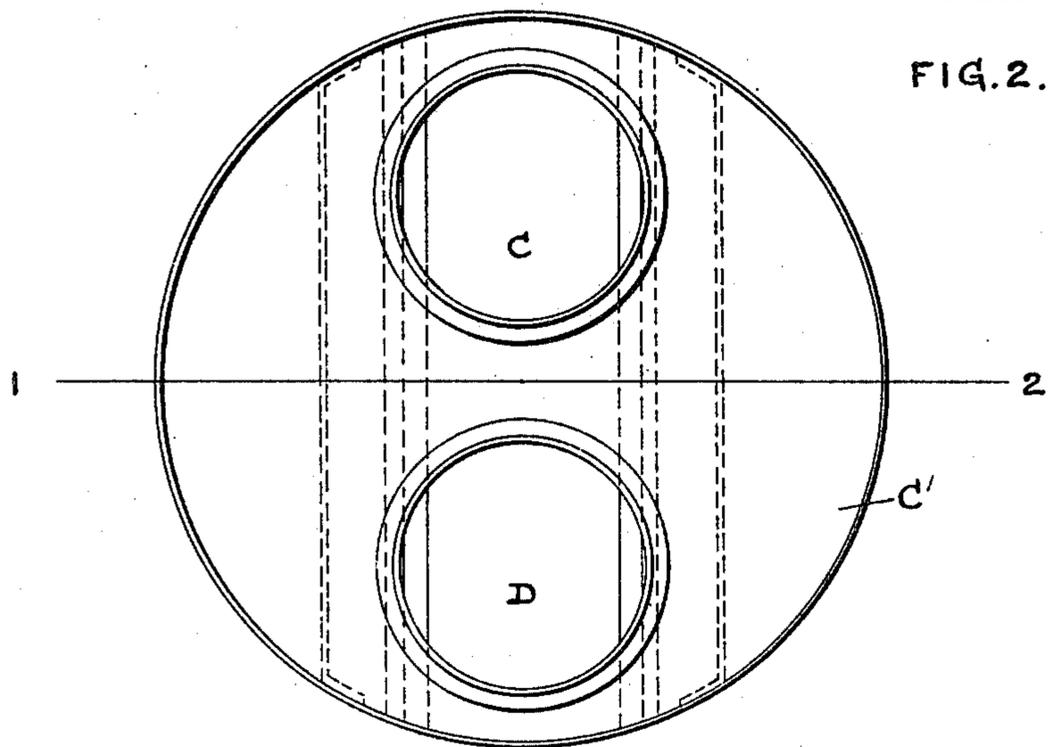


FIG. 2.

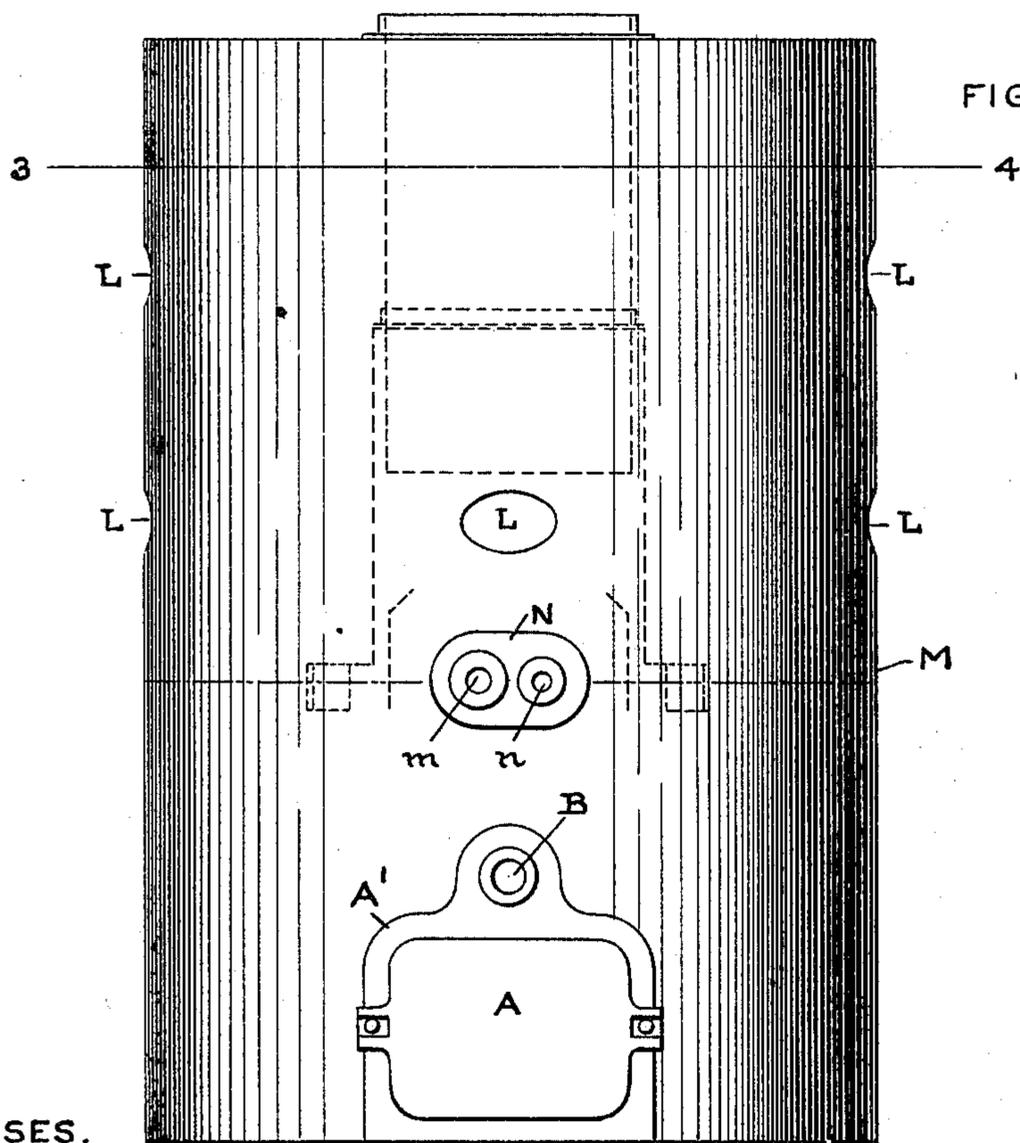


FIG. 1.

WITNESSES.  
*Wm. Lougher.*  
*W. B. Kennedy.*

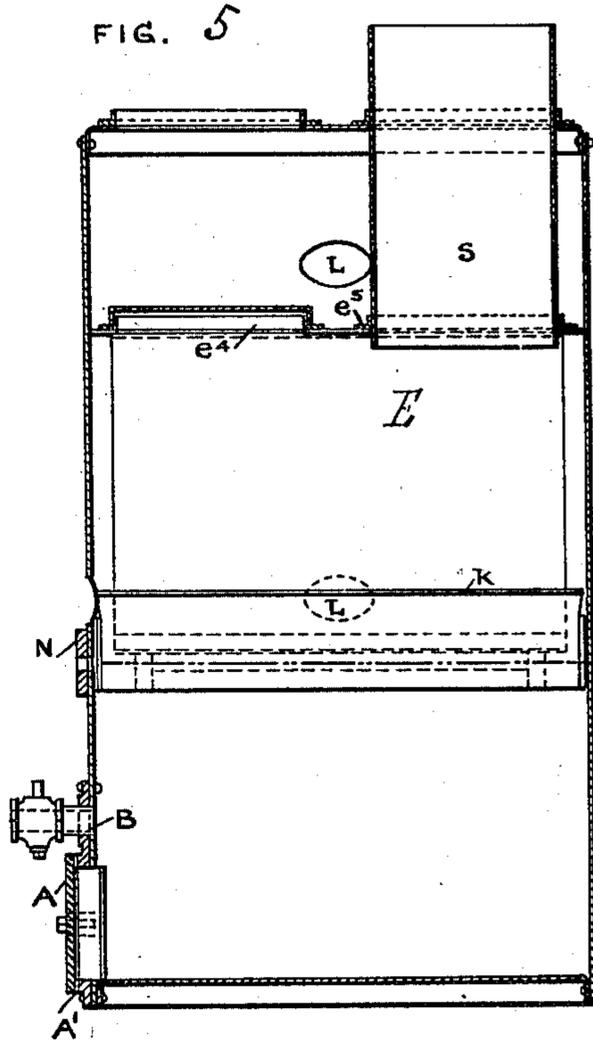
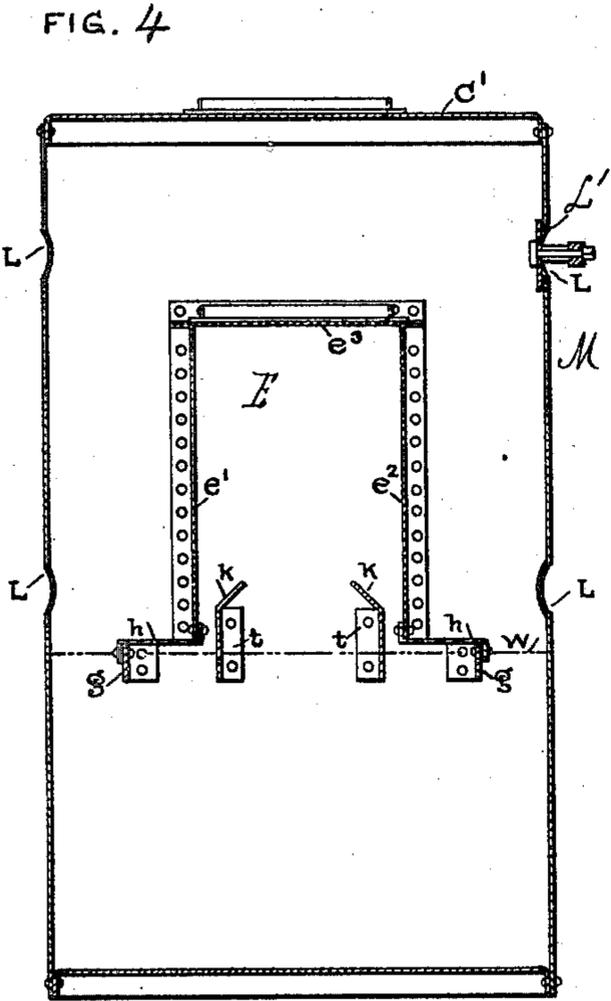
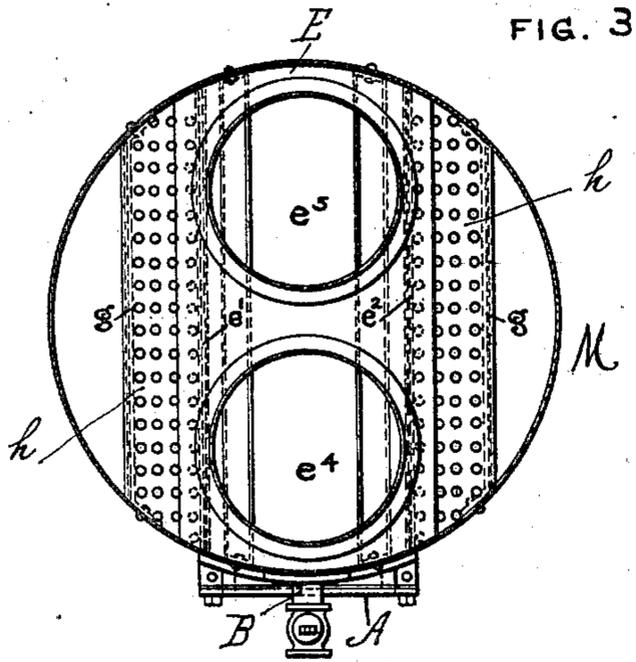
INVENTOR.  
*Ambrose G. Warren.*

A. G. WARREN.  
WASHER FOR SAND BLAST APPARATUS.

APPLICATION FILED MAR. 30, 1901.

NO MODEL.

2 SHEETS—SHEET 2.



WITNESSES  
*W. B. Kennedy*  
*W. B. Kennedy*

INVENTOR  
*Ambrose G. Warren.*

# UNITED STATES PATENT OFFICE.

AMBROSE G. WARREN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO J. W. PAXSON COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION.

## WASHER FOR SAND-BLAST APPARATUS.

SPECIFICATION forming part of Letters Patent No. 719,395, dated January 27, 1903.

Application filed March 30, 1901. Serial No. 53,665. (No model.)

*To all whom it may concern:*

Be it known that I, AMBROSE G. WARREN, a citizen of the United States, residing at the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Washers for Sand-Blast Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to devices for separating dust from air, commonly called "washers," when used in connection with sand-blast apparatus, for which purpose my improved device is particularly applicable.

The invention has for its object to provide a device in which the air laden with dust and dirt and which is introduced therein under pressure, imparting to it a considerable velocity, is discharged directly into a body of water contained in the device by passages directly in line with the inlet, in one of which passages deflecting means are provided, operating to convey the light particles of dust and the air with which it is admixed into the same body of water, but at a different point and immediately beneath a perforated plate in order that the water at that point shall be sprayed, and thus washing the dust from the air, allow the dust to descend into the body of water and the cleansed air to pass upward through the perforated plate and be discharged or drawn off by suction devices through discharge-outlets in or near the top of the device.

My invention consists of combined mechanisms hereinafter described performing these functions and accomplishing these results.

In the accompanying drawings, illustrating the same, Figure 1 is a front elevation of my improved washer. Fig. 2 is a plan view of the top of same, showing in dotted lines the inner perforated deflecting-plates, the partition-chamber, and means to support the latter within the casing. Fig. 3 is a horizontal section on the line 3 4 of Fig. 1. Fig. 4 is a vertical section of the whole device shown in Fig. 1, taken on the line 1 2 of Fig. 2; and Fig. 5 is also a vertical section of the same in

a plane at right angles to that given in Fig. 4. Fig. 6 is a detail sectional view of the plate *h*.

The device consists of a casing *M*, preferably cylindrical, and it is supplied with hand-holes *L L* to give access thereto, and these are closed by a removable cover *L'* of any suitable and ordinary construction, the casing being usually made of sheet metal. A cast-metal frame *A'* is fitted to the casing at or near the bottom and carries a door *A* for the removal of mud and dirt, and a blow-port *B* for the discharge of muddy water. In the side of the casing above the door-frame *A'* is provided another cast-metal frame *N*, providing therein two ports *m n*, the former for supplying water to the body of the casing and the latter an overflow-port. The top cover *C'* of the casing is provided with two openings *C D*, preferably circular, one of which supports a tubular inlet for the dust-laden air to be cleaned, and the other supports a tubular outlet for the discharge of the cleansed air. They are alike, and either can be used for either purpose. Whichever is selected (depending upon the particular circumstances of factory location and use) the one employed as the inlet is fitted with a tube or pipe *S*, which extends downward into the casing and is soldered air-tight to and slightly into the partition-chamber *E*, care being taken to make it somewhat smaller in diameter than the latter, though not smaller in diameter than the distance between the vertical sides of the deflecting-plates *t t*, hereinafter described.

The partition-chamber *E* is composed of two vertically-arranged flat plates *e'* and *e''*, extending from side to side of the casing, and through an opening in the top *e'''* of the same is passed the tube or pipe *S*. The edges of the partition-chamber walls *e'* and *e''* rest upon two perforated plates *h h*, which in turn rest upon two cross-supports *g g*, extending from side to side of the casing. In Fig. 3, showing a plan view of the partition-chamber *E*, two openings *e<sup>4</sup>* and *e<sup>5</sup>* are shown therein. One only is necessary, and one only can be used. For the reason heretofore stated with respect

to openings C D in the casing—namely, the arrangement and location of the device in the factory—it is found in practice more convenient to supply duplicate openings  $e^4$  and  $e^5$  in said partition-chamber in order, for example, that if opening D of the casing is employed as the inlet and opening C for the discharge the corresponding opening  $e^4$  of the partition-chamber in vertical line therewith is employed, the other opening  $e^5$  being temporarily closed with a suitable sealing-cap.

The operation of the device is as follows: Air laden with dust and dirt proceeding from a sand-blast room or apparatus, for example, and moving under some pressure is admitted to the device through the inlet C or D in the casing, the stones or heavy dirt will be discharged directly into the water passing there to in a vertical line, passing downward between the deflecting-plates  $t t$ , while a large portion of the volume of air admixed with lighter dust particles is driven and, guided by the inclined edges  $k k$  of the deflecting-plates, is led to the water in the space between the deflecting-plates  $t t$  and the walls of the partition-chamber E, striking the water and spraying it. The water is kept at a level indicated by the line W above the lower edge of the deflecting-plates and below the perforated plate. The effect of the spraying is a washing effect, and the cleansed air passes upward through the perforated plate or screen  $h$  to the upper portion of the casing, from whence it is drawn off by any suitable suction device through either opening C or D, whichever is employed as the discharge-opening.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for separating dust from air, consisting of a suitable closed casing having air inlet and discharge openings at or near the top thereof, laterally-disposed partition-walls  $e' e^2$ , with a cover-plate  $e^3$  forming a central chamber into which dust-laden air is conveyed, a tubular inlet-pipe S forming a con-

duit or passage-way between the air-inlet and said partition-chamber, a laterally-arranged perforated plate at the base of each partition-wall, and vertically-arranged deflecting-plates within said chamber, extending below the perforated plates; substantially as described.

2. An apparatus for separating dust from air, consisting of a suitable closed casing adapted to contain a body of water, having interchangeable inlet and discharge openings C D at or near its top, interior partition-walls  $e' e^2$  maintained in said casing and a connecting top cover-plate  $e^3$  therefor, forming a central chamber with an open base into which dust-laden air is conveyed, a tubular passage-way S between the air-inlet and said dust-chamber, a laterally-arranged screen in the casing surrounding the dust-chamber at or near its base, and means to deflect the dust-laden air toward the vertical walls of the dust-chamber and deliver it to the water at a point below the screen.

3. An apparatus for separating dust from air consisting of the combination with a closed casing adapted to contain a body of water having air inlet and discharge openings, a centrally-arranged partition-chamber within the same, direct tubular connection between said inlet-opening in the casing and the partition-chamber and extending into the latter, oppositely-disposed deflecting-plates suitably maintained within the casing, extending into the chamber in one direction and below the water-line in the other direction, and laterally-arranged perforated plates or screens at the base of the vertical walls of the partition-chamber; substantially as described.

In testimony whereof I have hereunto affixed my signature this 2d day of March, A. D. 1901.

AMBROSE G. WARREN.

Witnesses:

ANDREW V. GROUPE,  
H. T. FENTON.