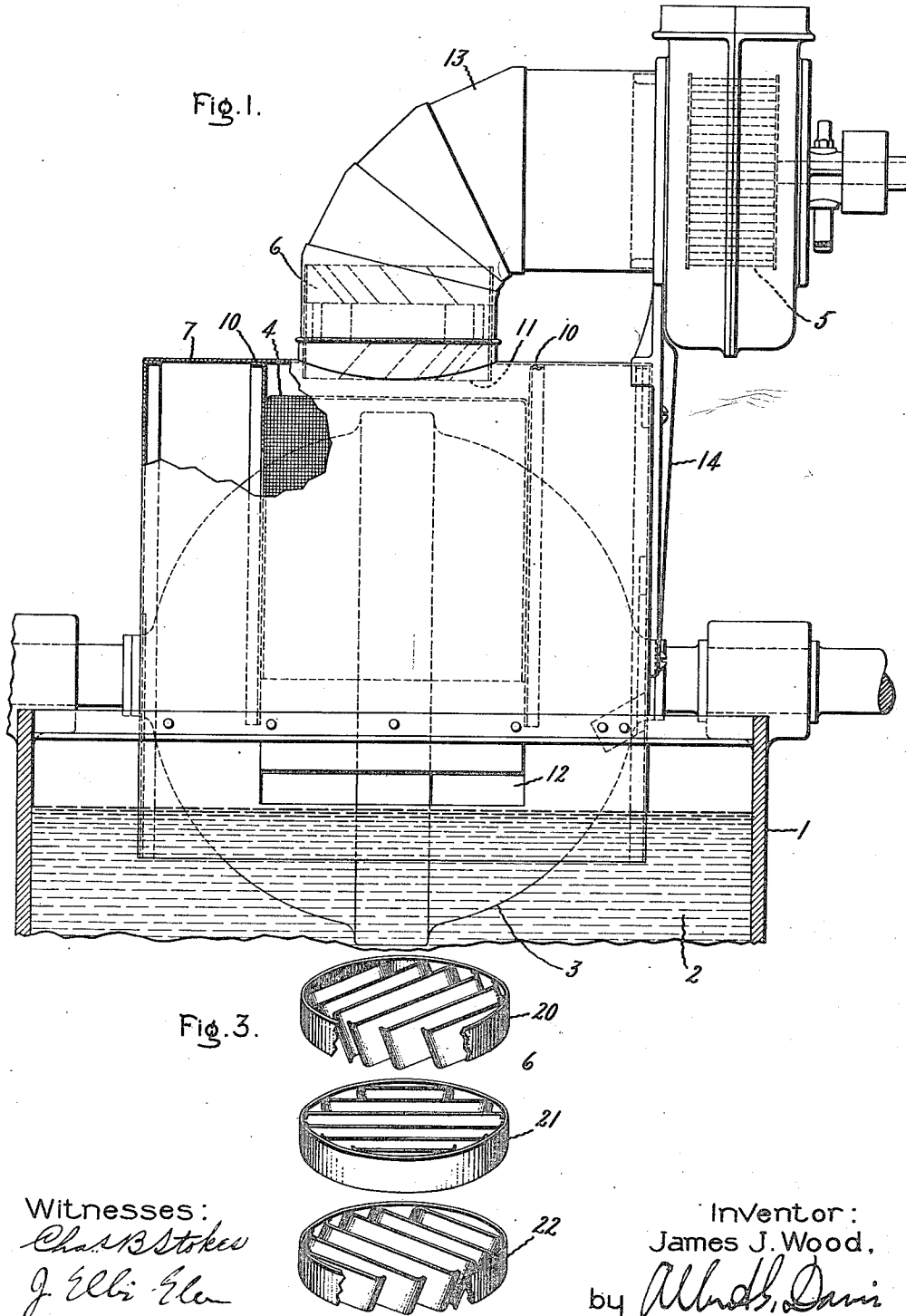


J. J. WOOD.
COOLING LIQUID ECONOMIZER.
APPLICATION FILED NOV. 28, 1913.

1,156,511.

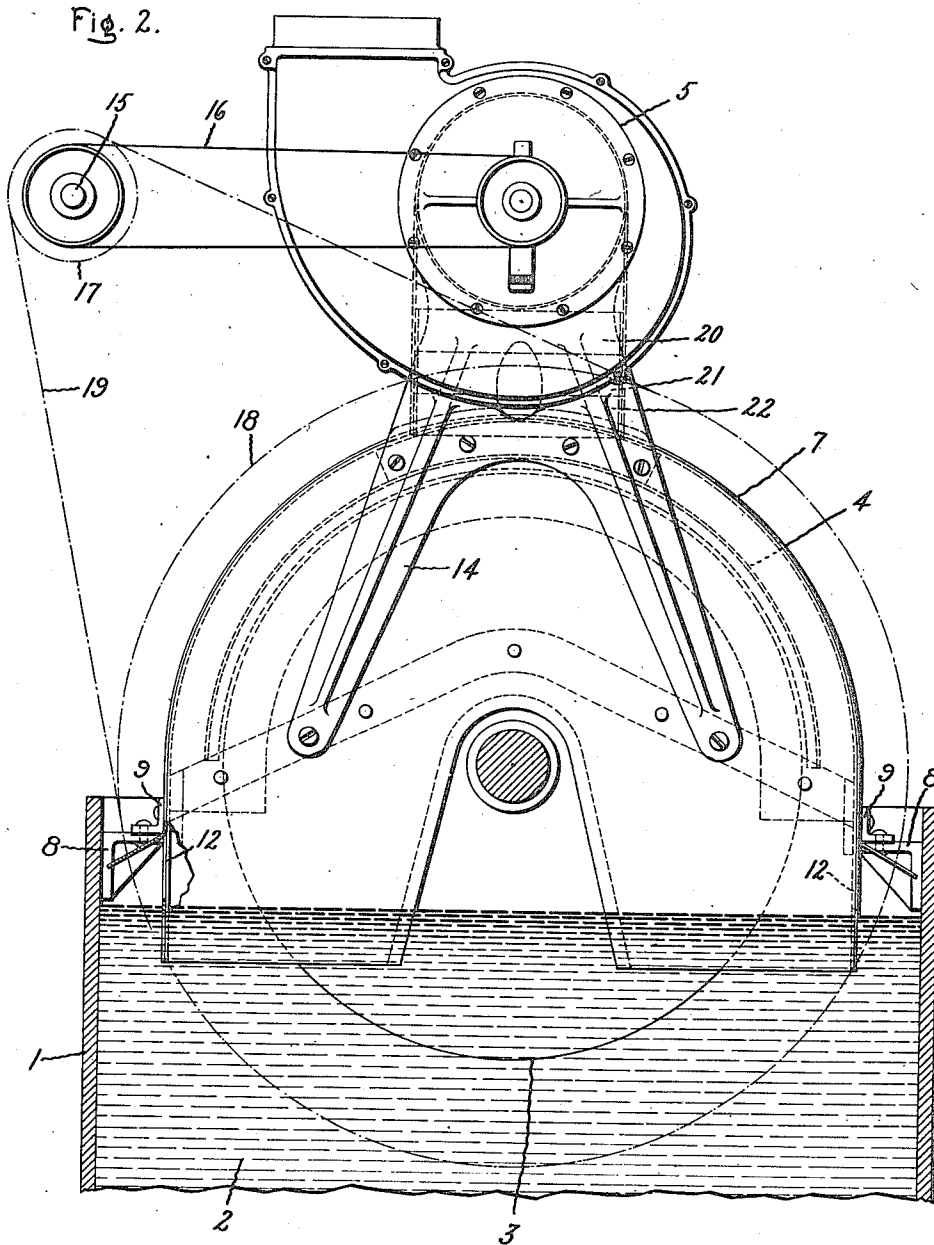
Patented Oct. 12, 1915.
2 SHEETS—SHEET 1.



J. J. WOOD.
 COOLING LIQUID ECONOMIZER.
 APPLICATION FILED NOV. 28, 1913.

1,156,511.

Patented Oct. 12, 1915.
 2 SHEETS—SHEET 2.



Witnesses:

Chas B Stokes
J. Elbi Elen

Inventor:
 James J. Wood,
 by *Alfred S. Davis*
 His Attorney.

UNITED STATES PATENT OFFICE.

JAMES J. WOOD, OF FORT WAYNE, INDIANA, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

COOLING-LIQUID ECONOMIZER.

1,156,511.

Specification of Letters Patent.

Patented Oct. 12, 1915.

Application filed November 26, 1913. Serial No. 803,429.

To all whom it may concern:

Be it known that I, JAMES J. WOOD, a citizen of the United States, residing at Fort Wayne, in the county of Allen, State of Indiana, have invented certain new and useful Improvements in Cooling-Liquid Economizers, of which the following is a specification.

My invention relates to a cooling liquid economizer and is particularly applicable to such an economizer for rotary refrigerating machines.

Rotary refrigerating machines have been constructed heretofore of two chambers, one of which contains a liquid, such as sulfurous anhydrid, which has been compressed and which subsequently vaporizes in the other chamber, producing a fall of temperature. The compressor end of such a machine becomes very hot unless some means are provided for keeping it at a proper temperature. In order to do this, it has been customary heretofore to run the compressor end of such a machine in a cooling liquid which is constantly renewed and to pass cooling air over the liquid which is splashed by the revolution of the machine. The quantity of cooling liquid required with such an arrangement is very great.

My invention has for its object a novel arrangement whereby the compressor end of a rotary refrigerating machine, or any revolving heated member, may be kept at a proper temperature with a much smaller quantity of cooling liquid than was possible heretofore. To this end, according to my invention, the heated member revolves in a tank containing liquid and splashes the liquid against a suitable device about the revolving member which breaks it up into particles, these particles being cooled by cooling air. In order to prevent the escape of any of the liquid with the cooling air, I preferably provide a baffle member in the path of the cooling air.

Other features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of my invention reference may be had to the following description taken in connection with the accompanying drawing in which—

Figure 1 is a side elevation, partly in section, of my economizer; Fig. 2 is an end ele-

vation of the economizer of Fig. 1, and Fig. 3 is a perspective view of a detail.

Referring to the drawing, 1 is a tank provided with a suitable inlet and outlet (not shown), and containing a cooling liquid 2. A heated member 3, which is shown as the compressor end of such a rotary refrigerating machine as described above, is mounted to revolve in the tank 1. By its revolution the cooling liquid is splashed or sprayed by the member 3 against a sieve 4 which breaks up into particles the liquid which has been splashed. This sieve may be a wire screen, the size of the mesh of which is not material, except that it must not be too large. I have found that a $\frac{3}{8}$ inch mesh is very satisfactory. A fan 5 is provided for forcing cooling air about the particles of the splashed liquid, as will hereinafter appear.

In order to prevent the escape of any of the liquid with the cooling air, I preferably provide a baffle member 6 in the path of the cooling air. The sieve 4 is preferably mounted in a casing 7. This casing 7 is shown as reaching down into the liquid 2, and as mounted on the tank 1 by means of brackets 8 and angle irons 9. The sieve 4 is supported in a casing but out of contact therewith, by means of angle irons 10. The casing has an opening 11 above the sieve and openings 12 near the bottom thereof. A pipe 13 connects the opening 11 in the casing with the fan 5. The baffle member 6 is mounted in this pipe.

I have shown the fan 5 as being supported by means of a bracket 14 from the side of the casing 7. The fan may be driven from a shaft 15 through a belt 16. The members of the refrigerating machine may also be driven from this shaft 15 by means of pulleys 17 and 18 and belt 19. The baffle member is shown as being composed of three baffles 20, 21 and 22 stacked together at an angle of 45 degrees to each other, the center one being reversed in relation to the angle of the baffle plates. Each baffle is a unit composed of six baffle plates set at an angle of 45 degrees to the horizontal or vertical axis. In other words, each of the baffles composing the baffle member are exactly alike, and in order to make the baffle member 6, these units are all placed in line in the same direction and set one on top of the other with the axis of the baffle plates

displaced by 45 degrees, after which the middle baffle is reversed. The arrangement of the baffle member 6 in the pipe 13 is such that the water strikes the baffle 22 square on, or normal to the face of the baffle plates, and the last baffle plates in the baffle 20 lead directly to the fan. By arranging the baffle member 6 in this way, the passage of moisture therethrough is absolutely stopped, while the air will pass therethrough uninterruptedly. Furthermore, the area of the orifice is not reduced by my arrangement of baffle plates.

The operation of my economizer is as follows: When the heated member 3 revolves in the cooling liquid 2, it throws off a large quantity thereof by centrifugal force. This liquid is thrown through the sieve 4, partially surrounding the upper side of the member 3. While the water is thrown through this sieve by centrifugal force, currents of air produced by the fan 5 are forced over the sieve and also through it, thereby perfectly aerating the water. This effects a considerable cooling of the cooling liquid and consequently reduces the amount of water required for condensing the gas in the compressor member 3. I have found, that, with a machine making about 28 pounds of ice per hour, it only requires 83/100 of a gallon of water an hour to keep the member 3 at the proper temperature with my economizer in operation, while it requires 49 gallons of water an hour to keep the member 3 at the same temperature when my economizer is not in operation.

I desire it to be understood that my invention is not limited to the particular arrangement shown and described, and I aim in the appended claims to cover all modifications which do not depart from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, means about said revolving member for breaking up into particles the liquid which has been splashed, means for forcing cooling air about said particles, and a baffle member in the path of the cooling air for preventing the escape of said particles of liquid with said cooling air.

2. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a sieve about said revolving member for breaking up into particles the liquid which has been splashed, and a fan for forcing cooling air about said particles.

3. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a sieve about said revolving member for breaking up into particles the liquid which has been splashed, a

fan for forcing cooling air about said particles, and a baffle member in the path of the cooling air for preventing the escape of said particles of liquid with said cooling air.

4. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a sieve for receiving said liquid which has been splashed, and means for forcing cooling air over said sieve.

5. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a sieve for receiving said liquid which has been splashed, means for forcing cooling air over said sieve, and a baffle member in the path of the cooling air for preventing the escape of said liquid with said cooling air.

6. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a sieve for receiving said liquid which has been splashed, and a fan for forcing cooling air over and through said sieve.

7. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a sieve for receiving said liquid which has been splashed, a fan for forcing cooling air over and through said sieve, and a baffle member in the path of the cooling air for preventing the escape of said liquid with said cooling air.

8. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a casing, a sieve mounted in said casing about said revolving member for breaking up into particles the liquid which has been splashed, said casing having an opening therein above said sieve, a fan, and a pipe connecting said fan with said opening, whereby said fan forces cooling air about the particles of liquid.

9. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a casing, a sieve mounted in said casing about said revolving member for breaking up into particles the liquid which has been splashed, said casing having an opening therein above said sieve, a fan and a pipe connecting said fan with said opening, whereby said fan forces cooling air about the particles of liquid, and a baffle member in said pipe.

10. In combination, a tank containing liquid, a heated member revolving therein and splashing said liquid, a casing mounted on said tank, a sieve mounted in said casing about said revolving member for breaking up into particles the liquid which has been splashed, said casing having an opening above said sieve and openings near the bottom thereof, a fan, and a pipe connecting said fan with the opening in said casing above said sieve, whereby said fan forces cooling air about the particles of liquid.

11. In combination, a tank containing

liquid, a heated member revolving therein
and splashing said liquid, a casing mounted
on said tank, a sieve mounted in said casing
about said revolving member for breaking
5 up into particles the liquid which has been
splashed, said casing having an opening
above said sieve and openings near the bot-
tom thereof, a fan, a pipe connecting said
fan with the opening in said casing above

said sieve, whereby said fan forces cooling 10
air about the particles of liquid, and a baffle
member in said pipe.

In witness whereof, I have hereunto set
my hand this 24th day of November, 1913.

JAMES J. WOOD.

Witnesses:

H. E. CRANE,
R. O. ORFF.