

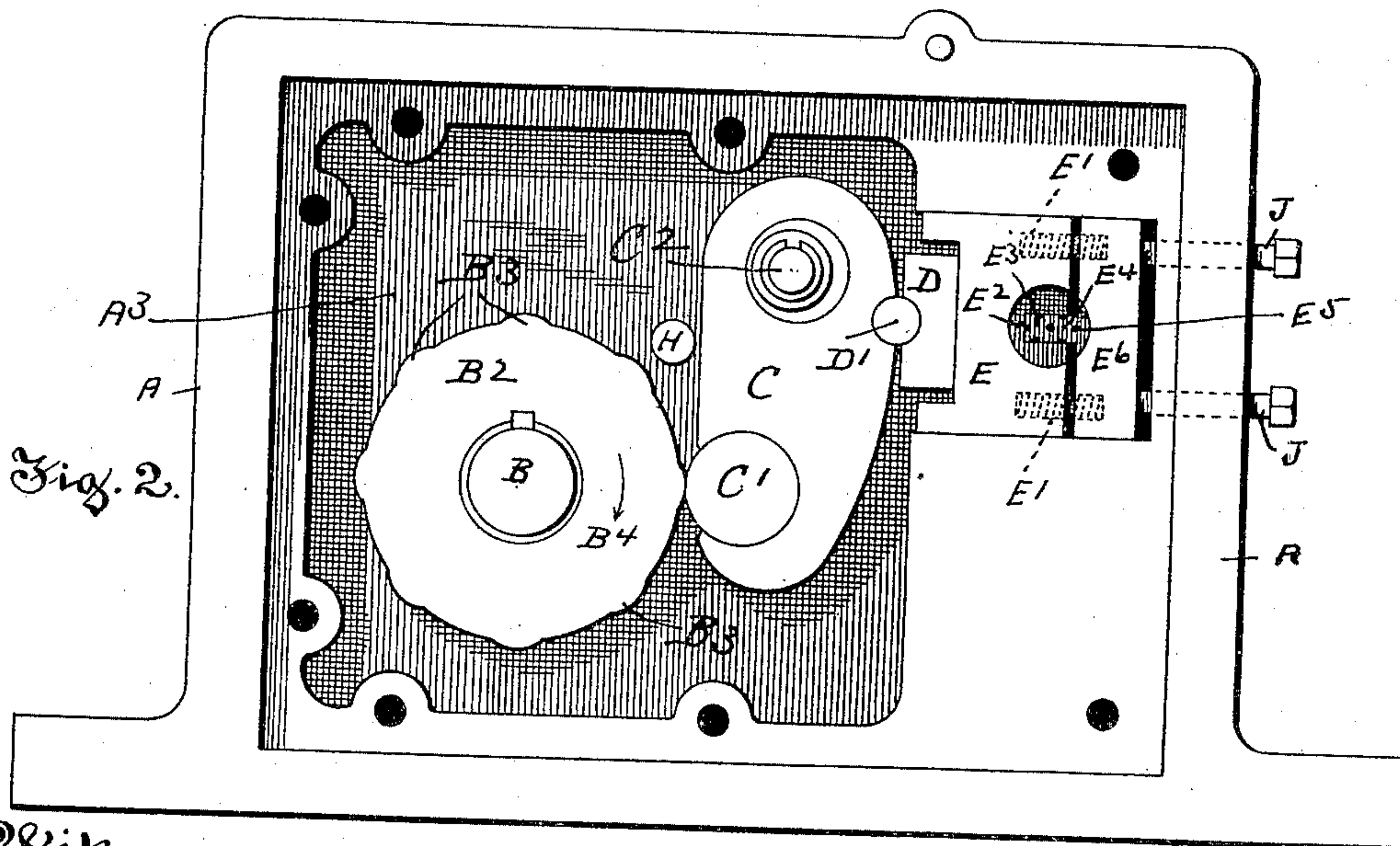
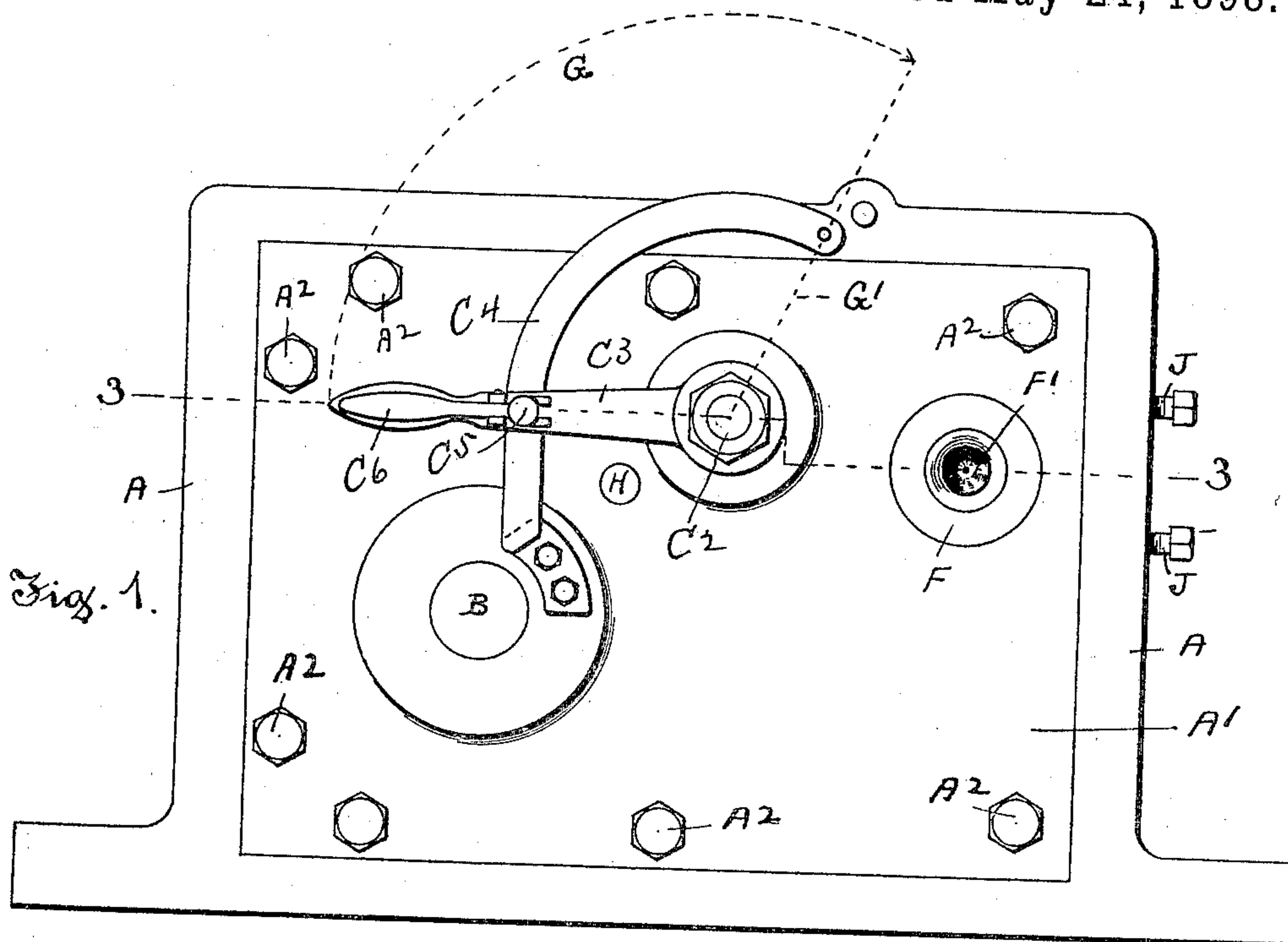
(No Model.)

2 Sheets—Sheet 1.

L. COOK.  
WIRE SWAGING MACHINE.

No. 604,604.

Patented May 24, 1898.



Witnesses  
Alwhiting  
Lena Foster

Inventor  
Leroy Cook.  
By his Attorney  
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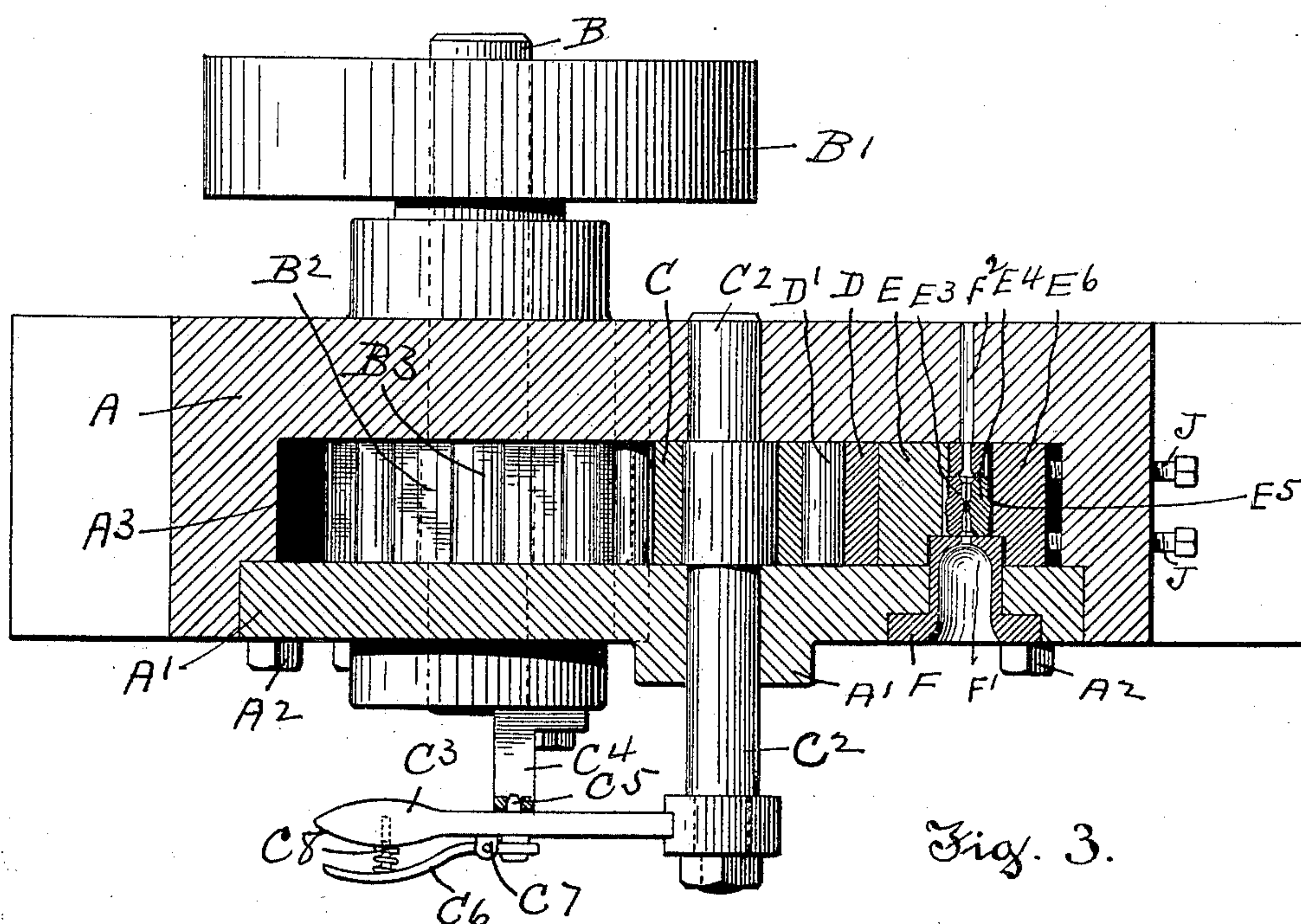


Fig. 3.

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# UNITED STATES PATENT OFFICE.

LEROY COOK, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE WASH-  
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## WIRE-SWAGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 604,604, dated May 24, 1898.

Application filed July 6, 1896. Serial No. 598,096. (No model.)

*To all whom it may concern:*

Be it known that I, LEROY COOK, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Wire-Swaging Machines, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

10 Figure 1 represents a front view of a swaging-machine embodying my invention. Fig. 2 is a front view of the same with the front plate removed in order to disclose the operative mechanism; and Fig. 3 is a horizontal  
15 sectional view on line 3 3, Fig. 1.

Similar letters refer to similar parts in the different figures.

The object of my invention is to provide a wire-swaging machine for swaging bicycle-  
20 spokes, needles, and similar articles which shall be simple and inexpensive in construction and by which the operative parts of the machine shall be relieved of the injurious strains incident to the wire-swaging machines  
25 now in use.

Referring to the drawings, A denotes the framework of the machine, which consists of a shell or case A, preferably cast in a single piece and having its front side closed by a  
30 detachable plate A', secured to the case by bolts A<sup>2</sup> and inclosing a chamber A<sup>3</sup>.

Journalled in the framework of the machine is a shaft B, carrying the belt-pulley B', by which it is rotated. Attached to the shaft  
35 B and inclosed within the chamber A<sup>3</sup> is a cam-wheel B<sup>2</sup>, having a series of projections B<sup>3</sup> on its periphery. The cam-wheel B<sup>2</sup> is rotated in the direction of the arrow B<sup>4</sup>, and the projections B<sup>3</sup> are successively brought into  
40 contact with a roll C', journalled in one end of a lever C, which is pivoted at its opposite end upon a spindle C<sup>2</sup>.

The spindle C<sup>2</sup> is journalled in the frame of the machine with its axis eccentric to the axis  
45 of the lever C, and is provided with a lever-handle C<sup>3</sup>, attached to its outer end and capable of swinging through a limited arc along a curved guide-plate C<sup>4</sup>, which is provided with holes at each end of the movement of  
50 the lever to receive a locking-pin C<sup>5</sup>.

The pin C<sup>5</sup> is held in the end of a lever C<sup>6</sup>, which is pivoted in lugs C<sup>7</sup>, projecting from the handle C<sup>3</sup>, and it is actuated by a spring C<sup>8</sup> to carry the pin C<sup>5</sup> into the holes in the guide-plate C<sup>4</sup> and lock the lever-handle at each  
55 end of its movement.

The lever C is connected with a pressure-plate D by a cylindrical pin D', extending transversely to the lever C and plate D and engaging semicircular recesses formed there-  
60 in and in a horizontal plane between the axis of the roll C' and the axis of the lever C. The pressure-plate D bears against the side of a sliding block E, sliding in ways formed in the frame of the machine and held in con-  
65 tact with the pressure-plate by means of spiral springs E' E'. The lever C, which is of the second class, having the fulcrum at one end and the power applied at the other end, with the work applied between the ends and on the  
70 side opposite the power, hangs from its fulcrum in a vertical plane midway between the periphery of the cam B<sup>2</sup> and the pressure-block D, so that the weight of the lever offers a minimum resistance to the action of the  
75 cam in closing the dies and also to the tension of the springs by which the dies are opened and the lever reversed. The pressure-plate D is capable of a slight vertically-sliding movement in the side of the horizontally-  
80 sliding die-block E in order to allow for the movement of the roll D' in the arc of a circle which is concentric with the spindle C<sup>2</sup>.

The sliding block E is recessed at E<sup>2</sup> to receive a pair of swaging-dies E<sup>3</sup> E<sup>4</sup>, which are  
85 pressed together by being crowded against a vertical side E<sup>5</sup> of the block E<sup>6</sup> by the sliding motion of the block E, as actuated by the lever C and cam-wheel B<sup>2</sup>. A thimble F is held in the plate A', having a funnel-shaped hole  
90 F' in alinement with the openings between the dies E<sup>3</sup> E<sup>4</sup>. The wire to be swaged is conducted to the dies through the hole F' and passes between the dies and a hole F<sup>2</sup> formed in the frame of the machine.

When the machine is in operation, the handle C<sup>3</sup> is brought into horizontal position, as represented in Fig. 1, thereby rotating the spindle C<sup>2</sup> in its bearings to carry the axis of the pivoted lever C toward the dies, so the  
100



action of the cam-wheel B<sup>2</sup> will bring the dies E<sup>3</sup> and E<sup>4</sup> together and compress the wire inserted between them.

When it becomes necessary to interrupt the swaging action of the dies, the handle C<sup>3</sup> is raised through the arc G into the position indicated by the broken line G', thereby rocking the spindle C<sup>2</sup>, so as to move the fulcrum of the lever C away from the swaging-dies, and at the same time bringing the lever C against the stop-pin H, held in the frame of the machine. When the upper end of the lever C is moved away from the swaging-dies by the rocking of the eccentric spindle C<sup>2</sup>, carrying the lever against the pin H, the pin H will act as a fulcrum and serve to move the lower end of the lever C away from the cam-wheel B<sup>2</sup> far enough to carry the roll C' out of the path of the projections B<sup>3</sup>, so the lever C will not be actuated by the rotation of the cam-wheel B<sup>2</sup>. The movement of the upper end of the lever C away from the dies permits the springs E' to act against the sliding plate E and allow the separation of the swaging-dies. The only rotating part of the machine consists of the shaft B and cam-wheel B<sup>2</sup>, driven by the belt-pulley B'. The pressure upon the swaging-dies is applied upon one side only and is received against the vertical wall E<sup>4</sup>, forming a part of the solid framework of the machine.

A single lever C is sufficient to compress the dies, and the cam-wheel B<sup>2</sup>, with its projections B<sup>3</sup>, can be formed in a single piece, and during the period of compression of the wire between the dies the strain upon the cam-wheel is received directly in the plane of its axis.

The block E<sup>6</sup> is held in the ways containing the sliding plate E, and it rests against the points of adjusting-screws J, held in the framework of the machine, by which the position of the block E<sup>6</sup> can be adjusted in order to bring the swaging-die E<sup>4</sup> into proper position. The block E<sup>6</sup> is preferably made heavy to provide inertia to resist the blows upon the swaging-dies. If desired, the adjustable block E<sup>6</sup> can be omitted and the swaging-die E<sup>4</sup> be made to rest against the framework of the machine; but the adjustability of the block E<sup>6</sup> obviates the necessity of the accurate fitting and adjustment of the operative parts of the machine.

I do not confine myself to the employment of the screws J to adjust the block E<sup>6</sup>, as other obvious and well-known means can be employed for that purpose—such, for example, as a sliding wedge inserted between the framework and the block E<sup>6</sup>—or other known means can be employed which will allow the quick movement of the block E in order to open the dies instead of by the rotation of the spindle C<sup>2</sup>.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a pair of swaging-dies, of a sliding block arranged behind one

of said dies, a pivoted lever operatively connected with said sliding block, a cam-wheel by which said lever is actuated to compress said dies, means for shifting the fulcrum of said lever and a stop-pin against which said lever is moved by the shifting of its fulcrum, whereby said lever is carried out of engagement with said cam-wheel, substantially as described.

2. The combination with a pair of swaging-dies of a lever pivoted at its upper end and hanging by gravity in a vertical plane between said dies and an actuating cam-wheel, a cam-wheel arranged to act against the lower end of said lever, means for operatively connecting said lever with one of said dies on the side opposite said cam-wheel and between the cam-wheel and the pivoted end of the lever, and means for moving the pivoted end of said lever away from said dies, substantially as described.

3. The combination with a fixed and movable swaging-die, of a pivoted lever operatively connected with said movable die, a cam-wheel by which said lever is actuated, means for shifting the fulcrum of said lever and a stop-pin against which said lever is moved by the shifting of said fulcrum, substantially as described.

4. The combination with a fixed and a movable die, of a sliding block bearing against said movable die and a pressure-plate capable of a sliding movement at right angles to the movement of said sliding block, a pivoted lever operatively connected with said pressure-plate, and a rotating cam-wheel by which said lever is actuated, substantially as described.

5. The combination with a pair of swaging-dies of a sliding block bearing against one of said dies, a pressure-plate bearing against the side of said sliding block and capable of a slight sliding movement thereon at right angles to the movement of said sliding block and provided with a semicircular recess, a pivoted lever having a semicircular recess opposite the recess in said pressure-plate, a cylindrical pin fitting said recess whereby said lever is operatively connected with said pressure-plate and a rotating cam-wheel by which said lever is actuated, substantially as described.

6. The combination of a pair of swaging-dies, a sliding block bearing against said dies to compress the same, a lever operatively connected with said sliding block and pivoted at one end upon a rotating spindle, a rotating spindle carrying said lever and journaled eccentrically in the frame of the machine, a cam-wheel arranged to act against the free end of said lever, a handle attached to said eccentric spindle, and means for determining the angular movement of said handle, substantially as described.

7. The combination with a pair of swaging-dies, of a lever pivoted at one end and operatively connected with one of said dies, a



rotating cam-wheel for actuating said lever to close said dies, means for simultaneously moving the pivoted end of said lever away from said dies and its opposite end away from said cam-wheel, whereby said lever is rendered inoperative on said dies and at the same time moved out of engagement with said cam-wheel, substantially as described.

8. The combination with a pair of swaging-dies, of a sliding block, E, a pressure-plate D bearing against said sliding block and capable of a slight movement thereon, and provided with a semicircular recess, a lever C pivoted at its upper end upon a rotatable eccentric spindle journaled in the frame of the

machine, said lever having a semicircular recess opposite the recess in said pressure-plate, a pin engaging both of said recesses, a cam-wheel having a series of radial projections acting against the free end of said lever, and a stop-pin H by which the free end of said lever is thrown out of engagement with said cam-wheel by the rotation of said eccentric spindle, substantially as described.

Dated this 2d day of July, 1896.

LEROY COOK.

Witnesses:

RUFUS B. FOWLER,  
LENA KESTER.