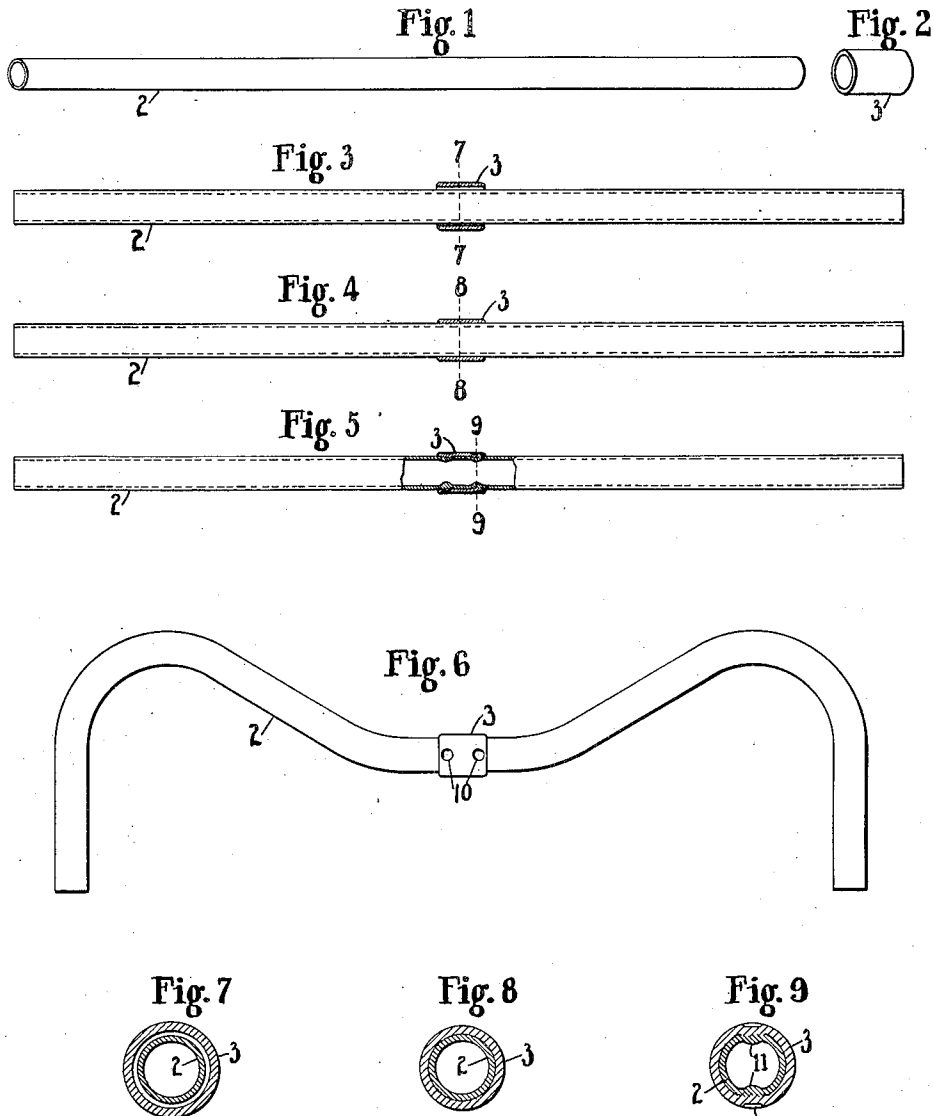


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APPLICATION FILED JULY 10, 1914.

1,151,914.

Patented Aug. 31, 1915.

2 SHEETS—SHEET 1.



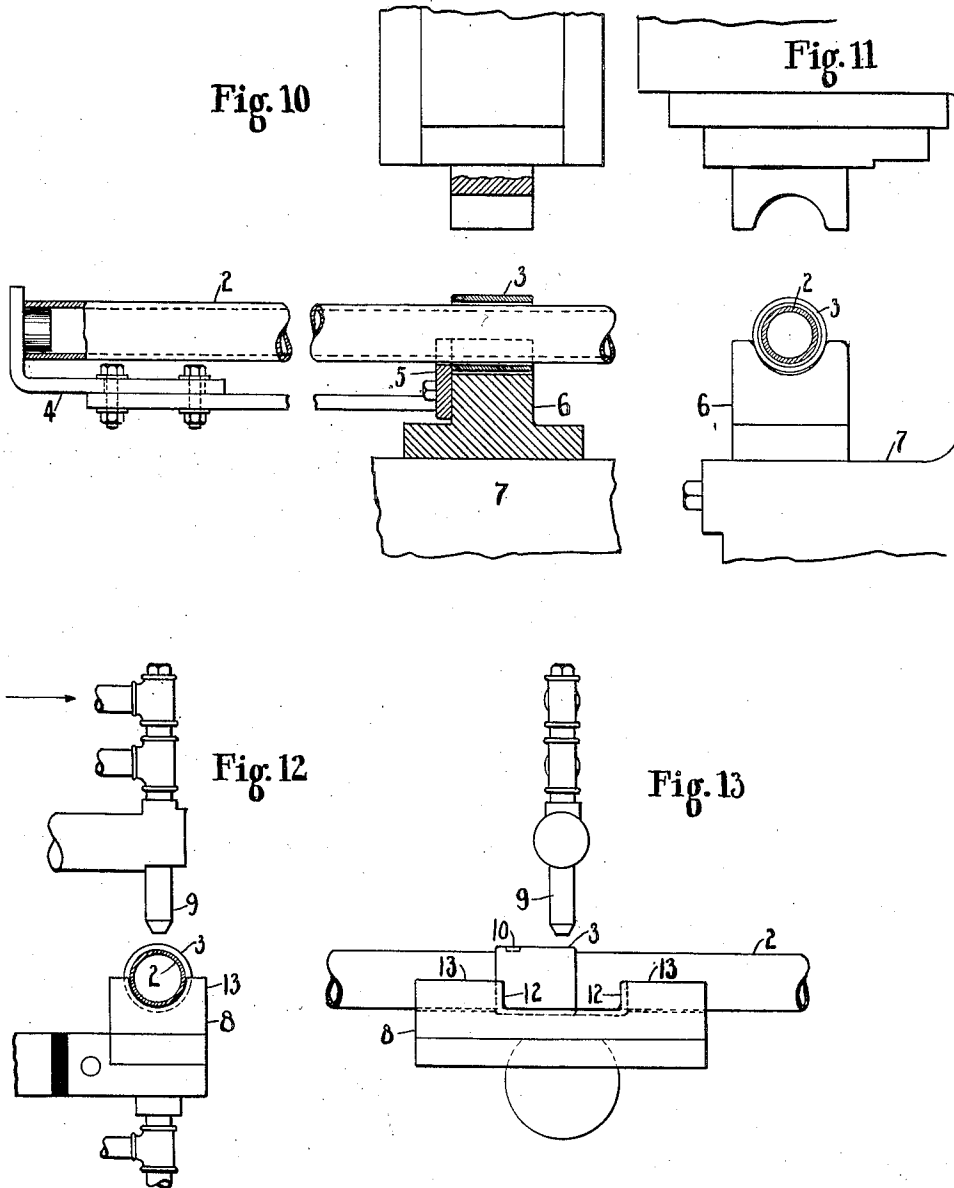
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# UNITED STATES PATENT OFFICE.

CHARLES E. WEAVER, OF CLEVELAND, OHIO, ASSIGNOR TO AMERICAN STOVE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

## METHOD OF MAKING HANDLE-BARS FOR BICYCLES.

1,151,914.

Specification of Letters Patent.

Patented Aug. 31, 1915.

Application filed July 10, 1914. Serial No. 850,125.

*To all whom it may concern:*

Be it known that I, CHARLES E. WEAVER, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Methods of Making Handle-Bars for Bicycles, of which the following is a specification.

This invention relates to an improved method of making handle-bars for bicycles, and the method consists in the series of steps as hereinafter described and more particularly pointed out in the claims.

In the accompanying drawings, Figures 1 and 2 are perspective views of a metal tube and sleeve, respectively. Fig. 3 is a side view of a metal tube, and a sectional view of a sleeve loosely engaged with the tube. Fig. 4 illustrates the tube and sleeve as they appear after the sleeve is contracted, and Fig. 5 shows the sleeve united to the tube by indented projections and welds at isolated places near the ends of the sleeve. Fig. 6 shows a completed handle bar except for the handles which are independent thereof. Figs. 7, 8 and 9 are cross sections (on a larger scale) through the tube and sleeve on lines 7-7, 8-8 and 9-9, of Figs. 3, 4 and 5, respectively. Figs. 10 and 11 are sectional and side elevations respectively of a pair of dies of a press showing a portion of a tube and the sleeve in position in the dies before contraction of the sleeve takes place. Figs. 12 and 13 are side and front elevations, respectively, of a set of electric welding electrodes showing a portion of a tube with a contracted sleeve in position for producing an indented projection and weld.

In practising my invention, the first step consists in taking a smoothly-finished piece of drawn steel tubing 2 of any desired length and sleeving a metal ferrule or sleeve 3 thereon to a point midway of the ends of the tube. The said ferrule or sleeve is of somewhat larger diameter internally than the external diameter of the tube preferably, in order that the sleeving operation be easily and quickly accomplished. To facilitate the operation and obtain an accurate placement of the sleeve centrally between the ends of the tube and in order that the tube itself be properly positioned in a press, I provide an adjustable stop and centering support 4 for the tube 2 and a stop-

plate 5 for the sleeve, said parts being affixed to the lower die 6 or the frame 7 of the press in any suitable manner, see Figs. 10 and 11. The next step consists in contracting the ferrule or sleeve 3 tightly upon the tube by reducing its diameter uniformly, which is accomplished by lowering the upper die of the press more or less repeatedly into compression relations with the sleeve and after each compression of the sleeve rotating the tube and sleeve more or less until uniform contraction of the sleeve takes place and the desired diameter is obtained. The final diameter is gaged usually by calipers in the possession of the operator, and calipering is necessary in view of the unusually close fit which is required of the sleeve 3 in its final place of use, that is; in the clamping head of the handle-bar stem in universal use but not shown in the drawings.

The mere clamping of the sleeve 3 upon the tube 2 is not sufficient to make a safe union; therefore, the tube and sleeve as contracted thereon is next subjected to an indenting and welding operation, which consists in placing the sleeved portion of the tube in slidable rest position upon a copper block or electrode 8 beneath a depressible pointed electrode 9 of an electric welding machine, see Figs. 12 and 13, and applying pressure and passing an electric welding current to the sleeve and tube by means of said pointed electrode, until a small area of the metal of the sleeve and tube is welded together and an indentation 10 is formed in the outer rounded surface of the sleeve and a projection 11 is also produced on the inner surface of the sleeve and the tube substantially as shown in Fig. 9. One or more of these indentations and welds may be made, but four in number are usually preferred as the edges of the depressions are of utility in establishing good gripping and clamping results when the ferrule or sleeve is in frictional relations with the clamping head of the handle-bar stem. The forming of a plurality of indentations and welds is performed rapidly and by successive steps which involve a sliding movement of the handle-bar tube 2 to place one end of the sleeve and then the other end beneath the pointed electrode and also a rotary and a similar sliding movement of the tube to produce a pair of

indentations and welds on the opposite side of the sleeve. To facilitate the operation, the block 8 is recessed between its ends to provide oppositely-related stop shoulders 12 5 to limit the slidable movement of the sleeve in respect to the electrode 9, and the block is also provided with a semi-circular channel in its raised ends 13 to hold and center the tube during welding operations. More 10 or less metal may be upset or displaced to roughen the exterior of the sleeve. This roughness is removed by an abrading operation, using grinding wheels or files. During the foregoing operations, the tube 2 15 is straight as originally, but is thereafter bent into the handle form shown in Fig. 6 or in any other form or style desired.

The ferrule or sleeve 3 is shown as seamless, but the same steps of uniting a sleeve 20 with a tube may be followed with advantage if a split sleeve is used.

What I claim is:

1. A method of making tubular handle-bars, consisting in sleeving a metal ferrule 25 loosely upon a tube; contracting the entire ferrule uniformly in diameter by pressure;

and indenting the ferrule and tube jointly in spots by pressure.

2. The method substantially as described consisting in placing two tubular pieces of 30 metal in loosely sleeve relations; contracting one of said pieces uniformly over its entire surface in fixed union with the other piece; and welding the said pieces together in isolated spots by the application of pres- 35 sure and an electric welding current.

3. The method of producing tubular handle-bars herein described, consisting in placing a short metal ferrule in loosely sleeved 40 relations centrally upon a metal tube of predetermined length; subjecting the ferrule to pressure to contract the same upon the tube; rotating the tube and ferrule and repeating the aforesaid pressure step until uniform contraction of the entire ferrule 45 has taken place; and finally welding the ferrule to the tube by the application of pressure and heat.

CHARLES E. WEAVER.

Witnesses:

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