

J. SCHNEIBLE.
SEPARATOR.

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1,043,974.

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Fig. 1.

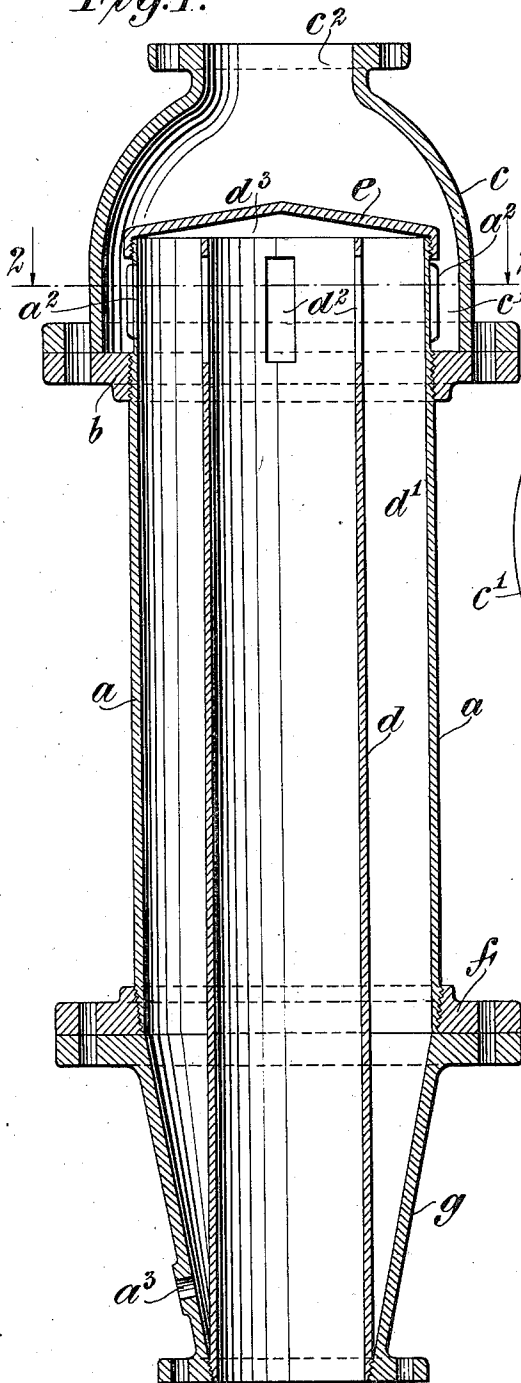


Fig. 2.

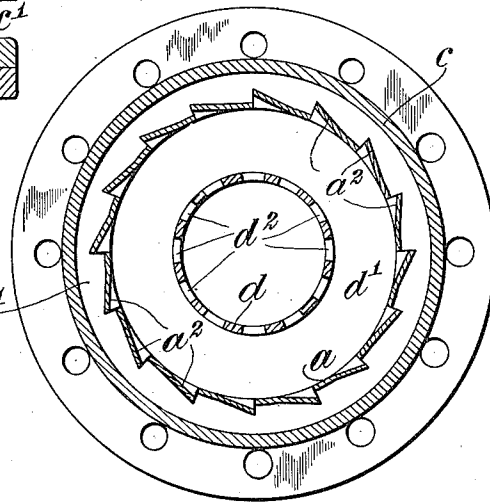
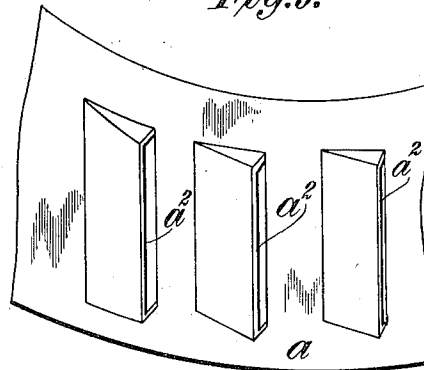


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SEPARATOR.

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To all whom it may concern.

Be it known that I, JOSEPH SCHNEIBLE, a citizen of the United States, residing in Chicago, Cook county, State of Illinois, have invented certain new and useful Improvements in Separators, of which the following is a specification, reference being had to the accompanying drawings, which form a part hereof.

The object of the invention is to increase the efficiency of separators designed for the separation of oil, water, or other liquid, from a liquid-bearing gaseous fluid such as steam, gas or air.

In the improved separator the gaseous fluid, bearing the liquid in suspension, enters a receiving chamber and at many points in the circumference passes therefrom into a separating chamber in which it has a vortical motion whereby the liquid is separated from the gaseous and aeriform fluid, the liquid descending upon the circumferential wall of the separating chamber while the dry fluid passes therefrom through the discharge pipe which is coaxial with the vortex space.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated as embodied in a convenient and practical form, and in which—

Figure 1 is a view of the improved separator in vertical central section. Fig. 2 is a view in horizontal section on the plane indicated by the line 2—2 of Fig. 1. Fig. 3 is a detail view illustrating more clearly the arrangement of the nozzles between the receiving chamber and the separating chamber.

In the embodiment of the invention illustrated in the drawing, the separator comprises a cylindrical shell *a*, a head *b* secured to the shell *a* somewhat below the upper end of the shell, a cap *c* secured to the head *b*, a pipe *d* which is concentric with the shell *a* and within the same, an inner cap *e*, a foot *f* secured to the shell *a* at its lower end and preferably a taper reducer *g* which is secured to the foot *f* and to the extended lower end of the pipe *d*.

The outer cap *c* is sufficiently larger in diameter than the shell *a* to form between the two an annular receiving chamber *c'* into which the steam, gas, or air is delivered through the inlet *c''*. It will be noticed that this chamber is closed at its base by the head

b for the purpose to be hereinafter more fully set forth. In that portion of the shell which extends above the lower end of the cap *c* are formed openings through which the steam or other fluid is permitted to pass from the annular receiving chamber *c'* into the separating chamber *d'* which is formed between the shell *a* and the pipe *d*. These openings through which the steam or other fluid passes preferably are located adjacent the base of the receiver and have the form of tangential nozzles, as indicated at *a''*, so that the steam or other fluid shall enter the separating chamber *d'* tangentially and the entire body of liquid in such chamber have a strong vortical motion. By reason of the proximity of the closed base of the receiving chamber and the openings *a''* the body of fluid is more certainly concentrated and directed through said openings, whereby said vortical motion is greatly accentuated.

The tangential nozzles may be formed in any convenient manner. They are indicated in the drawings as simply formed by punching outwardly from one side a portion of the shell *a*. The liquid which is separated from the gas or other fluid in the vortical motion of the fluid within the separating chamber condenses upon an inner wall of the shell *a* and runs to the bottom where it may be drawn off through a suitable discharge opening *a'''*. The dry fluid passes from the separating chamber *d'* into the discharge pipe *d* from whence it is conducted to any desired point. The dry fluid passes into the discharge pipe *d*, preferably through openings *d''* which are formed in the wall thereof in the same plane with the tangential nozzles *a''* through which the steam enters the separating chamber. The dry fluid may also pass over the top of the pipe *d*, below the cap *e*, as indicated at *d'''* in Fig. 1. It will be noted that the discharge pipe *d* is coaxial with the vortex established in the separating chamber *d'*, so that only the driest fluid passes from the separating chamber into the discharge pipe. It will also be noted that the receiving chamber *c'* is annular and coaxial with the separating chamber, so that the fluid to be separated is delivered to the separating chamber at many points about its circumference, thereby producing a strong vortical motion of the body of fluid within the separating chamber.

It will be understood that the form and

arrangement of parts will be varied to suit different conditions of use and that the invention, therefore, is not restricted to the particular form and arrangement of parts shown and described herein.

I claim as my invention:—

1. A separator for liquid bearing gaseous fluids, comprising a shell closed at its upper end; a cap having an inlet in its upper end and surrounding the shell at its upper end and forming about the upper end of the shell an annular receiving chamber closed at its bottom, and a discharge pipe located co-axially within the shell and forming therewith an annular separating chamber, the shell and the discharge pipe being formed with openings near their upper ends in the same horizontal plane for the passage of the fluid from the receiving chamber to the separating chamber and from the separating chamber into the discharge pipe.

2. A separator for liquid bearing gaseous fluids comprising a shell, a cap surrounding the shell at its upper end and forming an annular receiving chamber closed at its bottom and a discharge pipe located co-axially within the shell and forming therewith an annular separating chamber, the shell being provided within the cap with tangential nozzles through which the fluid passes from the receiving chamber into the separating chamber, and the discharge pipe being provided with openings in the same horizontal plane with said nozzles through which the dry fluid passes from the separating chamber into the discharge pipe.

This specification signed and witnessed this 17th day of July A. D., 1911.

JOSEPH SCHNEIBLE.

Signed in the presence of--

M. LAINDORFF,
AMBROSE L. O'SHEA.