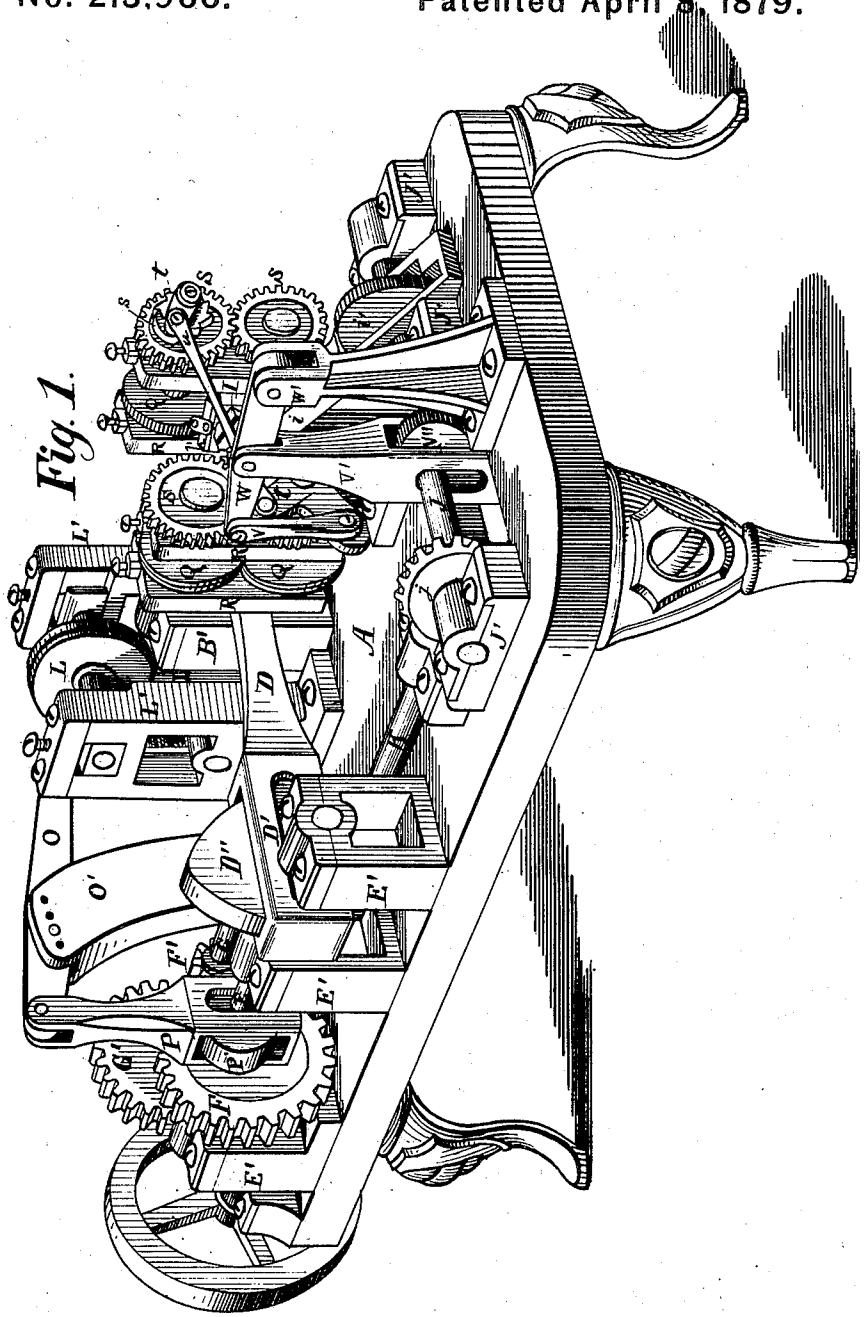
3 Sheets—Sheet 1

F. BILLINGS.

Machine for Making Barbed Fence-Wire.

No. 213,966. Patented April 8, 1879.

Fig. 1.



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Geo. W. Tibbits

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Inventor:

Frank Billings

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F. BILLINGS.

Machine for Making Barbed Fence-Wire.

No. 213,966. Patented April 8, 1879.

Fig. 3.

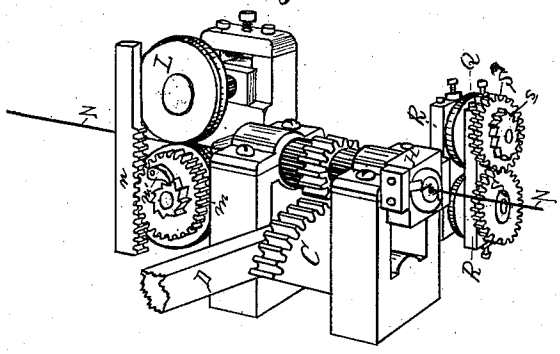
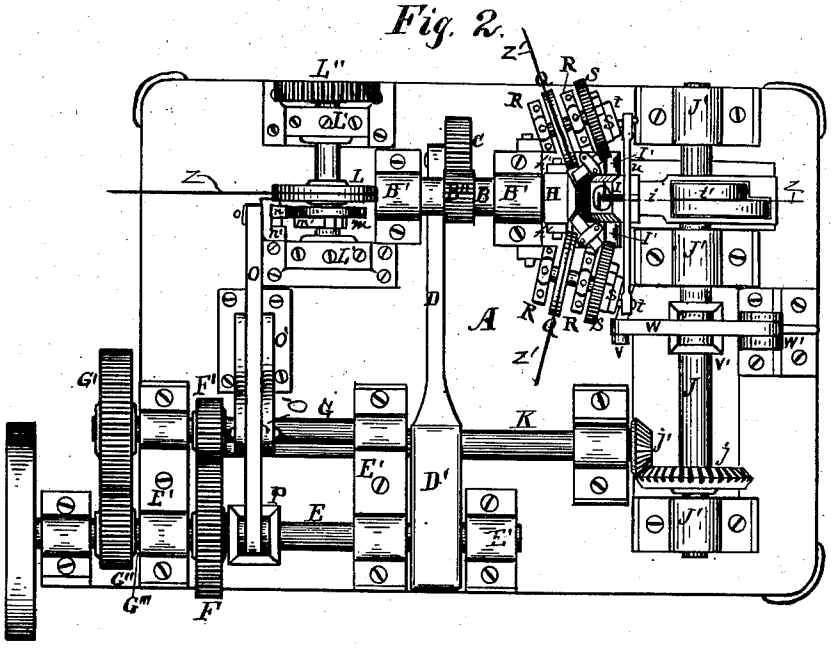


Fig. 2.



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3 Sheets—Sheet 3.

F. BILLINGS.

Machine for Making Barbed Fence-Wire.

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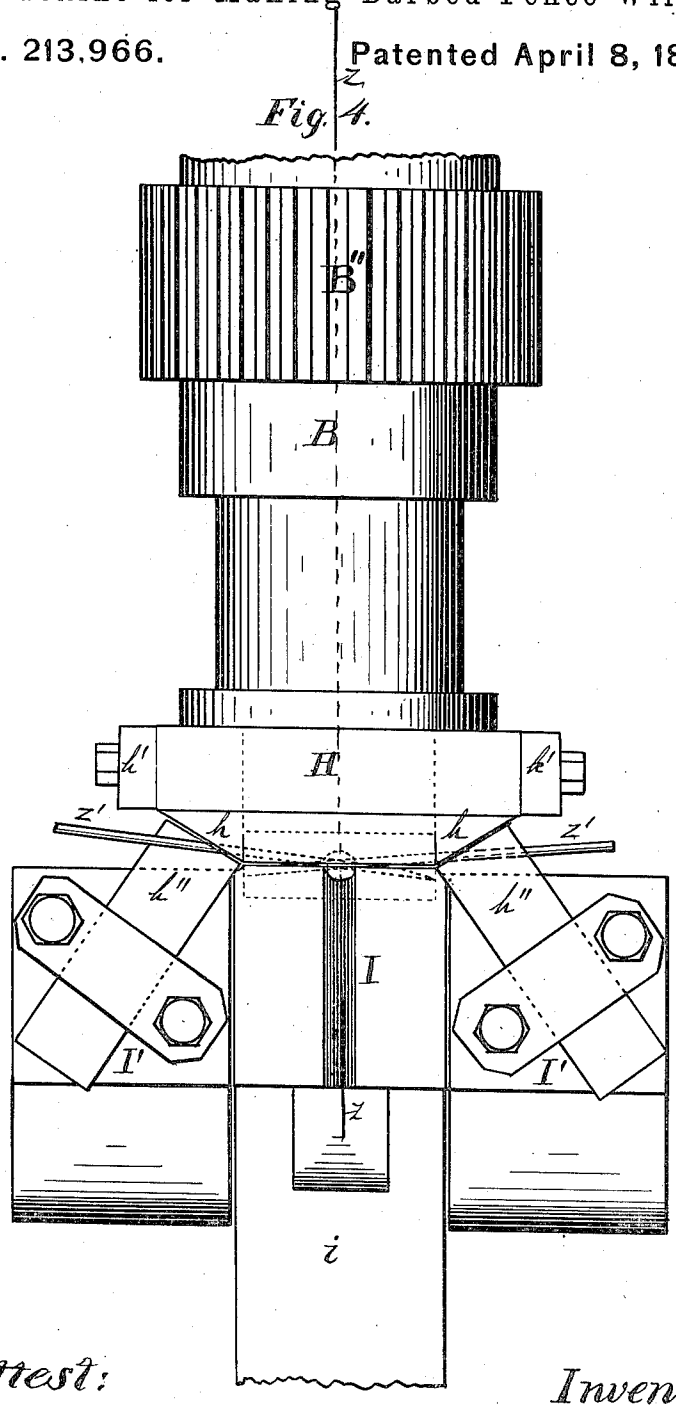
Fig. 4.



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Frank Billings

UNITED STATES PATENT OFFICE.

FRANK BILLINGS, OF CLEVELAND, OHIO.

IMPROVEMENT IN MACHINES FOR MAKING BARBED FENCE-WIRE.

Specification forming part of Letters Patent No. **213,966**, dated April 8, 1879; application filed June 24, 1878.

To all whom it may concern:

Be it known that I, FRANK BILLINGS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Machine for Making Barb Fence-Wire, which is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view. Fig. 2 is a plan view. Fig. 3 is a detached perspective view of the barb cutting and twisting head, its hollow shaft, bearings, and a portion of the feed mechanism. Fig. 4 is a detached and enlarged view of the cutting and twisting head and the opposing block, showing the location of the barb-wires ready to be cut off and twisted.

The object of this machine is the rapid manufacture of barbed wires for fencing, taking the main wires from the reel, feeding them through a hollow shaft, also taking the barb-wires from reels, feeding them to the main wires in grooves in the face of the cutting and twisting head, cutting off the barb-blanks, and twisting them onto and around the main wires at suitable intervals, said machine being constructed and operating substantially as hereinafter described and claimed.

In the drawings, A is a bed-plate, supported by suitable legs, and upon which are arranged all the working parts of the machine. B is a hollow shaft, set in bearings on the blocks B′ B′, and has a pinion, B″. Beneath said shaft B is a segment-gear, C, also having its bearings in the lower part of said blocks B′. D is a pitman attached to the segment-gear C, provided at its opposite end with a slotted frame, D′, in which a cam, D″, plays, and by means of which an oscillating motion is imparted to the said segment-gear C, through which a reciprocatory rotating movement is given to the aforesaid hollow shaft B. The said cam D″ is fixed on a shaft, E, having its bearings in the three blocks E′ E′ E′. This shaft E has a gear-wheel, F, connected with a pinion, F′, on a parallel shaft, G, which also has a gear-wheel, G′, outside of the block E′ at the end of the machine. This gear G′ connects with a pinion, G″, on a short shaft, G‴, and upon which are the driving-pulleys from which the whole machine derives its motion.

To the hollow shaft B is fixed a head, H, having a face slightly cone-shaped, and is provided with two cutters, *h h*, one located on each side of the opening through which the main wire passes. These cutters are set in slots in the sides of the head, and are held in place by plates *h′ h′* bolted to the said head. This is for the convenience of removing for sharpening, &c. Opposed to the head H is a block, I, pivoted between two posts, I′ I′. This block I has an oscillating movement imparted to it by a lever or pitman, *i*, connected therewith and operated by a double cam, *i′*, playing in a slotted frame on its opposite end. Said cam is fixed on a counter-shaft, J, having its bearings in the boxes J′ J′ J′ on the bed-plate A. This shaft J derives its motion through a bevel-gear, *j*, connected with a bevel-pinion, *j′*, on a shaft, K, driven by a pinion, *k*, connecting it with gear F on the shaft E.

In connection with the hollow shaft B is a feed mechanism consisting of a pair of feed-wheels, L L, whose shafts have their bearings in the blocks L′ L′, and are geared to run together by gear-wheels L″ L″ outside of the bearings. The bearings for the upper shaft are set in adjustable boxes, which are regulated by set-screws for regulating the tension of the said wheels upon the wire. The lower shaft is provided with a loose pinion, *m*, having a pawl, *m′*, which plays on a ratchet-wheel on the said shaft. By the side of the said ratchet and pinion is arranged a rack, *n*, playing in slides *n′* attached to the side of one of the blocks L′. This rack meshes with the aforesaid loose pinion *m*, and is operated by a connecting-rod, *o*, connecting it with a rocking lever, O, pivoted in a post, O′. The other end of said lever O is connected with a pitman, P, having a slotted frame on its lower end, in which a cam, P′, on shaft E plays, and from which the said feed mechanism derives its movements.

In connection with the revolving cutting and twisting head H is also a feed mechanism for feeding the barb wires to the said head, consisting of two sets of feed-wheels, Q Q Q Q, one pair located on each side of the head H. The bearings for the shafts of the said feed-wheels are fixed in frames R R R R, secured to the posts and blocks at both sides of the

head H, the bearings consisting of adjustable boxes regulated by set-screws for regulating the tension. Each pair of shafts of the said feed-wheels are geared to run together with gears S S S S, and are provided with ratchet-wheels and pawls *s s*, the said pawls being attached to loose cranks *t t*, and said cranks being connected together by a connecting-rod, *u*, by means of which the two pairs of feed-wheels work in concert. This feed mechanism derives its movements by means of a pitman, V, connecting one of the said cranks *t* with a rocking lever, W, pivoted at the opposite end in the top of a post, W′, and operated by a pitman, V′, having a slotted frame on its lower end, and operated by a cam, V″, on the counter-shaft J.

On the top of the two posts I′ I′ are fixed knives or cutters *h″ h″*, which work in conjunction with the two cutters *h h* in the head H in cutting off the barb-wires.

Let it be observed that the two pairs of feed-wheels are not set parallel to the sides of the head H, but are at a slight angle thereto. This is for the purpose of feeding the barb-wires in a slight diagonal line across the face of the head H, and into the grooves in the faces of both the head and the opposite block, I, as seen in Fig. 4.

The operation of this machine is as follows: The main wire or strand *z* is fed through the hollow shaft B by the feed mechanism at the end of said shaft by intermittent movements caused by the cam P on shaft E. At the same time the barb-wires *z′* are fed by their feed mechanism into the grooves in the head H, across each side of the said main wire. Then the shaft B is made to rotate by the segment-gear C, pitman D, and cam D″. The first movement of the said head H cuts off the barb-blanks, the cutters *h h* and *h″ h″* performing that operation. The revolution of the head H carries the newly-cut end of the blank barb around with it, while the other end of said barb-blank is held in the groove in the face of the block I, which remains stationary. The said barbs are thus wound around the main wire. At this point the cam *i′* draws the block I away from the head H, when the said head is revolved back again and the main wire is fed forward again, the block I is carried back to the head again, and the operation is repeated.

Having described my invention, I claim—

1. In a machine for barbing fence-wire, the combination of a revolving disk or head, H, having a central aperture and grooves, a die or block, I, having grooves or slots to receive the main wire, and the necessary actuating parts, operating substantially as and for the purposes described.

2. The grooved revolving disk-head H, having a central aperture, in combination with a groove plate or block, I, and oscillating lever *i*, as and for the purposes described.

3. The hollow shaft B, having the head or disk H, in combination with the lever *i*, carrying the grooved die or block I and cam *i′*, constructed and operating substantially as described.

4. The combination of the feed-rollers Q Q, suitable means or knives *h h* for cutting off the barb-wires, the revolving head H, and grooved block or plate I, constructed and operating substantially as and for the purposes described.

5. In a machine for automatically barbing fence-wire, the combination of the feed-rollers L L, hollow shaft B, head H, feed-rollers Q Q, knives *h h*, grooved dies or block I, and the intermediate actuating parts, substantially as and for the purposes described.

6. The combination, with the barb cutting and twisting head H, of the reciprocating block I, as and for the purpose specified.

FRANK BILLINGS.

Witnesses:
GEO. W. TIBBITTS,
SETH S. WHEELER.