(No Model.) 2 Sheets—Sheet 1.

W. W. WAINWRIGHT.

ROTARY BLOWER.

No. 584,067. Patented June 8, 1897.

FIG. 1.

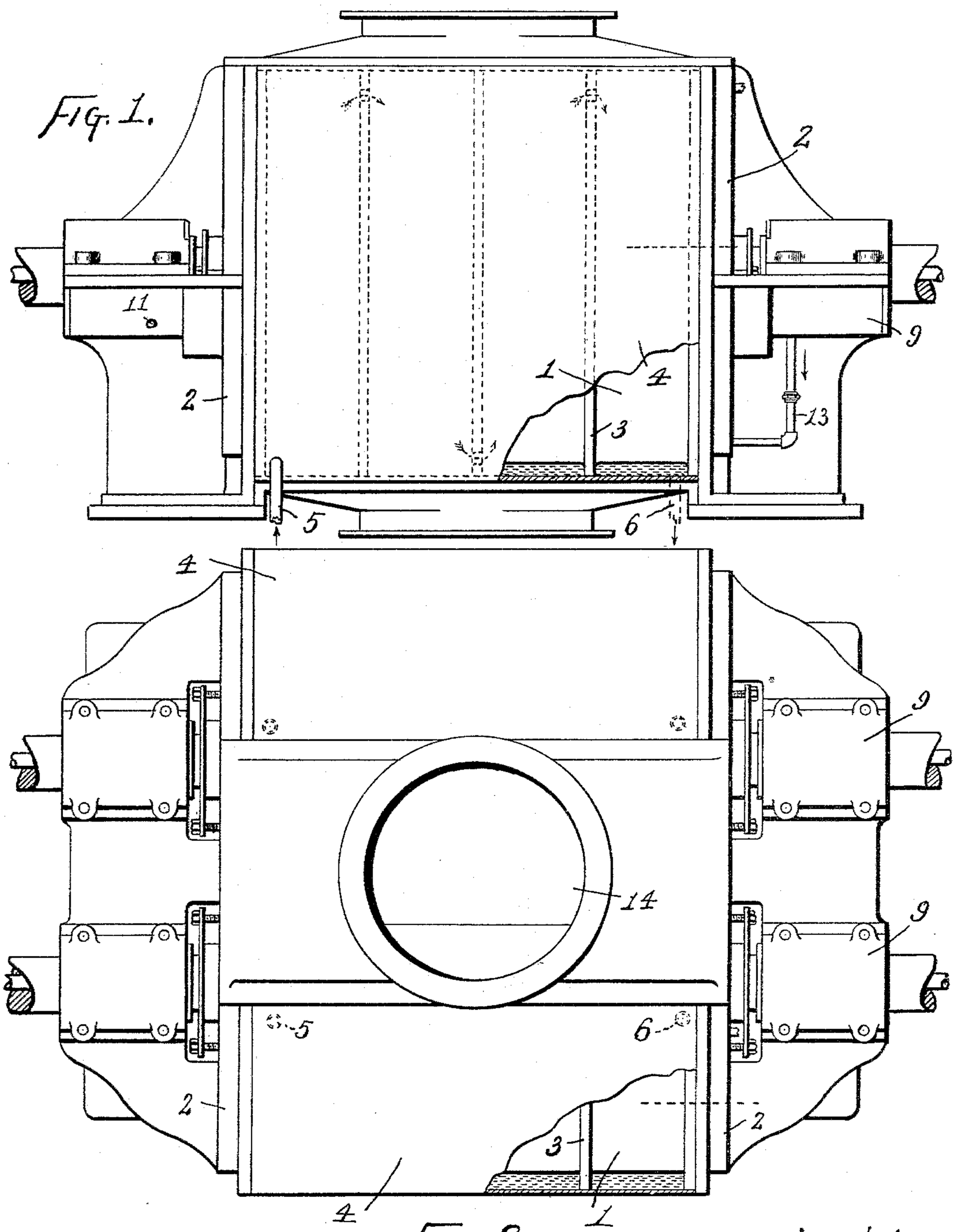

FIG. 2.

Witnesses:
E. R. Shipley.
Robert Lee.

William W. Wainwright
Inventor
by James W. See
Attorney

(No Model.) 2 Sheets—Sheet 2.

W. W. WAINWRIGHT.

ROTARY BLOWER.

No. 584,067. Patented June 8, 1897.

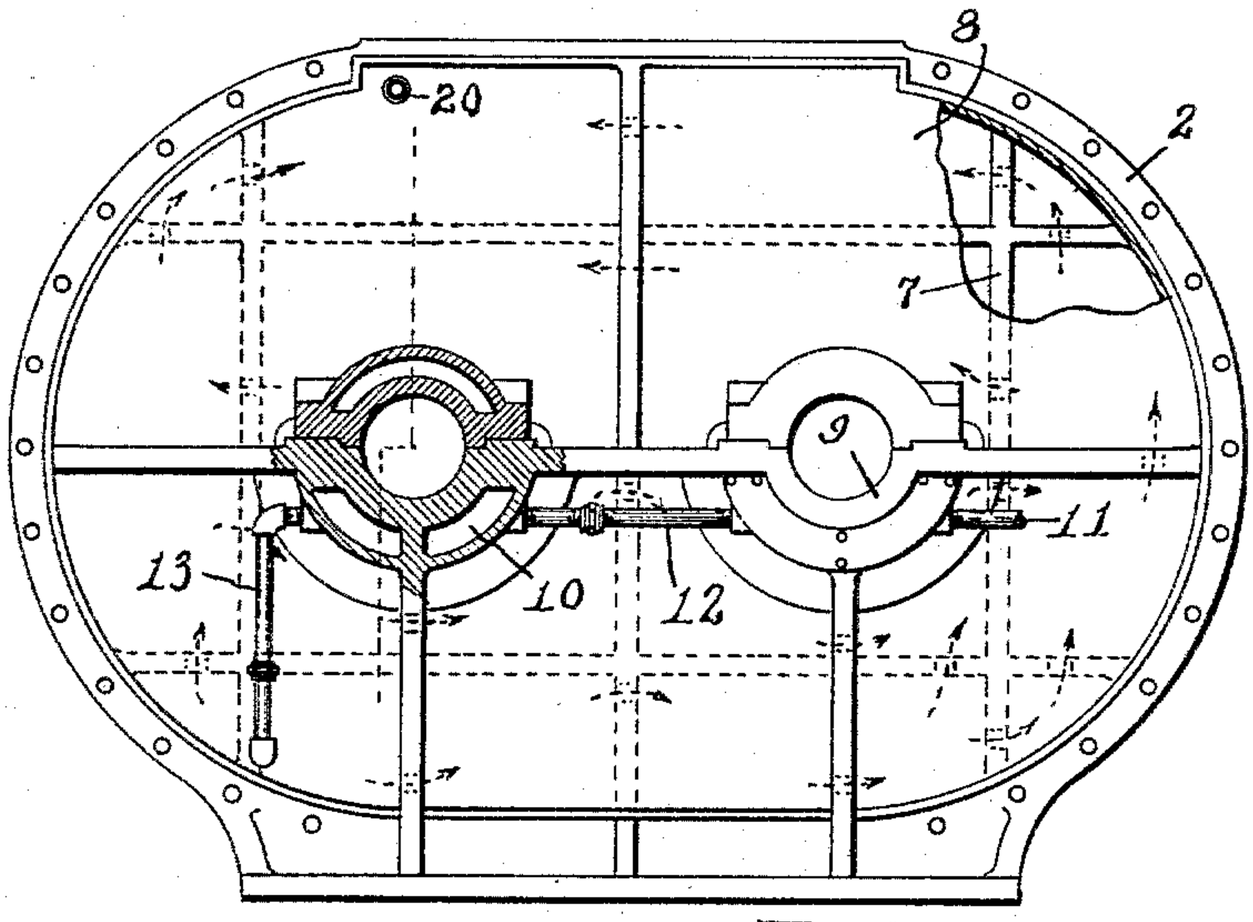

FIG. 3.

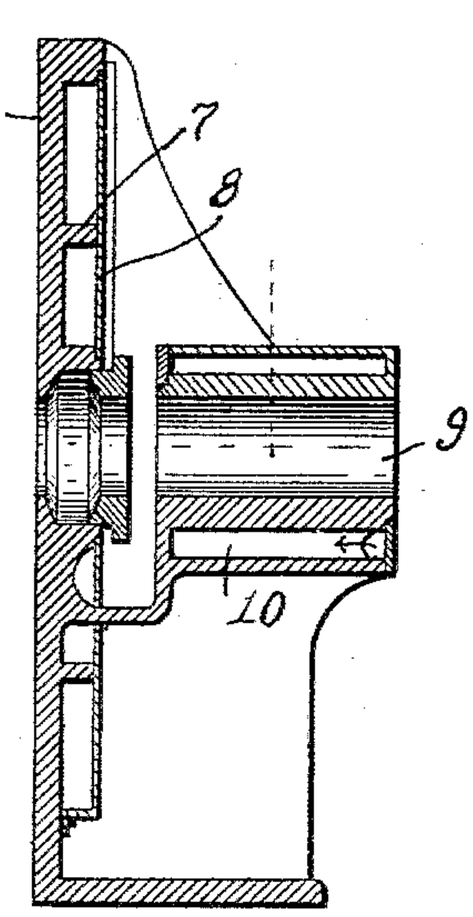

FIG. 4.

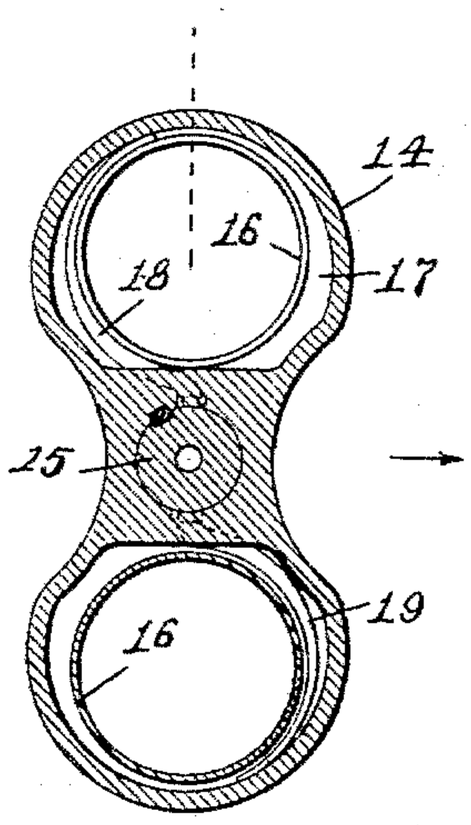

FIG. 6.

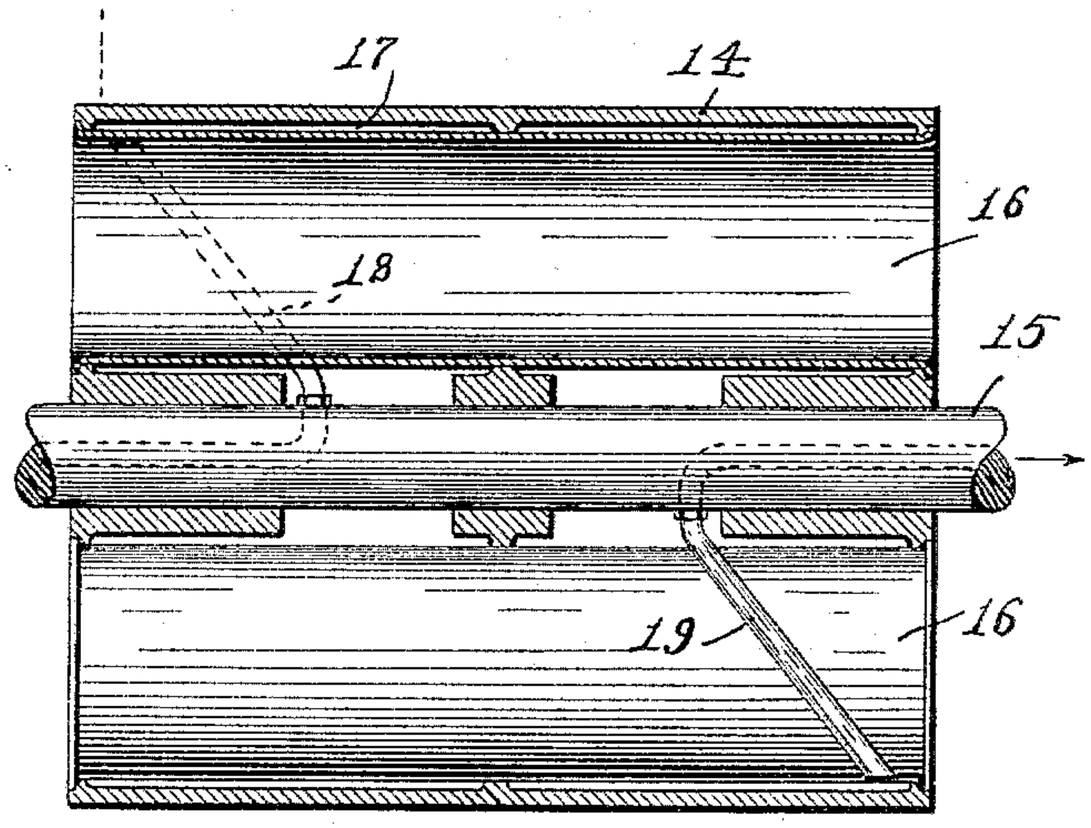

FIG. 5.

William W. Wainwright
Inventor

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E. R. Shipley.
Robert Lee.

by James W. See
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM W. WAINWRIGHT, OF CONNERSVILLE, INDIANA, ASSIGNOR TO THE P. H. & F. M. ROOTS COMPANY, OF SAME PLACE.

ROTARY BLOWER.

SPECIFICATION forming part of Letters Patent No. 584,067, dated June 8, 1897.

Application filed August 10, 1896. Serial No. 602,269. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. WAINWRIGHT, of Connersville, Fayette county, Indiana, have invented certain new and useful Improvements in Rotary Blowers, of which the following is a specification.

This invention pertains to improvements in rotary blowers used for the production of high pressures developing considerable heat due to compression and used in compressing inflammable gases, such as naphtha-gas, where the danger from sparking under high heat of compression is dangerous.

My invention will be readily understood from the following description taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a blower embodying my invention, a portion of the outer casing being broken away; Fig. 2, a plan of the same, a portion of the outer casing appearing in horizontal section; Fig. 3, an end view of the blower, a portion of the outer casing being broken away, and one of the journal-boxes appearing in vertical section; Fig. 4, a vertical section of one of the blower-heads; Fig. 5, an axial section of one of the rotary impellers of the blower, and Fig. 6 a transverse section of one of the impellers.

In the drawings, 1 represents the shell of the blower, of the usual form, suited for the pair of revolving impellers; 2, the head-plates of the shell, bolted thereto in the usual manner; 3, ribs projecting exteriorly from shell 1; 4, outer casings secured water-tight to the exterior ribs and flanges of the shell, chambers thus being formed between casing 4 and shell 1; 5, an inlet-pipe for water, communicating with an end one of the series, and 6 an outlet-pipe communicating with the chamber at the opposite end of the shell, the arrangement being the same at each side of the blower.

Cooling-water is forced into the inlet-pipe 5 and enters the first chamber and goes from thence into the second chamber through openings left in the ribs 3, the course of the water from chamber to chamber and finally to outlet-pipe 6 being indicated by the arrows in Fig. 1. The effect of this circulation of water is to carry off heat taken up by shell 1.

Proceeding with the drawings, Figs. 3 and 4, 7 indicates ribs or flanges projecting from the outer face of the head-plates 2 of the blower; 8, outer plates secured water-tight against these ribs and flanges and forming chambers upon the outer faces of head-plates 2, these chambers being in communication through holes in the ribs and flanges, as indicated by the arrows; 9, the journal-boxes of the blower, supported by the head-plates; 10, segmental water-tight chambers formed in the walls of the journal-boxes; 11, an inlet-pipe leading to the chamber of one of the journal-boxes; 12, a pipe placing the chambers of the two journal-boxes on a head-plate in communication with each other; 13, a pipe leading from the chamber of the second journal-box to one of the chambers formed in the head-plate.

Cooling-water entering at pipe 11 passes through the chambers of the first journal-box, and then through the chambers of the second journal-box, and then to one of the chambers in the head-plate, and thence through the various chambers to outlet 20, as indicated by the arrows in Fig. 3, this circulating water carrying off the heat taken up by the head-plates and journal-boxes, the heat taken up by these parts being the result of the heat due to the compression of the gas and also due to the friction of parts rubbing on them.

Proceeding with the drawings, Figs. 5 and 6, 14 indicates one of the impellers, which is formed hollow; 15, the usual impeller-shaft; 16, thin metallic tubes extending longitudinally through the lobes of the impeller and expanded into the end walls thereof, these tubes forming free passages endwise entirely through the impeller; 17, the chamber formed within the wall of the impeller around the outside of tubes 16, the chamber thus formed being of comparatively small cubical contents; 18, a pipe disposed within the impeller and leading from a water-channel formed axially into the shaft from one of its ends, this pipe extending around one of tubes 16 and delivering water to chamber 17, at one end of the impeller, at one of its major extremities; 19, a pipe whose outer end is at the opposite end and opposite major extremity of the impeller, the inner end of this pipe communicating with an axial channel extending out-

wardly through the end of the shaft, and the outlet in the head-plate, heretofore referred to.

Cooling-water forced into one end of the impeller-shaft fills the chamber within the impeller and goes out through pipe 19 and the opposite end of the impeller-shaft, a circulation being thus maintained within the walls of the impeller and carrying off the heat taken up by the impeller, such heat being due to the heat of compression of the gas and to the rubbing contact of the impeller with the walls of the casing.

I claim as my invention—

1. In a rotary blower, the combination, substantially as set forth, of a head-plate having double walls and interior perforated partitions forming a series of connected chambers, journal-boxes connected with said head-plate and having chambers independent of the chambers in said head-plate, water-conduits connecting the chambers of the journal-boxes and head-plate, and conduits for the inlet and outlet of cooling-water from the connected system of chambers.

2. In a rotary blower, the combination, substantially as set forth, of a hollow lobed impeller having an axial shaft, and thin metallic tubes extending through the impeller parallel with the shaft and expanded into the end walls of the impeller and serving, with the shell of the impeller, in forming thin hollow walls at the lobes.

3. In a rotary blower, the combination, substantially as set forth, of a hollow impeller, thin metallic tubes disposed within said impeller parallel with said shaft and expanded water-tight into the end walls of the impeller, and a shaft disposed axially in the impeller and having channels in its opposite ends communicating with the interior of the impeller exterior to said tubes.

4. In a rotary blower, the combination, substantially as set forth, of a hollow impeller, tubes extending endwise through the cavity thereof and secured water-tight in the end walls of the impeller, a shaft secured in the impeller and having a water-channel, an inlet-pipe leading from one portion of said water-channel to one diagonal extremity of the interior chamber of the impeller, and an outlet-pipe leading to another portion of said channel from the diagonally opposite portion of the chamber of the impeller.

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Witnesses:

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