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METHOD OF MAKING HEAT TRANSFER PIPE

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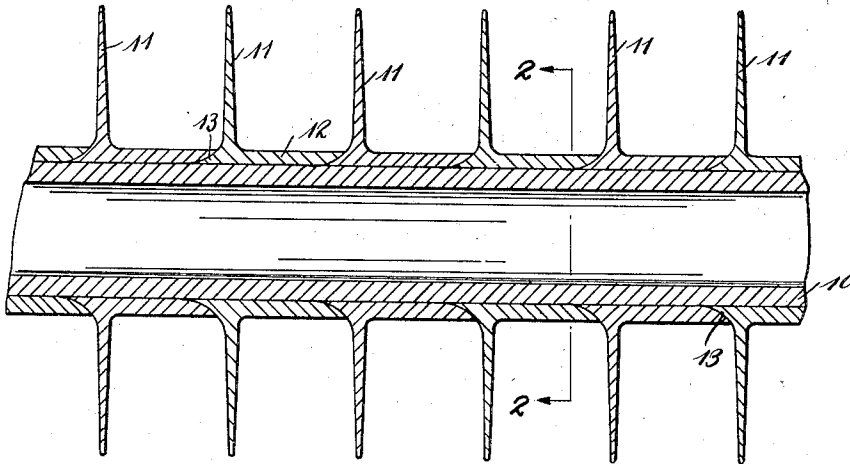


FIG. 1

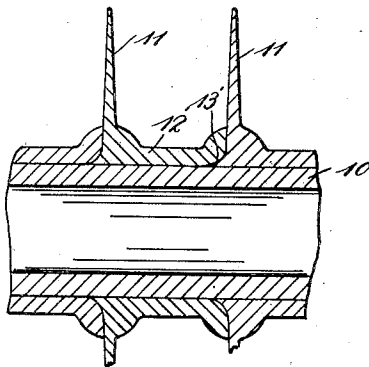


FIG. 3

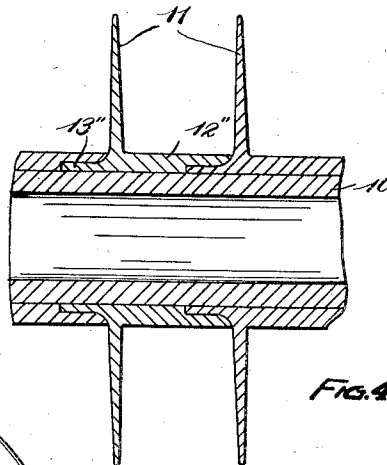


FIG. 4

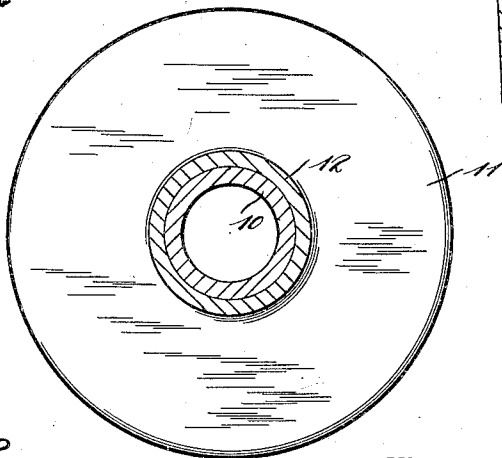


FIG. 2

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METHOD OF MAKING HEAT TRANSFER
PIPE

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4 Claims. (Cl. 22-203)

This invention relates to improvements in heat transfer pipes and method of making same. The invention has to do with a heat radiating or absorbing unit consisting of a pipe upon which are cast fin sections that completely enclose the pipe and are connected to each other by fluid-tight joints formed in the casting operation. In this manner the pipe is protected against the action of moisture, gases or the like. Preferably the fin sections are formed of a non-ferrous metal, not subject to rapid oxidation, such for example as aluminum, while the pipe itself is usually iron or steel and when left partially unprotected, as has been the case heretofore, is subject to rapid deterioration because of rust.

One of the objects of the invention therefore is the production of protected pipe units having heat radiating or absorbing fins, and the exclusion of moisture from the joints between adjacent sections of the unit.

Other objects and features of novelty will appear as I proceed with the description of those embodiments of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawing, in which

Fig. 1 is a central longitudinal section of a fragment of a pipe unit embodying the invention.

Fig. 2 is a cross section taken substantially on a line 2-2 of Fig. 1.

Figs. 3 and 4 are sectional detail views, similar to Fig. 1, showing modifications of the invention.

In carrying out the invention, as for instance in making an expansion unit for a refrigerating plant, a length of pipe 10 of suitable dimensions forms the trunk of the article. Seamless steel tubing is a suitable material for this purpose. This pipe is to be provided with spaced heat transferring fins formed preferably, although not necessarily, of a metal having high heat conductivity, aluminum for example.

The fins, shown at 11 in the drawing, appear as a series of disks intersecting the pipe at right angles. They are in fact annular flanges however, which taper outwardly in cross section, and are cast integral with cylindrical hubs that surround and grip the pipe tightly. Each fin section also has a neck on the side of the flange opposite the hub. In the drawing the hub is marked 12, 12' and 12'' in Figs. 1, 3 and 4, respectively, and the neck in the same figures is marked 13, 13' and 13''. These parts are somewhat differently formed in the different modifications, but essentially they are the same, the neck being relatively short and of smaller external diameter than the hub, the latter ex-

tending along the pipe to the next fin section and overlapping the neck of that section.

The fin sections, each consisting of a hub, a neck and at least one flange, are cast one at a time in place on the pipe, preferably by the die casting method. In other words, one section is cast on the pipe, the die opened and the pipe with its cast section moved along, when the die is again closed and the next fin section cast, a short time interval being allowed to intervene in order to permit the finished casting to cool somewhat and contract tightly against the pipe and against the neck of the preceding section.

An important feature of the invention is the provision of the neck together with the casting of the hub of the succeeding section around this neck, so that when the hub cools it will contract around the neck of the preceding section and form a joint that is fluid-tight.

It is to be understood, of course, that each section as cast, instead of including a single flange, may comprise two or more flanges.

By following the procedure above outlined the ferrous metal pipe 10 is completely enclosed in a non-ferrous metal jacket, and the succeeding sections of this jacket are so connected together that it is impossible for moisture to enter between them and cause deterioration of the pipe. The method also accomplishes the manufacture of heat transfer pipes of high efficiency at a relatively low cost and without machine work of any kind.

Having thus described my invention, I claim:

1. The method of forming heat transfer fins on pipe, which comprises casting one fin section at a time on the pipe with a neck at one end of the section surrounding the pipe and a hub portion at the other end of the section surrounding the pipe and overlapping the neck of the previously formed section.

2. The method of forming heat transfer fins on pipe, which comprises casting one fin section at a time on the pipe with neck and hub portions on the opposite ends of the section surrounding the pipe, permitting the casting to cool sufficiently to tightly grip the pipe, and then casting the next fin section on the pipe with a neck and a hub portion, said last named hub portion overlapping the neck of the previously formed section, and permitting the last named section to cool and contract, whereby a tight joint is formed between the two sections and moisture is excluded.

3. The method of forming heat transfer fins on pipe and protecting the pipe from the weather, which comprises casting one fin section at a time

on the pipe with a hub portion on one end of the section and a neck on the other end thereof, permitting the casting to cool sufficiently to tightly grip the pipe, and then casting the next fin section on the pipe with its hub portion overlapping the neck of the first named section, whereby a tight joint is effected between the sections and moisture is excluded.

4. The method of forming a protective jacket and heat transferring fins on a length of pipe,

which comprises casting on the pipe a section of metal having an annular flange with a pipe enclosing hub on one side of the flange and a short neck on the other side thereof, and thereafter casting a similar metal section adjacent to the first named section with the hub portion of the second section surrounding and gripping the neck of the first section, whereby a fluid-tight joint is formed between the sections.

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