

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

No. 507,198.

Patented Oct. 24, 1893.

Fig. 1.

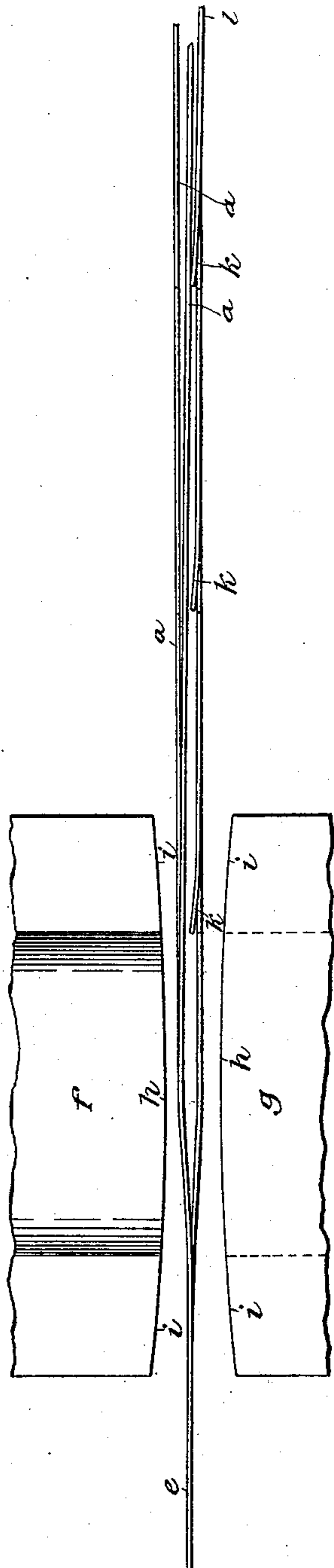
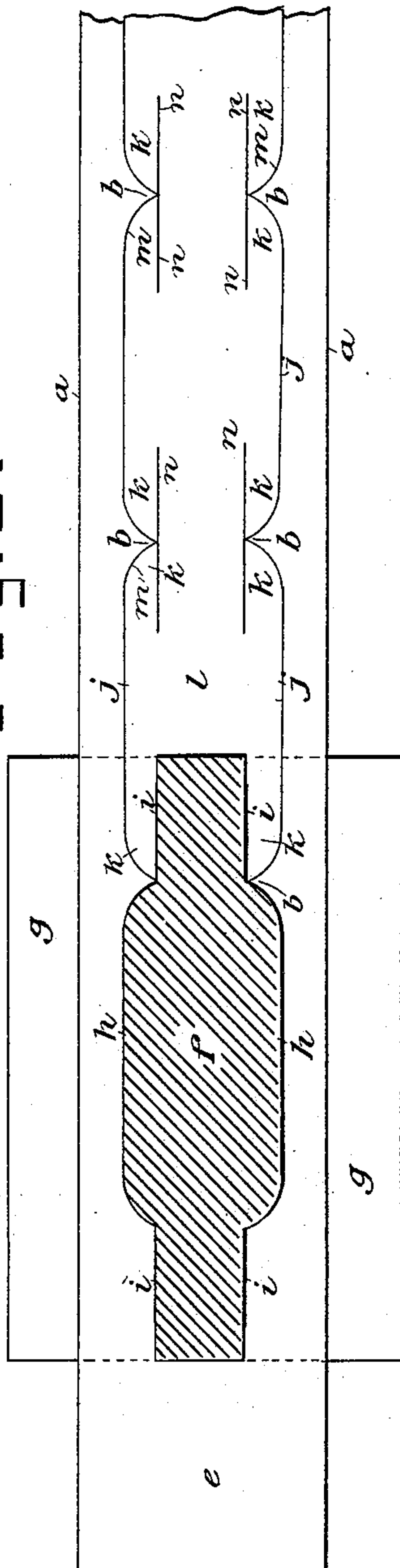


Fig. 2.



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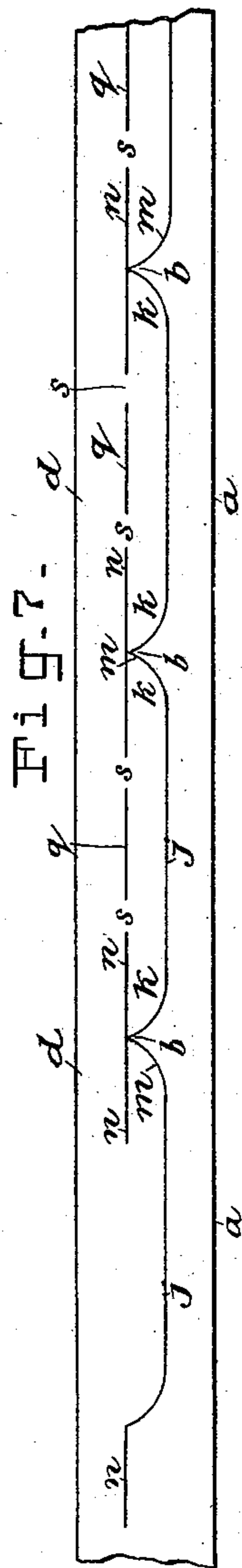
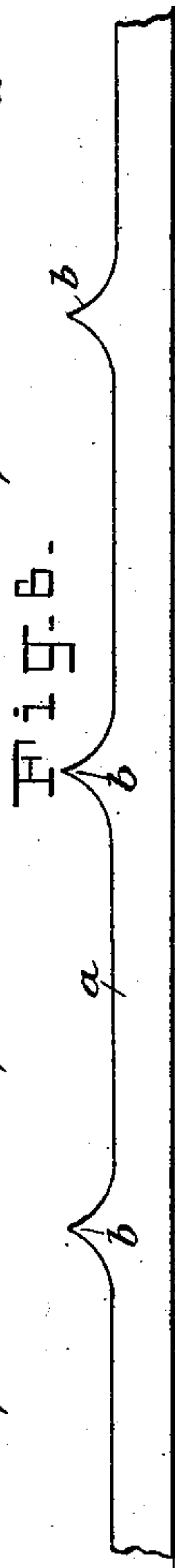
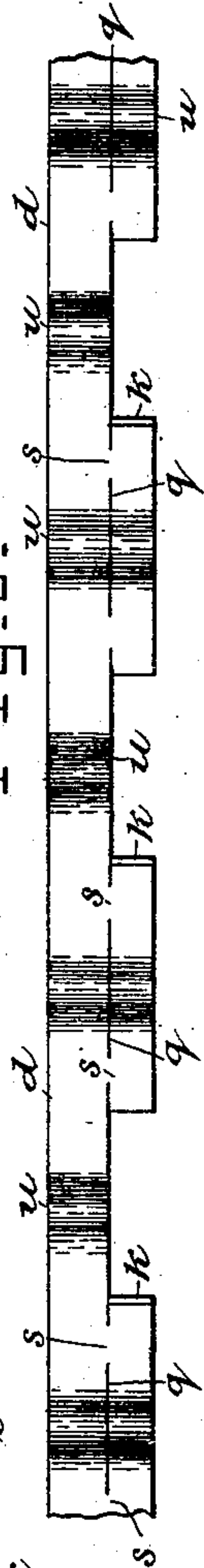
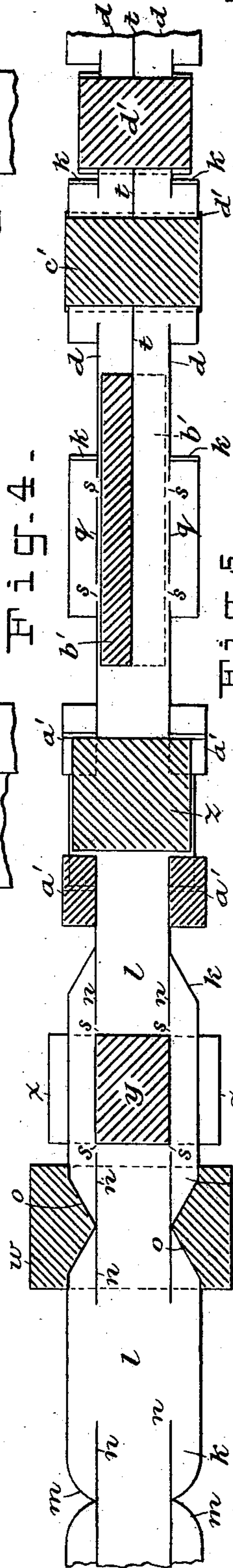
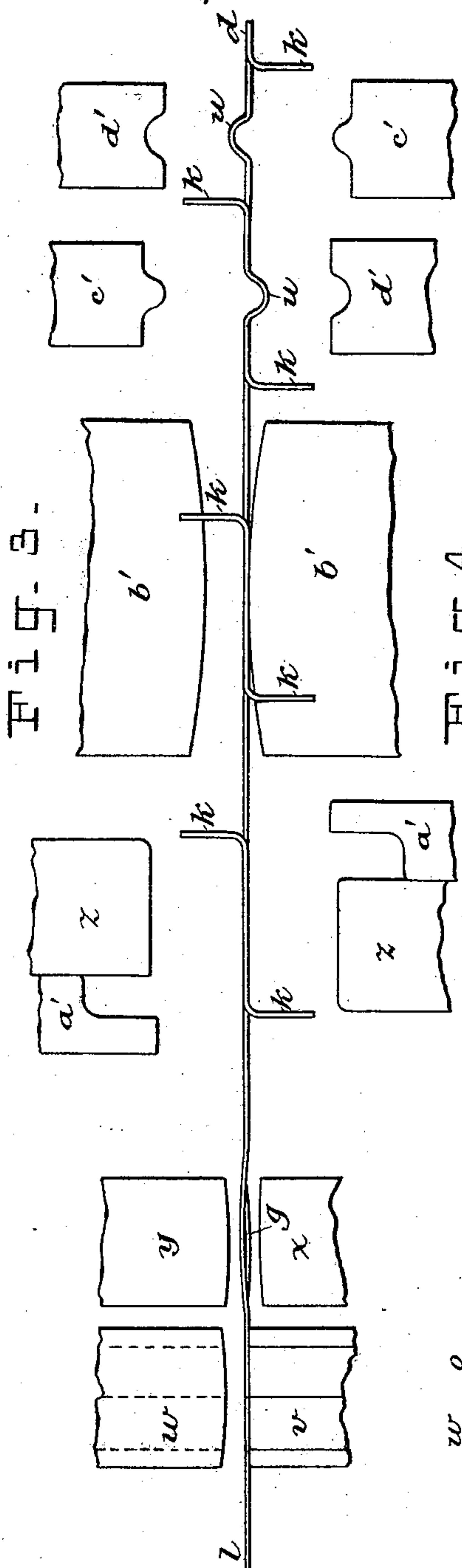
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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING BARBED FENCING.

SPECIFICATION forming part of Letters Patent No. 507,198, dated October 24, 1893.

Application filed April 11, 1889. Serial No. 306,758. (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 in the art of making barbed strips, the purpose being mainly to produce from one blank, two plain flat barbed strips, having barbs projecting from one edge in the plane of the strip, at greater intervals apart than the width of a barb, and it consists of the following mode of operation whereby through the making of two other strips at the same time and from the same blank and having barbs that are produced so as to project laterally from the edge all the material of the blank is utilized in marketable product and certain waste of material and labor that it is impossible to avoid by making only the two first described strips from one blank is avoided and the economical advantage of making four strips with the same expenditure of time and labor as in the making of two is secured all as hereinafter fully described reference being made to the accompanying drawings in which—

Figure 1 is a side elevation of dies used in the first step of my improved method with a blank strip to be converted into four barbed strips between them. Fig. 2 is a diagram showing the dies and strip of Fig. 1 in plan. Fig. 3 is a side elevation of dies used in the second step of the method, and completing the operation, with the blank between them. Fig. 4 is a diagram showing the dies and strip of Fig. 3 in plan. Fig. 5 is a side elevation of one of the barbed strips produced. Fig. 6 is a side elevation of another of said strips. Fig. 7 is a diagram showing the same method of operations in the making of only one of each kind of barbed strips from a narrower blank as it may be practiced if desired.

The strips *a*, Figs. 1, 2 and 6, having integral barbs *b*, at intervals along one edge and in the plane of the strip represent the form

of barbed strips which it is preferred to produce; such strips have been largely made heretofore but at the expense of considerable waste of material cut from between the barbs in short pieces, two such strips being made from one blank strip of suitable width for the purpose and so cut that the barbs of one strip are produced from the middle portion of the blank midway between the barbs of the other strip, from which it will be seen that to every barb on each strip there is a waste piece as wide as the length of the barb and nearly half the length of the distance from one barb to another. Beside this waste of material there is a waste of power and wear of dies in an amount of useless cutting equal to half the total length of the edges of the waste pieces. Practically the waste of material is about fifteen per cent. and it is almost wholly useless for any other purpose, and the percentage of waste of power and wear of dies is quite as much or more. To produce one strip only from a blank only wide enough for one strip there would be more than double the amount of waste material. It will be seen that it is very important to avoid these items of waste, and it will also be seen that in the following improved method which I have contrived for the production of other strips *d*, together with strips *a*, using a blank somewhat wider than is necessary for the two strips *a*, I avoid waste both in material and in unnecessary cutting either altogether or very nearly so. I take a blank strip *e*, of suitable width for producing the two strips *a*, from the margins as clearly indicated in Fig. 2, and also for the two other strips *d*, as indicated in Fig. 4, and first cut therefrom, said strips *a*, by a shear punch as *f*, working between the two coacting bed cutters *g*, both having the duplex cutting edges *h*, *i*, of which parts *h*, make the slits *j*, separating the strips *a*, with barbs *b*, from the remaining intermediate part *l*, of the strip and at the same time making the notches *m*, in the edges of part *l*, from which the barbs are produced; and the parts *i*, of said edges make the short slits *n*, lengthwise in the part *l*, of the strip each way from the bottoms of the notches *m*, out of which the barbs are produced. The strips *a*, are then separated from the intermediate part *l*, for subsequently

twisting, crimping and otherwise finishing them, and the remaining strip *l* is then further treated for producing the other two strips *d*, by trimming the curved edges of notches *m*, as shown at *o*, Fig. 4 to make sharper points of the barb spurs *k*, produced on the margins of the strip *l*, by the slits *n*. Said strip is also slitted at *q*, between and in line with the slits *n*, of each margin but not quite the whole distance between said slits so as to leave the short uncut webs *s*, retaining the barbs in connection with the strips. The barb spurs *k*, are also bent laterally to the strip and in opposite directions; the strip is also split along the middle as at *t*, and thereby separated and a barbed strip *d*, produced from each portion and finally the two strips *d* are crimped or corrugated, preferably, with one crimp between the barbs, as at *u*, but there may be more if preferred.

The point trimming dies which it is preferred to use consist of the duplex bed die *v*, and the corresponding upper movable dies *w*; *x*, represents bed dies and *y*, a movable die for cutting slits *q*; *z* represents clamping dies both of which are to be movable for closing on and holding the strip preparatory to bending the barbs *k*; *a'* are benders which move after the clamps have closed and bend the barbs two at a time on each margin of strip *l*, and in opposite directions; *b'*, slitting dies for dividing the blank along the middle and separating the two barbed strips *d*, one from the other and *c'* and *d'*, crimping dies by which the strips are crimped between the barbs.

The trimming of the points of the barb spurs is only essential in so far as it will generally be preferable to have the points sharper than they would be without trimming them, and it will be omitted in some cases.

The slits *q*, are made to facilitate the subsequent twisting of the rod which, owing to the material difference in width between the parts thus slitted and the alternate parts out of which the barbs are produced twists unevenly, the slits very materially lessen the torsional resistance of these wider parts, the two separated members being free of each other so that they can stretch and otherwise shift separately under the different stresses of twisting and thus enable the twist to be somewhat more uniform, but these slits may in some cases be omitted. The crimping may also be omitted as it is a matter of choice whether the strips be crimped or not, but it will generally be included.

The bending dies and the crimping dies must open sufficiently for allowing the bent barbs to pass between them when the strip shifts along in the feed movements. The slitting dies *b'*, may be narrow enough for the barbs to pass each side of them, and the crimping dies must also open enough to allow the bent barbs to pass, the strips being fed intermittingly the distance from center to center of the notches *m*, at each operation of

the dies, as this kind of machinery is generally made to operate. It is to be understood that the apparatus shown and described is only given as one example of apparatus that may be used, various other forms of contrivances being alike available for the purpose, as, for instance, a pair of roll dies having the properly shaped and suitably located cutters or dies on the faces may be used for carrying out the whole process including the cutting of the strips *a*, or a series of pairs having the special dies for the several different operations may be arranged in a gang successively to accomplish the whole process at one pass of the strip.

The dies of Figs. 3 and 4 may be differently organized for instance the slitting die *b'*, may be located in advance of all the rest, the crimping dies may be so placed as to make the crimps in the strips before the bending of the barbs.

The cutting dies may be organized in one machine, and the benders and crimpers in another machine to each of which the strip or strips may be fed separately and various other modifications of the apparatus may be adopted.

Referring to Fig. 7 it will be seen that the same method is applicable for making only two strips from a narrower blank, one of each kind *a*, and *d*, using only one range of the dies and dispensing with the slitting dies *b'*, these latter dies being only required when the double ranges of dies are employed as I have represented them in Figs. 1 to 4 inclusive and which are of course preferred because of the greater amount of product that may be turned out in a given time, but for working up narrow strips which can sometimes be procured to advantage as compared with the wider strips, and particularly when a more accurately made higher grade article is required, it will be preferred to use the single range of dies and make only the two strips as indicated in Fig. 7.

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

1. The improvement in the art of making barbed fencing which consists of cutting from the margin of a blank strip *e*, barbed strip *a*, having barbs *b*, at intervals along one edge projecting in the plane of the strip and producing said barbs from corresponding notches thus cut in the edge of the other portion of the blank strip in so cutting said barbed strip therefrom; cutting slits *n*, lengthwise in the notched strip each way from the bottoms of the notches, and bending the barbed spurs thereby partly separated from said notched strip laterally to said strip, and thereby producing the laterally projecting barbs thereon, all substantially as described.

2. The improvement in the art of making barbed fencing which consists of cutting from the margin of a blank strip *e*, barbed strip *a*, having barbs *b*, at intervals along one edge projecting in the plane of the strip and pro-

5 ducing said barbs from corresponding notches
thus cut in the edge of the other portion of
the blank strip in so cutting the said barbed
strip therefrom; cutting slits *n*, lengthwise
10 in the notched strip each way from the bot-
toms of the notches, trimming the curved
edges and sharpening the points of the barb
spurs thereby partly separated from said
notched strip, and bending said barb spurs
15 laterally to the strip and thereby producing
laterally projecting barbs thereon, all sub-
stantially as described.

3. The improvement in the art of making
barbed fencing which consists of cutting from
15 the margin of a blank strip *e*, barbed strip *a*,
having barbs *b*, at intervals along one edge
projecting in the plane of the strip and pro-
ducing said barbs from corresponding notches
thus cut on the edge of the other portion of
20 the blank strip in so cutting the said barbed
strip therefrom, cutting slits *n*, lengthwise on
the notched strip each way from the bottoms
of the notches; cutting slits *q*, intermediate
to slits *n*, and bending the barb spurs partly
25 cut from the notched strip laterally thereto

and thereby producing the laterally project-
ing barbs thereon, substantially as described.

4. The improvement in the art of making
barbed fencing which consists of cutting from
each margin of a blank strip *e*, barbed strip *a*, 30
having barbs *b*, at intervals along one edge
projecting in the plane of the strip and pro-
ducing said barbs from corresponding notches
thus cut in the edges of the other portion of
said strip in so cutting said barbed strips 35
therefrom; cutting slits *n*, lengthwise in the
notched strip each way from the bottoms of
the notches of both edges; bending the barb
spurs thereby partly cut from said notched
strip laterally to said strip, and splitting said 40
notched strip along the middle and separat-
ing it into two barbed strips having laterally
projecting barbs, 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.