D. J. POWERS.

Machines for Coiling and Weaving Wire.

No. 154,563. Patented Sept. 1, 1874.

Fig 1.

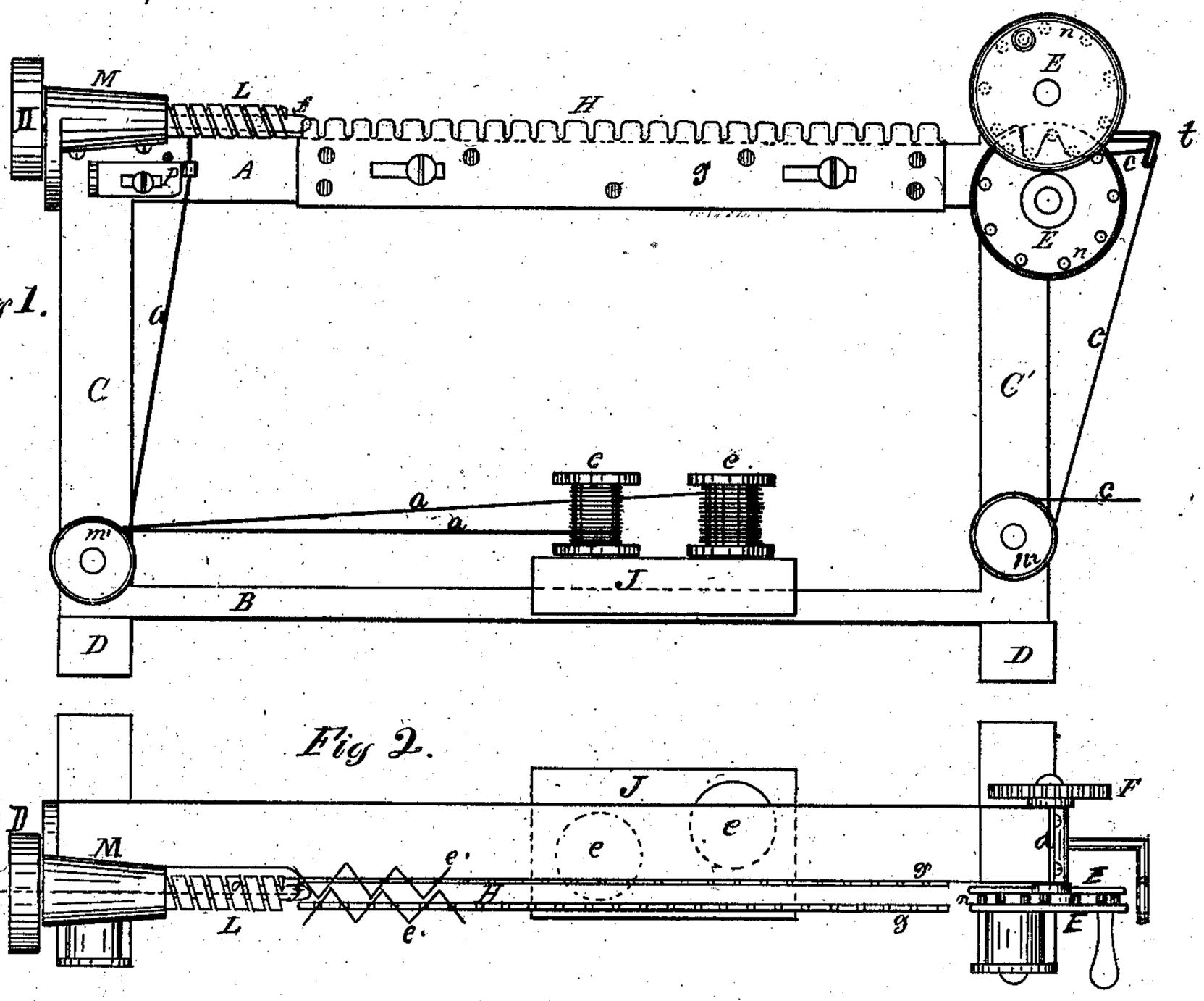


Fig 2.

Fig 3.

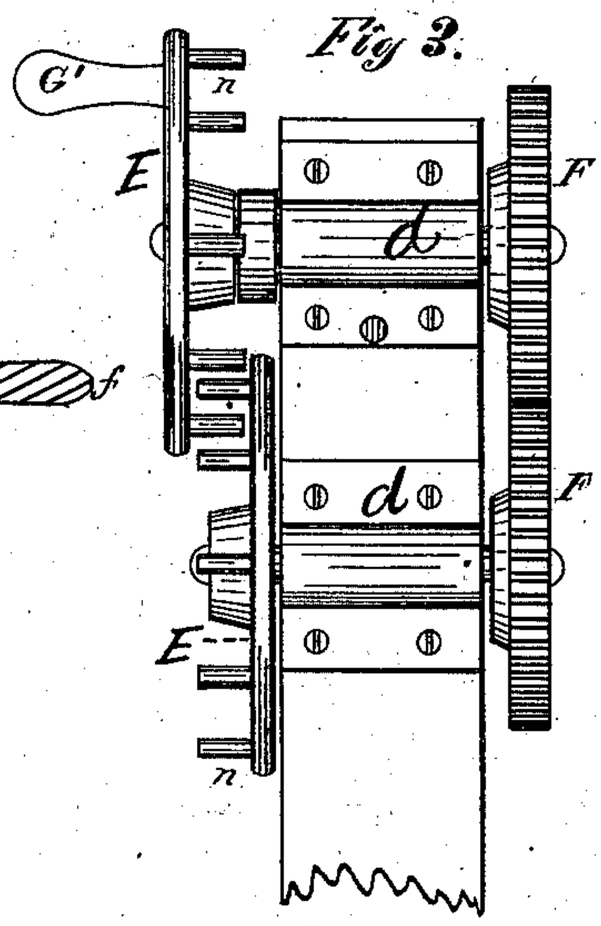
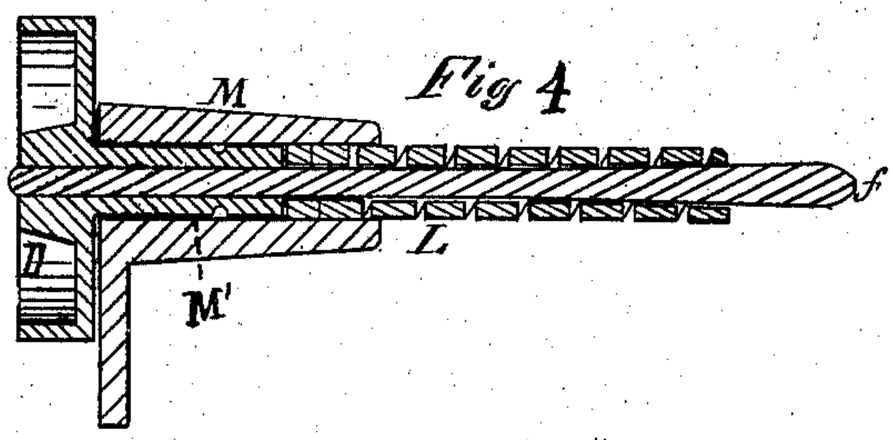


Fig 4



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IMPROVEMENT IN MACHINES FOR COILING AND WEAVING WIRE.

Specification forming part of Letters Patent No. **154,563**, dated September 1, 1874; application filed August 22, 1873.

To all whom it may concern:

Be it known that I, DAVID J. POWERS, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvement in Machines for Weaving Wire Fabrics; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a side elevation of a machine for weaving wire fabrics embodying my said invention. Fig. 2 is a general plan or top view of the same. Fig. 3 is an enlarged end view of the same, showing that portion of the machine used in giving form to zigzag wire used in connecting the coils; and Fig. 4 is an enlarged longitudinal central section of the device employed in coiling the wire detached.

Similar letters of reference indicate like parts in the several figures of the drawing.

My invention relates to that class of machines employed in the manufacture of wire fabrics for spring-mattress bed-bottoms, which consist of alternate zigzag wires connected by alternate coils interlocked by passing the coils through each alternate angle of the zigzag wire; and the invention consists in the employment of a revolving tapering spindle, in combination with a stationary grooved mandrel passing around the spindle and adapted to receive and guide the wire whereby the angles of the coil are determined; and in the mechanism employed in holding the wire during the process of interlocking the coils into the zigzag wires, as will be more fully understood by the description and claims.

In the drawing, A represents the frame-work of the machine, which is substantially made of wood or metal, and of any requisite form that will receive the operating parts. E E are face-wheels, which are mounted on transverse shafts journaled in boxes *d d* attached to the end C′ of the frame. Mounted on the end of these shafts, opposite to the face-wheels, are gear-wheels F F, which are of uniform diameter, and so arranged as to engage each other, by which means a uniform rotary motion is imparted to the wheels E E as power is applied to the crank G′. Secured within the approximate faces of the wheels E E are pins *n n*, as shown in Fig. 3. These pins are so arranged as to be of a uniform distance one from the other, and the wheels are arranged upon the shaft in such a manner as to bring the pins of one wheel in the center between the pins of the other wheel as both are uniformly rotated, and are arranged relative to the diameter of the wheels, so as to bring the pins in one wheel slightly past the pins in the other wheel and toward the center of the same, as shown by dotted lines in Fig. 1. Journaled to the end C′ of the frame is a sheave-wheel, *m*, which is so arranged as to freely revolve on its shaft. Permanently attached to the upper portion of the end C of the frame is a hollow head-block, M, extending parallel with the upper surface of the same. Loosely secured within this head-block is a hollow sleeve, M′, which is so arranged as to freely revolve therein. Mounted upon the outer end of this sleeve is a pulley, D, around which is passed a belt, (not shown,) communicating with any suitable motor by which a rotary motion is communicated to the sleeve. Permanently secured within this sleeve and extending parallel with the upper surface of the frame is a spindle, *f*, which is so arranged as to revolve within the head-block. This spindle extends outward from the head-block, and is slightly enlarged at its outer end, as shown in Fig. 4. Permanently secured within the end of the head-block and around the spindle is a forming coil or mandrel, L, which is also so arranged as to allow the spindle to revolve freely therein. The spiral openings in this mandrel are such as to allow the wire to be coiled to pass loosely through the same. J is an adjustable frame, which is loosely attached to the bed-timber B of the main frame. This frame J is so arranged as to admit of being moved in the direction of its length, and firmly secured at any requisite adjusted point. Mounted on this frame are spools *e e*, upon which the wire, *a*, to be coiled is secured. *m′* is a sheave-wheel, which is journaled to the lower portion of the end C of the frame, and so arranged as to freely revolve. P is an adjustable guide, which is so attached to the side of the upper portion of the frame as to admit of being

moved in the direction of its length, and firmly secured at the requisite adjusted point by a set-screw passing through the same. This guide is provided with an eye, through which the wire to be coiled loosely passes. The object of this guide is to change the position of the wire relative to the openings in the forming-coil. Permanently attached to the side of the upper portion of this frame are metal plates *g g*, which form the holding device H. These plates are each provided with a series of transverse channels formed in the upper edge, as shown in Figs. 1 and 2, and are so arranged upon the frame as to bring the channel on each plate in the center between the channels in the other plate, as shown in Fig. 2. The object of these plates is to hold the zigzag wire in the proper position to allow the coil to pass around the same at the intersection of the angles as the coils pass from the spindles.

It will be observed, by reference to Fig. 4 of the drawing, that the portion of the spindle passing through the forming-coil is made tapering, so as to increase the diameter of the same at the outer end, the object of which is to so tighten the coil as to cause the latter to be drawn through the forming-coil, and at the same time so expand the coil as to insure a uniform diameter of the same regardless of the spring of the wire.

In using my invention, the wire *c*, from which the zigzag wires are made, is wound around a suitable spool, (not shown,) and from the spool it passes around sheave-wheel *m* upward through guide *t*, and between the pins *n n* of wheel E E, and as motion is imparted to the wheel the wire is drawn from the spool and crimped by the engaging of the pins, as shown by dotted lines, Fig. 1, by which the wire is bent in a zigzag form. The wire is then placed in the holder H, as shown at *e*, Fig. 2. The wire forming the coil is wound around spools *e' e'*, and from the spools it is passed around sheave-wheel *m'* upward through the eye of guide P to and around the spindle, and as the latter is rotated the wire is wound around the spindle, the coil passing through the spiral opening in the forming-coil, which determines the angle of the coil, and as the latter passes from the enlarged end of the spindle it passes around the zigzag wires at the intersection of their angles, thus uniting the same, which operation is repeated until the required length of the fabric is formed.

Having thus described my invention, I claim—

1. The tapered revolving spindle *f*, in combination with the stationary open coil L, as specified.

2. In combination with the revolving spindle *f* and stationery open coil L, the adjustable guide P, as specified.

3. In combination with the spindle and open coil, as described, the holding device H, as specified.

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Witnesses.

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