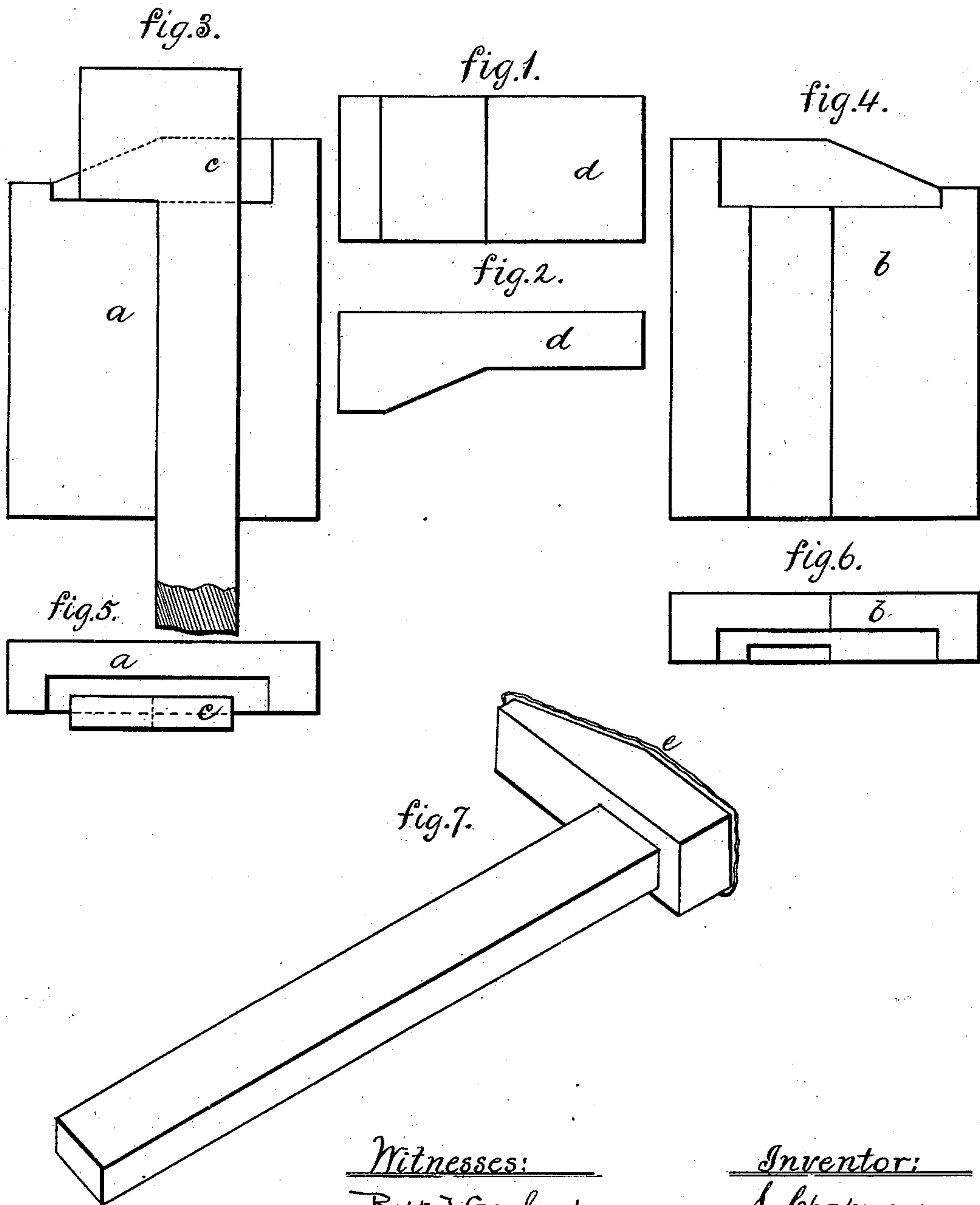


L. CHAPMAN.
Dies for Forging Wrench-Heads.

No. 225,745.

Patented Mar. 23, 1880.



Witnesses:
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UNITED STATES PATENT OFFICE.

LUKE CHAPMAN, OF COLLINSVILLE, CONNECTICUT, ASSIGNOR TO THE
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DIE FOR FORGING WRENCH-HEADS.

SPECIFICATION forming part of Letters Patent No. 225,745, dated March 23, 1880.

Application filed April 23, 1879.

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 Dies for the Manufacture of Wrench-Forgings, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 shows a face view of the heading-die. Fig. 2 shows a side view of the heading-die. Figs. 3 and 4 show face views of the corresponding parts of the holding-die. One of these parts, Fig. 3, is represented as holding a blank preparatory to the heading operation. Figs. 5 and 6 show upper-end views of the corresponding parts of the holding-die. As in Fig. 3, the blank is shown in one of the parts. Fig. 7 shows a view of the forging produced by the heading operation.

The invention relates to dies for forming a head on a wrench-bar; and it consists, generally speaking, in such a construction that the heading-die does not enter, but overlaps, the head-matrix.

The holding-die, which contains the head-matrix—*i. e.*, the matrix for giving shape to the bottom, sides, and end or ends of the head on the wrench-bar—is preferably in two corresponding parts, *a* and *b*. The letter *c* denotes a blank of preferable shape for submission to the action of the dies. The letter *d* denotes the heading-die.

The operation and method of use are as follows: 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, and a bar-matrix for holding the bar. As before mentioned, the holding-die is made in two corresponding halves, 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 under suitable power, advances toward the holding-die, upsetting the upper 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 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 characteristic feature of the dies is that the walls of the head-matrix form or give shape to 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.

It is not now new to upset and form a wrench-head in dies, such thing being shown in my patent dated February 4, A. D. 1873; but it is not practically possible to give the blank or stock-bar the exact amount of stock to just form a head and no more. A small excess must be had to insure the filling of the matrix. This excess must form a fin somewhere. In that case, where the header enters the matrix, this fin flows up and around the sides of the header, rapidly abrading it and exerting a tremendous force to open the dies sidewise. In the present case this fin flows off sidewise when it encounters no resistance, giving the dies a much longer lease of life, exerting no opening effect upon the die, and requiring much less power to operate the dies. Withal, the fin is more easily removed.

I claim as my invention—

The holding-die having a bar-matrix for holding the bar, and a head-matrix for forming the bottom, sides, and end or ends of the head, in combination with the heading-die, not entering, but overlapping, the head-matrix, all substantially as described, and for the purpose set forth.

LUKE CHAPMAN.

Witnesses:

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