

(No Model.)

J. H. BULLARD.

Shuttle Actuating Mechanism for Sewing Machines.

No. 237,088.

Patented Feb. 1, 1881.

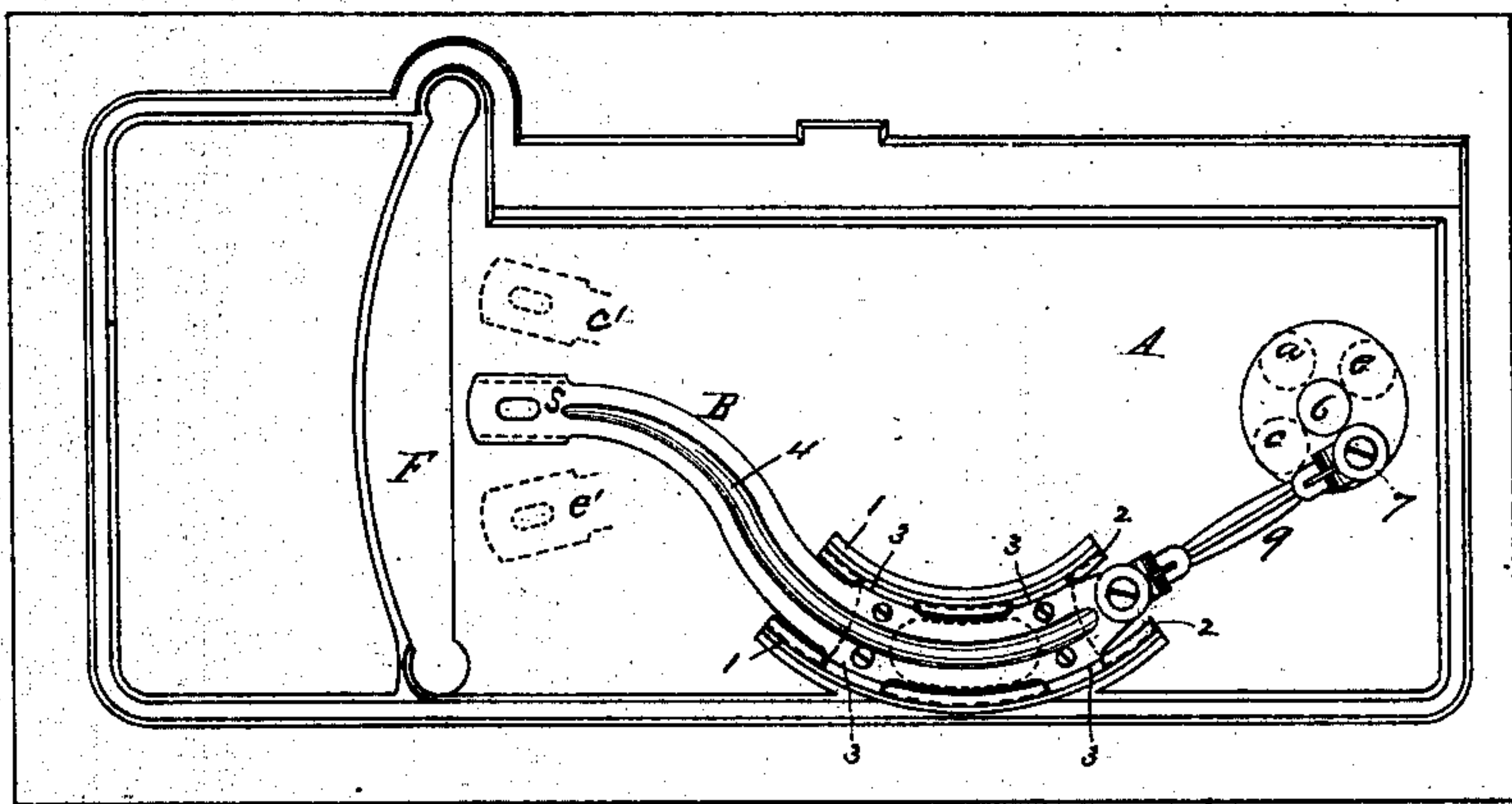


Fig. I

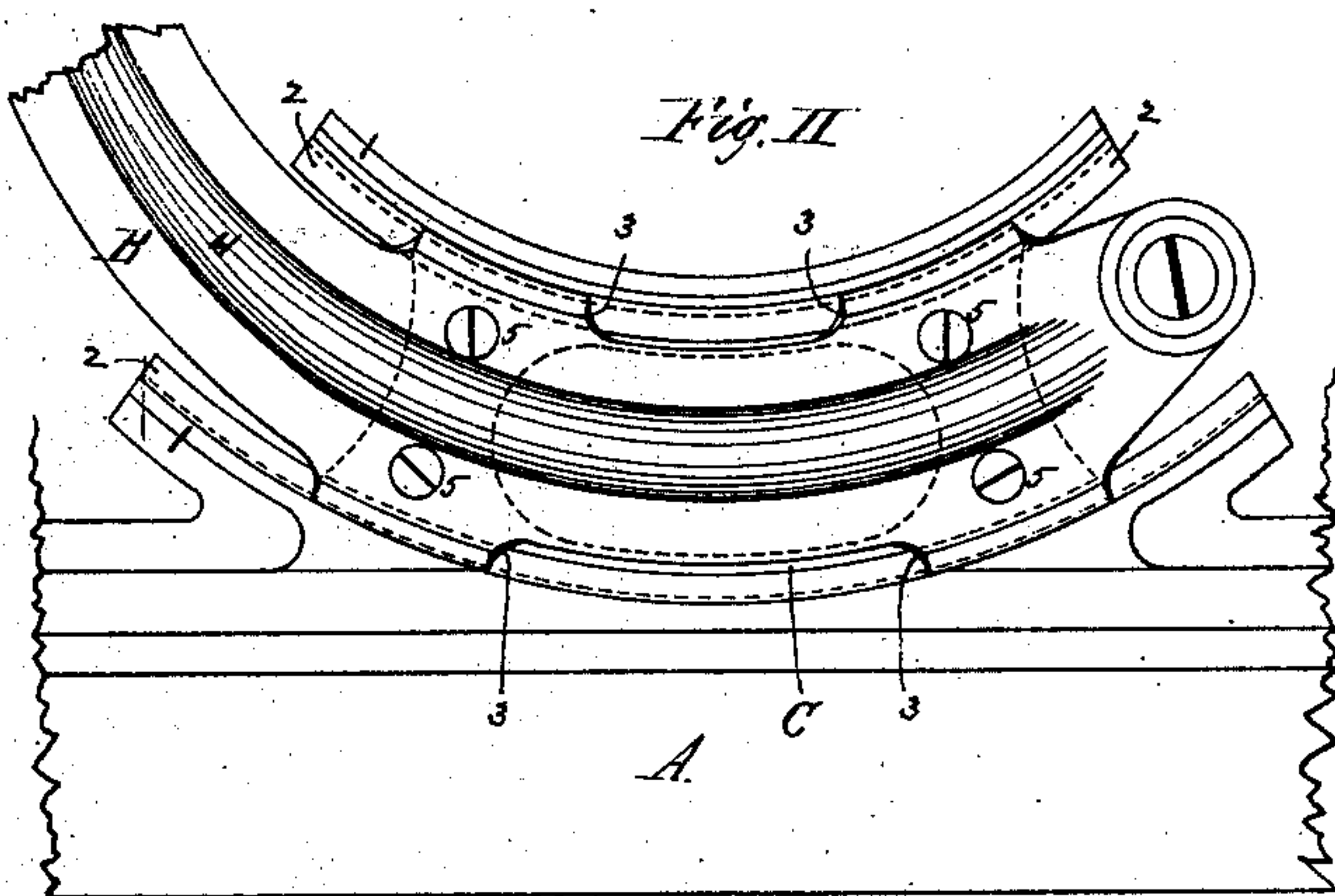


Fig. II

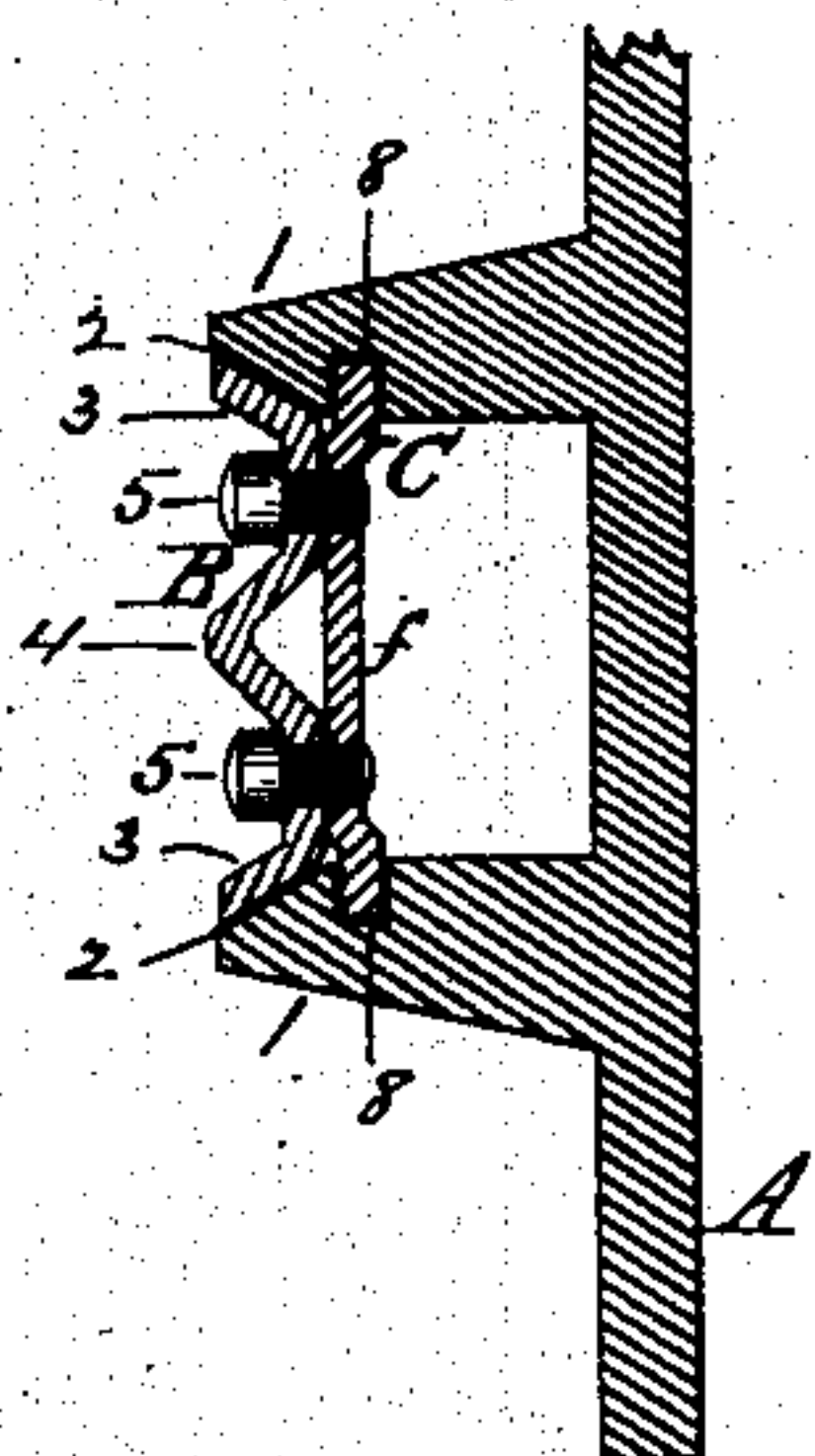


Fig. III

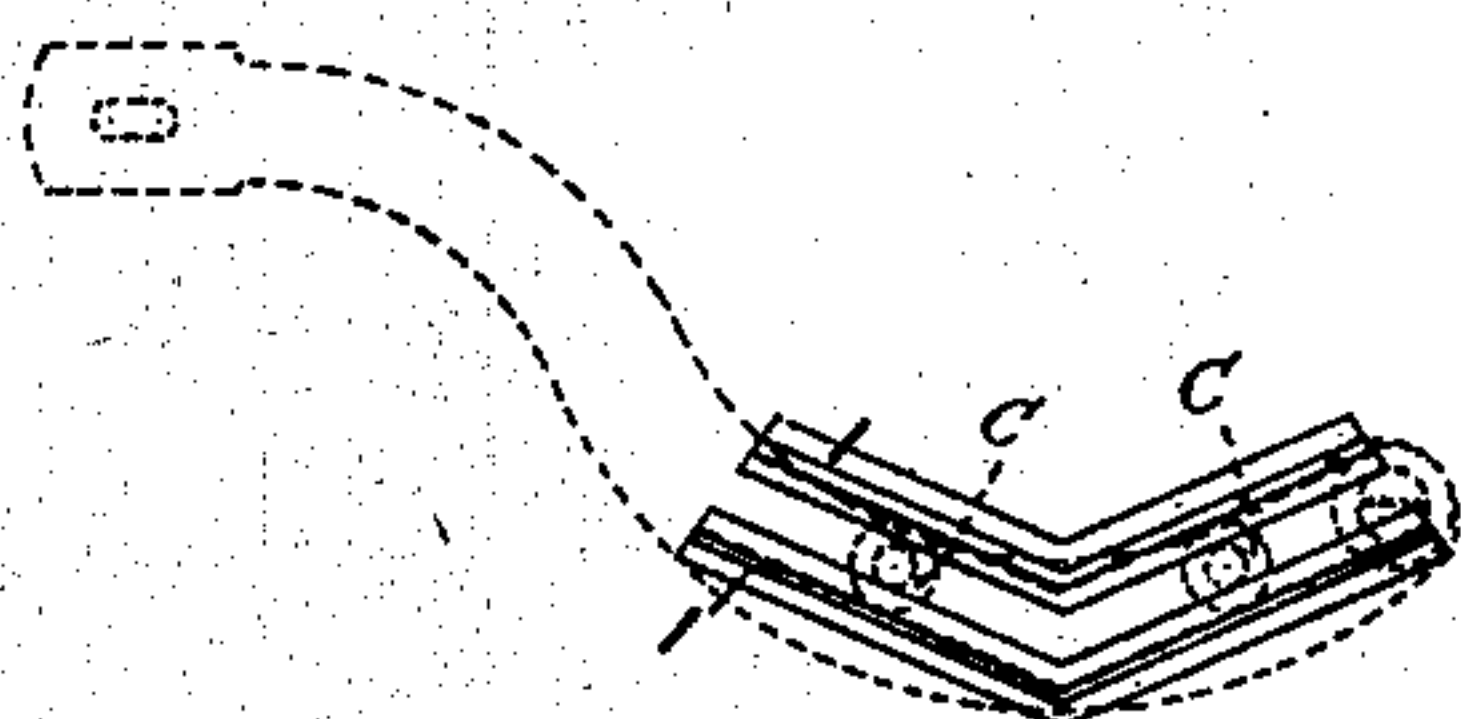


Fig. IV

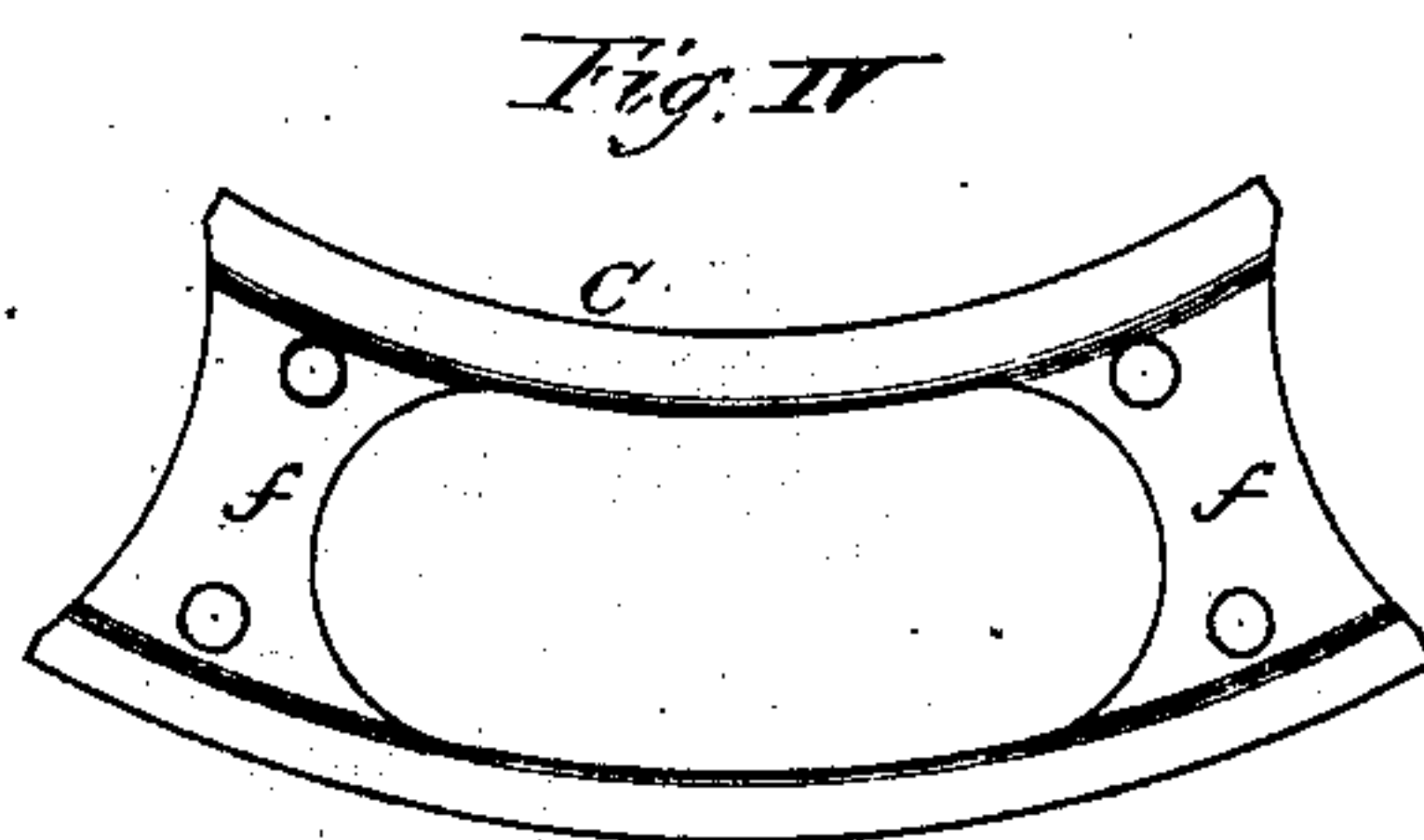


Fig. V

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SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 237,088, dated February 1, 1881.

Application filed July 26, 1880. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. BULLARD, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Shuttle-Actuating Mechanisms for Sewing-Machines, of which the following is a specification.

The object of my invention is to provide a sewing-machine with mechanism for moving the shuttle to and fro in which the power shall be applied directly and economically to the shuttle-driver in moving it, and in which the said driver shall move with the minimum amount of friction and noise. I accomplish this result by the mechanism illustrated in the accompanying drawings, in which—

Figure I is a reverse-plan view of a sewing-machine bed having a circular or curved shuttle-raceway with my invention applied thereto. Fig. II is a similar plan view of a portion of the bed, showing my invention. Fig. III is a transverse vertical section of the guideway, shuttle-driver, and its plate at a point where the shuttle-driver is secured to the plate. Fig. IV is a plan view of the shuttle-driver plate. Fig. V is an edge view of the same; and Fig. VI is a modification, showing a straight guideway, instead of curved.

In the drawings, A represents the bed of a sewing-machine constructed in the ordinary manner, and with a circular or curved guideway, 1, cast on its lower side, the inner edges of which are beveled, as at 2, and just inside the beveled part in the guideway is a groove or channel, 8. (Shown clearly in section in Fig. III and in dotted lines in Figs. I and II.)

The shuttle-driver B, which is curved, as shown in Fig. I, may be struck up or punched from sheet-steel with a strengthening-rib, 4, extending along its length, and may have a portion of both its edges, as at 3, turned outward to conform to the beveled inner edges of the guideway 1, and a curved plate, C, is inserted into the grooves or channels 8 of the guideway, which plate is secured to the shuttle-carrier, preferably, by screws 5. This driver B might be punched from sheet-steel with ears punched and bent outward on each side or edge, so that the said ears could be inserted into and slide to and fro in the grooves 8, and the turned-out edges 3 slide along the beveled edges of the

guideway, the ears being bent out just enough to hold the turned-out edges 3 firmly against the beveled edges of the way; but, inasmuch as in practice there might be some wearing away of the parts, I prefer to make a separate plate, C, with its middle or central portion, *f*, between its edges bent outward a little toward the driver B, and provided with threaded screw-holes, so that if the edges of the plate or the driver should wear away in sliding along the way the screws may be removed and the top of the part *f* filed off a very little and the screws inserted again, thus compensating for the wear and causing the edges at 3 to bind with just the desired degree of friction against the beveled edges of the way.

The ordinary vertical rotating shaft is shown at 6 in Fig. I with the crank-pin 7, the pitman 9 being secured at one end to the crank-pin and pivoted at the other end to the end of the driver B. As the shaft is rotated in either direction the pitman 9 moves the driver lengthwise in the curved guideway 1, and the other end of the driver is thereby caused to move in the arc of a circle in a lateral direction, and, with the ordinary shuttle-carrier attached to that end of the driver, to move the shuttle to and fro in the curved raceway F. As the crank-pin in revolving reaches the position shown at 7, or the position opposite, at *a*, the shuttle end of the driver is in a position shown in dark lines at *s*; but when the crank-pin is in a position at *c* the shuttle end of the driver is in a position shown in dotted lines at *c'* in Fig. I, and when the crank-pin is in a position shown at *e* the shuttle end of the driver will be in the position shown at *e'*, the rotary movement of the crank-pin producing a longitudinal movement of one end of the driver and a lateral movement of the other end in a curved line.

It will be perceived that the pitman 9, attached to the crank-pin 7, exerts its power almost in a direct line lengthwise the driver at all times to move the latter in either direction; hence there is no loss of power in moving the driver, and, as the power is thus applied at the greatest advantage, there is less loss of movement of parts or "backlash," and the parts move with very much less noise and friction than when the power is applied in angular directions, as in the case of all pivoted shuttle-levers.

It is, of course, evident that if the guideway was made straight, as shown in Fig. VI, instead of curved, so as to form, in general outline, two sides or portions of two sides of a triangle or a V shape, the same movement of the shuttle-driver would be the result when actuated by the crank-pin. In that case two separate plates or disks, C, might be used to which to secure the shuttle-driver, instead of one. (Shown in Fig. IV.)

Having thus described my invention, what I claim as new is—

1. The combination, with a sewing-machine, of a curved or inclined guideway, a shuttle-driver adapted to move in said guideway, and a shaft and crank-pin connected with and

adapted to actuate said shuttle-driver, substantially as described.

2. In a sewing-machine, a shuttle-driver combined with and adapted to move to and fro in a guideway in the direction of its length, and a crank-pin connected therewith to actuate said driver, whereby the shuttle end of the driver is caused to make a reciprocating lateral movement in the arc of a circle by the lengthwise movement alone of said driver in the guideway, substantially as set forth.

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Witnesses:

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