

(No Model.)

F. A. WRIGHT & I. YEAMANS.
DIE FOR FORMING ARTICLES FROM SHEET METAL.

No. 452,558.

Patented May 19, 1891.

Fig 1.

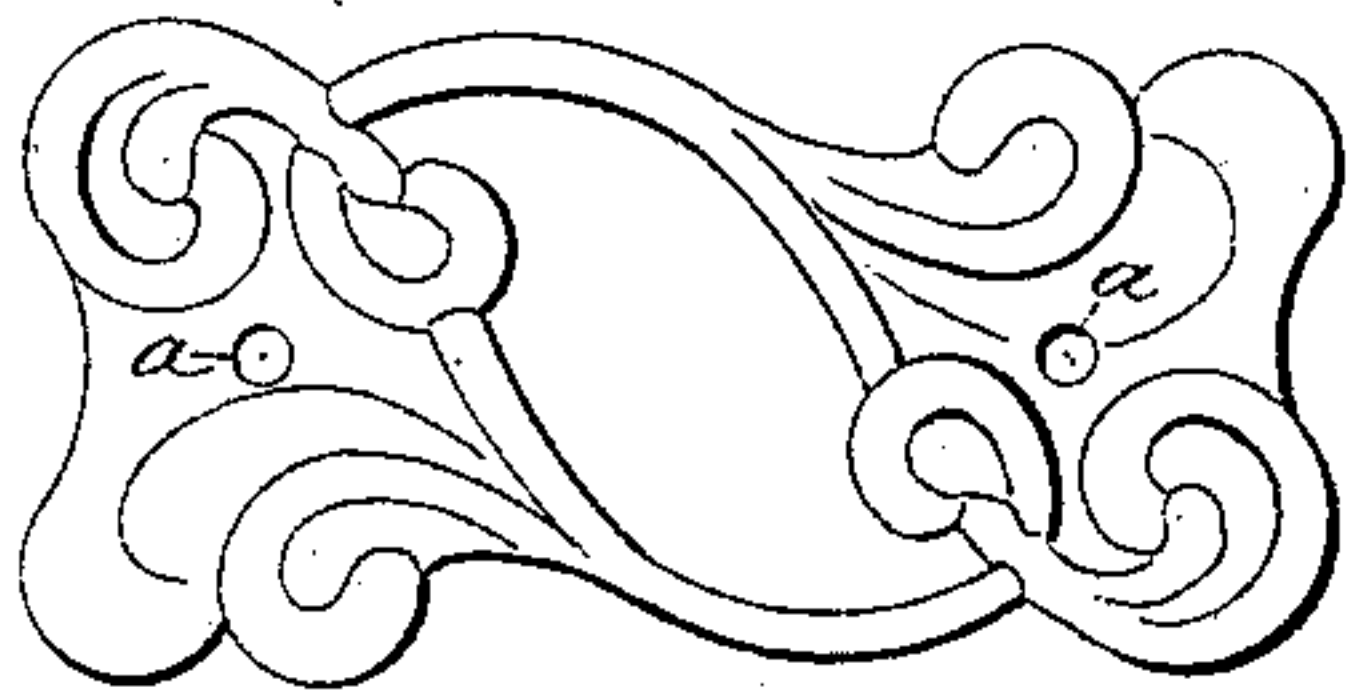


Fig. 3

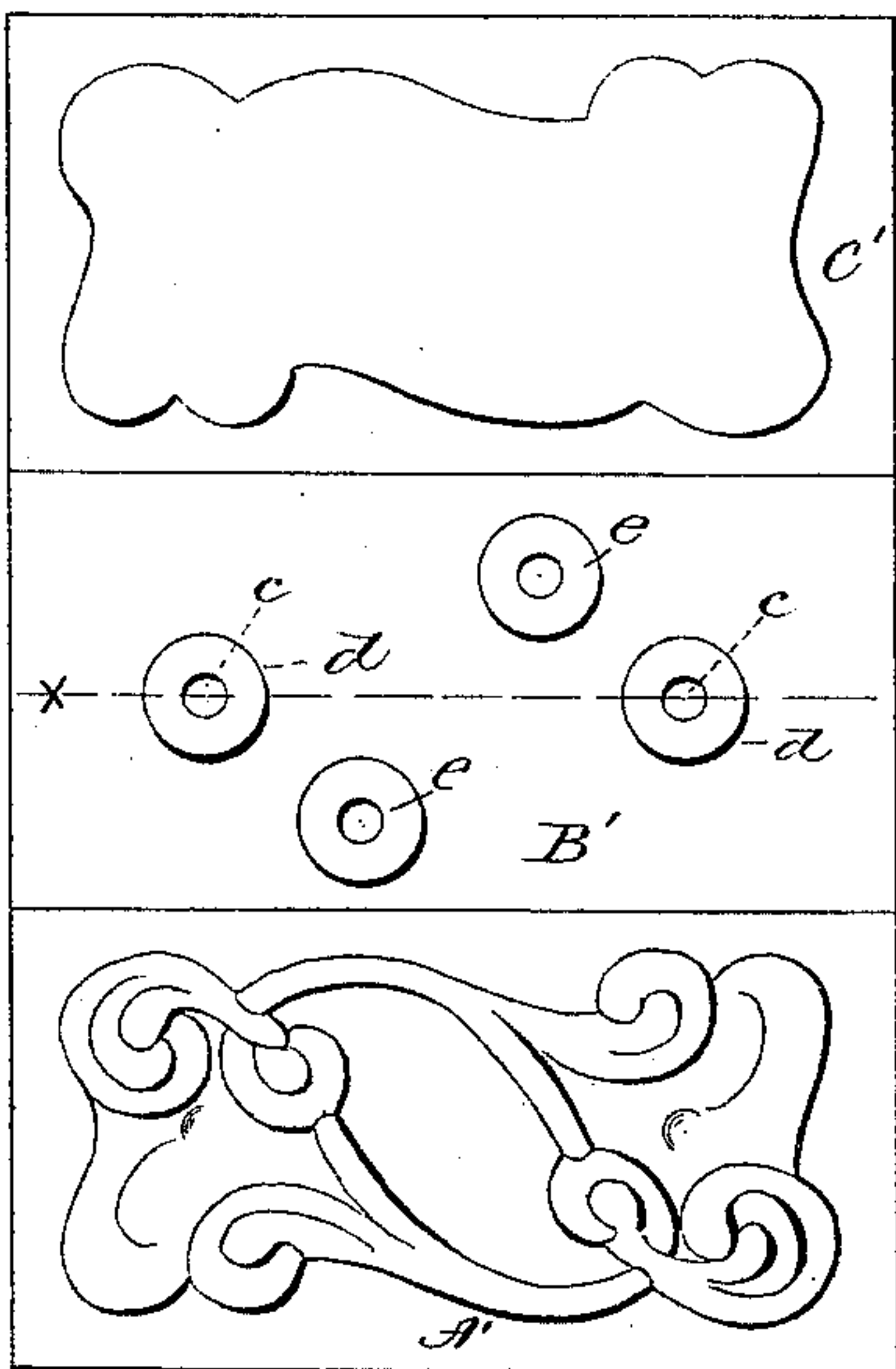


Fig. 2

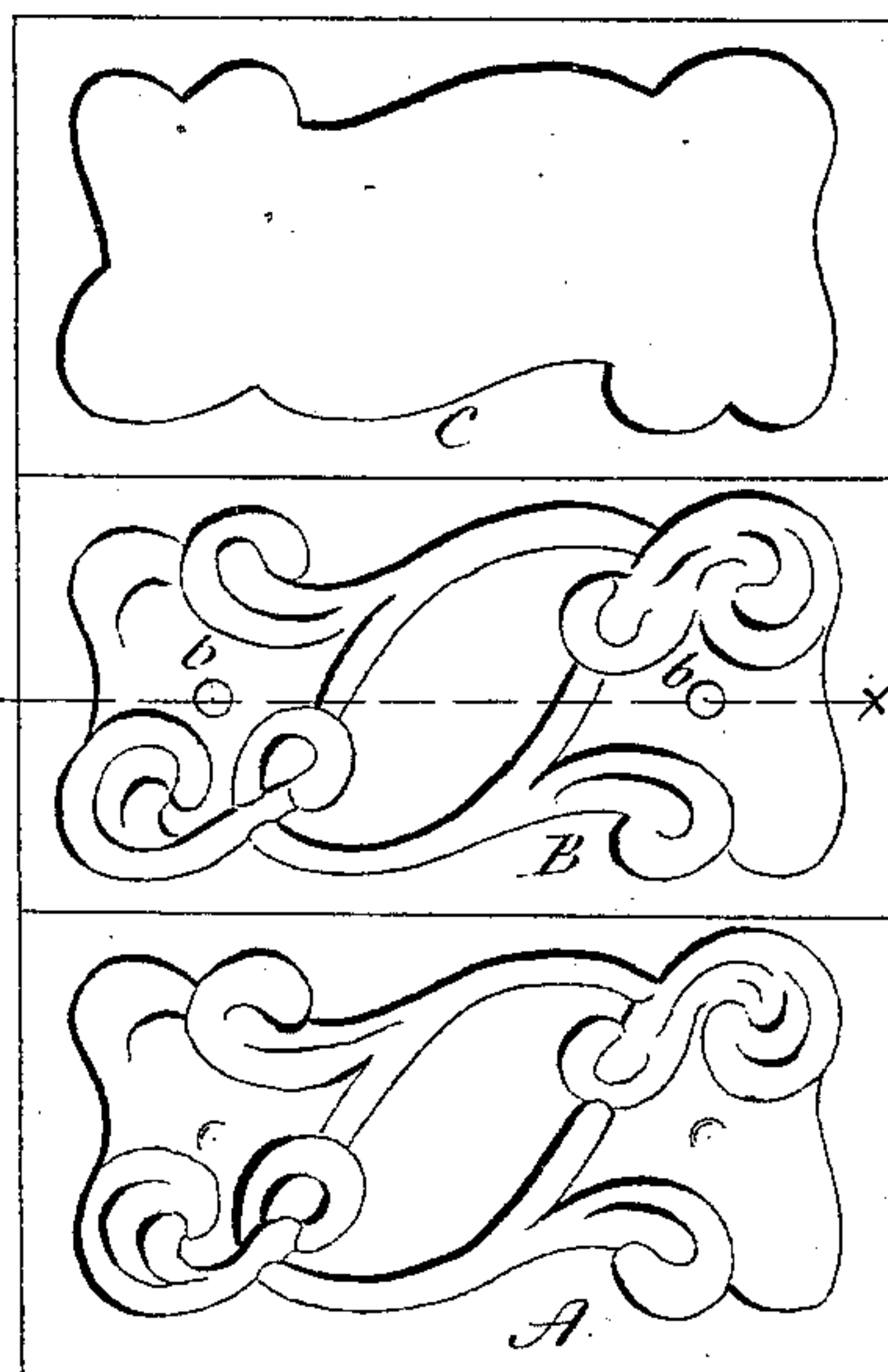
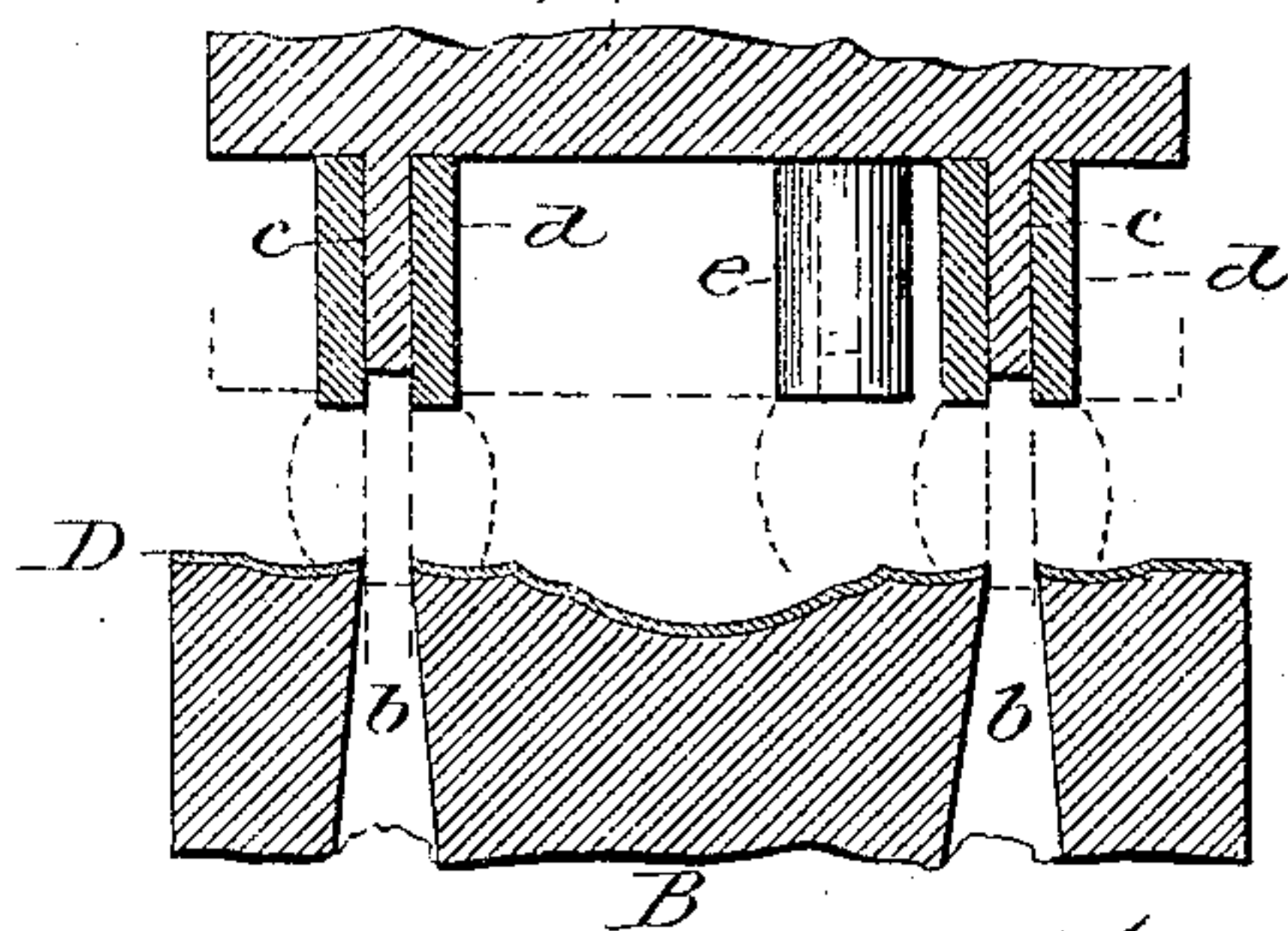


Fig 4



Witnesses:
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Inventors
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UNITED STATES PATENT OFFICE.

FRED A. WRIGHT AND IRA YEAMANS, OF MERIDEN, CONNECTICUT.

DIE FOR FORMING ARTICLES FROM SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 452,558, dated May 19, 1891.

Application filed January 26, 1891. Serial No. 379,102. (No model.)

To all whom it may concern:

Be it known that we, FRED A. WRIGHT and IRA YEAMANS, of Meriden, in the county of New Haven and State of Connecticut, have
5 invented new Improvements in Dies for Forming Articles from Sheet Metal; and we do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a
10 full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a face view of a drawer-pull base or rose; Fig. 2, a top view of the lower series
15 of dies; Fig. 3, an under side or face view of the punching series of dies; Fig. 4, a transverse section through the two series on line *x*.

This invention relates to an improvement in the construction of dies for stamping articles from sheet metal in which several operations are required upon the sheet to complete and separate the article from the sheet, particularly adapted for the making of the rose or base for drawer-pulls and like purposes, but applicable to the production of
20 other articles, the object of the invention being to hold the metal firm during the operation and until after the punching-die has withdrawn from its operation; and the invention consists in the construction of the dies, as hereinafter described, and particularly recited in the claim.

In the illustration the invention is represented as for the formation of the base of a
35 drawer-pull, the face view of one of such pulls being shown in Fig. 1. This base is made of sheet metal of ornamental outline, and its surface is ornamented by a depression formed in the lower die corresponding to the face of
40 the article, and the slide carrying a reverse die or punch corresponding to the reverse side of the article, and so that a sheet of metal placed between the two the ornamentation and outline will be produced in the
45 metal. The base is required to be perforated, as at *a a*, for the sockets for the drawer-pull, or may be holes through which nails or screws may be inserted for securing the article to the front of a drawer. Three operations are required in the production of this
50 article: first, the striking-up operation to em-

boss and give to the face its ornamentation; second, to pierce the holes, and, third, to cut the article from the sheet; and these dies are arranged in succession, so that at a single operation of the press the three operations are
55 produced at the same time but by successive dies.

In Fig. 2, A represents the die in which the striking-up or embossing is performed. In
60 the face of this die is a cavity corresponding in outline to the shape of the article to be produced, with the surface of the cavity ornamented according to the ornamentation required for the face of the article. B represents the second die, which has a cavity
65 formed in it a duplicate of the cavity in the first die, except that at the points where the perforations are required to be made the die is constructed with holes *b*, these holes corresponding in diameter to the diameter of the
70 hole required to be formed in the article. C, the third die, is constructed with an opening through it corresponding in outline to the outline of the article.
75

The companion or punching dies are represented in Fig. 3. The first companion die A' has a projection on its face corresponding to the cavity in the die A, and so that the sheet metal being placed between the two the projections on the die A' will force the metal into the cavities of the die A. The second die B' of this series is provided with punches *c c*, corresponding to the holes *b b* in the die B. The punches *c c* are also shown in Fig. 4,
80 where the two dies B and B' are shown in transverse section, cutting through the punches *c c* on line *x*. The punches *c c* have a considerable length projecting from the face of the die, as seen in Fig. 4, and
85 around these punches india-rubber or other elastic tubes or springs *d* are arranged, the length of the tubes or springs being somewhat greater than the projection of the punches, and so that normally the springs
90 will project beyond the end of the punches, as seen in Fig. 4. As the die B' descends, the elastic springs *d* strike the sheet-metal article in advance of the punches, and so as to press thereon. The springs yield as the punches pass
100 down through the article on the die to force the punching into the holes *b*, as represented

in broken lines, Fig. 4. In Fig. 4, D represents the metal article, which has first been formed in the die A and brought to the die B. After the punching has been produced the die B' rises, withdrawing the punches; but the springs bear firmly upon the sheet metal, so as to hold it upon the die and prevent its being drawn therefrom by the punches, and so that the punches are withdrawn from the metal without lifting it from the surface on which it rests. Other and similar springs *e e* may be employed to bear upon the metal at other points and near the edges of the blank, so as to have an influence upon the metal between the other dies, they serving to hold the central metal firmly upon its bed.

The die C' is constructed with a projecting punch in outline corresponding to the outline through the opening of the die C.

A strip of metal of the required width and thickness is first introduced between the dies A and A' and the dies brought together. The shaping and embossing are produced. Then after the dies separate the sheet is raised from the die A and advanced to bring the previously-struck portion into the cavity of the die B. Then when the dies next come together the second shaping will be produced between the dies A A'. At the same time the holes will be punched in the first shaped portion, and as the dies separate the springs of the punching-dies will so firmly hold the metal upon the lower die that all tendency of the metal to cling to the shaping-die or to the punches is prevented. After the punching the metal is again advanced, taking the punch and first shaped portion to a position in the opening of the die C, while the second punched portion will be presented upon the die B and the new portion upon the die A. The dies then descending, the dies A A' will give shape to the third, the dies B B' will punch the second, while the dies C C' will punch the complete

article from the strip, trimming it to the required outline. In this last operation the springs of the punching-dies serve to hold the metal down upon the dies A B C to prevent its rising therefrom, because of clinging to the punch which cuts the article from the sheet.

It will be understood that the several dies in the series are arranged in such relation to each other, and, as shown, that the metal may come to the required positions in the successive dies for the operation, as described.

If other operations are required, additional dies will be made in the series accordingly; but punching-dies surrounded by the springs as described will serve to prevent the metal from clinging to the punches or being lifted from the dies as the striking or punching dies rise.

We claim—

The herein-described improvement in dies for forming articles from sheet metal, which consist of a series of dies, one of which is adapted to give shape and ornamentation to the face of the article, another adapted to punch holes therein, another adapted to trim or cut the article from the sheet, the said dies being arranged in succession, the punches of the punching-dies having combined therewith springs projecting from the face of the die of a length greater than the length of the punches and so as to come into contact with the surface to be punched before the punch reaches that surface and to remain in contact with such surface until after the punch has retreated, substantially as described.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

FRED A. WRIGHT.
IRA YEAMANS.

Witnesses:

H. YALE HUTCHINSON,
A. W. HITCHCOCK.