

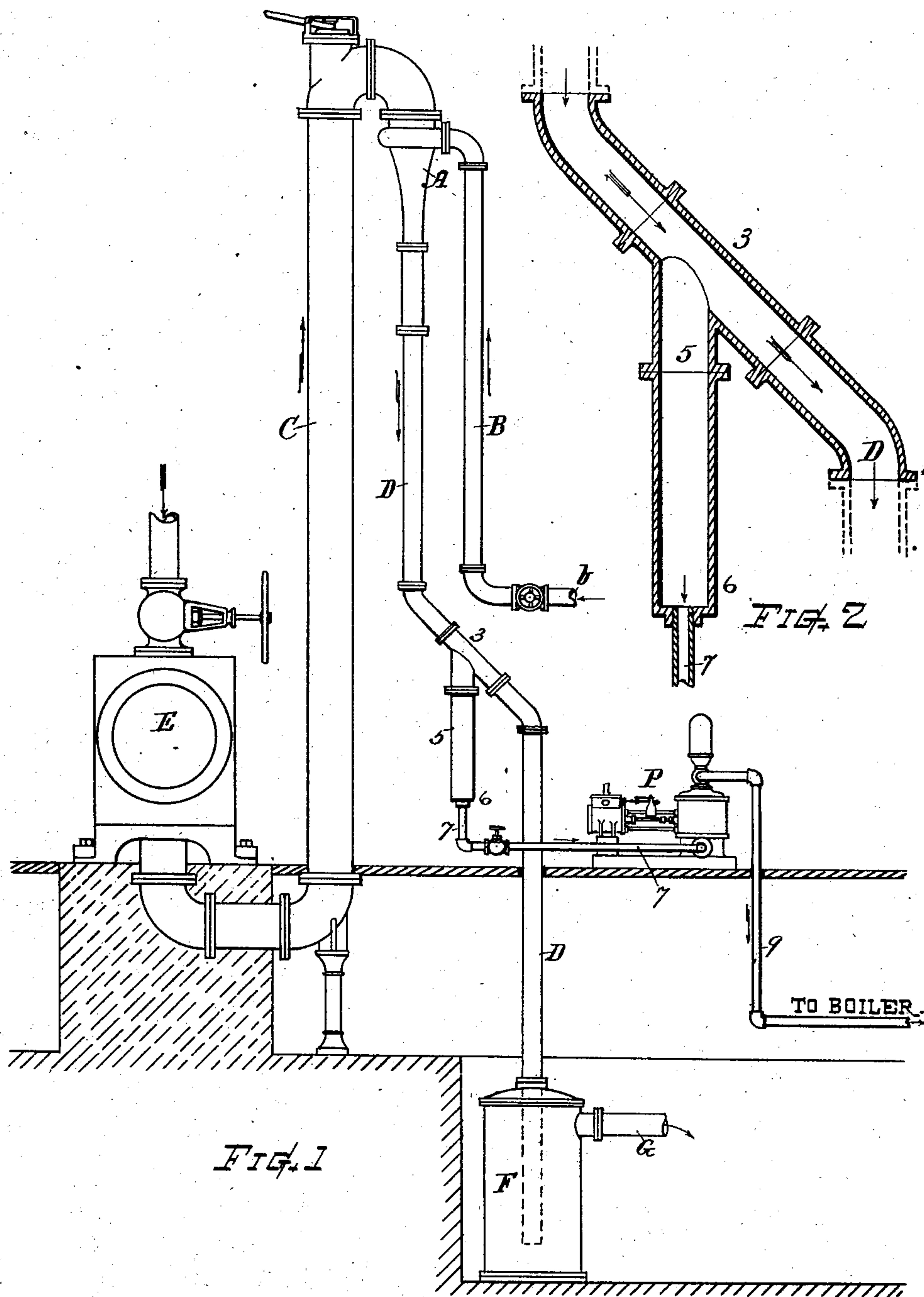
No. 721,158.

PATENTED FEB. 24, 1903.

W. H. COUGHLIN.
INJECTOR CONDENSER.

APPLICATION FILED JULY 30, 1902.

NO MODEL.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM H. COUGHLIN, OF WORCESTER, MASSACHUSETTS.

INJECTOR-CONDENSER.

SPECIFICATION forming part of Letters Patent No. 721,158, dated February 24, 1903.

Application filed July 30, 1902. Serial No. 117,620. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. COUGHLIN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Means for Taking Boiler Feed-Water from the Discharge-Pipes of Injector Steam-Condensers, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of my present invention is to provide, in connection with the discharge-pipe of a jet or injector steam-condenser, a simple, inexpensive, and efficient means for taking a feed-water supply therefrom, separating the grease or oil from the condensation-water, and obtaining hot pure water for feeding to steam-boilers.

The nature of my invention consists in providing, in combination with the discharge-pipe in an injector-condenser, a supplementary pocket, well device, or depending annexed chamber having its interior upper part in full communication with the interior of said discharge-pipe at a position between the injector-nozzle and the hot-well or place of discharge and connecting with the lower part of said pocket or chamber the draft-pipe through which the boiler feed-water is taken, said feed-water being drawn from the surplus hot condensive flow passing down from the condenser injector-nozzle, as more fully hereinafter explained.

In the drawings, Figure 1 represents an elevation view of an injector-condenser plant, illustrating the nature of my invention as applied in combination therewith; and Fig. 2 is a vertical section of my device for taking feed-water from the injector discharge-pipe.

In referring to the drawings, A indicates the condenser injector-nozzle; B, the water-supply pipe therefor and through which in practice cold water is delivered by a pump or other suitable means (not shown) attached to the end *b* in any convenient manner.

C indicates the exhaust-steam pipe from the engine E.

F indicates the hot-well into which the discharge enters, and G the hot-well overflow,

all of which parts are well known in their structure and mode of operation, the steam from the exhaust being condensed by the inflow of water at the injector-nozzle A, the hot oily condensation flowing down the discharge-pipe D to the hot-well and exit overflow. The height of the discharge-pipe is some thirty-two feet (more or less) as employed in usual practice.

In my invention I provide the discharge-pipe D with a lateral offset inclined section or member 3 at some convenient position between the injector A and hot-well F, and in full connection with such offset portion I arrange a depending pocket or annexed chamber 5, some three feet (more or less) in length and preferably of about the same diameter as the discharge-pipe, the pocket preferably forming a vertical sink or well in the line of said pipe. To the bottom or lower end of this pocket-chamber 5 I connect the smaller draft-pipe 7, that leads to the boiler feed-pump P, and from the pump to the boiler or boilers to which feed-water is to be supplied there extends the feed-pipe 9. The diameter and cross-sectional area of the chamber or pocket 5 are made considerably greater than that of the feed draft-pipe 7.

In the operation the flow of water from the injector-nozzle, together with the condensed steam and containing more or less grease or oil, passes down through the discharge-pipe D, the pocket or chamber being thereby kept constantly filled, while the greater quantity passes across the mouth of the pocket on its way to the hot-well or outflow-exit. The liquid in the pocket being comparatively quiet, the grease or oil therein separates from the water and, rising to the top of the chamber, is continually carried away by the flow in the discharge-pipe D, so that only hot pure water enters the bottom pipe 7 and passes to the feed-pump P and to boilers by way of the pipe 9.

As advantageous results incident to this invention it will be noticed that I am enabled to take water for boiler-feed purposes direct from an injector-condenser discharge, to draw out such feed-water near the point where the condensation is effected, thus utilizing the maximum degree of heat for return to the boiler, also effecting the separation of the

grease or oil from the feed-water in a simple and efficient manner and the constant discharge of the oil therefrom by the normal operation of the condenser flow. The means
5 for producing these results is simple and comparatively inexpensive for the purpose contemplated.

What I claim as of my invention, and desire to secure by Letters Patent, is—

10 1. The combination with the discharge-pipe from the nozzle of an injector-condenser, of a pocket at the side thereof forming a downward chamber with its upper end internally opening into said discharge-pipe, and the
15 boiler feed-pipe leading from the lower part of said chamber, for the purpose set forth.

2. The combination, with the discharge-pipe in an injector steam-condenser, of means for taking feed-water separated from oil, from the
20 hot condensing flow therein; said means comprising a water-sink pocket formed upon or connected with the side of the discharge-pipe and open thereinto at a position intermediate to the condenser-injector nozzle and hot-well.

25 3. In combination, with an injector steam-

condenser, the discharge-pipe having an offset therein below the injector-nozzle, a depending pocket internally open at its upper portion into said discharge-pipe offset as a branch of substantially similar diameter, and
30 having at or near its lower end an opening of smaller diameter to which the boiler-feed-supply pipe is connected.

4. A device for taking feed-water from a jet or injector steam-condenser, comprising
35 an inclined offset member for connection with the discharge-pipe between the condenser-nozzle and hot-well, said member provided with a depending pocket of greater area than the feed-water pipe, and open at its top end
40 into the discharge-passage, and the bottom of said pocket provided with means for connection with the feed-water pipe, substantially as set forth.

Witness my hand this 28th day of July, 1902. 45

WILLIAM H. COUGHLIN.

Witnesses:

CHAS. H. BURLEIGH,
CHARLES S. BACON.