

W. G. WILSON.  
AIR COMPRESSOR.  
APPLICATION FILED FEB. 19, 1906.

900,814.

Patented Oct. 13, 1908.

2 SHEETS—SHEET 1.

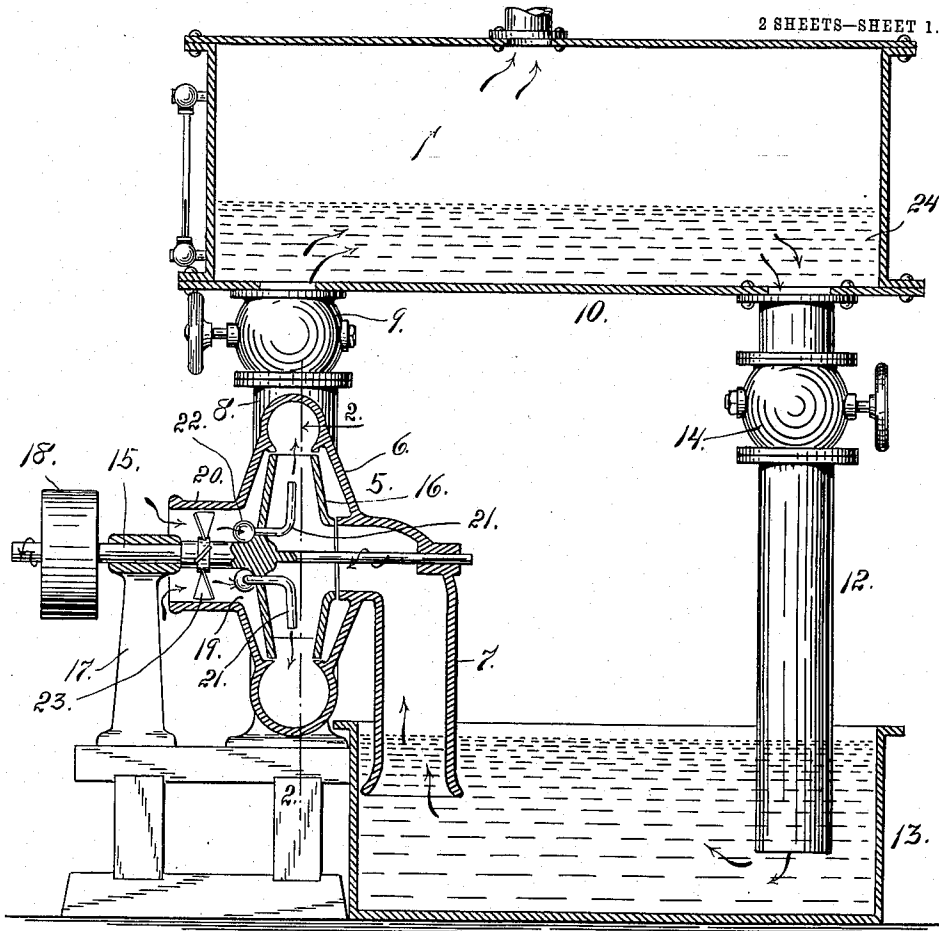


Fig. 1.

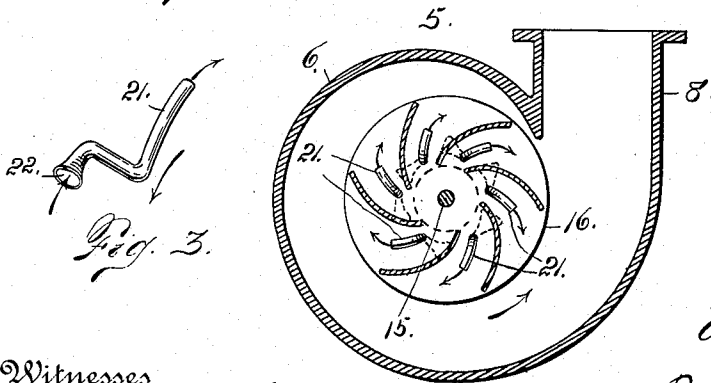


Fig. 3.

W. G. Wilson.  
Inventor  
By *Asst. Secy*  
Attorney

Witnesses  
Otto E. Huddick.  
Dena Nelson.

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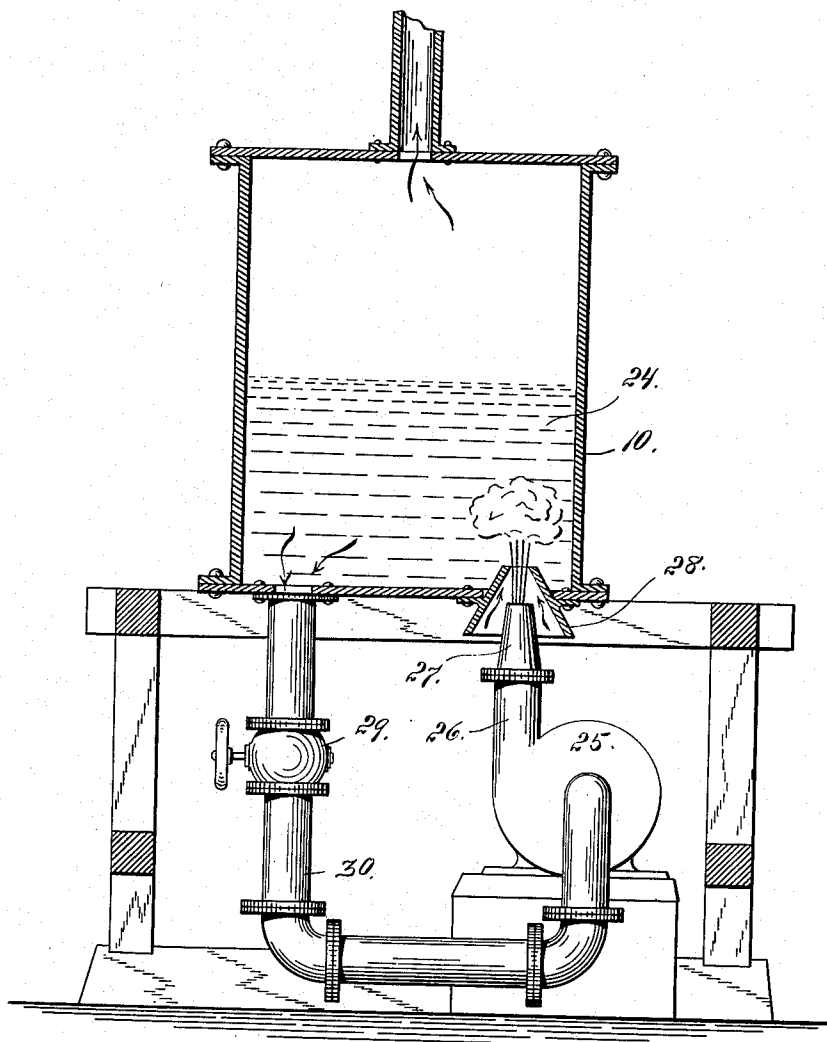


Fig. 4.

Witnesses  
*Otto C. Haddick*  
*Dena Nelson.*

*W. G. Wilson.*  
Inventor  
*By A. J. Mien*  
Attorney

# UNITED STATES PATENT OFFICE.

WYLIE G. WILSON, OF DENVER, COLORADO.

## AIR-COMPRESSOR.

No. 900,814.

Specification of Letters Patent.

Patented Oct. 13, 1908.

Application filed February 19, 1908. Serial No. 301,789.

*To all whom it may concern:*

Be it known that I, WYLIE G. WILSON, a subject of the King of Great Britain, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Air-Compressors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in air compressors and specifically to a device in which water is used as a vehicle to carry the air into the receiver and through the same.

In carrying out the invention I employ a centrifugal pump so arranged that atmospheric air is introduced to the body of water and carried with the latter into the receiver. The body of water or other liquid in the receiver is such that there is always an air space above in which the air is compressed. Provision is made, after a given or predetermined body of water has accumulated in the receiver, for drawing off the water as fast as it enters, thus maintaining a uniform quantity of water in the receiving tank. While the water is drawn off the air is trapped and the compression of the air is brought about by the continual introduction of air into the space above the liquid.

Having briefly outlined my improved construction I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a section taken through an apparatus illustrating my improvement. Fig. 2 is a section taken on the line 2—2 of Fig. 1. Fig. 3 is a perspective view in detail of one of the nozzles for introducing the air to the chamber of the pump, whereby it is acted on by the stream of water. Fig. 4 is a view partly in section showing a modified form of construction.

The same reference characters indicate the same parts in all the views.

Referring first to Figs. 1, 2 and 3, let the numeral 5 designate a centrifugal pump which so far as its general construction is concerned may be of any approved form. In

this pump, 6 is the casing; 7 the induction conduit; 8 the eduction conduit; 9 a controlling valve interposed between the eduction conduit and the receiver 10; 12 a return conduit leading from the bottom of the receiver to the supply tank 13, in which conduit is interposed a valve 14; 15 the shaft of the impeller 16, the said shaft being journaled in a suitable support 17 and provided with an operating pulley 18. The back wall of the casing is provided with an opening 19 around the impeller shaft, said opening being surrounded by an exteriorly protruding housing 20. The impeller on the side of the pump corresponding with the opening 19, is provided with open ended nozzles 21, one extremity of each of which projects into the opening 19, while the opposite extremity is directed outwardly toward the periphery of the casing, to facilitate the introduction of air during the action of the pump. The outer extremities of these nozzles are enlarged as shown at 22, to further facilitate the introduction of air, the said nozzles being properly directed to produce this result. Within the housing 20 is preferably located a fan 23 whose function is to draw atmospheric air thereinto and pass it thence to the induction nozzles.

When the device is in operation the impeller shaft being rapidly rotated, imparts a corresponding movement to the impeller 19 and the nozzles 21, whereby liquid as water is drawn from the supply tank 13 up through the conduit 7, into the pump chamber, where it is acted on by the revolving impeller. As the water is thrown outwardly into the periphery of the casing due to the rotary action of the impeller, air is drawn into the water and forced upwardly therewith into the receiving tank 10. When the operation is commenced, the valve 14 should be closed until a body of water 24 accumulates in the receiver. The valve 14 is then opened sufficiently to allow only as much water to escape through the pipe 12 as enters the receiver through the pipe 8. By virtue of this arrangement, the water is continually drawn off, thus leaving a uniform air space within the receiver, into which the air is forced during the continued operation of the apparatus.

In the form of construction shown in Fig. 4, the receiving tank will be designated 10, the same as in Fig. 1. In this case a cen-

trifugal pump 25 is employed and water is delivered to the bottom of the tank 10 from a conduit 26 leading from the pump, the water being delivered to a nozzle 27 projecting into an inverted funnel-shaped housing 28 surrounding an induction opening or port in the bottom of the tank 10. When the pump is in operation, the water is driven through the induction opening with great speed, the air being forced with the water or other liquid into the tank 10. As soon as a sufficient quantity of water has accumulated in the receiver 10 of this form of construction, a valve 29 in a return conduit 30 is opened and the liquid returns to the pump 25. In this way the water is used over and over again for air compression purposes. This is simply another form of construction whereby air may be compressed through the employment of a liquid vehicle.

Attention is called to the fact that in the form of construction shown in Fig. 1 the supply tank 13 may be dispensed with, and the conduit 12 connected directly with the pipe or conduit 7.

Having thus described my invention, what I claim is:

The combination with a receiving tank, a supply tank, a centrifugal pump arranged to take water from the supply tank and discharge it into the receiving tank, the said pump comprising a casing, a hollow rotatable impeller located within the casing, a water induction conduit connected with the casing and communicating with the impeller on one side, open-ended air inlet nozzles connected with the impeller on the opposite side from the induction conduit and extending through the casing to an air opening, the said nozzles being radially disposed rotating with the impeller, whereby the air and water enter the impeller from opposite directions and are forced together into the receiving tank.

In testimony whereof I affix my signature in presence of two witnesses.

WYLIE G. WILSON.

Witnesses:

A. J. O'BRIEN,  
DENA NELSON.