(No Model.)

3 Sheets—Sheet 1.

A. V. ABBOTT.

SEPARATOR.

No. 582,892. Patented May 18, 1897.

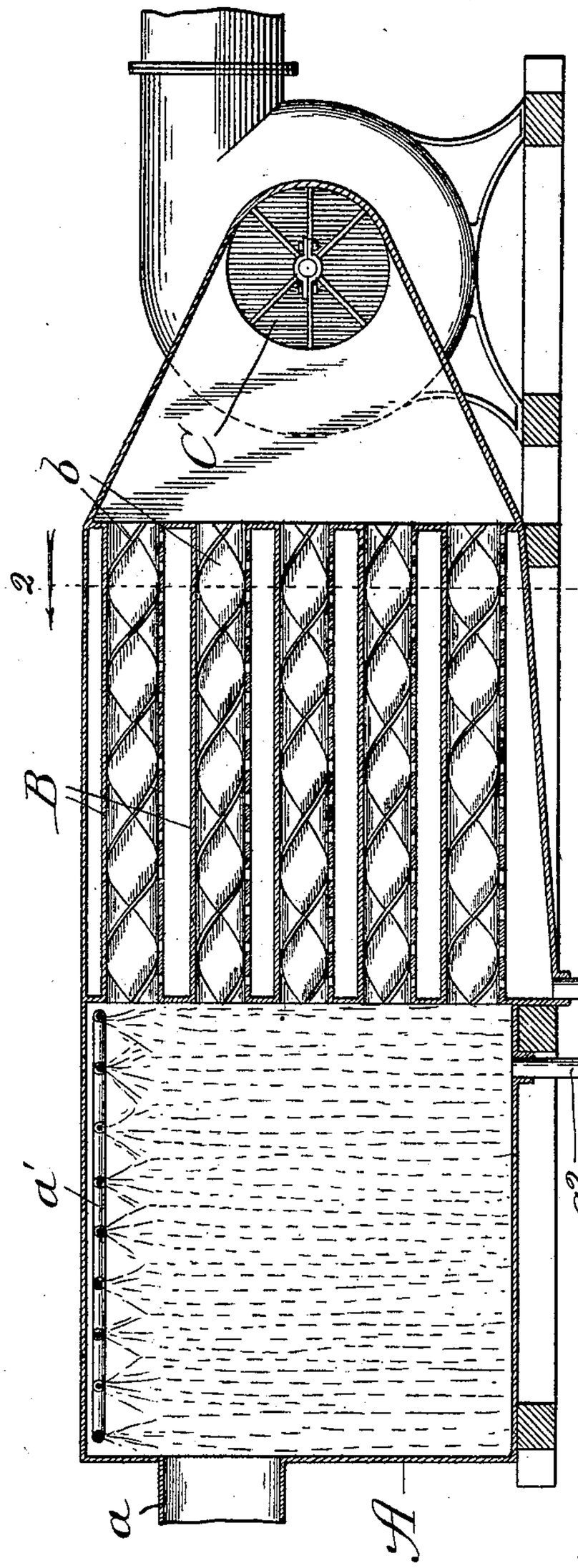

Fig. 1.

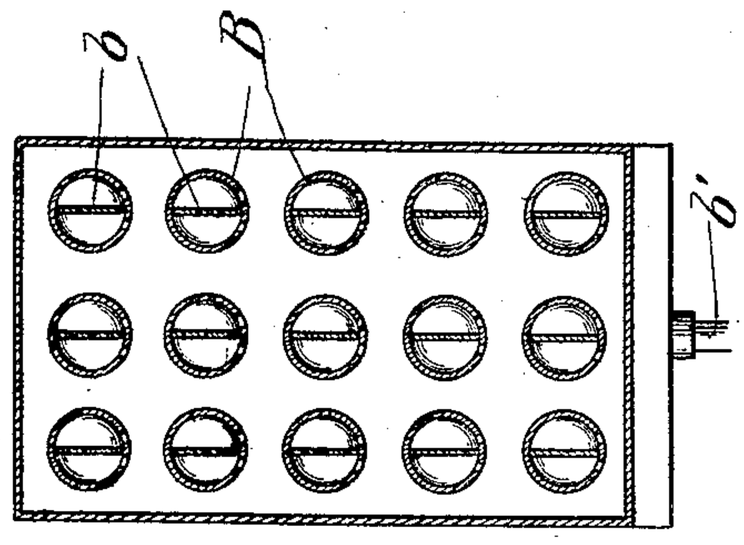

Fig. 2.

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(No Model.)

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Fig. 3.

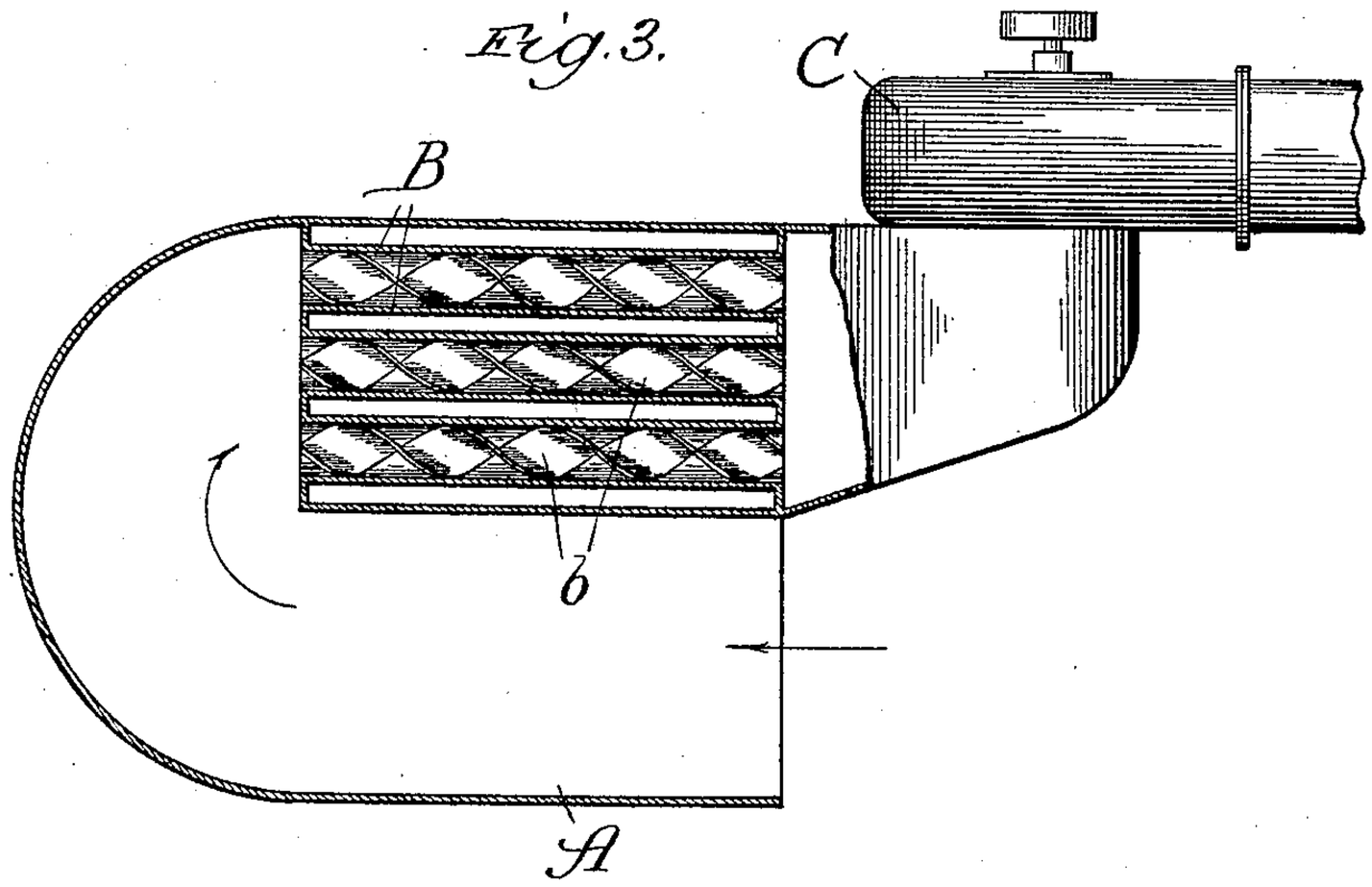
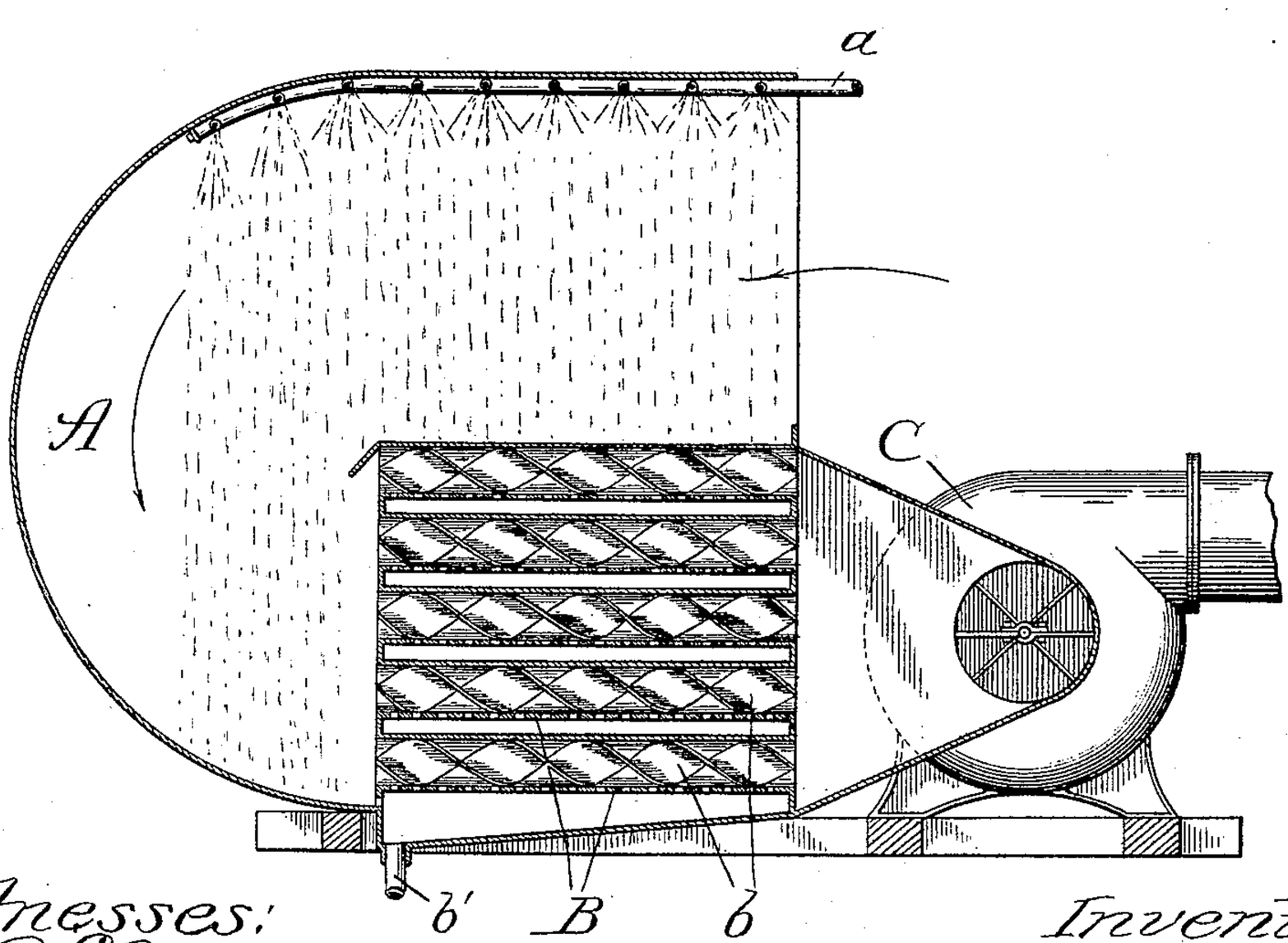


Fig. 4.



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3 Sheets—Sheet 3.

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Fig. 5.

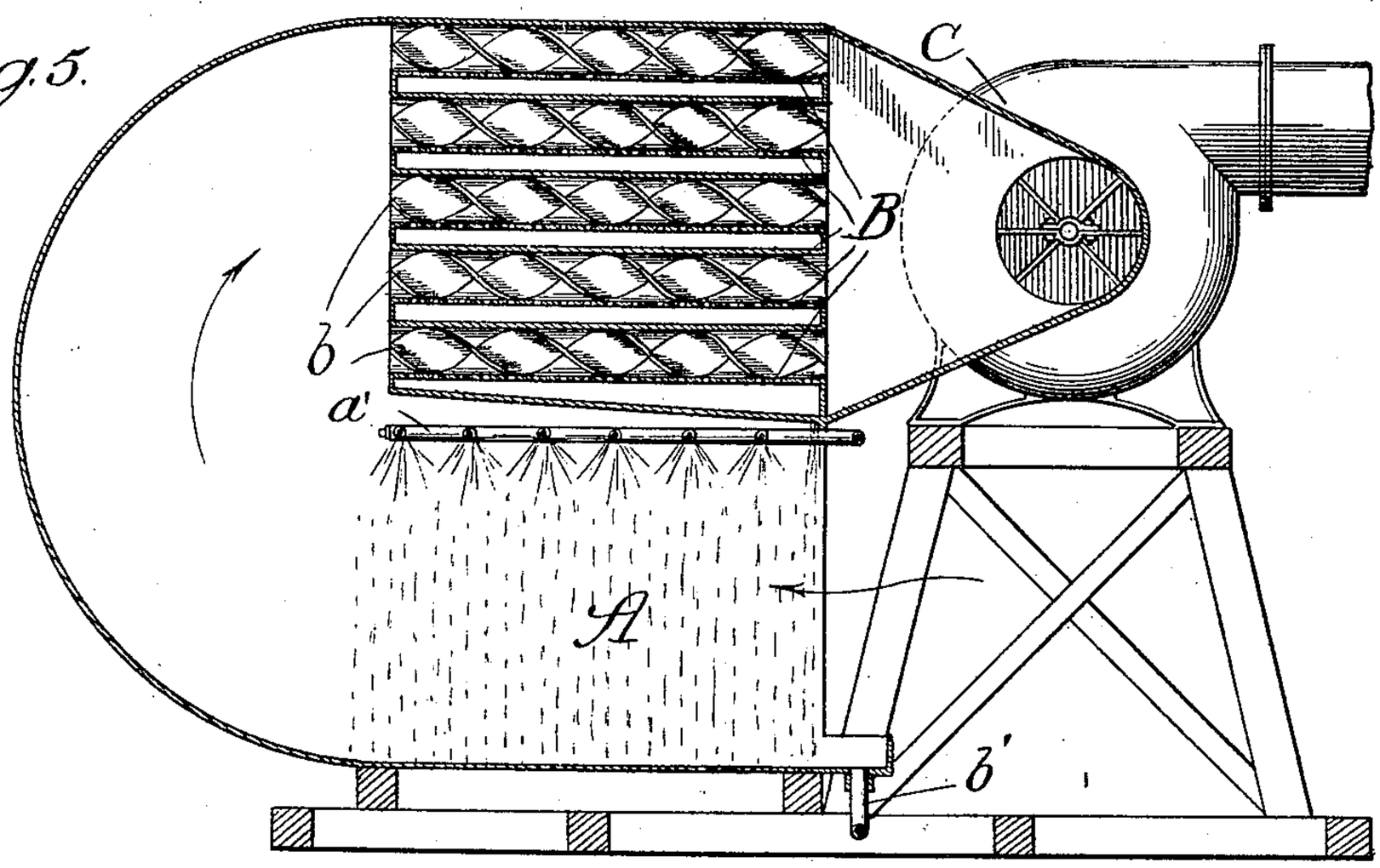
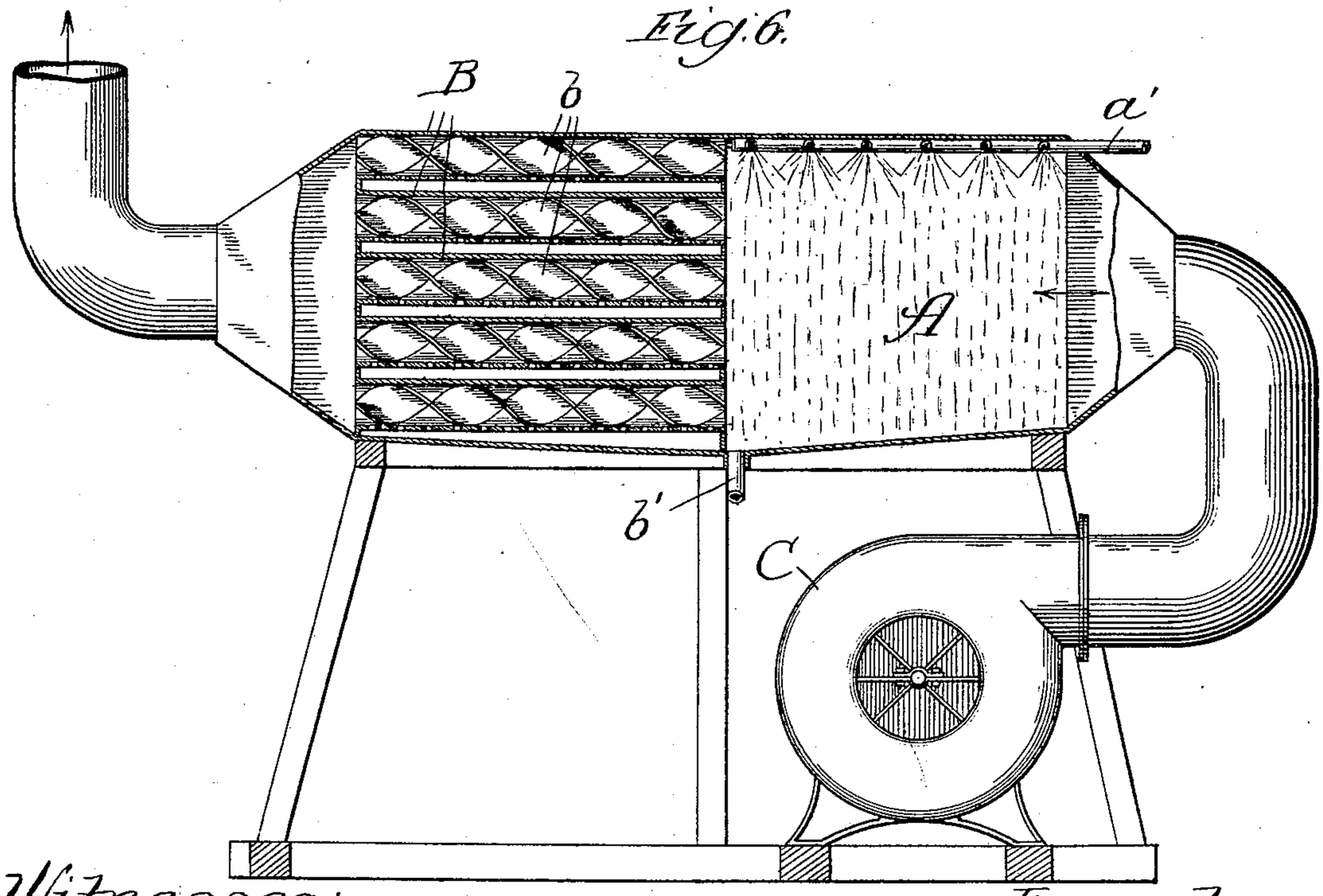


Fig. 6.



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UNITED STATES PATENT OFFICE.

ARTHUR V. ABBOTT, OF CHICAGO, ILLINOIS, ASSIGNOR TO GEORGE E. FOSS AND CHARLES P. NOBLE, OF SAME PLACE.

SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 582,892, dated May 18, 1897.

Application filed February 11, 1897. Serial No. 622,952. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR V. ABBOTT, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented a new and useful Improvement in Separators, of which the following is a specification.

The object of my invention is to provide for separating gases from air or from each other and for removing finely-divided particles of matter therefrom; and the invention, which is especially useful in connection with the ventilation of buildings, consists in the features and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of my improved separator; Fig. 2, a transverse sectional view taken on line 2 of Fig. 1; Fig. 3, a broken plan sectional view showing the wash-box or spray-chamber at the sides of the tubes; Fig. 4, a sectional side elevation showing the spray-chamber above the tubes; Fig. 5, a sectional side elevation showing the spray-chamber below the tubes, and Fig. 6 a broken sectional elevation showing a pressure-fan and the spray-chamber interposed between the fan and the tubes.

A is the wash-box or spray-chamber; a, an inlet for introducing air or other gases; a', a perforated pipe at the top of the box or chamber, and a^2 a drain-pipe extending from the bottom thereof or a nipple communicating with the drain-pipe; B, tubes extending forward from the wash-box or spray-chamber and perforated at the lower sides thereof; b, a spiral core, blade, feather, or wing inside the tubes; b', a drip or drain pipe for carrying off water or liquids, and C a fan or blower communicating with the tubes.

In constructing my improved separator I use an ordinary wash-box or spray-chamber provided with a suitable inlet for air or gases and a perforated pipe or other means for spraying water or liquid therein. For spraying water or other liquid into the wash-box or spray-chamber I prefer to use a pipe at the top of the box or chamber provided with spray-heads adapted to produce finely-divided particles of water or other liquid; but any other suitable device or appliance may be used for this purpose. This wash-box or spray-chamber may also be provided at its bottom with a drain-pipe for drawing off water or liquid accumulating therein.

In front of the wash-box or spray-chamber I arrange a series of tubes, preferably extending forward in a horizontal direction, and communicating with the suction side of an exhaust-fan, either directly or through an intermediate chamber. I prefer to inclose these tubes in a chamber having a drain-pipe at the bottom; but this is a mere matter of choice and not actually necessary. In each of these tubes I arrange a spiral core, blade, wings, or feathers, there being as many or as few of these as desired for any particular position or work.

In operation the fan draws or forces air or other gases through the wash-box or spray-chamber and through the tubes communicating therewith. The spiral core, blade, wings, or feathers causes the air or gases to revolve inside the tubes as the same is being drawn forward, this action being so strong and rapid as to also draw water or liquid from the spray-chamber into the tubes. The rapid rotation of the air or gases inside the tubes causes the water or liquid and everything in suspension therein to be thrown to the periphery of the tubes, from which it passes through perforations therein and is finally deposited at the bottom, whence it may be drained off through the outlet-pipe or removed in any other convenient way. This separation of the water or liquid and particles in suspension therein from the air or gases serves to purify the air, remove other gases or impurities, and collect the dust and foreign particles as desired.

Some of the advantages of my invention are that it provides a simple, economical, and efficient means for purifying air before its introduction into a building or room, for separating dust or other impurities from smoke, gases, or air passing from a room onto surrounding property, and for collecting such valuable particles or gases as may be absorbed or precipitated by water or other liquids.

The above description has special reference to the apparatus illustrated in Fig. 1 of the drawings; but it will be understood that many changes or variations may be made therein. For instance, the wash-box or spray-

chamber, instead of having a separate inlet for the introduction of air or gases, may have an open end in position to receive air or gases. (See Figs. 3, 4, and 5.) Instead of being immediately behind the tubes the wash-box or spray-chamber may be at one side (see Fig. 3) or above (see Fig. 4) or below the same, (see Fig. 5,) and either an exhaust or pressure fan may be used, as desired, and it is not necessary that the wash-box and tubes be in a direct line with the fan. As will be understood, then, I do not intend to limit myself to exact forms, minor features, or details of construction. On the contrary, I contemplate changing form and construction and omitting parts or using equivalents as circumstances may suggest or render expedient.

I claim—

1. In a separator, the combination of a wash-box or spray-chamber, means for introducing air or gases into the box or chamber, means for spraying water into the box or chamber, a series of perforated tubes communicating with the box or chamber each provided with a spiral core, blade, wing or feather, and a fan communicating with the tubes for drawing or propelling air or gases through the box or chamber and tubes, substantially as described.

2. In a separator, the combination of a wash-box or spray-chamber, means for introducing air or gases into the box or chamber, means for spraying water into the box or chamber, and means for draining water therefrom, a second chamber containing a series of tubes communicating with the wash-box or spray-chamber each provided with a core, blade, wing or feather, the chamber being provided with a drain-pipe at its bottom, and a fan communicating with the tubes for drawing or propelling air or gases through the box or chamber and tubes, substantially as described.

ARTHUR V. ABBOTT.

Witnesses:
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