No. 815,431. PATENTED MAR. 20, 1906.

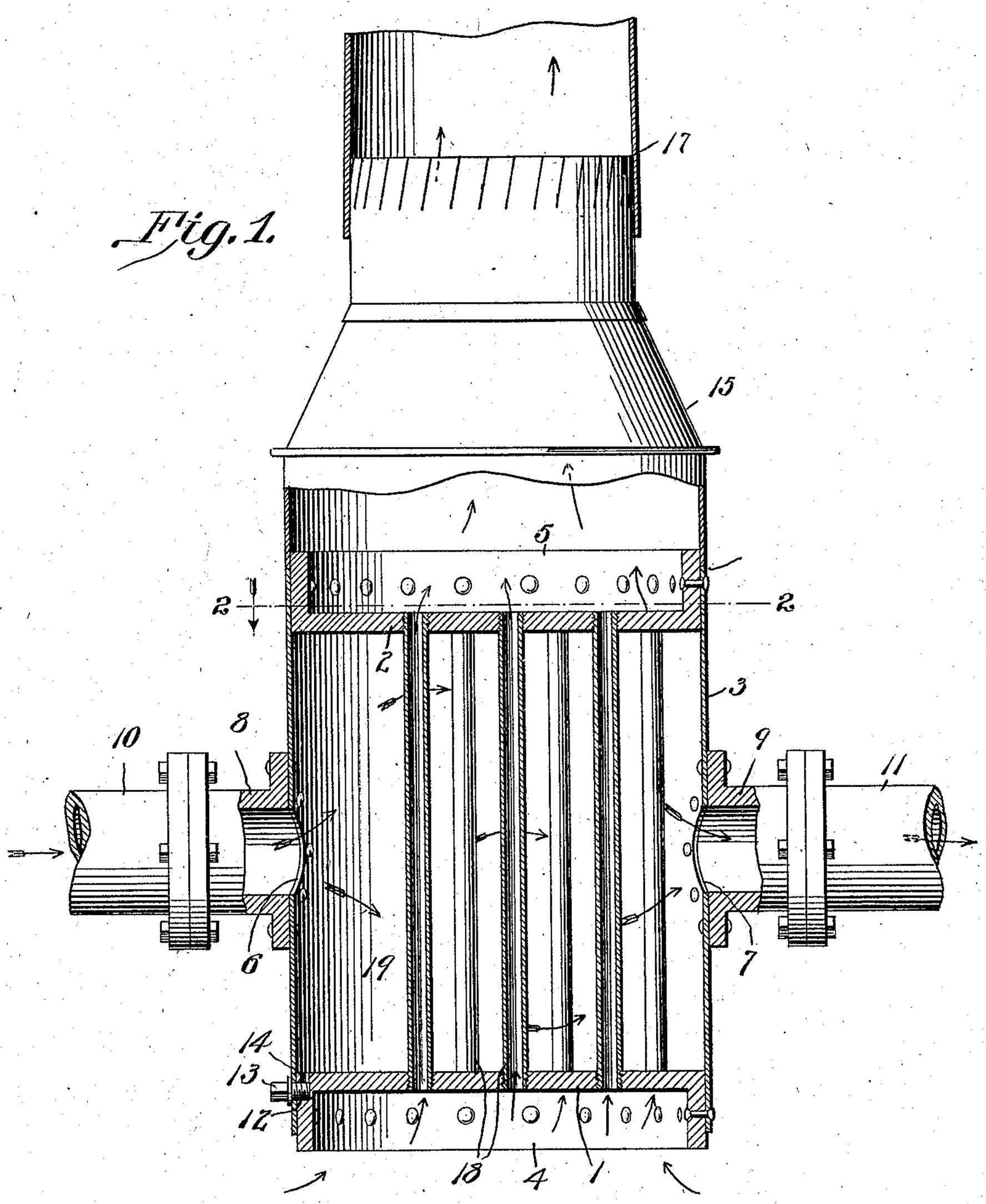
J. JEKLIN.

CONDENSER AND FEED WATER HEATER.

APPLICATION FILED SEPT. 14, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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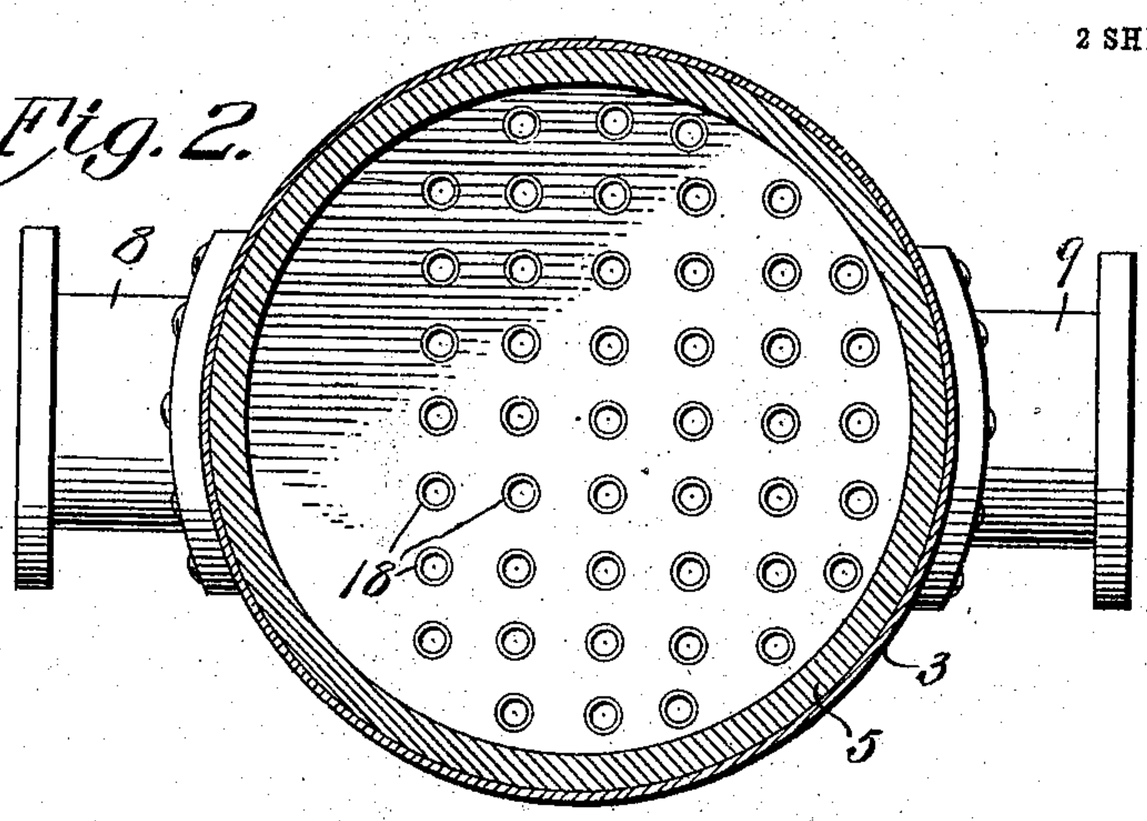
2 SHEETS—SHEET 2.

Fig. 2.



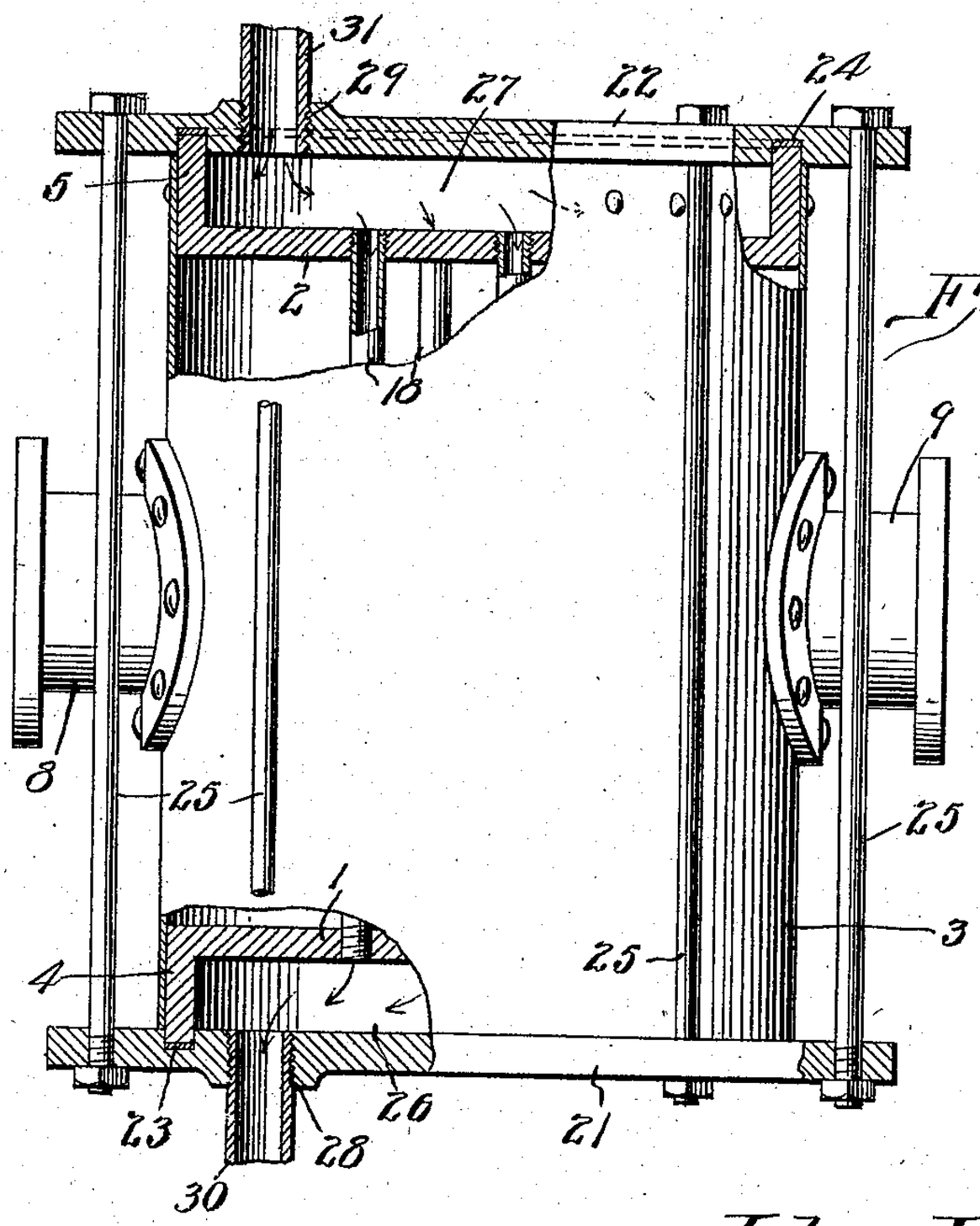


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN JEKLIN, OF SPOKANE, WASHINGTON.

CONDENSER AND FEED-WATER HEATER.

No. 815,431. Specification of Letters Patent. Patented March 20, 1906.

Application filed September 14, 1905. Serial No. 278,470.

To all whom it may concern:

Be it known that I, JOHN JEKLIN, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Condenser and Feed-Water Heater, of which the following is a specification.

This invention relates to condensers and feed-water heaters, and it has for its objects to simplify and improve the construction and operation of this class of devices and to provide a device of extremely simple construction which may be used in a variety of ways and for different purposes, such as for heating air or feed-water, as well as for condensing the exhaust from the cylinders or assisting in the performance of such condensation.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claim.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a vertical sectional view of a device constructed in accordance with the principles of the invention, the same being shown arranged as a condenser and air-feeder. Fig. 2 is a sectional view taken on the plane indicated by the line 2 2 in Fig. 1. Fig. 3 is a side elevation, partly in section, showing the device arranged as a condenser and feed-water heater.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

1 and 2 represent a pair of annularly-flanged heads, externally upon which is riveted a shell 3, preferably of light boiler iron or steel, the ends of said shell terminating at a distance from the outer extremities of the flanges 4 5 of the heads 1 2. The drum or cylinder formed by the shell 3 is provided on diametrically opposite sides with apertures 6 7, surrounded by flanged castings 8 9, with which are connected the pipes 10 and 11, serving, respectively, for the admission of steam and the exit of steam or water of condensation, as the case may be.

The lower head 1 of the casing, which is usually supported in an upright position, and the portion of the shell which is connected therewith, is provided with a screw-threaded aperture 12, having a threaded plug or closure 13 and connected by a duct 14 with the interior of the casing. When the latter is to be utilized essentially as an air-heater and incidentally as a condenser, a funnel-shaped tube 15 is provided, the same being fitted upon the upper head 2 to rest upon the shoulder 16, formed by the upper edge of the shell 3, the hood or funnel 15 is to be connected, as by a pipe 17, with the boiler-furnace, (not shown,) to which heated air may thus be supplied for the purpose of promoting combustion. When thus connected, it is obvious that the draft in the furnace will be sufficient to draw the cold air from the outside into and through a set of tubes 18, connecting the heads 1 2, which latter are provided with apertures, in which the ends of said tubes may be secured in any suitable convenient manner. It is to be understood, however, that forced draft may be used when desired.

When the principal object of the device is to heat air for the purpose of promotion of combustion in the boiler-furnace, exhaust-steam from the cylinders will be admitted into the casing through the opening 6, impinging upon the pipes or tubes 18, which latter are preferably made of relatively thin material, so that the air passing therethrough will be rapidly heated to a relatively high temperature. The uncondensed steam is permitted to escape through the opening 7, and water of condensation may be drawn off when necessary by removing the plug 13. The heated air will be permitted to escape through the funnel-shaped hood and is conducted through the pipe 17 to the boiler-furnace.

It is to be observed that, as clearly shown in Figs. 1 and 2, the conducting-pipes 18 are grouped at a distance from the steam-inlet 6, so that a relatively empty space, as 19, is left within the casing adjacent to said steam-inlet. The object of this is to permit the steam to expand to a considerable extent before impinging upon the pipes 18, so that the air passing through said pipes will be more evenly heated than would be the case if a few of said

air-pipes were exposed to the action of the steam closely adjacent to the inlet, in which event the steam would be quickly cooled and its expansive power diminished, so that the pipes distant from the steam-inlet would be but slightly heated.

When the device is to be utilized principally as a condenser and feed-water heater, a pair of annularly-grooved head-plates 21 and 22 are provided, the grooves 23 of said plates being adapted to receive the extremities of the flanges of the heads 1 and 2, packing 24, of soft metal, being provided to form tight joints between the heads 1 2 and the head-plates 21 22, which latter are drawn tightly together by means of tie-bolts 25. Between the heads and the head-plates are spaces 26 27. Said head-plates are provided with apertures 28 and 29, with which conducting-pipes 30 and 31 are connected, said pipes being directed toward the portions of the heads which are not provided with pipes 18. When this device is in operation, steam is admitted into the casing through the inlet-pipe 10, and water to be utilized as feed-water is pumped through the conducting-pipe 31 into the end space 27, where it impinges upon the portion of the head 1 which is solid or unprovided with pipes 18, said solid portion serving to scatter and diffuse the water so that it will pass very evenly through the pipes 18 to the end space 26, whence it escapes through the conducting-pipe 30. It is obvious that the water in its passage through the pipes 18 will be materially heated and that the steam passing through the casing will be rapidly condensed, the water of condensation being carried off through the pipe 11.

This improved device may be used by itself or it may be utilized intermediate a set of low-pressure cylinders and an ordinary condenser being used in the nature of an auxiliary.

Other uses and advantages of the device will readily suggest themselves to those skilled in the art to which it appertains.

Having thus described the invention, what is claimed is—

A device of the class described including a pair of flanged heads, a shell connected exteriorly therewith, terminating short of the extremities of the flanges and having diametrically opposite inlet and exit openings, and conducting-tubes connecting the heads said tubes being spaced from the inlet-opening; in combination with grooved head-plates engaging the flanges of the heads, abutting upon the edges of the shell, and having apertures for the reception of conducting-pipes directed against the portions of the heads unprovided with conducting-tubes.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN JEKLIN.

Witnesses:
O. J. REDDY,
JOHN KREEL.