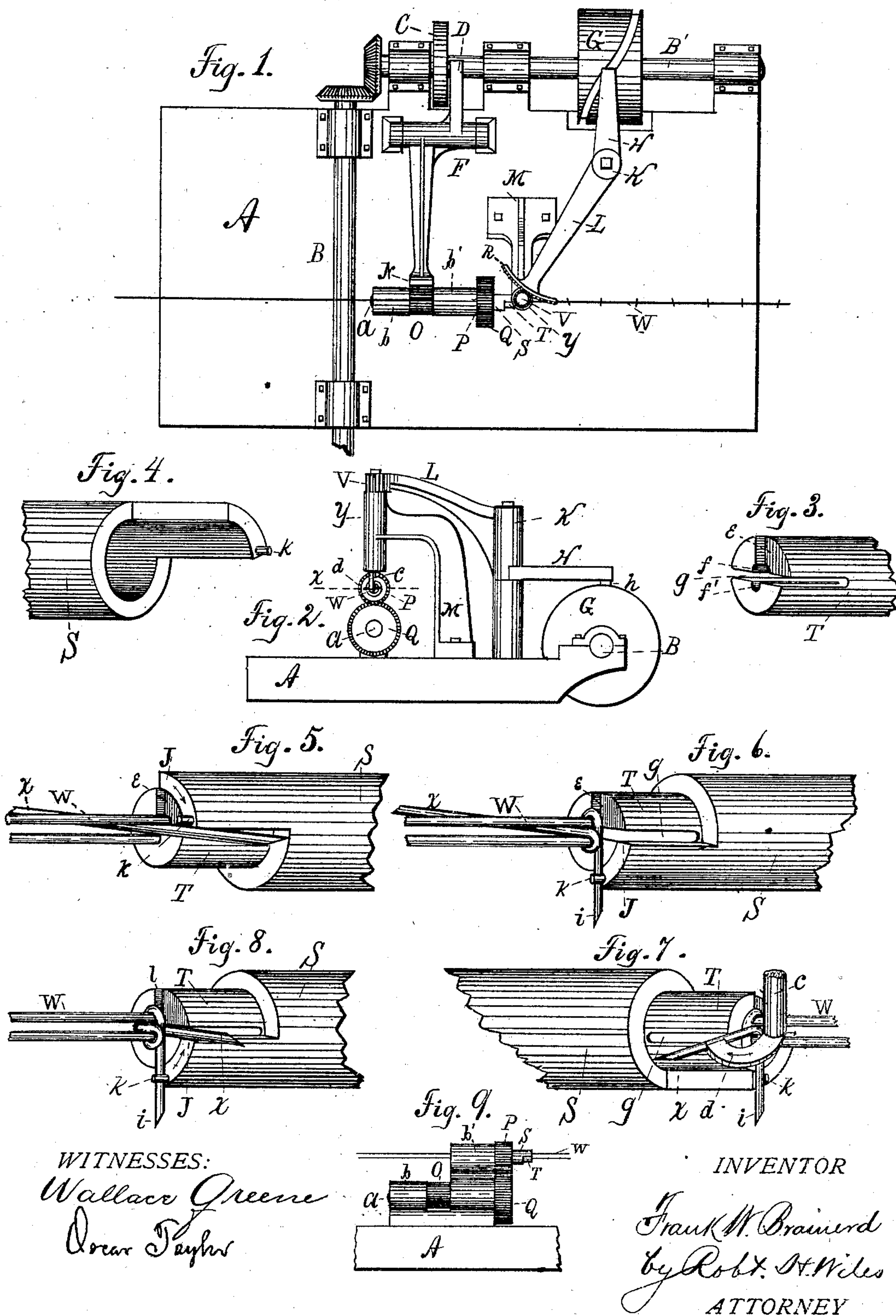


(No Model.)

F. W. BRAINERD.
WIRE BARBING MACHINE.

No. 277,451.

Patented May 15, 1883.



UNITED STATES PATENT OFFICE.

FRANK W. BRAINERD, OF FREEPORT, ILLINOIS.

WIRE-BARBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,451, dated May 15, 1883.

Application filed April 6, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. BRAINERD, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Wire-Barbing Machines; 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 pertains to make and use the same.

My invention is an improved mechanism for wrapping wire barbs upon the main strands of a fence-cable.

The construction of the device is fully explained in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a plan of the entire machine; Fig. 2, a front elevation of the wrapping device; Fig. 3, a perspective view of the stationary slotted spindle through which the main wires are fed forward; Fig. 4, a perspective view of the shell which surrounds said spindle and rotates thereon; Figs. 5 and 6, perspective views of said sleeve and spindle and the main and barbed wires in two successive steps in the formation of a barb; Fig. 7, a perspective view of same parts and finger *d* in position to tuck the barb-wire through the slot in the stationary spindle; Fig. 8, a perspective view of the sleeve, spindle, and main and barb wires after the barb-wire is tucked through the slot by the finger *d*; and Fig. 9, a side elevation of the wrapping sleeve, spindle, and gearing connected therewith.

In these drawings, A is the bed of the machine; B, the driving-shaft thereof, and B' a side shaft connected with the driving-shaft by miter-gears. An internal cam, C, rigidly attached to the shaft B', imparts reciprocal vertical motion to a segmental gear, N, and a second cam, G, imparts reciprocal horizontal motion to a segmental gear, R. The centers about which these segments move and the bearings in which they are journaled are fully shown, and their motion is evident.

To the bed are rigidly attached, in a line parallel to the side shaft, B', two vertical posts or supports, *b b'*, and in these posts, at a short distance above the bed, is journaled a shaft, *a*.

Between the posts *b b'* a pinion, O, is rigidly attached to the shaft *a*, and engages with the

segmental gear N, so that the reciprocal vertical motion of the segment produces reciprocal rotary motion of the pinion.

In front of the post *b'* a second pinion, Q, of a diameter double that of the pinion O, is also rigidly attached to the shaft *a* and turns with it.

Above the pinion Q is a horizontal cylindrical spindle, T, formed integrally with the post *b'*, and extending forward beyond the front face of pinion Q, and on the spindle T is mounted a sleeve, S, carrying a rigidly-attached pinion, P, which meshes with the pinion Q immediately below it. The diameter of the pinion P being one-half that of the pinion Q, the speed of revolution of the sleeve S is double that of the shaft *a*. The post *b'* and spindle T are pierced by two longitudinal perforations, *f f'*, Fig. 3, for the passage of the main wires to be barbed, and between said perforations is a horizontal slot, *g*, of a thickness slightly greater than the diameter of the barb-wire, and of sufficient depth to permit the tucking through it of one end of the barb, as hereinafter described.

In the face of the spindle is a recess, *e*, covering a sector of ninety degrees of the face, and having a depth equal to the diameter of the barb-wire, one of the limits of said recess being the horizontal slot *g* and the other the shoulder *l*, Fig. 8. The face of the sleeve S is flush with the face of the spindle T; but three-fourths of its circumference is cut back to a distance equal to the depth of the slot *g*, leaving only a segment of ninety degrees flush with the face of the spindle. A wrapping-pin, K, is rigidly attached to said segment J.

In front of the sleeve and spindle is a vertical bearing, Y, formed integrally with its support M, and in the bearing rotates a spindle, to whose upper end is rigidly attached a pinion, V, which meshes with the geared segment R, whose reciprocal horizontal motion has already been described. At the lower end of the vertical spindle is an eccentric-rod, *c*, Figs. 2 to 7, formed integrally therewith, and this rod terminates at the lower end in a horizontal curved finger, *d*, which lies in the plane of the slot *g* in the spindle T, is practically of the same thickness as said slot, and is so situated that the rotation of the rod *c* will pass it through said slot.

From the description of the various parts

of the machine shown it is evident that the rotation of the shaft B' will impart reciprocal rotary motion to the sleeve S and the vertical spindle which carries the rod c, and that the rotation of the vertical spindle will carry the finger d through the slot g. It is equally plain that the driving-cams C G may be so formed and arranged upon the shaft that the various motions of the barb-forming parts shall succeed each other in any desired order.

The operation of the parts in forming the barb to whose manufacture this machine is adapted is as follows: The spindle T and sleeve S being in the position shown in Fig. 5; and the main wires W being stationary in the perforations in said spindle, the barb-wire x is fed forward by suitable mechanism, passing between the main wires at right angles thereto, and immediately under the wrapping-pin K in the face of the sleeve S. The sleeve is then rotated in the direction indicated by the arrow in Fig. 5, through an angular space of four hundred and fifty degrees, or one and one-fourth revolutions, to the position shown in Fig. 6. The barb is then severed between the feeding mechanism and the main wires, and the form of the barb after such separation is shown in Fig. 7, which is the same as Fig. 6, except that it is reversed in order to show clearly the position of the rod c and finger d in relation to the barb. From the position shown in Fig. 7 the rod c is rotated one hundred and eighty degrees in the direction indicated by the arrow, carrying the finger d through the slot g, and bringing the end x of the barb into the position shown in Fig. 8. A reverse movement of the rod c withdraws the finger d, and the rotation of the sleeve S in the direction of the arrow in Fig. 8 through an arc of ninety degrees brings the point x into a vertical position against the shoulder l, makes the points parallel, and completes the barb. The main wires are then fed forward through a space equal to the distance between two adjacent barbs, when all the barb-forming parts are in the same position shown in Fig. 5, and are ready for the making of a second barb.

In the drawings no mechanism is shown for feeding the wires or for severing the barb-wire, these devices being well known and substantially the same in all wire-working machinery. The means shown for rotating the barb-forming parts are also well-known me-

chanical expedients. No novelty is claimed for them, nor are they material to the working of those parts of the machine which are believed to be new, as they may be readily replaced by other means equally simple and practical.

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

1. In a wire-barbing machine, a stationary spindle longitudinally perforated for the passage of two main wires, and slotted between said perforations to permit the tucking through it of the end of a barb formed on said wires, in combination with means, substantially as described, for tucking the end of the barb through said slot.

2. The combination of a stationary spindle longitudinally perforated for the passage of two main wires, and slotted between such perforations to permit the tucking through it of the end of a barb formed on said main wires, a sleeve rotating on said spindle and provided with a wrapping-lug in its face, and means, substantially as shown, for tucking the end of said barb through said slot.

3. The combination of a stationary spindle longitudinally perforated for the passage of two main wires, and slotted between such perforations to permit the tucking through it of the end of a barb formed on said wires, means for wrapping the barb about said wires, a tucking-finger lying in the plane of said slot, and means, substantially as described, whereby the said finger may be rotated through said slot, for the purpose of tucking through it the end of said barb.

4. The stationary spindle T, perforated and slotted, as shown, and having in its face the recessed sector e and shoulder l, in combination with the sleeve S and lug K, thereto attached, the rod c and finger d, formed integrally therewith, and means, substantially as described, for imparting reciprocal rotary motion to said sleeve S and rod c.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANK W. BRAINERD.

Witnesses:

R. H. WILES,
OSCAR TAYLOR.