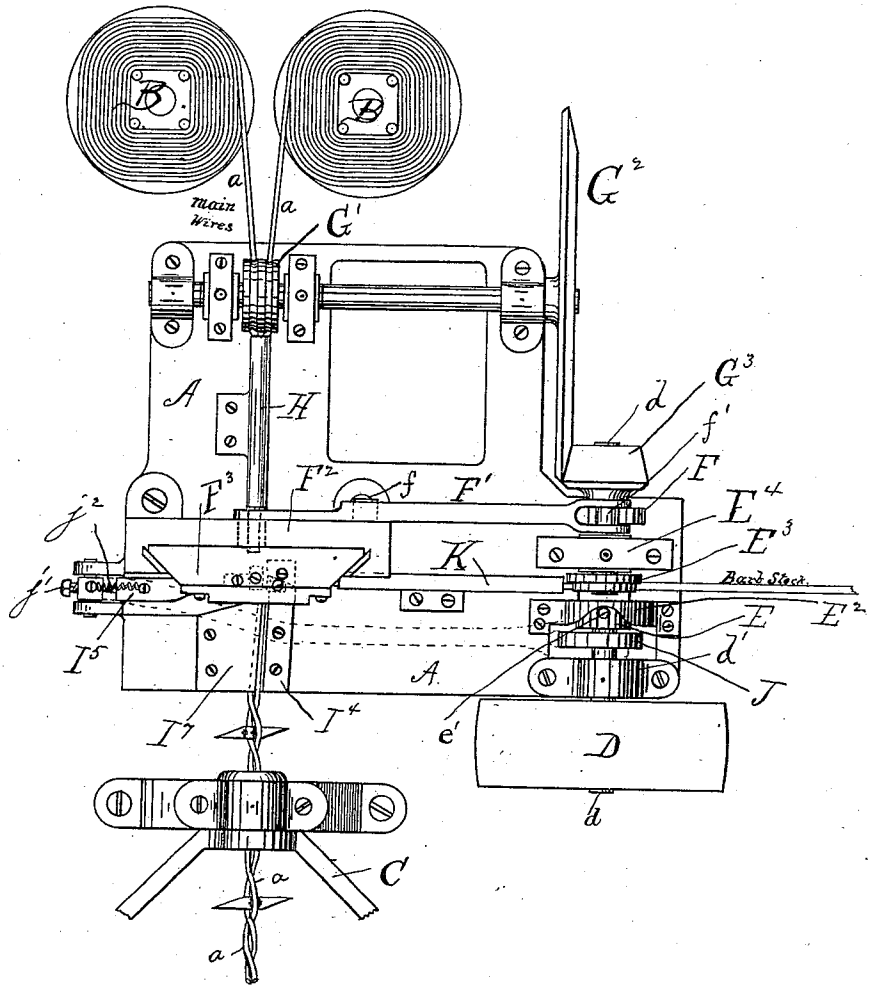
(No Model.) 3 Sheets—Sheet 1.

J. HOGG.

MACHINE FOR MANUFACTURING BARB FENCE WIRE.

No. 310,056. Patented Dec. 30, 1884.

Fig. 1.



Witnesses:
J. Everett Brown
H. M. Munday.

Inventor,
James Hogg.
per Munday Evarts & Adcock
his Attorneys.

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

J. HOGG.

MACHINE FOR MANUFACTURING BARB FENCE WIRE.

No. 310,056. Patented Dec. 30, 1884.

Fig 2.

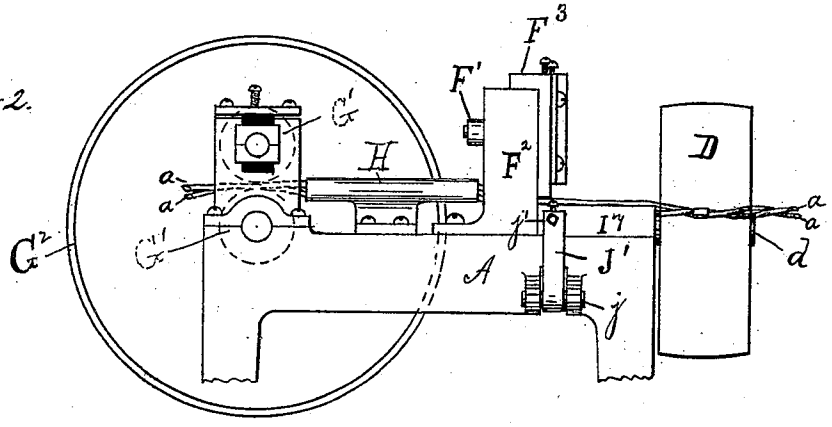


Fig 3.

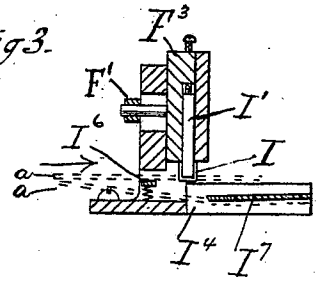


Fig 4.

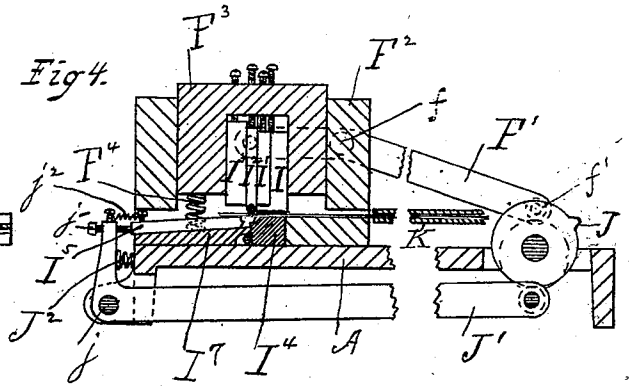
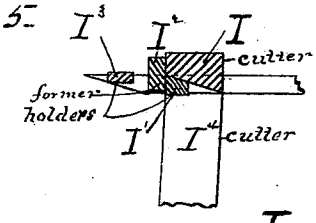


Fig. 5.



Witnesses:
J. Everett Brown
A. M. Munday

Inventor:
James Hogg,
per Munday Evarts & Adcock
his Attorneys.

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

J. HOGG.

MACHINE FOR MANUFACTURING BARB FENCE WIRE.

No. 310,056. Patented Dec. 30, 1884.

Fig. 6.

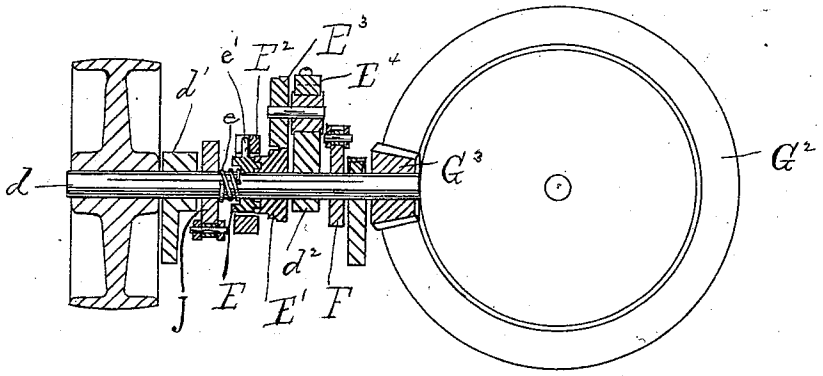


Fig. 7.

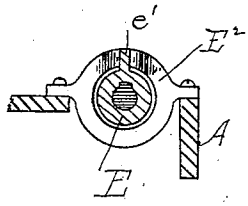


Fig. 8.

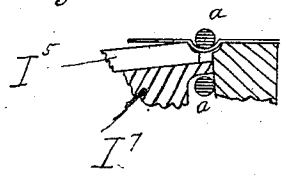
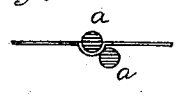


Fig. 9.



Witnesses:
J. Everett Brown
A. M. Munday.

Inventor
James Hogg,
per Munday Evarts & Adcock
his Attorneys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

JAMES HOGG, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE WASHBURN & MOEN MANUFACTURING COMPANY, OF WORCESTER, MASSACHUSETTS, AND ISAAC L. ELLWOOD, OF DE KALB, ILLINOIS.

MACHINE FOR MANUFACTURING BARB FENCE-WIRE.

SPECIFICATION forming part of Letters Patent No. 310,056, dated December 30, 1884.

Application filed July 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES HOGG, of Chicago, Cook county, State of Illinois, have invented certain new and useful Improvements in Machines for Manufacturing Barbed Fence-Wire, of which the following is a specification.

My invention is designed to manufacture automatically that class of barbed fence-wire shown in Letters Patent of the United States No. 247,540, granted to E. M. Crandal, September 27, 1881, and will be more fully explained and understood by reference to the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout the several figures.

In the drawings, Figure 1 is a plan view of my machine. Fig. 2 is a side view thereof. Figs. 3 and 4 are vertical sections of the head-block and cutting-knives taken at right angles to each other. Fig. 5 is a horizontal section of the upper knife and retaining-stops. Fig. 6 is a central section through the parts borne on the driving-shaft. Fig. 7 is a face view of the clutch-cam; and Figs. 8 and 9 are views showing the forming operations applied to the barb.

A represents the frame of the machine; B B, the spools on which the main wires *a a* are wound.

C represents a portion of an ordinary twister, by which the wires *a a* are twisted and formed into the cable after the insertion of the barb. The pulley D, by which power is communicated to the machine, is mounted upon a shaft, *d*, held in suitable bearings, *d'* and d^2. On this shaft *d* is a clutch of ordinary construction, composed of the sliding half E and a non-sliding half, E', the sliding half being forced into engagement with the non-sliding half by the spring *e*, encircling the shaft *d*, and thrown out of engagement by a stationary annular cam, E^2, secured to the bed of the machine, and a pin, *e'*, inserted in the sliding half, and following the surface of the cam as the clutch rotates. The non-sliding half of the clutch is loose upon the shaft *d*, so that it does not rotate except when engaged by the other half of the clutch. It is formed upon the side, and is integral with one of the feed-rollers by which the barb-strip is fed, the other feed-roller, E^3, being mounted upon a standard, E^4, integral with bearing d^2. The shaft *d* further actuates the moving knife by which the barb is severed. This is done by a cam, F, fast to said shaft, and a lever, F', pivoted at *f* to the standard F^2, in which the knife-head F^3 reciprocates. The small roller *f'* in the end of the lever rides upon the surface of the cam, and a spring, F^4, placed under the knife-head, exerts constantly a pressure contrary to that of the cam, so that the roller *f'* is kept in actual contact with the surface of the cam at all times. The main wires, which are supplied from spools B B, are fed to the barbing mechanism by rollers G' G', one of which is positively actuated by the beveled gear G^2 on the same shaft therewith and the beveled pinion G^3 on the drive-shaft *d*. A tubular guide, H, for directing the fence-wires, may be inserted between the rolls G' and the barbing mechanism, if found necessary. One of the fence-wires passes immediately over the barb, and the other, which passes below, is kept from contact with it until the barb has been formed, as hereinafter stated.

In the moving knife head F^3 is secured the knife proper, I, the holder I', the barb-former I^2, and holder I^3. Below is the stationary knife I^4, a crimping device, I^5, a support, I^6, (see Fig. 3,) for the upper fence-wire, and a separating-plate, I^7, adjoining the lower knife, and by which the fence-wires are kept separate until after they have passed beyond the same toward the twister. The holders I' and I^3 seize the ends of the barb as soon as it has been severed, and the support I^6 and plate I^7 support the fence-wire during the cutting and crimping operations. The former I^2 is placed between the holders I' and I^3, and immediately over the upper fence-wire, and so that when the knife-head descends it forces said fence-wire into the barb, bending the latter to the extent shown in Fig. 8, and while held in this position the crimping device I^5 is advanced and completes the bending of the barb to the form given in Fig. 9. The crimping device is actuated from the main shaft by the cam J,

the elbow-lever J′ passing under the machine and pivoted at *j*, and connected to the crimper by the set-screw *j′* and the small spring j^2. The crimper is withdrawn by the retraction of the lever under the influence of the spring J^2.

The support I^6 may be a stationary and unyielding device, and it may be forked to receive the upper fence-wire, and may also be perforated to guide the lower wire. It is of course necessary, where the wires are fed in by horizontal rollers, as shown, that the wires be separated, so that one shall be above the other to permit the feeding of the barb between them, and this function may be served, as stated, by the support I^6, or any other suitable device. The feed of the barb-strip occurs of course intermittently and between the operations of the moving knife, and the crimping operation occurs immediately after the descent of the knife-head and before the rise thereof. The feed of the fence-wires is continuous, but is so proportioned relative to the feed, severing, and shaping of the barbs that the latter are applied thereto at proper intervals and without interrupting their progress through the machine. The barbs ride along the upper surface of the plate I^7, with the upper wire lying in the bend thereof, and when they have passed beyond said plate the other fence-wire comes in contact therewith by reason of the twist. The crimper is placed upon an incline, as shown, in order that only the forward end thereof may come in contact with the barb, and thus any tendency to buckle or bend the barb, except at the point desired, is avoided. During the bending of the barb the rear end thereof is closely confined between the holder I′ and the upper surface of the stationary knife; but the other, which is held between the holder I^3 and the crimper, is allowed to move to accommodate the bend. The bending operation, therefore, does not strain or rupture the stock at all, and an essential feature of construction in bringing about this result is the placing of the bending or crimping device upon an incline. Of course either the crimper itself may be beveled or its support may be beveled, thereby decreasing the amount of surface in contact with the top holder and allowing the barb-strip to slip over its polished surface.

Instead of making the crimper a separate device, it may be made a part of the lever J′, the only other change then requisite being the shifting of the pivotal point *j*. The barb-strip is very liable to bend, being flat material, and I therefore prefer to pass it through a guideway, K, between the feed-rollers and the knives.

It will be seen from the description given that the holders I′ and I^3 serve to keep the ends of the barb pointing outward, so that they do not change the direction in which they point during the operations upon the barb. It will also be noticed that the bearing end of the crimper is cut away at the upper corner, so as to approach somewhat the contour of the wire, and that the surface of the stationary knife I^4, which resists or opposes the lateral pressure of the crimper, is similarly shaped. I regard this feature as desirable, but it may be considerably varied upon one or both parts.

I claim—

1. In a barb-fence machine, the combination of mechanism for feeding forward the fence-wires, mechanism for feeding the barb-strip, mechanism for severing the barb-strip, mechanism for bending the barb partially around one of the fence-wires, mechanism for crimping the barb against the wire, mechanism for holding the ends of the barbs outward, and mechanism for twisting the fence-wires, substantially as specified.

2. The combination, with mechanisms for feeding and twisting the two fence-wires, and mechanism, substantially as described, for bending the barb about one fence-wire, of a guide constructed to hold the fence-wires apart at the point where the barb is thus applied to one of said wires, and mechanism for feeding the barb between the fence-wires, substantially as and for the purposes set forth.

3. The combination, with mechanisms for feeding and twisting the two fence-wires, mechanism for feeding the barb between the fence-wires, and mechanism, substantially as described, for bending the barb partially around one of the fence-wires, of a means, as I^7, arranged to support the barb between the point of its application to the said fence-wire, to or near the point at which the two fence-wires are twisted together, substantially as described.

4. In a barb-fence machine, the barb-crimper set upon an incline, as shown, in combination with the barb severing and holding devices, substantially as specified.

5. In a barb-fence machine, the combination, with the crimper, of the cam J, the elbow-lever J′, the spring J^2, and the devices connecting the crimper and lever, substantially as specified.

JAMES HOGG.

Witnesses:
A. M. MUNDAY,
EDW. S. EVARTS.