

(No Model.)

W. E. BROOKE.  
METHOD OF MAKING WRENCH HANDLES.

No. 504,518.

Patented Sept. 5, 1893.

FIG. 1.

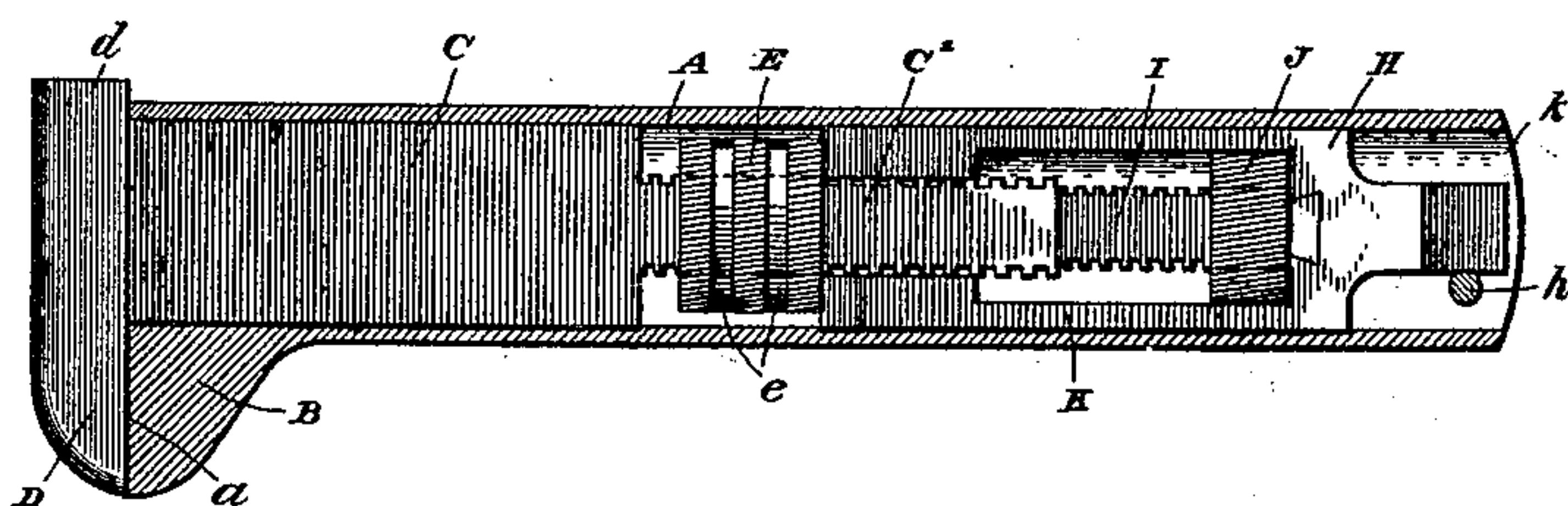
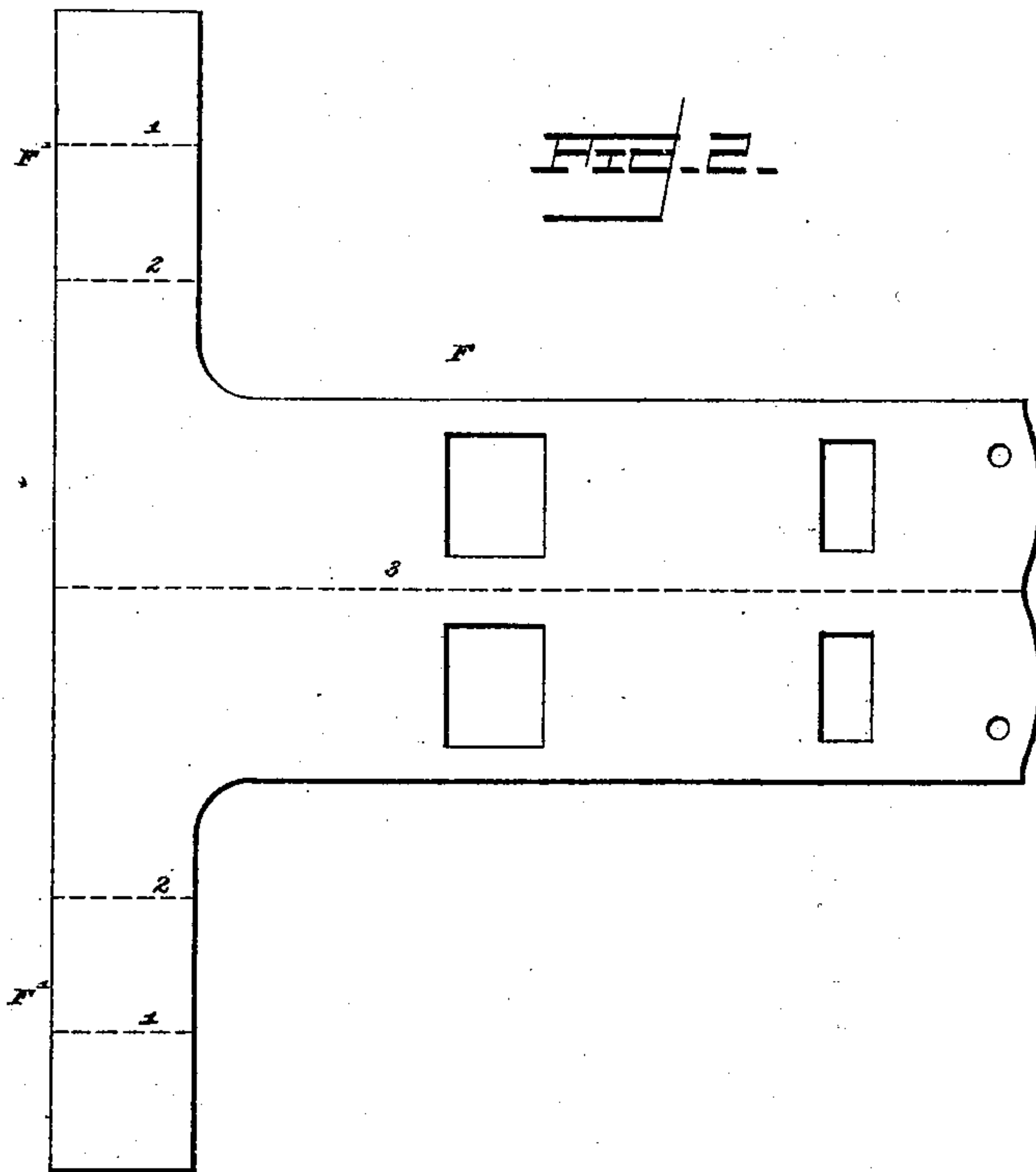


FIG. 2.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## METHOD OF MAKING WRENCH-HANDLES.

SPECIFICATION forming part of Letters Patent No. 504,518, dated September 5, 1893.

Application filed November 1, 1892. Serial No. 450,629. (No specimens.)

*To all whom it may concern:*

Be it known that I, WILLIAM E. BROOKE, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Methods of Making Monkey-Wrench Handles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to an improvement in a combined wrench and screw driver, of the kind especially adapted for use with bicycles, the same being of a light, strong, simple pattern and it relates more particularly to the method of making the hollow sheet metal handle piece of the wrench, the object being to make the same quickly and easily so that it will be durable and efficient and with a sufficiently strong jaw to stand the strain thereon in actual use, and the invention therefore consists in the method of making the handle piece, substantially as will be herein-  
after described and claimed.

In the annexed drawings illustrating my invention: Figure 1 is a longitudinal section of my improved wrench having its handle piece made of sheet metal in accordance with my new method. Fig. 2 is a plan view of the sheet metal blank out of which the handle piece is to be formed before it is bent up into the shape of the hollow stock.

Similar letters and numerals of reference designate corresponding parts in the several figures of the drawings.

A represents the hollow sheet metal wrench stock or handle piece, with a combined rigid jaw B, whose face  $\alpha$  is at right angles to the general direction of the handle piece A. This hollow stock is of a flattened elongated form. Its size and shape may vary within wide limits.

The movable jaw D which is parallel to the rigid jaw B and is adjustable away from or toward the latter to permit the use of the device with nuts of varying sizes, is preferably formed on one end with a hammer  $\delta$ . This jaw D is made integral with its sliding shank C, which lies within the handle piece A and conforms to the internal dimensions thereof, being designed to reciprocate back and forth

therein in order to accomplish the adjustment of the movable jaw relatively to the position of the rigid jaw.

The sliding shank C is provided at its inner end with a screw-threaded extension C' whereon is a knurled or milled adjusting nut E, provided with an encircling groove  $e$  which nut is located in a transverse opening in the handle piece A at a point about midway the length thereof. It will be evident that by rotating the adjusting nut E within its recess, the screw which is in engagement therewith will be fed forward or backward and the movable jaw consequently adjusted in one direction or the other as may be desired. The movable jaw D is hard and solid so as to adapt it for its use, being made by forging into the required shape.

The handle piece A is formed from a sheet metal blank, cut to the desired size and then bent into the required shape to provide a hollow stock for receiving the reciprocating shank of the movable jaw and also for receiving a screw driver shank, which I shall herein-  
after explain. A plan view of this blank is seen in Fig. 2. It is designated by the reference letter F. Near one end it is provided with oppositely extending projections F' F' of rectangular or other suitable form. These are intended to be folded at each of the lines 1, 2, so that each projection F' will when folded provide three thicknesses of metal and then after the blank has been folded longitudinally along its middle line 3, to form the hollow handle casing, these triple thick projections will come in close contact with each other to make the rigid jaw B having the flat face  $\alpha$ . In cutting the blank into the required shape, as shown in Fig. 2, it will be cut with a suitable die or other device in a cold state. After heating, suitable mechanism will then be employed to bend it on the several lines indicated so as to make the handle piece of the required shape. It will then be again heated and drop forged so that its edges and parts will be thoroughly welded together. This will cause the folded projections F' F' to be thoroughly welded together into a hardened jaw or support B which will be firm and strong and will act efficiently in conjunction with the movable jaw D to grip



an object tightly between them. The projections F' F' may be folded to provide three thicknesses or they may be folded as many or as few times as may be requisite to give the fixed jaw B the required thickness and strength. The principal point to be observed is that the blank has these extensions which have a length which makes them capable of being folded so that after the blank has been longitudinally folded they may be interwelded to make a strong jaw.

The end of the casing opposite to where the fixed jaw is located is open at k.

H designates the screw driver. It is formed on its inner end with the screw-threaded shank I, made separate therefrom, but provided with a head which fits into a slot in the screw driver for the purpose of connecting the shank and the screw driver. On this shank I is a knurled or milled adjusting nut J similar in general purpose and function to that of the adjusting nut E, said nut J being located likewise in a transverse opening in the handle piece A at a point a short distance from the end wherein is the slot k. It will be evident that by rotating the adjusting nut J within its recess, the screw which is in engagement therewith will be fed forward and the screw

driver bit consequently projected from or retracted within the end of the casing. The screw driver H is also provided with a yoke piece which lies on each side of and supports the screw-threaded shank C'. The ends of the screws C' are in contact with each other when the screw driver is located in its innermost position in the casing as shown in the drawings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The herein-described method of making a sheet metal casing for wrenches which consists in first shaping a suitable sheet metal blank having projections, folding these projections to present several thicknesses of metal and then folding the halves of the blank longitudinally together bringing the folded projections into contact with each other and welding them together to form a solid hard jaw, substantially as described.

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

WILLIAM E. BROOKE.

Witnesses:

J. FRED. KELLEY,  
WM. L. BOYDEN.