

No. 677,521.

Patented July 2, 1901.

J. E. LEWIS.  
STEAM SEPARATOR.

(Application filed Apr. 17, 1901.)

(No Model.)

Fig. 1

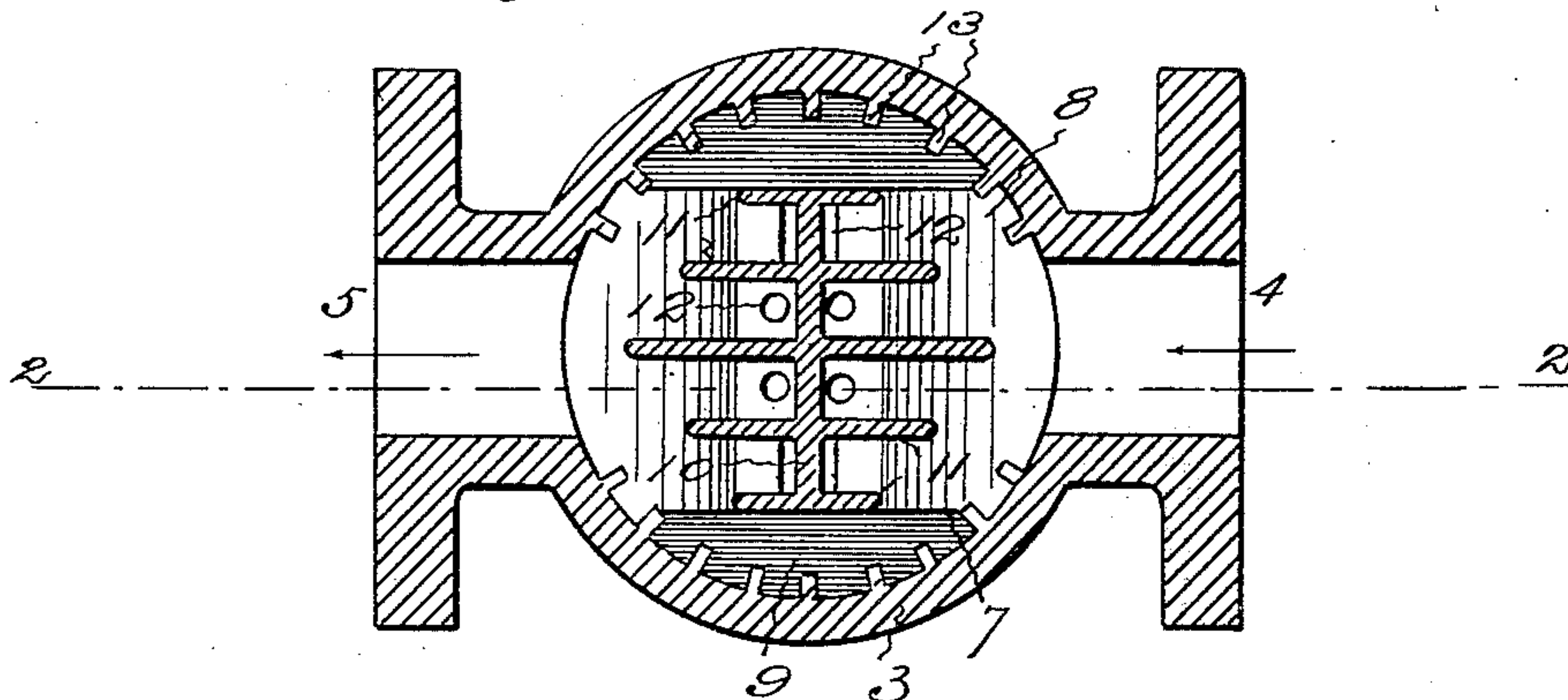
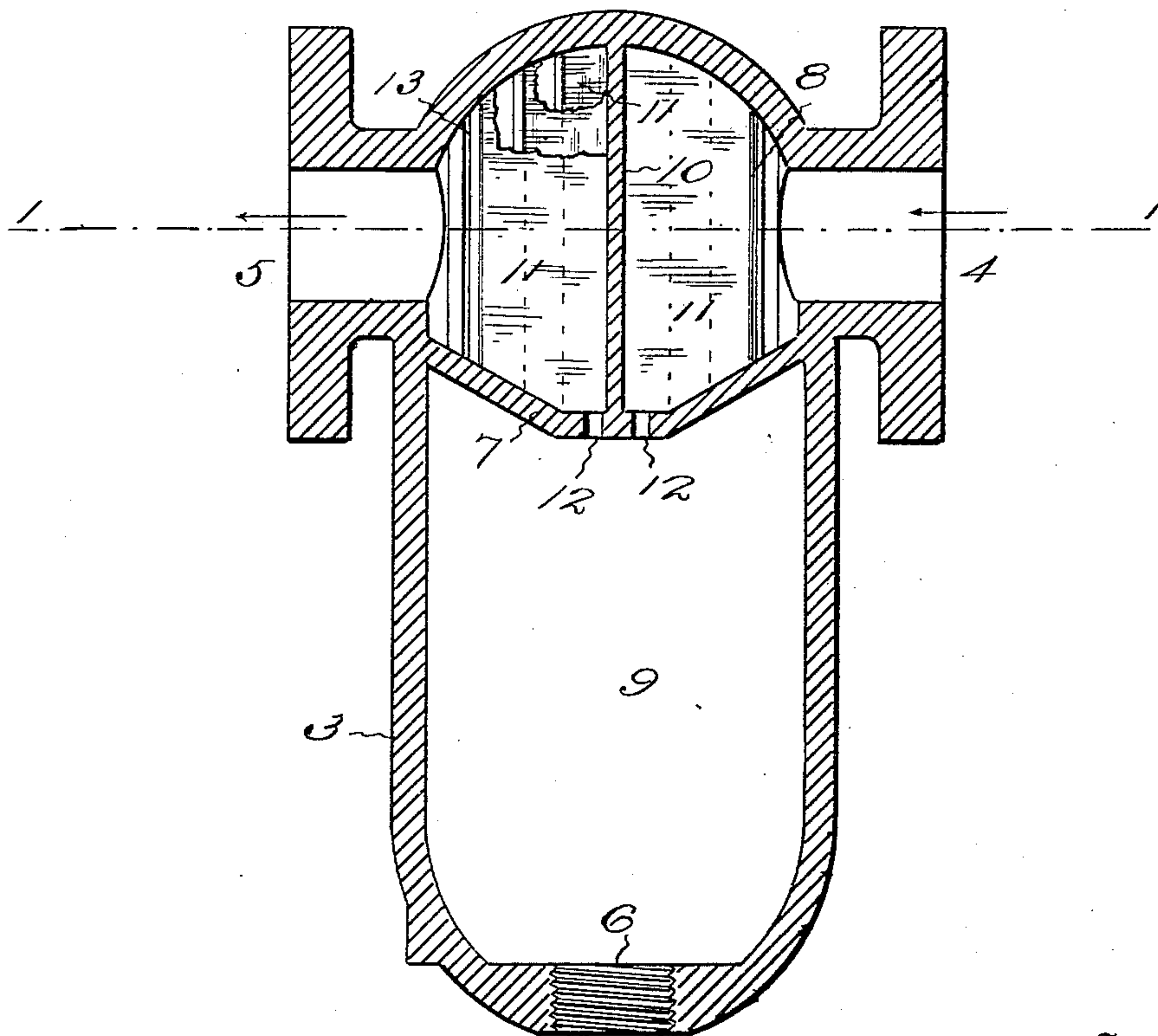


Fig. 2



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# UNITED STATES PATENT OFFICE.

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## STEAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 677,521, dated July 2, 1901.

Application filed April 17, 1901. Serial No. 56,294. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. LEWIS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Steam-Separators, of which the following is a specification.

This invention relates to a horizontal steam-separator which has a central baffle-plate with ribs forming pockets for collecting moisture by direct impact and peripheral ribs forming pockets for collecting moisture thrown off by centrifugal action as the steam passes around the baffle-plate.

The object of the invention is to provide a compact, durable, and efficient separator which can be cheaply constructed, will be self-cleaning and will not effect any appreciable reduction of steam-pressure.

Figure 1 of the accompanying drawings shows a horizontal section of a separator that embodies the invention, the section being taken on the plane indicated by the broken line 1 1 on Fig. 2; and Fig. 2 shows a vertical section of the same separator, taken on the plane indicated by the line 2 2 on Fig. 1.

In the separator illustrated the cylindrical shell 3, with the flanged steam-inlet 4 and flanged steam-outlet 5 at the upper end and threaded outlet 6 for the entrained liquid at the lower end, is cast of iron in a single piece. A bridge 7, cast integral with the shell, divides the steam-chamber 8 from the liquid-well 9. This bridge, which is lowest at the middle, extends from below the steam-inlet to below the steam-outlet. It is not quite as wide as the shell, and therefore does not completely separate the steam-chamber above from the well below.

In front of the steam-inlet and extending from the middle of the bridge to the top of the steam-chamber is an integral baffle-plate 10, and projecting from the baffle-plate both toward the steam-inlet and toward the steam-outlet are ribs 11. These ribs, which extend from the bridge to the top of the steam-chamber, vary in width, those at the middle being the widest and those at the outside being the narrowest. Openings 12, either round or rectangular, are made through the lowest part of the bridge each side of the baffle-plate at

the bottom of the pockets formed by the baffle-plate and the ribs in front of the steam inlet and outlet.

Projecting inwardly from the side walls of the shell and extending from the level of the bridge to the top of the steam-chamber are ribs 13, arranged to form radial pockets between them.

Liquid entering the separator with the steam first strikes the baffle-plate and is deposited in the pockets, while the steam passes around the edges of the baffle-plate. The liquid thus deposited runs down the plate between the ribs and drips through the openings in the bridge at the bottom of the pockets into the well below. Any moisture that remains in the steam after the first impact with the baffle-plate is thrown off centrifugally as the steam passes around the edges of the baffle-plate and is caught in the pockets between the inwardly-projecting ribs on the side walls of the shell. Liquid collected in these radial pockets runs down the side of the shell into the well.

This separator is very efficient, for the steam is subjected to the action of the baffle-plate pockets and then to the action of the radially-arranged peripheral pockets. This separates all heavy matter and moisture, leaving the steam to flow through the outlet very dry. The pockets in front of the steam-inlet, that receive the direct impingement of the liquid as it enters the separator, are of such depth that the liquid will not spatter back into the current of the steam, and the pockets on the sides of the steam-chamber will collect and retain any heavy matter that is carried with the steam around the edges of the baffle-plate. The steam flows through the upper part of this separator quite a distance above the precipitated liquid and cannot pick up any of the liquid that has been entrained. The outlet for the dry steam is fully protected by the baffle-plate and ribs, and yet the passages are of such area that no reduction of pressure results in the separator.

The separator is self-cleaning and cannot become clogged or rendered inoperative by the accumulation of heavy matter. It is compact, so as to be comparatively light in weight, and it occupies but a small space.



I claim as my invention—

1. A steam-separator consisting of a shell having a steam-inlet and a steam-outlet near the upper end, and a drip-outlet at the lower end, a bridge less in width than the width of the steam-chamber extending across the interior from below the steam-inlet to below the steam-outlet, a baffle-plate in front of the steam-inlet and extending from the bridge to the top of the steam-chamber, ribs projecting from the baffle-plate toward the steam inlet and outlet, openings in the bridge at the bottom of the pockets between the ribs, passages in the steam-chamber around the edges of the baffle-plate, and ribs projecting inwardly from the side walls of the shell toward the baffle-plate, substantially as specified.
2. A steam-separator consisting of a shell having a steam-inlet and a steam-outlet near the upper end, and a drip-outlet at the lower end, a bridge less in width than the width of the steam-chamber extending across the interior from below the steam-inlet to below the steam-outlet, a baffle-plate in front of the steam-inlet and extending from the bridge to the top of the steam-chamber, ribs of different width projecting from the baffle-plate

toward the steam-inlet and extending from the bridge to the top of the steam-chamber, openings through the bridge at the bottom of the pockets between the ribs, and passages in the steam-chamber around the edges of the baffle-plates, substantially as specified.

3. A steam-separator consisting of a shell having a steam-inlet and a steam-outlet near the upper end, and a drip-outlet at the lower end, a bridge less in width than the width of the steam-chamber extending across the interior from below the steam-inlet to below the steam-outlet, and declining from both sides toward the middle, a baffle-plate in front of the steam-inlet and extending from the lowest point of the upper surface of the bridge to the top of the steam-chamber, ribs projecting from the baffle-plate toward the steam inlet and outlet, openings through the bridge at the bottom of the pockets between the ribs, and passages in the steam-chamber around the edges of the baffle-plate, substantially as specified.

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