

(No Model.)

H. C. WHITE.
STEAM SEPARATOR.

No. 435,990.

Patented Sept. 9, 1890.

Fig. 1.

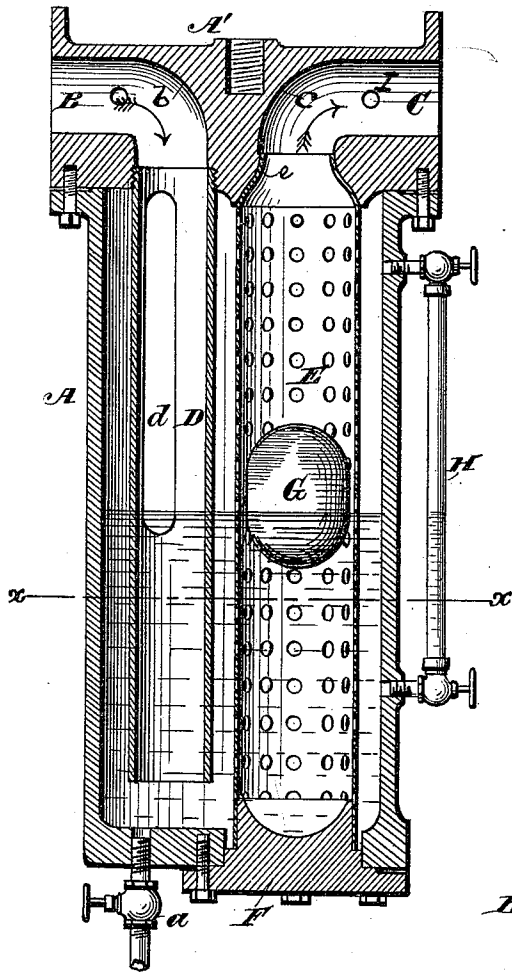


Fig. 2.

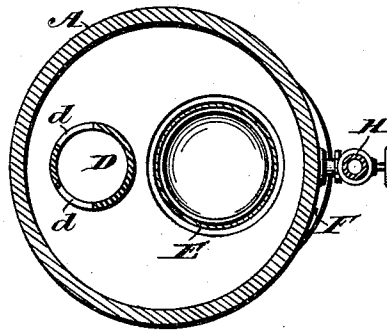
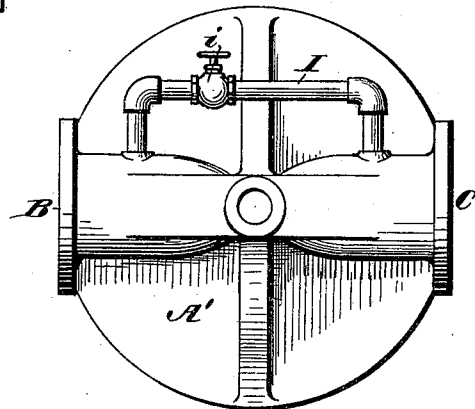


Fig. 3.



Witnesses.

Wm M Ernst

Wm H. Sloan

Inventor.

Henry C. White

By

William R. Baird

Atty

UNITED STATES PATENT OFFICE.

HENRY C. WHITE, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE A. BARNARD,
OF SAME PLACE.

STEAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 435,990, dated September 9, 1890.

Application filed May 13, 1890. Serial No. 351,707. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. WHITE, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Steam-Separators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters marked thereon, which form part of this specification.

My invention relates to steam-separators; and its novelty consists in the construction and adaptation of the parts, as will be more fully hereinafter pointed out.

Its object is to deprive the steam from a generator of the water entrained or suspended in it while on its way to the place of its use.

It is an improvement upon the device patented to me by Letters Patent of the United States No. 386,173, dated July 17, 1888, and contains some modifications of the mechanism therein described.

In the drawings, Figure 1 is a vertical longitudinal section of my device, showing the perforated chamber and the float-valve in elevation. Fig. 2 is a horizontal section on the plane of the line $x x$ in Fig. 1. Fig. 3 is a top plan view.

Referring to the drawings, A is a chamber of metal or other suitable material provided with openings to receive the inlet-pipe B, the outlet-pipe C, the drain-pipe a , provided with a valve or cock, and the water-gage H. Depending from the inlet-pipe B and forming a continuation thereof is a pipe or chamber D, placed within the chamber A, open at the bottom, and provided with apertures or openings, as d , to permit the escape of the steam into the chamber A. Similarly depending from the outlet-pipe C is the pipe or chamber E, similarly perforated to admit of the entrance of the steam therein. At the top of this pipe E the body thereof is reduced, forming a valve-seat e , against which a float G, suspended within the chamber E, can play. The inlet and outlet pipes are bent at an angle with the main steam-pipe upon their en-

trance to the chamber A. They are also connected outside of this chamber by a by-pass pipe I, provided with a valve or cock i for opening and closing the same. Access is afforded to the interior of the chamber A by means of the hole at the bottom closed by the plate F. I may make the top or cover of the chamber A of one casting A', having the bent portions b and c of the inlet and outlet pipes and the reduced portion of the outlet-pipe cast therein—a form of construction which recommends itself on account of its simplicity.

The action of the apparatus is as follows: The saturated steam from the generator coming in through the pipe B is deflected downward by striking the curved portion thereof b . The entrained or suspended water in the steam adheres to the walls of the pipe D and flows down toward the bottom of the chamber. The steam, being thus deprived of a large portion of its water, escapes through the apertures d into the interior of the chamber A, and thence into the outlet-pipe E through the openings therein. The float-valve G serves the purpose of checking the flow of the steam by rising against the valve-seat e if a sudden and dangerous influx of the water occurs within the chamber A, or if the drip-cock in the pipe a should be neglected and the water allowed to accumulate within the chamber A. The float G is guided by the walls of the pipe E, so that it will always seat in the proper way. When it occurs that the water has risen, as stated, and the float is held firmly against the valve-seat e by the pressure of the steam and the flow of the steam through the apparatus is stopped, in order to drive the float from its seat the valve i in the by-pass pipe I is opened, and the steam is thus permitted to flow directly, and not through the apparatus.

This device is also useful in cases where it is deemed desirable to use the steam without passing it through the separator. The by-pass pipe may also be cast within the casting A', if desired. In certain cases I may dispense with the pipe E, and then the float G must be guided to the valve-seat e , formed on the mouth of the outlet-pipe, by some form of inexpensive guide, such as vertical rods,

upon which it slides. The particular means to be employed in any given case is readily within the discretion of a trained mechanic.

What I claim as new is—

- 5 1. In a steam-separator, the combination, with the steam and water chamber, of the outlet-pipe and a floating valve for closing the same, and the inlet-pipe perforated to allow the steam to escape laterally into said chamber, as described.
- 10 2. In a steam-separator as described, the combination, with the chamber A, of the inlet-pipe B, the chamber D, having apertures, as *d*, the perforated pipe E, and the outlet-pipe C, as described.
- 15 3. In a steam-separator, the combination, with the chamber A, the inlet-pipe B, and the outlet-pipe C, of the by-pass pipe I, provided with the valve *i*, as described.
- 20 4. In a steam-separator, the combination, with the inlet-pipe B, the chamber D, having apertures, as *d*, and the outlet-pipe C, provided with a valve-seat *e* upon its inner extremity, of the float-valve G, with means for
- 25 guiding the same against the said valve-seat, as set forth.

5. In a steam-separator, the combination, with the chamber A, of the inlet-pipe B, the chamber D, having apertures, as *d*, the perforated pipe E, the outlet-pipe C, provided 30 with a valve-seat *e*, the float-valve G, and the by-pass pipe I, provided with the valve *i*, as described.

6. In combination with a steam-separator, a cover therefor cast in one piece and containing within the same the curved portions 35 *b* and *c* of the inlet and outlet pipes, and the valve-seat *e*, as described.

7. In combination with a steam-separator, a cover therefor cast in one piece and containing within the same the curved portions 40 *b* and *c* of the inlet and outlet pipes, the valve-seat *e*, and the by-pass pipe I, as described.

In testimony whereof I affix my signature 45 in presence of two witnesses.

HENRY C. WHITE.

Witnesses:

WM. RAIMOND BAIRD,
P. F. RANDOLPH.