

No. 745,312.

PATENTED DEC. 1, 1903.

H. D. BARAGWANATH.
CONDENSER.

APPLICATION FILED JULY 6, 1903.

NO MODEL.

Fig. 1.

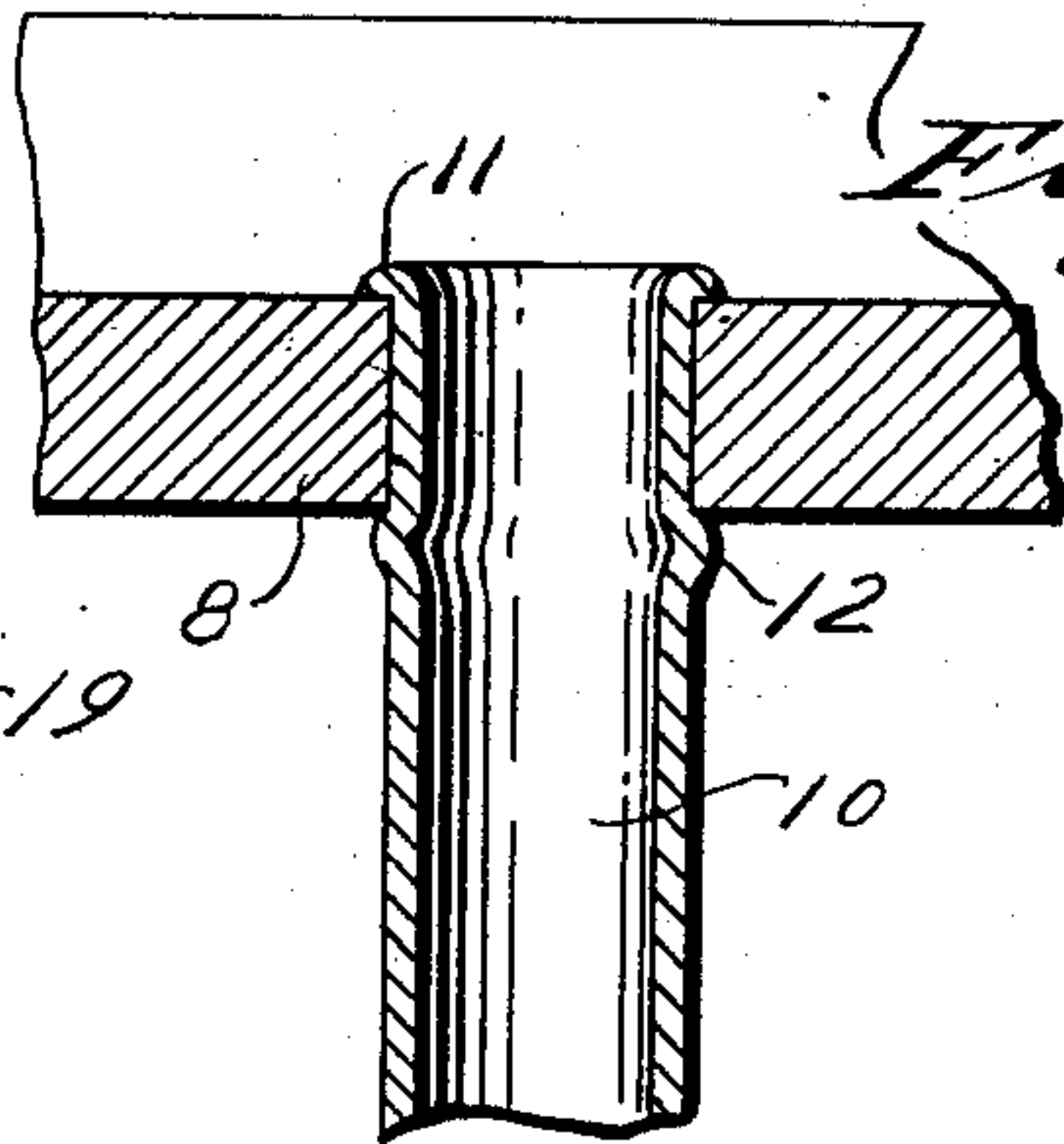
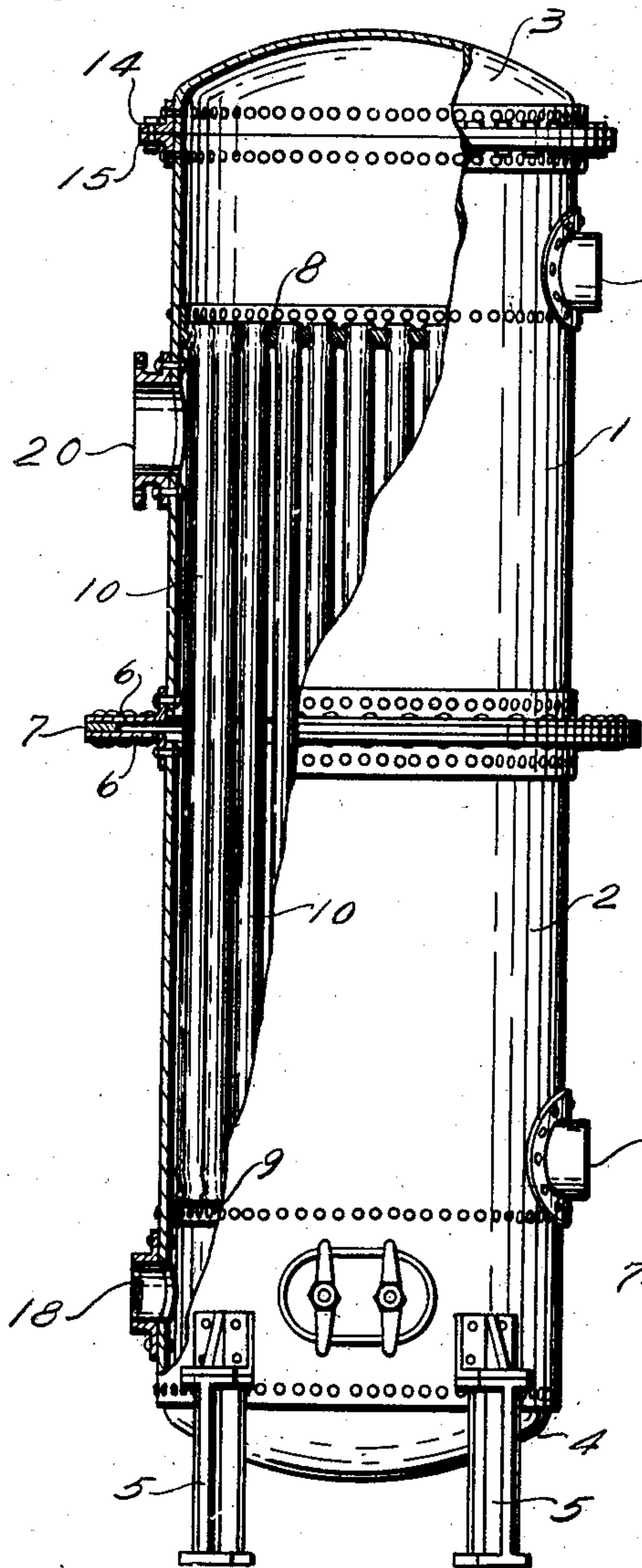


Fig. 2.

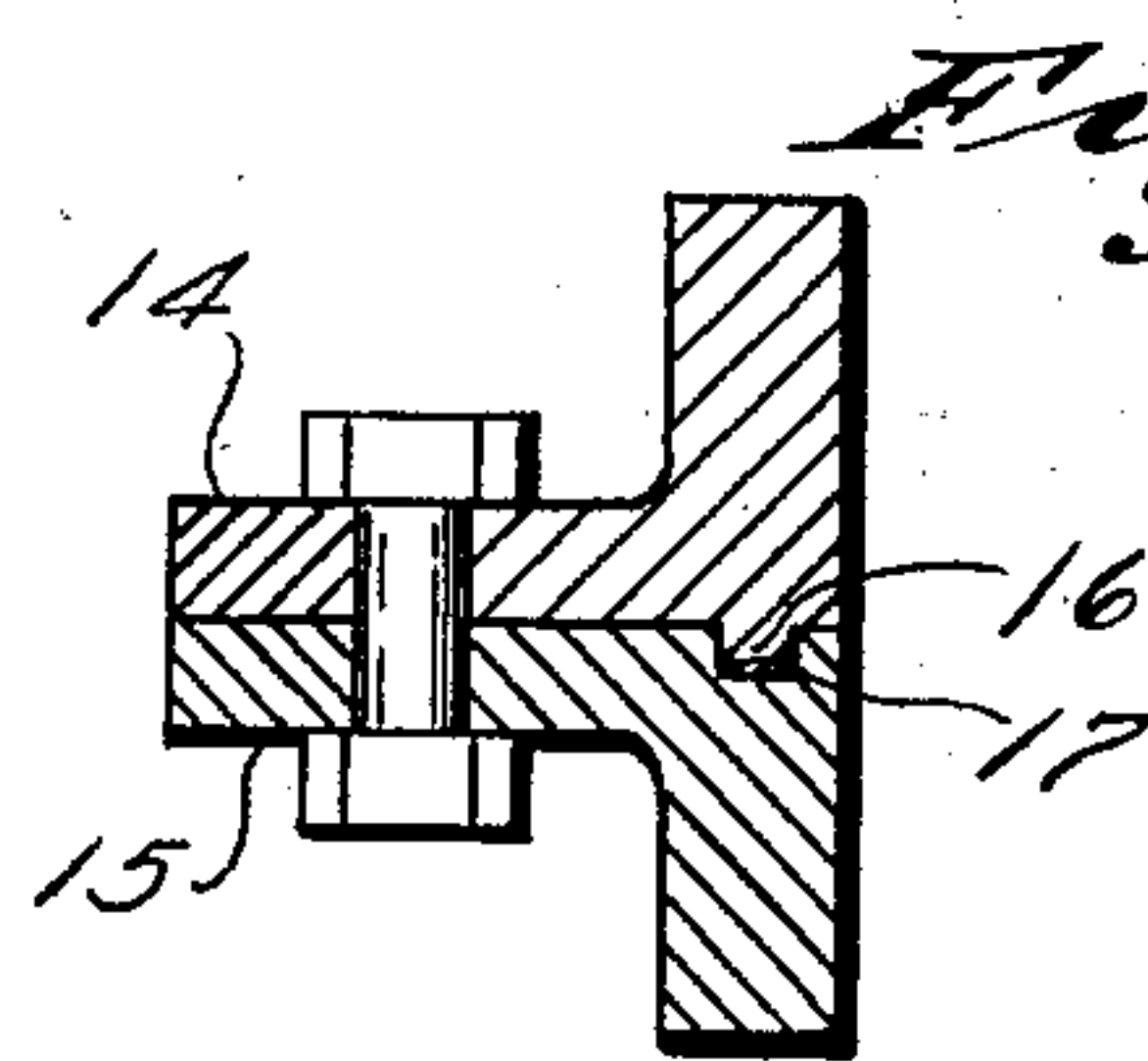


Fig. 3.

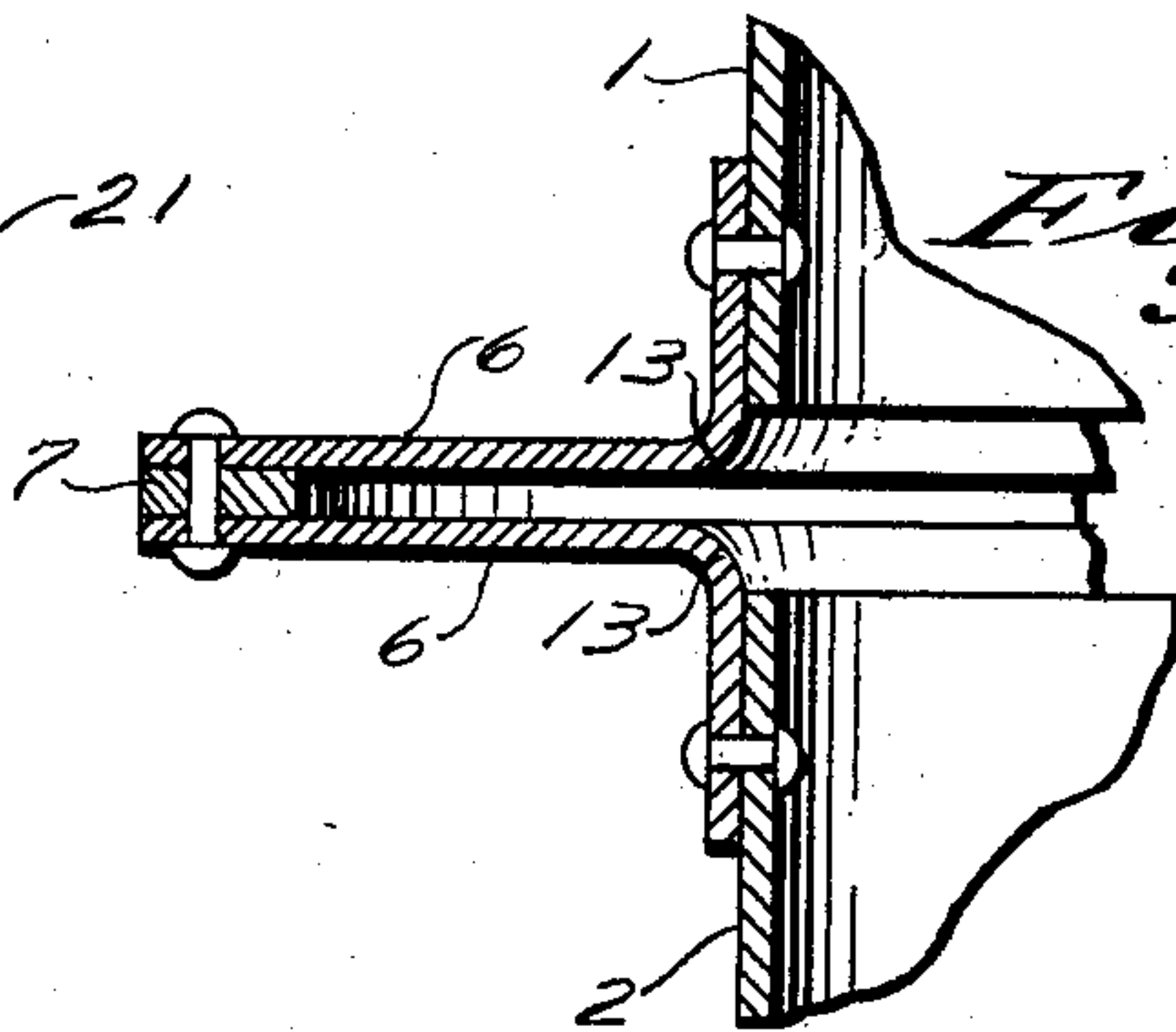


Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY D. BARAGWANATH, OF CHICAGO, ILLINOIS.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 745,312, dated December 1, 1903.

Application filed July 6, 1903. Serial No. 164,404. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. BARAGWANATH, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Condensers, of which the following is a specification.

The main objects of my invention are to provide improved construction for condensers, water-heaters, and similar devices having water-tubes secured therein, and to provide means whereby the connections of the heating-tubes with their plates will not be strained through different expansions between said tubes and the shells of the condenser. I accomplish these objects by the device shown in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a condenser constructed according to my invention. Fig. 2 is an enlarged section of the connection between a heating-tube and the tube-plate. Fig. 3 is an enlarged section of the flanges for securing the head of the condenser to the shell. Fig. 4 is a transverse section, partly broken away, of the expansion-joint in the shell.

In the construction shown the shell of the condenser is cylindrical in form and consists of two parts 1 and 2, secured together at their adjacent ends and each closed at its other end by a head 3 and 4, respectively. The device is supported by the feet 5. The parts 1 and 2 are provided at their adjacent edges with annular flanges 6, each of said flanges being securely riveted to its corresponding part of the condenser. The flanges 6 are separated at their outer edges by means of a liner-ring 7 and are securely riveted together and calked, so as to form a water-tight joint. The interior of the shell is divided into three compartments by the tube-plates 8 and 9, between which extend a plurality of longitudinally-disposed tubes 10, which extend through both of the tube-plates and are rigidly secured to such plates by being expanded at their ends, as shown at 11 and 12 in Fig. 2. The tubes are rigidly secured to the tube-plates and the

tube-plates are rigidly connected with the shell. To prevent any severe strain of the connections between the tubes and the tube-plates through unequal expansion between the tubes and the shell, the parts 1 and 2 of the shell are connected by an expansion-joint, as shown. If the shell expands or contracts to a less degree than the tubes, then such expansion will be compensated for by yielding of the flanges 6. The liner 7 serves to separate the flanges 6, so that there will be a considerable space between the heels 13 of the flanges 6, giving room for said flanges to yield in both directions, and thus permitting of both expansion and contraction of the shell at the joint between said flanges.

The head 3 is preferably connected to the part 1 of the shell by means of the flanges 14 and 15, which are respectively riveted to said head and shell and are bolted together. These flanges are preferably provided with an annular tongue-and-grooved connection at 16, and a gasket 17 is seated at the bottom of the groove, as shown in Fig. 3. This provides a tight joint that is readily separable.

When the device shown is used as a condenser, water from the circulating-pump enters at 18, passes upwardly through the tubes 10, and finally passes out at 19. Steam is admitted at 20 and fills the space surrounding the tubes 10 and between the plates 8 and 9. The air-pump is connected at 21.

The operation of the expansion-joint and other parts of the device will be understood from the foregoing description.

It will be seen that some of the details of the construction may be altered without departing from the spirit of my invention. I therefore do not confine myself to such details except as hereinafter limited in the claim.

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

A device of the class described, comprising a shell; a pair of plates extending transversely of said shell and rigidly secured to same; a plurality of tubes extending between said plates and rigidly secured against movement transversely of said plates; said shell com-

prising two parts joined together along a transverse plane between said plates; the opposed ends of said parts each having a flange secured thereto and disposed at right angles to said shell; a liner of considerably less width than said flanges secured between same in suitable manner to permit of relative contraction and expansion of the joint between

the parts of the shell connected by said flanges, substantially as described.

Signed at Chicago this 5th day of June, 1903.

HENRY D. BARAGWANATH.

Witnesses:

EUGENE A. RUMMLER,
RUDOW RUMMLER.