March 18, 1947. W. B. BRONANDER 2,417,629

COOLING FIN STRUCTURE

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Fig. 1.

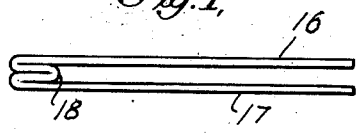


Fig. 2.

Fig. 3.

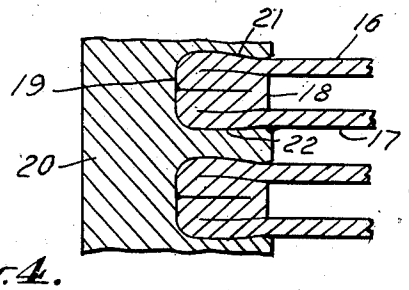
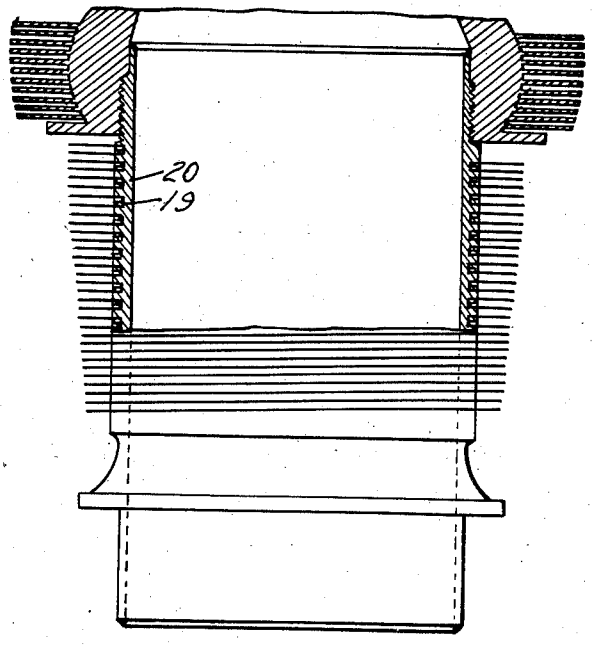


Fig. 4.



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COOLING FIN STRUCTURE

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4 Claims. (Cl. 257—261)

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This invention relates to heat exchange structure and particularly to cooling fins and to the cooling fin connection between the fin and the cylinder or other member to be cooled.

Cooling fins are usually formed integral with the tube or cylinder or are brazed or soldered thereto. The casting of fins integral with the cylinder involves the use of expensive patterns and fins so cast are brittle. The brazing, welding or soldering of the fins to the tubular members or cylinders is expensive and time consuming and does not always result in a rigid and efficient joint.

This invention has for one of its objects to provide a cooling fin construction that is simple and practical and can be economically manufactured.

Another object of the invention is to provide a simple and practical connection between the fin and cylinder, tubular member or other member to be cooled, so constructed that the fin will be firmly and rigidly anchored and the connection will efficiently conduct the heat.

Further objects of the invention will appear from the following specification taken in connection with the drawings which form a part of this application, and in which

Fig. 1 is an end elevation showing a cooling fin constructed in accordance with the invention;

Fig. 2 is a perspective view of the fin shown in Fig. 1;

Fig. 3 is a partial sectional view illustrating the cooling fin shown in Fig. 1 secured in the groove of a tubular member or cylinder; and

Fig. 4 is an elevational view, partly in section, showing an engine cylinder constructed and applied thereto in accordance with the invention.

The invention briefly described consists of a double walled cooling fin having substantially parallel walls, and having material disposed between said walls at the connected edges thereof. When the fin is connected or anchored in a groove in the member or cylinder to be cooled, the material between the walls thereof is compressed, thereby forcing the portions of the walls disposed in the groove laterally into firm gripping engagement with the walls of the groove. The walls of the groove are preferably so formed that portions disposed inwardly from the outer edges of the groove will be spaced apart a greater distance than the dimension of the mouth of the groove. This form of construction results in a firm and rigid anchoring of the fin within the groove and to the cylinder or tubular member.

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Further details of the invention will appear from the following description.

In the particular embodiment of the invention illustrated in Figs. 1 to 3 inclusive, the fin is W-shaped and comprises walls 16 and 17 and an intermediate inverted V-shaped portion 18.

When the fin shown in Figs. 1 to 3 inclusive has been inserted in the groove 19 of a cylinder or member 20 to be cooled, to which the fin is to be secured, the intermediate portion 18 of the fin is compressed, thereby spreading the portions of the fin walls 16 and 17 which are disposed within the groove 19 laterally into firm gripping engagement with the walls 21 and 22 of the groove 19. The groove walls 21 and 22 are preferably irregular or distorted in shape and portions thereof disposed inwardly from the outer edges of the groove are positioned a greater distance apart than the dimension of the mouth of the groove. As the fin walls are expanded laterally, they will be forced into this wider portion of the groove, thereby more effectively anchoring the fin in the groove.

From the foregoing description it will be clear that a simple, practical and efficient form of fin and fin connection have been worked out and that the structure described will form an effective anchoring connection between the fin and the cylinder or member. Furthermore, it will be clear that the connection described will effectively conduct the heat from the cylinder or member to the fin.

Although one specific embodiment of the invention has been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. A double walled cooling fin adapted to be secured in a groove and having two substantially parallel, spaced walls connected along one edge by compressible material integral with the walls and folded to form layers substantially parallel to the fin walls and substantially filling the space between the portions of said walls to be positioned in the groove whereby inward pressure directed against said material will force the walls into gripping engagement with the walls of the groove.

2. A double walled cooling fin adapted to be secured in a groove and comprising a strip of material formed into W-shape at the connected

edges of the double walls, the inverted V portion of the W edge portion substantially filling the space between the portions of the walls to be positioned in the groove whereby inward pressure on said inverted V portion will force the walls laterally and anchor the walls in the groove.

3. A double walled cooling fin adapted to be anchored in a groove in a member to be cooled and comprising two substantially parallel, spaced walls, the edge portion of each wall to be positioned in the groove being folded back on itself, said folded portions substantially filling the space between the portions of the walls to be positioned in the groove whereby inward pressure on said folded portions will force the walls laterally to anchor the walls in the groove.

4. A double walled cooling fin structure adapted to be secured in a groove in a member to be cooled, said fin structure having two substantially parallel, spaced walls connected at the edge to be anchored in the groove by integral layers of compressible material, distinct from and in addition to the fin walls which substantially fills the space between the walls at the edge of the fin structure to be anchored in the groove.

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