March 29, 1932. E. A. COBB 1,851,239

REFRIGERATION APPARATUS

Filed March 15, 1928

Fig. 1.

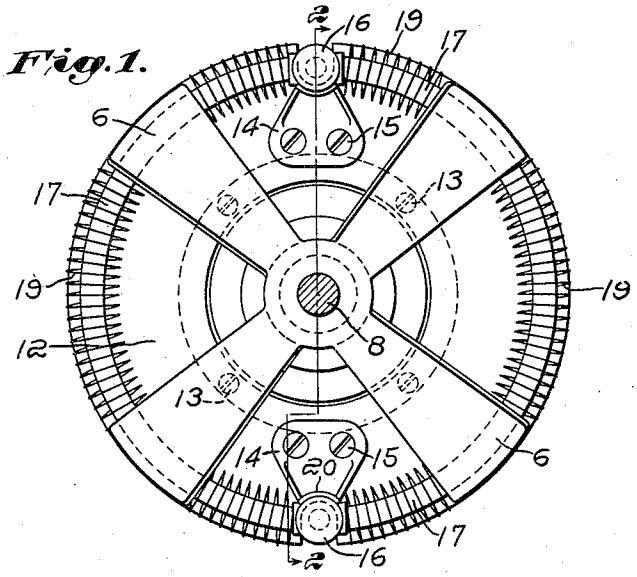


Fig. 2.

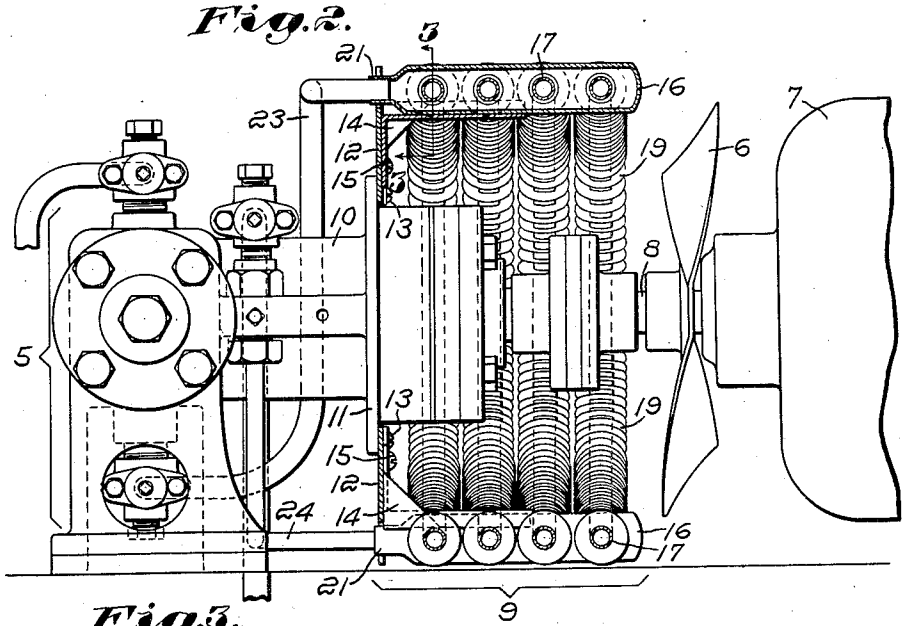
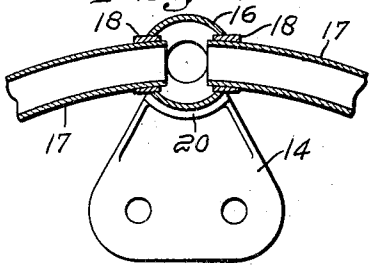


Fig. 3.



Inventor:
Eugene A. Cobb,
by Emery, Booth, Janney & Varney,
Att'ys.

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UNITED STATES PATENT OFFICE

EUGENE A. COBB, OF LYNN, MASSACHUSETTS, ASSIGNOR TO WALTER J. SUGDEN, OF BOSTON, MASSACHUSETTS

REFRIGERATION APPARATUS

Application filed March 15, 1928. Serial No. 261,942.

This invention relates to refrigeration apparatus of the compressor-condenser-expander-circuit type, and aims to provide an improved construction and arrangement of the condenser with relation to the fan and the compressor, whereby increased efficiency of the condenser is attained.

The invention will be best understood by reference to the following description, when taken in connection with the accompanying drawings of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is an end elevation of a portion of a refrigeration apparatus exemplifying the invention;

Fig. 2 is a sectional view on line 2—2 of Fig. 1; and

Fig. 3 is a sectional view, on an enlarged scale, on line 3—3 of Fig. 2.

Referring to the drawings, and to the embodiment of the invention which is selected for exemplification, and having reference at first to Fig. 2, there is shown a compressor 5, a fan 6, and a motor 7, all coaxially arranged and connected by a shaft 8, to which the fan is secured, and by which the power is transmitted from the motor to the compressor.

A condenser 9 is disposed about the shaft and between the fan and the principal part of the compressor, the latter, however, having a housing 10, a portion of which extends into the space within the condenser and about the shaft. This housing affords a convenient support for the condenser, and to that end herein is provided with an annular flange 11, to which there is secured a plate 12, as by means of suitable fastening elements such as screws 13 extending through the plate and into the flange, into which the screws are threaded. The condenser is conveniently supported on this plate by brackets 14, appropriately secured to the plate as by screws 15 extending through the brackets and threaded into the plate.

The condenser herein shown by way of example comprises two headers 16, each of which is apertured along opposite sides (see Fig. 3) to receive the ends of arc-shaped tubes 17, appropriately secured thereto as by bushings 18, brazed or soldered to the headers and to the tubes. The tubes are suitably ribbed to increase their effective area, as by helical fins 19. The brackets 14 are formed to present arc-shaped supports 20, conforming to the cross section of the headers 16, thus supporting the latter, without the need of fastening devices. Each of the headers has a reduced portion 21, which presents a neck extending through the plate 12. One of the headers is connected to a compressor outlet 23, while the other is connected as by a pipe 24 to an expander (not shown).

Thus it is apparent that the condenser presents a central air space closed at one end by the plate 12 and a portion of the compressor, while the opposite end is open adjacent the fan. Thus all the air which is admitted to the central air space is obliged to pass from the surrounding atmosphere through passages between and about the tubes 17, and the headers 16, on its way to the fan. In this way, the entire surface of the condenser is utilized, thereby increasing the efficiency of the condenser. The plate 12 thus serves as a shield or baffle, in addition to affording a support for the condenser on the compressor. The arrangement, however, is such that the parts can be very quickly and conveniently dismounted, should occasion require.

Having thus described one embodiment of the invention, but without limiting myself thereto, what I claim and desire by Letters Patent to secure is:

1. In a refrigeration apparatus, the combination of a condenser comprising conduit means disposed about a central air space and having air passages leading from the surrounding atmosphere to said space, a compressor, means supported by said compressor and closing said space at one end, and a fan adjacent and directed toward the other end.

2. In a refrigeration apparatus, the combination of a condenser comprising conduit means disposed about a central air space and having air passages leading from the surrounding atmosphere to said space, a compressor, means supported by said compressor and in turn supporting said conduit means

and closing said space at one end, a fan adjacent and directed toward the other end, and a shaft extending through said space and connecting said compressor and said fan.

3. In a refrigeration apparatus, the combination of a compressor, a motor, a shaft connecting said motor to said compressor, a condenser interposed between said compressor and said motor and having air passages extending transversely of said shaft, a fan secured to said shaft between said condenser and said motor, and a shield closing the end of said condenser adjacent said compressor and supported by the latter and in turn supporting said condenser, thereby to compel the air drawn by said fan through said condenser to pass through said passages.

4. In a refrigerating apparatus, the combination of a condenser comprising a plurality of arc-shaped tubes and headers connecting said tubes, and constituting a plurality of spaced coils disposed about a central air-space, a compressor adjacent one end of said air space and extending into the latter, a fan adjacent the other end of said air space, a plate secured to said compressor and constituting therewith a closure for the adjacent end of said air space, said plate having openings through which said headers extend, and brackets secured to said plate and extending into said space and supporting said headers.

5. In a refrigerating apparatus, the combination of a condenser comprising a plurality of arc-shaped tubes and longitudinal headers connecting said tubes, and constituting a plurality of spaced coils disposed about a central air space, a compressor adjacent one end of said air space and presenting a closure for said end and a support for said headers, and a fan adjacent the other end of said air space.

6. In a refrigerating apparatus, the combination of a condenser comprising a plurality of spaced coils disposed about a central air space, a compressor adjacent one end of said air space, means supported by said compressor and presenting a closure for said end, and a fan adjacent the other end of said air space.

In testimony whereof, I have signed my name to this specification.

EUGENE A. COBB.