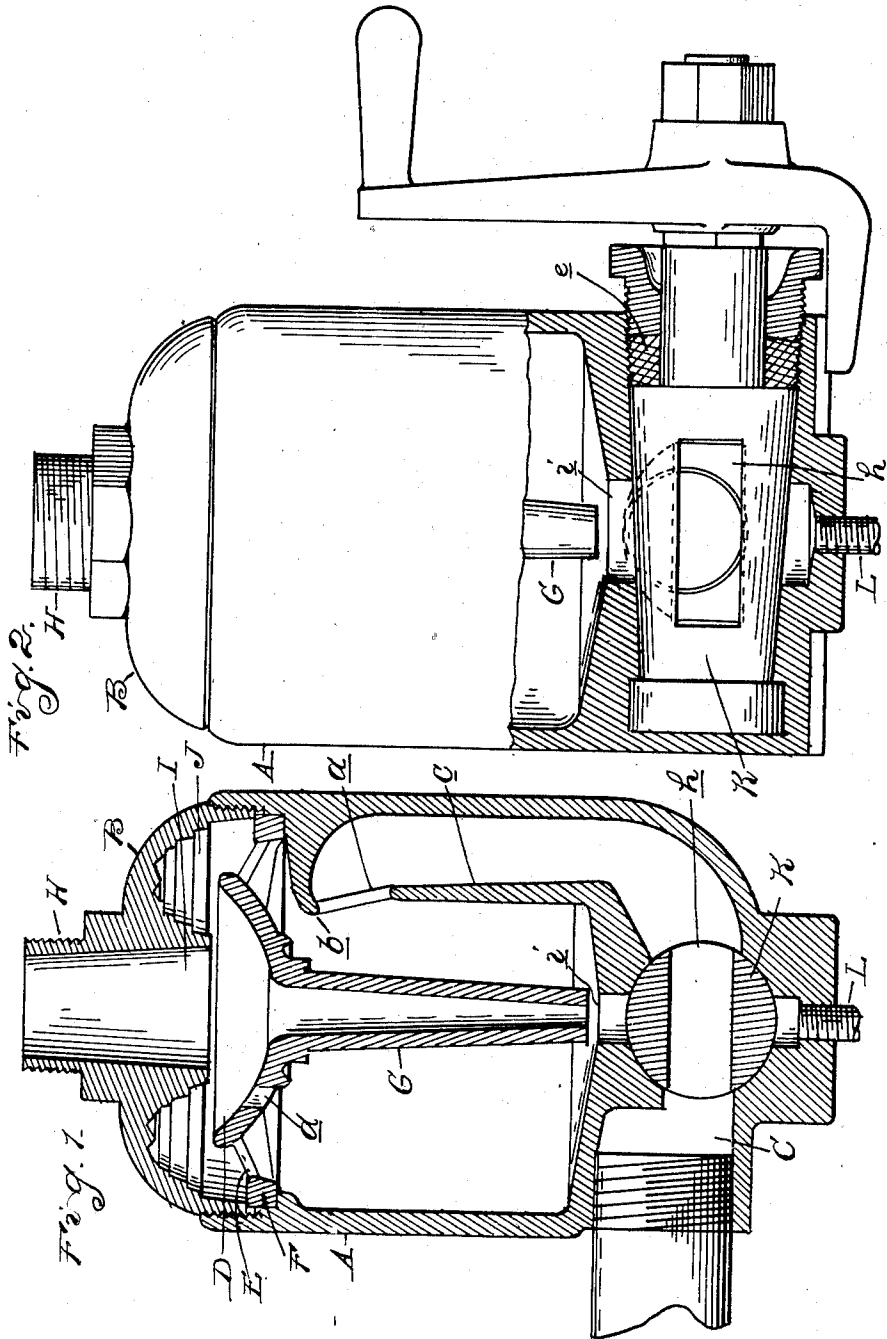


E. K. STANDISH.
STEAM SEPARATOR.
APPLICATION FILED JAN. 16, 1911

1,039,836.

Patented Oct. 1, 1912.



Witnesses
W. K. Bond
J. B. Sknap

Inventor
Edward K. Standish
By *[Signature]*
Attys

UNITED STATES PATENT OFFICE.

EDWARD K. STANDISH, OF DETROIT, MICHIGAN, ASSIGNOR TO DIAMOND POWER SPECIALTY COMPANY, OF DETROIT, MICHIGAN, A COPARTNERSHIP.

STEAM-SEPARATOR.

1,039,836.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed January 16, 1911. Serial No. 602,880.

To all whom it may concern:

Be it known that I, EDWARD K. STANDISH, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, 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.

The invention relates to new and useful improvements in steam separators, particularly intended to be used in the steam pipe leading to a flue cleaner; in the construction, arrangement and combination of the separating devices, and in the combining with the separator of the shut-off valve for the steam; and in the construction and arrangement of the valve to act as a drain valve for the separator when the steam is shut off; as more fully hereinafter described and particularly pointed out in the claims.

In the drawings,—Figure 1 is a vertical central section through a separator embodying my invention; and Fig. 2 is a side elevation, the lower part being in section.

The separator comprises a casing A, of substantially bowl-shape, and a removable top B, the two being screwed or otherwise secured together. At the bottom is a passage C extending across the bottom of the bowl, and leading up the side, and discharging into the body of the bowl through the port *a* near the top. The upper edge of this port preferably has the lip *b*, which tends to deflect the steam slightly downward, and also slightly overhangs the wall *c* of the passage so that drip from above will not drop into the steam passage. In the top of the bowl is the concavo-convex diaphragm D, lying preferably within the top and spaced from the side walls by the spider E, which has a ring F resting on a shoulder of the bowl near the top, and is clamped in position by screwing the top against it, as plainly to be seen in Fig. 1. This diaphragm terminates in a hollow drainage nipple G, which depends to near the bottom of the bowl, centrally thereof. It is also preferably provided with one or more apertures *d*. The top has a central outlet nipple H, to which the outlet steam pipe is connected and has an inwardly-extending portion I which forms an inverted trough-like passage in the upper section of the top. The

wall of this passage is stepped or corrugated as shown at J.

Across the steam inlet passage C is a cross bore, in which is secured by a suitable gland the plug cock K, having the cross port *h*, which may be brought into alignment with the steam passage, or, when the steam is shut off, with the ports *i* *h* in the bottom of the bowl, and below the cock. This latter port connects preferably with a drain pipe L.

The parts being thus constructed, they are intended to operate as follows: The device is intended primarily to be inserted in the steam pipe leading from the steam down to a flue cleaner, being below the cleaner so that all water will drain from the cleaner into the bowl. The cock being opened, as shown in Fig. 1, steam will pass through the passage C and enter the bowl through the port *a*. The water in the steam will fall into the bowl and settle in the bottom. The steam will then pass through the spider around the diaphragm, impinge against the stepped walls of the passage in the upper portion of the top, be deflected downward by the inwardly extending nipple portion B¹, and finally pass out through the exit pipe. Any water in the steam which leaves the bowl will tend to be separated in impinging on the stepped walls of the passage in the top, and in the bowl portion of the diaphragm, and will drain through the nipple G into the bowl. Thus, wet steam will be largely freed from its water in passing through the separator, before it reaches the flue cleaner. Water or wet steam if injected into the flues tends to cake the soot and render it impossible to remove, while dry steam does not have this effect.

It will be seen that in this structure I combine a steam shut-off valve with the separator, and thus dispense with the necessity of another valve for the steam shut-off.

What I claim as my invention is,—

1. In a steam separator, the combination of a separating chamber having a steam passage leading therein and a drainage port therefrom, and a single valve for controlling the steam passage and drainage port.

2. In a steam separator, the combination of a bowl forming the separating chamber, a steam inlet passage extending across the bottom of the bowl and up to the top of the bowl, the bowl having a drainage port

at the bottom, and a single means for controlling the steam passage and drainage port.

3. In a steam separator, the combination
5 of a bowl having an inlet passage opening into one side thereof near the top, a diaphragm centrally positioned within the bowl above the plane of the inlet opening and spaced from the sides of the bowl, a
10 curved deflector extending above the inlet opening and overhanging a wall of the bowl, an inwardly projecting central nipple in the top of the bowl, forming an inverted trough-shaped steam passage, annular steps
15 or corrugations in the wall of said trough-shaped passage, and a central drainage tube depending from said diaphragm to substantially the bottom of said bowl.

4. In a steam separator, the combination
20 of a bowl having an inlet passage opening

into one side thereof near the top, a diaphragm centrally positioned within the bowl above the plane of the inlet opening and spaced from the sides of the bowl, and a central drainage tube depending from said
25 diaphragm to substantially the bottom of said bowl.

5. A steam separator, comprising a casing having an inlet passage at the side opening into the casing adjacent the top thereof, and
30 a curved deflector positioned at the upper end of the inlet passage and extending above the opening in the casing and beyond the inner wall of the passage.

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

EDWARD K. STANDISH.

Witnesses:

JAMES P. BARRY,
W. J. BELKNAP.