Feb. 24, 1925. 1,527,780

F. R. BONTE

PROCESS FOR PREVENTING CORES FOR TUBULAR BODIES FROM WELDING

Filed Sept. 15, 1921

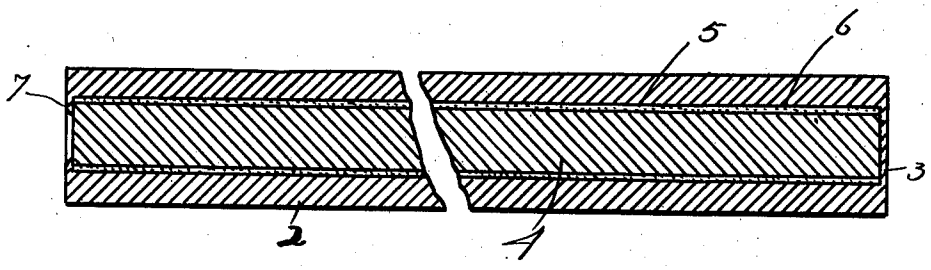


Fig. 1.

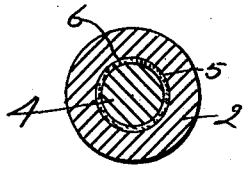


Fig. 2.

INVENTOR
Frederick R. Bonte
By W. W. Williamson Atty.

Patented Feb. 24, 1925. 1,527,780

UNITED STATES PATENT OFFICE.

FREDERICK R. BONTE, OF BETHLEHEM, PENNSYLVANIA.

PROCESS FOR PREVENTING CORES FOR TUBULAR BODIES FROM WELDING.

Application filed September 15, 1921. Serial No. 500,953.

To all whom it may concern:

Be it known that I, FREDERICK R. BONTE, a citizen of the United States, residing at Bethlehem, in the county of Northampton and State of Pennsylvania, have invented new and useful Improvements in a Process for Preventing Cores for Tubular Bodies from Welding, of which the following is a specification.

My invention relates to new and useful improvements in a process for preventing cores for tubular bodies from welding, to provide such a process whereby tubes or tubular bodies having any desirable interior or exterior shapes either similar or dissimilar may be worked to any desired elongation.

The process essentially consists in pickling and liming a hollow billet and inserting a metal core of smaller diameter than the hole through said billet in said hole then filling the space between the core and the walls of the billet with a non-metallic substance, then elongating and reducing the cross section of the billet and core by rolling or some other suitable method and then withdrawing the elongated core which act is assisted or made easy by the non-metallic substance.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains, may understand how to make and use the same, I will describe its construction in detail, referring by numerals to the accompanying drawing forming a part of this application, in which:—

Fig. 1, is a fragmentary longitudinal sectional view of a billet showing the metallic core therein surrounded by a filler of suitable non-metallic substance and illustrating the means for fastening the core in the billet.

Fig. 2, is a transverse sectional view thereof.

In carrying out the invention as here embodied, I take a steel billet represented by the numeral 2 of proper weight and analysis and pierce the same in any suitable and well known manner, such as the Mannesman method or the recently developed hot punching method. The latter method is preferably for the reason that the billets can be formed into shells, tubes or tubular bodies of varied cross sections such as for instance hexonical shell with a round hole or a round shell with hexonical square, round or rectangular hole, or in other words the billet may be of any desirable exterior shape having a hole therethrough of any desirable shape either similar or dissimilar to the exterior shape of the billet.

The hollow billets when punched are formed to leave a thin wall 3 at one end to act as a stop for the metal core as well as the non-metallic filling substance while the pierced billets are trimmed to leave a fin or burr on each end that can be forced over the ends of the core to anchor said core and hold the filler in place.

The finished section desired is determined by the size of the hollow billet which is properly proportioned to give, after the same has been worked for elongation a reduction of cross section, as by rolling, the desired size bar. This hollow billet is pickled and limed. The core 4, preferably of steel, which is smaller in diameter than the hole 5 through the billet is placed in said hole after which the filler 6 of any suitable non-metallic substance, such as graphite in various forms, powdered soap stone or powdered mica, is placed in the space between the walls of the billet and the metal core which will hold said core concentric with the walls of the billet and after this space is completely filled the other end of said billet is closed in any suitable manner as by forming a burr on the billet as indicated at 7 or this closure may be made by any of the well know processes such as by a welding. After the last mentioned end of the billet has been closed the same is ready for rolling or otherwise working to reduce the cross sectional area of the billet and its core and elongating the same.

The rolling process can be done according to regular mill practice, but for best results on close tolerance, work should be scheduled on a hand bar mill as differentiated from a guide mill on which the cheaper forms should be processed.

After the billet and core have been worked for elongation and reduction of cross section, as by rolling, and said metal core has cooled, one end is machined down sufficiently to expose the core and the same is pulled out and when certain non-metallic substances are used as a filler they act as a lubricant to assist in removing the metallic core even

after the application of the pressure or heat to the billet during the working thereof.

A tubular body thus formed may be used immediately upon withdrawal of the core or the same can be further finished to an exact size by cold drawing as will be obvious.

One of the outstanding advantages of this process is the relative small cost of producing tubular bodies particularly with relation to such bodies having various exterior and interior cross sectional shapes.

Of course I do not wish to be limited to the exact details of construction as herein shown as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is:—

1. The process of making tubular bodies which comprises pickling and liming a hollow billet, introducing a metallic core into the hole of said billet with a jacket of graphite interposed therebetween, elongating and reducing the cross section of billet and core and withdrawing the elongated core from the tubular body.

2. The process of making tubular bodies which comprises pickling and liming a hollow billet, introducing a core in the hole of said billet, then introducing finely divided dry graphite between the core and the walls of the billet, then elongating and reducing the cross section of billet and core and withdrawing the core from the tubular body the graphite acting as a lubricant to assist the removal of the core.

3. The process of making tubular bodies which comprises pickling a hollow billet in a hot sulphuric acid solution between 185 and 205 degrees F., then liming said billet in a hot oyster shell lime bath between 180 and 200 degrees F., introducing a metallic core into the hole of said billet with a jacket of graphite interposed therebetween, heating the assembled billet to a temperature between 1600 and 2100 degrees F., elongating and reducing the cross section of the assembled billet and withdrawing the elongated core from the tubular body with the graphite acting as a lubricant to assist the withdrawal of the core.

4. The process of making tubular bodies which comprises introducing a metallic core into the hole of a hollow billet, said core being of less diameter than said hole, then introducing finely divided dry graphite in the space between the core and the walls of the billet, then heating the assembled billet to a temperature between 1600 and 2100 degrees F., elongated and reducing the cross sectional area of the assembled billet, as by rolling, and withdrawing the core from the tubular body with the graphite acting as a lubricant to assist the withdrawal of the core.

In testimony whereof, I have hereunto affixed my signature.

FREDERICK R. BONTE.