

Sept. 21, 1937.

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2,093,810

METHOD OF MAKING TUBING

Filed March 13, 1936

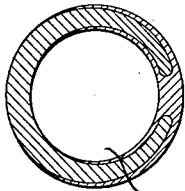


Fig. 2

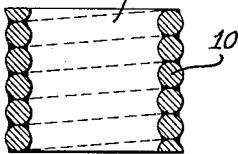


Fig. 1

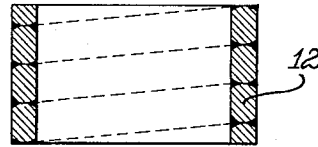


Fig. 3

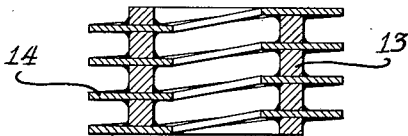


Fig. 4

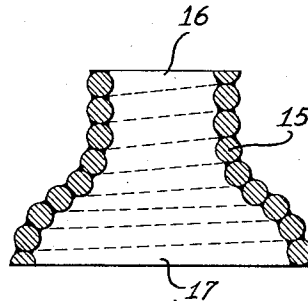


Fig. 5

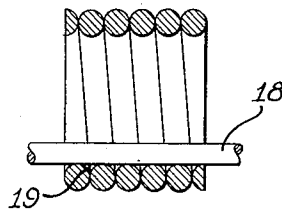


Fig. 6

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2,093,810

METHOD OF MAKING TUBING

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Application March 13, 1936, Serial No. 68,710

2 Claims. (Cl. 113—112)

This invention relates to refrigerating apparatus, and more particularly to the manufacture of tubing which may be used in connection with refrigerating apparatus and which is also applicable to many other industries besides that relating to refrigerating apparatus.

An object of this invention is to provide a method of manufacturing tubing which is extremely simple and economical.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred form of the invention is clearly shown.

In the drawing:

Fig. 1 is a cross section of tubing manufactured in accordance with my invention;

Fig. 2 is a view taken transversely to Fig. 1;

Fig. 3 is a cross section, somewhat similar to Fig. 1, but showing a slightly modified form of the invention;

Fig. 4 is a view somewhat similar to Fig. 1, but showing how the tubing may be provided with internal and/or external fins;

Fig. 5 is a view somewhat similar to Fig. 1, but showing how the tubing may be made with varying sizes or diameters; and

Fig. 6 is a cross sectional view of the tubing in the process of manufacture.

In practicing this invention, a wire is wound into a spring-like tube, preferably with inherent tension so that adjacent loops of the tube are kept in touching position. Thereafter, bonding material is distributed along the tube, and the tube is heated to seal the same along the tube wall.

In the modification shown in Fig. 1, the tube is made by winding the cylindrical wire 10 into the form of the spring-like tube 11, and preferably the tube 11 has a cylindrical cross section as indicated in Fig. 2. In Fig. 3, the wire 12 may have an oblong cross section, and the wire may be wound substantially in the same manner as with respect to Fig. 1. In the modification shown in Fig. 4, the wire 13 is wound with the spiral plate 14 interposed between its loops, so that the plate 14 is adapted to form either internal and/or external fins on the tube. In the modification shown in Fig. 5, the cross section or diameter of the tube can be varied along the length of the tube. Thus, the wire 15 may be wound so that it has the diameter 16 at one portion and the diameter 17 at another portion.

Machines for winding wire into spring-like tubes are well known and the method of oper-

ating the machine and of forming spring-like tubing are well known and are, therefore, not specifically described herein.

In sealing the wall of the tube, I preferably form the wire from ferrous material, and preferably it is steel of any well known type, including stainless steel, Monel metal or the like. After, or during the formation of the tube, a wire or strip 18 of bonding material, such as cuprous material is placed in the tube. Thereafter, the tube is placed in a substantially horizontal position in a furnace having a reducing atmosphere, and is heated to a temperature sufficient to weld the adjacent loops of the tubes and seal the wall completely. Thereafter, the tube is cooled in the reducing atmosphere and is ready for use.

It is to be noted that, preferably, the cross section of the wire is so chosen that internal ridges are formed in the tube so that the tube is provided with a spiral groove 19 along its length. The bonding material is distributed along the tube, preferably, in the form of a wire. The tube is held in a substantially horizontal position, and the ridges formed by the spiral groove along the lower part of the tube automatically trap a small portion of the bonding material in each pocket thus formed. The bonding material then automatically distributes itself by capillary attraction upwardly along each loop, so that the entire wall of the tube is hermetically sealed and a strong tube is formed.

While the form of embodiment of the invention as herein described constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. The method of manufacturing tubing which comprises spirally winding a wire into a spring-like tube with an internal spiral groove, placing a wire of bonding material through substantially all of the portion of the tube to be bonded, and heating said tube while in a substantially horizontal position to seal the same along the tube wall.

2. The method of manufacturing tubing which comprises spirally winding a wire into a spring-like tube with an internal spiral groove, placing bonding material in strip form through substantially all of the portion of the tube to be bonded, and heating said tube while in a substantially horizontal position to seal the same along the tube wall.

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