

(No Model.)

A. OWEN.

WIRE FORMING MACHINE.

No. 390,893.

Patented Oct. 9, 1888.

Fig. 1.

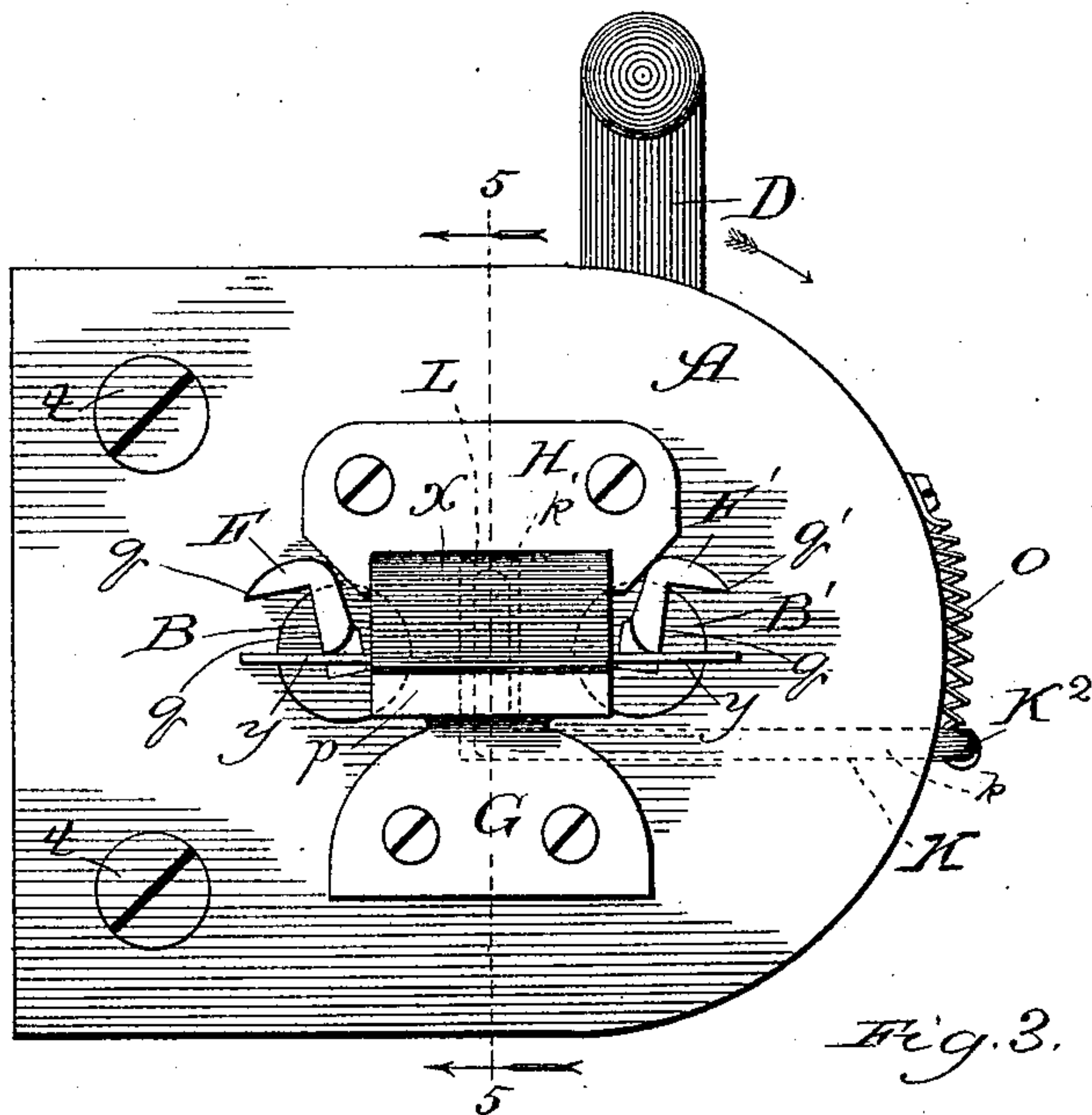


Fig. 2.

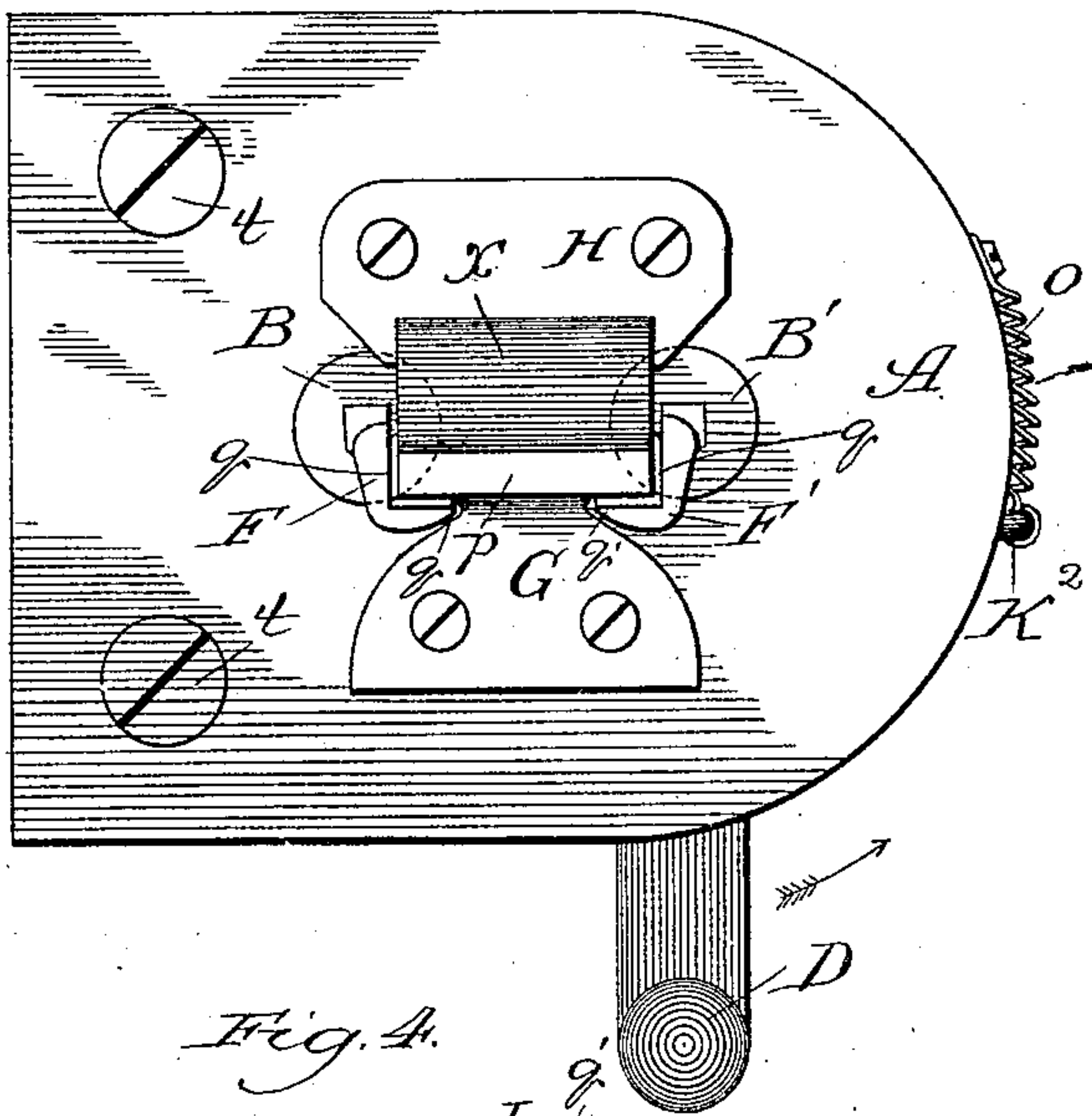


Fig. 3.

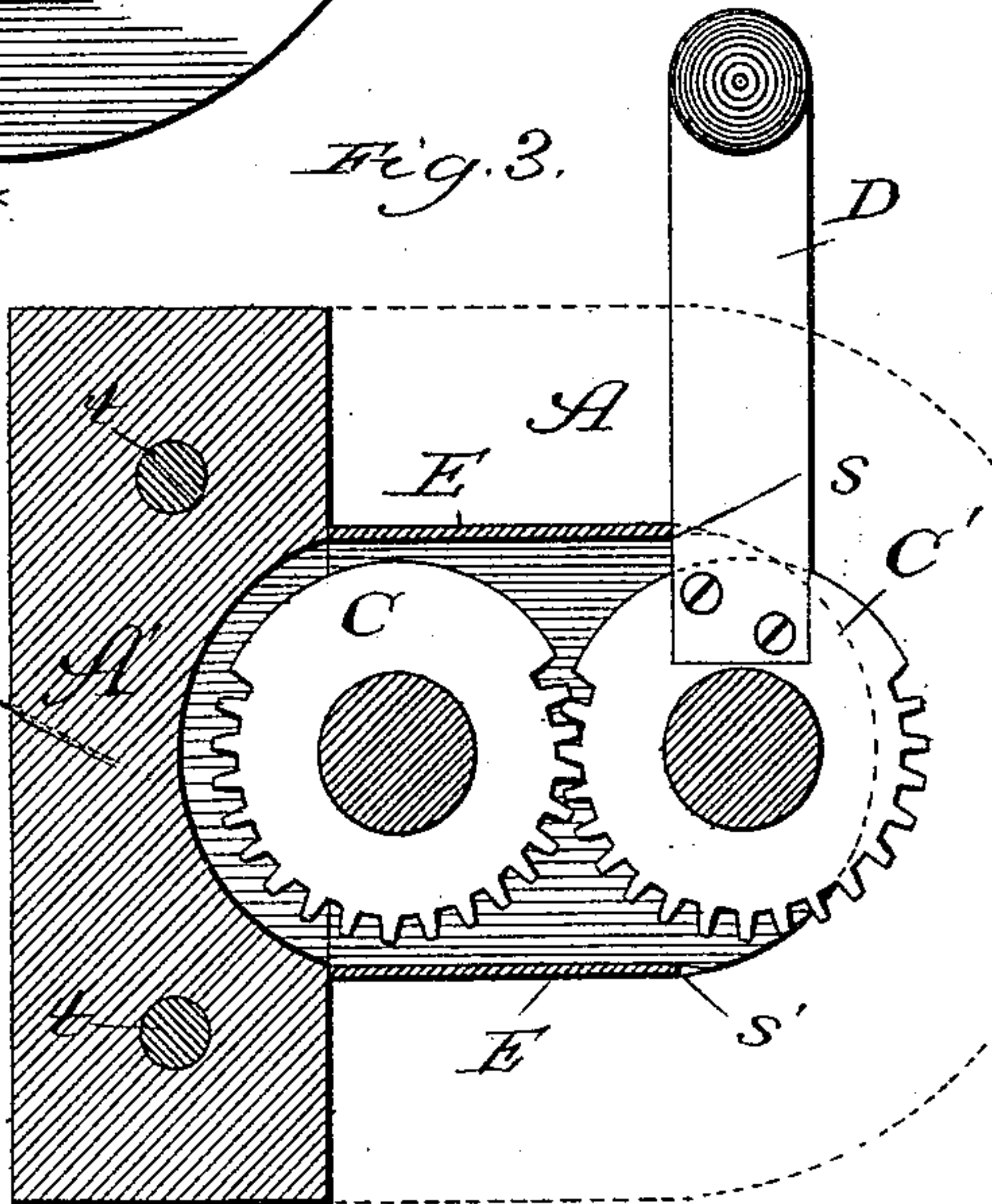


Fig. 4.

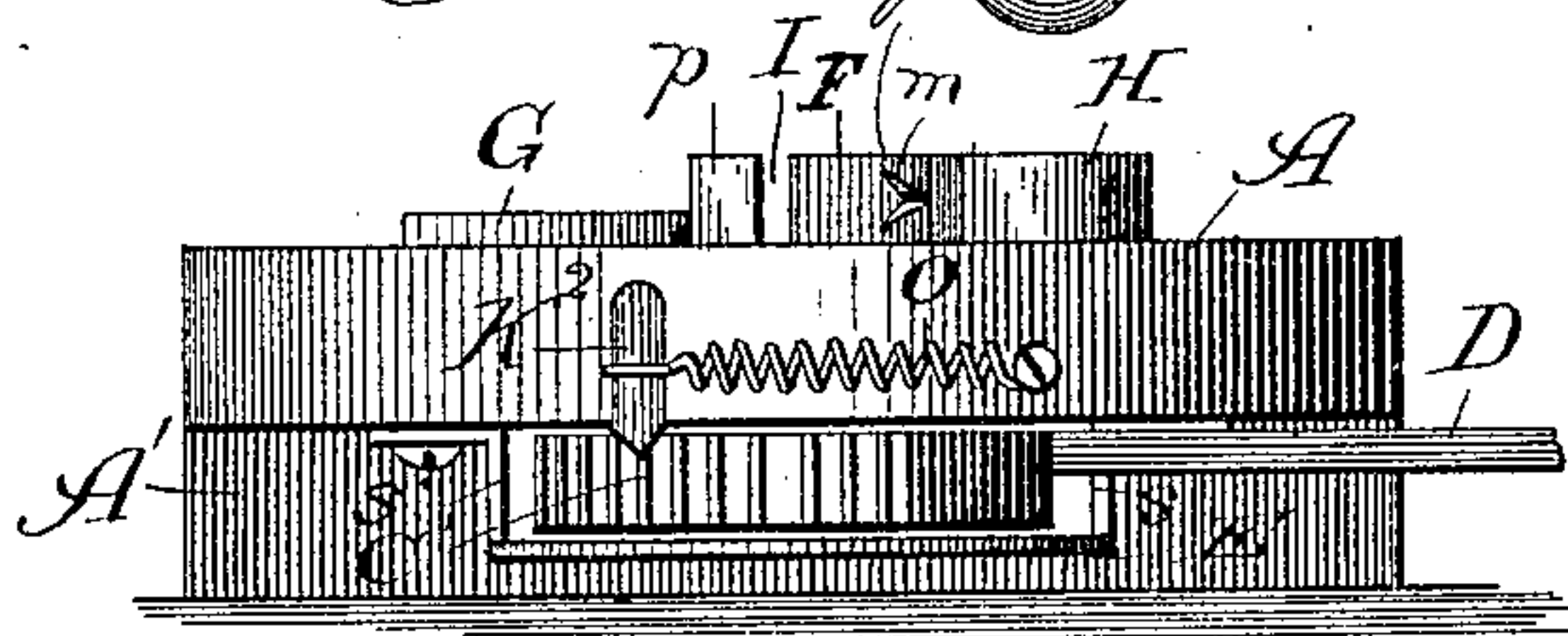
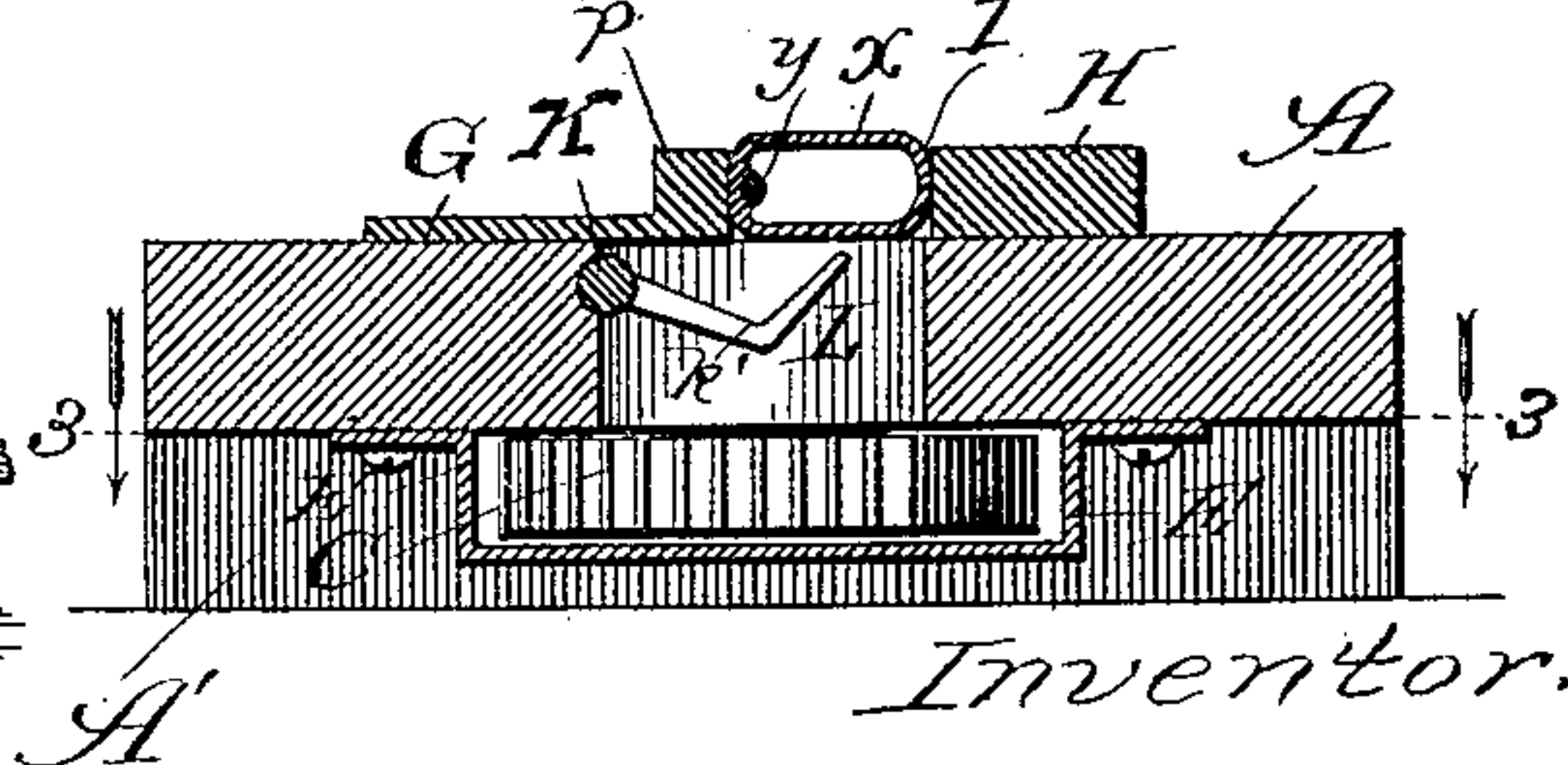


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALVA OWEN, OF CHICAGO, ILLINOIS.

WIRE-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No 390,893, dated October 9, 1888.

Application filed August 2, 1888. Serial No. 281,793. (No model.)

To all whom it may concern:

Be it known that I, ALVA OWEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Improvement in Wire-Forming Machines, of which the following is a specification.

My invention relates to an improved machine for forming a certain part of an electric
10 belt manufactured by me, for which Letters Patent of the United States No. 368,546 were granted to me on the 16th day of August, 1887. The part referred to consists of a wire fastened along the inner side of one of the elements of
15 a cell and projecting from opposite ends of the latter to connect the said cell electrically with an adjacent cell.

The object of my invention is to provide a machine for bending the wire toward its op-
20 posite ends in one operation and produce thereby connecting-wires rapidly and with the necessary uniformity as to size and shape.

My invention consists in the general construction of my improved machine; and it
25 further consists in details of construction and combinations of parts.

In the drawings, Figure 1 is a plan view of my improved machine, showing a zinc element of an electric battery-cell in position with a
30 wire extending from its opposite ends, and illustrating all the parts as they appear at the commencement of an operation of the machine to form the connecting-wire; Fig. 2, a similar view of the machine with the element in position thereon, showing the parts as they ap-
35 pear at the end of a forming operation; Fig. 3, a horizontal section taken on the line 3 3 of Fig. 5; Fig. 4, an end view of the machine; and Fig. 5, a section on the line 5 5 of Fig. 1, viewed
40 in the direction of the arrows.

A is a base-plate, preferably of metal, arranged with screw-holes *t*, at which it may be fastened upon a work-bench or other support. A' is a separate or integral part of the plate
45 A upon the under side, and of about the same thickness as the latter, through which the screw-holes *t* also pass. The office of the part A' is to raise the plate A the distance of the thickness of the former above its support,
50 whereby parts (hereinafter described) which lie underneath the plate A may be free to op-

erate without coming into contact with the support upon which the device is fastened.

B B' are turn-plates, the faces of which lie, preferably, flush with the surface of the bed-
55 plate A and which extend to the under side of the latter, fitting snugly through circular openings provided therein. The turn-plates B B' are placed a predetermined distance apart and operate as shafts for gear-wheels C C', which
60 are of larger diameter than the turn-plates B B', and are supported at the under side of the plate A. The gear wheels C C' are in mesh with each other, and held in position against the under side of the plate A by a casing, E.
65 The sides of the casing E terminate at points *s s'*, while its base extends beyond said points, as shown by dotted line in Fig. 3, to afford the necessary support to the gear-wheel C'.

D is a lever connected eccentrically to the
70 gear-wheel C' and extending therefrom beyond the base-plate A. The terminating-points *s s'* of the sides of the casing E operate as stops to limit the play of the lever D to a half-revolution.
75

As thus far described, the mechanism of my improved device corresponds substantially with that of a machine for forming wire clips and constituting the subject of a separate con-
80 current application for Letters Patent of similar title to the present, and the novel features and manner of operation of said mechanism are fully set forth in said concurrent applica-
tion.

The distinguishing feature of the present
85 device is the forming-die device, hereinafter described.

The turn-plates B and B' are provided, respectively, on their upper surfaces with fin-
90 gers, constituting formers F F', having each two straight edges, *q q'*, at right angles to each other. The parts F F' are rigidly secured at their bases to the plates B B', and are arranged, as shown, to extend in contrary directions.

A plate, G, fastened upon the bed-plate A,
95 is provided with a raised part or block, *p*, and cut away on opposite sides adjacent to the block *p*, as shown, to permit the formers F F' readily to embrace the block *p*, as hereinafter described. H is a plate, also fastened upon
100 the bed-plate A and shaped to form, with the raised part *p* of the plate G, a recess, I, to re-

ceive elements X during the operations of the machine, as hereinafter described, to bend and form the wires of the latter.

An element, X, having the ends of a wire, 5 Y, projecting from its opposite ends, is inserted into the recess I, which it fits snugly and which causes it to be in the proper position with relation to the formers F F', which latter at the beginning of the operation are in the positions 10 shown in Fig. 1. The lever D is then turned to the stop s, which causes the gear-wheels C C', and consequently the turn-plates B B', to turn in opposite directions. The formers F F', as they revolve from their initial positions (shown in Fig. 1) to their final position, 15 (shown in Fig. 2,) engage the wire Y toward its opposite ends and bend it around the opposite ends of the block p, which latter are square and fit the angles of the edges q q' of the formers F F', as shown. At the end of the 20 forming operation the wire appears bent as represented in Fig. 2, which is the ultimate shape desired. To prevent the ends of the wire Y, while engaged by the formers F F' 25 during the operation of bending, from slipping out of contact with the formers, I provide notches m in the ends of the latter (see Fig. 4) to receive the wire. The element X fits so tightly into the recess I that at the 30 end of the operation of forming the wire Y it becomes necessary to discharge it from the machine—as in the machine before mentioned as forming the subject of a concurrent application—and I therefore provide automatic 35 discharge mechanism K for the purpose.

An opening, L, is provided in the bed-plate A between the turn-plates B B', and a shaft, k, of the discharge mechanism K extends therefrom to the end of the bed-plate A. In 40 the opening L the shaft carries a finger or striker, k', and at its opposite end, beyond the

end of the bed-plate, a wiper, k². A spring, o, serves to keep the wiper in vertical position, whereby it extends into the path of the lever D. As the lever D is forced backward from the position shown in Fig. 2 to its initial position, (shown in Fig. 1,) it operates the discharge mechanism 45 by engaging the wiper k², which turns the shaft k and causes the finger k' to strike the under side of the element X and thus dis- 50 lodge it and throw it from the machine.

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

1. In a machine for bending and forming wire, the combination, with the bed-plate A, 55 turn-plates B B', and mechanism for operating them, of the forming-die, comprising the block p, rigid upon the base-plate A, and the formers F F', rigidly connected to the turn-plates, substantially as described. 60

2. In a machine for bending and forming wire, the combination, with the bed-plate A, turn-plates B B', and mechanism for operating them, of the forming-die comprising the block 65 p, rigid upon the base-plate, and the formers F F', rigidly connected to the turn-plates, and a recess, I, adjacent to the block p, substantially as and for the purpose set forth.

3. In a machine for bending and forming wire, the combination, with the bed-plate A, 70 turn-plates B B', and mechanism for operating the same, of the forming-die comprising the block p, rigid upon the base-plate, and the formers F F', rigidly connected to the turn-plates, a recess, I, adjacent to the block p, an 75 opening, L, below the recess I, and discharge mechanism K, substantially as and for the purpose set forth.

ALVA OWEN.

In presence of—

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