(No Model.)

S. STUART.

SEPARATOR.

No. 383,674. Patented May 29, 1888.

Fig. 1.

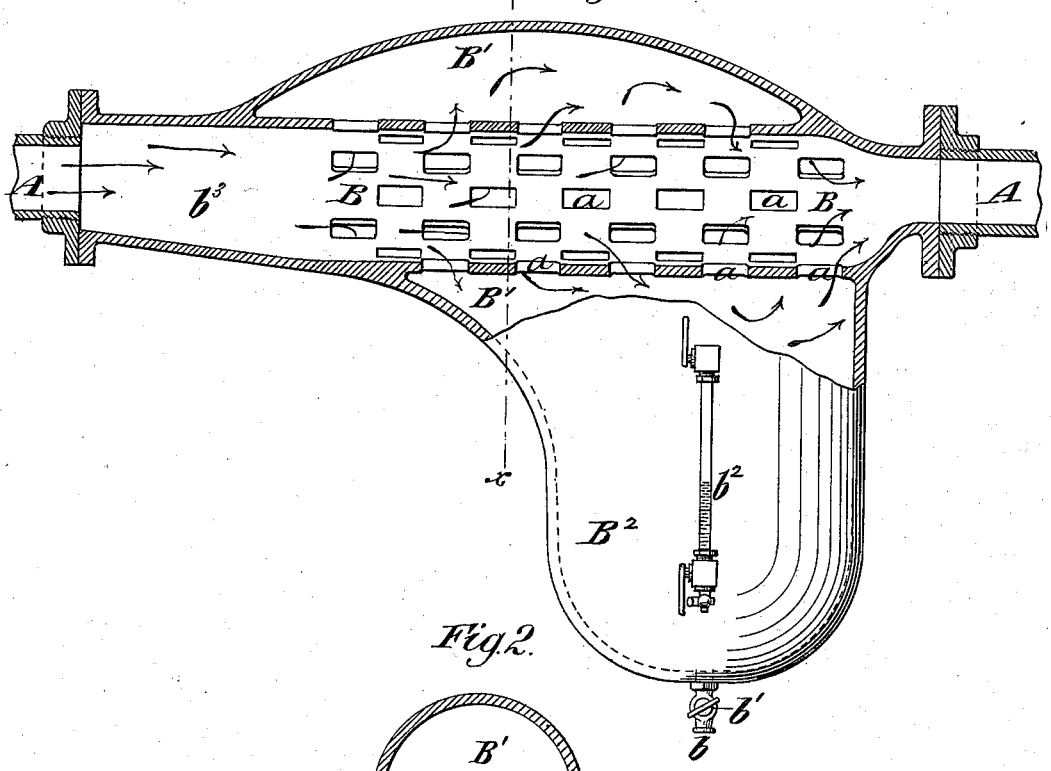
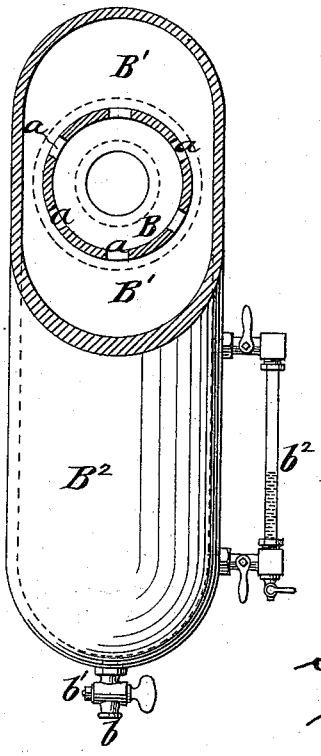


Fig. 2.



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SINCLAIR STUART, OF PLAINFIELD, NEW JERSEY.

SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 383,674, dated May 29, 1888.

Application filed December 20, 1887. Serial No. 258,458. (No model.)

To all whom it may concern:

Be it known that I, SINCLAIR STUART, of Plainfield, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Separators for Steam-Pipes, of which the following is a specification.

My invention relates to a separator which may be inserted in a line of pipe for live or exhaust steam, and which will separate from the steam the water, and in case of exhaust-steam also the oil, which is always carried from the cylinder of an engine, steam-pump, or similar machine, and thus prevent the boiler and the condenser, if one be used, being injured by the deposit of oil and grease therein. When such a device is applied to an exhaust-pipe for supplying exhaust-steam to a system of heating-radiators, it prevents oil and grease from being carried to and deposited in the radiators, and thereby prevents foul odors which are frequently produced where such deposit occurs.

In my Letters Patent No. 362,191, dated May 3, 1887, I have shown a device for the purpose, consisting of a chamber wherein are arranged catch-plates or abutments against which the steam impinges; but I have now discovered that the desired result may be accomplished by constructing the device so as to afford free opportunity for the expansion of the steam and for the escape from the steam-pipe of the water and oil which will be caused to deposit by the reduced velocity consequent on such expansion.

The invention will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of my device; and Fig. 2 is a transverse section thereof on the plane of the dotted line *x x*, Fig. 1.

Similar letters of reference designate corresponding parts in both figures.

A designates the steam or exhaust pipe in which my device is applied. The sections of this pipe at opposite sides of the separator are connected with a pipe-section, B, forming a part of the extractor, and which is usually of larger diameter than the pipe A, so that as the steam reaches the pipe-section B it will expand and will have its velocity correspondingly reduced. The separator comprises a chamber, B′, which surrounds the pipe section B, and it has at its lower portion a well, B^2, which is in open communication with the chamber B′, and forms, in fact, a part thereof, both being formed in a single casting. At the bottom of the well B^2 is an outlet-pipe, *b*, provided with a valve, *b′*, and through which the water and oil may be withdrawn from time to time. The well B^2 may also have applied to it a gage-glass, b^2, for indicating the level of oil and water within it.

The pipe-section or passage B is perforated throughout its length, which is covered by the chamber B′, or has numerous openings *a* formed therein, through which water and oil, and also steam, pass into the chamber B′. As here represented, the portion b^3 of said pipe-section B which is outside the chamber B′, and therefore imperforate, is of gradually-increasing diameter, or inwardly-flaring in the direction in which steam enters, and as the steam passes into and through the pipe section or passage B its velocity becomes reduced, owing to its expansion, and the particles of water and oil deposit, owing to their specific gravity, and find their way through the openings *a* into the chamber B′ and thence to the well B^2. So, also, any steam which passes through the openings *a* has its current broken up and loses its velocity and allows the water and oil held in suspension to deposit in the chamber B′.

When the separator is applied in an exhaust-pipe which communicates with a condenser, and wherein a vacuum is to be maintained, the outlet *b* may have applied to it a discharging-chamber, also having a valved outlet, as shown in my aforesaid patent, and then the well B^2 may be discharged without interfering with and notwithstanding the vacuum in the chamber B′.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The separator herein described, consisting of a steam-pipe section or passage which is perforated or formed with lateral openings, and with the ends of which are connected the steam-pipe sections, and a chamber surrounding the perforated pipe-section or passage, and which is constructed to form a well for

receiving water and oil, substantially as herein set forth.

2. The combination, with the pipe-sections A, of the separator, comprising the pipe-section or passage B, larger in diameter than the sections A, and having lateral perforations or openings, the chamber B′, surrounding the pipe section or passage B, and the well B^2, for receiving the water and oil, and provided with an outlet-pipe therefor, substantially as herein set forth.

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