

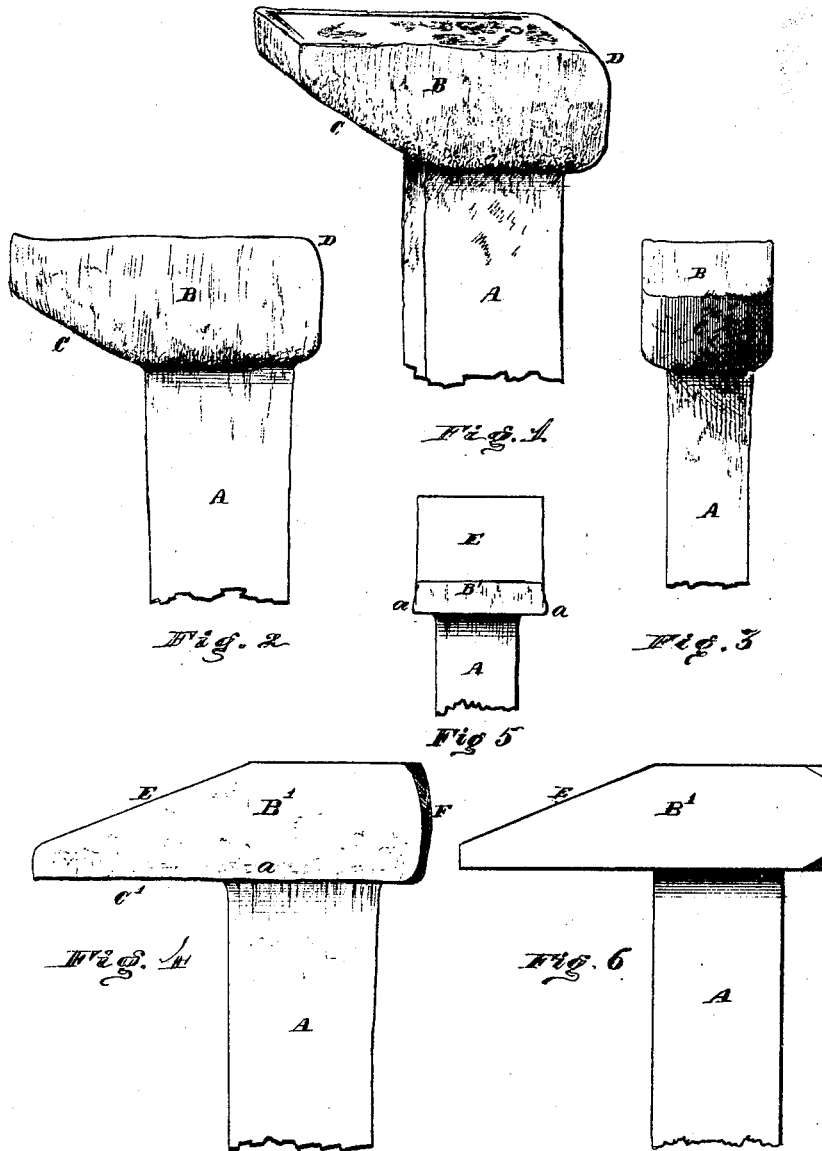
A. G. Coes,

2. Sheets. Sheet. 1.

Forming Wrench Heads.

No. 113,743.

Patented Apr. 18. 1871.



witnesses

Thos. H. Dodge  
A. E. Price.

Inventor

Amy G. Coes

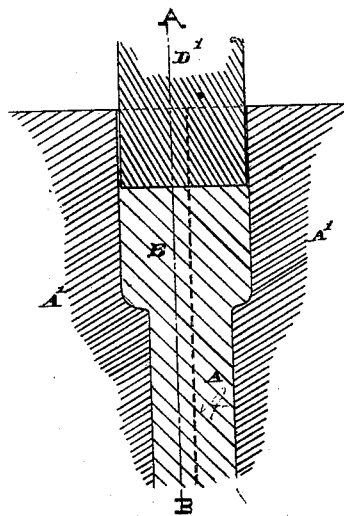
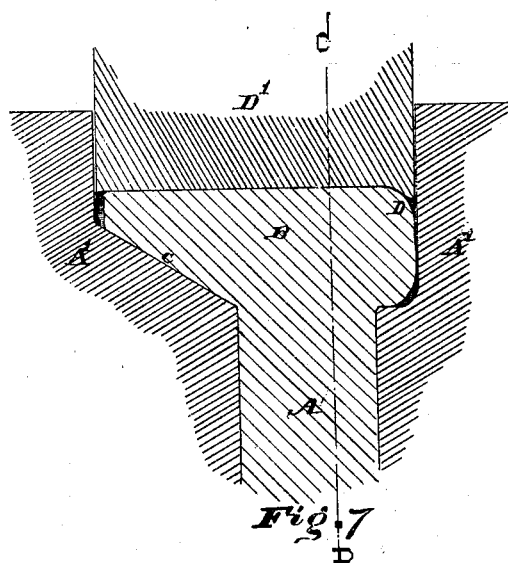
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*Witnesses*

*Thos. H. Dodge*  
*A. E. Pierce*

*Fig. 8*

*Inventor*

*A. G. Coes*

# UNITED STATES PATENT OFFICE.

AURY G. COES, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN THE MODES OF FORMING THE HEADS OF WRENCH-BARS.

Specification forming part of Letters Patent No. **113,743**, dated April 18, 1871.

*To all whom it may concern:*

Be it known that I, AURY G. COES, of the city and county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Mode of Forming Wrench-Bar Heads; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawing, which forms a part of this specification, in which—

Figure 1 represents a perspective view of a wrench-bar head after being subjected to the first process of formation. Fig. 2 represents a side view of the same. Fig. 3 represents a front view of the same. Fig. 4 represents the wrench-bar head as formed preparatory to finishing. Fig. 5 represents a front view of the head as formed preparatory to finishing, and Fig. 6 represents the head when finished. Fig. 7 represents a vertical central section of the forming-dies, wrench-bar, and partially-formed wrench-head on line A B, Fig. 8; and Fig. 8 represents a similar view on line C D, Fig. 7.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

As wrench-bar heads have heretofore been formed, it has been the usual practice to use a bar of metal of sufficient width and thickness to make the head, and to then roll or forge down the bar of the wrench to the required size, which is a slow and comparatively expensive process, and, besides, by such mode of formation, it is difficult to produce a sufficient fullness at the lower corners of the head, and as a consequence the wrench, when finished, shows scars and flaws at the junction of the head and bar, which detracts very much from the appearance and value of the wrench, the only alternative being to use a large surplus of metal, which requires to be slabbed off in the process of finishing the head, and consequently very much increases the waste of material and cost of manufacture. Then, again, no successful mode has been devised, previous to my present invention, whereby the head could be formed from a piece of metal rolled to the size, or near the size, of the re-

quired wrench-bar, the bar and head being formed in one piece.

The object of my present invention is to produce a wrench-bar head which shall have the required fullness at its corners without a surplus of metal, and also to form the head from and upon a small bar, so as to obviate the necessity of forging or rolling down said bar; and my invention consists in first upsetting the end of a piece of metal of the size, or near the size, of the required wrench-bar into the peculiar shape, as hereinafter described, to form the head, and afterward forging or pressing the head into the required shape for finishing.

My improved mode of forming wrench-bar heads is as follows:

A piece of metal, rolled to the size, or nearly the size, of the required wrench-bar A, is arranged in a suitable die, A', and its end upset, by means of properly-applied pressure, to produce the peculiarly-shaped blank head B. The forming-dies A' and D' are of such shape that the blank head B will be formed with an upward inclination or bevel, C, at its lower side, while its upper rear corner, D, will be made with an inward inclination, as indicated in Figs. 2 and 3 of the drawing.

After the head B has been upset to the form shown in Figs. 1, 2, and 3, it is removed from the forming-die, and is subjected to suitable shaping mechanism, whereby the head is elongated and flattened to the proper shape for finishing, as shown by Figs. 4 and 5. For this part of the process I prefer a machine consisting of a drop and a pair of lateral cheek-pressers, the drop and cheek-pressers acting upon the head alternately, similar to that heretofore patented by L. and A. G. Coes.

It will be understood that the face of the drop-die is made to correspond in shape to the required form of the upper side of the head, it being provided with a suitable angle to bend down the forward end of the head B, and thereby produce the bevel E at the upper side thereof, while the lower side is at the same time bent down at a right angle with the bar A, as shown at C', Fig. 4.

By the operation of bending down the forward end of the head the metal is forced out.

ward at the sides *a*, as indicated in Figs. 4 and 5, thus producing the required fullness at the corners, the extreme end being at the same time worked forward in a very perfect and easy manner.

The effect of the drop-die and cheek-pressers in shaping the head *B'* causes the metal to recede at the rear end *F*, whereby the desired fullness is obtained at that part; and the object of leaving the upper corner *D* of the blank-head *B* beveled off, as indicated in Figs. 1 and 2, is to prevent waste from an excess of metal.

The forming-die which holds the bar *A* may be made a little larger near the head *B* than

the required size of the finished bar, so as to allow sufficient metal to insure a smooth finish upon the bar.

Having described my improvements in the mode of forming wrench-bar heads, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

Reducing the head *B*, shown in Fig. 1, to the shape shown in Figs. 4 and 5, in the manner substantially as described.

AURY G. COES.

Witnesses:

THOS. H. DODGE,

A. E. PEIRCE.