Feb. 18, 1958 W. A. COLLINS 2,823,903

CLINCHED PLATE CONDENSER WITH MOUNTING RAILS

Filed Aug. 6, 1953

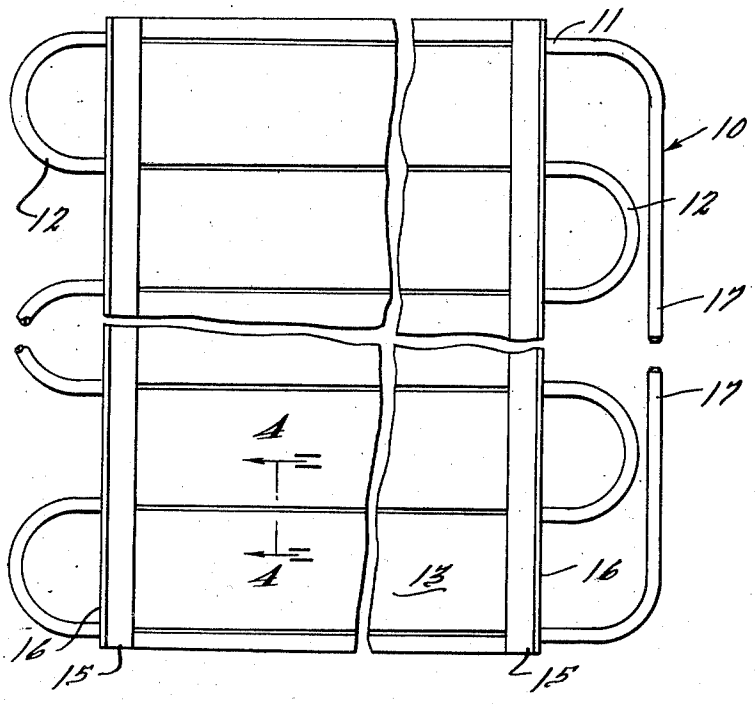


Fig. 1.

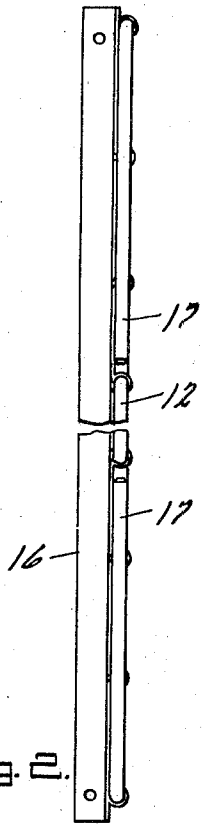


Fig. 2.

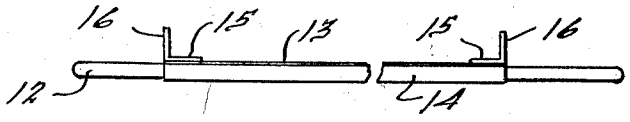


Fig. 3.

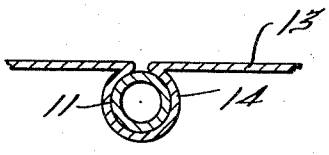


Fig. 4.

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CLINCHED PLATE CONDENSER WITH MOUNTING RAILS

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Application August 6, 1953, Serial No. 372,759

1 Claim. (Cl. 257—36)

This invention relates to a clinched plate condenser having mounting rails, and particularly to a condenser made from a sinuous tube having straight portions clinched within channel sections of a plate and secured in position by angle elements which form supporting brackets.

The condenser of the present invention embodies a tube which is sinuously formed to have spaced straight portions joined by end loops and disposed in heat transfer relationship with a plate having areas which are clinched about the straight portions of the tube. Spaced channels are provided in the plate in which the straight portions of the tube are disposed, with the channels thereafter closed to have the metal thereof wrapped around the tube in good heat-conducting relationship thereto. Angle-shaped elements are welded to the plate at opposite ends thereof across the clinched channel portions so as to prevent the channel portions from opening and substantially reducing the contact between the metal of the plate and the tube. The reinforcing angle elements are employed for supporting the condenser, the side flanges of which may extend a substantial amount to provide a chimney effect for the flow of air if mounted on the back of a refrigerator.

Accordingly, the main objects of the invention are: to construct a condenser from a sinuously formed tube having straight portions secured in channels in a plate, the metal of which is clinched about the tube in good heat-transfer relationship therewith; to provide a clinched plate type of condenser with reinforcing brackets which prevent the expanding of the clinched channel portions of the plate so as to maintain good heat-transfer engagement between the plate and the tube; to reinforce a clinched plate type of condenser with brackets having outwardly presenting flanges which provide a chimney effect for the air with the rear wall of a refrigerator when mounted thereon, and, in general, to provide a condenser of the clinched-on plate type which is simple in construction and economical of manufacture.

Other objects and features of novelty of the invention will be specifically pointed out or will become apparent when referring, for a better understanding of the invention, to the following description, taken in conjunction with the accompanying drawing, wherein:

Figure 1 is a broken view in elevation of a condenser embodying features of the present invention;

Fig. 2 is an edge view of the condenser illustrated in Fig. 1, as viewed from the right-hand side thereof;

Fig. 3 is an end view of the condenser illustrated in Fig. 1, and

Fig. 4 is an enlarged, broken sectional view of the structure illustrated in Fig. 1, taken on the line 4—4 thereof.

Referring to the figures, a tube **10** is bent into sinuous form having a plurality of spaced straight portions **11** joined by oppositely disposed end loops **12**. A plate **13** is provided with a plurality of channel portions **14** in which the straight portions **11** of the tube are placed and the channel closed to have the metal thereof clinched about the straight portions of the tube in good heat-conducting relationship thereto. A method of so clinching the channel **14** about the tube is illustrated, described and claimed in the copending application of Thomas H. Polad, Serial No. 215,822, filed March 15, 1951, now Patent No. 2,772,077 granted November 27, 1956, and assigned to the assignee of the present invention.

At each side edge of the plate **13** a channel element **15** is provided, being welded, brazed or otherwise secured thereto for preventing the plate from expanding to have the channels **14** move out of tight clinched relationship with the straight portions **11** of the tube. The angle members provide assurance that a proper conducting relationship will exist between the straight portions of the tube and the wall of the channel, crimped thereabout. The outwardly extending flange **16** of the angle elements **15** provides a support for the condenser and produces a chimney effect to the air passing over the surface of the plate **13** when mounted against a surface, such as the rear wall of a refrigerator. The ends **17** of the tube are disposed in spaced aligned relation to each other and are the means by which the tubular portion of the condenser is connected within a refrigeration system.

What is claimed is:

A condenser formed of a metal plate having channel portions therein extending from one side edge to the other, straight portions of a sinuously formed tube disposed in said channel portions of the plate the entire length of the metal of which is clinched about said straight portions, and angle members extending along the vertical side edges of the plate and secured thereto for preventing the plate from spreading and the clinched metal from separating from the straight portions of the tube, one of the flanges of the angle members extending outwardly from the plane face of the plate to form supporting means for the condenser on a wall member thereby providing a chimney effect for the air passing therebetween.

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