G. DEBENEDETTI.

MANUFACTURE OF SECTION TUBES.

APPLICATION FILED DEC. 27, 1917.

1,283,692. Patented Nov. 5, 1918.

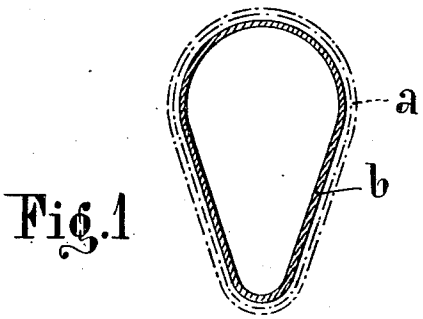


Fig. 1

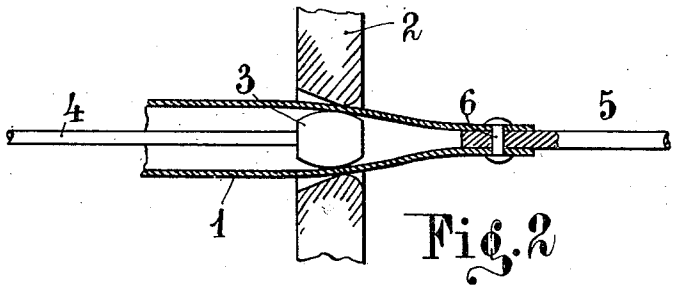


Fig. 2

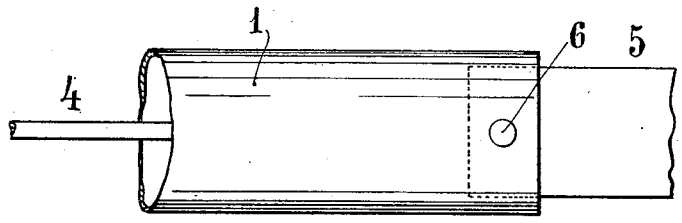


Fig. 3

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UNITED STATES PATENT OFFICE.

GUIDO DEBENEDETTI, OF TURIN, ITALY.

MANUFACTURE OF SECTION-TUBES.

1,283,692. Specification of Letters Patent. Patented Nov. 5, 1918.

Application filed December 27, 1917. Serial No. 209,125.

To all whom it may concern:

Be it known that I, GUIDO DEBENEDETTI, subject of the King of Italy, residing at Turin, Italy, have invented certain new and useful Improvements in the Manufacture of Section-Tubes, of which the following is a specification.

The section tubes are at present manufactured by cold drawing tubes having circular section through a number of dies which modify gradually the contour of said tubes so as to cause them to take up the required shape (square, hexagonal, rectangular, oval or the like).

Such a method is objectionable on the standpoint of the cost, as it requires a large amount of time and skilled workmanship and it is necessary to reheat the tubes after each drawing; further the deformation imparted to the tubes in this operation is not a drawing by which the material of the tube is displaced from a point to another of the tube but on the contrary has the character of a strong bending which causes the resistance of the material to be lessened in the zones in which there is a great difference between the original and final contours of the tube.

On the other hand it is not possible to effect a hot drawing of the tubes as in this case the thickness of the tube walls is modified to an uneven extent owing to the drawing which is transmitted by the metal when in a plastic state.

According to this invention the drawbacks objected to are removed by the fact that the tube is first shaped by pressing to a contour like to the final one and then the blank thus obtained is cold drawn to impart it the required final shape and dimensions.

In the annexed drawing Figure 1 shows by way of example the contour of a tube at the end of two subsequent stages of manufacture; Fig. 2 is the diagrammatic sectional view of the arrangement of the several parts for the drawing operation and Fig. 3 is the side view of the connection between the tube and its tie rod.

The rough tube having a circular contour is first shaped by hot or cold pressing to a contour like to the final one say by means of rolling mills or by presses. The contour given to the blank by this first operation is preferably similar to the final one and has preferably a somewhat larger section as shown by dotted lines at —*a*— Fig. 1. The blank 1 thus obtained (Fig. 2) is then drawn through a die 2 after having inserted inside it the mandrel 3 which is located in the die hole; in such a way the blank is shaped to its final contour —*b*— shown in full lines Fig. 1, the surface and thickness of its walls being at the same time caused to become even and regular.

Owing to the fact that the first pressing or rolling operation causes the tube to take a contour similar to and having a larger area than the final one, the mandrel 3 may be easily inserted into it from its rear end, said mandrel being secured in its proper position in register with the die hole by means of a rod 4 passing through the tube.

On the contrary by the known method the forward end of the blank must be split out in order to insert therein the mandrel which cannot enter the same owing to its shape and dimensions which generally differs from that of the blank; further it is necessary to deform the split ends of the blank to engage the same in the drawing machine jaw; on the contrary by the method according to this invention there is no necessity for splitting out the forward end of the tube and thus there is no possibility that the split may become extended along the entire length of the tube or to a large portion of the same as it is the case when operating according to known methods.

The resistance of the tube is thus improved and a portion of the same is saved; further the operation of breaking up or splitting out the tube and of inserting the mandrel therein are avoided, these latter operations giving rise to serious difficulties in practice.

The tube may be connected with the drawing machine jaw by means of a tie rod 5 which may be connected therewith by means of a transverse pin or rivet 6 (Figs. 2 and 3); in the particular case of oval or elongated section tubes the connection above described is very easy to be obtained as on drawing the blank the same has yet a like contour and a metal band 5 may be used as a tie rod, the tube walls being caused to close against the band and being connected therewith by means of a rivet or the like.

What I claim as my invention and desire to secure by U. S. Letters Patent is:—

1. In the manufacture of section tubes, the method of first shaping by compression a tube of circular section to a profile like

to the final one and then cold drawing said blank through a draw plate the hole of which has the desired final shape of the tube.

2. In the manufacture of section tubes the method of first shaping by compression a tube of circular section to a profile similar to and having a larger sectional area than the final one and then cold drawing said blank on a mandrel.

3. In the manufacture of section tubes the method of first shaping by compression a tube of circular section to a profile similar to and having a larger sectional area than the final one, introducing a mandrel in said blank from its rear end and cold drawing the blank on said mandrel through a draw plate the hole of which has the desired final shape of the tube.

4. In the manufacture of section tubes the method of first shaping by compression a tube of circular section to a profile similar to and having a larger sectional area than the final one, introducing a mandrel in said blank from its rear end, and cold drawing the blank on said mandrel and through a draw plate said blank being connected with the jaw of the drawing machine by a member riveted with the end of the tube.

5. In the manufacture of section tubes the method of first shaping by compression a tube of circular section to a profile similar to and having a larger sectional area than the final one, introducing a mandrel in said blank from its rear end and cold drawing the blank on said mandrel and through a draw plate, the said blank being connected with the drawing machine jaw by a band riveted with the end of the blank.

In testimony whereof I affix my signature in presence of two witnesses.

GUIDO DEBENEDETTI.

Witnesses:

MARIO DELGROGIO,

GIUSEPPE LEO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."