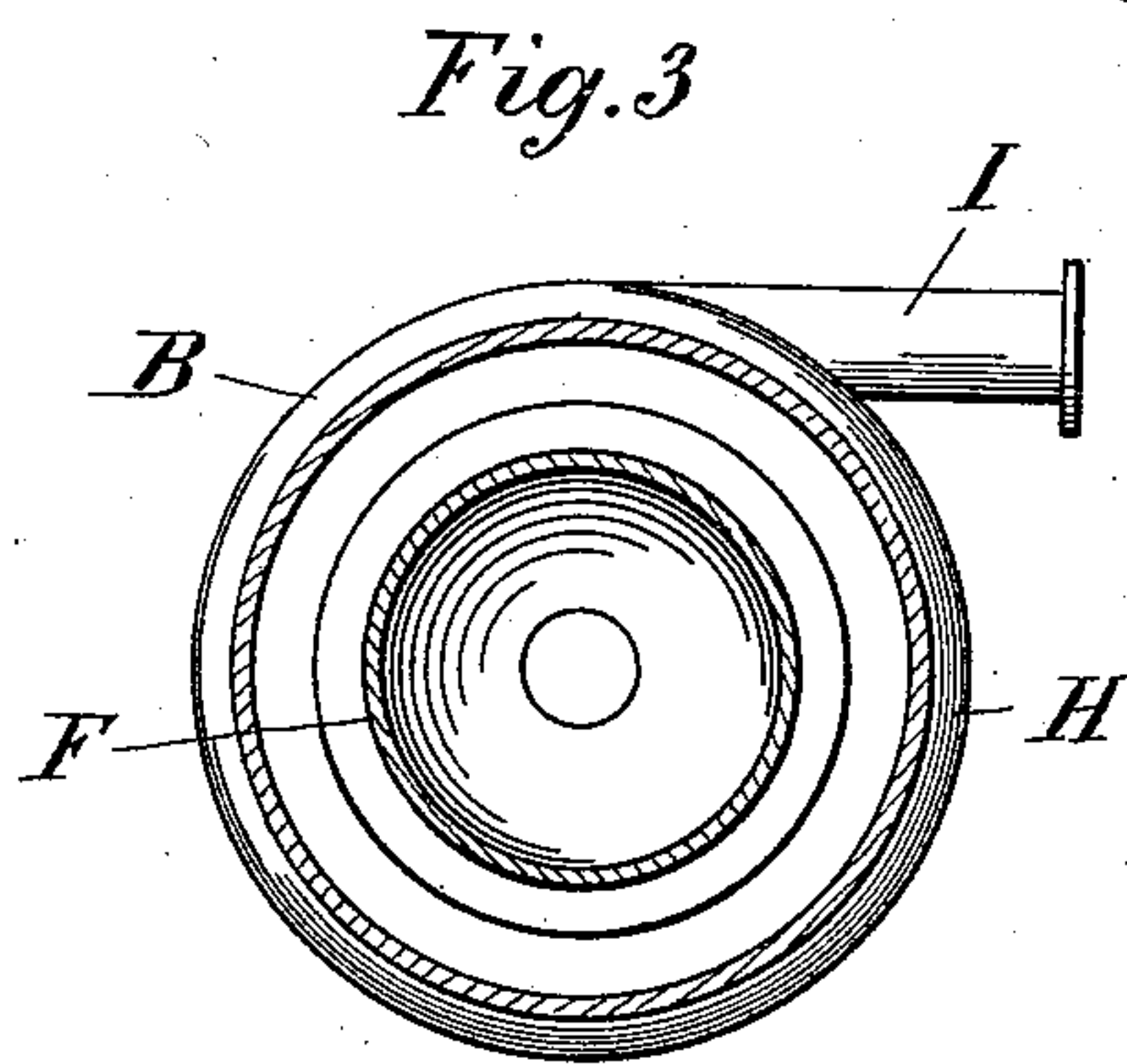
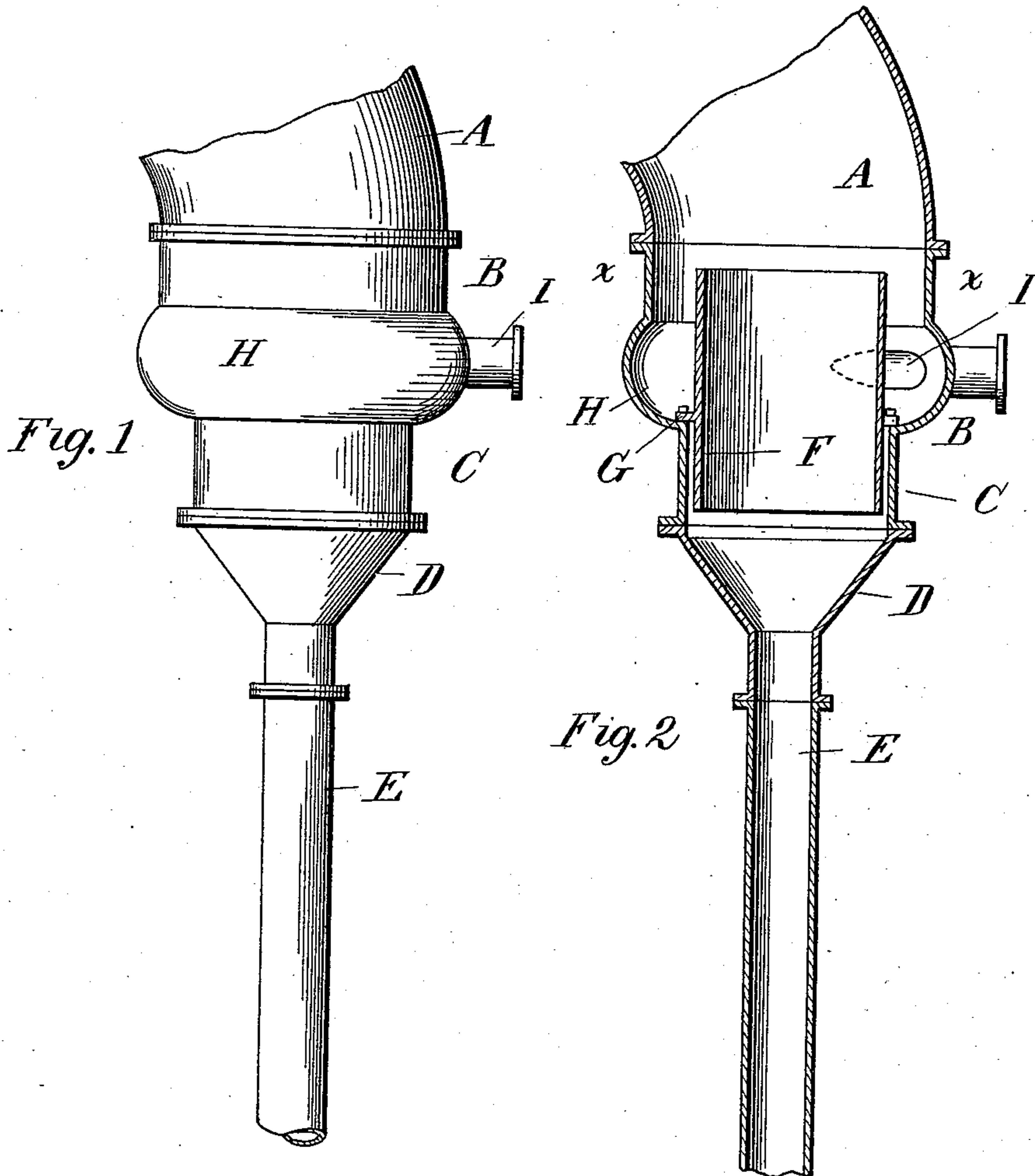


(No Model.)

T. CRANEY.
CONDENSER.

No. 487,997.

Patented Dec. 13, 1892.



Witnesses:
P. M. Hulbert
M. D. O'Gherty.

Inventor:
Thomas Craney
By Tho. Sprague Son
Attys.

UNITED STATES PATENT OFFICE.

THOMAS CRANEY, OF BAY CITY, MICHIGAN.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 487,997, dated December 13, 1892.

Application filed April 13, 1892. Serial No. 429,066. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CRANEY, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Condensers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in condensers, and more particularly to that class of condensers known as "water-column" or "hydraulic" condensers, in which a vacuum is formed by the suction created by the falling of the body of water in a vertical column.

The invention consists in the peculiar construction of the condensing-chamber and the means of bringing the water therein tangentially to create a spiral current, causing the formation of a whirlpool, thereby greatly increasing the effectiveness of such a condenser.

The invention further consists in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

In the accompanying drawings, Figure 1 is an elevation of my improved condenser. Fig. 2 is a vertical central section thereof. Fig. 3 is a cross-section on line $x x$.

A is the vapor-pipe leading from any evaporating apparatus or still, the vapors from which it is desired to condense to form a vacuum therein.

B is the casing of my condenser, having the contracted lower section C, which connects into the tapering section or reducer D, which connects with the discharge-pipe E. This latter is of sufficient length to form a column of water the fall of which will give the desired degree of vacuum in the evaporating-chamber. Within the casing B is the casing F, preferably of cylindrical form and of a slightly-smaller diameter than the sec-

tion C of the casing B, secured by a central flange G and forming the annular water-chamber H above the flange.

I is an inlet water-pipe entering the water-chamber tangentially, or entering in such a manner as to cause water to circulate around the casing E. The water being thus admitted under pressure will rise in the water-chamber and fall in a spirally-falling current over the upper edge of that casing, forming a whirlpool within the casing E, tapering down toward the section D, and finding exit through the pipe E.

By forcing the water spirally over the edge of the casing a conical suction-space is formed within the casing or above the pipe E, which greatly increases the surface of the water with which the air or vapor contacts, thereby increasing the suction. The vapor capacity of the suction-chamber is also increased by the whirling movement of the water, which also assists in forming the vacuum.

What I claim as my invention is—

1. In a condenser, the combination of the vapor-pipe, a condensing-chamber into which said pipe leads, and a tangential water-supply adapted to produce a whirlpool in the condensing-chamber, substantially as described.

2. In a condenser, the combination of the vapor-pipe, a condensing-chamber into which said pipe leads, a water-chamber around said condensing-chamber closed at the bottom and open at the top, and a tangential water-supply pipe entering said water-chamber, adapted to force the water over into the condensing-chamber to produce a whirlpool therein, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS CRANEY.

Witnesses:

JAMES WHITTEMORE,
MARY B. O'DOHERTY.