H. F. B. JORGENSEN.

PROCESS FOR PRODUCTION OF HEAT EXCHANGING BODIES.

APPLICATION FILED JULY 24, 1920.

1,428,638. Patented Sept. 12, 1922.

Fig. 1.

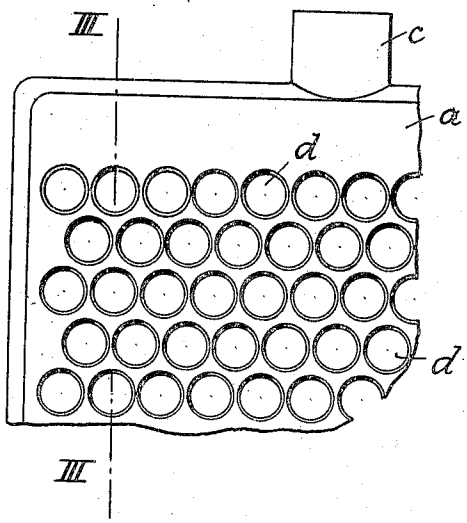


Fig. 2.

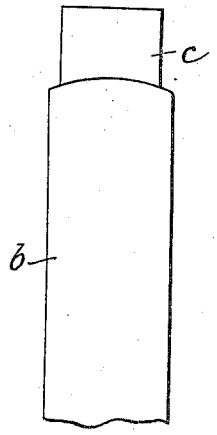
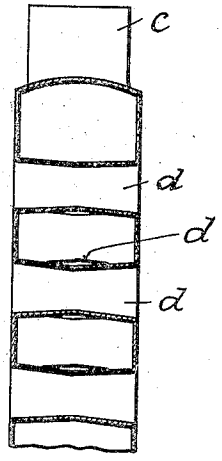


Fig. 3.



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UNITED STATES PATENT OFFICE.

HANS FREDERIK BARKER JÓRGENSEN, OF COPENHAGEN, DENMARK.

PROCESS FOR PRODUCTION OF HEAT-EXCHANGING BODIES.

Application filed July 24, 1920. Serial No. 398,763.

To all whom it may concern:

Be it known that I, HANS FREDERIK BARKER JÓRGENSEN, subject of the King of Denmark, residing at Vejrogade 7, Copenhagen, Denmark, have invented certain new and useful Improvements in Processes for Production of Heat-Exchanging Bodies, of which the following is a specification.

This invention relates to the manufacture of hollow, cellular heat-exchange bodies such as automobile radiators and the like.

The invention involves an improved process for the manufacture of such bodies, by electrolytic deposition on a matrix of easily-fusible metal or metal-alloys, for instance, a tin-lead alloy of any suitable proportion, which matrix is subsequently removed from the deposit by melting it out. As examples of alloys which may be satisfactorily used, the following may be given, viz:

Lead, 80%; antimony, 12%; tin, 8%. Or, lead, 73%; antimony, 8%; tin, 19%.

According to the invention, the electrolytic deposition of the metal on the matrix or core is commenced in a non-acid depositing bath and is continued therein until a firm coating of deposited metal is produced thereon, whereupon the core with the coating thus deposited is washed and then immersed in the depositing bath proper and retained therein until the coating has attained the requisite thickness. The non-acid bath may consist of:

Water	1,000 gr.
Crystalline sodium carbonate	20 gr.
Acid sodium sulfate	20 gr.
Granulated copper acetate	20 gr.
Pure cyanide	20 gr.

Instead of this bath, a neutral bath may be used, comprising:

Water, 1000 gr. and copper sulfate, neutralized with ammonium sulfate, 150 gr.

By carrying out the initial portion of the depositing step first of all in a neutral depositing bath, the adhesion between the metallic deposit and the core is such that when the latter is melted, there will be left upon the inside of the radiator a coating of the metal of which the core is made, which coating strengthens the radiator very considerably and renders it more durable in use.

The core is melted after the completion of the galvanic deposition to remove it, preferably by immersing it in a molten body of the same metal as that of which the core is made, whereby the outer surface of the radiator likewise becomes coated.

In the accompanying drawing there is shown, by way of example, one way of constructing an automobile radiator according to the invention, Figures 1 and 2 thereof being fragmental front and side elevations, respectively, of such radiator, and Figure 3 a section along the line III—III of Figure 1.

Referring more particularly to said drawing, *a* indicates either the front or the rear wall of the radiator, *b* its side wall, *c* its supply or discharge nipple and *d* the passages for the air. These passages are of double conical shape, expanding towards both ends in order to secure compactness of the material deposited on the walls thereof; the reason being that if the core is placed in the bath in such a manner that the axes of the channels are horizontal, hydrogen will be deposited at the top of the passages, whereas if the passages expand towards both ends, it can easily escape.

In the above, it has been assumed that the entire heat-exchange body to be constructed is made in a single piece; but the invention may obviously be modified in such a manner that the body is divided into pieces or elements of suitable sizes which are constructed singly and subsequently joined together as a unit, for instance by soldering.

I claim as my invention:

1. The herein-described process of manufacturing automobile radiators, comprising preparing a fusible metallic core; then depositing a metal electrolytically upon said core, such deposition being commenced in a non-acid depositing-bath and continued therein until a firm coating is produced on the core, and then completed in the depositing bath proper; and finally removing the core by melting it out.

2. The herein-described process of manufacturing automobile radiators, comprising preparing a fusible metallic core; then de-

positing a metal upon said core, such deposition being commenced in a non-acid depositing-bath and continued therein until a firm coating is produced on the core and then completed in the depositing bath proper; and finally melting said core to remove the same by immersing it in a molten body of the same metal as that from which the core was constructed.

In testimony whereof I affix my signature.

HANS FREDERIK BARKER JÓRGENSEN.

Witnesses:

O. MESTERGAARD,

CARL MENNINSEN.