(No Model.)

C. M. GIDDINGS.

SEPARATOR FOR STEAM BOILERS.

No. 321,016. Patented June 30, 1885.

Fig. 1.

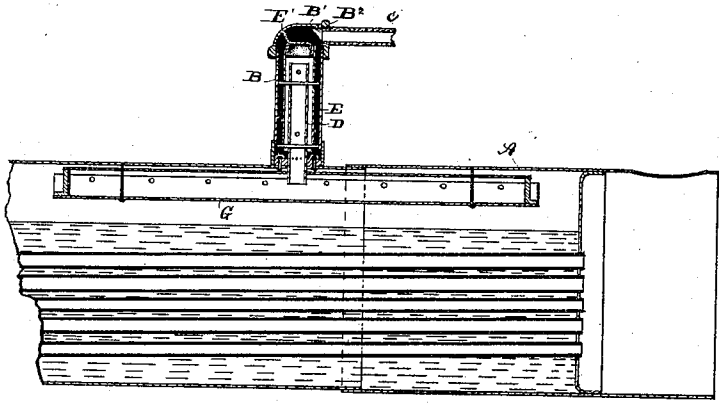
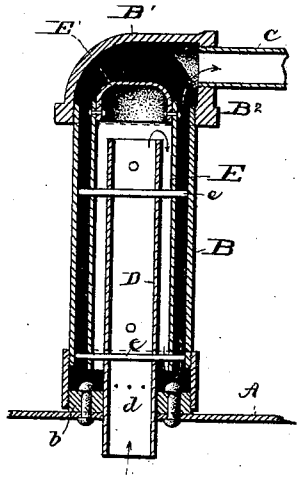


Fig. 2.



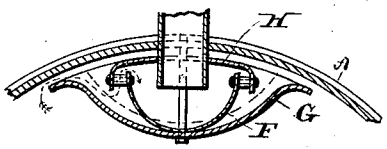


Fig. 3

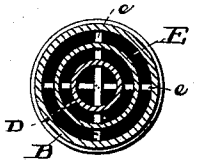


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

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SEPARATOR FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 321,016, dated June 30, 1885.

Application filed April 2, 1885. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. GIDDINGS, of Massillon, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Separators for Steam-Boilers; and I do hereby 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 pertains to make and use the same.

My invention relates to improvements in steam-boilers, the object being to provide mechanism located in the steam-space of the boiler to prevent water from drawing over through the steam-pipe into the engine. With this object in view my invention consists in certain features of construction and in combination of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation in section of a portion of a steam-boiler with my improvements attached. Fig. 2 is an elevation in section of the steam-dome and internal mechanism. Fig. 3 is a transverse section of a portion of the boiler and attached devices. Fig. 4 is a transverse section of the steam-dome on the line of *x x*, Fig. 1.

A represents the shell of the boiler; B, the steam-dome, and C the steam-pipe. The dome has a curved head, B′, with a nozzle, B^2, for attaching the steam-pipe. At the bottom the dome has an internal head, *b*, attached to the shell of the boiler.

D is a pipe extending well up into the dome and secured in the head *b*, and extending through and a short distance below the shell of the boiler, and has drip-holes *d* at the upper face of the head *b*.

E is a pipe intermediate in size and location between the dome and pipe D, is closed by the curved cap E′, is supported by stay-bolts *e* or other suitable devices, is open at the bottom, and terminates a short distance above the head *b*. Directly under the pipe D, and extending lengthwise of the boiler, are located the semicircular trough F and the baffle-plate G, and over the trough F, and fitting around the pipe D, is the cover H. This cover is located near the shell of the boiler, to which it conforms in cross-section except at the edges, where it curves more sharply downward and extends below the edges of the trough, from which it is but slightly separated, leaving a narrow and approximately vertical passage-way between the cover and trough. The baffle-plate is near or joins the bottom of the trough, and curves outward with reverse curves at the edges, as shown in Fig. 3. The trough and baffle plate have small drip-holes along the bottom.

The parts F, G, and H are fastened together in their proper relative position, and are then placed in position in the boiler and secured by bolts. The ends of the trough, cover, and baffle-plate may be closed by a head in common, or they may be closed by separate heads, as preferred. The parts F, G, and H are of considerable length, and may extend nearly the length of the boiler.

It is well known that when steam in large quantities is drawn from one part of a boiler it is liable to draw water with it and carry the water to the engine. This frequently occurs in starting an engine, or when the engine is laboring heavily.

It is found that with my improved attachments, by reason of drawing the steam in small quantities respectively from all parts of the steam-space of the boiler, and by reason of the frequent sharp bends in the steam passage-way, the steam reaches the steam-pipe "dry" and in good condition to operate the engine. The steam first enters the narrow space between the edges of the baffle-plate and the boiler-shell, and this space is some distance removed from the water-line. The tortuous course of the steam is shown by the arrows. Any upward movement or dashing of the water, as might occur in the boiler of a traction-engine in passing on rough roads, or in a marine boiler, would be arrested by the baffle-plate, so that under such circumstances but little, if any, water would be likely to enter the trough F, and if any spray passed into the pipe D it would be arrested by the two return-bends before it reaches the steam-pipe, and by means of the drip-holes aforesaid would return by gravity to the boiler.

I am aware that so-called "dry-pipes" have been employed for this purpose, usually consisting of a perforated pipe located in the steam-space in the boiler and connected with the steam-pipe. Such devices have usually

been defective, for the reason that the draft of steam through the perforations would carry more or less water into the dry-pipe, a portion at least of which was likely to be carried into the steam-pipe and engine.

With my improved mechanism the spaces between the baffle-plate and boiler where the steam first enters, although narrow, are long, and are of such dimensions in the aggregate that there is little current of steam through these openings, by reason of which very little water ever enters the tube D, and any fine particles of water that may be carried thus far are arrested by the bends in the passage-way at the upper end of the pipe D and at the lower end of the pipe E, and are returned by gravity to the boiler as aforesaid.

What I claim is—

1. A steam-boiler "drying" mechanism, consisting, essentially, of a baffle-plate the upper edges of which are separated slightly from the shell of the boiler, a trough located above the baffle-plate and provided with a cover, as described, and a steam-pipe communicating with said trough.

2. In a steam-boiler, the combination, with a steam-dome and a steam-pipe passing upwardly through the bottom of said dome, of a pipe or casing, E, closed at the top and open at the bottom and covering the upper open end of the steam-pipe.

3. In a steam-boiler, the combination, with a steam-dome closed at the bottom and a steam-pipe passing upwardly through said closed bottom and terminating within the dome, of a casing or pipe having a closed upper end and open lower end, the said dome, pipe, and casing being arranged substantially as shown.

4. In a steam-boiler, the combination, with pipes located the one within the other in the steam-dome, and arranged to form return-bends in the steam passage-way and in open relation with a covered trough located in the steam space in the boiler, a baffle-plate arranged below and partially surrounding said trough, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 6th day of March, 1885.

CHARLES M. GIDDINGS.

Witnesses:
GEORGE HANSON,
ERNEST KIMMEL.