W. H. & G. W. MILLER.

Dies for Manufacturing Bolsters for Pocket-Knives.

No. 164,320. Patented June 8, 1875.

Fig. 1

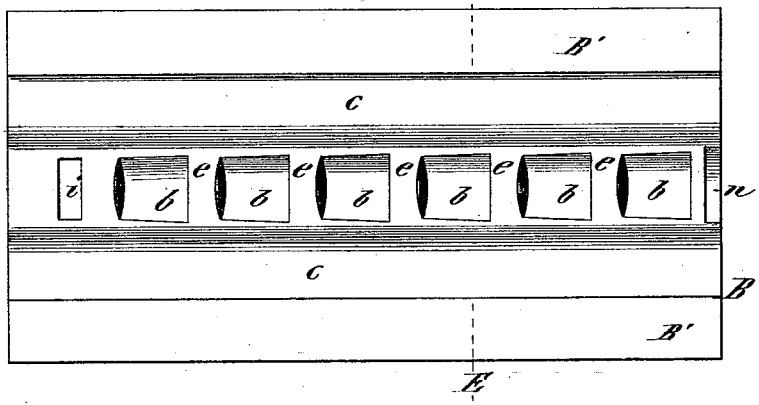


Fig. 3

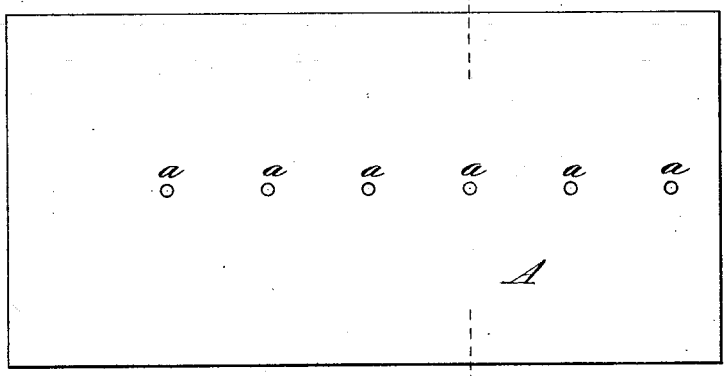


Fig. 4

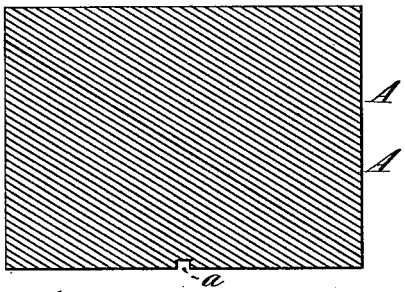
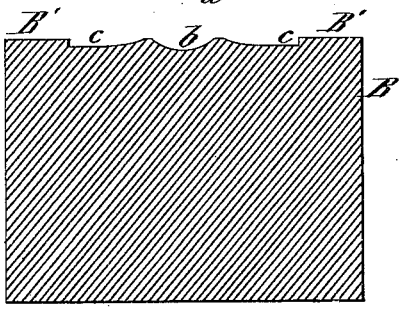


Fig. 2



Witnesses,
E. P. Kendrick.
N. E. Moseley

Inventors.
William H. Miller.
George W. Miller.
By T. A. Lewis.
their Atty.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

WILLIAM H. MILLER AND GEORGE W. MILLER, OF MERIDEN, CONN.

IMPROVEMENT IN DIES FOR MANUFACTURING BOLSTERS FOR POCKET-KNIVES.

Specification forming part of Letters Patent No. **164,320**, dated June 8, 1875; application filed December 3, 1874.

To all whom it may concern:

Be it known that we, WILLIAM H. MILLER and GEORGE W. MILLER, both of Meriden, in the State of Connecticut, have invented a new and useful Improvement in Dies for the Manufacture of Bolsters for the Handles of Pocket-Cutlery; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a plan view of the counter-die. Fig. 2 is a transverse vertical section of the same at line E. Fig. 3 is a reverse plan view of the die, and Fig. 4 is a transverse vertical section of the same at line E′.

Our invention relates to an improvement in forging the bolsters for the handles of pocket-cutlery; and it consists of a counter-die, having a series of cavities of the desired form of the bolsters to be forged, with a shallow recess at the side of the series of the bolster cavities to receive the waste metal, and in connection with this counter-die of a die having a plane flat face provided with a small round hole, or a series of holes, located just over the series of bolster cavities, where the faces of the die and counter-die are placed together.

In the drawings, B represents the counter-die, having a general plane, flat face, in which is made a series of cavities, *b*, each of which is made of the desired form of the bolster, and which cavities are formed at proper distances apart, as shown in Fig. 1. A continuous, shallow recess, *c*, is made along the side of the series of cavities *b*, into which recess the waste metal is forced, when the dies are brought together with the required pressure. The face of the die A is plane or flat, and is provided with a series of holes, *a*, each hole being directly over one of the cavities *b* when the die and counter-die are brought together. The counter-die B may be firmly fixed in any secure position, and the die A be fixed in a movable plunger, or in any desirable manner, so that it may be brought down with force upon the counter-die, and if desirable a small cavity, *i*, may be made in the face of the counter-die B, and also one at *n*, a little deeper than the one at *i*.

The metal rod or bar being heated, is laid upon the counter-die, over the series of cavities *b*, and the die being forced down upon it with suitable pressure the metal is forced down into the cavities *b*, forming a series of bolsters at one pressure of the die. Most of the waste metal in this operation is forced out each way into the shallow recess *c* while the metal of the bar just around and between the cavities *b* is pressed very thin, that part of the counter-die being flat and upon nearly the same horizontal plane as the outer part B′, and the series of bolsters thus formed are held together by this thin portion of the metal.

When the die is forced down upon the bar to form the series of bolsters a part of the metal enters and fills each hole *a*, so that when the bolsters are formed a small protuberance is made upon each bolster, which protuberance serves as the rivet by which the bolster is secured to the scale or handle of the knife. After the first series of bolsters is formed upon the bar the latter is cut off between the series of bolsters and the protuberance which was formed by the plane face of the die A pressing the heated metal into the cavity *n*, and the bar when next heated and laid upon the counter-die is moved along on its face until the said protuberance strikes into the cavity *i*, when the die is brought down as before, the cavity *i* and the said protuberance upon the bar serving as a gage to facilitate the manipulation of the bar and insure a more perfect economical use of metal; but these cavities *i* and *n* are merely for that purpose, and are not absolutely required in the successful working of the dies.

Having thus described our invention, what we claim as new, is—

As a means of forging a series of bolsters, at one operation, from a single bar of metal, the counter-die B provided with a series of cavities, *b*, and the recess *c* and the die A provided with the series of holes *a*, substantially as herein set forth.

WILLIAM H. MILLER.
GEO. W. MILLER.

Witnesses:
C. P. IVES,
JAMES P. PLATT.