D. STODDART.

Condensers for Steam-Pumps.

No. 145,538. Patented Dec. 16, 1873.

Fig. 2.

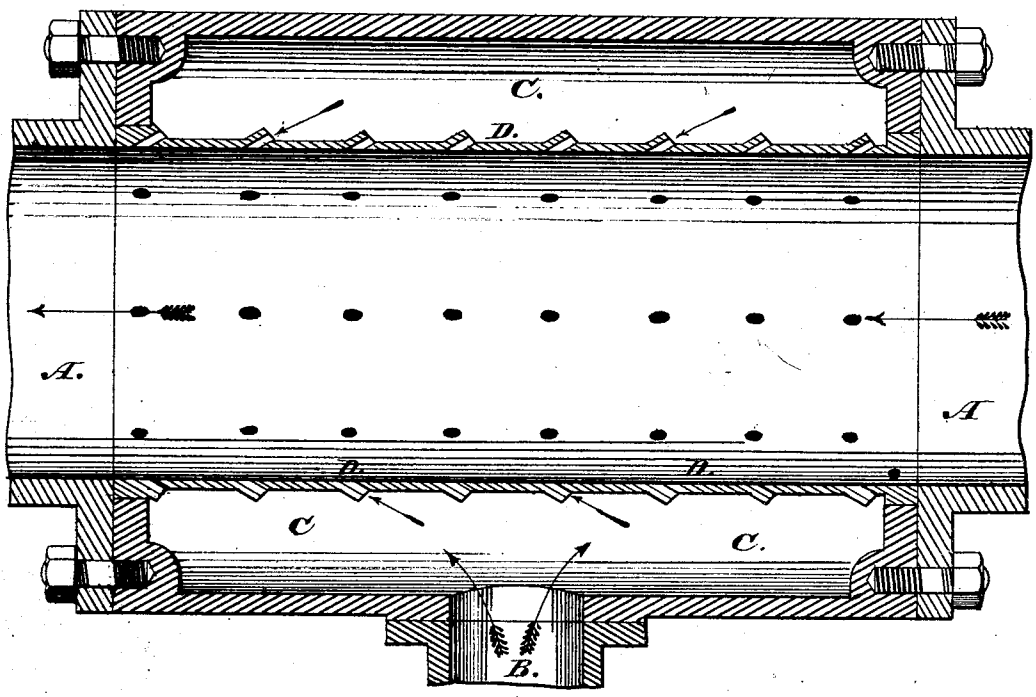
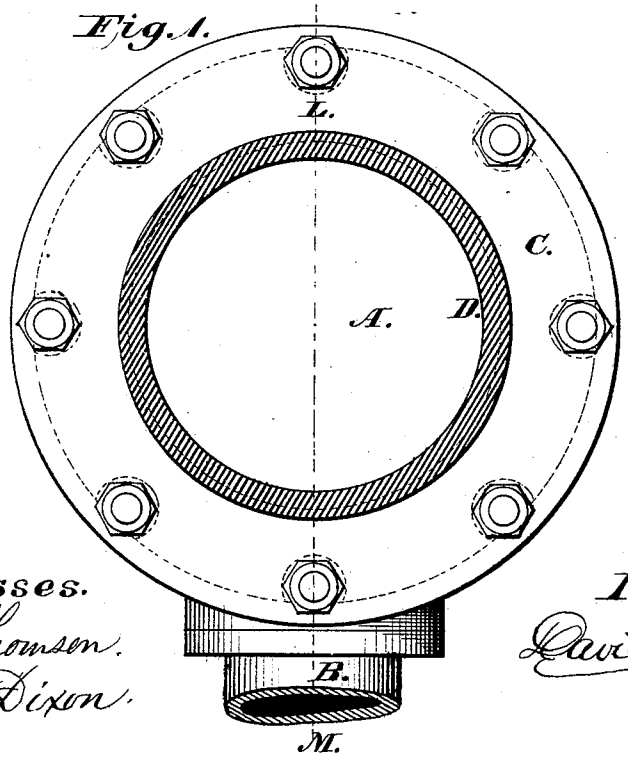


Fig. 1.



Witnesses.

John. Thomsen.

Wm. G. Dixon.

Inventor.

David Stoddart.

UNITED STATES PATENT OFFICE.

DAVID STODDART, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN CONDENSERS FOR STEAM-PUMPS.

Specification forming part of Letters Patent No. **145,538**, dated December 16, 1873; application filed July 21, 1873.

To all whom it may concern:

Be it known that I, DAVID STODDART, of the city and county of San Francisco and State of California, have invented a Condenser for Steam-Pumps, of which the following is a specification:

The object of my invention is to attain the condensation of the exhaust steam from the cylinders of steam-pumps.

Referring to the accompanying drawings forming a part of this specification, Figure 1 is an end view of the condenser, and Fig. 2 is a longitudinal section through the plane L M.

A is the suction-pipe connecting to the pump-chamber of a steam-pump. B is the exhaust-pipe from its steam-cylinder. C is a tight cylindrical chamber, having a cylindrical lining, D, which is interposed in the suction-pipe, and forms a part thereof. The lining is perforated with numerous small holes drilled inclined to its axis, the inclination being as nearly as practicable coincident in direction with the current of water through the suction-pipe.

Heretofore it has been common to exhaust directly into the suction-pipe by one opening, whereby the steam, coming suddenly in contact with a limited amount of water, causes violent agitation, even when the direction of the entering exhaust steam coincides with the flowing suction-current; but, by means of the chamber C, a reservoir is provided for the exhaust, wherefrom, through the numerous small outlets in the lining D, the steam impinges in many fine streams on a larger body of water without undue disturbance, and the resultant of the forces tends to assist the column of water in its onward course. The lining D may have the holes without inclination, and still the arrangement will be practicable and useful, but of impaired efficiency, as compared with the inclined perforations.

An important practical advantage of this condenser is that it may be readily inserted into any suction-pipe, whether vertical, inclined, or horizontal, while presenting facility for connection of the exhaust-pipe at any desired position. When the steam-pump runs at quick or ordinary speed the chamber C will not usually be filled with water between the reciprocations; but when the pump works slowly, or the current of water is slow in the suction-pipe, then the water may enter the chamber C to some extent. In such case the impulse of the exhaust will be partly expended on the contained water, causing a return water-current through the perforations, and a retarded exhaust in point of time, which, under such circumstances, is simply advantageous.

The aggregate area of the perforations may be equal to the area of the exhaust-pipe. Their diameter may be one-fourth of an inch, or more or less, the length of D, about four times its internal diameter, and the cubic contents of C, outside of D, may be equal to three times the interior cubic contents of D. These proportions are not imperative, but only suggestive in successful practice, and may be modified at the option and skill of the engineer to suit the circumstances presented in each particular case.

Having described my invention fully, as above, what I claim, and desire to secure by Letters Patent, is as follows:

The combination of the perforated lining D, the suction-pipe A, the chamber C, and the exhaust-pipe B, arranged substantially as described.

DAVID STODDART.

Witnesses:
JOHN THOMSON,
WM. G. DIXON.