(No Model.)

T. V. ALLIS.

DIE USED IN MAKING SHEET METAL FENCING.

No. 455,867. Patented July 14, 1891.

Fig. 1.

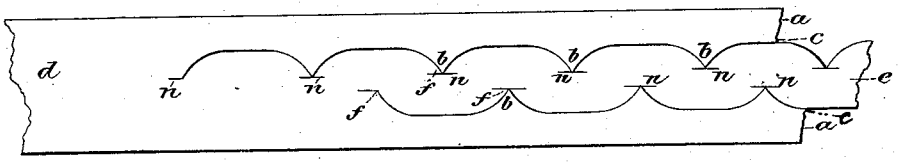


Fig. 2.

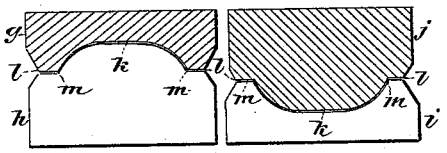
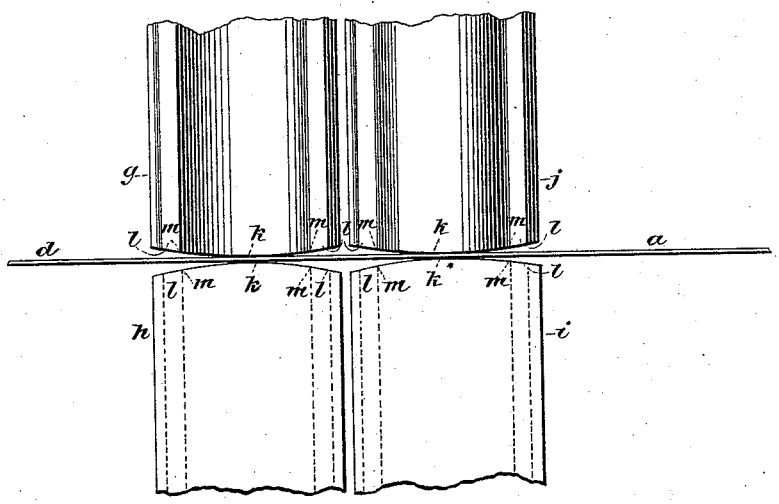


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS V. ALLIS, OF NEW YORK, N. Y.

DIE USED IN MAKING SHEET-METAL FENCING.

SPECIFICATION forming part of Letters Patent No. 455,867, dated July 14, 1891.

Application filed September 20, 1888. Renewed December 15, 1890. Serial No. 374,676. (No model.)

To all whom it may concern:

Be it known that I, THOMAS V. ALLIS, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Dies for Use in Machines for Making Metallic Fencing, of which the following is a specification.

My present invention is a contrivance of dies for use in apparatus for the making of metallic fencing-strips, whereby with a blank somewhat wider than that heretofore used in the production of two barbed strips from a double blank strip and with substantially the same amount or character of cutting I produce the like two barbed strips and another plain or unbarbed but somewhat ornamental strip, in which the surplus metal wasted as heretofore practiced is utilized, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a diagram of the blank strip, illustrating the method of cutting it for producing the two barbed and one unbarbed strips. Fig. 2 represents face views of lower dies and horizontal sections of the upper dies, such as may be employed for so cutting the blank; and Fig. 3 represents said dies in side elevation.

In Fig. 1 the barbed strips *a* are substantially the same as have been heretofore made out of one blank strip in the above-indicated method, said strips having Λ-shaped barbs *b* at intervals along one edge, that are produced out of the middle web of the blank by cutting the barbs of one strip from between the barbs of the other strip and also cutting away the surplus of said middle web necessary to be removed from between the barbs which it is desired to locate a greater distance apart than they would be if only barbs were cut from between other barbs, as saw-teeth are cut; but in the aforesaid method of making these two barbed strips the blank from which they are cut is so much narrower than the blank *d* herein represented that the points of the barbs of one strip are parted from the other strip only by a slit, and the surplus metal of the middle web is cut away in short waste pieces corresponding to the spaces between the barbs when the points of the barbs of one strip touch the edge of the other strip between the barbs of the latter strip, so that the cuts from base to point of the barbs extend entirely across from the edge of one barbed strip to the edge of the other. Without any more cutting and without any waste of material whatever, I produce a third ornamental strip *e*, in addition to the two barbed strips *a*, by making the blank *d* about a third wider than is heretofore used and slitting it apart in two separate or independent lines, each in the proper locality of and in conformity with the shape of the barbed edges of the strips *a* and without cutting across and separating the part of the middle web cut from between the barbed strips into short pieces—that is to say, by cutting a barbed strip of the proper width from each side of the middle web and in the proper lines and curves or angles for producing the barbs. By the same operation I produce, besides said barbed strips, the intermediate plain strip *e*, with the re-entering angles or notches *f* in the edges, out of which the barbs *b* of the other strips are cut, the angles of one edge of said plain strip being intermediate to those of the other edge, so that the tensile strength remains uniform notwithstanding the notches, and thus produce an ornamental strip having the appearance of being crimped edgewise and also much resembling a twisted strip or rope, particularly from a distance, which is a popular style of metallic fencing. Thus I make three strips in the same time without any waste of material and without any more cutting than heretofore expended in making two strips, and I have for one strip the apparently edge crimped or twisted style cut in that form instead of being crimped or bent, which is better than the crimped fencings, because the fibers of the metal are not distorted as in bending and will bear more tensile strain without stretching.

The dies which I use for carrying out this improved method of making fencing consist of the slitting or shearing dies substantially as represented in Figs. 2 and 3—that is one, pair, as *g h*, for cutting the slit along one edge of the strip *e* and separating one of the barbed strips, and another pair, as *i j*, for cutting the slit along the other edge of said strip and separating the other barbed strip from it—the said pairs of dies being placed

side by side in the course along which the blank strip feeds to cut one slit *c* in advance of the other and sufficiently apart from each other to work practically—that is, without interference with each other and without injuriously straining or kinking the metal between them. The two pairs of dies are offset from each other in the line of the feed movement of the strip suitably for cutting the respective slits the proper distance apart for the required width of the intermediate strip and are in reverse of each other suitably for notching the opposite edges of the said strip. In this example I have represented the two pairs of dies, as gaged the length of one and a half feed movement of the strip apart from center to center, the length of the feed movement being equal to the distance of the barbs apart on each barbed rod; but said dies may be the length of two and a half or three and a half feed movements, or other distance apart, if desired; but whatever the distance the condition must be that the cuts of one pair of dies are intermediate to those of the other pair—that is to say, the extremities of the cuts of one pair of dies meet opposite to the middle of the cuts of the other pair and produce the points of one barbed strip intermediately to those of the other barbed strip, and also make the notches of the respective edges of the plain or middle strip intermediately. The shape of the cutting-edges *k* of the dies, so far as that part is concerned which separates the strips and makes the barbs, is substantially that of the notches cut in the barbed strips between the barbs. The edge of one die of each pair is formed on the end of the ribbed side of the die corresponding to the shape of the notch to be produced in the edge of the barbed strip for the shaping of one side each of two contiguous barbs and the edge of the barbed strip between them, and also corresponding to the salient part of the plain middle strip produced by cutting it from the notch in the barbed strip. The edge of the other die is formed on the end of the correspondingly-grooved counterpart of the said ribbed die; but there is also a terminal extension *l* at each end beyond the point *m*, where the aforesaid ribbed and grooved shapes terminate and where the points of the barbs are formed. The purpose of this extension is to continue the cut in the metal of the intermediate strip a little beyond the terminal point of the barb and the re-entering notch in the said middle strip in such form and direction that the breaking stress that would otherwise be concentrated by the notch at the bottom, so as to promote the cracking of the strip directly crosswise thereat, will be distributed and the tensile strength of the strip will be preserved by the well-known principle of stopping a crack in a metal plate by producing a confronting transverse line of intact texture of the plate. These extensions of the dies also facilitate their operation by reason of being projected in the direction in which the die-faces are made convex, as represented in Fig. 3, so that they shear-cut the metal with a gradual parting of the edges at each end of the dies, that widens to the thickness of the metal or greater when the dies are closed to the greatest extent, so that it is feasible to make the short cuts *n* each way from the points of the barbs in the middle strip and terminating in solid metal without distorting it, as would be the case if the dies terminated at the points *m*, where it is necessary to cut entirely through the metal, and besides the points of the barbs would be imperfect.

In the arrangement of the dies which I have represented in the drawings the two ribbed dies *h* and *i* are the stationary or bed dies and the others *g* and *j* the movable ones; but so far as that is concerned it may be reversed, *h* and *i* being the upper movable ones and *g* and *j* the bed-dies; or, again, *h* and *j* may be the bed-dies and *g* and *i* the movable ones, or vice versa, and either way they will work well, though I prefer the arrangement which I have represented. In the arrangement shown dies *h* and *i* may be formed on or attached to one bed or stock and *g* and *j* to another bed or stock.

The method is the subject of a separate application for a patent filed together with this.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of dies for making metallic fencing-strips, consisting of two pairs thereof, as *g h* and *i j*, one of which dies of each pair is grooved in the side having the cutting-edge *k* and the other ribbed on its cutting side in counterpart of the grooved die, the width and depth of which rib and groove are respectively equal to the length apart between the barbs *b* and to the length of the said barb to be produced, the said pairs of dies being placed side by side in the direction of the feed movements of the strip to be cut and apart from each other, so that the successive cuts of one pair meet opposite the middle of the cuts of the other pair, and being offset from each other laterally on the line of the said feed movements of the strip the width of the notched plain strip to be produced between the barb-strips, and also being in reverse of each other suitably for notching the opposite edges of the said plain strip, substantially as described.

2. The combination of dies for making metallic fencing-strips, consisting of two pairs thereof, as *g h* and *i j*, one of which dies of each pair is grooved in the side having the cutting-edge *k* and the other ribbed on its cutting side in counterpart of the grooved die, the width and depth of which rib and groove are respectively equal to the length apart between the barbs *b* and to the length of the said barbs to be produced, the said pairs of dies being placed side by side in the

direction of the feed movements of the strip to be cut and apart from each other, so that the successive cuts of one pair meet opposite the middle of the cuts of the other pair, and being offset laterally from each other on the line of the said feed movements of the strip the width of the notched plain strip *e* to be produced between the barb-strips, also being in reverse of each other suitably for notching the opposite edges of the said plain strip, and also having the extension parts *l* beyond the ribbed and grooved parts *k* of the cutting-edges, substantially as described.

Signed at New York city, in the county and State of New York, this 19th day of September, A. D. 1888.

THOMAS V. ALLIS.

Witnesses:
W. J. MORGAN,
S. H. MORGAN.