(No Model.)

L. WINEBURGH.

DIE FOR CUTTING STOCK FOR SHEET METAL CLASPS.

No. 265,294. Patented Oct. 3, 1882.

Fig. 1.

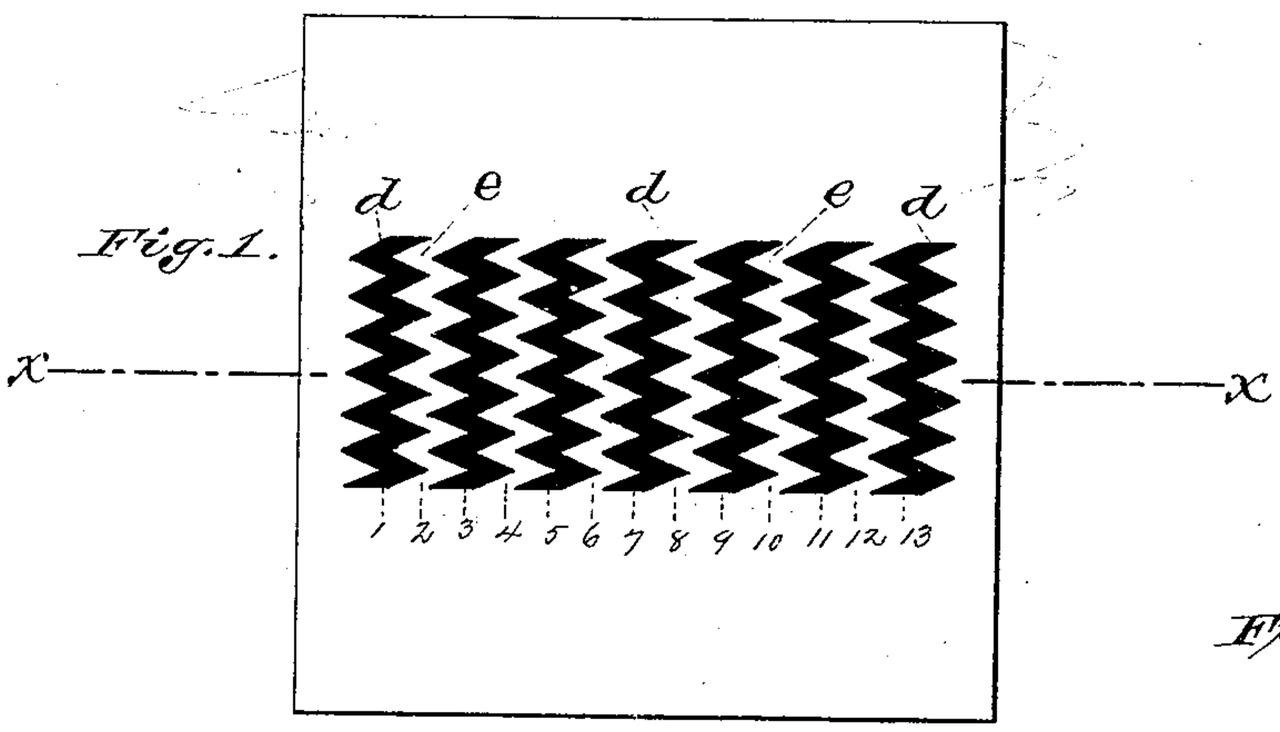


Fig. 7.

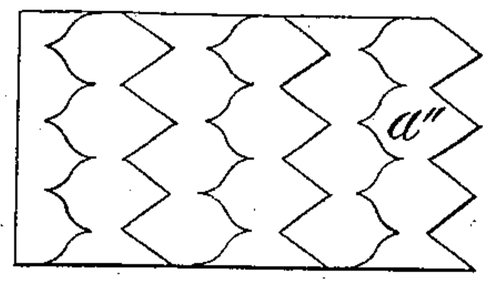


Fig. 2.

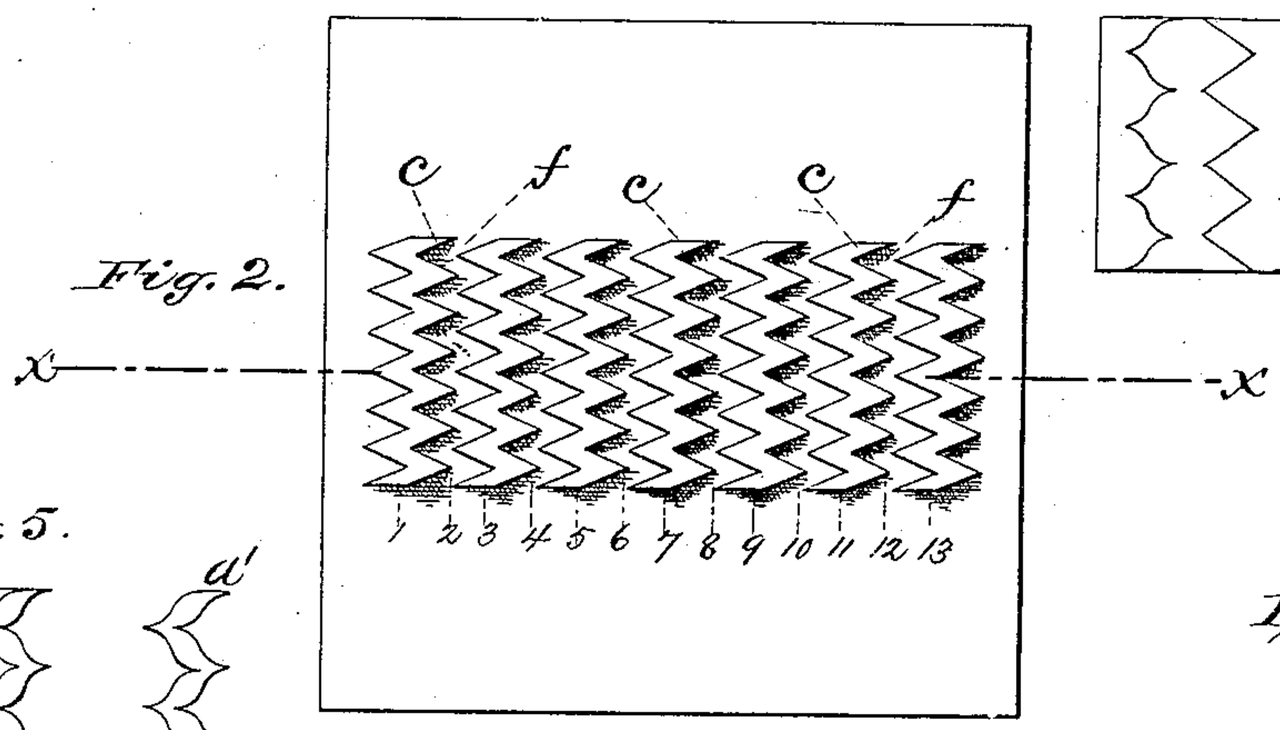


Fig. 5.

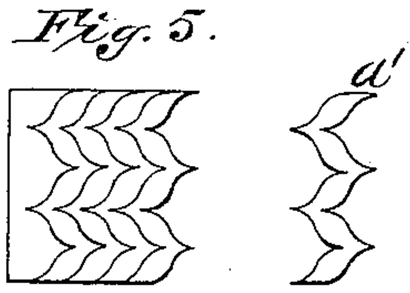


Fig. 6.

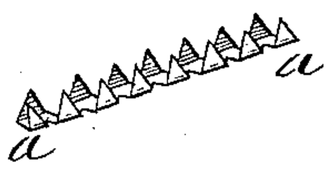


Fig. 3.

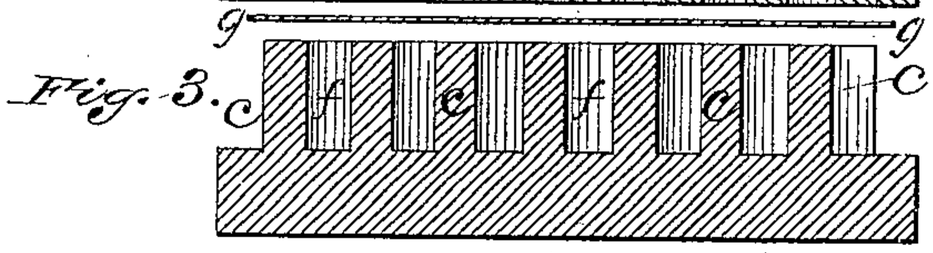
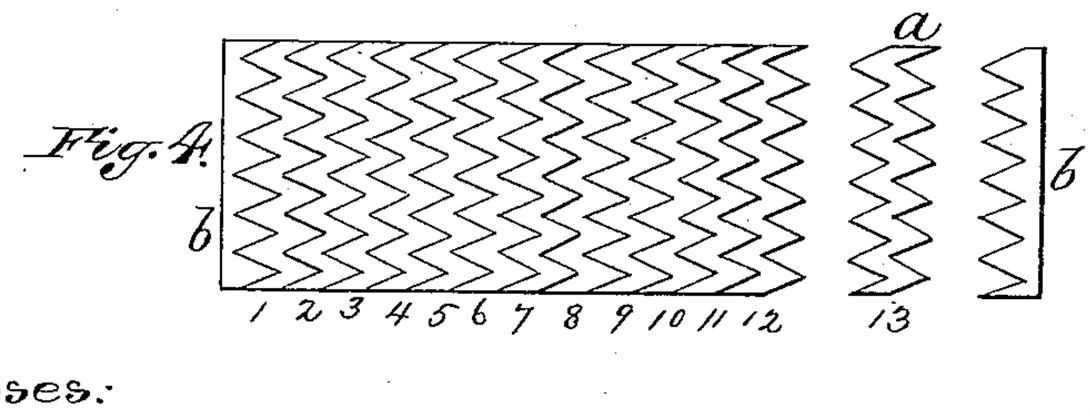


Fig. 4.



Witnesses:
Henry R. Parker
A. J. Leonard

Inventor:
Lazarus Wineburgh
by Chas. M. Higgins
Attorney

UNITED STATES PATENT OFFICE.

LAZARUS WINEBURGH, OF NEW YORK, N. Y.

DIE FOR CUTTING STOCK FOR SHEET-METAL CLASPS.

SPECIFICATION forming part of Letters Patent No. 265,294, dated October 3, 1882.

Application filed February 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, LAZARUS WINEBURGH, of the city, county, and State of New York, have invented an Improved Mode of Cutting or Stamping Forms from Sheet Metal or other Material and Improved Dies for the Same, of which the following is a specification.

My invention relates more especially to the stamping or cutting of pronged metallic fastenings for the purpose, for instance, of fastening the wires of hoop-skirts to their tapes, which fastenings are first cut flat and then bent up; but the invention is equally adapted for producing forms or fastenings for any other purpose, whether complete as soon as stamped in their flat form or completed by subsequent bending. My improvement, however, applies to the initial act of cutting or forming the blanks or forms, without necessary relation to subsequent bending or finishing operation, which may be performed in the usual way; and a distinguishing feature of my improvement is that I cut a large number of similar forms at one action from one sheet without any waste whatever occurring between the forms. My invention may therefore be stated to lie partly in the peculiar formation of the blanks or forms cut, but more especially in the peculiar formation of the dies adapted to cut said forms, which consist essentially of a series of similarly-formed stamps or plungers having spaces between them exactly similar to the plungers themselves, whereby one set of stamps will exactly intermesh with the other set when forced together, and thus divide the sheet placed between them into a number of similar forms without waste, as before stated and hereinafter fully set forth.

In the annexed drawings, Figure 1 presents a plan view of one part of my improved die, which may in this case be termed the "female" part, while Fig. 2 presents a plan view of the other part, which may be termed the "male." Fig. 3 gives a cross-section of the two parts (on line *x x* of Figs. 1 and 2) shown approaching each other, with the sheet to be divided represented as placed between them, preparatory to the cutting action of the dies. Fig. 4 is a plan view or diagram of the sheet which is cut by the dies, showing the series of closely-recurring forms into which the sheet is or may be divided, the same being separated at one end to show the shape of one individual form and the fragment of waste at the end of the series. Fig. 5 is a view similar to Fig. 4, showing a form of different design, but embodying the same principle. Fig. 6 shows one of the forms in Fig. 4, with its prongs bent up, ready for use as a fastener in hoop-skirts, &c. Fig. 7 represents another modification, or a combination of the forms shown in Figs. 4 and 5.

The individual form or blank which my system is designed to produce is represented detached at *a* in Fig. 4. This, as illustrated, has a generally zigzag shape, with teeth or prongs on its opposite longitudinal sides or edges, like the teeth of a saw, and it may be particularly noted that the spaces between the teeth are of the same form as the teeth themselves, and that the teeth project from opposite sides of the form in an alternate position, as shown, and the crest or point of the tooth or salient angle on one form is in line with the trough of the tooth or entering angle on the next form. In Fig. 5 the form *a'* has angular or V-shaped prongs or members; but the special contour of the members, whether angular or curved, is not at all essential, provided the salient and entering parts of the contour are similar and alternate with each other on opposite sides or meeting edges of the series of forms, as illustrated. Thus in Fig. 5 the contour of the members has a curved character, similar to the well-known bracket form; but in this case also the salient and entering members are identical and alternate on opposite sides of the form. While I prefer to have each form present the same contour on each edge and to have the members or points in alternate position on opposite sides, as seen in Figs. 4 and 5, yet this is not at all essential, for, as will be seen on reference to Fig. 7, the contour of one edge of the individual form may be quite different from the contour of the other edge, and the points may be in line with each other on opposite edges, while embodying precisely the same principle and securing the same effect as in Figs. 4 and 5. Hence by this system of configuration it is obvious that a number of such forms, as *a* or *a'* or *a''*, may be fitted together exactly without any waste or open space between them, and with their ends in exact line, as seen in Figs. 4, 5,

and 7, and it of course follows that by properly-constructed dies a whole row of such forms might be cut transversely from one sheet in closely-recurring series without any waste whatever, except the slight fragments *b* or *b'* at each end, as shown in Figs. 4 and 5. Now, the dies for accomplishing this are shown clearly in Figs. 1, 2, and 3, and, referring first to the male part shown in Fig. 2, it will be observed that it consists of a series of stamps or plungers, *c c*, each having precisely the same form in cross-section as the forms *a a*, as illustrated, and each plunger is so separated from the next as to leave a space between them also exactly similar to one of the forms *a* and to the plungers themselves. Now, the female part of the die shown in Fig. 1 has of course a series of openings, *d d*, cut therein, as represented by solid black shading, which correspond with one of the desired forms and fit exactly to the plungers *c c* of the male part, and between these openings are solid bridges or partitions *e e*, of precisely the same form as the openings *d d*, and corresponding exactly with the spaces *f f* between the plungers *c c* of the male part. It will therefore be evident, referring to Figs. 1, 2, and 3, that if the two parts of the die are forced together the solid parts or plungers *c* or *e* of one die will intermesh with the hollow parts or spaces *d* or *f* of the other die, and that if a sheet of metal, such as shown at *g* in Fig. 3, be placed between the two before they are forced together, the sheet will be completely divided into a number of closely-recurring forms, all similar, as shown in Fig. 4. In this case thirteen forms will be cut at one stroke, (see Figs. 1, 2, and 4,) seven of which, in alternate order, will be forced by the plungers of the male die up through the openings of the female die, where they may be swept off the top of the same, while the intervening and remaining six will be forced by the plungers *e* of the female die down into the spaces *f* of the male die, out of which they may be raised by a suitable clearing device as soon as the female die rises, preparatory to another stroke. Hence the entire sheet will thus be cut up into numerous forms, all similar, without any waste, except the small fragments *b b* at the ends, thereby accomplishing a most important economy in the manufacture of such articles, and effecting a novel and valuable improvement in the art of stamping, and one which it was not thought to be heretofore possible. After the forms or blanks are stamped, as shown at *a* in Fig. 4, the points or teeth may next be bent up at right angles by any of the usual systems of bending-dies, as shown in Fig. 6, when the articles are then complete as a fastener to hold the wires of hoop-skirts, &c., to the braids. And here it may be noted that the special construction of the fastener shown in Figs. 5 and 6 presents an important advantage for this purpose, for, owing to the alternating position of the prongs on the opposite edges, it will be understood that when the prongs are passed through the tape and bent or clinched over the wire they will intermesh and lie level upon the wire, and at the same time cover and hold the wire more securely, as will be readily appreciated. The advantage of the design shown in Fig. 5 over that shown in Figs. 4 and 6 is that the teeth of *a'* will be fewer and farther apart than the teeth of *a*, which will be better adapted for many purposes.

It may here be further noted that owing to the double curved outline of the teeth in Fig. 5 the points of the teeth while far apart are yet sharp or acute, and the spaces between the teeth are exactly the same form as the teeth themselves, which is essential to my system of dies. If, on the contrary, the sides of these teeth were straight or angular, as in Figs. 4 and 6, the points would then be too broad or obtuse, whereas by making them with a double curved outline, similar to a printer's bracket, the teeth are widely spaced, yet their points are acute, which, as will be noted, is an important advantage for the purpose of fasteners, &c.

It will be readily understood from what has been already shown that a great many designs besides those shown in Figs. 4, 5, and 7 may be produced by this system, whether of angular or curved contour, but all on the principle stated, and hence it is not at all necessary to set forth all the specific shapes that may be thus produced, as they will vary with every purpose for which the forms are desired.

It will also be understood that in many cases the articles may be of such a nature as to be completed when stamped, without recourse to subsequent bending operations, and my improvement does not hence concern the bending operation.

In operating my improved dies the male part, Fig. 2, would be affixed to the bed of the stamping-press and the female part, Fig. 1, to the plunger thereof by any of the usual means of attaching and operating dies, as will be understood by those skilled in the art. In Fig. 1 I have represented the female part of the die as formed from a solid plate with the openings *d d* cut through the same, which is of course a practical construction, although I do not particularly recommend this. In Fig. 2 I have represented the male die, for simplicity of illustration, as being formed of a solid block of metal with the plungers *c c* cut solidly out of the same; but this construction I do not of course recommend, on account of its difficulty and expense. It is not of course necessary that I specify any particular ways of making these dies, for practical die-makers will readily understand how they may be constructed in a variety of ways. In reference to Fig. 2, however, I would mention that the plungers *c c* may all be formed in the shape of separate plugs, which may be driven firmly into sockets in the base-plate, instead of being cut solidly on the base-plate. Indeed, in both parts of the dies, as shown in Figs. 1 and 2, the plungers

may be formed separate and held or clamped in a marginal frame surrounding them, so that the plungers on one part will pass freely through the spaces between the plungers on the other part. These spaces will be open clear through the dies, so that the cut forms will be forced directly through and be discharged therefrom. In this case either die could be called "male" or "female" with respect to the other.

Any novel features which I may have shown but not claimed in this application I reserve for the subject of a future application.

What I claim is—

A series of similarly-formed female cutters adapted to extend severally across a strip or sheet of metal and placed the one in advance of the other, so as to leave intermediate spaces between them similar to the cutters themselves, in combination with a similarly formed and arranged series of male cutters adapted to exactly fit the spaces between the female cutters, the coinciding faces of the male and female cutters being so dentated that the salient members on one cutter correspond to the entering members on the next cutter, the two series being thus adapted to co-operate in cutting a number of similar blanks from one sheet at one action without waste between the blanks, substantially as herein shown and described.

LAZARUS WINEBURGH.

Witnesses:
CHAS. M. HIGGINS,
M. J. LEONARD.