

H. E. MACCAMY.
AIR COOLER FOR AIR COMPRESSORS.
APPLICATION FILED OCT. 23, 1912.

1,055,196.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

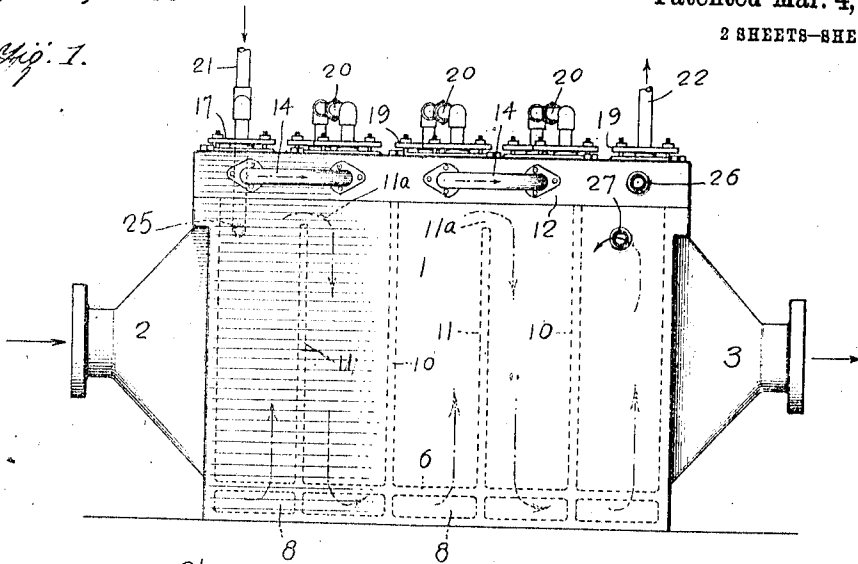


Fig. 2.

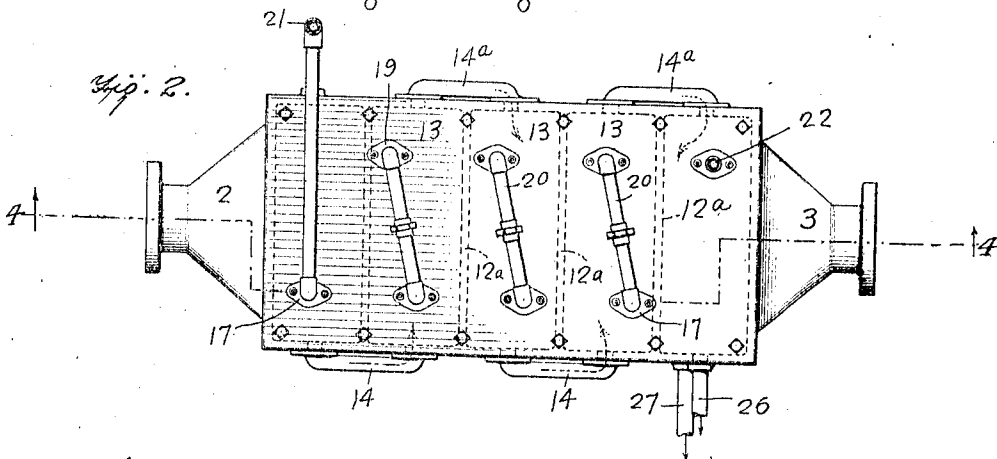
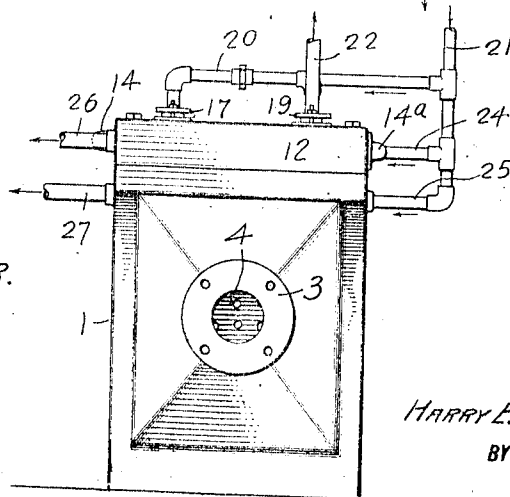


Fig. 3.



WITNESSES

L. H. Schmidt.
L. A. Stanley

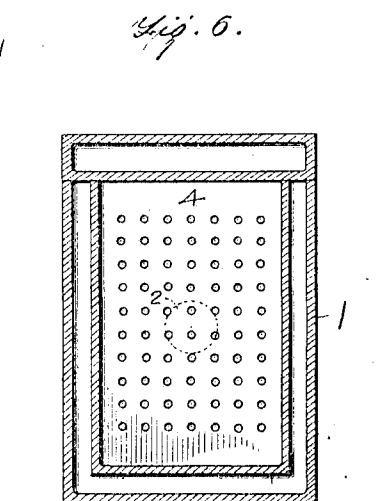
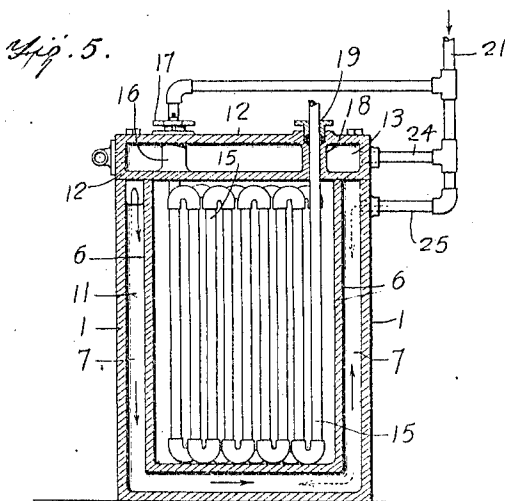
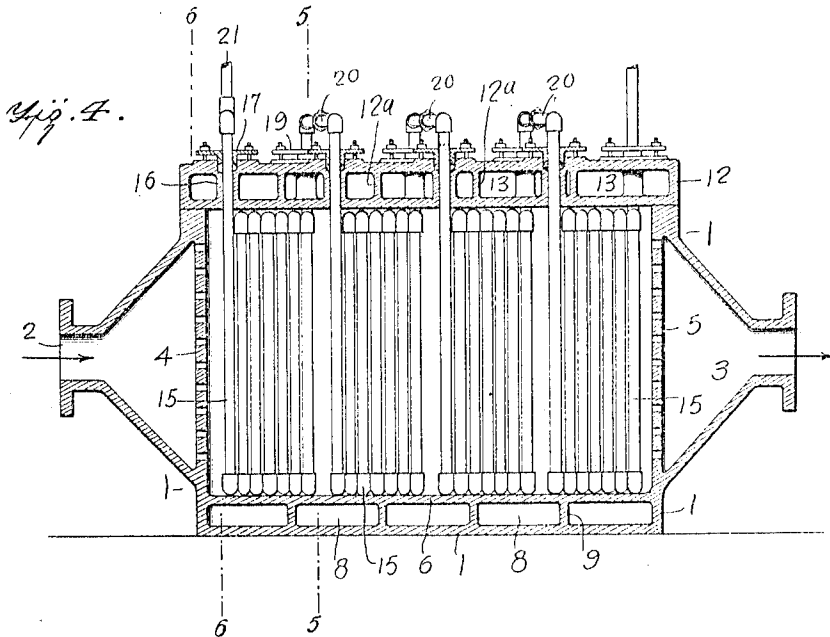
INVENTOR
HARRY EDWIN MACCAMY,
BY Munn & Co.,
ATTORNEYS

H. E. MACCAMY.
AIR COOLER FOR AIR COMPRESSORS.
APPLICATION FILED OCT. 23, 1912.

1,055,196.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 2.



WITNESSES

L. H. Schmidt.
L. A. Stanley

INVENTOR
HARRY EDWIN MACCAMY,
BY *Munn & Co.*

ATTORNEYS

UNITED STATES PATENT OFFICE.

HARRY EDWIN MACCAMY, OF SPOKANE, WASHINGTON.

AIR-COOLER FOR AIR-COMPRESSORS.

1,055,196.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed October 23, 1912. Serial No. 727,366.

To all whom it may concern:

Be it known that I, HARRY E. MACCAMY, a citizen of the United States, and a resident of Spokane, in the county of Spokane and State of Washington, have invented a new and useful Improvement in Air-Coolers for Air-Compressors, of which the following is a specification.

My invention relates to air coolers for use with either single or multiple stage air compressors, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device for cooling air in which a greater surface of air is exposed to the cooling medium than in the ordinary air cooling device. This object I attain by means of a perforated partition and a series of pipes which are so disposed as to break up the air into minute particles, at the same time causing these particles to pass into contact with the cooling surfaces.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which,

Figure 1 is a side view of the device; Fig. 2 is a plan view thereof; Fig. 3 is an end view; Fig. 4 is a section along the line 4-4 of Fig. 2; Fig. 5 is a section along the line 5-5 of Fig. 4; and Fig. 6 is a section along the line 6-6 of Fig. 4.

In carrying out my invention I provide an exterior casing 1 having at one end an inlet 2 and at the other an outlet 3. Between the inlet 2 and the interior of the casing is arranged the perforated partition 4, while a similar partition 5 is disposed between the interior of the casing 1 and the outlet 3. An interior box or casing 6 is provided, leaving spaces or passages 7 on the sides, and spaces 8 at the bottom. Between the casing members 1 and 6 at the bottom of the device is a series of partitions 9 which divide the spaces 8 into a series of passages, as will be shown later. Between the inner casing 6 and the outer casing 1 on the sides of the device are partitions 10 which extend from the casing 6 to the top 12. Alternating with these partitions 10 are the partitions 11 which extend upwardly from the casing 6 but terminate short of the top 12

in order to provide passage ways 11^a. (See Fig. 1.)

The top 12 is divided by a series of partitions 12^a into separate passages 13. The adjacent passages are connected at their ends by means of the pipes 14 and 14^a. (See Fig. 2.) The pipes 14 connect adjacent passages at one end and the pipes 14^a connect adjacent passages at the other end.

Disposed in the interior of the inner casing 6 is a series of pipe coils, such as those shown at 15 in Figs. 4 and 5. One end of each coil 15 extends up through a post or spacing member 16, a packing gland 17 being provided for rendering the device airtight. The opposite end of the coil extends through a similar post 18 which is provided with a packing gland 19 similar to the gland 17. As will be seen from Figs. 1, 2, and 4, the end of one coil 15 is connected with the end of the next coil by means of the pipes 20. An inlet pipe 21 communicates with the first coil 15, while the outlet pipe 22 leads from the last coil. The inlet pipe 21 also communicates by means of a branch pipe 24 with one of the passages 13 of the hollow top 12, see Fig. 5, while the branch pipe 25 establishes communication between the inlet pipe 21 and one of the vertical side passages 7.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The column of compressed air in its passage, either from the low pressure cylinder to the high pressure cylinder, as in multiple stage compressors, or from the compressor to the receiver, as in single or multiple air stage compressors, enters the inlet 2 and immediately is broken up into small streams by the perforated partition 4. The air is forced thence against the pipes of the cooling coils 15. The cooling medium for filling the pipes 15 is preferably water, although it is obvious that any other suitable cooling medium might be used. The water passes into the pipes 15 by means of the inlet 21 as described, and thence from coil to coil through the connecting pipes 20, finally passing out through the outlet pipe 22. The water which passes through the branch pipe 24 enters one of the passages 13 in the top, passes laterally across the device, thence through one of the connecting pipes 14, see Fig. 2, thence through the adjacent passage 13, thence by pipe 14^a into the next passage

13, etc., finally emerging through the pipe 26, see Fig. 3. The water which enters the side passages 7 by means of the pipe 25 (see Fig. 5) circulates through these side passages in the manner shown in Fig. 1 and finally emerges from the pipe 27. The air, it will be noticed, in passing from the inlet 2 to the outlet 3 does not flow along the pipes which form the coils 15, but flows transversely of them. Thus the air no sooner passes one pipe than it is brought against another one. This arrangement of pipes serves to bring all particles of the air into contact with the cooling surfaces of the pipe and results in a very efficient cooling device. Furthermore, the air is broken up again in its passage of the perforated partition 5, thus giving the air a final cooling.

I claim:—

1. In an air cooling device, an exterior casing, an interior casing, water passages between said interior and said exterior casing, an air inlet communicating with said interior casing, an air outlet leading therefrom, a series of water cooled pipes disposed within the interior casing, each of said pipes

extending at right-angles to the direction of travel of the air from the inlet to the outlet, and a perforated partition disposed between said air inlet and the water cooled pipes for breaking up the air into small particles.

2. In an air cooling device, an exterior casing, an interior casing, water passages between said interior and said exterior casing, an air inlet communicating with said interior casing, an air outlet leading therefrom, a series of water cooled pipes disposed within the interior casing, each of said pipes extending at right-angles to the direction of travel of the air from the inlet to the outlet, a perforated partition disposed between said air inlet and the water cooled pipes for breaking up the air into small particles, a second perforated partition between the water cooled pipes and the outlet, and means for supplying water to said water passages.

HARRY EDWIN MACCAMY.

Witnesses:

JAMES M. FITZPATRICK,
GEORGE E. ADAMS.