(No Model.)

A. SCHERB.

Dies for Forming Flat Sheet Metal Articles.

No. 237,610. **Patented Feb. 8, 1881.**

Fig: 1.

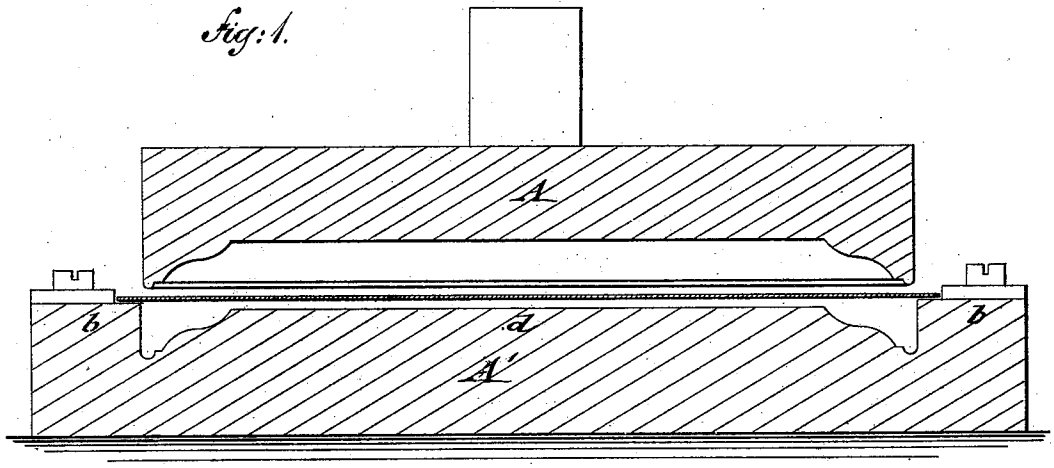


Fig: 2.

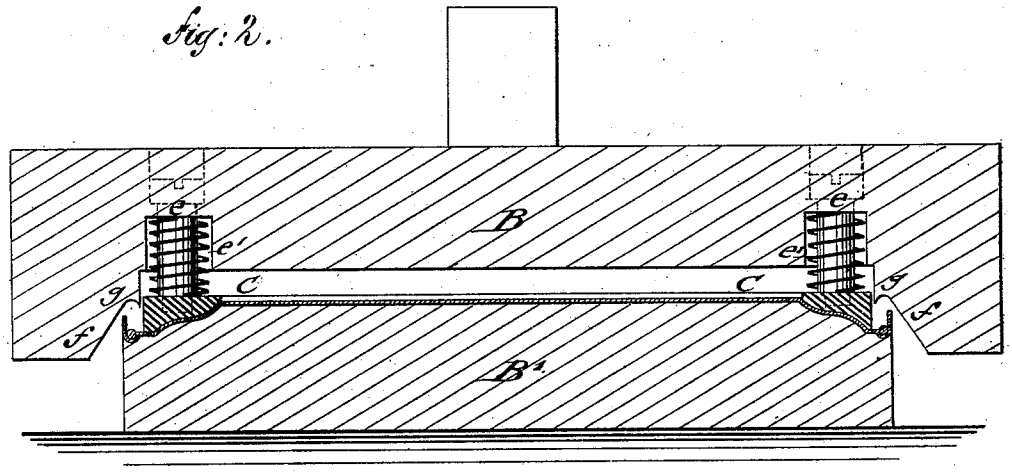


Fig: 3.

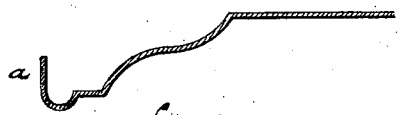
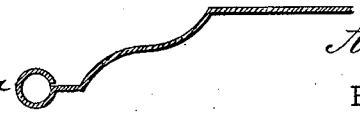


Fig: 4.



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AUGUST SCHERB, OF VIENNA, AUSTRIA.

DIE FOR FORMING FLAT SHEET-METAL ARTICLES.

SPECIFICATION forming part of Letters Patent No. 237,610, dated February 8, 1881.

Application filed September 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, AUGUST SCHERB, of Vienna, in the Empire of Austria, have invented certain new and useful Improvements in Manufacturing Flat Sheet-Metal Articles, of which the following is a specification.

This invention relates to improved dies for stamping flat bodies of sheet metal, such as trays, plates, cups, and other articles, in a common stamping-press; and the invention embraces the use of two sets of dies, as hereinafter described and claimed, in which sheet-metal blank is successively stamped, the first set being used to form the circumferential molding, the second set for laying on the exterior bead or rim, which may be either hollow or wired. The second die is provided with a spring-pressed ring or plate, by which the molded blank is firmly held in position while the rim is bent over by means of an incline and nose of the male part of the die.

In the accompanying drawings, Figure 1 represents a vertical transverse section of the male and female parts of the die, employed for forming the molding of the sheet-metal blank. Fig. 2 is a vertical transverse section of the second set of dies, by which the molded blank is firmly retained for the purpose of forming the exterior stiffening-rim; and Figs. 3 and 4 are vertical transverse sections, on an enlarged scale, of a flat sheet-metal body, as stamped up by the dies, shown in the different stages of its manufacture.

Similar letters of reference indicate corresponding parts.

In the drawings, A A′ represent, respectively, the male and female dies of the first set, which is employed for stamping up the exterior molding of the tray, plate, cup, or other sheet-metal article. The dies A A′ serve also to set up a straight exterior flange, *a*, vertical to the central or main part of the tray or other article, as shown in Fig. 3. The male die A is carefully and accurately fitted into the female die A′ in such a manner that between the exterior vertical surfaces of both dies a narrow uniform space is obtained which is equal to the thickness of the sheet-metal blank to be stamped up by the set of dies. The exterior part, *b*, of the female die A′ is made somewhat higher than the central portion, *d*, of the same, so that the sheet-metal blank which is laid on the outer part, *b*, of the female die does not come in contact with the central surface of the same, as shown clearly in Fig. 1.

In the operation of the dies the first step is the formation of a vertical flange, *a*, around the outer edge of the blank by the action of their vertical faces, and the next step the formation of the molding by the action of their curved faces. The central horizontal face, *d*, of the female die being lower than its outer horizontal face on which the blank first rests, the formation of the flange is completed before the formation of the molding is begun, so that the blank is held uniformly by the flange from the beginning to the end of the molding process. In the molding process the lower portion of the vertical flange is drawn inwardly around the lower rounded-off edge of the male die to the extent required by the blank in assuming the exact shape of the molding represented by the dies. As the vertical flange exerts the same resistance to the motion of the male die at all parts of its circumference on being drawn inwardly, it is stretched uniformly and the molding produced in a perfectly smooth and straight manner, without any folds or creases, as shown in Fig. 3. The blank is now placed into the second set of dies, B B′, (shown in Fig. 2,) the female die B′ of which is produced with the same moldings as the female die A′ of the first set of dies, so that the blank is supported thereon over its entire surface, with the exception of the vertical flange *a*, which extends in an upward direction. On the male die B is supported, by means of sliding posts *e*, an annular ring or plate, C, which is forced downward in guide-sockets of the die B by means of interposed springs *e′*, until the enlarged upper ends of the posts *e* bear against the bottom of the guide-sockets. The ring or plate C presses in this position firmly upon the upper surface of the sheet-metal blank, which is placed in position upon the female die B′. The plate C holds thereby the sheet-metal blank rigidly in position upon the female die B′, so as to prevent the shifting or other change of position of the blank during the action of the male die B. When the male die B is carried downward the pressure of the springs has first to be overcome, after which first an in-

clined plane, *f*, and then a curved nose, *g*, of the male die B bear upon the vertical flange *a* of the blank and cause it first to be thrown inwardly into inclined position, and finally bent over or closed upon the molding, forming thus the stiffening-rim of the article, as shown in Fig. 4. This is accomplished with or without the use of a stiffening-wire, as desired. In this manner flat articles of sheet metal of round, oval, or other shape may be stamped up with any desired molding at their circumference.

In some cases—especially with round or oval shapes—the spring cushioning ring or plate may be dispensed with, as the molding of the blank is sufficiently stiff to resist a lateral displacement or other change of position during the bending over or closing of the flange.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent—

1. The combination of the male die A, having a circumferential molding and outer vertical surface, with a female die, A′, having a central part, *d*, below the level of the outer part, *b*, the latter having an inner vertical guide-surface, substantially as set forth.

2. The combination of the female die B′, having a flat face provided with a molding around its outer edge, adapted to receive the molded plate-blank, and the flat male die B, provided with a downwardly-inclined flange, *f*, having a curved nose, *g*, said male die being provided with a flat retaining plate or ring, C, provided with guides and springs, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses this 30th day of June, 1880.

AUGUST SCHERB.

Witnesses:
JOHAN FINSTERLE,
RUDOLF STOHR.