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PROCESS OF MAKING TUBES.

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To all whom it may concern:

Be it known that I, DAVID L. SUMMEY, a citizen of the United States, residing at Waterbury, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Processes of Making Tubes, fully described and represented in the following specification.

This invention relates to the production of brass tubes.

In the commercial production of brass tubes by the so-called "hot processes," according to the ordinary practice, a billet is cast to about the size of the desired tube. This cast billet is then heated and while hot is rolled into a tube on the ordinary Mannesmann machine. A cast billet, however has the usual casting defects, such as bubbles, blow holes, spills, etc., and these defects will be present in the finished tube, sometimes in an exaggerated form. Further, brass tubes produced by this process are relatively low in copper. Practically speaking, in commercial operations, brass tubes containing above 62½ per cent of copper cannot be produced by this process. Brass tubes, however, having a high copper content are desirable because of the increased advantages in working.

Brass tubes are also commercially produced by the so-called "cold process." According to the ordinary practice a tube is cast around a core and is then cold treated to produce the finished tube. By this cold process, tubes having a percentage of copper up to 67% or higher, are produced. Such tubes, however, have the casting defects referred to in connection with the "hot process." It is possible to remove such casting defects from the outer surface of the tube, to a certain extent, by scalping. It is, however, a difficult and expensive operation to remove such defects from the interior surface of the tube. Furthermore, the production of tubes by the "cold process" is expensive.

It is the principal object of the present invention to provide for the production, by the hot process, of brass tubes containing a high percentage of copper.

With this general object in view, the invention consists in the process of making brass tubes as herein described and more particularly pointed out in the appended claims.

In carrying out the invention, a wrought billet is employed, this billet containing above 62½% copper. It is important that this wrought billet should be substantially free from lead. In addition to the copper the composition of this wrought billet may advantageously consist substantially of lead-free spelter, that is to say, the lead content of the spelter shall be such that the heat will contain less than .02% of lead. The copper content of the billet may be as high as 68%.

The wrought billet is heated in any suitable manner, and, while hot, is subjected to the action of tube forming rolls and a core. This last mentioned step may be conveniently carried on in the so-called Mannesmann machine.

While the wrought billet may be produced in any suitable manner, in carrying out the invention by what is regarded as the best method, the billet is formed by extrusion. For example, a mass of cast metal is placed in an extrusion press and extruded into a rod of proper diameter. This rod is then cut into billets of convenient lengths, the billets heated and formed into tubes as above described.

Brass tubes produced according to the present invention possess the advantageous features of both the old "hot" and "cold" processes, in addition to the new advantages attained. They have the benefit of the high copper content of tubes made by the "cold process" and can be much more economically made. Casting defects are eliminated and the finished tube is smooth and free from defects both inside and out.

What is claimed is:

1. The process of producing brass tubes which consists in forming wrought billets containing above 62½% copper and manipulating the wrought billets to form them into tubes.

2. The process of producing brass tubes

consisting in subjecting wrought billets containing above 62½% copper, while hot, to the action of tube-forming rolls and a core.

3. The process of producing brass tubes consisting in subjecting, while hot, extruded billets containing above 62½% copper to the action of tube-forming rolls and a core.

4. The process of producing brass tubes consisting in extruding into a rod a mass of metal containing above 62½% copper, the balance of the mass being substantially lead-free spelter, cutting the rod into billets, heating the billets, and subjecting the billets, while hot, to the action of tube-forming rolls and a core.

In testimony whereof, I have hereunto set my hand.

DAVID L. SUMMEY.