(No Model.)

4 Sheets—Sheet 1.

I. A. KILMER, Dec'd.

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WIRE BARBING MACHINE.

No. 519,633. Patented May 8, 1894.

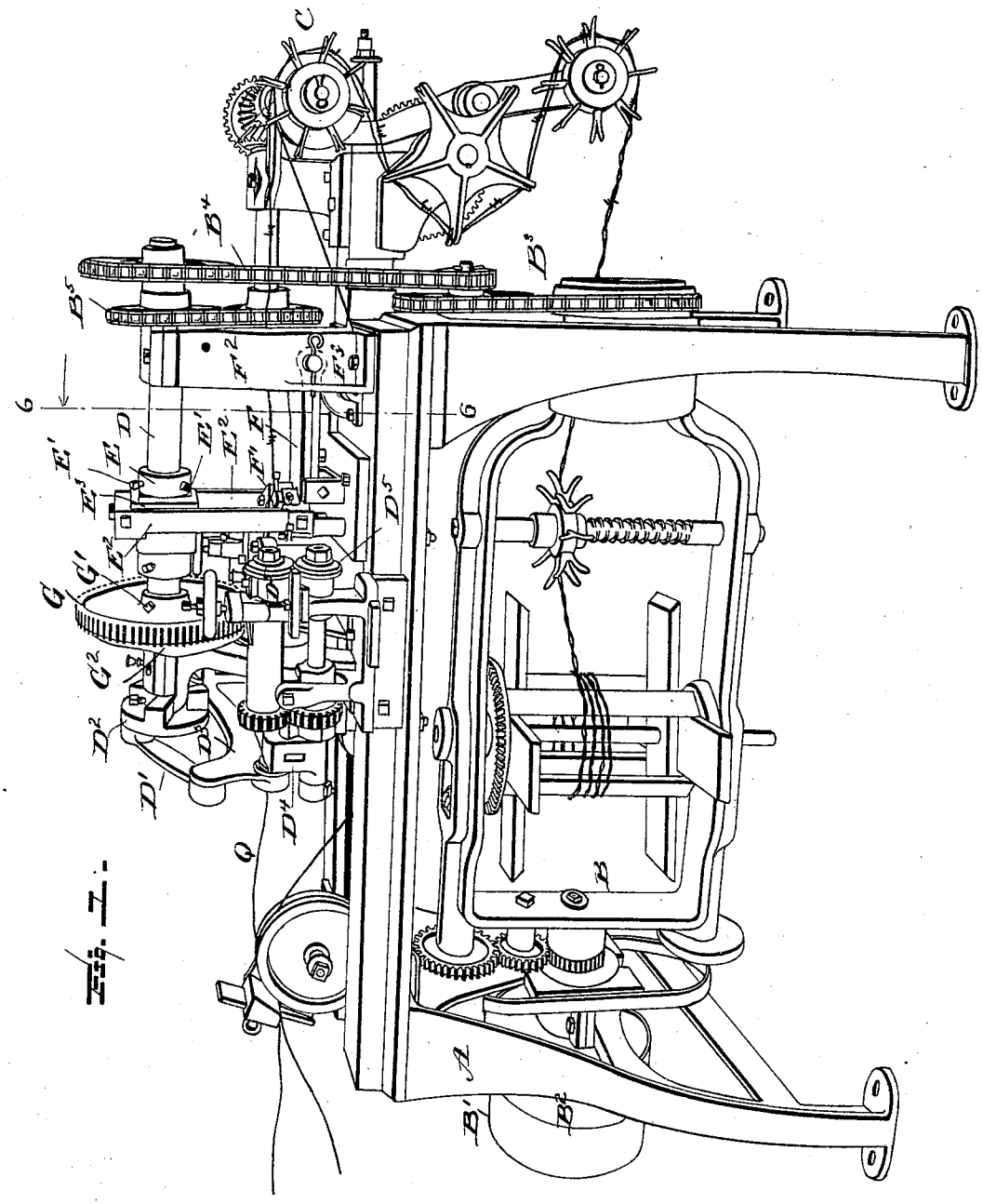

Fig. 1.

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Fig. 2.

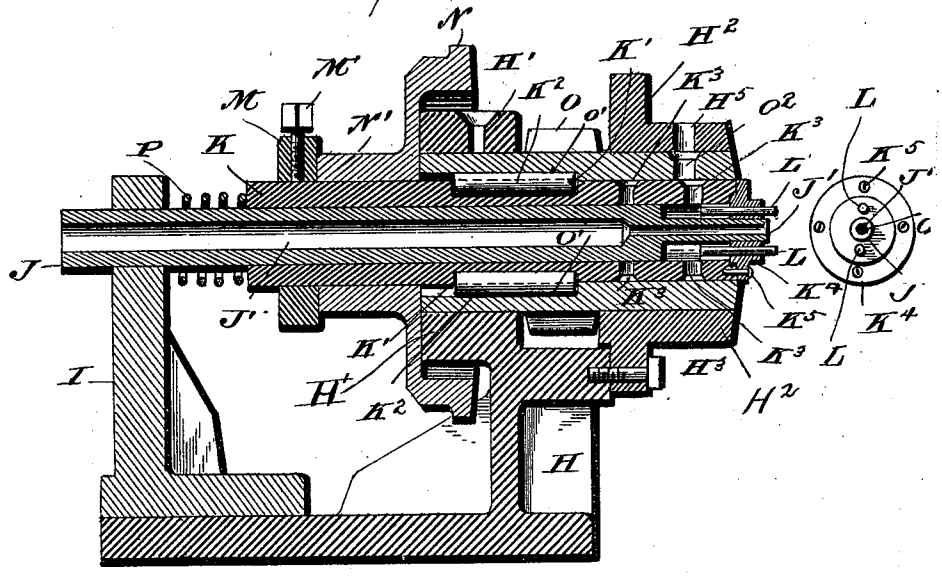
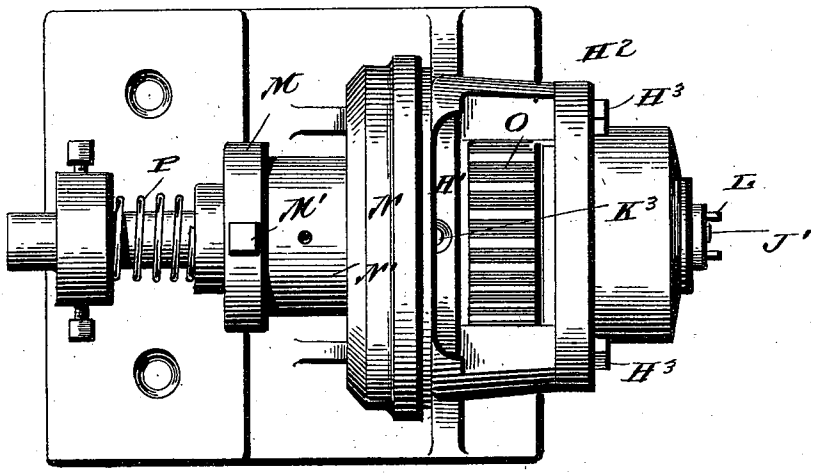


Fig. 3.



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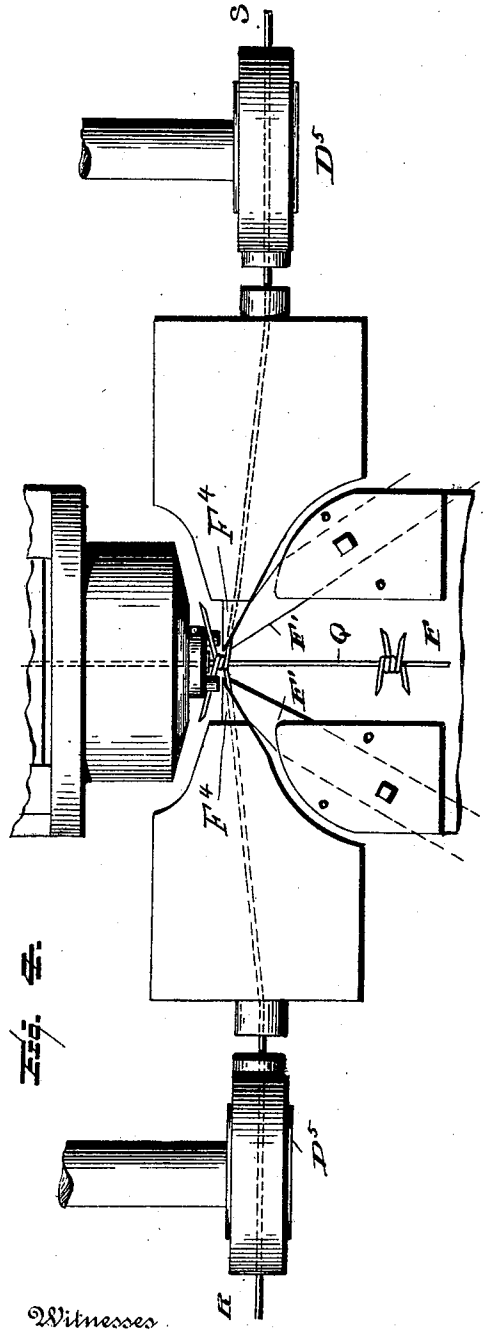

Fig. 4.

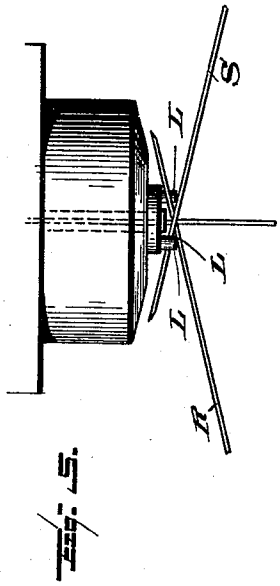

Fig. 5.

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WIRE BARBING MACHINE.

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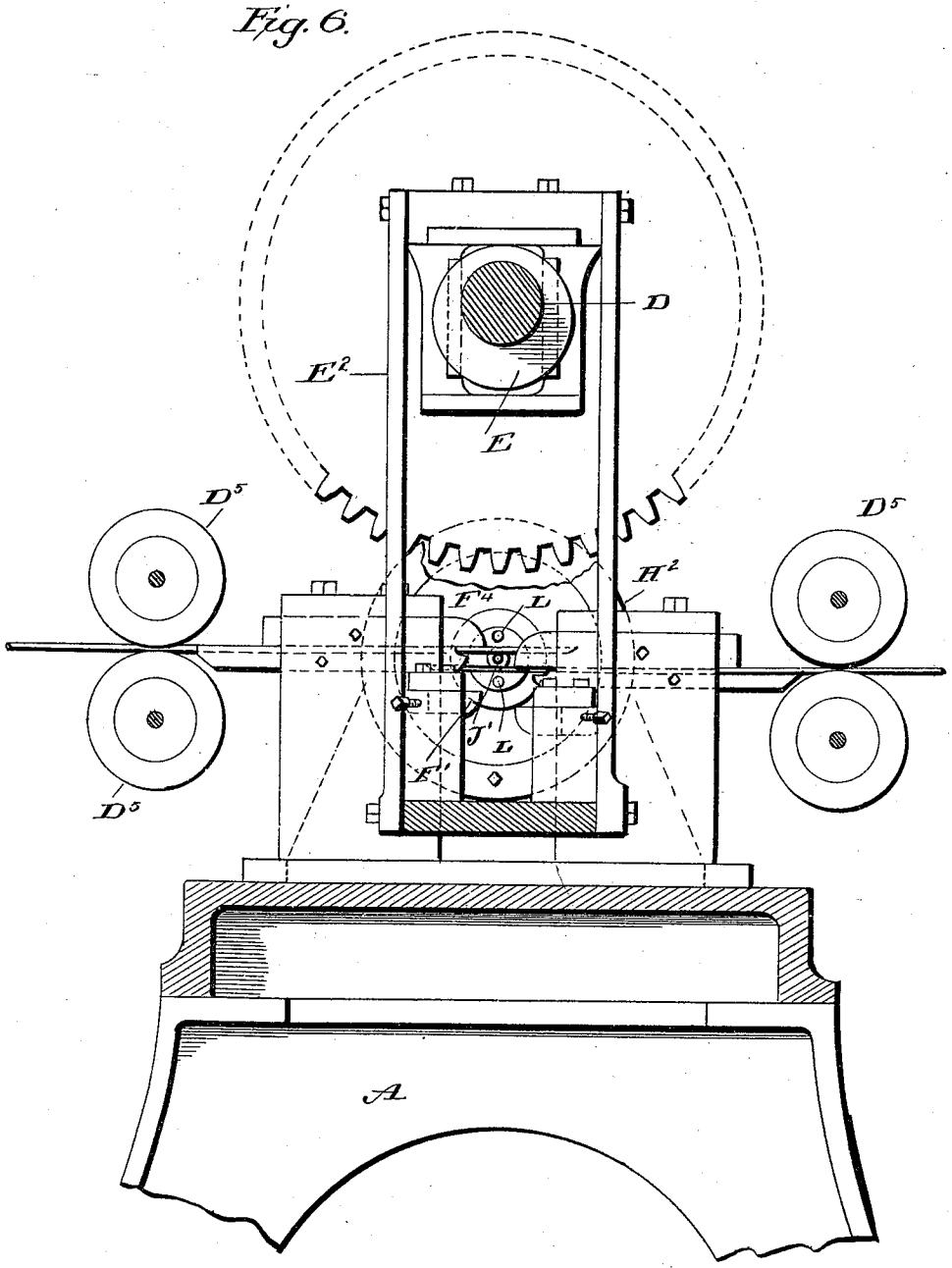
Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM A. KILMER, OF NEWBURG, NEW YORK, ADMINISTRATOR OF IRVING A. KILMER, DECEASED.

WIRE-BARBING MACHINE.

SPECIFICATION forming part of Letters Patent No. 519,633, dated May 8, 1894.

Application filed December 23, 1893. Serial No. 494 520. (No model.)

To all whom it may concern:

Be it known that IRVING A. KILMER, deceased, late a citizen of the United States, residing at Newburg, county of Orange, State of New York, (WILLIAM A. KILMER, of Newburg, Orange County, State of New York, administrator of said IRVING A. KILMER,) invented certain new and useful Improvements in Barb-Wire Machines, of which the following is a specification.

This invention relates to wire barbing machines and has reference among other details to the construction and mode of operation of the barb wire cutting mechanism and the barb coiling mechanism together with other details hereinafter described, the novel features of the invention being particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a perspective of an entire machine in which is embodied the invention. Fig. 2 is a central, vertical section of the coiling head and an end elevation of a cap to the same. Fig. 3 is a plan of the coiling head, and Figs. 4 and 5 are details on an enlarged scale for the better illustration of the operation of the principal parts. Fig. 6 is a vertical cross section on the line 6 6 of Fig. 1 looking in the direction of the arrow.

Like letters refer to like parts in all the figures of the drawings.

A is a framework suitable for the support and operation of the various portions of the machine of which B is the spooling frame to which power is applied by means of belt-pulleys B′, B^2 and from which by means of sprocket-gearing B^3, B^4, B^5, power is conveyed to operate the take up mechanism C, and the feed shaft D which, by means of the connecting rod D′ operated by the disk D^2 on said shaft conveys power to the bell crank lever D^3 to which is connected the rock-arms D^4 of the barb-wire feeding mechanism which terminates in the feeding rolls D^5. These parts being of usual construction and possessing a well known mode of operation form no part of the invention and therefore require no further description.

Upon the shaft D there is secured, in this instance adjustably, by means of set screws or bolts E′, a cam E. This cam is embraced by straps E^2 including a box or bearing E^3 within which the cam operates by contacting therewith. The straps E^2 are connected, movably with the free end of a pivoted platform F which carries the movable cutters F′, more clearly shown in Fig. 4. The opposite end of the platform is pivoted in the brackets F^2 of the machine and on a rod or bolt F^3 passing therethrough.

As thus far described it will be seen that at each rotation of the shaft D a movement of the barbed-wire feeding-rolls D^5 sufficient to present wire enough to form barbs is produced. It is understood that the feeding rolls are arranged in position upon each side of the machine to feed a barb-wire at each side in order to produce a four-pointed barb. It is apparent, however, that the various improvements involved in the invention are applicable to a machine constructed for forming other than four-pointed barbs. Not only is the desired movement of the barb feeding mechanism produced at each revolution of the shaft D but in addition thereto and in the same period a vertical, oscillatory movement of the platform F and the cutters F′ thereon is produced. The timing of this latter movement may be regulated by the adjustable connection of the cam E on said shaft, the regulation being such that the severance of the barb wires takes place after they are twisted upon the main strand. As shown clearly in Fig. 4 the movable cutters F′ pass in shearing fashion stationary cutters F^4 the strands being fed under said stationary cutters and over the movable cutters so that at an upward movement of the platform F, the severance is accomplished and by reason of the relative disposition and conformation of the cutters and the direction of the movement of the barb wires, the diagonal severance thereof produces short points thereon.

G represents a gear secured to the shaft D adjustably by means of set screw G′, which gear carries upon a side thereof a cam G^2. The purpose of the gear is to rotate the coiling-head and the purpose of the cam is to reciprocate that part of the coiling head which carries the coiling pins as will appear more fully hereinafter. The adjustment of the gear upon the shaft permits of a control of

the time during the rotation of the shaft at which the coiling pins shall be withdrawn into the coiling head.

Referring now to Figs. 2 and 3 which illustrate in section and plan the coiling head. In this instance the coiling head is mounted in a supplemental frame H, I, the latter forming the bearing for the center guide J, through which is conducted the main strand of wire about which the barbs are coiled and with which the second strand is twisted after the barbs are applied to the main strand. A central bore J′ permits of the passage of the main strand. Upon the center guide there is mounted a sleeve K having a number of exterior longitudinal semi-circular grooves K′ in which are seated three or more splines K^2 which serve to support and reduce the friction of parts mounted upon the sleeve. The sleeve K is provided with oil holes K^3 which give access to the bearing surfaces of the sleeve and of the interposed splines as well as to the parts which rotate upon the sleeve. The outer end of the sleeve is covered by a plate K^4, secured thereto by screws K^5. In the face plate or it may be in the end of the sleeve are secured the coiling pins L which therefore move with the sleeve as a part thereof. A collar M is adjustably secured to the sleeve K by means of the bolt M′. A friction wheel or collar N is also mounted upon the sleeve and its hub N′ abuts against the collar M.

O is a gear mounted on the sleeve and its hub is provided with semi-circular grooves O′ similar to but longer than the grooves K′ in the sleeve K and in these grooves the splines K^2 rest. The increased length of the grooves O′ extend to the inner end of the hub of the gear O. This hub takes bearing in the upper projection H′ of the supplemental frame H and in an additional riser H^2 secured to said frame by bolts H^3.

Calling to remembrance the gear G on shaft D, Fig. 1, and assuming that it is in mesh with the gear O, Figs. 2 and 3, and that its cam G^2, is in mesh with the disk or collar N, the operation of the parts will be seen to be as follows: The gear G rotates the gear O, and this through the splines K^2 will rotate the sleeve K and the coiling pins L upon and about the center guide J. When the cam G^2 is brought with its thickest part against the collar N, the sleeve and the coiling pins are moved rearwardly so that said pins are withdrawn with the face plate K^4 until the pins are flush with or back of the outer end of the center guide. A coiled spring P keeps the wheel or collar N and the parts controlled thereby to the front so that the pins are projected when not otherwise operated upon as described. Now by referring to Figs. 4 and 5, the operation of applying coiling and severing barbs to the main wire Q will be understood. While the main wire is being fed to the center guide the barbed wires are fed from opposite sides of the machine by the mechanism hereinbefore described and at angles to the main wire, one below said wire and above a coiling pin and the other above said wire and below a coiling pin. At this time the coiling head is rotating in a direction to coil the projecting ends of the barb wires R and S adjacent to each other along the main wire, the head making the necessary rotary movement to accomplish this before the cam G^2 operates to withdraw the coiling pins. The cam E now brings into action the cutters F′ and the barb wires R and S are severed and in the interim of the passage of the main wire a distance equal to that at which the barbs are placed from each other, new lengths of barb wires are fed in as before described and the operation is repeated. The purpose of the elongation of the anti-friction roller grooves in the hub of the gear O will be now apparent as it permits of the reciprocation of all parts within the hub necessary for the purpose of projecting and withdrawing the coiling pins. The hub of the gear and the riser H^2 are provided with oil-holes O^2, H^5 respectively.

The various oil holes described communicate with each other either directly or indirectly by means of connecting bearing surfaces so that oil introduced at H^5 supplies the bearings of the pulley within the riser and upon the sleeve and of the sleeve upon the center guide. From thence the oil falls into the bearings of the splines K^2 and of the wheel or collar N and its hub N′. In this manner all the parts are amply lubricated.

What is claimed is—

1. In a wire barbing machine and in combination with the fixed barb wire cutters, movable cutters mounted upon a platform provided for vertical movement and connected for operation with a cam on the feed shaft, substantially as specified.

2. Cutting mechanism for a barb wire machine comprising a movable platform pivoted on a horizontal pivot and carrying cutters, co-operating with fixed cutters and connected with a cam adjustably mounted on the feed shaft whereby the timing of the cutting operation is fixed relative to that of the barb wire feeding mechanism, substantially as specified.

3. The combination with the barb wire feeding mechanism and with the shaft which operates the same, of barb wire cutting mechanism, a platform carrying cutters and mounted for vertical oscillatory movement and a cam adjustably mounted upon said shaft, substantially as specified.

4. A coiling head comprising a center guide, a sleeve mounted thereon with roller splines and carrying the coiling pins, and means for rotating and reciprocating the sleeve, substantially as specified.

5. A coiling head comprising a center guide, a sleeve mounted thereon, a pulley mounted on the sleeve and interposed rollers acting as splines, substantially as specified.

6. A coiling head comprising a center guide, a sleeve provided with a face plate carrying coiling pins and with spline seats and a gear the hub of which is provided with spline seats longer than those in the sleeve, a wheel or collar mounted on the sleeve and adapted to contact with a cam for reciprocating the sleeve independently of the gear and the center guide, substantially as specified.

7. A coiling head comprising a center guide, a sleeve mounted thereon for rotation and reciprocation, a gear mounted on the sleeve for rotating the same, a collar mounted on the sleeve for reciprocating the same in one direction and a spring for reciprocating it in an opposite direction, substantially as specified.

8. A coiling head comprising a center guide, a sleeve mounted upon the guide and provided with a face plate embracing the guide and carrying coiling pins and with spline seats, a gear mounted on the sleeve and provided with spline seats, interposed splines, and bearings for rotatably supporting the gear, substantially as specified.

9. A coiling head comprising a center guide, a sleeve mounted for rotation and reciprocation thereon and carrying coiling pins, a gear connected to the sleeve by splines and rotatably mounted in bearings, and a collar mounted on the sleeve and abutting against the gear bearing, and a spring to normally maintain the collar against the gear-bearing, substantially as specified.

10. In a coiling head, a bearing for a gear and for an inclosed sleeve, center guide, and interposed splines, a series of oil holes in the bearing, the gear-hub, and the sleeve for lubricating the interior bearing surfaces of the elements mentioned, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM A. KILMER,
Administrator of the estate of Irving A. Kilmer.

Witnesses:
D. S. WARING,
C. A. MCCREADY.