(No Model.)

L. CHAPMAN.

MANUFACTURE OF WRENCH FORGINGS.

No. 300,445. Patented June 17, 1884.

Fig. 1.

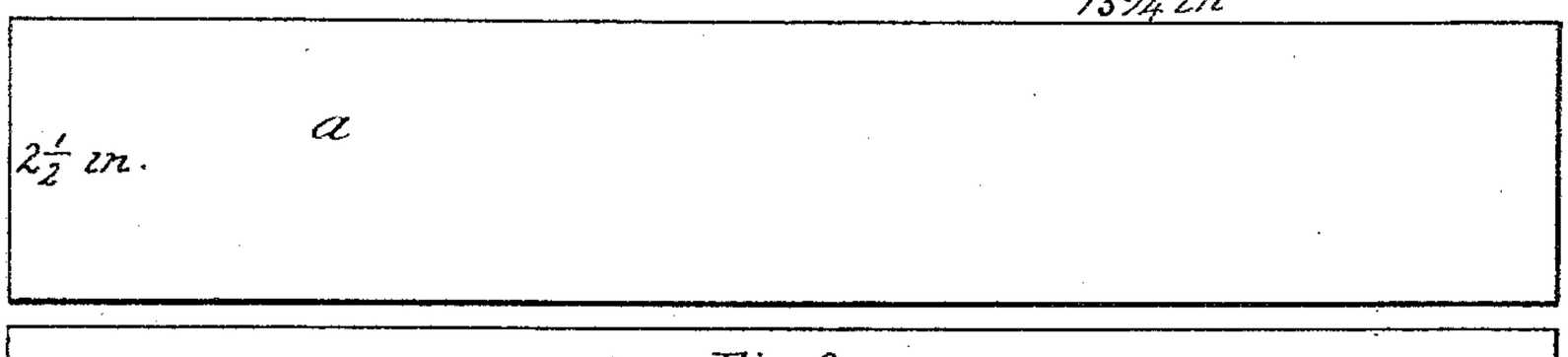
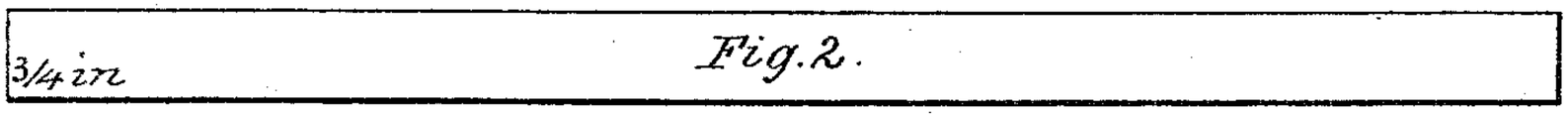


Fig. 2.



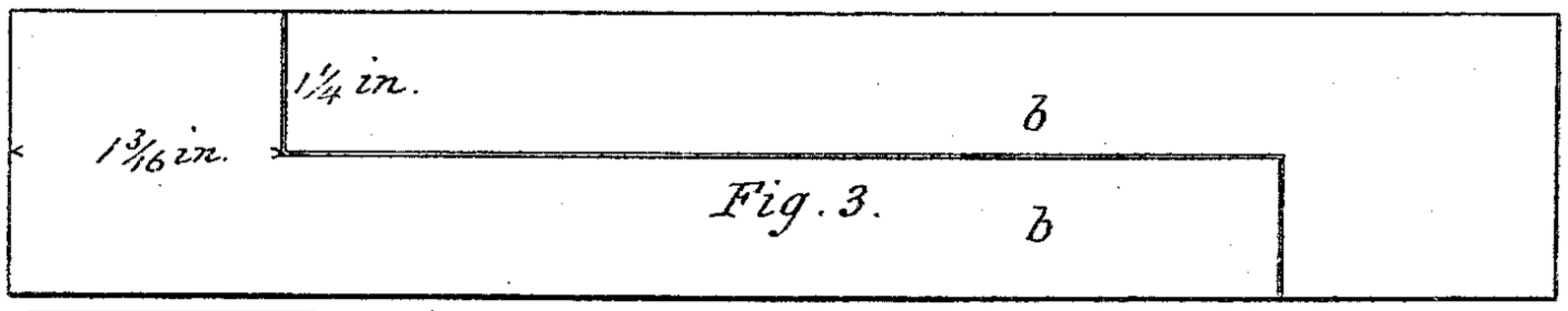


Fig. 3.

Fig. 6.

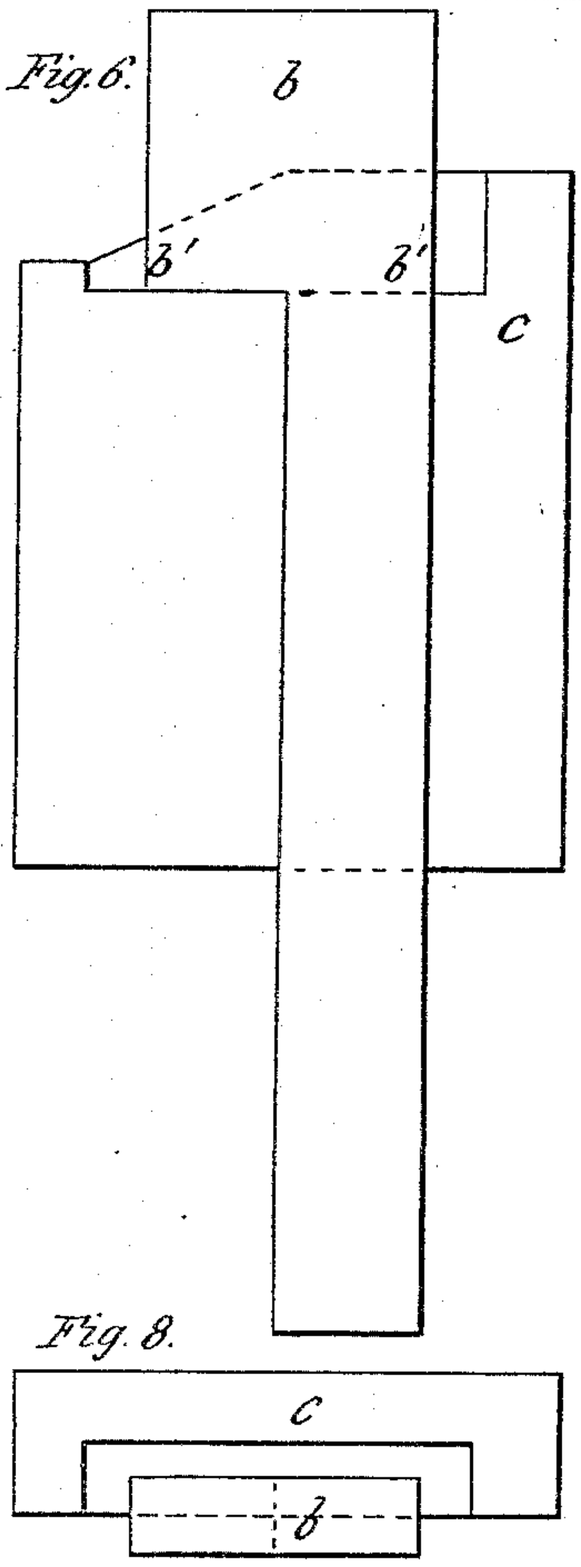


Fig. 4.

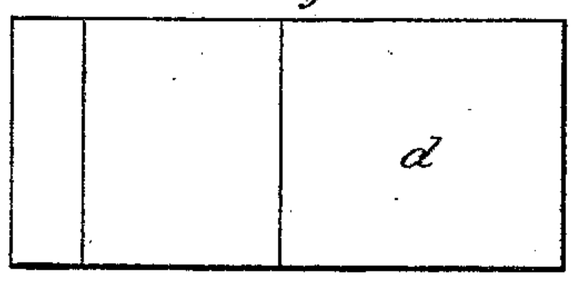


Fig. 5

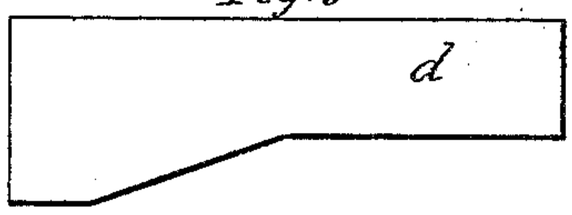


Fig. 7.

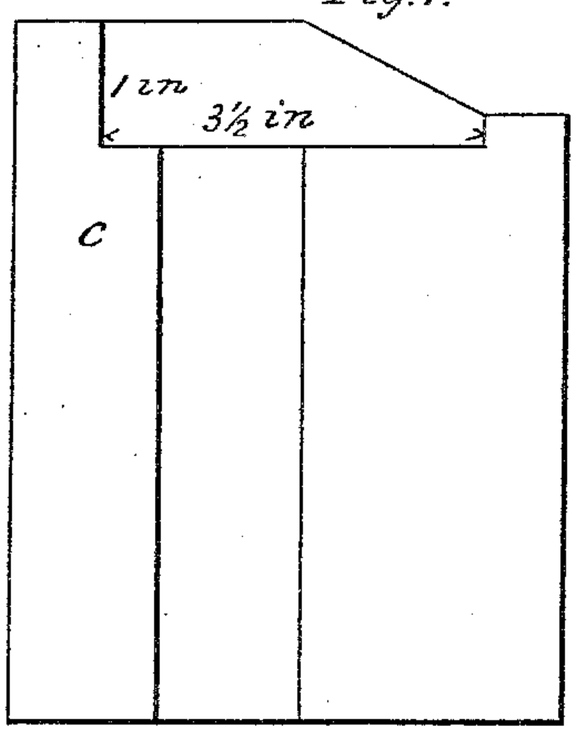


Fig. 9.

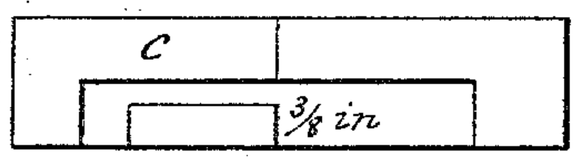


Fig. 8.

Fig. 10

Witnesses.
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UNITED STATES PATENT OFFICE.

LUKE CHAPMAN, OF COLLINSVILLE, CONNECTICUT, ASSIGNOR TO THE COLLINS COMPANY, OF SAME PLACE.

MANUFACTURE OF WRENCH-FORGINGS.

SPECIFICATION forming part of Letters Patent No. 300,445, dated June 17, 1884.

Application filed April 22, 1882. Renewed October 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, LUKE CHAPMAN, of Collinsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements Pertaining to the Manufacture of Wrench-Forgings, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 shows a side view of a bar-section (of iron or steel) such as commercial bars are cut into as a step preparatory to the other steps taken in carrying out this invention. Fig. 2 shows an edge view of the same bar-section. Fig. 3 shows a side view of the same bar-section after its division, by suitable dies or spears, into two corresponding blanks. Fig. 4 shows a face view of the heading-die. Fig. 5 shows a side view of the heading-die. Figs. 6 and 7 show face views of the corresponding parts of the holding-die. One of these parts is represented as holding one of the blanks shown in Fig. 3, preparatory to the heading operation. Figs. 8 and 9 show upper end views of the corresponding parts of the holding-die, as in Fig. 6 the blank is shown in one of the parts. Fig. 10 shows a view of the forging produced by the heading operation.

This invention is herein shown and described as applied to the production of a forging for the bar and head of a "hammer" or "monkey" wrench. These forgings were originally produced by the common blacksmith's art. Since then various methods and means have been tried to abridge and cheapen their manufacture.

An advantage of the methods and means herein described is that one is enabled to take commercial bars—that is, bars of iron or steel such as are readily procurable in market without extra cost for peculiarity of shape—and by short and simple and cheap operations convert them into the desired forgings.

This method and means are as follows: Take commercial bars, substantially rectangular in cross-section with greater width than thickness, and cut them—cold or hot, but preferably cold—into the lengths or bar-sections *a*. Then by suitable cutting-dies or shears cut these bar-sections—cold or hot, but preferably cold—into the two corresponding blanks *b*. Then heat the large end of the blank to a forging-heat and place it in the holding-die. This holding-die has a "head-matrix" for forming the head and a bar-matrix for holding the bar. It is preferably made in two corresponding halves or parts, *c c*, which, in suitable machinery and under suitable power, close together face to face to hold the blank during the heading operation, and then open again. After the blank is in place in the holding-die, the heading-die *d*, moved by suitable machinery and under suitable power, advances toward the holding-die, upsetting the enlarged end of the blank, and forcing the metal thereof to fill the head-matrix of the holding-die, after which the heading-die retreats to its normal position of rest. Practically the amount of stock in the enlarged end of the blank should be slightly in excess of the amount required for the head of the forging, in order to insure the complete and entire filling of the head-matrix. This excess will form a fin, *e*, on the forging, which is afterward trimmed off.

The essential feature of the blank *b* is that the enlargement at one end is substantially on one side of the bar, and that it has underneath the shoulder *b' b'*, which, by resting upon the bottom of the head-matrix, substantially aids in supporting the blank under the heading operation.

The characteristic feature of the dies is that the walls of the head-matrix form the bottom, sides, and end or ends of the head, while the heading-die does not enter the holding-die, but overlaps the head-matrix, and in action forces the excess of metal into lateral fin or fins.

A substantial part of this invention is used if the cutting of the bar-section into the corresponding blanks *b b* is omitted and blanks of this shape be otherwise produced.

To give an idea of the dimensions of the commercial bars used and of the blanks and

dies, I have in some of the accompanying drawings given in figures the dimensions for a fifteen-inch wrench. Dimensions for other sizes can be readily gotten at from these.

I claim as my invention—

The method, art, or process of producing wrench-forgings, consisting in cutting bar-sections *a* into the blanks *b b*, and then heading the blanks in dies, all substantially as herein described.

LUKE CHAPMAN.

Witnesses:

OLIVER F. PERRY,

ALBERT L. THAYER.