

No. 677,462.

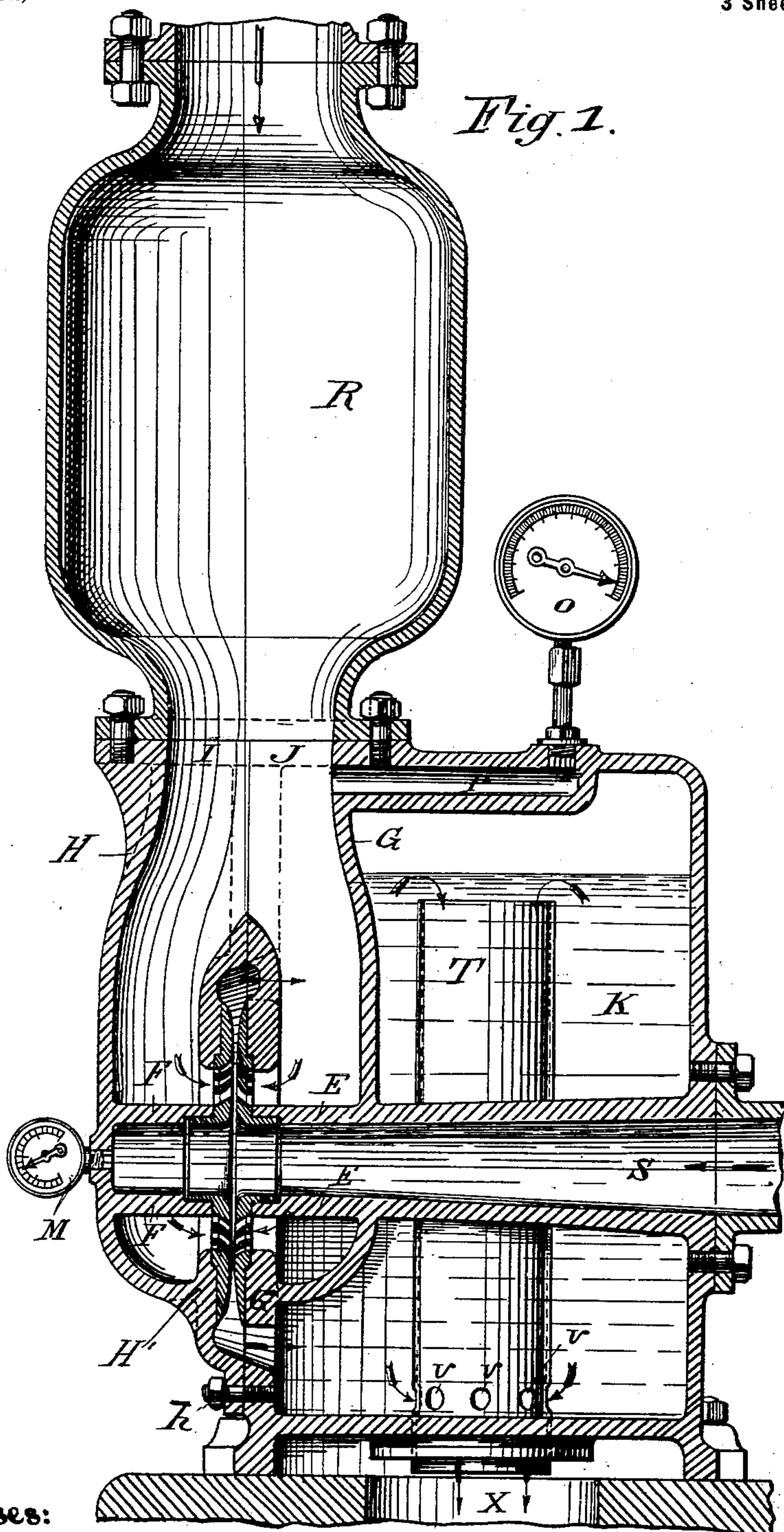
Patented July 2, 1901.

P. NÉZERAUX.  
CONDENSING APPARATUS.

(Application filed Sept. 28, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

J. W. McMahon.  
L. M. Shireman.

Inventor.

Placide Nézeaux  
by B. Singer.  
Att'y.

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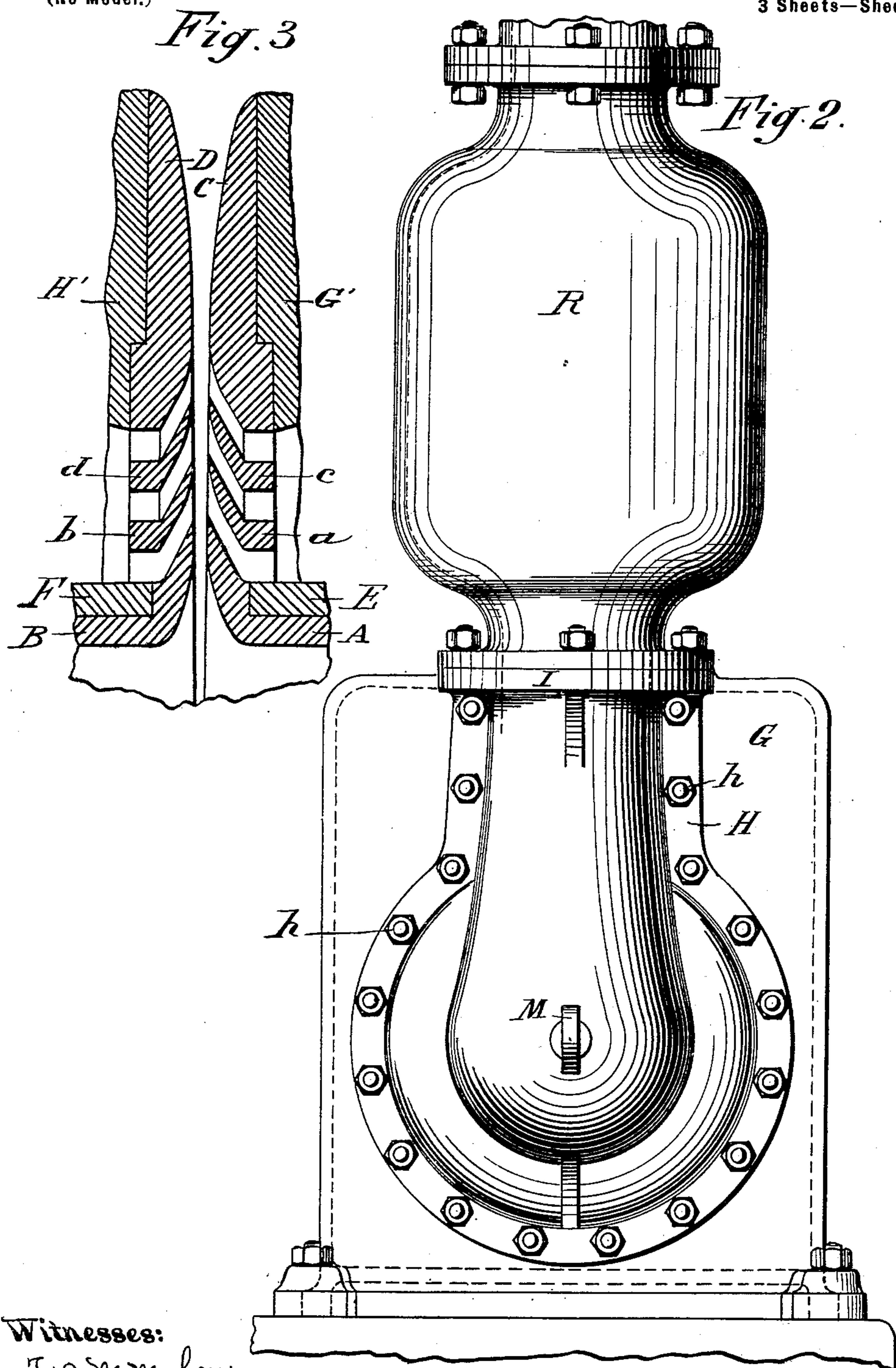
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**3 Sheets—Sheet 2.**



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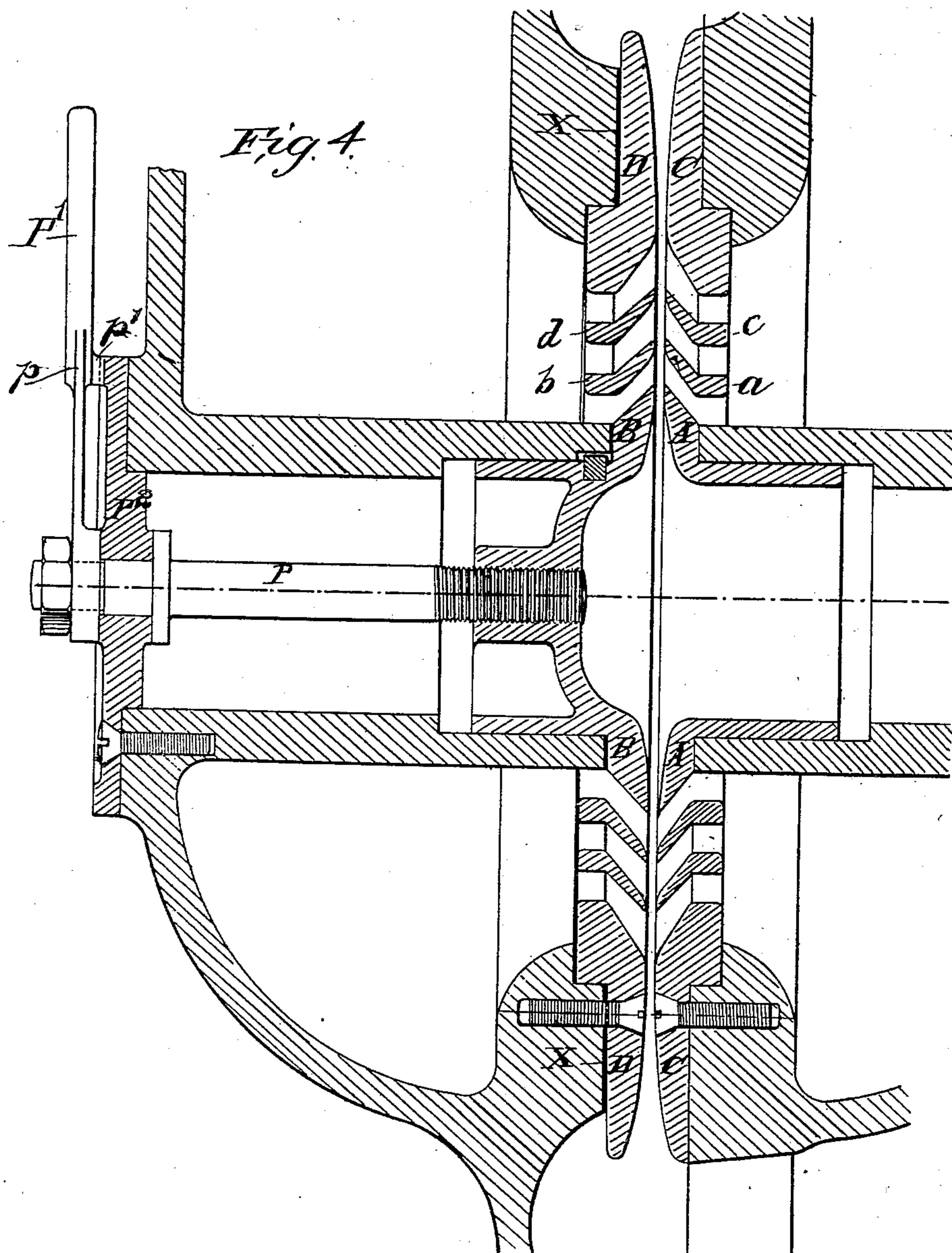
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

PLACIDE NÉZERAUX, OF FIVES-LILLE, FRANCE.

## CONDENSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 677,462, dated July 2, 1901.

Application filed September 28, 1900. Serial No. 31,419. (No model.)

*To all whom it may concern:*

Be it known that I, PLACIDE NÉZERAUX, a citizen of the Republic of France, and a resident of Fives-Lille, France, have invented certain new and useful Improvements in Condensing Apparatus, of which the following is a specification.

My present invention relates to a condensing apparatus, one object being to provide an improved condenser to be employed in conjunction with a pump or any other source of pressure adapted to supply water under pressure, said condenser producing condensation of steam or any gas by means of a circular jet of water capable of making the vacuum within a suitable chamber and carrying with it and condensing the fluid to be condensed.

A further object of my invention is to provide an apparatus which is of simple and compact construction and which may be easily started, it being noted that the novel construction has no movable parts subject to go out of order during the operation.

With these objects in view my invention consists of the novel construction and combination of parts fully described and claimed hereinafter, reference being had to the accompanying drawings, wherein—

Figure 1 is a vertical sectional view of a condenser constructed in accordance with my invention. Fig. 2 is a front elevation of same, and Figs. 3 and 4 are details.

As already stated, the improved apparatus will do work by means of a circular jet of condensing-water. I will now proceed to describe the construction whereby such a circular jet of condensing-water is utilized, reference being had to Figs. 1 to 4 of the accompanying drawings, wherein A and B represent two converging disks arranged in line with each other and fitted and suitably secured to the part E of the main body G of the apparatus and to the part F of the casing H, respectively, said casing H being secured to the body G by means of screws *h h* or in any other suitable manner.

C and D represent two converging and diverging disks concentrically arranged around the disks A and B and suitably secured, respectively, to the parts G' and H' of the body G and the casing H.

*a* and *b* are two converging cones suitably secured to cones *c* and *d*, rigidly secured to the disks C and D. Said cones *a b c d* serve to maintain the cohesion of the circular jet of water when the latter enters between the discharge-disks C and D.

R represents a reservoir connected at I J with the casing H and the body G and through which steam or gas to be condensed enters the apparatus.

O is a vacuum-indicator connected with the reservoir R through the passage or conduit P.

M is a manometer indicating the pressure of the condensing-water entering the apparatus through the conduit S and supplied thereto by a centrifugal or other pump or any other source of water under pressure. (Not shown in the drawings.)

T represents a vertical tube arranged within the tank K and secured in or over a corresponding aperture in the bottom of the latter, just above which said tube is provided with a series of holes V V, serving to expel a portion of the condensation products, and thus avoid too great a disturbance at the upper surface of the water, which would affect the stability of the vacuum.

The construction as thus described operates as follows: The condensing-water forced into the conduit S under a suitable pressure—say six to eight meters—indicated by the manometer M, is discharged at the peripheries of the disks A and B, passes between the cones *a b* and *c d*, and then into the ejector C D, whence it enters the water-tank K, from which it is expelled through the top and bottom part of the tube T into a conduit X. The steam entering the apparatus through the reservoir R is condensed on contact with the circular jet, and thus utilizes economically the *vis viva* due to its condensation by producing a perfect vacuum within the reservoir.

It will be observed that the space between the disks A B and C D and between the cones may be easily adjusted by suitable means—such, for instance, as a screw P, operated by crank or handle P' outside the casing H and actuating the disk B, such screw being colared in the head P<sup>2</sup> to prevent endwise movement and the crank being constructed with sufficient spring to permit a lug *p* therein to



engage with a socket *p'* on the head, whereby the screw may normally be locked in position—that the number of cones *a b c d* must be varied in accordance with the concentric spaces between the disks A B and C D, that  
 5 said cones may be omitted when a dry vacuum or the condensation of a small amount of steam is to be produced, in which case the disks A B and C D may be arranged closer to  
 10 each other, that the disks A B C D and the cones *a b c d* may be formed of two similar pieces, and that the annular spaces between the disks and the cones may be omitted and series of holes of equivalent cross-section and  
 15 same incline substituted therefor.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a condenser of the class described,  
 20 the combination with a chamber and a water-tank communicating with each other, of a condensing-water conduit, leading into said chamber a pair of oppositely-arranged converging disks within the chamber, a pair of  
 25 converging and diverging disks concentrically arranged around said converging disks, means for leading fluid, to be condensed, into said chamber, and means for expelling condensation-water from the water-tank, substantially as set forth.  
 30

2. In a condenser of the class described, the combination with a chamber and a water-tank communicating with each other, of a condensing-water conduit, leading into said  
 35 chamber, a pair of oppositely-arranged converging disks within the chamber, a pair of converging and diverging disks concentrically arranged around said converging disks, a series of converging cones arranged apart  
 40 from each other between said pairs of disks, means for leading fluid to be condensed into

said chamber and means for expelling condensation-water from the water-tank, substantially as set forth.

3. In a condenser of the class described, 45 the combination with the chamber and a water-tank communicating with each other, of a condensing-water conduit, leading into said chamber a pair of oppositely-arranged converging disks within the chamber, a pair of  
 50 converging and diverging disks, concentrically arranged around said converging disks, a series of converging cones arranged apart from each other between said pairs of disks, a suitable reservoir arranged above and communicating with said chamber for leading  
 55 fluid to be condensed into the latter, and means for expelling condensation-water from the water-tank, substantially as set forth.

4. In a condenser of the class described, 60 the combination with a chamber and a water-tank communicating with each other, of a condensing-water conduit, leading into said chamber, a pair of oppositely-arranged converging disks within the chamber, a pair of  
 65 converging and diverging disks concentrically arranged around said converging disks, a series of converging cones arranged apart from each other between said pairs of disks, a suitable reservoir arranged above and communicating with said chamber for leading  
 70 fluid to be condensed into the latter, and a vertically-arranged tube within the water-tank, said tube provided at its bottom with perforations and connected to a suitable discharge-conduit, substantially as set forth. 75

In testimony whereof I have hereunto set my hand in presence of two witnesses.

PLACIDE NÉZERAUX.

Witnesses:

CHARLES PETIT,  
 ALFRED CHÉRON.