A. KÜNZLI.

CONDENSER OR PUMP.

APPLICATION FILED JULY 7, 1911.

1,013,499.

Patented Jan. 2, 1912.

FIG. 1.

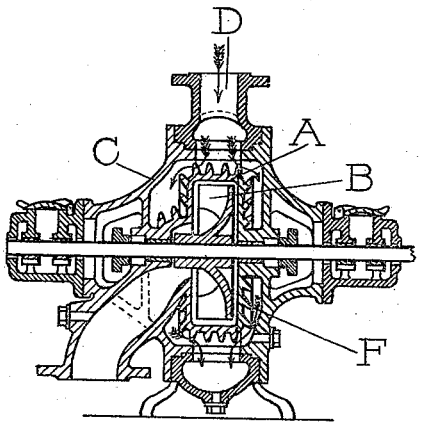


FIG. 2.

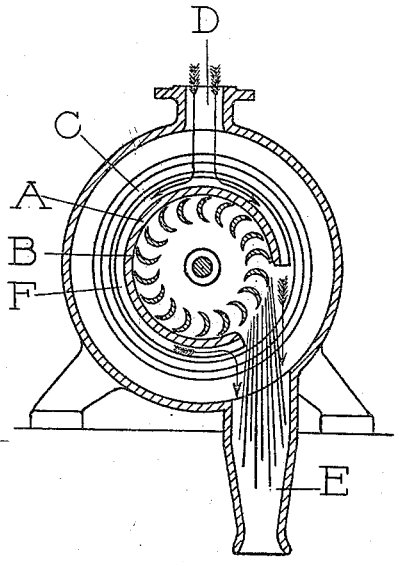
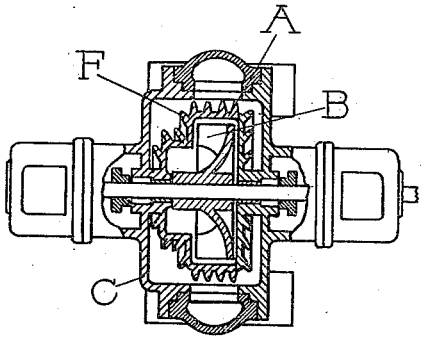


FIG. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

ARTHUR KÜNZLI, OF LEIPZIG, GERMANY.

CONDENSER OR PUMP.

1,013,499. Specification of Letters Patent. Patented Jan. 2, 1912.

Application filed July 7, 1911. Serial No. 637,314.

To all whom it may concern:

Be it known that I, ARTHUR KÜNZLI, a citizen of the Republic of Switzerland, residing at Leipzig, Germany, have invented certain new and useful Improvements in Condensers or Pumps, of which the following is a specification.

Up to the present time centrifugal pumps have been used in conjunction with injectors as condensers or air pumps. The condensation in such pumps therefore is a mixed one which results in a considerably large consumption of water and consequently of power. Owing to the high velocity of the jet the time for obtaining an intimate mixture of the fluid and water and cooling same is too short and as a consequence a complete condensation takes place after same have passed the compression nozzle. The steam to be drawn out by suction is first partially compressed and then condensed. However the cooling which takes place is insufficient even under these conditions in the case of an air pump and the gases to be drawn out by suction must be compressed at a still high temperature and therefore at comparatively large volumes.

It is the purpose of the present invention to avoid the described deficiencies. Accordingly the casing of the centrifugal pump is arranged in the condenser or vacuum chamber in such manner that the steam or air to be drawn out by suction is forced to flow first around the casing for the purpose of effecting a surface cooling and then through the nozzle whereby the work of compression is minimized.

The invention is illustrated in the accompanying drawing in which:

Figure 1 represents in sectional elevation a centrifugal condenser or pump embodying in desirable form the present improvements. Fig. 2 is a cross section of Fig. 1, and Fig. 3 shows in sectional plan view a vacuum pump.

Similar letters of reference denote like parts in all the figures.

In the drawing A represents the casing of the centrifugal pump. Arranged within said casing is a centrifugal wheel B of any desirable construction. According to this invention the casing A is located in a special casing C so arranged that sufficient space is left between the two casings. This allows of the passage of the fluid such as steam, air or gas which enters through the inlet D before it comes in contact with the water jet.

The low temperature of the water which is supplied by the centrifugal pump is transmitted through the walls of the casing A to the steam, air or gas flowing between same and the casing C thereby cooling them before they are mixed with the water jet forced through the nozzle E by the centrifugal wheel B.

In order to increase the surface condensation the casing A may be provided with ribs F or cooling surfaces may be arranged thereon in any suitable manner so as to increase the surface cooling to a relatively high degree.

By the described preliminary cooling of the steam, air or gases the consumption of water and power is considerably smaller for a relatively high vacuum than with former apparatus by virtue of the more complete suction.

I claim as my invention:

1. A centrifugal condenser or vacuum pump, comprising a condenser or vacuum chamber, a casing of the centrifugal pump within said condenser or vacuum chamber, a second casing around the first so arranged as to leave space for the passage of the fluid for cooling same before it comes in contact with the water jet.

2. A centrifugal condenser or vacuum pump, comprising a condenser or vacuum chamber, a casing with centrifugal pump mounted within said condenser or vacuum chamber, a second casing around the first so arranged as to leave space for the passage of the fluid for cooling same by surface cooling and the water supplied by the pump before it comes in contact with the water jet.

3. A centrifugal condenser or vacuum pump, comprising a condenser or vacuum chamber, a casing with centrifugal pump and cooling surfaces outside mounted within said condenser or vacuum chamber, a second casing around the first so arranged as to leave space for the passage of the fluid for cooling same by surface cooling and the water supplied by the pump before it comes in contact with the water jet.

Signed at Leipzig, Germany, this 24th day of June 1911.

ARTHUR KÜNZLI.

Witnesses:
ALBERT R. MORAWETZ,
RUDOLPH FRICKE.