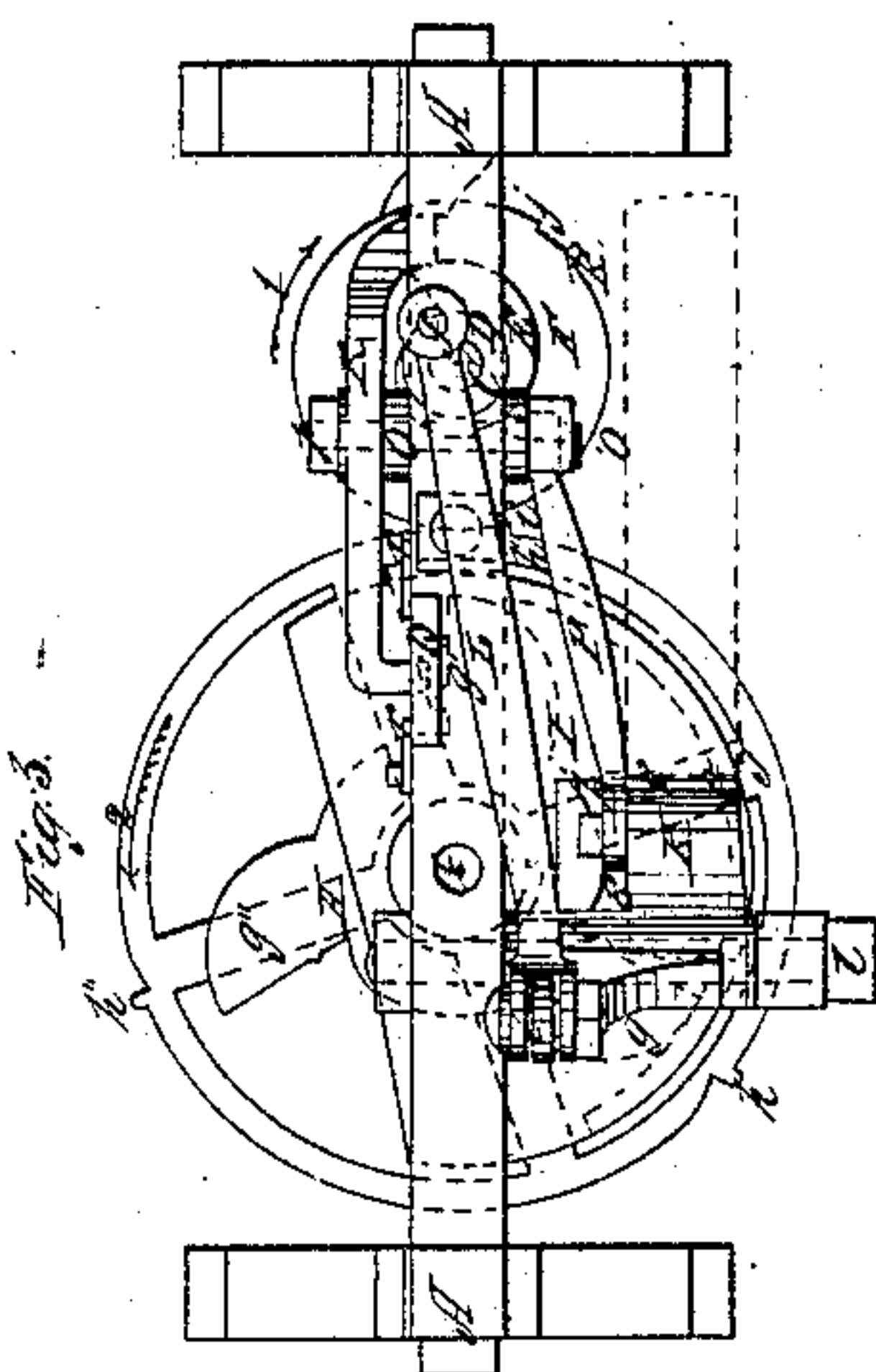
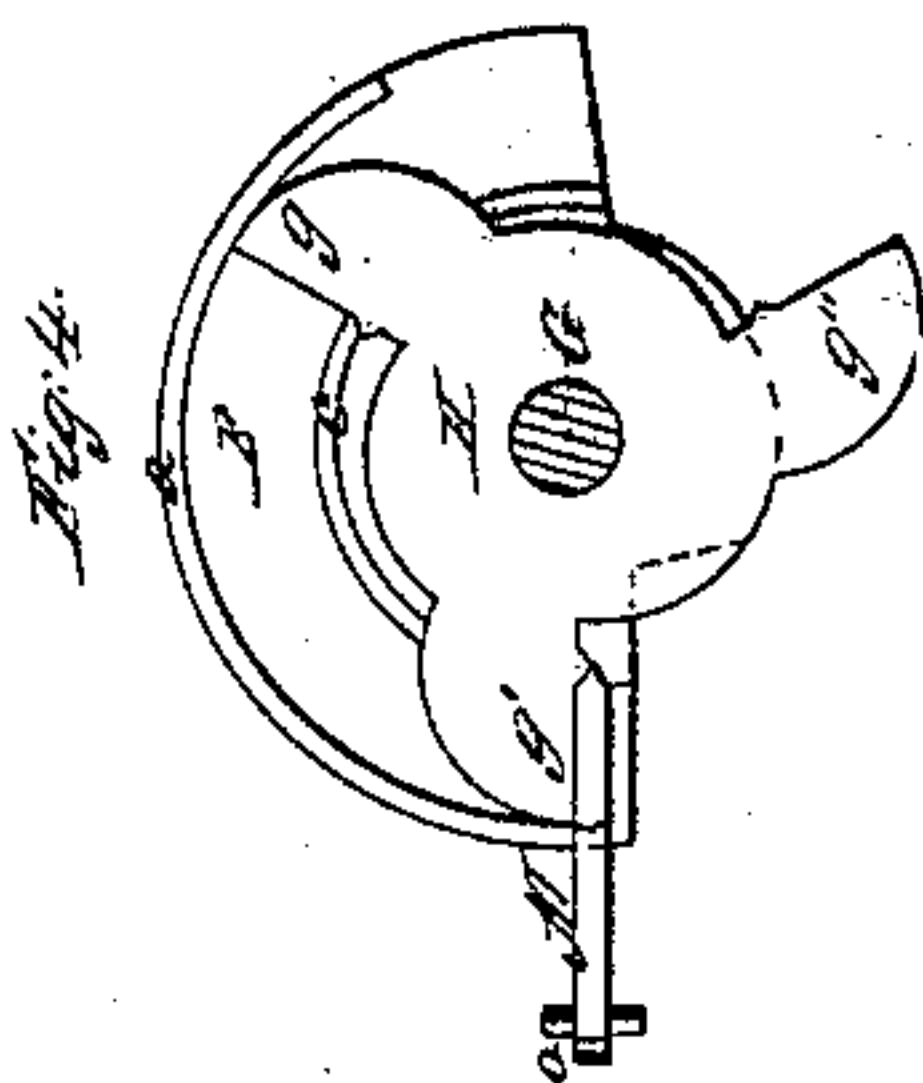
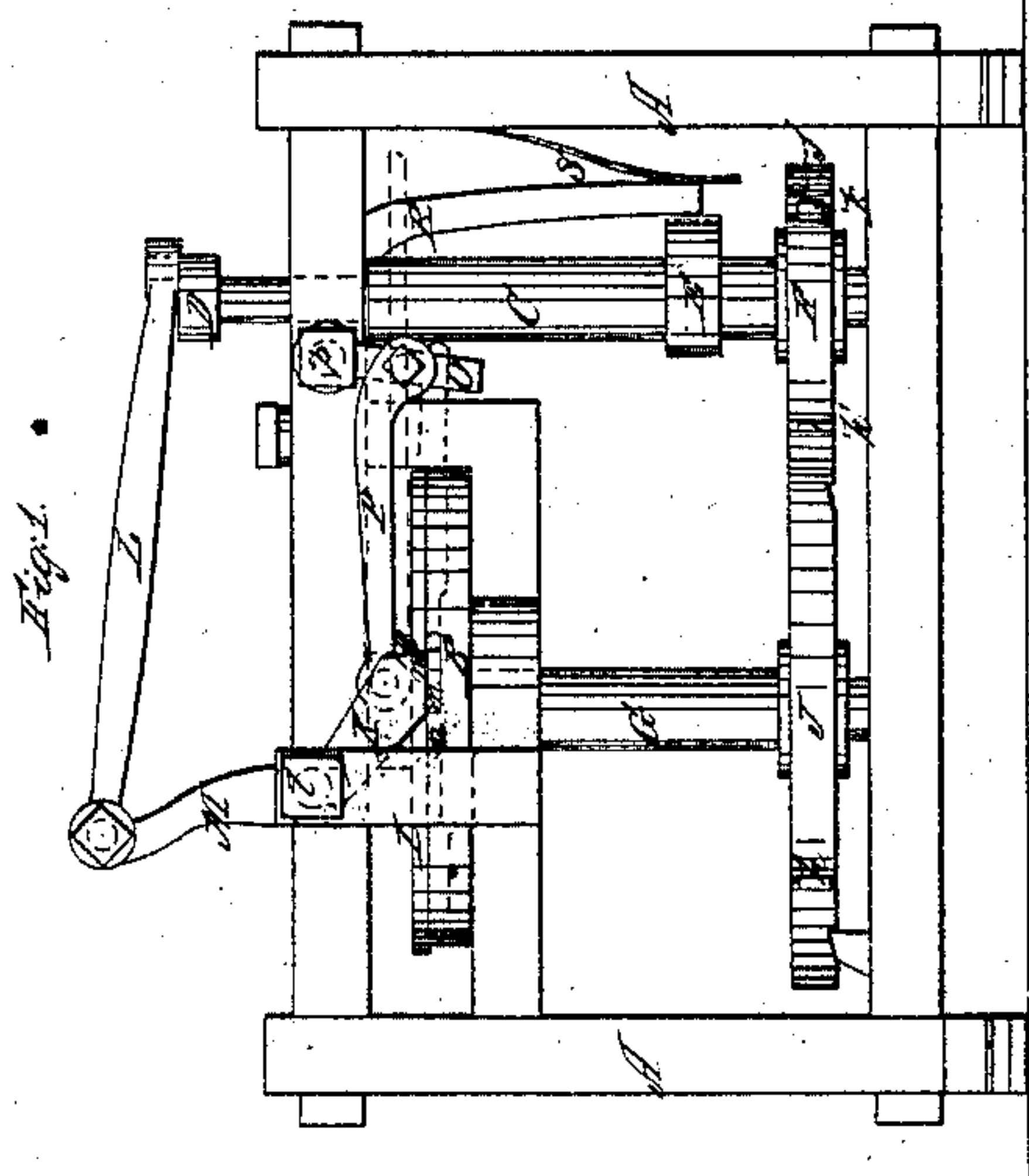
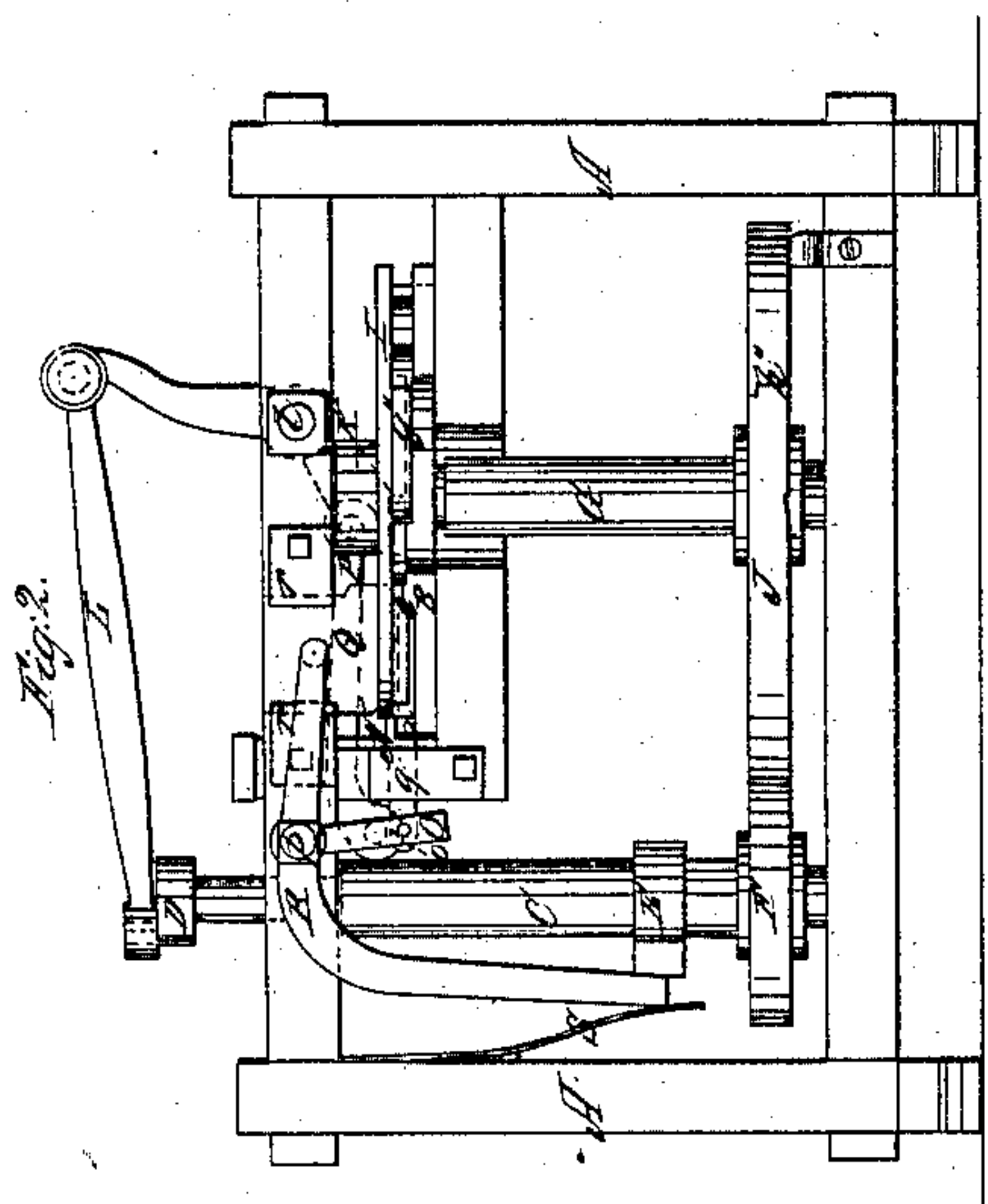
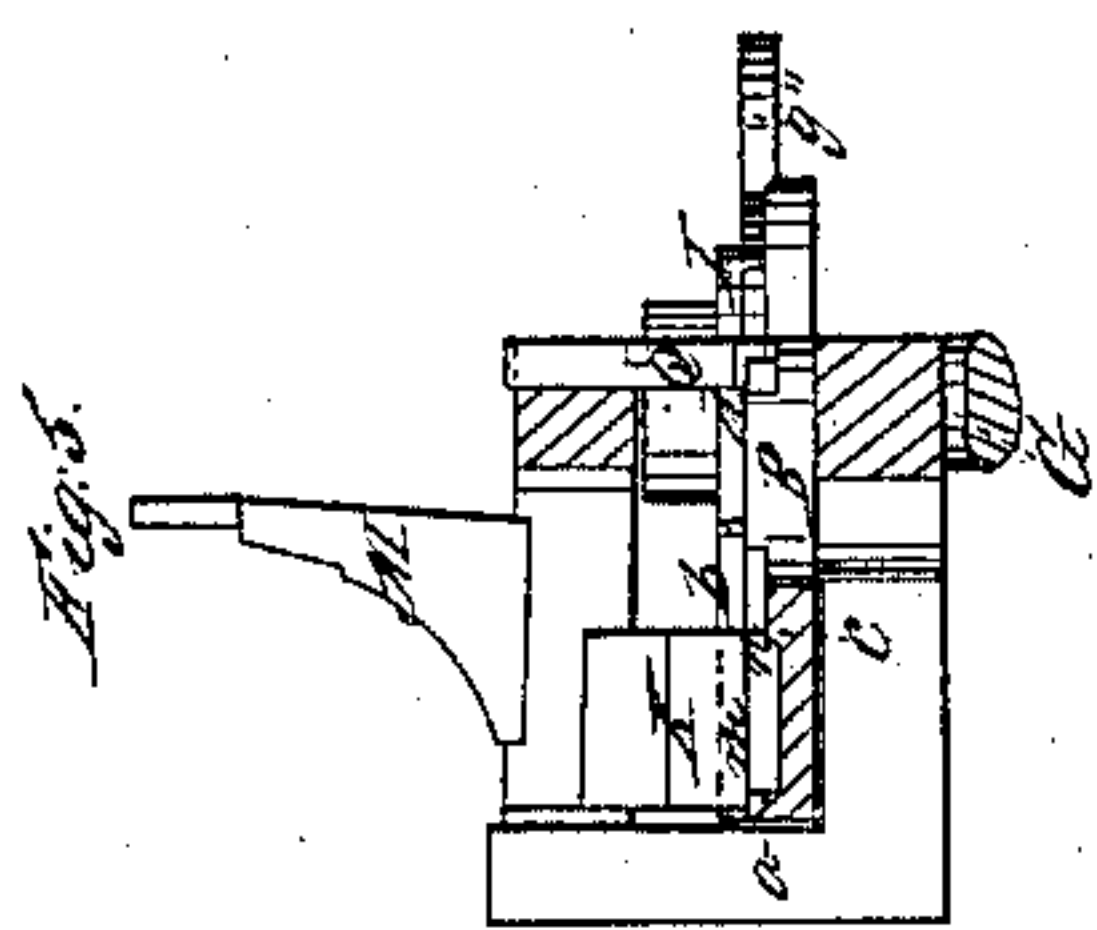


*W. M. Ison.*

*Making Spikes.*

*N<sup>o</sup> 8,289.*

*Patented Aug. 12, 1851.*



# UNITED STATES PATENT OFFICE.

M. M. ISON, OF ETOWAH, GEORGIA.

## SPIKE-MACHINE.

Specification of Letters Patent No. 8,289, dated August 12, 1851.

*To all whom it may concern:*

Be it known that I, MARK M. ISON, of Etowah, in the county of Cass and State of Georgia, have invented certain new and useful Improvements in Machines for Making Spikes and Nails; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is an elevation of that side of the machine where the iron is cut off and pointed. Fig. 2, is an elevation of the opposite side, where the heading is performed and the spike or nail delivered from the machine. Fig. 3, is a plan of the machine. Fig. 4, is a plan of the table and carrier. Fig. 5 is a transverse vertical section taken through the machine in such a way as to show one spike just cut off and pointed and another under the holding die in a position for heading.

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

My invention consists in a horizontal stationary table nearly of the form of a segment of a circle, having a hollow space within it, in which works a revolving cam or carrier hung on a shaft concentric to the table. The iron from which the spikes are to be formed which consists of a plate about the same width as the length of the spikes required is fed along the upper surface of the table, and is cut off in strips of suitable size across the edge of an opening in the top above, and afterward pointed between the said shear arm and the table. The cam before mentioned, which revolves and becomes stationary at regular intervals, is then made to carry the spike around within the hollow space in the table, and allow it to stop under a holding die which moves up and down in a line at right angles to the face of the table and the motion of the carrier. This die is then by a suitable movement brought down upon it to hold it while a heading tool moving nearly in line with the spike is caused by suitable mechanism

to be brought into operation upon it and form the head.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, A, represents the framing of the machine consisting mainly of two uprights connected by longitudinal bars, and supported on a suitable base.

B, is the stationary table which consists of a plate of metal of the form of a segment of a circle, a little larger than a semi-circle, it has a projecting rim *a*, standing up from its face nearly all along the circular part of its face, and upon this rim a plate I, is supported and secured leaving a space between it and the lower part of the table. On the lower part of the table at a distance from the inside of the rim equal to the intended length of the spike before heading, there is a slightly raised boss *c*, presenting the form of a segment of the frustum of a cone, the inclination of the periphery being the reverse of the inclination or bevel required for the point of the spike, is intended to form one side of the said point. Through the plate I, there are two openings one *b*, of considerable size, shown in Figs. 3 and 5, and another *d*, which is merely a slot through which the holding die passes, shown in Fig. 5. The edge *e* of the opening *b*, must be steeled as it is intended to form one cutting edge of the shears which cut off the spike.

C, is the main shaft which is hung in suitable bearings in a vertical position; it carries at its upper end a crank D, whose wrist *f*, has a very short throw for operating the vibrating shear, and it carries a cam E, for operating the holding down die, and a friction wheel F.

G, is a shaft hung in bearings parallel to C, it passes through the center of the table B, carrying the three armed cam or carrier H, the three arms *g*, *g'*, *g''*, of which fit in the space between the bottom of the table B, and the upper plate I, the front faces of the arms are nearly radial. The shaft G, also carries a friction wheel



J, whose periphery is provided at three equidistant points with small projections or teeth  $h, h', h''$ , at the back of each of which the periphery is slightly recessed. One part of the periphery of the wheel F, corresponding in length with each space on the wheel J, between two of its teeth, is more prominent than the other part which is recessed from  $i$ , to  $j$ , see Fig. 3, but has a small tooth  $k$ , projecting near to  $j$ . The prominent part of the periphery of the wheel F, when in contact with the periphery of the wheel J, will by the revolution of the main shaft C, cause it (the wheel J), to move on its axis by reason of the friction of contact, but the less prominent or recessed part passes without moving it; the starting of J, being accomplished by the tooth  $k$ , coming in contact with  $h, h'$ , or  $h''$ .

K, is the vibrating shear arm attached to a deep socket working on a center pin  $l$ , secured in the frame, its edge  $m$ , or the whole arm is steel, forming with the edge  $e$ , a pair of shears; the under face of the arm is provided with a beveled projection  $n$ , at one end, which comes immediately over the periphery of the conical surface  $c$ , and when the shear arm is brought down, presses or forms the point of the spike after cutting it off. The shear arm receives the necessary motion by means of a pitman L, connected to the wrist  $f$ , of the crank D, and to an arm or lever M, on its own socket.

N, is the header, which is attached by a pin  $o$ , to a lever frame O, hung on a stationary pin or center  $p$ , secured in the frame; it works through a guide  $q$ , in the frame, and receives the necessary motion at the proper time through a rod P, connecting the lever frame O, with the vibrating shear arm K.

Q is the holding down die which is of suitable form on its under side to hold the spike secure upon the table while the header is made to act upon it; it slides in guides  $r$ , and is brought down upon the spike at a suitable time and held down by means of a bent lever R, having its fulcrum on the pin  $p$ , one end of this lever is inserted in a suitable recess in the die, and the other end bears upon the cam E, being held against it by a spring S.

The operation of the machine is as follows: Rotary motion is given to the shaft C, by any convenient means, in the direction of the arrow 1, see Fig. 3, and the iron being previously heated, is brought either directly from the rolls or otherwise in the direction of the red lines shown in Fig. 1, on to the upper plate I, of the table, and its end is presented a sufficient distance over the edge  $e$ , to have a strip cut off of suitable width to form the spike, when the vibrating shear arm K, will be brought down and will cut off the overhanging end of the iron between its edge  $m$ , and the edge  $e$ , of the spring  $b$ ,

afterward forcing it down into the opening and down on the lower part of the table B, where it will form the point; the shaft G, and carrier H, being stationary while the iron is being cut off and pointed. The shear arm will after the cutting off and pointing, commence its upward motion to release the spike, and as soon as this upward motion commences the tooth  $k$ , on the wheel F, comes in contact with one of the teeth  $h, h'$ , or  $h''$ , on the large wheel and sets the shaft G, in motion, giving it one third of a revolution in the direction of the arrow 2, in Fig. 3, after which the point  $i$ , on the wheel F, passes the next tooth on the wheel J, and it (the wheel J,) and the shaft G, becomes again stationary by reason of the friction of the two wheels being diminished, while the next spike is cut off and pointed by another descent of the shear arm, the iron from which the spikes are made being moved forward previous to every descent of the shear arm. By the motion just described as being given to the wheel J, and shaft G, the carrier H, receives a corresponding motion and carries the spike first cut off between the plate I, and the lower part of the table B, to a position in front of the heading or under the holding die where on becoming stationary it allows it to remain. During the time that it is stationary the cam E, operating on the lever R, brings down the holding die which together with the arm of the carrier holds the spike in place, and the header being brought forward by the next downward stroke of the shear arm, the head is upset or turned around the corner of the holding die Q. As soon as the head is formed the holding die is raised by its lever R, being forced by the spring S, against the less prominent part of the cam E, and the header is drawn back by the upward motion of the shear arm, and by this time the wheel J, and shaft G, begin their motion again, and the arm of the carrier which brought the spike to the header pushes it out from the machine, the next arm behind it bringing the spike last cut off and pointed, to a suitable position to be held by the holding die Q, and headed. This operation is repeated as long as the machine remains in motion, two spikes being always operated upon at once, one being cut off and pointed, while the one cut off and pointed before it, is being headed. In Fig. 1, a spike is shown just cut off, and under the shear arm being pointed; in Fig. 2, one is shown being headed, and in Fig. 5, one is shown at each stage of its manufacture.

Having thus fully described my invention, I do not claim the header N, or the holding die Q, irrespective of their arrangement and operation; but

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

The arrangement of the carrier H, within



the hollow table B, substantially in the manner described, and also the combination of a carrier so arranged, with a single gripping die Q, arranged with respect to it in the  
5 manner substantially as shown, the die and the carrier assisting each other in holding the spike while being headed.

In testimony whereof I have hereunto

signed my name before two subscribing witnesses this twenty second day of May in the 10 year of our Lord one thousand eight hundred and fifty one.

MARK M. ISON.

Witnesses:

) STEPHEN FLOYD,  
WILLIS LITTLE.