(No Model.)

J. L. ROBERTSON.

STEAM SEPARATOR.

No. 428,954. Patented May 27, 1890.

Fig. 1

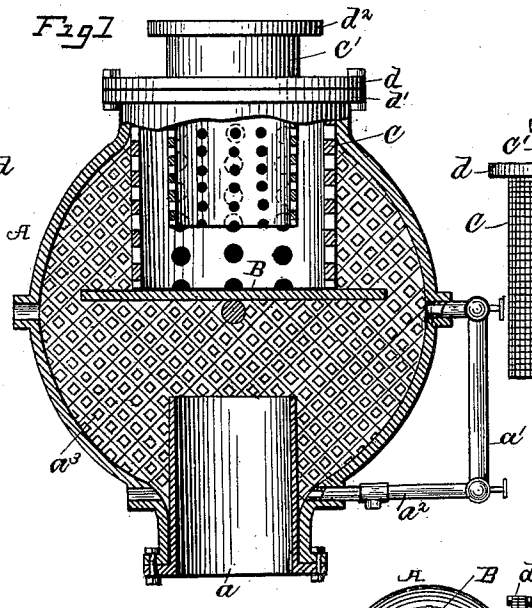


Fig. 2.

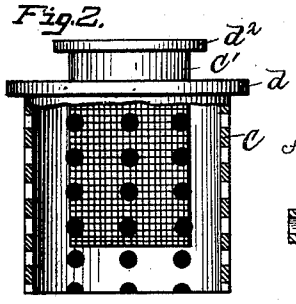


Fig. 3.

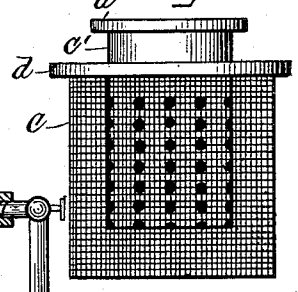


Fig. 4.

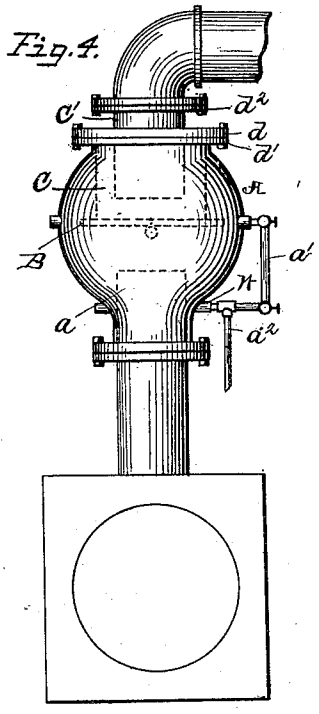
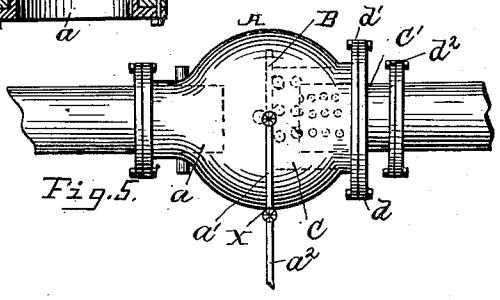


Fig. 5.



Witnesses.
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By [signature]
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UNITED STATES PATENT OFFICE.

JAMES L. ROBERTSON, OF NEW YORK, N. Y.

STEAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 428,954, dated May 27, 1890.

Application filed February 11, 1890. Serial No. 339,978. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. ROBERTSON, a citizen of the United States of America, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Steam-Separators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention pertains to certain new and useful improvements in steam-separators; and it has for its object the provision of new and improved highly efficient means whereby oil, grease, grit, and other foreign substances are separated from exhaust-steam and water is removed from live steam.

The invention comprises a shell or casing, the interior surface of which is corrugated or roughened, a central plate or deflector, and an upper series of apertured or perforated cylinders or separators in juxtaposition to said plate or deflector, substantially as hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view illustrative of my invention. Figs. 2 and 3 are modified forms of the inner cylinders or separators. Fig. 4 is a view in side elevation showing my invention as attached to a vertical steam-pipe, and Fig. 5 when attached horizontally.

Referring to the drawings, A designates the shell or casing, *a* the steam-inlet pipe extending therein a short distance so as to form (in vertical connections) a receptacle for the accumulated oil, &c., said pipe being rigidly secured to or formed with the lower end of said shell or casing.

a' is the gage or sight-tube, with which is connected the drain-pipe a^2. This latter pipe in vertically-disposed separators opens at one end into the lower end of shell A, as shown in Fig. 1, and at W, Fig. 4, while in horizontal connections said drain-pipe opens into the under side of said shell, as seen at X, Fig. 5. The shell or casing has its inner surface provided throughout with grooves or recesses a^3, preferably of intersecting lines in intaglio.

B is a central plate or deflector rigidly secured within the shell or casing, space being left between the latter and said plate sufficient for the passage of steam without creating back-pressure. While this plate is shown as being flat, it is obvious that the same may be concaved or convexed on its lower surface.

C C' are two cylinders or separators, the latter being smaller and inclosed within the former, which at its lowest end rests against or near to plate or deflector B, or may be made fast therewith. These cylinders or separators are made of any material, but preferably of metal, and provided throughout with holes or perforations; or, as shown in Fig. 3, the outer cylinder or separator may be of wire-gauze, or, vice versa, as seen in Fig. 2, the inner cylinder or separator being so made. The upper end of cylinder or separator C is provided with a circular flange *d* for connection with a similar flange *d'* of shell A, while cylinder or separator C' is also provided with a flange d^2 for connection with the steam-outlet pipe.

By thus constructing the shell or casing with an inner corrugated or roughened surface of grooves or recesses and providing the two cylinders or separators and the plate or deflector the separation of water from live steam and oil, grease, grit, and other foreign substances from exhaust-steam is readily effected, and the same upon being so separated will gravitate to the bottom of the shell or casing, to be carried off by the drain-pipe.

The advantages and operation of my invention will be at once apparent to those skilled in the art to which it appertains. In vertical connections the steam on entering the shell or casing will strike against the under side of the central plate or deflector, and the latter being solid or free from all perforations or openings the steam will be deflected against the roughened or corrugated surface of the shell or casing, and after passing around the edge of said plate or deflector will pass through the two apertured or perforated cylinders or separators, thus further extracting oil and other substances, and escape at the upper end after having been freed from water and all foreign matter. The latter will drop to the bottom of shell or casing A and collect in the receptacle around inlet-pipe *a*, and can be drawn off by drain-pipe *a'*. In horizontal connections the operation is the same, the waste or foreign matter being drawn off from

the bottom portion of shell or casing A, as before explained. In this form the outer cylinder C is not perforated in its lower portion, as shown in Fig. 5, the object being to prevent the accumulated oil, &c., from being thrown up thereinto by the action of the steam.

It is obvious that other changes than those above referred to may be made in my invention without departing from the spirit or scope thereof—as, for instance, the separators C C′ may be of any preferred form and not necessarily cylindrical, and the latter separator C′ can be made of finely-perforated terra-cotta for some special purposes.

I claim as my invention—

1. In a steam-separator, the combination of the substantially spherical shell or casing having a lower receptacle, a central plate or deflector located above said receptacle and having a continuous narrow passage-way between its edge and said shell or casing, the apertured or perforated cylinders or separators at one side only of said plate or deflector, and the drain-pipe opening into said receptacle and having a gage or sight-tube connected therewith, substantially as set forth.

2. In a steam-separator, the substantially spherical shell or casing having its inner surface provided throughout with grooves or recesses, and the central plate or deflector located in said shell or casing and having a continuous passage-way around its edge, substantially as set forth.

3. In a steam-separator, the substantially spherical shell or casing provided with a lower receptacle and having its inner surface grooved or recessed, the central plate or deflector secured therein above said receptacle, and the apertured or perforated cylinders or separators adjacent to said plate or deflector, one of said cylinders or separators bearing against said plate or deflector and the other being suspended therein, substantially as set forth.

4. In a steam-separator, the combination, with the substantially spherical shell or casing having its ends open, of the steam-inlet pipe extending into one of said ends forming a lower receptacle therearound, the central plate or deflector, the apertured or perforated cylinder or separator C, secured to the other end of said shell or casing and bearing against said plate or deflector, the apertured or perforated cylinder or separator C′, located in said former cylinder or separator, and the drain-pipe, substantially as set forth.

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

JAMES L. ROBERTSON.

Witnesses:
W. J. R. HUGLEMAN, Jr.,
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