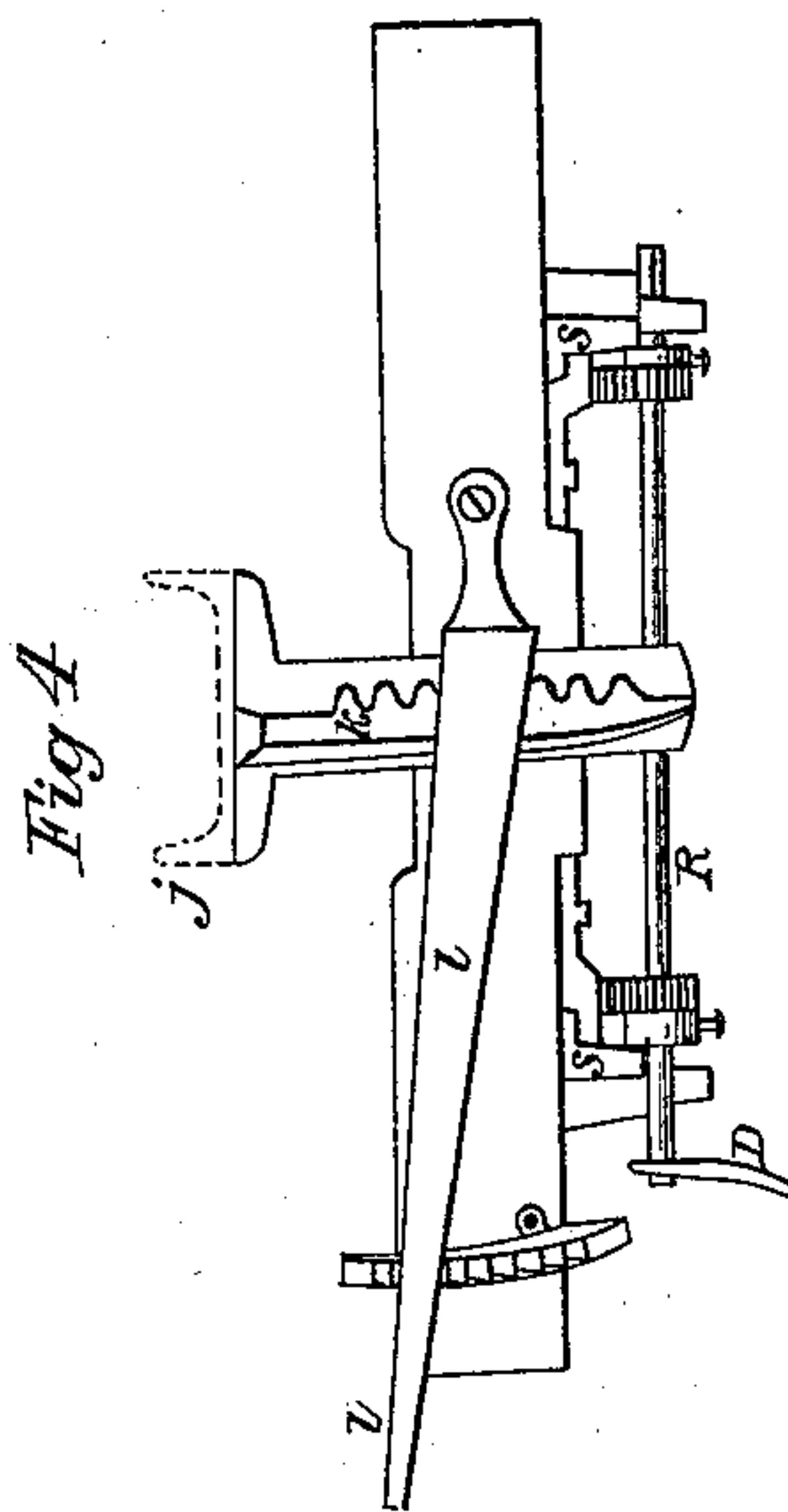
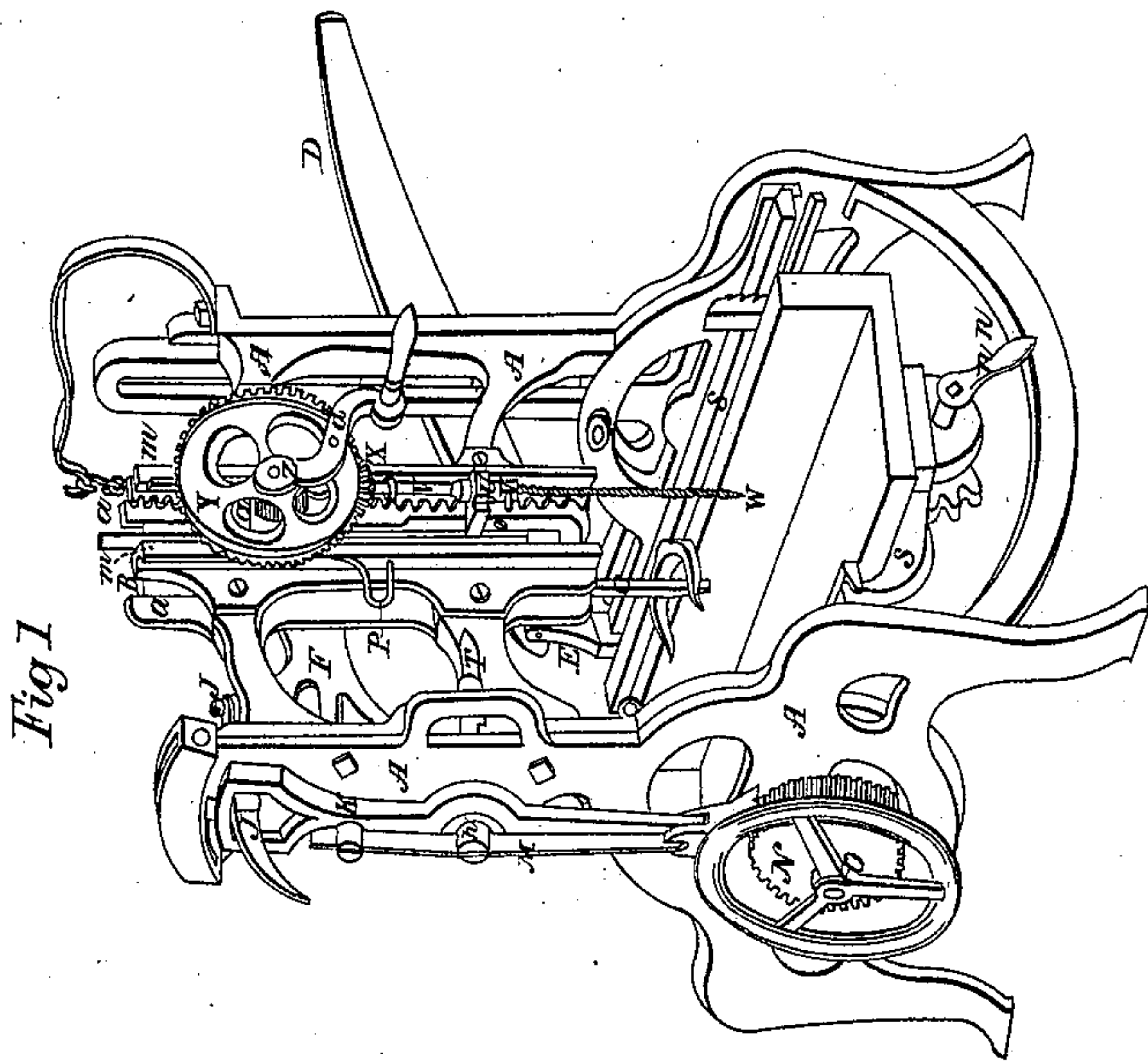
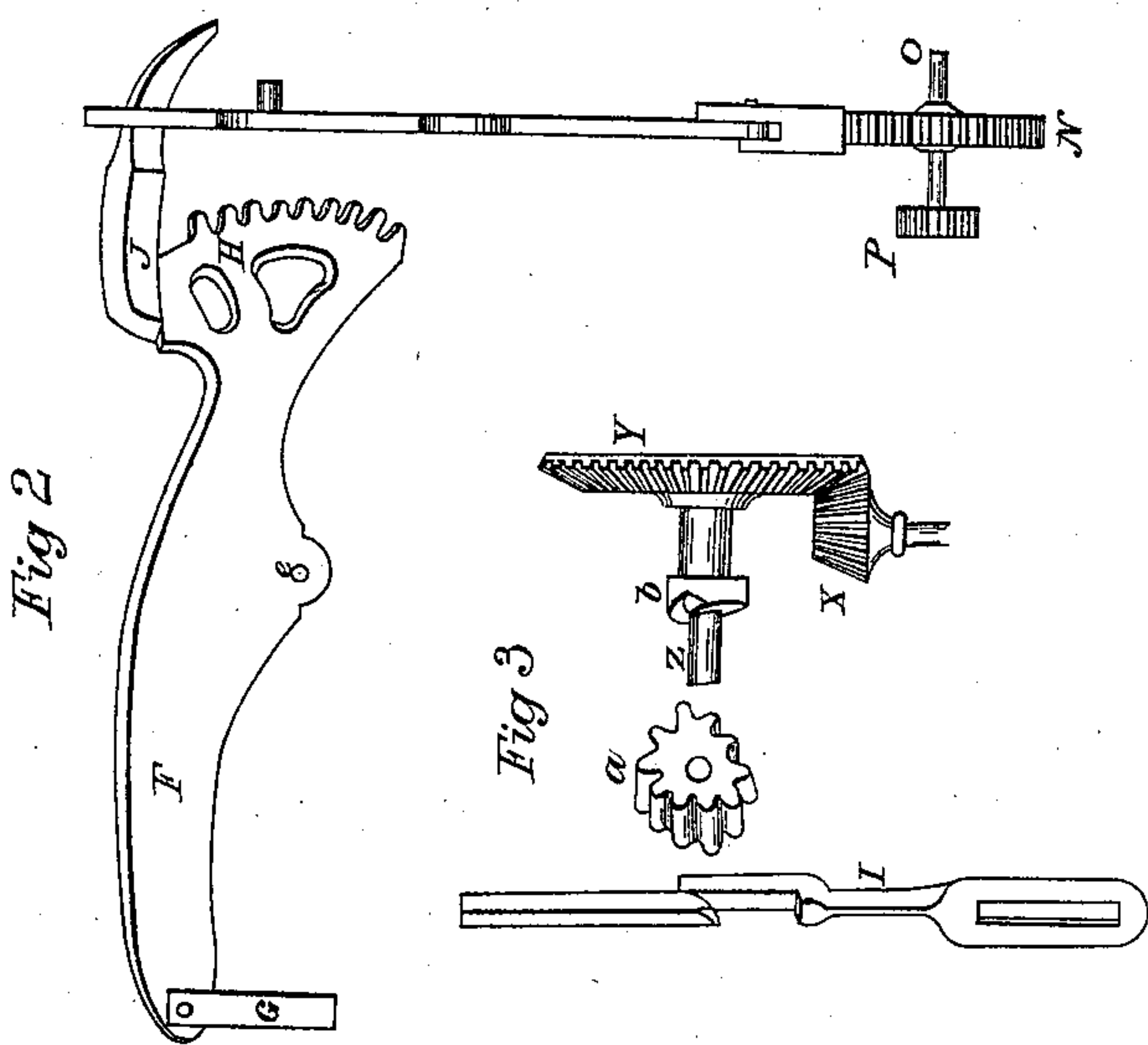


*G. W. Stearns,
Mortising Machine.*

$\mathbb{F}_2^{14,416}$.

Patented Mar. 11, 1856.



UNITED STATES PATENT OFFICE.

GEORGE N. STEARNS, OF SYRACUSE, NEW YORK.

BORING AND MORTISING MACHINE.

Specification of Letters Patent No. 14,416, dated March 11, 1856.

To all whom it may concern:

Be it known that I, GEORGE N. STEARNS, of Syracuse, in the county of Onondaga and State of New York, have invented certain
5 new and useful Improvements in Machines for Boring and Mortising; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being
10 had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a perspective view of the machine. Fig. 2 is a section illustrating the levers which move the chisel and carriage.
15 Fig. 3, is a view of the rack, pinion or clutch, also bevel wheels, and the spring which acts upon the clutch. Fig. 4, is a side view of the part of the carriage which is movable, right and left by means of rack
20 and pinion at each end of a shaft, also the clamp, and lever which moves the clamp.

Similar letters of reference indicate corresponding parts, in each of the several figures.

25 To enable those skilled in the art to make and use my invention, I will now proceed to describe the construction and operation of the same.

A, represents the frame of the machine,
30 on the upper transverse pieces of which are placed two guides, (a) (a) between which a sash B, works; said sash having a mortising chisel C, attached to its lower end as seen in Fig. 1. On the right side of the
35 machine is a lever, D, having its fulcrum at, b, or it is connected by a pivot to the upper part of a small lever, E, the lower end of which is connected by a pivot to the frame of the machine. To the sash, B, there is
40 attached a lever, F, said lever being attached to the sash by a pivot, (e), as shown in Fig. 2. The outer end of the lever, F, is attached by the pivot (d) to another lever, G, the lower end of which is attached by a pivot to
45 the lever, D. On the inner end of the lever, F, is a segment, H, the teeth of which fit in recesses in the side piece of the frame. On the upper end of the segment, H, there is a cam, J, attached by means of a set screw
50 passing through a slot in the cam. The slot allows the cam to be moved and adjusted, according to the thickness of the timber to be mortised; so that the carriage is not moved until the chisel is withdrawn. The
55 cam is shown in Fig. 2. This cam as the segment H is operated, works reciprocally

through a slot in the side piece of the frame directly above the recess. On the left side of the frame, there is secured by a pivot (h,) a lever K, to the lower end of the lever, 60 K, a pawl, L, is attached by a pivot (i), and the upper part of the pawl has a slot or opening in which is placed the lower end of a spring, (M,) which moves it. This spring, M, passes through the pivot (h) 65 where it is attached extending into a projection from the upper end of the lever K, as shown in Fig. 1. The form of lever, K, will be clearly seen in Fig. 1. On the inside of the frame a lever T is attached to the 70 pivot, h, which acts upon lever K, by means of the spring, M.

We will now proceed to show the operation of the machine.

The timber being placed on the bed to 75 be mortised, is first clamped down by moving the clamp lever, Z. The bed containing the timber, is moved right, or left, to place the timber in the desired position to be mortised, by the wrench, or lever, n, on the end 80 of the shaft, R, as seen in Figs. 1 and 4. The lever, K, being in a perpendicular position, as seen in Fig. 1, is moved by lever, T, to an angle which throws either point of the pawl, into a position to be thrust into pin- 85 ion, N, according to the direction desired to be mortised, as will be shown hereafter. By the downward motion of the lever D, the cam is moved in, so that the thick portion of the cam is withdrawn from the lever, K, 90 and the lever, K, is pressed to the cam by the upper half of the spring, M, and causes the pawl to move backward, the top of which being moved forward by the spring, M, causes the point of the pawl to 95 drop between the teeth. The upper motion of the lever, D, throws out the thick portion of the cam, and moves forward the lower end of the lever, K, and the pawl also turns pinion, N, which is hung on a shaft, O, on 100 the inner end of which is hung a pinion, P, which meshes into a rack, R, underneath the bed frame, S.

When it is desired to give an opposite feed motion to the bedframe, the position of 105 lever, K, is changed, by moving lever, T, which brings the opposite side of the lever, K, against the cam, causing the opposite end of the pawl to catch into the pinion, N, the operation is the same as heretofore described, 110 the carriage moving in an opposite direction, after each motion of the pinion, N, the

point of the pawl is taken up out of the teeth of the pinion, by the lower half of the spring, M, making the pawl self adjustable.

Thus, by the foregoing description, it will be seen that the chisel is operated, and the proper feed motion is given to the bedframe, at one and the same time, by merely operating a single lever, D.

To the back part of the upper transverse pieces, to which the guides, (a), (a), are attached, are also attached two guides, (m), (m), between which a sash, U, works; said sash having a vertical arbor, V, secured in it, in the lower end of which is secured an auger, W. On the upper part of the arbor, V, there is a small bevel wheel, X, which meshes into a larger bevel wheel, Y, the shaft, Z, of which passes horizontally through the upper part of the sash, U. On the inner end of the shaft, Z, there is a loose pinion, a, which may be connected or disconnected with the shaft by a clutch, b, as seen in Fig. 3, at the side of one of the guides (m), there is secured a stationary rack, c, see Fig. 1.

Between the guides, m, m, and back of the shaft, Z, and pinion, a, there is a perpendicular spring I with a slot in the lower part, the spring I is fastened to the lower transverse section of the frame by means of a set screw, and may be moved up or down, according to the depth to be bored. On the outer end of the shaft, Z, there is a crank, D, as shown in Fig. 1. By turning the crank, D, a rotary motion is given the arbor, V, and auger, W, and the auger feeds itself; the sash, U, descending between the guides, (m), (m), the work being secured as before mentioned; when the auger has bored down

the proper distance. The end of the shaft, Z, passes below a projection in the spring, I, which presses against the pinion, a, over the shaft and causes it to clutch to the shaft. The pinion, a, then revolves with the shaft, Z, and is moved up by means of the stationary rack; and the spring, I, (by its peculiar form) regains its position at the end of the shaft, Z. By turning the crank back one quarter of a revolution the pinion a is unclutched, and in the right position to commence boring. The pinion, a, is made self-adjustable by means of the spring, I. The sash, U, may be kept in the upper part of the guides until it is designed to operate the auger, by means of a spring, (P), see Fig. 1, which catches underneath one side of the sash; the spring being withdrawn when it is designed to operate the auger.

The work may be mortised or bored at any angle by inclining the bed frame, as is done on many other mortising machines.

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

1. I do not claim a movement of the carriage exclusive of the means by which it is done. I claim an adjustable cam in combination with levers F, K, T, spring M, pawl L, pinions N and P, and rack R, as set forth, in the specification.

2. I claim the use of the spring or its equivalent, to move the clutch which gives the return motion to the auger.

G. N. STEARNS.

Witnesses:

J. H. WEST,
WM. G. SEGAR.