J. T. WILKIN.

VACUUM PUMP.

APPLICATION FILED JAN. 22, 1910.

958,345. Patented May 17, 1910.

Fig. 3.

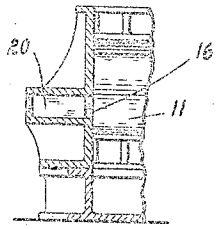


Fig. 1.

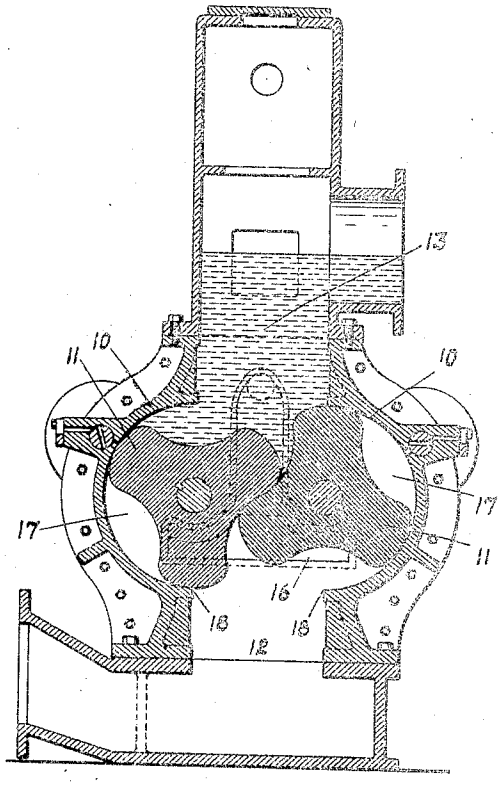
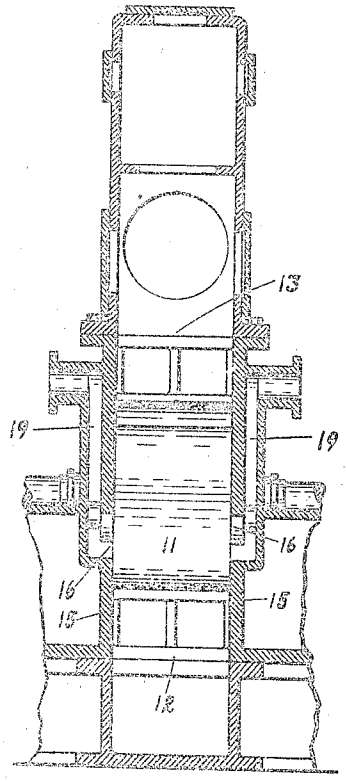


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN T. WILKIN, OF CONNERSVILLE, INDIANA, ASSIGNOR TO THE CONNERSVILLE BLOWER CO., OF CONNERSVILLE, INDIANA, A CORPORATION OF INDIANA.

VACUUM-PUMP.

958,345. Specification of Letters Patent. Patented May 17, 1910.

Application filed January 22, 1910. Serial No. 539,552.

To all whom it may concern:

Be it known that I, JOHN T. WILKIN, a citizen of the United States, residing at Connersville, in the county of Fayette and State of Indiana, have invented a certain new and useful Vacuum-Pump, of which the following is a specification.

The object of my invention is to produce an improvement in that form of vacuum pumps which forms the subject matter of my Patent No. 924,024.

In the structure there shown some difficulty has been experienced, under some conditions, owing to the fact that there was such splashing of the water as would tend to water seal the air inlet and thus prevent the inflow of air from the condenser through the air inlet port 19, such action being especially true at high speeds and heavy duty. In order to avoid these difficulties I have found it necessary to change the relation of the air inlet to the impellers so that the upper side of the air inlet will come as closely as possible to the lowest line of contact between the two impellers and so that the air inlet will have a width sufficient for the inflow of air to continue at all times, being cut off from any particular pocket in the structure at about the time when that pocket is cut off from the water inlet. By this arrangement it becomes possible to very materially raise the lower edge of the air inlet relative to the water inlet and to avoid the objectionable effects of splashing.

The accompanying drawings illustrate my invention.

Figure 1 is a transverse section of a pump constructed in accordance with my invention; Fig. 2 a longitudinal section with the impellers shown in full lines and Fig. 3 a fragmentary section of another form.

In the drawings, 10, 10 indicate two cylindrical portions of the barrel of the pump in which are mounted the impellers 11, 11, said impellers, in the particular form shown, being of the common three-lobe type. The barrel is completed by the usual end walls 15 between which the impellers lie, and leading upwardly into the lower end of the barrel is the water inlet 12, the usual water outlet 13 leading from the upper side of the barrel.

Formed through each end wall 15 (the double construction as here described is advisable although not necessary) is an air port 16 which lies between the two impellers and has its upper edge as near as possible to the lower line of contact between the impellers, a slight lap being provided as a factor of safety. The port 16 need not be of any great vertical dimensions so long as sufficient inlet capacity is maintained, it being advisable to have its lower edge as high as possible, but transversely the port 16 is extended as far as possible into the cylindrical walls of the barrel so that the tips thereof will extend to points where communication between the port 16 and the pocket 17 (formed between two adjacent lobes of an impeller) and the cylindrical portion of the barrel will not be cut off until about the time when the tip of the incoming lobe of the impeller contacts with the adjacent cylindrical portion of the barrel, at 18. By thus arranging the port 16 full opportunity is given for a continuous inflow of air into the pump chamber above any possible level to which the water may rise in the lower end of the pump and there will be inflow of air into each of the pockets 17 as long as possible.

There is, at all times, a tendency for water within the lower port of the pump to flow outwardly into port 16 and it is therefore desirable that no portion of the passage communicating with this port be lower than the lower part of the port and in the form shown in Fig. 2 I therefore provide a vertical passage 19 which communicates at its upper end with a coupling to which a suitable supply pipe may be connected, said supply pipe (not shown), coming from an exhaust chamber or condensing chamber in an ordinary manner. In Fig. 3 the air port 16 is fed by a horizontal passage 20 which is provided at its outer end with a portion adapted to receive a feed pipe.

I claim as my invention:

1. In a vacuum pump of the lobed-impeller type, a water inlet, an air port leading into the pump chamber between the impellers thereof and extending transversely into those portions of the pump chamber with which the lobes of the impellers contact whereby the said air port will be cut off by the lobes of the impellers at about the time said lobes cut off communication with the water inlet.

2. In a vacuum pump of the lobed-impeller type, a water inlet, an air port lead-

ing into the pump chamber between the impellers thereof and extending transversely into those portions of the pump chamber with which the lobes of the impellers contact whereby the said air port will be cut off by the lobes of the impellers at about the time said lobes cut off communication with the water inlet, said air port having its upper edge slightly below the lowest line of contact between the two impellers and its lower edge above the lowest points of the pump chamber which co-act with the impellers.

3. In a vacuum pump, a pump chamber comprising a pair of mating portions and connecting end walls, a pair of co-acting lobed impellers mounted in said pump chamber and co-acting with the mating portions and end walls thereof, said pump chamber having a water inlet leading into the lower part thereof between the mating portions, and an end wall having a transversely extended recess formed therein and extending into the mating portions of the chamber so as to be cut off from said chamber by the lobes of the impellers at about the time when said lobes cut off said mating portions from the water inlet, said recess having an air feed passage leading thereto.

4. In a vacuum pump, a pump chamber comprising a pair of mating portions and connecting end walls, a pair of co-acting lobed impellers mounted in said pump chamber and co-acting with the mating portions and end walls thereof, said pump chamber having a water inlet leading into the lower part thereof between the mating portions, and an end wall having a transversely extended recess formed therein, said recess having its upper edge slightly below the lowest line of contact between the impellers and its ends transversely extending into the mating portions of the chamber so as to be cut off from said chamber by the lobes of the impellers at about the time when said lobes cut off said mating portions from the water inlet, said recess having an air feed passage leading thereto.

5. In a vacuum pump of the lobed-impeller type, an air port leading into the pump chamber between the impellers thereof and extending transversely into those portions of the pump chamber with which the lobes of the impellers contact whereby the said air port will be cut off by the lobes of the impellers at about the time said lobes cut off communication with the water port, and a vertical air passage formed in the end casing and communicating with the air inlet, and having its inlet above the air port.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this third day of January, A. D. one thousand nine hundred and nine.

JOHN T. WILKIN. [L.S.]

Witnesses:
ARTHUR M. HOOD,
THOMAS W. MCMEANS.