

(No Model.)

J. VERMEULEN.
SPIRAL SPRING COILING MACHINE.

No. 481,443.

Patented Aug. 23, 1892.

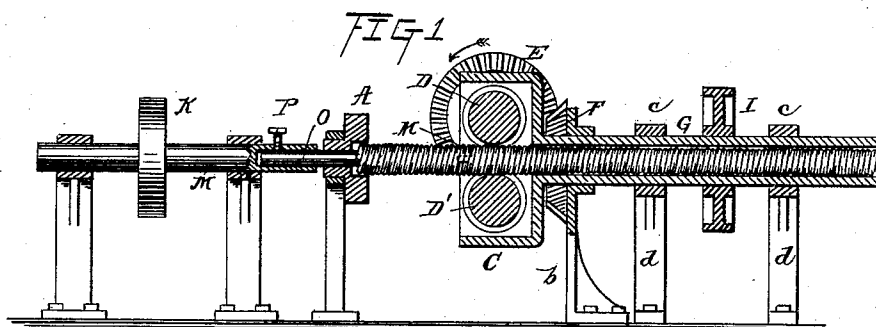


FIG. 2.

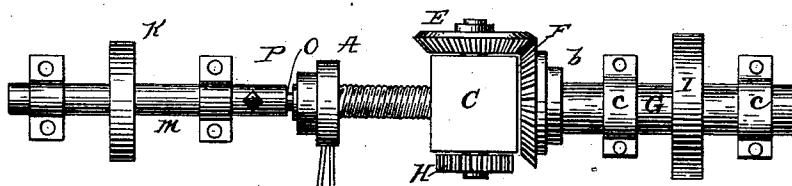


FIG. 3.

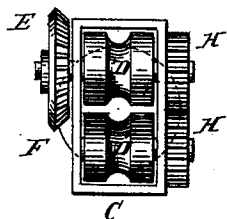


FIG. 4.

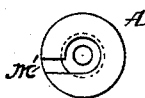


FIG. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN VERMEULEN, OF NEW YORK, N. Y., ASSIGNOR, BY MENSE ASSIGNMENTS,
TO THE OLIVER & ROBERTS WIRE COMPANY, LIMITED, OF PITTSBURG,
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SPIRAL-SPRING-COILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,443, dated August 23, 1892.

Application filed March 31, 1890. Serial No. 345,998. (No model.)

To all whom it may concern:

Be it known that I, JOHN VERMEULEN, a citizen of Belgium, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Spiral-Spring-Coiling 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 appertains to make and use the same.

The object of my invention is to produce spiral springs by a new and economical method and to avoid the defect of existing machines, among which I will mention the flattening or distorting of the wire while being coiled.

My machine is adapted to produce spiral springs of any desired diameter at a rapid and uniform rate of speed and to produce uniform sizes on a given size of mandrel.

One form of my invention is shown in the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a machine embodying my invention. Fig. 2 is a top plan view. Fig. 3 is a detail view of the revolving roller-head. Fig. 4 is a detail view of the forming-die, and Fig. 5 is a sectional view of the forming-die.

Same letters indicate similar parts in the different figures.

The coiling-mandrel M is rotated by means of the pulley K, operated by a belt from a source of power, (not shown,) and this mandrel receives the wire strand from suitable coils. (Not shown.) The wire is coiled around the mandrel O by the revolution of the mandrel M, and on the first starting of a spring is held on the mandrel by its being inserted in the slot M'. (See Fig. 4.) The coiled wire is drawn from the mandrel O by the action of the revolving roller-head, which is mounted on a spindle or hollow shaft G, driven by the pulley I, as the mandrel M is driven. The rolls D D' are rotated by means of the bevel-wheel E, which is meshed with a stationary bevel wheel or rack F, so that when the shaft G, carrying the revolving roller-head, is rotated the action of the bevel-wheels is to rotate the rolls D D' in the direction indicated by the arrow in Fig. 1.

The operation of my machine is as follows: The machine being motionless and a quantity of wire being provided, the end of the

wire is first introduced and secured in the slot M', and on the mandrel being rotated the wire is coiled on the mandrel until it enters the forming-die A, the action of the coiling-mandrel being slightly assisted until the coil becomes long enough to enter between the rolls of the rotating roller-head, where the coiled spring is grasped by the pressure of the rolls. Thus the mandrel coils the spring and the rolls draw the spring off the mandrel and also prevent the spring from uncoiling from the mandrel. In some cases it is necessary to drive the rotating roller-head at a slightly-increased speed, so as to cause the newly-formed spring to adhere closely to the mandrel M. The operation of making the springs is now continued as long as the length of the wire will permit or as is desired.

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

1. A machine for coiling wire, which consists of a revolving mandrel for coiling a strand of wire and a pair of rollers which revolve at or about the same speed as the coiling-mandrel, said rollers feeding the coil onward from the mandrel, and means for imparting a positive motion of rotation to said rollers, substantially as described.

2. A machine for coiling wire, which consists of a coiling-mandrel, forming-die, and a rotating head, rotating rollers for said head, means for rotating the head, and means for rotating the rollers upon their axes, substantially as set forth.

3. In a machine for coiling wire, the combination of a coiling-mandrel, a forming-die through which said mandrel passes, rollers geared together and having their axes transverse to the coiling-mandrel and arranged on opposite sides thereof, a bevel-wheel mounted upon one of the rollers, a revoluble head within which the rollers are mounted, a shaft for revolving said head, and a stationary gear-wheel meshing with the bevel-wheel, substantially as described.

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

JOHN VERMEULEN.

Witnesses:

H. A. VIEU,
HENRY RENBERT.