June 26, 1951 H. G. DICKMAN 2,558,345

CONDENSER COIL ASSEMBLY

Filed June 30, 1948

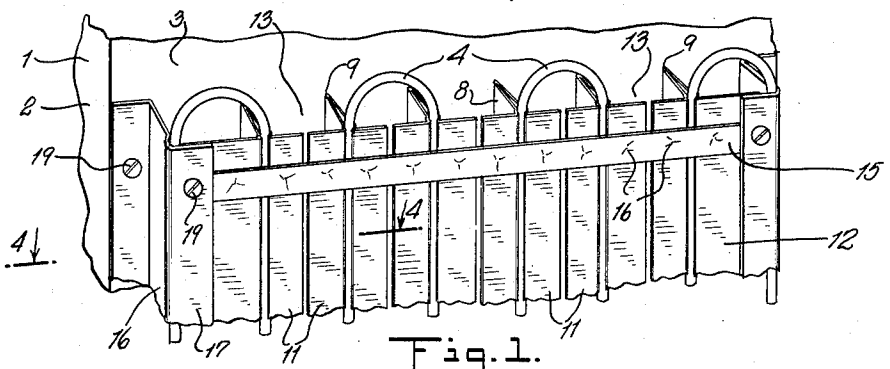


Fig. 1.

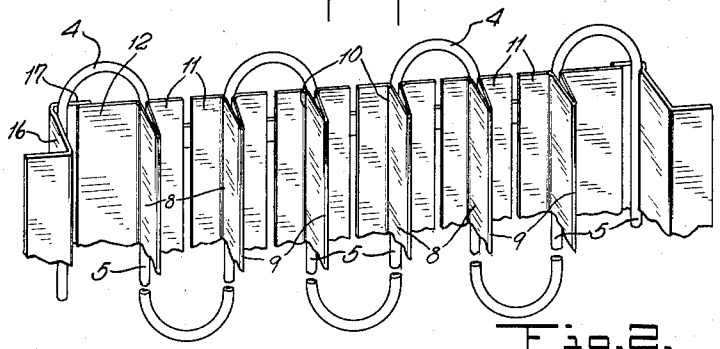


Fig. 2.

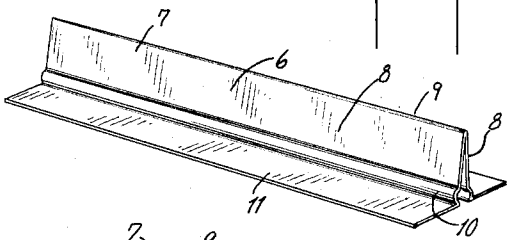


Fig. 3.

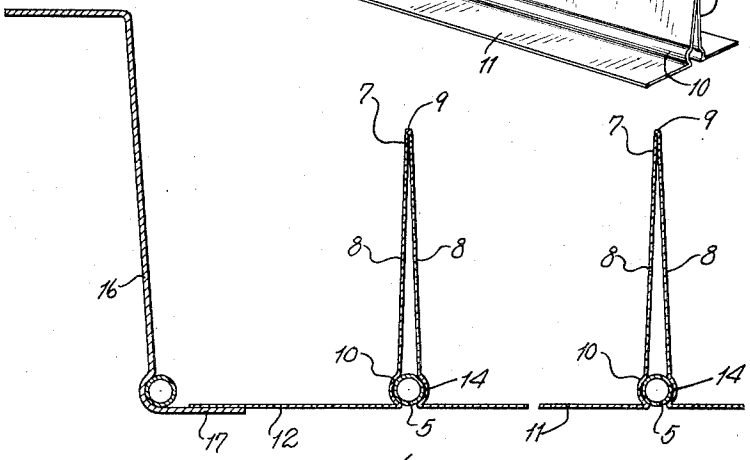


Fig. 4.

INVENTOR.
HAROLD G. DICKMAN
BY Kenyon & Kenyon
ATTORNEYS

Patented June 26, 1951

2,558,345

UNITED STATES PATENT OFFICE

2,558,345

CONDENSER COIL ASSEMBLY

Harold G. Dickman, Pleasant Ridge, Mich.

Application June 30, 1948, Serial No. 36,254

4 Claims. (Cl. 257—262.12)

1

This invention relates to condensers particularly useful in mechanical refrigerators.

It has for its objects:

First, the production of a new and improved condenser coil or heat exchanger assembly which is highly efficient in operation and which can be made easily and inexpensively.

Second, to provide such a condenser coil assembly in which the coil assembly, including the radiating surfaces, can be made of simple shapes which can be easily rolled from sheet metal and assembled to give an assembly having wall and projecting fins.

Third, to provide such an assembly which can be easily and simply installed on a refrigerator cabinet in such a way as to give highest efficiency in operation and without disfiguring the refrigerator.

Other objects and advantages will be apparent from the following description of the invention, which is shown in the accompanying drawings, in which

Fig. 1 is a partial perspective view of the improved coil assembly in place on the back of the cabinet of a mechanical refrigerator.

Fig. 2 is a partial perspective view of the other side of the coil assembly shown in Fig. 1.

Fig. 3 is a partial perspective view of one of the sheet metal units employed in making the assembly, and

Fig. 4 is a detailed partial sectional view taken on the line 4, 4 of Fig. 1.

The condenser unit which comprises this invention is made up of a coil, which can be a continuous serpentine coil, having a series of straight, parallel legs between which are disposed resilient sheet metal members which provide heat dissipating surfaces and which, when in position, serve to form stacks to increase the efficiency of heat transfer and the convection currents employed for this.

The sheet metal members are preferably formed by cutting strips to the desired length and then rolling to form. They are so formed that their central portion provides a resilient clip to fit over the legs of the coil while also forming a fin and flue-forming member. They also have side members which combine, when the assembly is complete, to form a substantially continuous wall extending between the legs of the coil to permit the coil to be mounted on the back of a mechanical refrigerator without disfiguring it materially and in such a way as to produce the desired flue effect to assist the convection currents to cool the condenser.

2

The condenser is shown mounted in place on a mechanical refrigerator 1 in Fig. 1. The cabinet indicated generally at 2 has a back wall 3 on which the condenser unit is mounted.

The condenser unit consists of a series of straight, parallel legs 5, which are shown as part of a serpentine coil 4 which is here shown as continuous. The heat dissipating surfaces and flue-forming members consist of the sheet metal members 6, each of which is formed with a resilient center portion 7 which has two walls 8 which are joined at 9. Near the free ends these walls are formed in semi-rounded fashion, as indicated at 10, to receive the legs 5 of the tube 4. Extending from the free edges of the members 8 are members 11 which lie in the same plane and unite to form a substantially continuous wall, as indicated at 12 in Fig. 1, when the unit is assembled.

The central portions 7 of the members extend from this wall and form radiating fins. They also tend to form flue-like passages, indicated generally at 13, to eliminate eddy current and speed up the flow of air as it is heated and rises.

The members 8 are resilient and can be easily clipped onto the legs 5, where they are soldered or brazed, as indicated at 14.

The unit is assembled by means of straps 15, which are attached to the members 11 of the sheet metal members 6 by spot welding, as indicated at 16, thus holding the assembly rigidly in place. The brackets 16 are employed to mount the assembly on the back wall 3 of the refrigerator casing 2. They are provided with flanges 17, which are fastened by machine screws 18 to the members 15. They also have flanges 18, which are fastened by screws 19 to the back wall of the cabinet. The wall 12 faces outwardly and the fins formed by the central portion 7 extend in toward the back wall of the cabinet.

When the unit is mounted on the refrigerator, the fins 7 serve as vertical partitions and the legs 5 of the tube 4 likewise extend vertically. This permits the air to pass upwardly through the unit without eddy currents, thus effectively and efficiently cooling the unit.

The unit can be simply and easily made. The members 6 are cut to length and then rolled.

When the unit is assembled on the back of the refrigerator, the members 11 form a substantially continuous wall concealing the other portions of the unit, thus preventing any material disfiguration of the cabinet. The wall 12 also serves to confine the air as it passes upwardly, giving a flue action.

The preferred form of the invention has been described above. It will be apparent to those skilled in the art that the condenser of this invention may be changed in form without departing from this invention. Although the preferred form has been described, there is no intention of limiting the invention to this form, it being intended only that the invention be limited to that covered by the claims.

I claim:

1. In a mechanical refrigerator having a cabinet having a vertically-disposed wall and a condenser unit mounted on and spaced from said wall comprising a serpentine tube having a series of spaced, parallel vertically-extending legs a combination of a plurality of sheet metal members, one clipped on each leg, and comprising a pair of walls joined at one edge and embracing a leg on their free edges to form a fin extending inwardly from said leg and a pair of fins extending in a plane between said legs to form a substantially flat wall with other such members.

2. In a mechanical refrigerator having a cabinet having a vertically-disposed wall and a condenser unit mounted on and spaced from said wall comprising a series of spaced, parallel vertically-extending legs a combination of a plurality of sheet metal members, one clipped on each leg, and comprising a pair of walls joined at one edge and embracing a leg on their free edges to form a fin extending inwardly from said leg and a pair of fins extending in a plane between said legs to form a substantially flat wall with other such members.

3. A condenser coil assembly comprising a continuous serpentine tube having a series of spaced, parallel legs and a series of resilient heat transfer members, one clipped on each of said legs, each resilient member comprising a pair of walls joined together along one edge to form a resilient clip, each wall formed at its free edge to receive and partially embrace the leg to which it is clipped and each wall having at its free edge a substantially flat member extending laterally therefrom, said flat members all extending in substantially the same plane and forming a substantially continuous flat wall extending between said legs.

4. A heat exchanger coil assembly comprising a series of spaced, parallel legs and a series of resilient heat transfer members, one clipped on each of said legs, each resilient member comprising a pair of walls joined together along one edge to form a resilient clip, each wall formed at its free edge to receive and partially embrace the leg to which it is clipped and each wall having at its free edge a substantially flat member extending laterally therefrom, said flat members all extending in substantially the same plane and forming a substantially continuous flat wall extending between said legs.

HAROLD G. DICKMAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
966,070	Bailey	Aug. 2, 1910
1,125,113	Junkers	Jan. 19, 1915
2,071,182	Steenstrup	Feb. 16, 1937
2,090,417	Hull	Aug. 17, 1937
2,205,984	Kromas	June 25, 1940
2,279,272	Anderson et al.	Apr. 7, 1942
2,281,299	Steenstrup	Apr. 28, 1942
2,306,385	Herter	Dec. 29, 1942

FOREIGN PATENTS

Number	Country	Date
470,978	Great Britain	Aug. 25, 1937
573,873	France	Mar. 19, 1924