

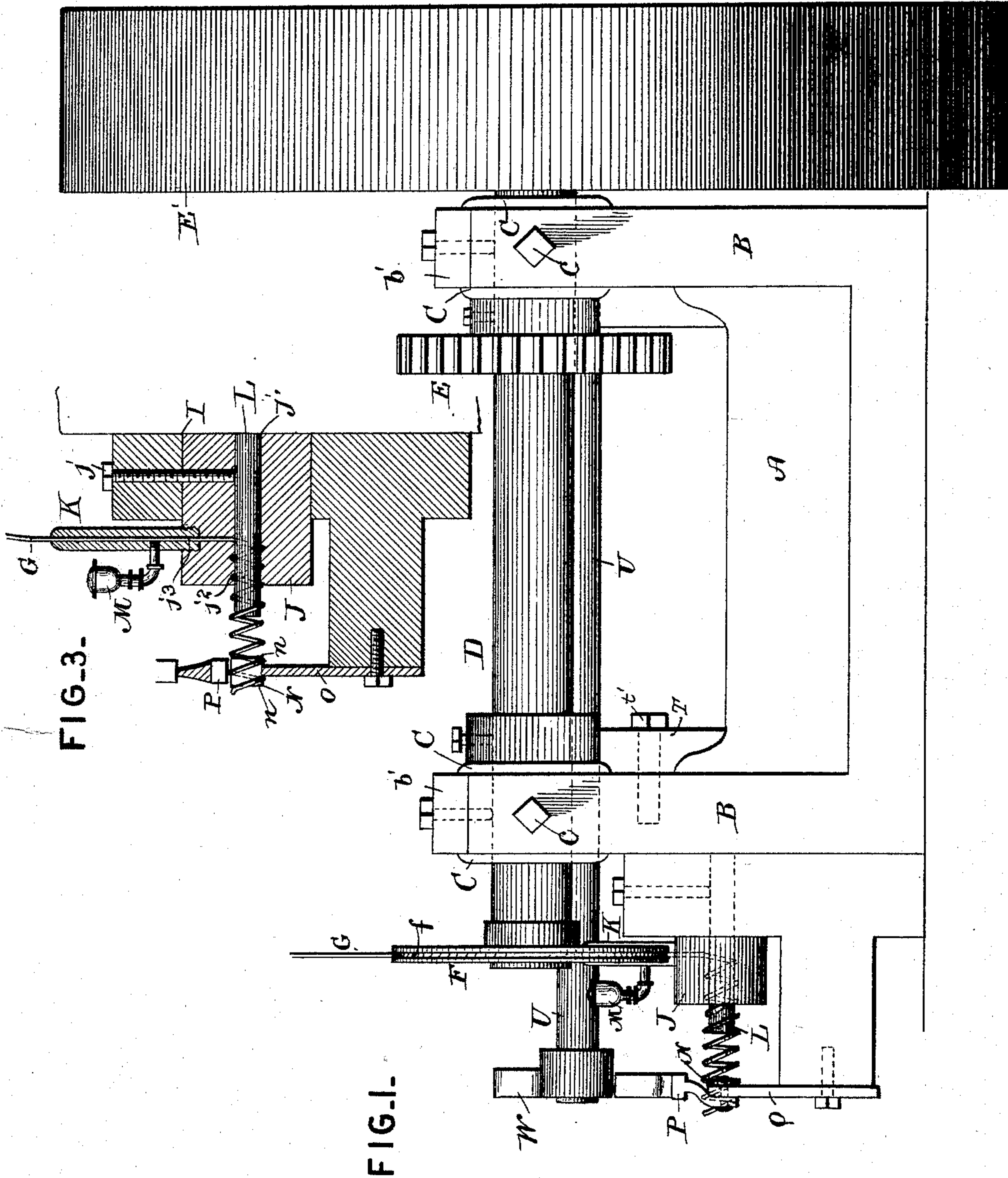
(No Model.)

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E. J. FULGHUM & L. ROBERTS.  
WIRE COILING AND CUTTING MACHINE.

No. 483,321.

Patented Sept. 27, 1892.



Witnesses

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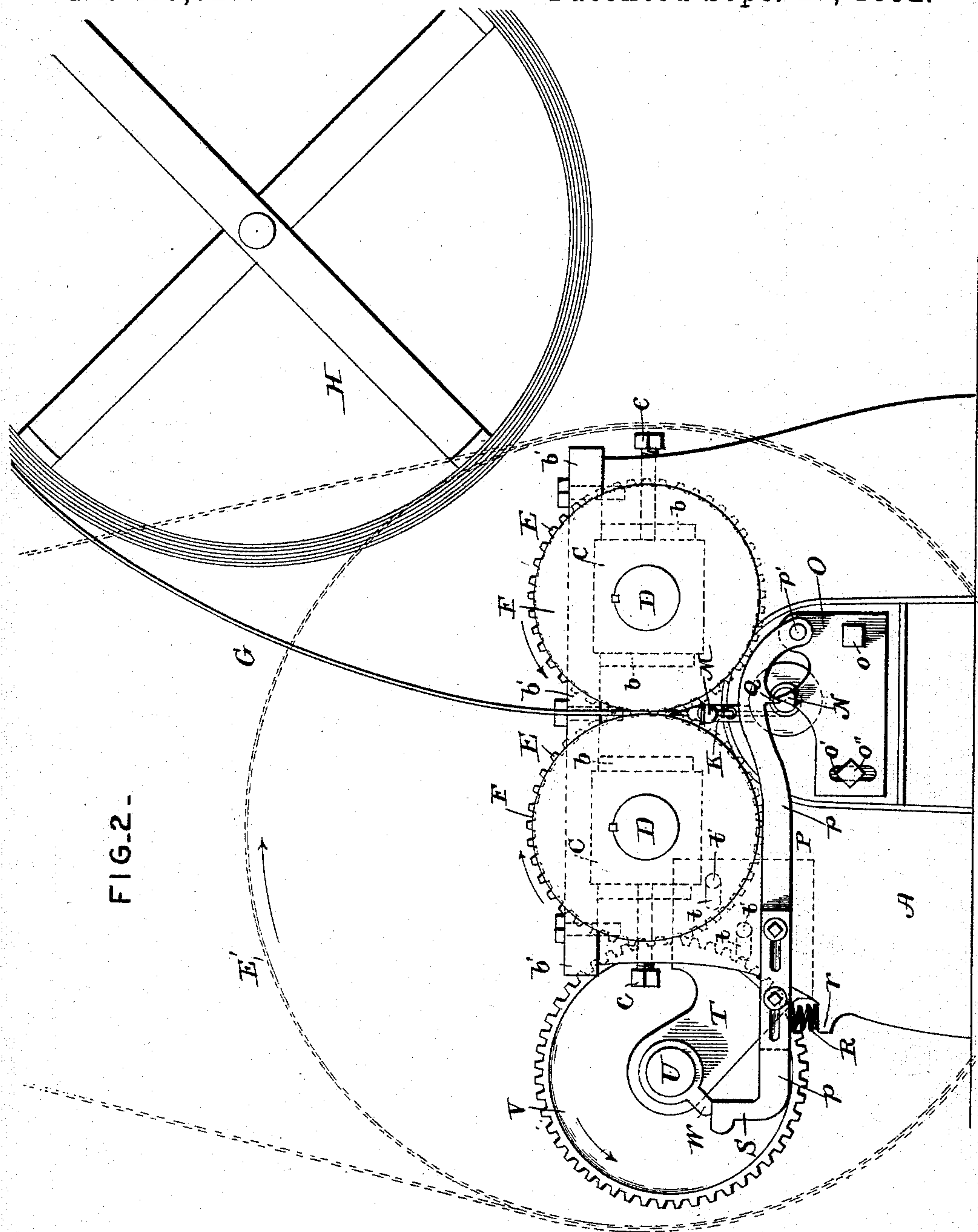
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# UNITED STATES PATENT OFFICE.

ELISHA J. FULGHUM AND LORIN ROBERTS, OF TRAVERSE CITY, MICHIGAN.

## WIRE COILING AND CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 483,321, dated September 27, 1892.

Application filed February 6, 1892. Serial No. 420,485. (No model.)

*To all whom it may concern:*

Be it known that we, ELISHA J. FULGHUM and LORIN ROBERTS, citizens of the United States, residing at Traverse City, in the county of Grand Traverse and State of Michigan, have invented a new and useful Wire-Coiling Machine, of which the following is a specification.

This invention relates to machines for coiling wire; and it has for its object to provide a machine of this character for coiling wire of any size into coils which can be made of any size and length, according to the option of the manufacturer, and at the same time to provide means for regularly cutting the coils in lengths at regular intervals, which may be regulated at will.

To this end it is the object of this invention to provide a wire coiling and cutting machine which shall have the various parts comprising the same so combined and related with each other as to effectively and accurately attain the ends aimed for.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a wire coiling and cutting machine constructed in accordance with our invention. Fig. 2 is a front view of the same. Fig. 3 is a detail sectional view through the cylindrical coil-die and the adjacent cutting-knives.

Referring to the accompanying drawings, A represents a suitable bed or framework having at each end the standard portions B, each of which is provided with the opposite guide-openings  $b$ , inclosed by the cap-plates  $b'$ , said openings receiving and accommodating the laterally-adjustable flanged bearing-blocks C, working therein and adjusted by means of the side set-screws  $c$ , working through opposite sides of said standard-arms and engaging the bearing-blocks C therein. The bearing-blocks C accommodate the parallel and horizontal feeding-shafts D, extending beyond one end or the front of the machine, and which carry the intermeshing gear-wheels E, keyed thereto adjacent to one end of the frame A. A large power wheel or pulley E'

is keyed on the end of one of said shafts and serves to communicate motion from suitable machinery to said parallel feed-shafts, which are thus caused to revolve toward each other or in opposite directions, as indicated by the arrows in Fig. 2 of the drawings.

Securely keyed to the projecting ends of both of the feed-shafts D are the solid wire feeding disks or wheels F. Each of the said feeding-wheels F is provided with a V-shaped peripheral groove  $f$ , which, with the groove of the opposing feed-wheel, serves to grasp the wire G and force the same downward. The wire G is wound upon an ordinary reel H, suitably located adjacent to the machine. By means of the adjustable bearing-blocks  $b$  the said feeding-wheels F are pressed against the wire G, fitting into their V-shaped grasping grooves at the point where they most nearly intersect, and are clamped tightly thereagainst by means of the set-screws  $c$ , in order to secure sufficient friction to force the wire downward under considerable force. This adjustment provides for the accommodation of the machine to various thicknesses of wire.

The end of the frame or casting A directly below the feeding-wheels F is provided with a circular die-recess I, which receives and accommodates the cylindrical removable coil-die J, which is rigidly held in position within said recess, or, more properly speaking, socket, by means of the binding-screw  $j$ , passing through said socket and into the die. The said die J is provided with a horizontal central bore  $j'$ , which bore is spirally grooved at  $j^2$  from its outer end to a point about midway of its length, at which point the spiral groove connects with the wire receiving and guiding perforation  $j^3$ , passing through the body of the circular die J and communicating with the wire-guide tube K, located directly above the die and suitably secured to or within the body of the framework or casting A. The central bore  $j'$  is snugly closed by the solid-metal plug L, also held in place by means of the fastening-screw  $j$ , and which causes the wire forced through the opening  $j^3$  in the die to pass therearound and through the spiral groove which coils the same. A self-lubricating oil-cup M is connected with the guide-tube and serves to lubricate the wire, so that it passes easily through the die without caus-



ing any heat. The guide-tube K receives the wire directly from the feeding-wheels F and furnishes not only a guide for directing the wire into the die, but also allows for the necessary lubrication of the wire just noted. It is of course understood that this guide-tube is only of a size or bore sufficient to receive the wire passed therethrough. The guide-tube and the removable die may be changed according to the thickness of the wire coiled, in such case the spiral groove of the die being of the requisite size to correspond with the wire. The plug L slightly projects beyond the outer end of the cylindrical die J and serves to guide the coiled wire passing therefrom to the cutting-knife N, located opposite the die J. The said knife or knife-edge N is carried upon the vertically-adjustable knife-plate O. The said knife-plate O is bolted at one corner at *o* to the bed of the machine at one end and at the opposite corner or end is provided with a vertical slot *o'*, working over the securing-bolt *o''*, which allows the said knife-plate to be adjusted vertically to adjust the knife N with respect to the upper knife-lever P, working thereover. The said knife N or knife-blade projects, as at *n*, to either side of the plate carrying the same, so as to receive the coiled wire passing from the adjacent guide and which spins itself out and around the knife, or, more properly speaking, stationary member, over which automatically works the upper pivoted knife-lever P. The said knife-lever P comprises the laterally-adjustable slotted sections *p*, clamped together so as to allow for the adjustment of the knife-lever for the purposes which will readily appear. The said knife-lever is pivoted at one end at *p'* to the plate O and adjacent to said pivotal connection is provided with a knife or cutting edge Q, so disposed as to just pass the edge of the cutting-knife N, and thus sever the coil of wire at the proper length, according to the adjustment of said lever. The said lever P is normally held up and away from the knife N and the coil winding thereover by means of the spring R, resting upon the shoulder *r* on the frame A and bearing thereunder, and said lever is further provided at its free end with the upwardly-extending stop S.

Adjustably clamped to the end standards B of the base or frame and at one side of the machine are the bearing-arms T. The said bearing-arms T are provided with the adjusting-slots *t*, which receive the clamping bolts or screws *t'*, passing therethrough and the main base or frame of the machine. The said bearing-arms T accommodate the offstanding horizontal shaft U, upon which is keyed the gear-wheel V, meshing with the adjacent gear-wheel E on the adjacent feeding-shaft D, and from which motion is communicated to said gear-wheel V. To one end of the shaft U is secured the strikearm or lug W, which at each revolution of the shaft U and the cog-wheel V, driving the same, strikes the

upper end of the stop S and forces the knife-lever P downward, thus severing the coil of wire at the proper moment, and which continues to spin out until another revolution of said cutting-shaft, when another length of the coiled wire is cut off.

The adjustable bearing-arms T provide means whereby various sizes of wheels V, driving the cutting-shaft U, may be used, so that the cutting of the coil of wire in different lengths may be provided. The adjustment of the knife-lever P allows the same to be adjusted with relation to the different sizes of cutting-wheels used.

The construction, operation, and advantages of the herein-described wire coiling and cutting machine are thought to be apparent without further description.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a machine of the class described, the combination of the frame having a die socket or recess at one end, parallel feeding-shafts laterally adjustable upon said frame, feeding-disks keyed to one end of said shafts, a cylindrical coil-die removably fitting the die socket or recess and provided with a central bore and a spiral coil-groove formed in the face of the bore near one end thereof, a solid plug registering with the bore of said die and projecting beyond one end thereof, a single fastening-screw passing through the frame and the die mounted in the same and impinging against the plug within said die to secure the various parts together, and knife members arranged directly opposite the projecting ends of said plug, one of said members being adapted to receive the coil, which spins and winds over the cutting-edge thereof, substantially as set forth.

2. In a machine of the class described, the combination of the frame having a die socket or recess at one end, parallel feeding-shafts journaled in said frame, feeding-disks keyed to said shafts, a removable cylindrical coil-die detachably secured within said socket or recess beneath said feeding-wheels and provided with a central bore, a spiral coil-groove formed in the face of the bore and extending from one end to an intermediate point, and a wire-receiving opening passing through the body thereof and forming a continuation of said spiral groove from its intermediate or central terminus, a solid plug snugly fitting said bore and projecting beyond the die to direct the wire around said spiral groove and beyond the die, said plug being removably secured in place within said die, and means for rotating said shafts, substantially as set forth.

3. In a machine of the class described, the combination, with the bed or frame, of the feeding-wheels and means for rotating the same toward each other, a coil-die, a stationary adjustable knife-plate adjustably secured to said bed and provided with a knife edge or blade adapted to receive the coil which spins



and winds thereover, a laterally adjustably  
spring-pressed knife-lever pivoted to said  
knife-plate and provided with a knife-edge  
working over said stationary knife-plate, and  
5 means for automatically operating said knife-  
lever at regular intervals, substantially as set  
forth.

4. In a machine of the class described, the  
combination, with the frame or bed, of the  
10 feeding-shafts having feeding-wheels and in-  
termeshing gear-wheels, a coil-die, a station-  
ary knife member located directly opposite  
said coil-die and receiving the coiled wire, a  
movable spring-pressed knife member pivoted  
15 to said stationary knife member and working  
over the same, said movable knife member  
having an upwardly-extending stop, later-

ally-adjustable bearing-arms, a cutting-shaft  
 journaled in said arms and having a gear-  
wheel meshing with one of said feeding-shaft 20  
gear-wheels, and a strike arm or lug keyed  
to one end of said cutting-shaft and adapted  
to engage said movable knife member stop at  
every revolution of the shaft, substantially  
as set forth.

In testimony that we claim the foregoing as  
our own we have hereto affixed our signatures  
in the presence of two witnesses. 25

ELISHA J. FULGHUM.  
LORIN ROBERTS.

Witnesses:

W. A. HANNA,  
THOS T. BATES.