May 30, 1933. E. AGHNIDES 1,912,113

WATER PUMP

Filed June 11, 1931

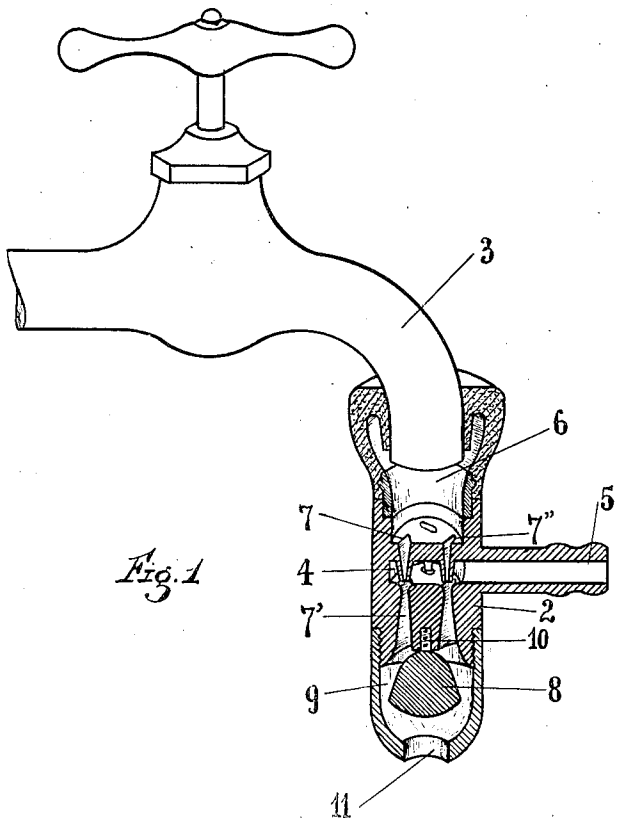
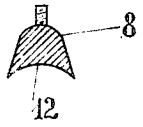


Fig. 1

Fig. 2



Inventor:
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WATER PUMP

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This invention relates to water pumps adapted to produce a depression in a vessel or space, by the known suction effect of water in a nozzle.

One object of the invention is to do away with the very long or long outlet tube that it was always necessary to provide to prevent the inrushing back of air into the vacuumized vessel. In order to attain this I provide an arrangement by which the jets of mixed water and gas are directed in an annular space or canal such that the transverse section of the central portion of the same, considered in the same direction as the flow of water and gas first increases, then diminishes to become in the end null.

Also the exterior contour of the said annular space or canal, considered in the direction of the flow of water and gas first comes nearer or converges to the said central portion, then diverges from the same.

Also it is provided an outlet having a section smaller than the largest transverse section of the said central portion.

One realizes in that manner a particular path for the liquid, path which is characterized in that it is curved without breaking or fragmenting the flow of liquid.

According to this invention such an annular canal is realized by providing in a canal of no particular shape a pear-shaped deflector which provides the said central portion and which has a transverse section first augmenting, thereafter decreasing to become finally nil.

I have illustrated a form of realization of this invention by way of example only in the accompanying drawing in which:

Fig. 1 is a perspective view partly in section of my improved water pump.

Fig. 2 shows a modified form of the deflector.

In Fig. 1 the water jet 1 is mounted on a tap 2 and comprises an air chamber 4 connected by a pipe 5 to a vessel or space, not illustrated, and in which vacuum is to be made.

The flow of liquid projected into 6 is divided in several jets by conduits such as 7 or 7″ having a section converging towards the air chamber 4. These jets are directed into conduits 7′ which have a section diverging towards the outlet.

The conduits 7, 7′, 7″ have a section other than circular, so as to provide a larger surface of contact between the water and the air in chamber 4. In Fig. 1 the canal 7″ is the most clearly visible, having a very elongated section, which may be elliptical or rectangular, whereas conduit 7 is triangular in section.

The conduits 7′ lead into an annular canal 9, the central solid portion 8 of which has a section which first increases, then decreases to become nil, taking the direction of the flow of fluid. The said central portion 8 is constituted by a pear-shaped deflector, secured, for instance screwed, by a projection 10, and having a transverse section such as aforesaid.

It is obvious that in view of increasing or decreasing the said shape of the circular canal 9 the exterior wall thereof can be made concave and/or convex.

In order to provide a further curved path for the liquid, the canal 9 is provided with an outlet opening 11 smaller than the largest section of the said central portion and provided of course below the said central portion.

By this means it has been found that although with the very short length of the jet, and without a supplementary evacuation pipe, no air could enter by the outlet to return to the vacuum chamber, and the efficiency of the apparatus is very much increased.

I may also provide a somewhat modified pear-shaped deflector according to Fig. 2, that is, having a bottom or outlet face concave or cup-shaped. This cup designated by 12 has for effect to prevent still more efficiently any retrogradation of the air, the air filets coming back into the apparatus being immediately directed and stopped in the centre of said cup 12.

Preferably the outlet 11 will be provided with a wire gauze acting as anti-spout device.

I wish to point out that my invention is not to be considered as restricted to these particular forms of construction illustrated, and other forms may be considered, as long as

they are within the scope of the following claims.

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

1. A water jet pump comprising a tubular body, air suction pipes leading into a chamber in said body, a plurality of water conduits leading into said chamber, a plurality of air and water conduits leading from said chamber into an annular conduit providing a converging passage, subsequently a diverging passage for the mixture of fluids, and an outlet opening immediately after said diverging passage.

2. A water jet pump comprising a tubular body, an air suction pipe leading into a chamber in said body, a plurality of water conduits leading into said chamber, a plurality of air and water conduits leading from said chamber into a fluid laminating annular passage, a pear shaped deflector provided in said passage, and an outlet having an opening smaller than the largest diameter of the said pear shaped deflector.

3. A water jet pump comprising a tubular body, an air suction pipe leading into a chamber in said body, a plurality of water conduits leading into said chamber, a plurality of air and water conduits leading from said chamber into a fluid laminating annular passage, a pear shaped deflector secured centrically in said passage and having a concave outlet side, an outlet having an opening smaller than the largest diameter of the said pear shaped deflector.

ELIE AGHNIDES.