

(No Model.)

2 Sheets—Sheet 1.

J. LOWE.

MACHINE FOR MAKING SHANK STIFFENERS.

No. 300,379.

Patented June 17, 1884.

FIG. 2.

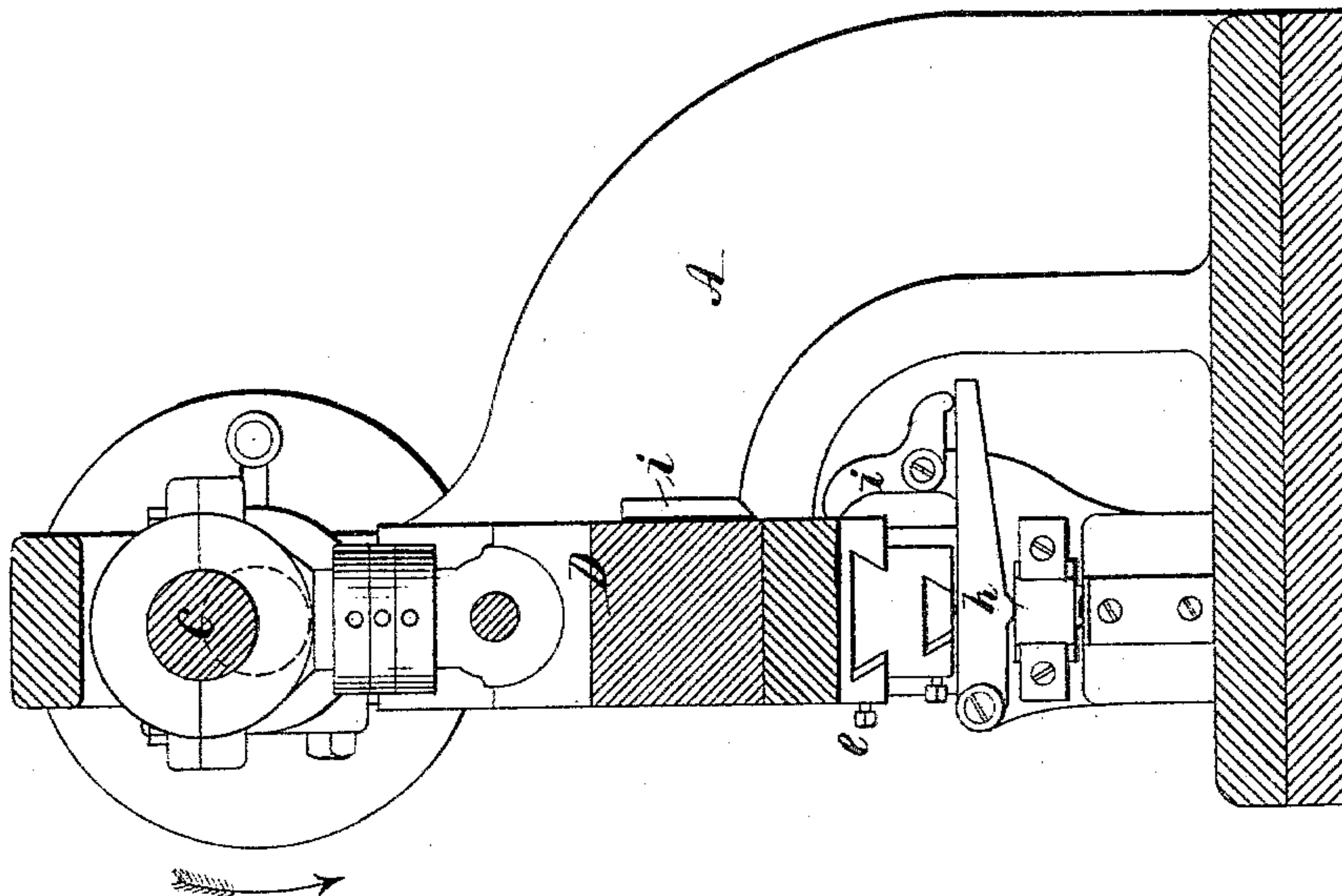
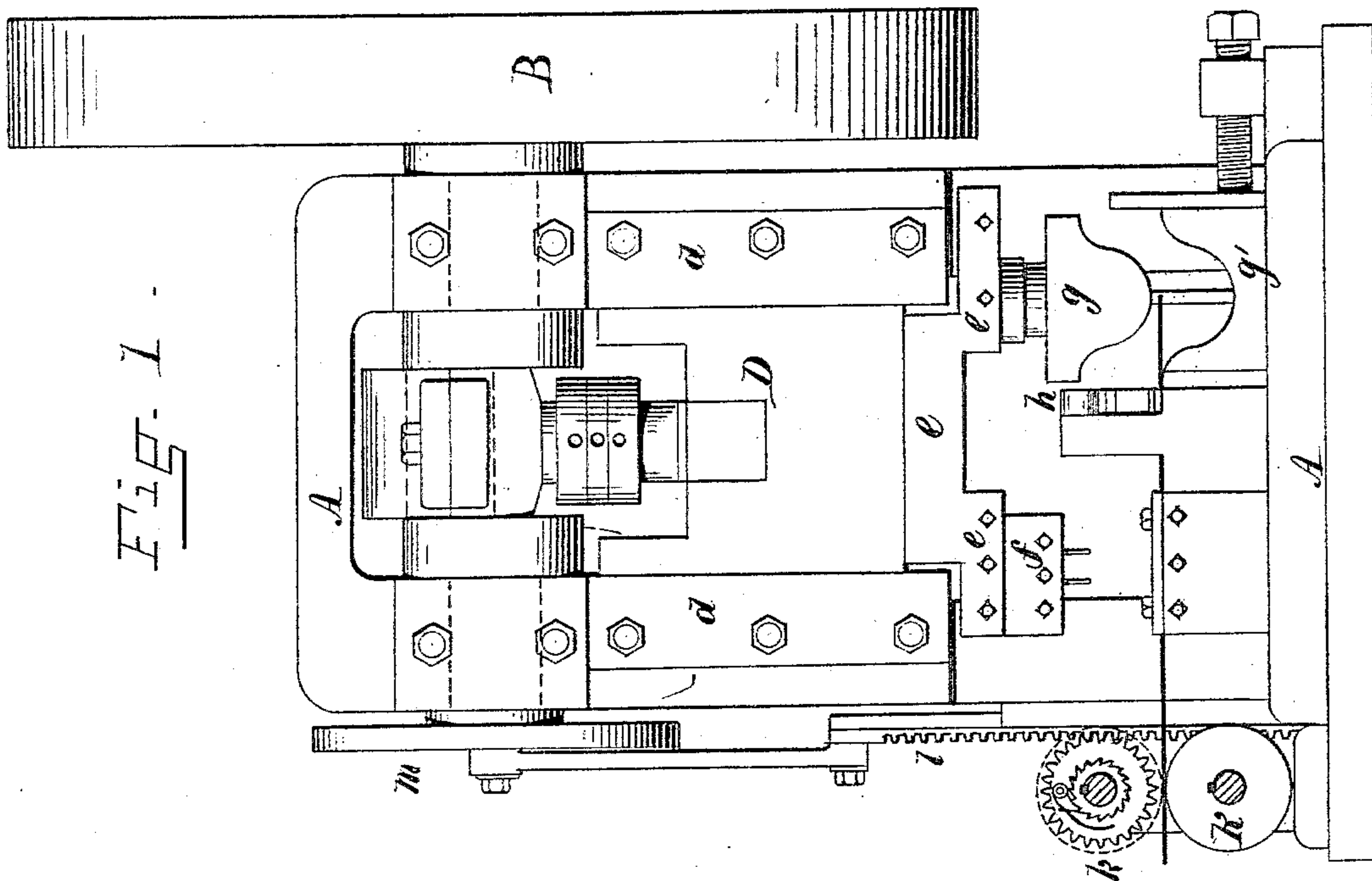


FIG. 1.



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Fig. 3

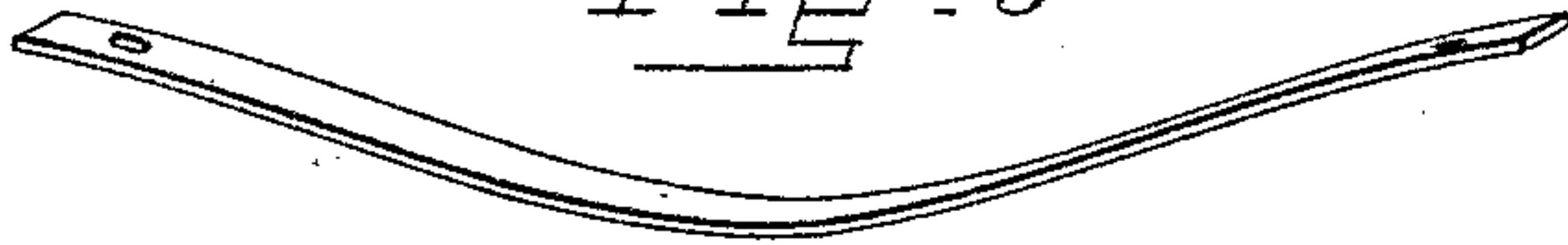


Fig. 5

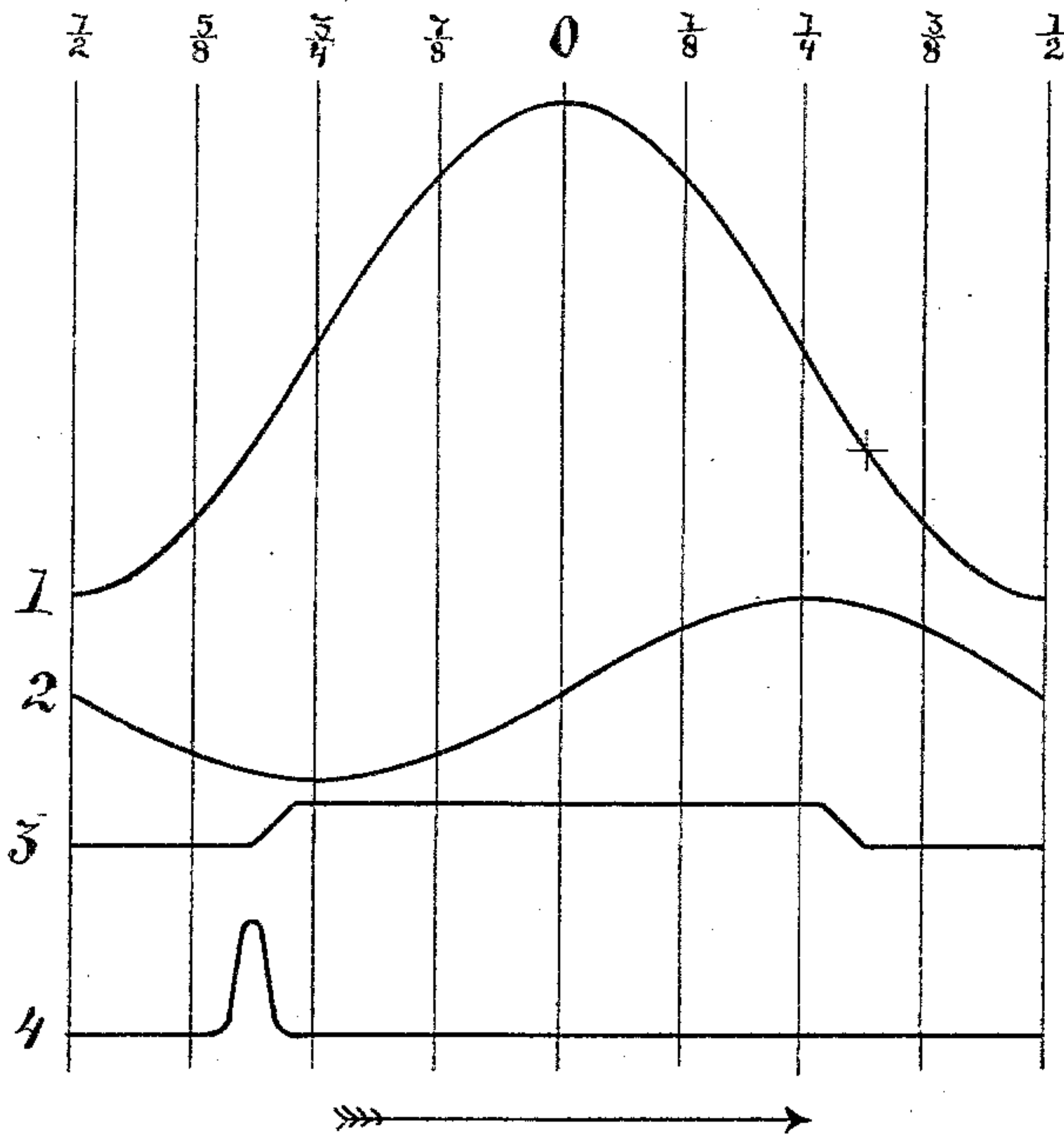
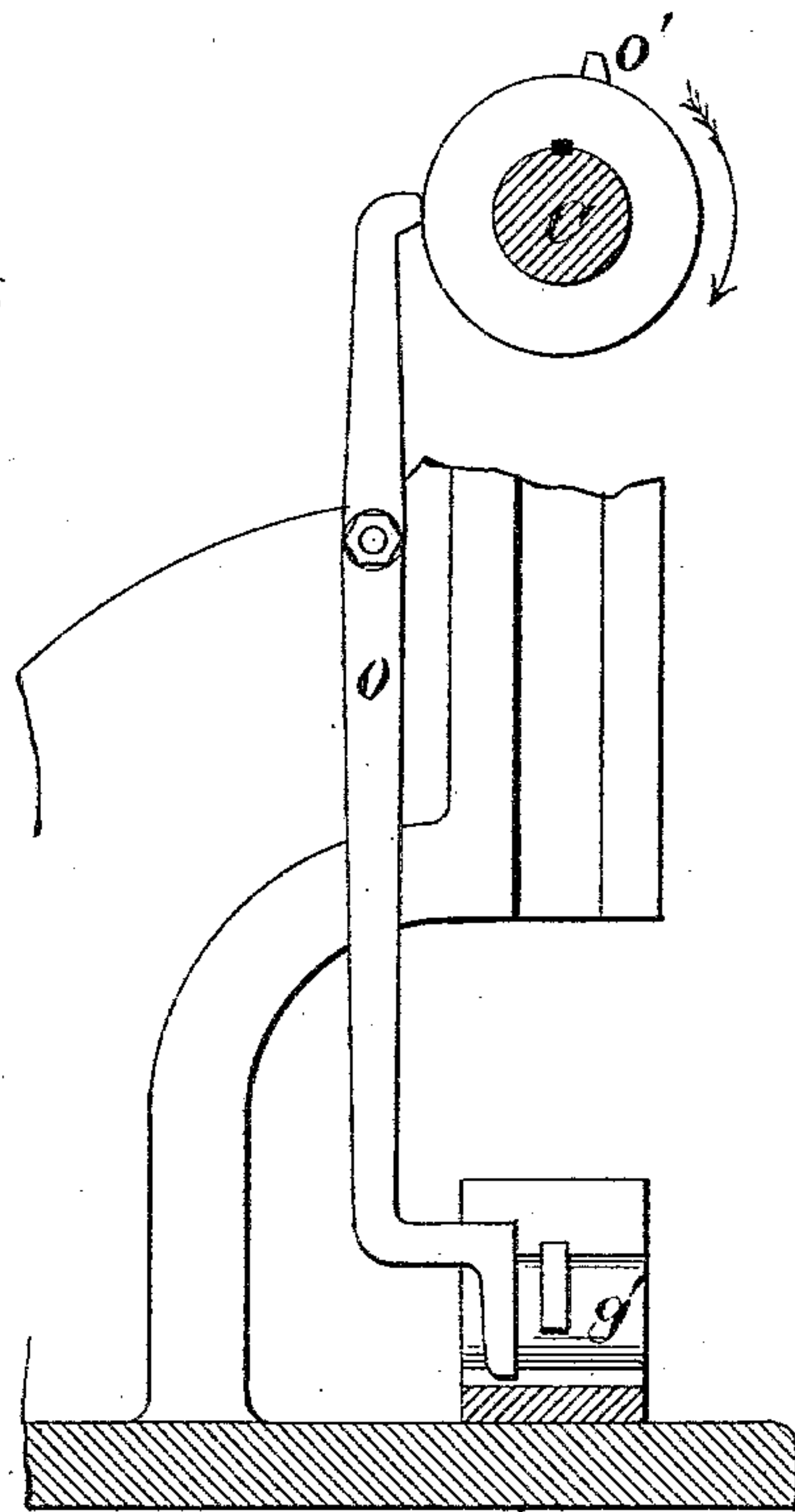


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN LOWE, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR MAKING SHANK-STIFFENERS.

SPECIFICATION forming part of Letters Patent No. 300,379, dated June 17, 1884.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN LOWE, of the city and county of Providence, and State of Rhode Island, have invented certain new and useful
5 Improvements in Machines for Making Shank-Stiffeners; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.
10

My invention relates to machines for punching and bending metal stiffeners for the shanks of boots and shoes; and my invention consists in certain combinations of devices whereby
15 the punching and bending operations are more efficiently and accurately performed, as hereinafter described and claimed.

Figure 1 is a front view of the improved machine. Fig. 2 is a sectional view through
20 the plunger of the machine. Fig. 3 is a perspective view of the shank-stiffener. Fig. 4 is a view of the lever acting as the discharger and showing its relation to the machine. Fig. 5 is a diagram showing the relative motions
25 of the working parts of the machine during one revolution.

Shank-stiffeners—such as the one shown in Fig. 3—have heretofore been made of strips of sheet metal or of flat wire. These stiffeners
30 require to be very tough, so as to keep the shank in its curved position, and also must have sufficient spring to yield to the bending of the boot or shoe. The stock of which my improved stiffeners are made is iron, or, more preferably, steel wire which has been reduced
35 by cold-rolling to a flattened section in which the rounded corners are preserved. By this cold-rolling the metal is condensed, the atoms being forced into much closer and more compact relation to each other, the metal becomes
40 tougher and more resilient. The so-prepared metal strips are fed to my improved machine, by which they are punched, cut into the required lengths, and stamped into the desired
45 form.

In the drawings, A is the frame of the machine. B is the balance-wheel secured to the end of the shaft C. This shaft has a crank formed near the center of the machine, to
50 which the plunger D, sliding in the ways *d d*, is secured, so that at each revolution of the

shaft the plunger is reciprocated downward and upward through one reciprocation. The end of the plunger is provided with the dove-tailed clamp, *e e*, in one of which the punch-
55 die *f*, and the other the bending-die *g*, is secured. *h* is a shearing or cutting lever, by means of which the strips are separated into the desired lengths. It is operated by the bell-crank lever *i*, one arm of which comes in
60 contact with the cam *j*, secured to the plunger D as the same descends. The curved die *g* fits the female die *g'*, and as it descends bends the shank-stiffener and subjects it to considerable pressure. The curvature of the blank
65 is, however, much greater than what is required for the shank-stiffener, which, owing to the process of cold-rolling, will spring back and assume the shape shown in Fig. 3.

The prepared flattened wire is supplied to
70 the machine by means of the feed-rollers *k k*, operated by rack-bar *l*, engaging with the pinion connected with the ratchet-gear on the upper roller, *k*. (Shown in Fig. 1.) The rack-bar *l* is connected with the disk *m*, which is
75 secured to the end of the main shaft C, so that at each revolution reciprocating motion is imparted to the rack-bar *l* and the feed-rollers rotated intermittently to feed the desired
80 length of wire, the said pinion being on the spindle of the roll, and carrying a pawl which engages the teeth of a ratchet-gear ring mounted rigidly on the said spindle, the arrangement being such that the rolls turn only at the
85 upward movement of the rack-bar. Punches *f* pierce the wire with two holes, and the cutter *h* separates the wire between the two holes so punched, thereby producing the shank-stiffener (shown in Fig. 3) with a hole near
90 each end. The shank-stiffener so produced differs from the shank-stiffeners heretofore made in that the metal is more condensed, therefore more rigid. The edges of the shank,
95 being cold-rolled from round wire, are rounded and not liable to injure the interior of the shank. The machine operates continuously and discharges the completed shank by means of the lever *o*, the upper end of which, by coming in contact with the cam *o'*, throws the
100 lower part into the female die *g'* and discharges the bent shank-stiffener.

In the diagram, Fig. 5, the line 1 represents

the path of the plunger; 2, the feeding device; 3, the cutter, and 4 the throw-off or discharger.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

5 1. In a machine for making shank-stiffeners, the combination, with the machine-frame and its punching and bending dies, of the plunger arranged to reciprocate vertically in guides on said frame, the punches and bender, and
10 the cam secured to said plunger, and the shearing-lever and its operating bell-crank lever, all constructed and arranged substantially as described.

15 2. The combination, with the machine-frame and its driving-shaft and the reciprocating plunger actuated by said shaft, of the geared feed-rolls, the rack-bar, and the disk *m*, arranged to actuate said rack-bar, substantially as described.

3. The combination, with the machine- 20 frame and the driving-shaft thereon, of the plunger carrying the punches and bender, the punching and bending dies, and the cam *o'* and lever *o*, substantially as and for the purposes described. 25

4. The combination, with the frame of the machine, of the shaft *C*, the balance-wheel *B*, the plunger *D*, provided with the clamp *e*, the punches *f f*, and the die *g*, the disk *m*, rack-bar *l*, constructed to operate the feed-rollers 30 *k k*, and the lever *o*, constructed to discharge the work, as described.

JOHN LOWE.

Witnesses:

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