

(No Model.)

3 Sheets—Sheet 1.

J. D. CURTIS.
MACHINE FOR MAKING WIRE FENCING.

No. 514,671.

Patented Feb. 13, 1894.

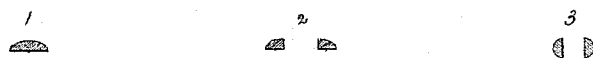


Fig. 1

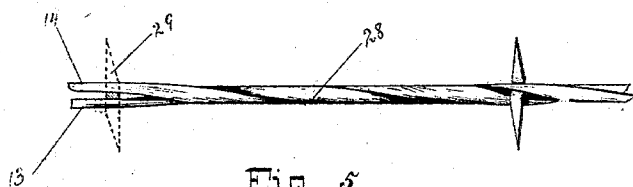


Fig. 5

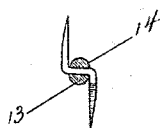
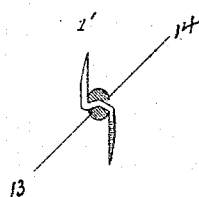


Fig. 6

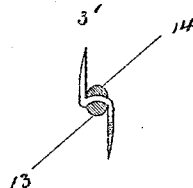


Fig. 7

Witnesses
Reginald Washburn
R. M. Washburn

By his Attorney

Inventor
John D. Curtis
C. Washburn

(No Model.)

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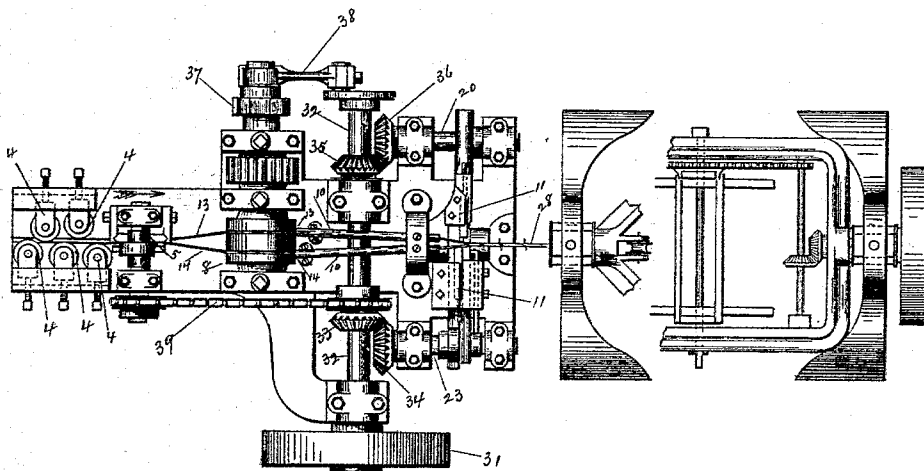


Fig 2

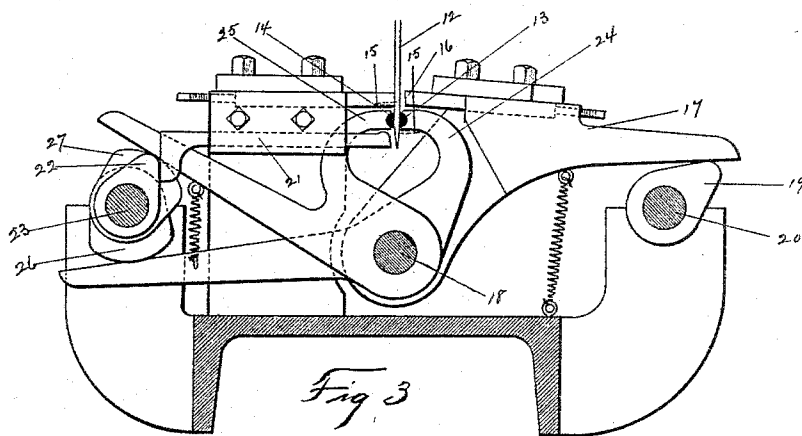


Fig 3

Witnesses

R. M. Washburn.
H. Ward Bates.

John D. Curtis Inventor

By his Attorney C. Washburn:

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Fig. 7

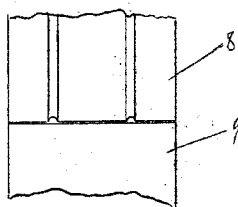


Fig. 8

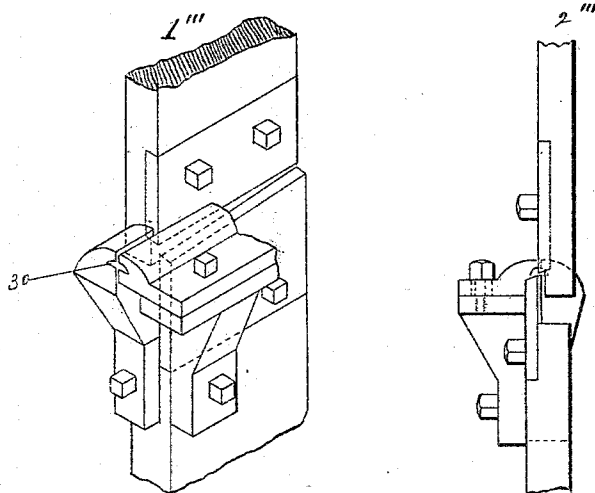


Fig. 9

Witnesses

Reginald Washburn
R.M. Washburn

By his Attorney

Inventor

John D. Curtis
C. Washburn

UNITED STATES PATENT OFFICE.

JOHN D. CURTIS, OF WORCESTER, MASSACHUSETTS.

MACHINE FOR MAKING WIRE FENCING.

SPECIFICATION forming part of Letters Patent No. 514,671, dated February 13, 1894.

Application filed December 29, 1892. Serial No. 456,616. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. CURTIS, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Machines for Making Wire Fencing, which improvements are fully set forth in the following specification.

The object of my invention is to dispense in the manufacture of wire fencing with the process of drawing after the metal leaves the rolling mill, and before it can be used in the barbing machine, and at the same time to produce with the greatest economy, a fencing, light in weight, and of smooth, uniform finish, together with an entirely novel method of securing the barb to the fence strands. This I accomplish by rolling a rod, of suitable form in cross-section, slitting the rod lengthwise into two substantially equal members, which are then, by suitable means, if necessary made symmetrical in form, and then, after inserting the barb between the two members, twisting the two members together with two of their sides in contact, thus holding the barb securely in place. The means by which I accomplish this will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which in—

Figure 1.—1. shows in cross-section one form in which the rod may come from the rolling mill. 2 shows the rod in cross-section after it has been subjected to the splitting operation, and 3 shows the rod in cross-section after the two members have been changed to the form in which they appear in the finished fencing. Fig. 2 is a plan view of my improved machine and twister. The twister frame is shown partly broken away, but the working parts appear with sufficient clearness to illustrate the mode of operation which is well known by those skilled in the art, the mechanism being old. Fig. 3 is a front elevation of the barbing and compressing mechanism shown in plan at 11, Fig. 2. Fig. 4 shows a barb severed from the main barb wire, in the form in which it is inserted between the main strands of the fencing. Fig. 5 is a side view of a piece of the finished barbed wire, showing two barbs, the one on the left 29 indicating in dotted lines the relative positions of the ends of the

barb, and the plane of the feed of the barb wire, and also shows the two members 13 and 14 twisted together to form the completed cable 28. Fig. 6 is an end view of four forms, 1'—2'—3'—4' of the completed barb, showing in section four forms in which the main strands of the fencing may be conveniently made. Fig. 7 shows three sectional views, 1'', 2'', 3'', of the twist guides, designed for wire segmental in cross-section, said guides being shown in plan at 10, Fig. 2, 1'' being a sectional view at the point where the split rods enter the guides, 2'' at a point where the split rods are partially turned, 3'' where the split rods emerge from the guides, the two members of the cable having their flat sides toward each other. Fig. 8 is a partial, sectional view of the feed-rolls shown in plan at 8, Fig. 2, 8 being the upper roll, and 9 the lower roll. In Fig. 9:—1''', is a perspective view of the splitting apparatus, in this case, an ordinary pair of shears, 30 being the guide through which the rod enters the shears, and 2''' is an elevation of the face of the shears. The shears are shown in plan at 5, Fig. 2.

By changing the shape of the finishing train of rolls in the rolling mill, a rod can be produced of any desired section, but I prefer, as being the most practicable, a rod segmental in cross-section, as shown in 1, Fig. 1. 2—Fig. 1—is a section of the rod after it has been split lengthwise into two parts as nearly equal as possible in sectional area, and 3—Fig. 1.— is a section of the two parts of the split rod after they have been changed from the quadrant section 2 to the segmental section 3. The last two operations resulting in changing the sectional area of the rod to the forms shown in 2 and 3 may be conveniently performed as I shall hereinafter indicate, in connection with the process of barbing, and by mechanism which may be a part of the barbing machine, and the sectional area 3,—Fig. 1.— may be secured by either drawing or rolling. As will hereinafter appear, I secure the result by rolling, in the process of manufacturing the barbed wire.

In the use of my improved machine for making barbed wire, the metal may be taken directly from the rod mill to the barbing machine, the details of the material parts of which are shown in Figs. 2 and 3.

In Fig. 2,—4 4 represent an ordinary roll-straightener, through which it is convenient to pass the rod in order to straighten it, as it enters the machine. The barb is made from
 5 a flat wire, fed more conveniently from above as indicated at 12,—Fig. 3, through feed-rolls not shown in the drawings, and which may be so arranged as to flatten the wire in process of manufacture. The barb is fed down be-
 10 tween the two members of the cable 13 and 14, and the ends are then bent in opposite directions into the position shown in the dotted lines 15, 15. The barb is held in place by the twisting together of the two members of the
 15 cable with two surfaces in contact with the surface of the barb, which, at the point of contact may be made broader than at other parts of the barb. The barb is severed and cut to a point by the cutter 16, secured to the
 20 rocker-arm 17, moving on the shaft 18, and actuated by the cam 19, which is revolved by the shaft 20. The cutter 16 not only cuts the barb, but bends it at an angle with the plane in which the barb wire is fed, while the free
 25 end of the barb is bent in a similar way and in the opposite direction by the arm 21 actuated by the cam 22 attached to the shaft 23. The form of the cut barb before it is bent, is shown in Fig. 4. While the barb is being
 30 bent, the two members 13 and 14 of the main cable are held firmly together by the jaws in rocker-arms 24 25 moving on the shaft 18 and actuated by the cams 26 27 on the shaft 23. The power is applied to the pulley 31, Fig. 2,
 35 which revolves the main shaft 32, which, through the bevel gears 33, 34, 35, 36, actuates the shafts 23 and 20, which operate the barb-bending mechanism as heretofore particularly described in connection with Fig. 3.
 40 The feed and reducing rolls 8 and 9 are actuated by pawl and ratchet 37 connected with the main shaft 32, by the arm 38. The shears 5 are operated by the chain 39 connecting them with the main shaft 32.
 45 In the use of my improved machine, I bring the rod directly to the barbing machine from the rod-mill, placing the coiled rod upon the reel, not shown in the drawings, at the rear of the barbing machine, Fig. 2, the rod being
 50 preferably of the form in cross-section shown in 1, Fig. 1. The rod is then passed through the rolls 4 4 4 4 of the straightener and carried through a suitable guide 30 Fig. 9, under the splitting device 5, where it is divided length-
 55 wise into two members which emerge in the direction of the arrow, through the feed-rolls 8 and 9, by which the section of the two parts is made segmental as shown in 3, Fig. 1, and in 2', Fig. 6. The feed-rolls 8 and 9 may also
 60 be so formed as to give to the two members of the rod the shape shown in section in 1', 3' and 4', Fig. 6, or any other desired shape, it only being necessary that there shall be two bearing surfaces between which the barb may
 65 be securely held. The two parts of the rod then pass through the twist guides 10 10, or other guiding mechanism so arranged that

where the barb is introduced at a suitable distance, in front of the guiding mechanism, two of the surfaces of the two parts of the rod are
 70 brought in contact with the sides of the barb and with each other on either side of the barb after they are twisted together.

The barbing device, the details of which have been fully described, is placed at a suit-
 75 able distance in front of the guiding mechanism, and after the barb is applied the two parts of the rod are firmly twisted together and the completed fencing wound upon spools for transportation, upon any well-known form
 80 of twister, commonly in use, one such form being illustrated in the drawings, Fig. 2.

I prefer to attach my twister to the machine of which it may be a part.

I may also wind the barb around one or both
 85 of the strands of the fencing, using any of the styles of barbing devices commonly in use in place of that which I have chosen to illustrate my improved process; or, I may dispense with
 90 the use of barbs altogether, thus producing a two-strand, barbless cable, a very desirable form of fencing; nor, do I confine myself to a rod segmental in cross-section. It is obvi-
 95 ous that a rod triangular in cross-section, or of any other shape providing it is capable of being split into two members having surfaces between which the barb may be held, can be
 100 used in my improved machine. I may also omit the process of making the two members into which the rod is split, symmetrical in form, which I accomplish by rolling, and convey the split rod at once from the shears to
 105 the barbing device, it only being necessary that the two members of the cable have surfaces between which the barb may be held, but in practice I prefer to use the process as indicated.

It is not essential to the successful working of my machine that twist guides be used, as
 110 any equivalent mechanism, such as guide rolls, will operate equally well.

In the process as I have described it, the fencing produced, after being wound upon
 115 spools, in the usual way, may be dipped in paint, and is then ready for the market.

It is obvious that by the use of my im-
 120 proved machine a barbed or barbless wire fencing is produced, light in weight, smooth and symmetrical in form, at the lowest possible cost, and with the same compensating qualities which exist in the ordinary two-
 125 strand fencing, in general use.

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

1. In a machine for making fencing from a single rod, a splitting device, in combination
 135 with mechanism whereby the flat surfaces thus formed may be brought together, said members being twisted with their flat surfaces in contact to form the finished fencing, substantially as shown and described.

2. In a machine for making fencing from a single rod, the combination of a splitting de-

vice, with means for changing in cross-section the members thus formed, whereby two bearing surfaces may be prepared, adapted to make a joint when twisted together, and
 5 mechanism whereby the prepared surfaces may be brought together, said members being twisted together, with their prepared surfaces in contact, to form the finished fencing, substantially as shown and described.

10 3. In a machine for making barbed fencing from a single rod, a splitting device, in combination with mechanism whereby the flat surfaces thus formed may be brought together, and barbing mechanism whereby a barb may
 15 be inserted between the flat surfaces of the strands, said barb being held in place by the twisting together of said strands with their flat surfaces in contact, substantially as shown and described.

20 4. In a machine for making barbed fencing from a single rod, the combination of a splitting device, with means for changing in cross-section the members thus formed, whereby two bearing surfaces may be prepared adapted
 25 to make a joint when twisted together, and mechanism whereby the prepared surfaces thus formed may be brought together, and barbing mechanism whereby a barb may be inserted between the prepared surfaces of the
 30 strands, said barb being held in place by the twisting together of the strands, with their prepared surfaces in contact, substantially as shown and described.

35 5. In a machine for making barbed fencing from a single rod, a splitting device, in combination with mechanism whereby the flat sur-

faces thus formed may be brought together, barbing mechanism whereby a barb may be inserted between the flat surfaces of the strands, said barb being held in place by the
 40 twisting together of said strands with their flat surfaces in contact, and mechanism whereby the ends of the barb may be bent at an angle with the plane of the contact surfaces, and mechanism whereby the two strands of the
 45 fencing may be firmly compressed, while the ends of the barb are being bent, substantially as shown and described.

6. In a machine for making barbed fencing from a single rod, the combination of a splitting device, with means for changing in cross-
 50 section the members thus formed, whereby two bearing surfaces may be prepared, adapted to make a joint when twisted together, mechanism whereby the prepared surfaces
 55 thus formed may be brought together, and barbing mechanism whereby a barb may be inserted between the prepared surfaces of the strand, said barb being held in place by the
 60 twisting together of the strands, with their prepared surfaces in contact, and mechanism whereby the ends of the barb may be bent at an angle with the plane of the contact surfaces, and mechanism whereby the two
 65 strands of the fencing may be firmly compressed while the ends of the barb are being bent, substantially as shown and described.

JOHN D. CURTIS.

Witnesses:

R. M. WASHBURN,
 C. G. WASHBURN.