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APPARATUS FOR BENDING METAL TUBES AND LIKE HOLLOW BODIES

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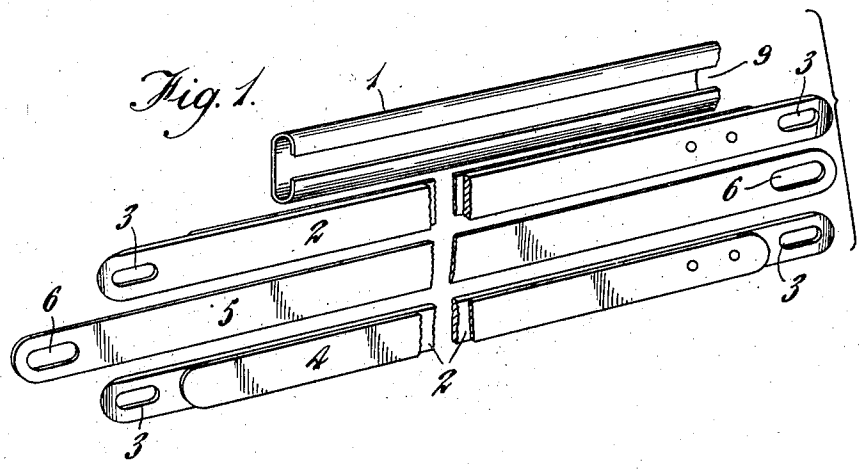
Fig. 1.



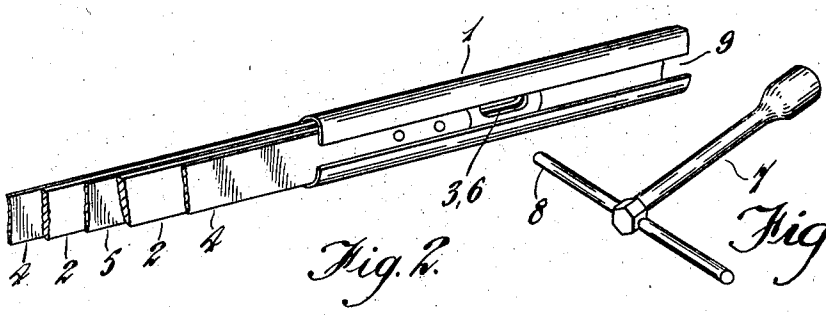


Fig. 2.

Fig. 4.

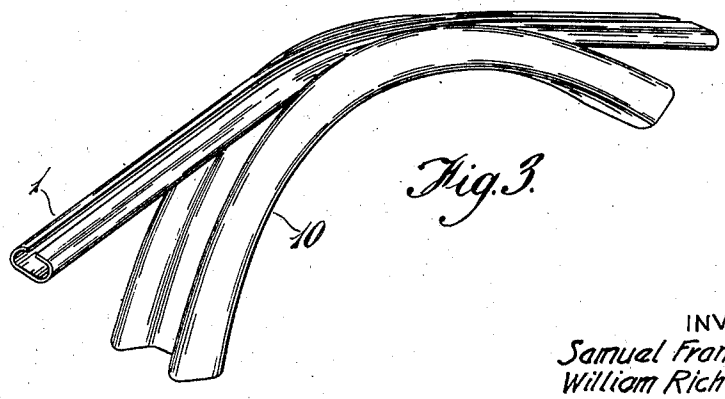


Fig. 3.

INVENTORS
Samuel Frank Ibbetson
William Richard Green

BY Earle & Chappell
ATTORNEYS

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APPARATUS FOR BENDING METAL TUBES AND LIKE HOLLOW BODIES

Samuel Frank Ibbetson, Thaxted, and William Richard Green, Eltham, London, England, assignors to Kirsch Company, Sturgis, Mich., a corporation of Michigan

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3 Claims. (Cl. 153—63)

This invention relates to an improved method of and means for bending metal tubes and like hollow bodies which may be of circular, oval, square, or like closed section, or of C-shape or like open slotted section.

In the bending of such bodies difficulty arises owing to the stresses and strains set up at the bend which tend to cause distortion as by flattening and spreading so that the uniformity of the section is not maintained.

It is an object of the present invention to provide a simple and conveniently portable device for enabling tubing and the like to be bent without this difficulty.

It is a further object of the invention to provide a flexible core which may be fitted snugly within that part of the tube to be bent, and which is adapted to be readily removed therefrom on completion of the bending operation.

In order to facilitate this insertion of the flexible core and particularly its withdrawal from the bent tube, the core may comprise two or more separable parts which are adapted to be removed individually. At least one of these separable parts should preferably consist of resilient material and may be used in conjunction with a flexible metal spacing member, the preliminary withdrawal of which facilitates the removal of the resilient part or parts of the core. Alternatively two flexible resilient members may be correspondingly but oppositely tapered so that when assembled side by side the combined cross-section is substantially constant throughout: slight relative longitudinal movement of the members serves, however, to reduce the cross-section to a substantial degree so that the members are loosened and can then be readily withdrawn.

In order to prevent lateral spreading of the tube in the neighbourhood of the bend, the core may be used in conjunction with a suitable curved former on which that part of the tube containing the core is bent. This former may consist of an arcuate externally channelled member of suitable radius which may be fitted over the knee for hand operation. The cross-section of the channel should conform to the external shape of the tube and the side walls or flanges thereof will resist lateral spreading.

The core device may be provided with a hook or hole at one or preferably at both ends of each member so that the members may be manipulated within the tube by a suitable tool capable of moving the core either as a whole or the individual members independently.

The invention will now be described by way of example as embodied in the device which is illustrated in the accompanying drawing, and which is particularly applicable to the bending of C-section curtain rail.

In the drawing:

Fig. 1 is a perspective view showing the separate members of the core and also a length of the curtain rail to be bent;

Fig. 2 shows how the assembled core is introduced into the rail before bending, and also a suitable tool by means of which it can be manipulated within the tube; and

Fig. 3 is a perspective view of a suitable former with the rail being bent over it but with the core omitted for clearness of illustration, it being understood that the core members will extend at least over the full length of the curved portion of the rail.

Fig. 4 is a perspective view of a suitable tool for use in connection with the apparatus.

The core consists of two fibre strips **2** of slightly less width than the interior of the rail **1**. Each of these strips is chamfered at its ends and is provided closely adjacent either end with a short longitudinally extending slot **3**. To one face of each fibre strip also is secured a flexible metal facing strip **4** riveted close to one end. This facing strip may be shorter than the fibre strip and also of slightly less width: its purpose is to prevent undue wear of the fibre by abrasion against the interior of the rail, and consequently when the core is assembled these strips lie along the outer face thereof.

A separate flexible metal strip **5** is provided near its ends with longitudinally extending slots **6** corresponding to the slots **3**. The core is preferably assembled in the tube as follows: The two fibre strips are slid in face to face with the metal facing strips **4** directed outwardly. Between the chamfered ends of the fibre strips, which are preferably left projecting slightly from one end of the rail, the metal strip **5** is then inserted, the assembled members being a snug fit within the rail. The slots **3** and **6** at one end of the strips are next brought into correspondence as shown in Fig. 2 and are then engaged by the tool **7**. This may consist of a small box spanner suitable for operating the nuts of the various brackets and other fittings associated with the rail with a permanently mounted "tommy bar" **8** the end of which can engage the slots in the strips through the opening **9** in the rail. By means of this tool the entire core can be pulled

along the rail until its centre is in line with the part at which the bend is required.

The bending operation is then effected over the arcuate former 10 shown in Fig. 3, the channel along the outer face of which is capable of accommodating the rail and fully supporting the flanges thereof. As will be seen from the drawing, this former is of such a shape that it may readily be supported on the knee, the ends of the rail being bent down to the required extent by hand. Being supported both internally and externally over the entire neighbourhood of the bend, the cross-section of the rail and in particular the spacing between the free edges remains substantially unaltered.

In order to facilitate the withdrawal of the core from the bent rail it is preferable first to extract the metal strip 5. For this purpose strip 5 is made a little longer than the fibre strips 2 so that although slots 3 and 6 are all in register at one end of the core, the corresponding slot 6 at the other end will extend beyond strips 2 so that it can readily be engaged independently by the tool 7. After withdrawal of strip 5, the fibre strips are easily removable.

We claim as our invention:

1. Apparatus for forming bends in curtain rods having a C-shaped cross section comprising a plurality of core strips each having an aperture disposed to be opposite the slot of the rod when the core strips are inserted therein to permit the insertion of a member through the slot of the rod for moving said core strips either individually or as a unit within said rod, two of said core members comprising resilient fiber strips each having a metallic facing strip, and one of said core strips comprising a flexible metal strip adapted to be inserted between said fiber strips.

2. Apparatus for forming bends in curtain rods having a C-shaped cross section comprising a plurality of core strips each having an aperture disposed to be opposite the slot of the rod when the core strips are inserted therein to permit the insertion of a member through the slot of the rod for moving said core strips either individually or as a unit within said rod.

3. Apparatus for forming bends in curtain rods having a C-shaped cross section comprising a plurality of core strips each having an aperture disposed to be opposite the slot of the rod when the core strips are inserted therein to permit the insertion of a member through the slot of the rod for moving said core strips either individually or as a unit within said rod, two of said core members comprising resilient fiber strips, and one of said core strips comprising a flexible metal strip adapted to be inserted between said fiber strips.

SAMUEL FRANK IBBETSON.
WILLIAM RICHARD GREEN.