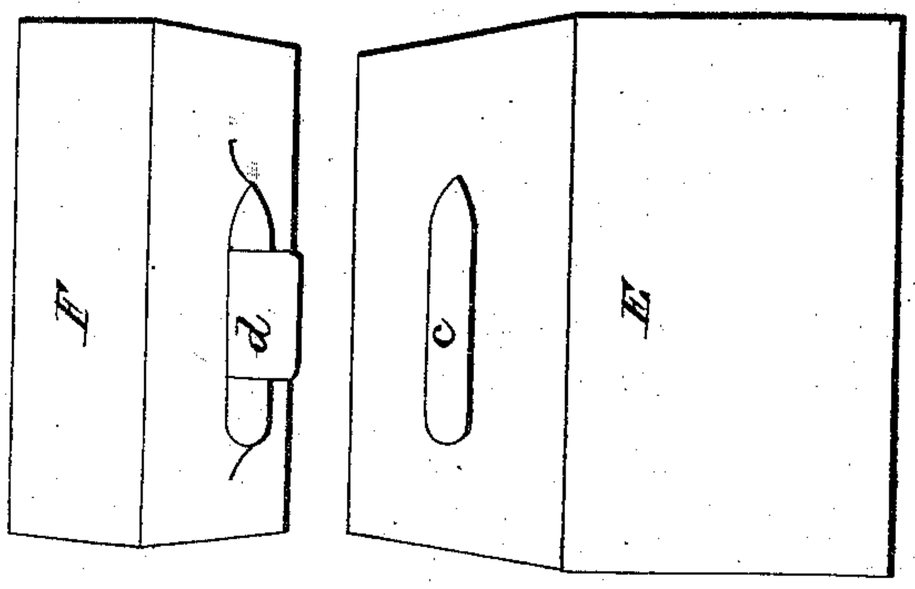
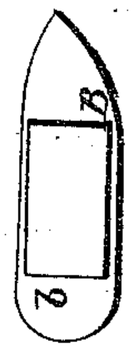
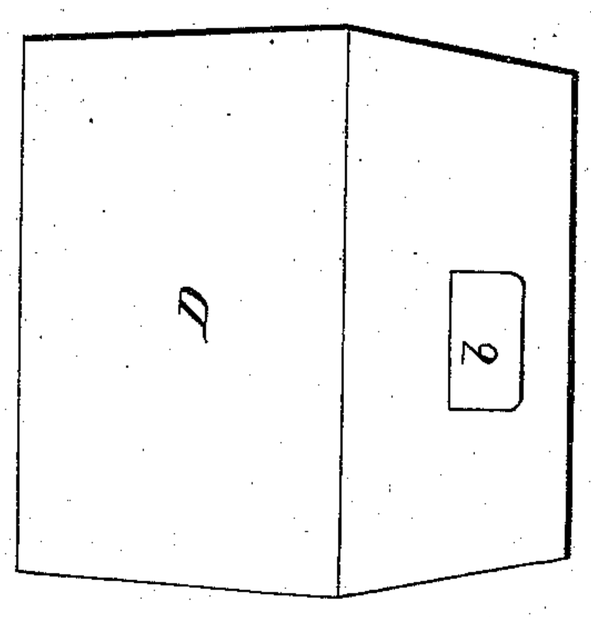
C. E. Billings.

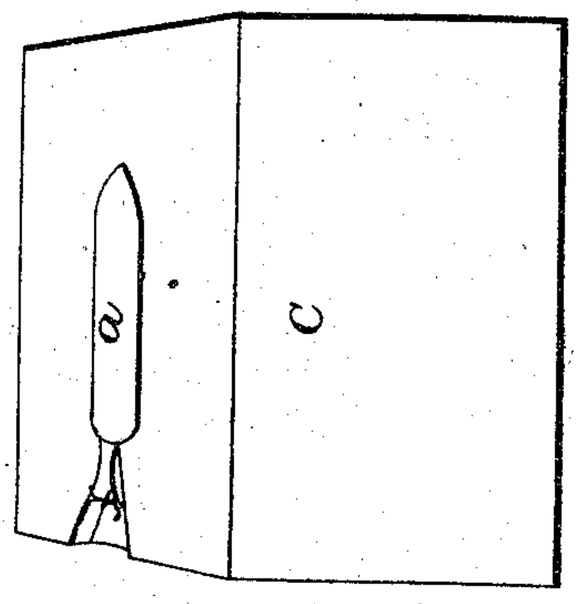
Making Shuttle Frames.

No. 63,978. Patented Apr. 16, 1867.









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United States Patent Office.

CHARLES E. BILLINGS, OF HARTFORD, CONNECTICUT.

Letters Patent No. 63,978, *dated April* 16, 1867.

IMPROVED DIE FOR FORMING SHUTTLE-FRAMES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. E. BILLINGS, of Hartford, Hartford county, State of Connecticut, have invented a new and useful improved Method of Forming Shuttle-Frames for Sewing Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon. In the drawings forming part of these specifications—

Figure 1 represents my shuttle-frame after formation by my operations.

Figure 2, a set of dies used in the first operation.

Figure 3, a set of dies used in the next operation.

My invention consists of a new and improved method of forming the frames of sewing-machine shuttles, whereby the operation is rendered more simple, and consequently more economical.

Formerly these frames were made of several parts, the outside shell and two pieces, which fitted in each end of it, and were there brazed or otherwise fastened. These parts are shown in fig. 1, which, although forming a representation of my frame, which is made by dies from a solid piece, is still the same in shape; and the parts A and B are similar to the parts above spoken of, which are brazed in the shell in the old method. By this operation several operations were necessary, viz, forming the outside shell, forming the pieces A and B, and fastening the latter into the shell. In my process, however, all these are completed in one operation. In fig. 2 are shown the dies used in my operation, C being the lower die, having the cavity *a* in it, which forms the outside of the frame, and D being the upper die having the projection *b*, which forms the top and inside of the same.

This operation is as follows: A rod or bar of heated metal is placed over the cavity *a*, and the die D, being in a drop or press, descends upon it, forcing the metal into the cavity *a*, the projection *b* forming the cavity inside the shell. It is necessary on some shuttles that a projection should be formed on the rear end of the case; this and other variations in form may be accomplished at the foregoing operation by forming the die suitably. In fig. 3 is shown another set of dies, which I use for smoothing the surface of the frame after it has been formed. This consists of a lower die, E, having a cavity, *c*, similar to the cavity *a* in the die C, but without the space *e* left in the latter for the newly-formed frame to remain connected with the stock, and an upper die, F, having a projection, *d*, similar to the one, *b*, upon the die D. Only so much surface of this die closes, however, upon the frame as fits its upper surface around the projection *d*. After the frame is formed in the first operatian, it is placed, without heating, in the cavity *c*, and the drop or press closes the die F down upon it, smoothing the surface by the pressure. The advantages I obtain by this process are the reduced number of operations, and consequent economy of time and expense in manufacture.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The dies C and D, with cavity *a* and projection *b*, for the purpose of forming the shuttle-frame, arranged substantially as described.

2. The dies E and F, the cavity *c*, and projection *d*, for the purpose of finishing the shuttle-frame, arranged substantially in the manner described.

C. E. BILLINGS.

Witnesses:

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