

(No Model.)

2 Sheets—Sheet 1.

T. V. ALLIS.
METHOD OF MAKING BARBED FENCING.

No. 505,693.

Patented Sept. 26, 1893.

Fig. 1.

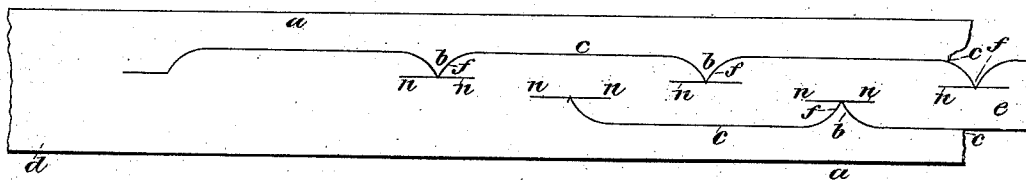


Fig. 2.

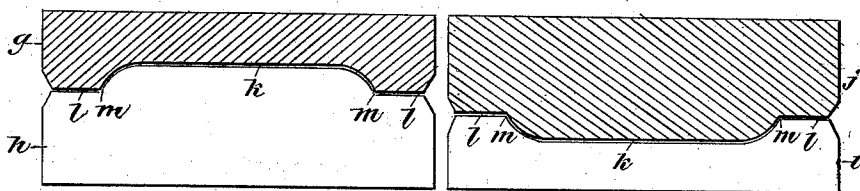
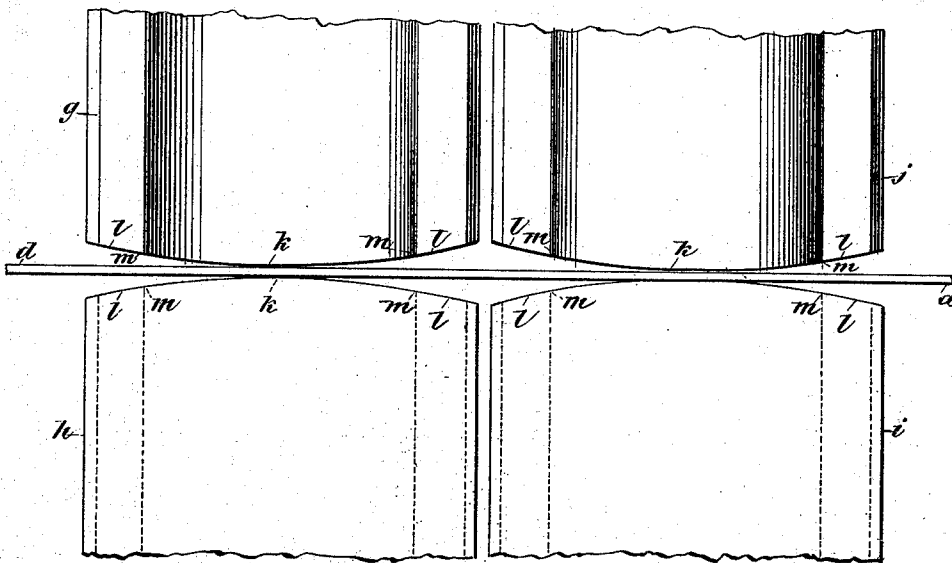


Fig. 3.



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Fig. 4.

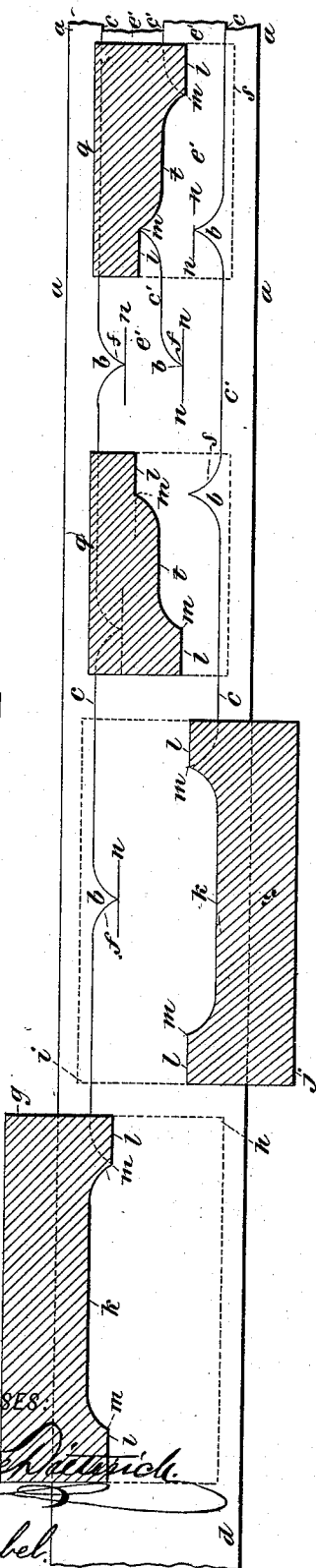
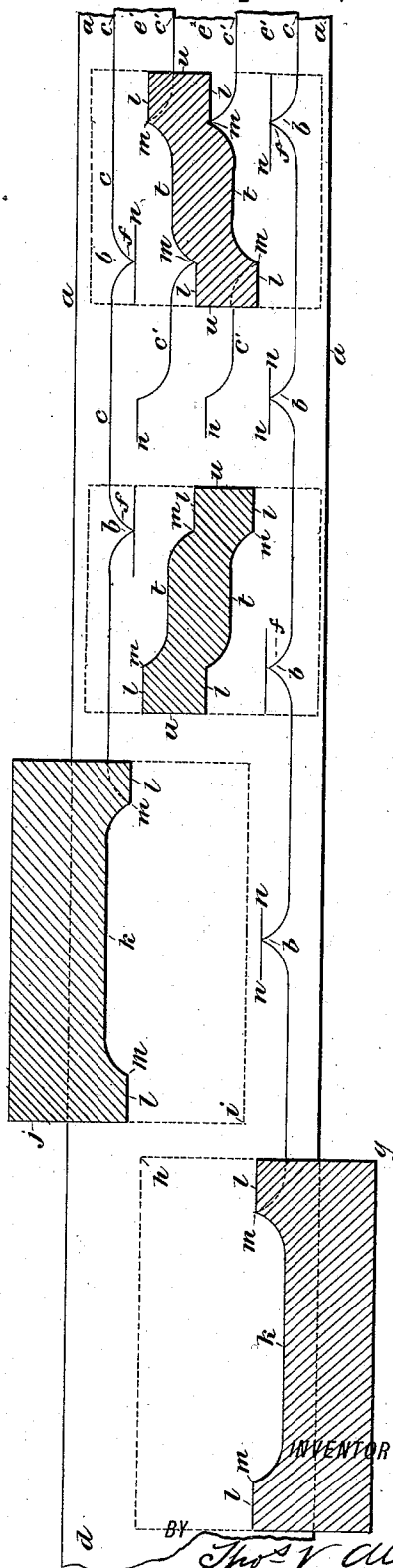


Fig. 5.



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METHOD OF MAKING BARBED FENCING.

SPECIFICATION forming part of Letters Patent No. 505,693, dated September 26, 1893.

Application filed November 30, 1888. Serial No. 292,276. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS V. ALLIS, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Methods of Making Barbed Fencing; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement of the method of making barbed fencing which consists of producing two barbed strips from a double blank strip having points projecting from one edge at intervals along the same by cutting said double blank along the middle web so as to both separate the blank into two parts and at the same time produce pointed barbs out of said middle web at intervals along the inner edges of the two strips cut apart, the points of one strip being cut from between the points of the other strip, together with waste pieces for removing the surplus of the middle web not wanted for barbs because of the distance apart that it is desired to locate the barbs, one example of which said method is illustrated in the patent to me November 2, 1878, No. 209,790, to which reference is made for a better understanding of the same. My present improvement of this method of making barbed fencing is a contrivance whereby with a blank, somewhat wider than that heretofore used, 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 having notches in the edges and in which the surplus metal, wasted as heretofore practiced, is utilized. And with a wider blank making a wider intermediate strip with its edges thus notched and slitting the latter by another slit forming notches in one and corresponding barbs on the other of the edges cut apart I produce two intermediate strips in addition to the marginal barbed strips, said intermediate strips having notches in one edge and notches and barbs alternately on the other edge. And again, using a still wider blank and making a correspondingly wider intermediate notched strip and slitting it by two other slits so as to convert it into

three strips I make the like two strips having notches in one edge and notches and barbs on the other edge, and another intermediate strip therefrom having notches and barbs alternately on both edges, besides the aforesaid two marginal barbed strips, all as hereinafter fully 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 the lower dies and horizontal sections of the upper dies such as may be employed for so cutting the blanks. Fig. 3, represents the dies of Fig. 2 inside elevation with the blank strip between them in the process of operation. Fig. 4, is a horizontal section of the upper dies, face view (dotted) of the lower dies, and diagram of the blank strip showing the method of operation for producing the two barbed strips from the margin of the blank and two intermediate notched and barbed strips, and Fig. 5, is a horizontal section of the upper dies, face view (dotted) of the lower dies and diagram of the blank strip showing the method of operation for producing the two barbed strips from the margin of the blank and three intermediate notched and barbed strips.

The barbed strips *a*, in Figs. 1, 4 and 5 are substantially the same as have been heretofore made out of one blank strip in the above first described 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.

5 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 as heretofore used, and
10 slitting it apart in two separate or independent lines *c*, 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
15 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
20 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
25 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 edge-
30 wise and also much resembling a twisted 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
35 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 in that shape which is better than the
40 crimped fencings because the fibers of the metal are not distorted as in bending, and will bear more tensile strain without stretching.

The cutting may be done with roll dies, one
45 of which has a groove, the side walls of which are made in conformity with the lines of the barbed edges of the two strips *a*, and the other has a projecting rib in conformity with the shape of the intermediate strip *e*, and in
50 counterpart of the groove, or the intermediate strip may be punched from between the barbed strips by punching dies of like character. But I prefer to use slitting or shearing dies substantially as represented in Figs.
55 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
60 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,
65 without interference with each other and without injuriously straining or kinking the metal between them, and the two pairs of

dies being offset from each other laterally to the line of the feed movement of the strip suitably for cutting the respective slits the
70 proper distance apart for the required width of the intermediate strip and also being in reverse of each other as required for notching the opposite edges of the said strip. In this
75 example I have represented the two pairs of dies as gaged the length of one and a half feed movements of the strip apart from center to center, the length of the feed movement being equal to the distance of the barbs
80 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 being that the cuts of one pair of dies
85 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
90 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
95 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 being formed on the end of the ribbed
100 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
105 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; and the edge of the other die being formed on the end of the correspondingly grooved counterpart of the said
110 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 which is to
115 continue the cut in the metal of the intermediate strip a little beyond the terminal point of the barb and of the re-entering notch in the said middle strip in such form and direction that the breaking stress that would
120 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
125 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
130 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 ex-

tent 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. By the same method and by making another slit c' along the middle of a wider blank, the intermediate portion of the blank from which the marginal barbed strips a , are produced is converted into two strips e' notched at intervals along one edge same as strips e , but notched and barbed intermediately along the edges separated by the slit c' , the line of said slit being made to diverge in opposite directions parallel to the divergent points of the slits c , producing the barbs of strips a , and notches in the outer edges of strips e' , so that the barbs of the one edge of the strips c' projecting therefrom opposite the notches of the other edge give additional ornamental effect by their symmetrical relation to the opposite notches and besides they constitute a reserve of metal compensating for that cut out of the opposite notches and thus afford greater tensile strength thereat. For cutting this slit c' , I use in this example farther along in the range in which the strip feeds and in range with the middle of the space between dies i, j , two other pairs of dies q, s , said dies having edges t , of half the length of edges k , of dies g, h , and i, j , and with reversely curved extremities joined to straight terminal extensions l , at each end beyond the point m , where the points of the barbs are formed, corresponding to the like points of said dies g, h , and i, j , but in planes including a narrower part of the middle portion of the blank than is included between the planes of the said similar points of dies g, h , and i, j .

The first pair of dies q, s , are located half a feed movement beyond the dies i, j , so that the cuts made by it terminate coincident, lengthwise, with the barb of one strip a , and with the center of the distance between two barbs of the other strip respectively, with one of the curved extremities parallel to the coincident curves of the slits c , respectively. The second pair of dies q, s , are located the length of a feed movement beyond the first pair with the curved extremities of their edges t , in reverse of the same parts of the first pair q, s , and one of them parallel with the coincident reverse curves of slits c , so that the cuts which they make separate the intervals of uncut material left by the first pair q, s , and complete the slit c' , along the center of the blank and separating strips e' , so as to make barbs b , and notches f , alternately along the edges of both. These two pairs of dies q, s , may, of course, be located farther along the feedway from the dies i, j , as the length of one and a half, two and a half, or more, feed movements if preferred, but it is better to have them as close together as prac-

ticable. With a still wider blank and making two slits c' , besides the two slits c , I produce a third intermediate strip e'' , besides the others above described, using similar or other approved dies g, h , and i, j , for cutting off the marginal strips a , but placed farther apart laterally and the movable dies u , having duplicate edges t , and the like extensions l , at each end beyond the point m , together with bed dies having the corresponding coacting edges whereof the parts t , are, like the similar points of dies q, s , half the length of points k , of the edges of dies g, h , and i, j , and similarly divergent in opposite directions for cutting the like reverse curves of both the slits c' , in the same relation to the slits c , and thus producing strips e' intermediately to the marginal strips a , and having notches along one edge, and barbs and notches along the other edge, and also producing the middle strip e'' , from between strips e' , and having notches and barbs alternately along both edges, the said dies u , and their counterpart bed dies being similarly arranged along the feedway and relatively to the dies g, h , and i, j , as are the dies q, s , employed in the making of the two intermediate strips e' .

The dies are 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 method of making from a blank strip two barbed strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb, which consists of cutting from each edge or marginal portion of a blank strip wider than the width required for the two barbed strips, a barbed strip having barbs at such intervals along the edge cut apart from the blank, and thereby producing from the intermediate portion of the blank an unbarbed fencing strip having the edges notched by cutting the barbs of the barbed strips therefrom and containing the metal cut from between the barbs of the respective barbed strips.

2. The method of making from a blank strip two barbed strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb, which consists of cutting from each edge or marginal portion of a blank strip wider than the width required for the two barbed strips, a barbed strip having barbs at such intervals along the edge cut apart from the blank, and intermediate on each strip to the barbs of the other strip and thereby producing from the intermediate portion of the blank an unbarbed fencing strip having the edges notched alternately by cutting the barbs of the barbed strip therefrom and containing the metal cut from between the barbs of the respective barbed strips, substantially as described.

3. The method of making barbed fencing strips having integral barbs projecting from

one edge and in the plane of the strip at intervals of greater length than the width of a barb which consists of cutting from each edge or marginal portion of a blank strip wider than the width required for the barbed strips, and an intermediate strip, a barbed strip having barbs at such intervals along the edges cut apart from the rest of the blank, and thereby, and by slitting said remaining portion of the blank on a line along the middle diverging at intervals in opposite directions and parallel to the divergent portions of the respective slits by which the barbed strips are produced, at the same time producing two intermediate strips having notches on one edge and notches and barbs alternately along the other edge, substantially as described.

4. The method of making barbed fencing strips having integral barbs projecting from one edge and in the plane of the strip at intervals of greater length than the width of a barb, which consists of cutting from each edge or marginal portion of a blank strip,

wider than the width required for two barbed strips and two intermediate strips, a barbed strip having barbs at such intervals along the edges cut apart from the rest of the blank and thereby and by slitting said remaining portion of the blank in two parallel lines along the middle portion diverging at intervals in opposite directions and parallel to the divergent portions of the respective slits by which the barbed strips are produced, at the same time producing two intermediate strips having notches in one edge and notches and barbs alternately along the other edge and a middle strip having notches and barbs along both edges alternately, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS V. ALLIS.

Witnesses:

W. J. MORGAN,
W. B. EARLL.