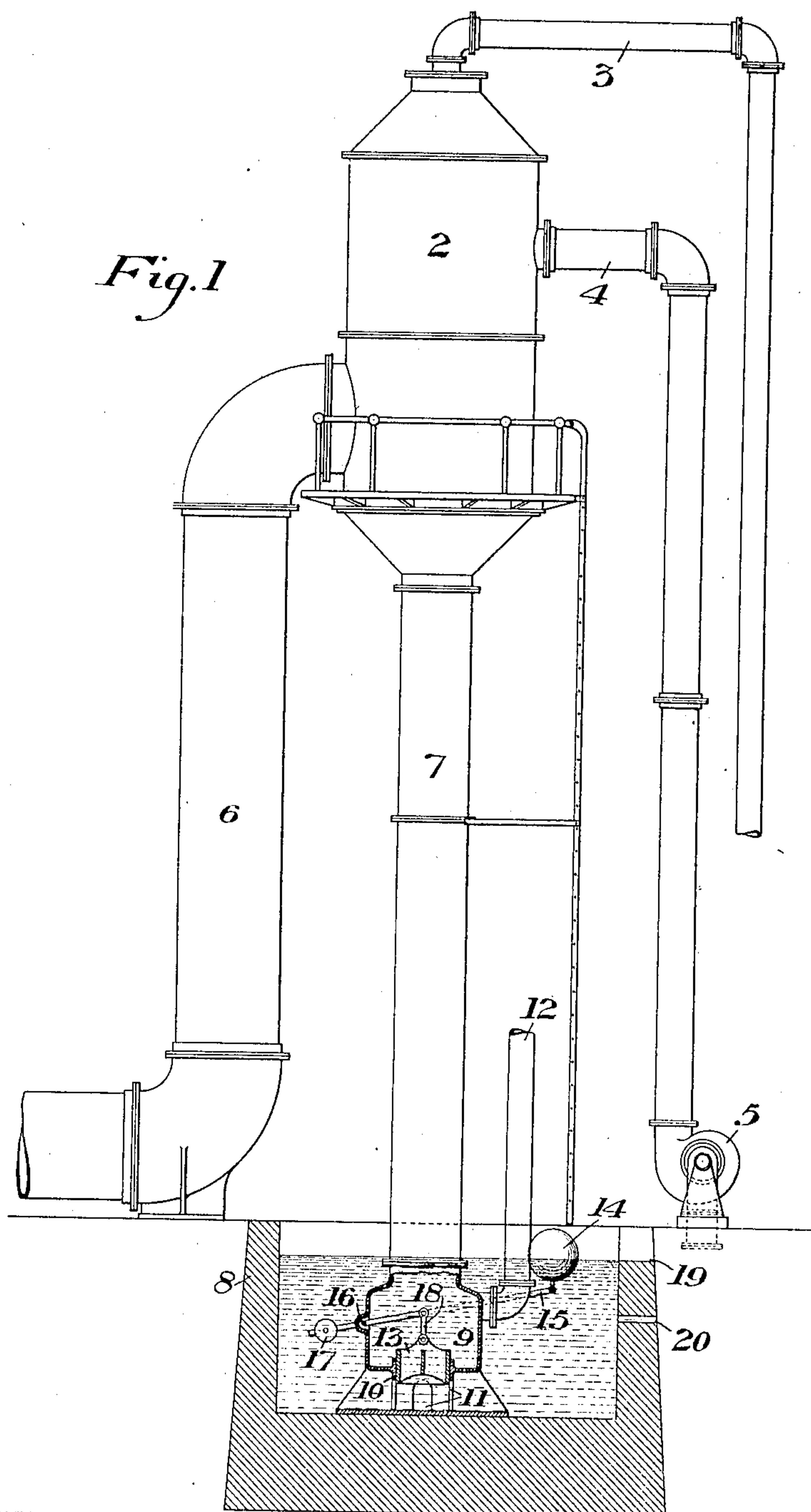


No. 887,634.

PATENTED MAY 12, 1908.

A. H. HELANDER.  
BAROMETRIC CONDENSER.  
APPLICATION FILED JAN. 31, 1908.

2 SHEETS—SHEET 1.



WITNESSES

*W. W. Swartz*  
*G. B. Blum*

INVENTOR

*A. H. Helander,*  
*By Baker, Byrnes & Parnell*  
*his Attys.*

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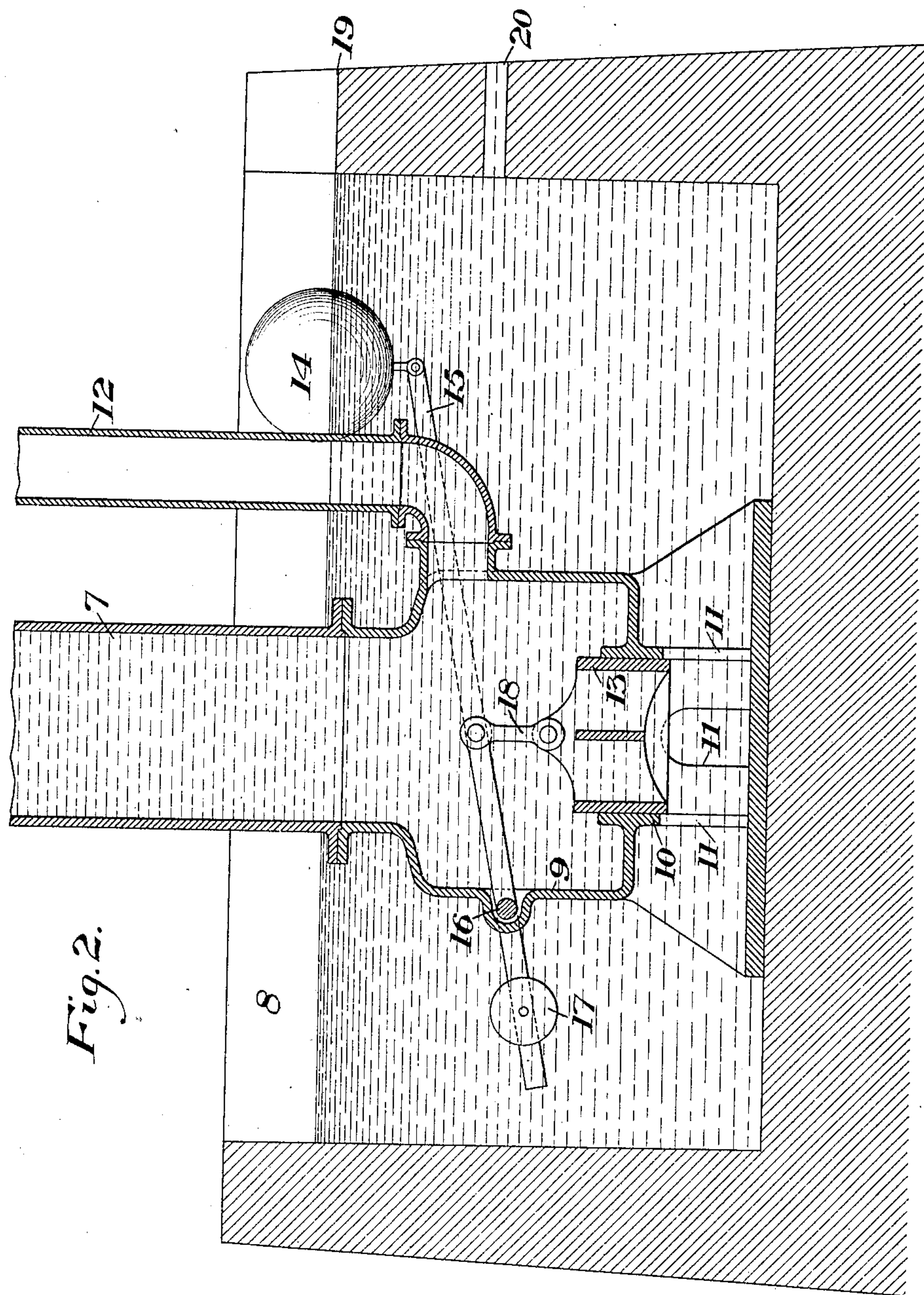


Fig. 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

AXEL H. HELANDER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO MESTA MACHINE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## BAROMETRIC CONDENSER.

No. 887,634

Specification of Letters Patent.

Patented May 12, 1908.

Application filed January 31, 1908. Serial No. 413,563.

*To all whom it may concern:*

Be it known that I, AXEL H. HELANDER, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Barometric Condenser, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation partly in section of a condenser embodying my invention; and Fig. 2 is an enlarged sectional view of the parts which more particularly constitute my invention.

My invention has relation to the class of barometric condensers, and is designed to provide a novel arrangement of the free steam exhaust for such condensers.

Heretofore it has been customary to provide the steam inlet pipe of the condenser with a free exhaust controlled by a valve normally held closed by the vacuum action within the condenser. These valves are not only very expensive but are exceedingly difficult to keep in proper working order owing to the difficulty of holding them properly seated, and in practice they not only leak but more or less constantly "chatter".

My invention is more particularly designed to avoid the use of valves of this character, and to provide a free steam exhaust in connection with the tail pipe of the condenser so arranged that the escape of steam is normally prevented through such exhaust by the water present in the tail pipe, but which upon the failure of the vacuum in the condenser, will be open to the atmosphere. I also preferably provide in connection therewith, a valve for positively preventing escape of steam from the tail pipe into the surrounding atmosphere, although this may be omitted.

The precise nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown one embodiment thereof, and which will now be described, it being premised, however, that various changes may be made by those skilled in the art without departing from the spirit and scope of my invention as defined in the appended claims.

In the drawings, the numeral 2 designates the condensing chamber, which may be of any well known or usual interior construction.

3 designates the vacuum pipe communicating with the upper portion of the chamber

and connected with the usual exhaust pump (not shown).

4 is the usual water inlet pipe supplied by a pump 5, and 6 is the inlet pipe for the steam to be condensed.

7 designates the usual tail pipe, which extends downwardly from the bottom of the condenser into a sink 8, into which the water of condensation is discharged from the tail pipe.

In accordance with my invention, I provide the lower portion of the tail pipe below the normal water level of the sink with an enlargement or chamber 9 having an outlet pipe 10 at its bottom, which discharges into the sink through the openings or ports 11.

12 designates a free steam exhaust pipe, which communicates with the interior of the chamber 9, and which leads to any desired place.

The discharge pipe 10 is preferably provided with a hollow valve 13, which is arranged to close the ports or opening 11 by the action of a float 14 attached to a float lever 15 which is pivoted at 16 within an offset portion of the wall of the chamber 9. This lever is preferably provided with an adjustable counterweight 17, and is connected with the valve by means of the link 18.

The operation is as follows:—Under normal working conditions there is a column of water in the tail pipe 7 of a height depending upon the vacuum in the condenser, and which seals the free exhaust pipe 12, the valve 13 being held open by the action of the float as shown in the drawings. When, however, the vacuum fails in the condenser, the water falls in the tail pipe and is forced down by the steam from the steam pipe 6. This water will be forced out through the hollow valve 13 into the sink, where it is discharged at the overflow 19 and the drain 20. Sufficient water will be forced out of the chamber 9 to unseal the entrance to the free steam exhaust pipe 12, and the steam will then freely exhaust therefrom. Some of the water in the sink will be forced out at the overflow 19, and the constantly open drainage opening 20, and if the level of the water in the sink should thereby be lowered sufficiently to otherwise permit any escape of steam through the openings 11, the fall of the float 14 will close the valve 13 and thus under any condition positively prevent any escape of steam except through the exhaust



pipe 12. This valve 13 may, however, be omitted, since ordinarily the body of water in the sink will be sufficient to prevent any escape of steam. The use of the valve, however, makes a positive safeguard, and is preferred.

To start the condenser sufficient water is pumped into the sink from any suitable source to raise the float to open the valve 13.

The advantages of my invention will be apparent to those skilled in the art, and to whom the expense and difficulties of the ordinary free exhaust valve in connection with condensers of this type are well known.

My invention can be readily and cheaply applied to exhausting condensers, and obviates the use of vacuum-seated valves, while at the same time it provides for the free exhaust of steam upon the failure of the condenser to work.

I claim:—

1. In a barometric condenser, a tail pipe leading from the condenser, a sink or receptacle into which said pipe discharges at its lower end, and a free steam exhaust passage communicating with said pipe below the normal water level of the water in the sink or receptacle; substantially as described.

2. In a barometric condenser, a tail pipe leading from the condenser, a sink or receptacle with which the tail pipe leads and discharges, a free steam exhaust passage communicating with the tail pipe below the normal water level in the sink or receptacle, and a valve for controlling the discharge of the tail pipe into the sink or receptacle, and means for opening and closing said valve by changes in the water level in the sink or receptacle; substantially as described.

3. In a barometric condenser, a tail pipe leading from the condenser, and having a chamber at its lower portion, a ported discharge pipe leading from said chamber, a free steam exhaust passage also leading from said chamber, above the discharge pipe, and a float and connections operated by changes of water level in the sink or receptacle for actuating said valve; substantially as described.

In testimony whereof, I have hereunto set my hand.

AXEL H. HELANDER.

Witnesses:

GEO. B. BLEMING,  
GEO. H. PARMELEE.