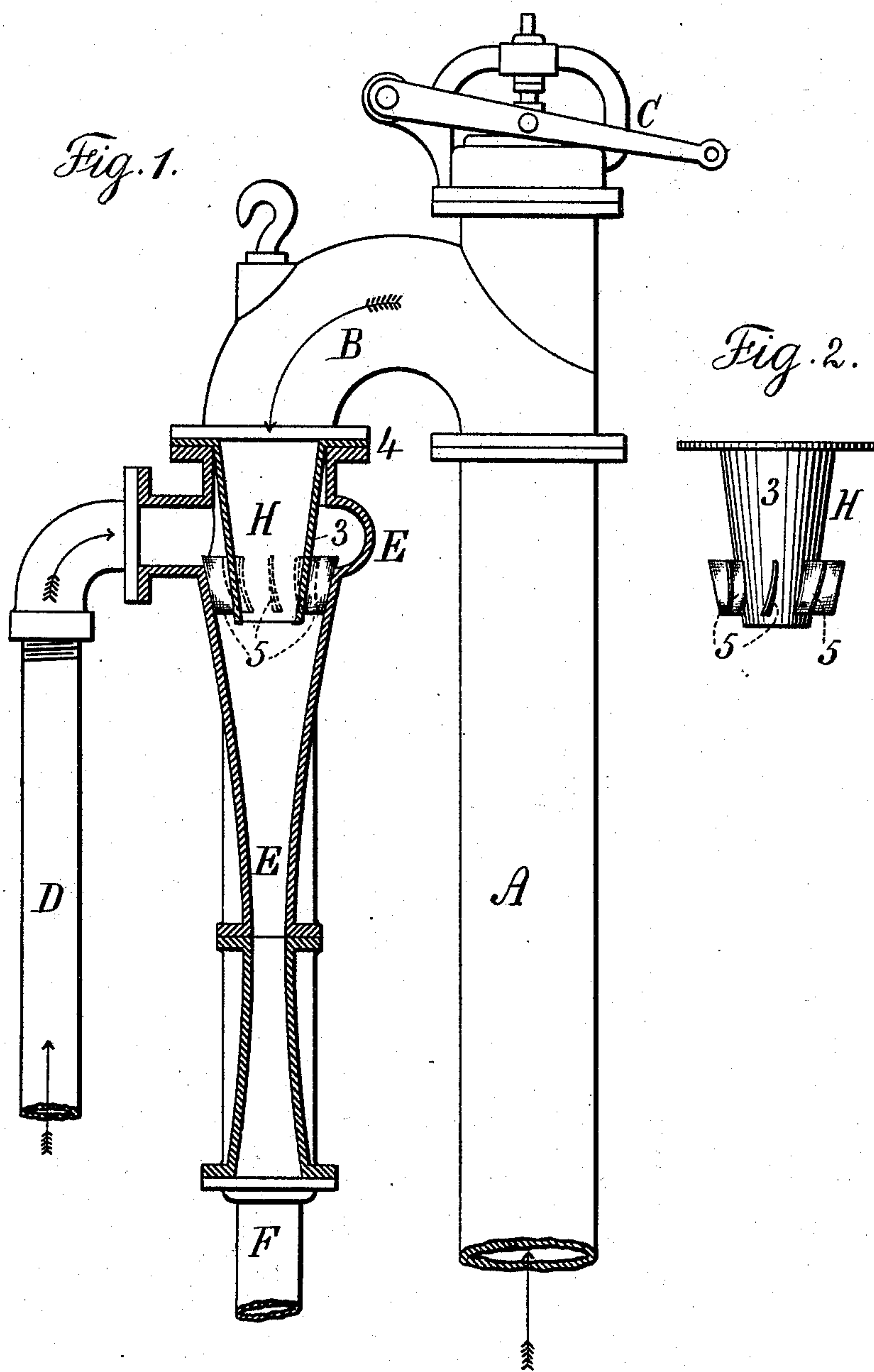


(No Model.)

F. M. WHEELER.
CONDENSER.

No. 541,781.

Patented June 25, 1895.



Witnesses:
J. Staib
Chas. A. Smith

Inventor:
F. M. Wheeler
per
Lemuel W. Serrell
Atty.

UNITED STATES PATENT OFFICE.

FREDERICK MERIAM WHEELER, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO
THE GEO. F. BLAKE MANUFACTURING COMPANY, OF NEW YORK, N. Y.

CONDENSER.

SPECIFICATION forming part of Letters Patent No. 541,781, dated June 25, 1895.

Application filed August 30, 1894. Serial No. 521,691. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK MERIAM WHEELER, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented an Improvement in Condensers, of which the following is a specification.

Condensers have heretofore been made in which the steam from the engine passes into a vertical pipe and water has been brought into contact with said steam either before the water passes through the pump or afterward, and in some instances a descending column of water passing through an annular opening has received within the column the steam so as to act upon the steam to condense it as well as to produce a minus pressure or suction action to draw the steam into the water.

The object of the present invention is to economize the water and cause the same to thoroughly mix with the steam so that it gives a column of water which will condense a larger volume of steam than has heretofore been usual, and with this object in view I give to the downwardly issuing jet of water a rotation in the discharge nozzle, such rotation being effected by diagonally or spirally curved blades and the rotary movement of the water causes the same to mix with and condense the steam with great rapidity and without lessening the minus pressure or suction action of the descending column of water, and the case of the condenser is preferably tapering so that the water has a rotary and spiral movement. Hence I term this condenser the "spirojector" condenser.

In the drawings, Figure 1 is a vertical section of the improved apparatus, and Fig. 2 is a detached view of the deflectors.

The steam passes by the pipe A and the curved neck B to the condenser, and there is usually an adjustable relief valve at C opening outward in case of any accumulation of pressure in the condenser.

The water supply pipe D passes to the top of the vertical column E which is advantageously contracted in the middle portion and connected at its lower end to the discharge pipe F passing to the hot well or other receptacle.

Within the upper portion of the condenser

is an annular deflector H composed of the tapering tube 3 that is flanged at its upper end so as to be connected with the flanges 4 that unite the neck of the steam pipe to the condenser, and this tapering tube 3 forms a channel for the steam passing into the condenser and around the tapering tube 3 and below the inlet water-way are the wings or deflectors 5 which are advantageously vertical or nearly so at their upper ends and curved in one direction at their lower ends so that as the water which passes into the condenser from the pipe D descends it is given a diagonal movement by the curved lower ends of the deflectors 5, and this lateral movement causes the water to rotate within the tapering condenser case E as it passes downwardly, and this movement of the water is similar to a whirlpool and the water mixes with and rapidly condenses the steam in its downward and spiral movement, so that the efficiency of the condenser is promoted and the volume of water required for condensing a given volume of steam is lessened.

I claim as my invention—

1. The combination in a condenser, of a case, a connection to the upper end thereof for admitting steam, a connection for the supply of condensing water, a tapering tube through which the steam passes and deflector wings upon the exterior of said tube, the wings being inclined to give to the descending column of water a rotary or spiral movement in the condenser case, substantially as set forth.

2. The combination in a condenser, of a case E contracted near the middle thereof, a steam supply pipe connected with the upper end thereof, a tapering tube extending downwardly into the condenser case, a lateral water supply pipe and deflecting wings around the tapering tube that are vertical or nearly so at their upper ends and curved at the lower ends to give to the descending column of water a rotary or spiral movement, substantially as set forth.

Signed by me this 21st day of August, 1894.

FREDK. MERIAM WHEELER.

Witnesses:

W. A. EBSEN,

GEO. C. CONKLIN.