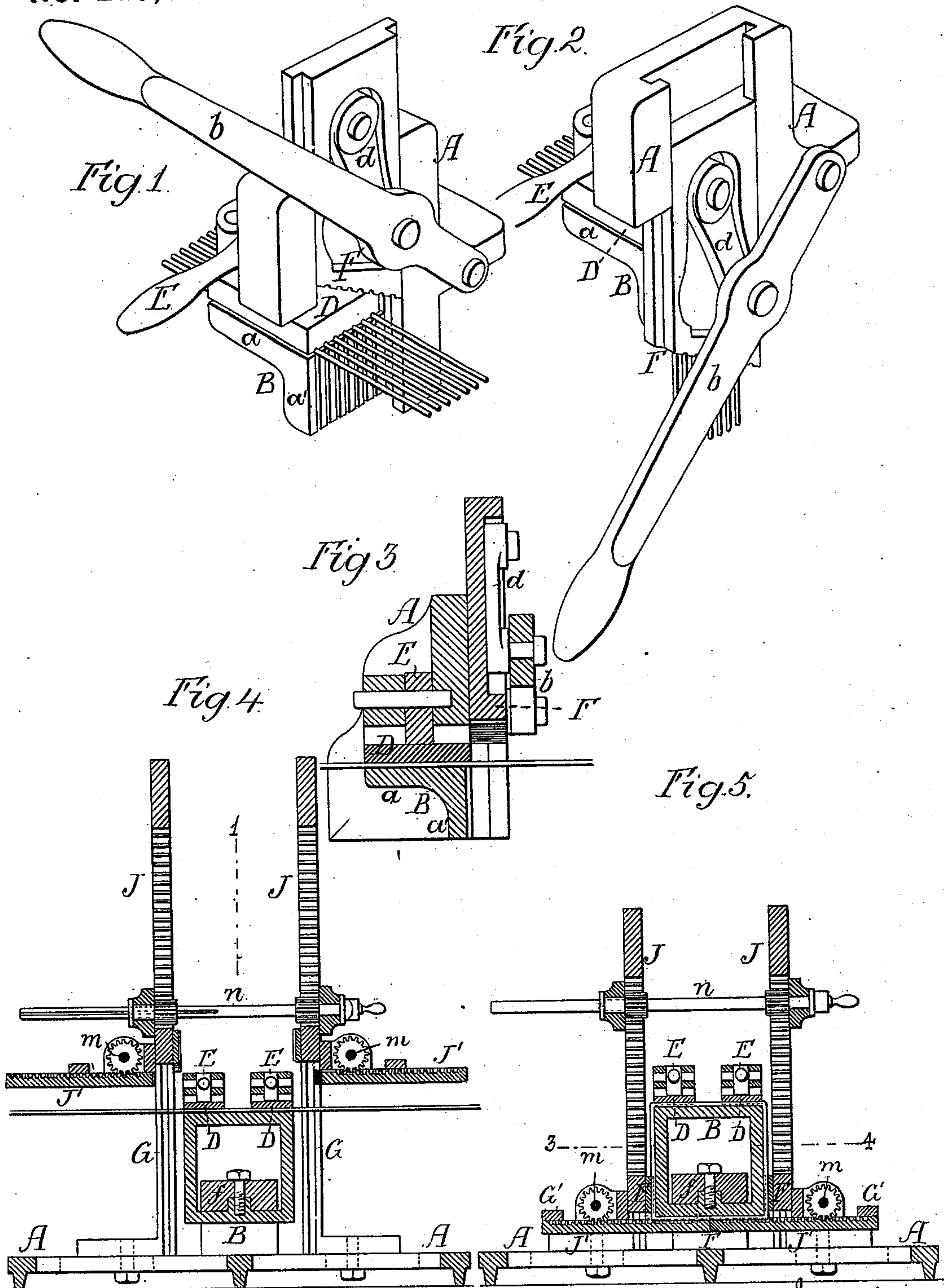


H. MARTYN

## Machine for Bending Wire.

**No. 227,804.**

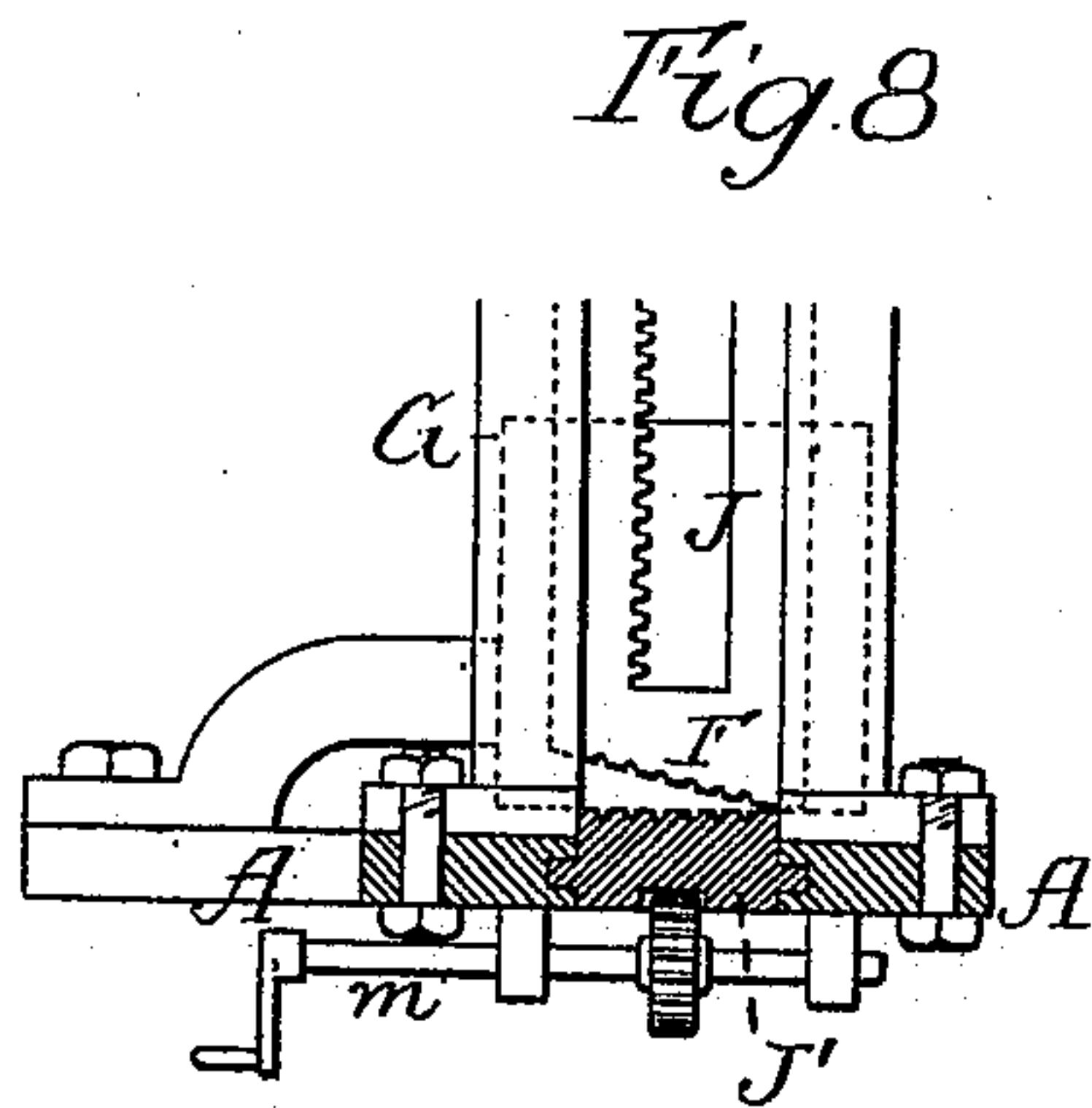
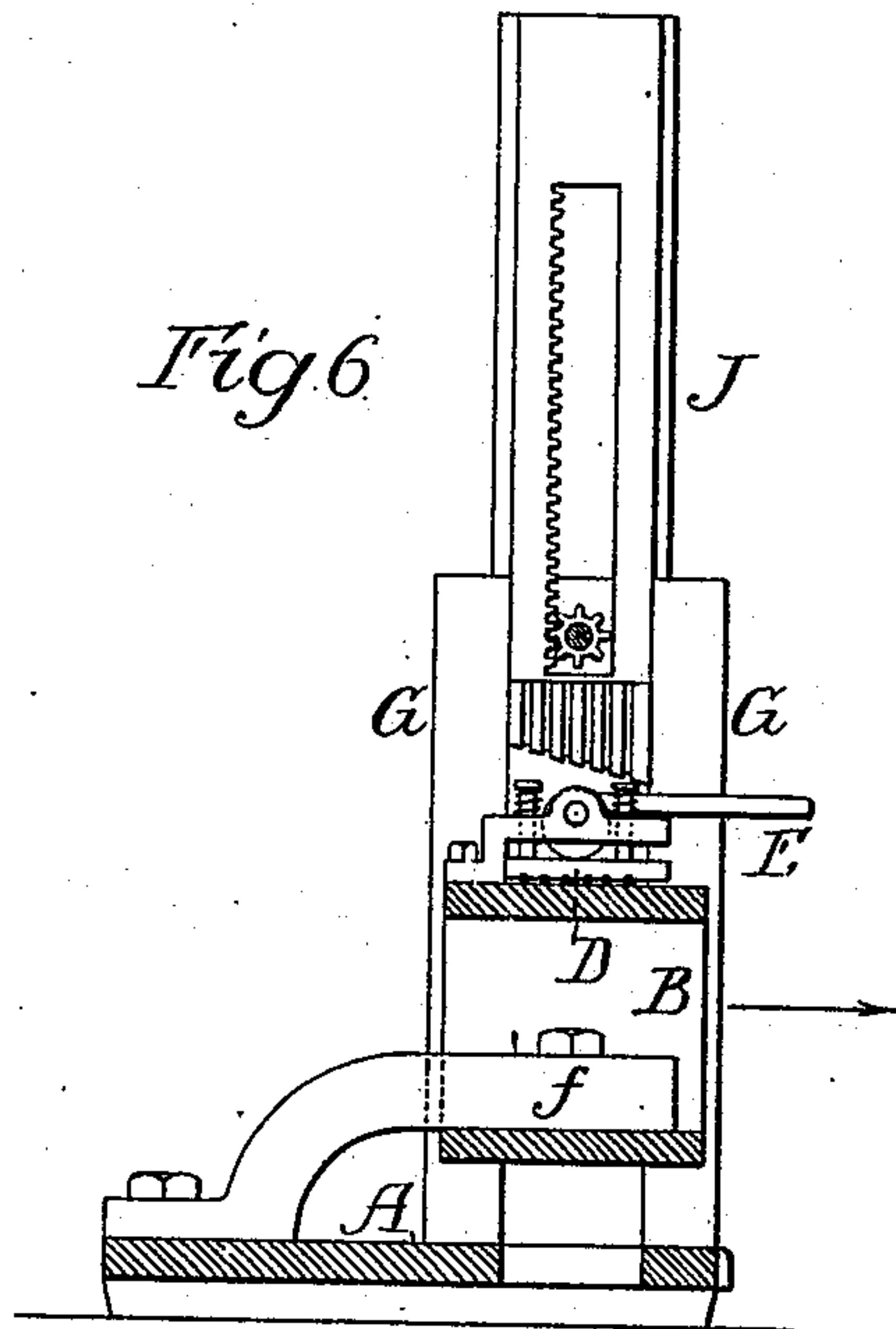
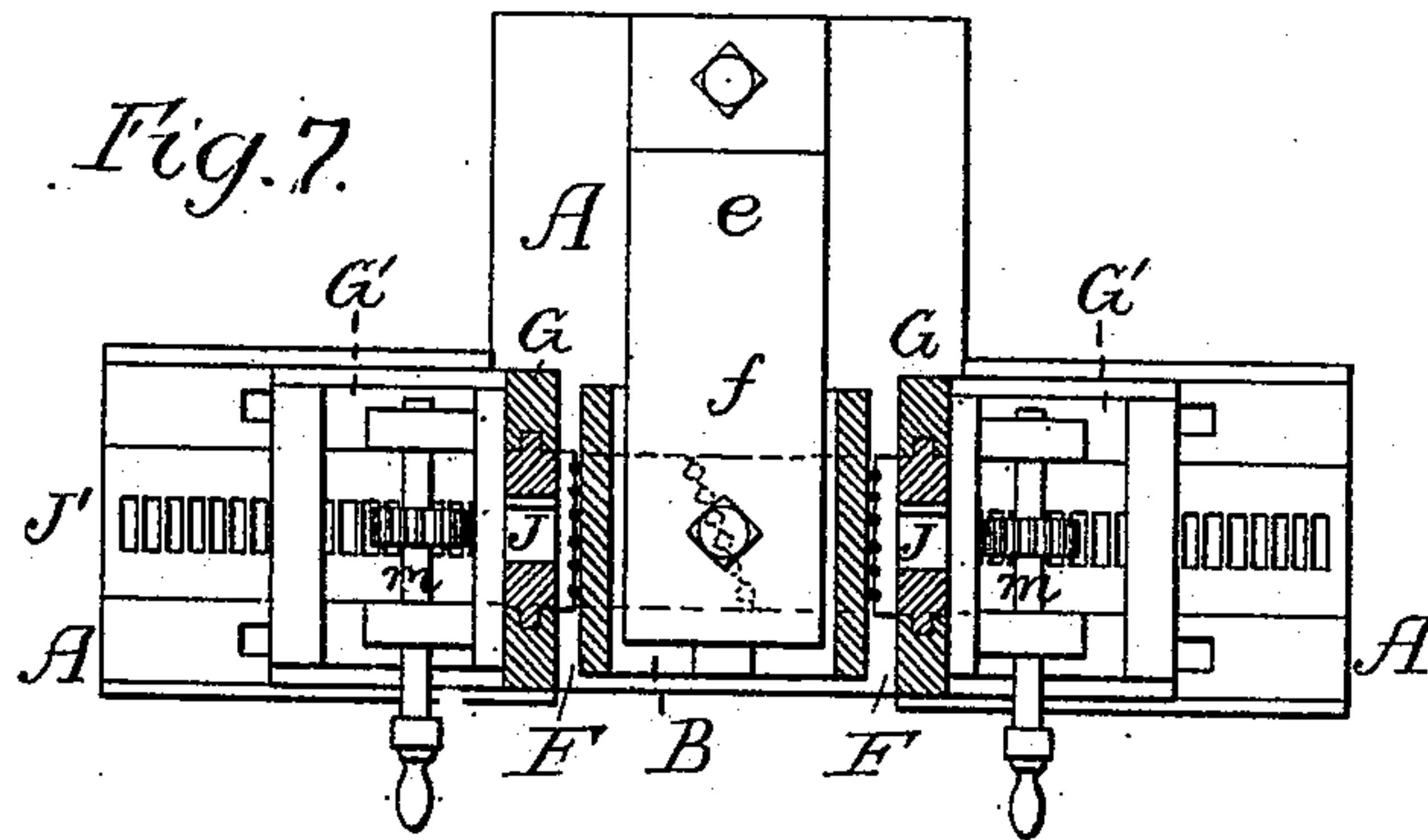
**Patented May 18, 1880.**



Witnesses  
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Harry Smith

Inventor  
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by his Attorneys  
Howson and Son

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# UNITED STATES PATENT OFFICE.

HENRY MARTYN, OF PHILADELPHIA, PENNSYLVANIA.

## MACHINE FOR BENDING WIRE.

SPECIFICATION forming part of Letters Patent No. 227,804, dated May 18, 1880.

Application filed February 2, 1880.

*To all whom it may concern:*

Be it known that I, HENRY MARTYN, a subject of the Queen of Great Britain and Ireland, residing in Philadelphia, Pennsylvania, (and having resided in the United States during the whole of the past year, and taken the oaths prescribed by law for becoming naturalized in this country,) have invented certain Improvements in Devices or Machinery for Bending Wires, of which the following is a specification.

The object of my invention is to construct a machine for accurately and rapidly bending wires to quadrangular shape over a former, an object which I attain in the manner and by the devices too fully explained hereinafter to need preliminary description.

In the accompanying drawings, Figures 1 and 2 are perspective views of one of the simplest forms of my improved wire-bending device; Fig. 3, a vertical section of Fig. 1; Fig. 4, a longitudinal section of an organized machine constructed according to my invention and adapted for bending wires around a rectangular former; Fig. 5, a view of the same character as Fig. 4, but with the working parts in a different position; Fig. 6, a transverse section of Fig. 4 on the line 1 2; Fig. 7, a sectional plan of Fig. 5 on the line 3 4, and Fig. 8 a modification of part of my invention.

In Figs. 1, 2, and 3, which illustrate my invention as applied to a simple hand-tool for application to a work-bench, A is a frame, secured to or forming part of which is a former, B, having, in this instance, two faces, *a* and *a'*, at right angles to each other, both faces being provided with a series of semicircular grooves, and the grooves of one face communicating with those of the other.

D is a guided plate arranged adjacent to the face *a* of the former B, and acted on by a cam-lever, E, so that when a number of wires are inserted in the grooves of the face *a* the said plate may be caused to press upon said wires and retain them firmly in position.

To suitable guides in the frame A, parallel with the face *a'* of the former B, is adapted a block, F, which can be caused to move to and fro in the guides by operating a lever, *b*, which is connected to the block F through the medium of a link, *d*. The lower edge of the said block

and the inner face of the same are furnished with grooves which coincide with those in the faces *a* and *a'* of the former B, and the lower edge of the block is beveled, for a purpose explained hereinafter.

The operation of bending wires with this device is as follows: The wires are placed in the grooves of the face *a* of the former B and clamped therein by operating the lever E and plate D, the ends of the wires projecting beyond the face *a'*, as shown in Fig. 1. The lever *b* is operated so as to cause the descent of the block F, the lower edge of which acts upon the projecting portions of the wires, bending them down and pressing them into the grooves of the face *a'* of the former B.

Owing to the beveling of the lower edge of the block F the wires are acted upon in succession, so that the effort required to bend the wires will be less than if all the wires were acted on simultaneously.

The grooves in the block F and former B serve to guide the wires and keep them in proper lateral position, the grooves also permitting the proper bending of the wires without abrading, flattening, or indenting the same.

After the wires have been bent, as above described, the block F is raised, and the wires released and readjusted prior to a repetition of the above-described operation.

Figs. 4, 5, 6, and 7 represent an organized machine for bending wires to a quadrangular form without the necessity of removing and replacing the said wires.

The quadrangular former B is hollow and detachably secured to a projection, *f*, secured to or forming part of the base A of the machine. To the top of the former B are secured frames in which are guides for the clamping-plates D D and bearings for the cam-levers E, by means of which said plates are operated.

Vertical standards G G are secured to the base A, and to guides in these standards are adapted slides J J, the lower ends of the latter carrying horizontal frames G' G', to which are adapted slides J' J'. The lower ends of the slides J and the inner ends of the slides J' are furnished with grooved blocks F, similar to those shown in Figs. 1, 2, and 3. The slides J' are provided with racks into which gear pinions on shafts *m*, carried by the frames



G', and each of the slides J is slotted vertically, one side of the slot being provided with a rack into which gears a pinion on a horizontal shaft, *n*, carried by a bearing on one of the standards G, and arranged to both turn and slide in a bearing on the opposite standard, to which the pinion is confined longitudinally, the shaft having a groove and the pinion a feather, in order to permit the desired adjustment of the frames.

In bending wires with the above-described machine the shafts *m* and *n* are first operated so as to move the slides J' outward and the slides J upward to their full extent, as shown in Fig. 4. A former, B, of the desired size having been applied to the projection *f*, the standards G G are adjusted to positions adjacent to the sides of said former and secured after adjustment. The wires are placed on the top of the former and clamped thereto, the ends of the wires projecting on both sides of the former, as shown in Fig. 4.

The shaft *n* is then operated so as to cause the descent of the slides J and the bending of the projecting portions of the wires down against the sides of the former B by the blocks F of said slides.

When the slides J reach the limit of their downward movement the shafts *m* are operated so as to cause an inward movement of the slides J', the blocks F of which bend the projecting ends of the wires beneath the former, on the under side of which the opposite ends of the wires meet. In order to insure the application of pressure to the wires throughout their entire length, the blocks F of the slides J' are beveled in opposite directions, as shown in Fig. 7.

When the wires have been thus bent the slides J' are retracted, the slides J and the parts carried thereby elevated, and the wires released from the control of the clamping-plates D and removed from the former B in the direction of the arrow, Fig. 6, prior to the insertion of a fresh set of wires and a repetition of the operation.

In order to permit the lateral removal of the wires from the former B the latter should have plain surfaces, the clamping-plates D being grooved, and the grooves in the bending-blocks being of a depth sufficient to receive the wire without flattening, abrading, or indenting the same.

I do not wish to claim the carrying of the guides G' by the slide J; nor do I limit myself to such construction, as the slides J' may, if desired, be guided directly in the bed A, as shown in Fig. 8, or the slide may be guided in a frame hung to the under side of the bed, so as to be readily swung into or out of oper-

ative position. Neither is my invention confined to the particular construction of guides and mechanism for operating the slides or blocks shown and described, as this mechanism may be varied in numerous ways without departing from the essential feature of my invention, although I may say that the lever and rack-and-pinion devices shown in connection with the two forms of my invention are preferred, as they have been found to answer well in practice.

I do not desire to claim, broadly, the bending of a wire or wires over a former by means of a sliding block, as machines have heretofore been constructed in which this has been done; but

I claim as my invention—

1. The combination of a right-angled former, a device for clamping wires to one of the faces of said former, guides parallel with the other face of the same, a block adapted to said guides, and means for reciprocating the block therein and over the face of the former, the inner face of the block having a series of grooves by which the wires are guided as they are bent, and in which, after bending, the wires are contained, as set forth.

2. The combination of a right-angled former, a device for clamping wires to one of the faces of said former, guides parallel with the other face of the same, a block adapted to said guides, and means for reciprocating the block therein and over the face of the former, both the outer face of said former and the inner face of the block having a series of grooves for the guidance and reception of the wires, as set forth.

3. The combination of a rectangular former, devices for clamping wires to the top of the same, bending-blocks adapted to guides parallel with the sides of the former, other bending-blocks adapted to guides parallel with the bottom of the same, and means, substantially as described, for reciprocating said bending-blocks in the guides and over the faces of the former, as specified.

4. The combination of the main frame, the rectangular former detachably secured thereto, laterally-adjustable guiding-frames G, carrying slides J, with blocks F, and horizontal guides, to which are adapted slides J', with blocks F, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY MARTYN.

Witnesses:

JAMES TOBIN,  
HARRY SMITH.