No. 778,075. PATENTED DEC. 20, 1904.

G. A. SAGER.

DUST ARRESTER.

APPLICATION FILED JULY 21, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

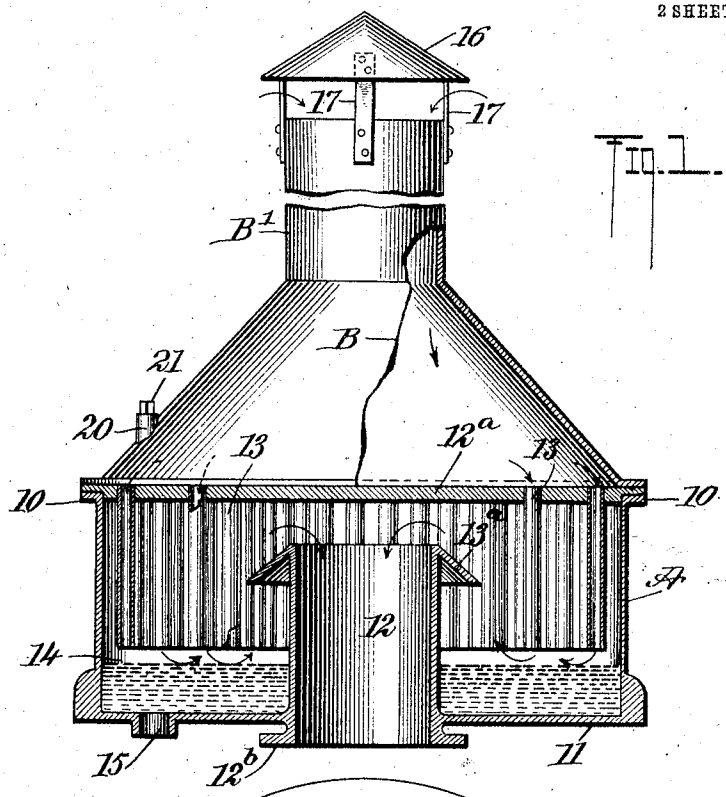


FIG. 1.

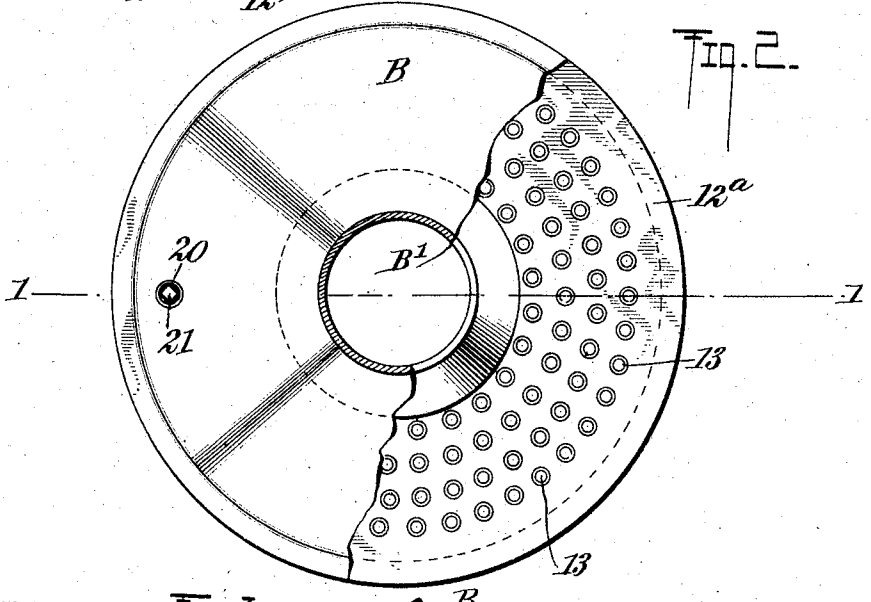


FIG. 2.

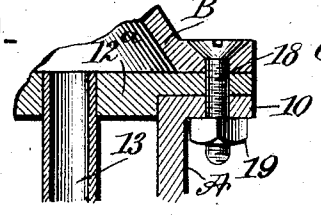


FIG. 3.

WITNESSES:

G. P. Kingsbury.

J. Fredericks.

INVENTOR

George Arthur Sager

BY Munn & Co.

ATTORNEYS

No. 778,075. PATENTED DEC. 20, 1904.

G. A. SAGER.

DUST ARRESTER.

APPLICATION FILED JULY 21, 1904.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

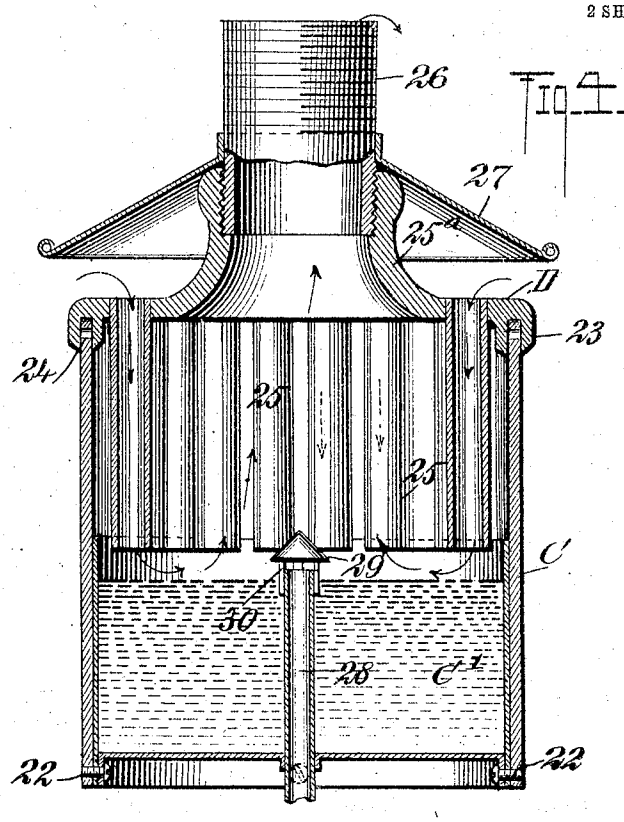
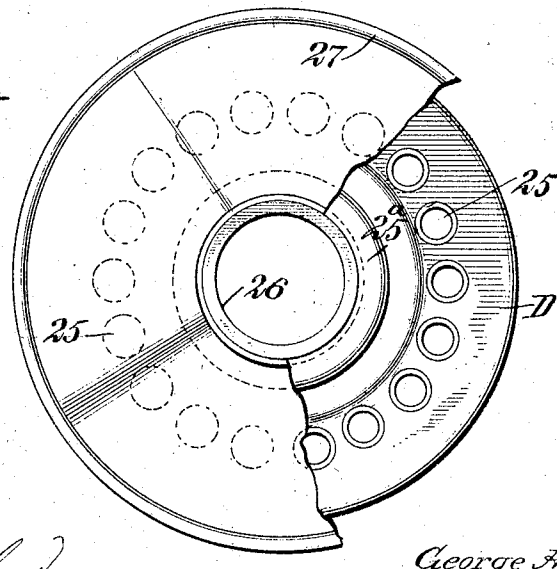


Fig. 5.



WITNESSES:

G. P. Kingsbury.

H. C. Fickes

INVENTOR

George Arthur Sager

BY Munn & Co.

ATTORNEYS

No. 778,075. Patented December 20, 1904.

UNITED STATES PATENT OFFICE.

GEORGE A. SAGER, OF ALBANY, NEW YORK.

DUST-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 778,075, dated December 20, 1904.

Application filed July 21, 1904. Serial No. 217,575.

To all whom it may concern:

Be it known that I, GEORGE A. SAGER, a citizen of the United States, and a resident of Albany, in the county of Albany and State of New York, have invented a new and Improved Dust-Arrester, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a device adapted to extract dust and foreign particles from the air to be fed to pneumatically-operated tools and devices, so that the air upon reaching the operative parts of such tools or devices will be pure, and consequently said operative parts of the tools or devices will not become clogged by foreign matter, as now frequently happens to such an extent as to render the tools or devices inoperative, necessitating time and expense in cleaning.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of one form of the device adapted particularly to be placed upon the roof or indoors at a convenient point, the section being taken practically on the line 1 1 of Fig. 2. Fig. 2 is a sectional plan view of the device illustrated in Fig. 1 and partly broken away. Fig. 3 is a detail sectional view illustrating the manner in which the sides, top, and upper partition or diaphragm are connected. Fig. 4 is a vertical section through a device slightly differing in construction in certain parts and adapted particularly for locomotive use in connection with the air-pumps of air-brake systems, and Fig. 5 is a sectional plan view of the device as illustrated in Fig. 4 and partly broken away.

In the form of the device shown in Figs. 1, 2, and 3, A represents the body of the device, which is shown circular in form, although it may have any desired shape. The said body A is shown provided with an outwardly-extending upper flange 10, and the said body is provided with a bottom 11, at the central portion of which bottom a pipe 12 is either secured or is integrally produced, said pipe 12 being open at the top and at the bottom. The pipe 12 is provided at its upper end with a downwardly-extending and outwardly-flaring flange 13^a. This pipe 12 extends within the body A to a point near its top and is provided usually at its lower end below the bottom 11 with a flange 12^b, so that the pipe 12 may be readily connected with another pipe or a system of pipes leading to the air-compressing machine employed. The body A is covered at the top by a partition or diaphragm 12^a, which partition or diaphragm extends out usually to the outer edges of the flange 10 of the body. This partition or diaphragm 12^a is provided with any desired number of tubes 13, secured in said partition or diaphragm 12^a at their upper ends in any approved manner, the said tubes 13 being carried through the said partition or diaphragm, and the tubes 13 extend downward to within a predetermined distance of the bottom 11 of the body A, as is shown in Fig. 1, forming in the said body A below the said tubes a chamber 14, adapted to contain oil, water, or any liquid capable of attracting and retaining such foreign material as generally accompanies air from the outside atmosphere. The bottom 11 is provided with an outlet 15 in communication with the liquid-receiving compartment or chamber 14, and this outlet 15 may be connected with a pipe leading wherever desirable. This pipe may also be provided with a valve, so that the liquid in the body A may be drawn off at any time. A top section or cover B is provided for the said body A, and this top section B is preferably of conical formation, as is shown in Fig. 1. A circular vertical section B′ is carried up from the upper portion of the said top section, and a hood or cap 16 is supported a desired distance above the top of the extension B′ of the top section by means of straps 17 or their equivalents, the incoming air to the top section or cover B′ passing beneath said hood or cap. The top section or cover B and the diaphragm or partition 12^a may be secured to the body A in any desired manner. Usually, however, they are connected by means of bolts 18, having suitable nuts 19 applied, as is illustrated in Fig. 3. The oil or

liquid employed may be introduced into the liquid-receiving section 14 of the body A in any desired way. Usually, however, the liquid is introduced through a tube 20, located in the top section B, normally closed by a plug 21, as shown. In the operation of this form of the device the air laden with impurities enters the device between the cap 16 and the opposing portion of the extension B′ of the top section and passes down into the top section, from thence through the tubes 13, where the air is made to impinge on the liquid in the chamber-section 14 of the body, as is indicated by the arrows in Fig. 1, and at such times the foreign particles brought into the device by the air will be attracted and held by the liquid at the bottom of the said body A. The air thus purified, as is indicated by the arrows in Fig. 1, ascends around the central pipe 12 and is drawn down through said pipe 12 by the action of the air-compressing device employed. Thus it will be observed that the air which is supplied to the air-compressor and from the air-compressor to a pneumatically-operated tool is practically free from all foreign matter and there is no tendency to clog the operative parts of the tool, as frequently happens when the air is drawn direct from the outside atmosphere and is so conveyed to the compressor and tool.

In Figs. 4 and 5 I have illustrated a form of device adapted to be used particularly on locomotives in connection with the air-pumps of air-brake systems to prevent foreign matter entering the systems. In this form of the device the body C is shown as circular, although it may be of other form, and is open at the top and bottom; but at the bottom portion of the body C a tank C′ is removably secured by means of screws 22 or their equivalents, the bottom of the tank C′ forming the bottom of the body C. The bottom part of the tank, although it is shown removable from the sides thereof, can be integral with the sides, if desired; but the bottom portion of the tank should extend down far enough below the bottom proper to receive the screws 22 or other fastening devices employed. A top section or cover D is provided for the body C, and this top section or cover is preferably provided with a downwardly-extending marginal flange 23, having a groove therein to receive the upper edge of the body C, and this cover D may be secured to the body C by passing screws, rivets, or the like through the flange 23 and through openings 24 in the body, as shown in Fig. 4. The top section or cover D is provided with a series of tubes 25, suitably secured therein, the said tubes extending entirely through the said cover and down to a point within the tank C′ above the level of the liquid—oil, water, or the like—contained in the said tank, as is also shown in Fig. 4. The top section or cover D is provided with a central opening around which the bottom portion of a neck or vertical extension 25^a is located, preferably integral with the cover, and this neck receives at its upper end one end of a coupling 26, which coupling is adapted for attachment or connection with any pipe or system of pipings leading to an air-compressor, from which the air is forced to the tools to be operated. A hood or cap 27 is located at the upper portion of the neck 25^a, the air to be purified or filtered, as it were, being made to pass between the said hood and the cover D, entering and passing down through the tubes 25, as is indicated by the arrows in Fig. 4, whereupon the air is forced to impinge upon the liquid in the tank C′ and then passes up in its purified form through the coupling 26 and the neck 25^a. The air may strike the liquid so forcibly as to cause the same to be unduly agitated, and in order to prevent the liquid from passing up under such conditions to the tubes 25 an overflow-pipe 28 is secured in the bottom of the tank C′, extending to any desired point. This overflow-pipe 28 is provided with a cap 29, held spaced from its upper end by suitable straps 30. When the tank requires cleaning, it is simply necessary to remove the devices employed to fasten it to the body C, whereupon the tank may be drawn out from the body, cleaned, and readily replaced.

It will be noted that in each of the embodiments of my improvements herein shown the outlet for the purified air is located entirely within the boundaries or horizontal dimensions of the body and the top section of the structure, so that the use or employment of an outer casing is entirely dispensed with and the structure reduced to compact form. I also dispense with the use of outer pipes or other appurtenances at the sides of the structure, which would be an obstruction in the intended applications of the structure, and I have found that increased results are obtained by locating the air-outlet centrally of both the body and top section thereof, since the currents of purified air tend to flow in that direction, due to the fact that there are no side outlets therefor. With the embodiment shown in Fig. 4 it has also been found advantageous to locate the overflow-pipe 28 centrally of the body, since the same is thereby rendered equally available irrespective of the side or direction from which any undue agitation of the liquid in the body may proceed.

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

1. A dust-arresting device, comprising a body adapted to contain a liquid, a top section detachably seated upon the body, the joint between the two being closed, said top section being formed with a central vertical extension, a hood supported by the extension, for deflecting air downwardly within the device, tubes pendent from the top section, for directing the incoming air to and against the surface of the

liquid, and an outlet for the purified air centrally disposed with relation to both the body and top section and the tubes.

2. A dust-arresting device, comprising a body adapted to contain a liquid, a top section detachably seated upon the body, the joint between the two being closed, the said top section being formed with a central vertical extension, a hood supported by the extension, for deflecting air downwardly within the device, tubes pendent from the top section, for directing the incoming air to and against the surface of the liquid, an outlet for the purified air, centrally disposed with relation to both the body and top section and the tubes, and a centrally-disposed liquid-overflow pipe extending upwardly within the body.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE A. SAGER.

Witnesses:

J. FRED. ACKER,

JNO. M. RITTER.