W. H. MILLER.

Die for Making the Handles of Pocket-Cutlery.

No. 160,059. Patented Feb. 23, 1875.

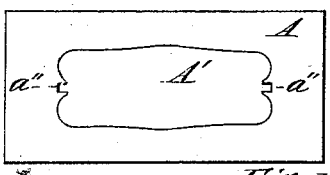

Fig. 1

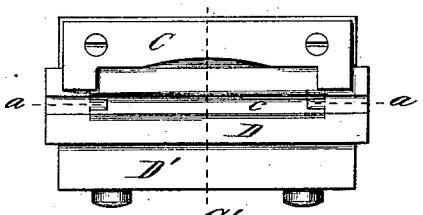

Fig. 3

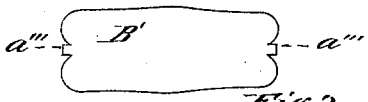

Fig. 2

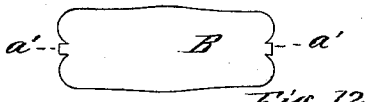

Fig. 12

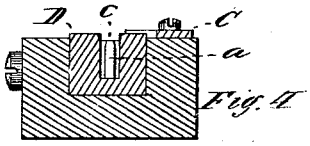

Fig. 4

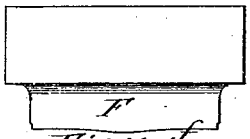

Fig. 7

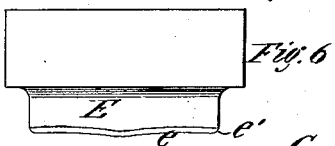

Fig. 6

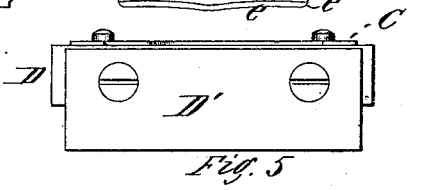

Fig. 5

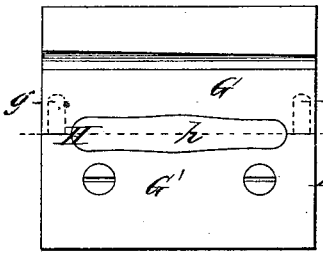

Fig. 8

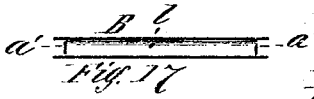

Fig. 17

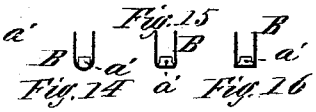

Fig. 15 Fig. 14 Fig. 16

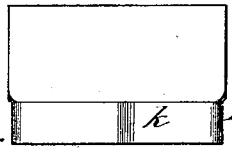

Fig. 10

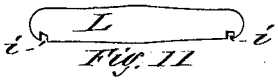

Fig. 11

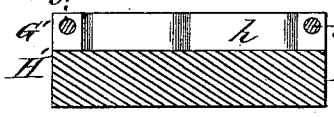

Fig. 9

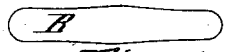

Fig. 13

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UNITED STATES PATENT OFFICE.

WILLIAM H. MILLER, OF WEST MERIDEN, CONNECTICUT.

IMPROVEMENT IN DIES FOR MAKING THE HANDLES OF POCKET-CUTLERY.

Specification forming part of Letters Patent No. **160,059**, dated February 23, 1875; application filed October 27, 1874.

To all whom it may concern:

Be it known that I, WILLIAM H. MILLER, of West Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in the Manufacture of Pocket-Cutlery; and I 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 die used to stamp or punch out the blank from which the skeleton scale or frame is formed. Fig. 2 is a reverse plan view of the punch. Fig. 3 is a plan view of the die used in giving the general form to the skeleton scale or frame. Fig. 4 is a transverse section of the same. Fig. 5 is a front view of the same. Fig. 6 is a front view of the punch used with the die D in the first operation of bending the blank into shape. Fig. 7 is a front view of the punch used in the second operation of forming the skeleton scale or frame. Fig. 8 is a plan view of the die used in giving the final shape to the skeleton-scale. Fig. 9 is a longitudinal vertical section of the same. Fig. 10 is a front view of the punch used with said die. Fig. 11 is a plan view of a former, which is placed within the skeleton-scale, and used in connection with the die and punch shown in Figs. 9 and 10. Fig. 12 is a plan view of the blank, showing its form as first punched from the sheet. Fig. 13 is a side view of the skeleton scale or frame when first doubled or bent into its approximate form. Fig. 14 is an end view of the same. Fig. 15 is an end view of the same after the second operation of bending. Fig. 16 is an end view of the same when finished, and Fig. 17 is a front view of the same looking into the skeleton-scale.

My invention relates to an improvement in the manufacture of pocket-cutlery; and it consists of certain punches and dies, operating together, by means of which a blank formed of sheet metal is bent into the proper shape to form, in one piece, the scales and back of a knife-handle; and also of a former operating in connection with the dies and punches, by means of which the metal is made sharp at the angles after being formed.

The object of my invention is to make the metallic portion of the handle all of one piece, more cheaply, quickly, and with a better finish, as to its form, than has hitherto been done.

In the drawings, A is a die, of which the inside shape A′ is of the desired pattern, according to the particular style of knife to be manufactured, and which, in this case, to illustrate the invention, is of the shape to cut out the blank B, (shown in Fig. 12;) and B′ is the punch to be used with said die, and is of such shape as to fit the inside A′ of the die; and this die and punch are used to stamp or cut out said blanks B from suitable sheet metal. D, in Fig. 3, represents a die, which may be firmly fixed in any suitable block, D′, said die having a longitudinal recess or cavity, *c*, therein, with the lugs *a* projecting into said recess, one at each end, and a gage, C, is attached to or made in connection with the die D, or its block D′, so that when the blank B is laid upon the die D, over the cavity *c*, one edge of the blank may be placed against the gage to cause the blanks, as they are successively laid upon the die, all to be placed in precisely the same position to be formed or bent. E represents a punch, having its lower edge *e* and corners *e′* rounded, and it is of such length and thickness that when a blank is laid upon the die D, over the cavity *c*, the said punch E may be forced down upon the said blank, forcing the latter into the cavity *c*, and causing the blank to assume the form of the said cavity.

In punching out the blank B, the projection *a‴* on each end of the punch B′, and the corresponding recesses *a″* in the die A, form the ears *a′* upon the blank B, one at each end; and when the blank B is placed over the cavity *c* upon the die D, the lugs *a*, projecting into said cavity, cause the ears *a′* of the blank to be bent upward into the blank, when the punch E and the blank are forced into said cavity, said ears forming an abutment, *a′*, just inside each end of the blank, as shown clearly in Figs. 14 and 17. This ends the first operation of bending the skeleton-scale or frame into shape. The blank, as thus formed, is still left in the die D, and the die F, having its lower corners *f* sharp, is forced down into the cavity *c*, and

into the bent or doubled blank therein, with proper force, and the blank is thereby made more sharp at the corners, as shown clearly in Fig. 15, and the ears *a'* are also made more sharp at the angle. H, in Fig. 8, represents a die made in two parts, G and G', so arranged as to be moved toward and from each other, and provided with holes and steady-pins *g*, to cause the two parts to always fit together exactly to form the cavity *h* of the die, and these two parts G and G' may be firmly held together when in use by means of a cam-lever, or any other suitable and convenient means. The punch *k* is made to fit the cavity *h* closely, and both are used together, as shown in Figs. 9 and 10. L, in Fig. 11, is a former, which is made to fit snugly the inside of the blank B when bent into the proper form shown in Fig. 15 by the second punch F, and said former should have the notches *i*, one in each end, so that the ears *a'* of the blank may enter said notches, and permit the former to perfectly fill the cavity in the blank. When the former is so placed within the blank skeleton, the latter is placed upon its side in the bottom of the cavity *h* of the die H, and the punch *k* is forced into said cavity, and down upon the blank, with great force. This operation forces the metal of the blank skeleton out against the sides of the cavity *h*, and makes all the exterior corners of the blank sharp and angular, as shown clearly in Fig. 16. The blank skeleton-scale B, as thus prepared, is then ready for use in the manufacture of handles of pocket-cutlery, and when finished gives a solid and pleasing appearance to the knife, and renders it capable of withstanding much greater strain than when the sides and back are made separately in the ordinary manner. With suitably heavy machinery the die H might be omitted, and the former L being placed within the blank skeleton-scale B, both may be placed within the die D, and the punch F be forced down upon the edge of the former, and the metal in the blank will be forced out at all the corners to fill the die, and the sharp angular form be given to the blank, as before; but, owing to the advantage of using lighter machinery, I prefer to use the die H, as hereinbefore described.

It is evident that the dies may all be arranged in a series, and made in one piece of metal; but, owing to the greater facility of manipulation, I prefer to make them in parts, as described.

The abutments *a'* at each end of the skeleton scale or frame B, when formed, serve to give the knife a more perfect finish when completed, and also to assist in securing the back spring in place, as the latter may be placed within the skeleton-scale between the abutments, and secured therein by the blades of the knife and the abutments, or by a pin inserted through both the skeleton scale or frame and back spring.

These skeleton scales or frames may be formed up and sold in the market to knife-manufacturers with advantage, as the tools and machinery adapted for such work would be quite similar for the manufacture of all the different styles and patterns of knives.

Having thus described my invention, what I claim as new is—

1. As a means of giving form to the skeleton scale or frame B of a pocket-knife handle, the die D and the punch F, operating together to force the said blank into the cavity in said die, and cause it to take the form thereof, substantially as described.

2. As a means of giving a sharp finish to the exterior angles of the skeleton scale or frame B, the combination of the die H, the punch *k*, and the former L, substantially as set forth.

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