

(No Model.)

J. A. GIDDINGS.  
IRON SHAPER.

No. 593,522.

Patented Nov. 9, 1897.

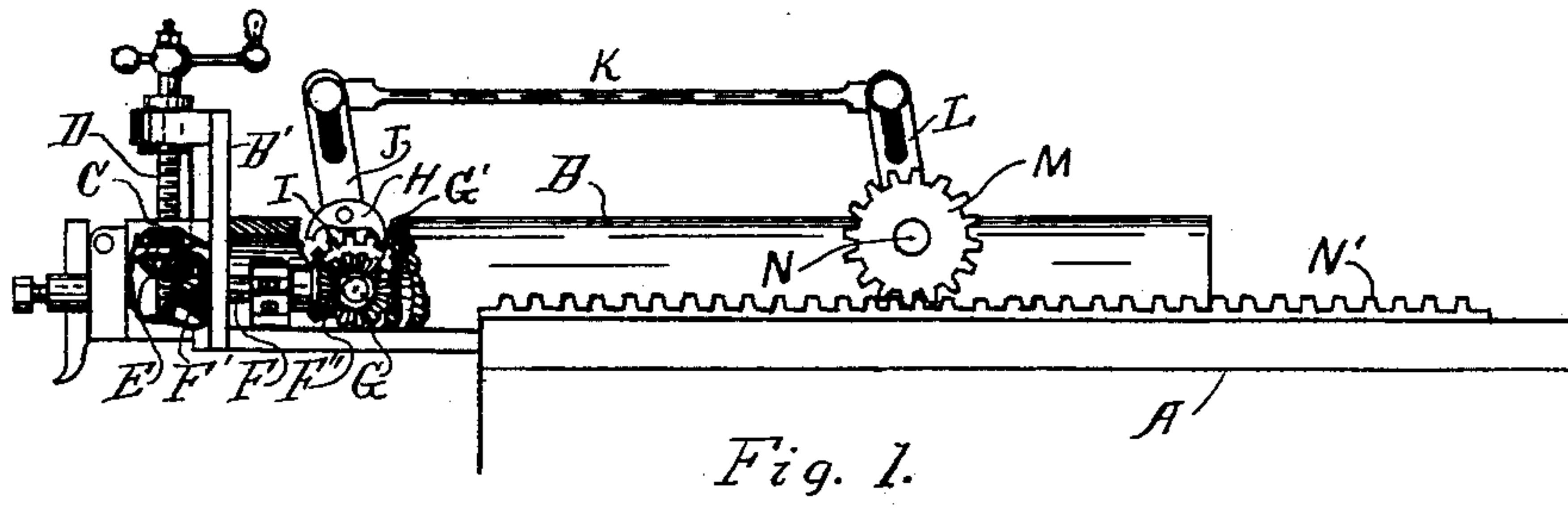


Fig. 1.

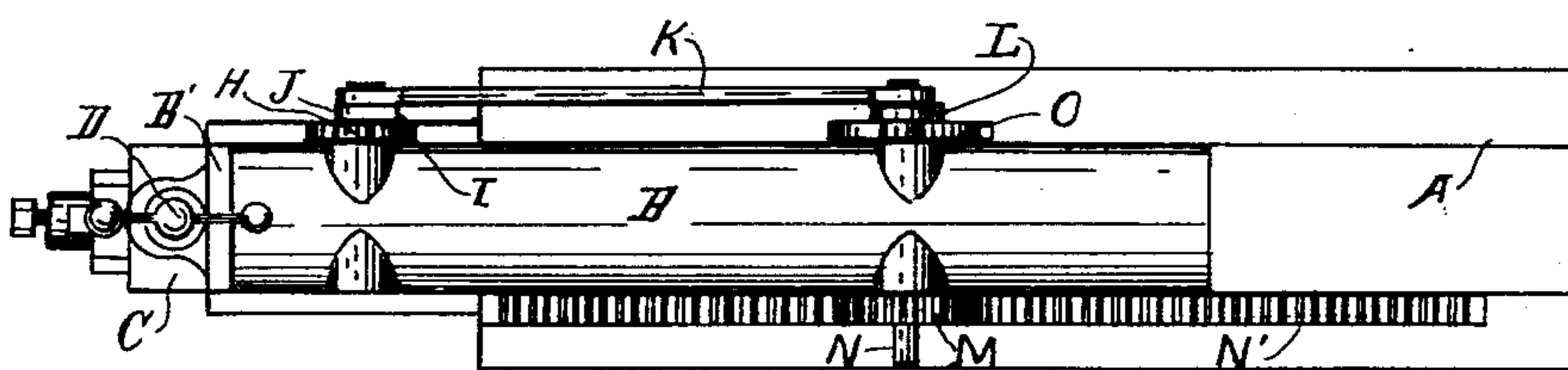


Fig. 2.

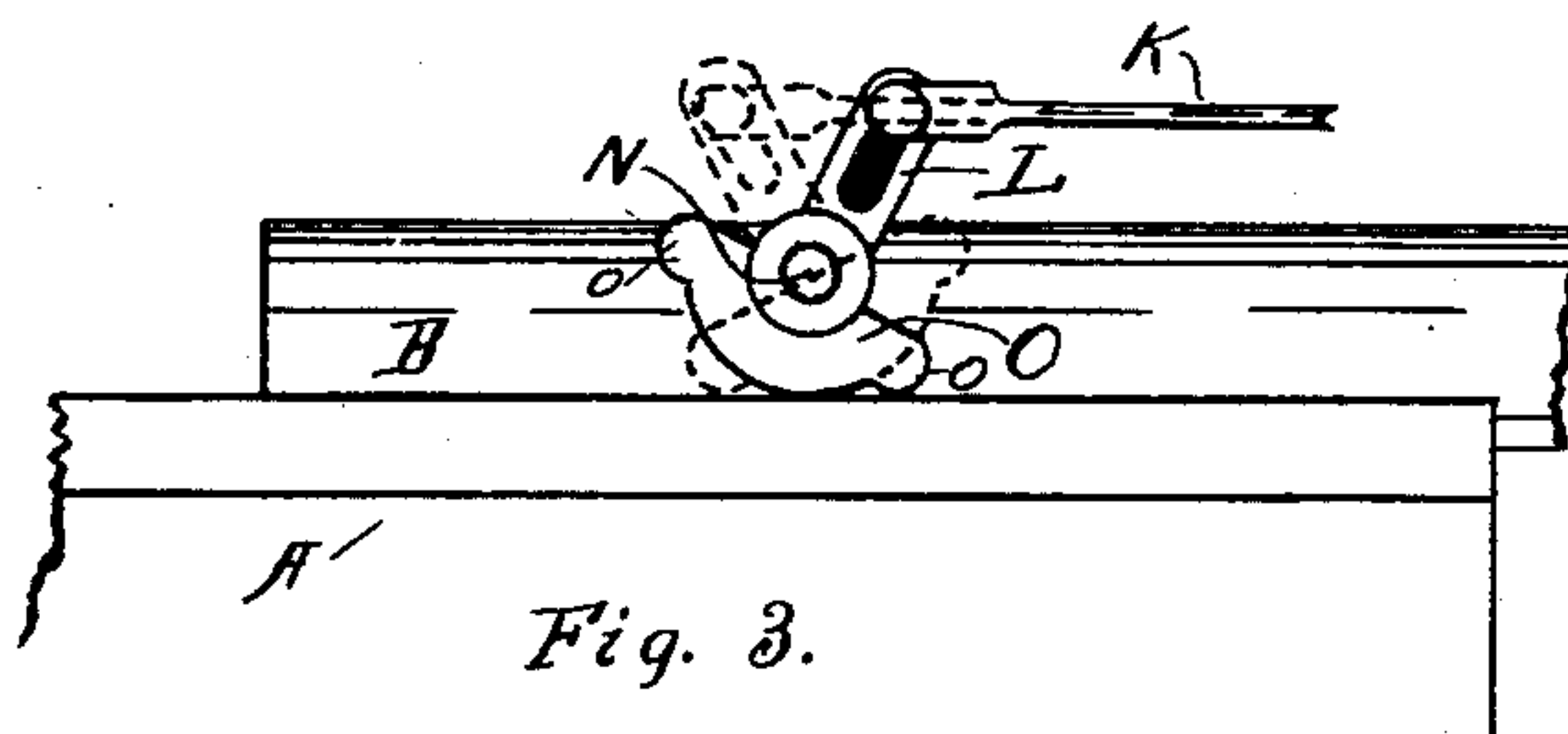


Fig. 3.

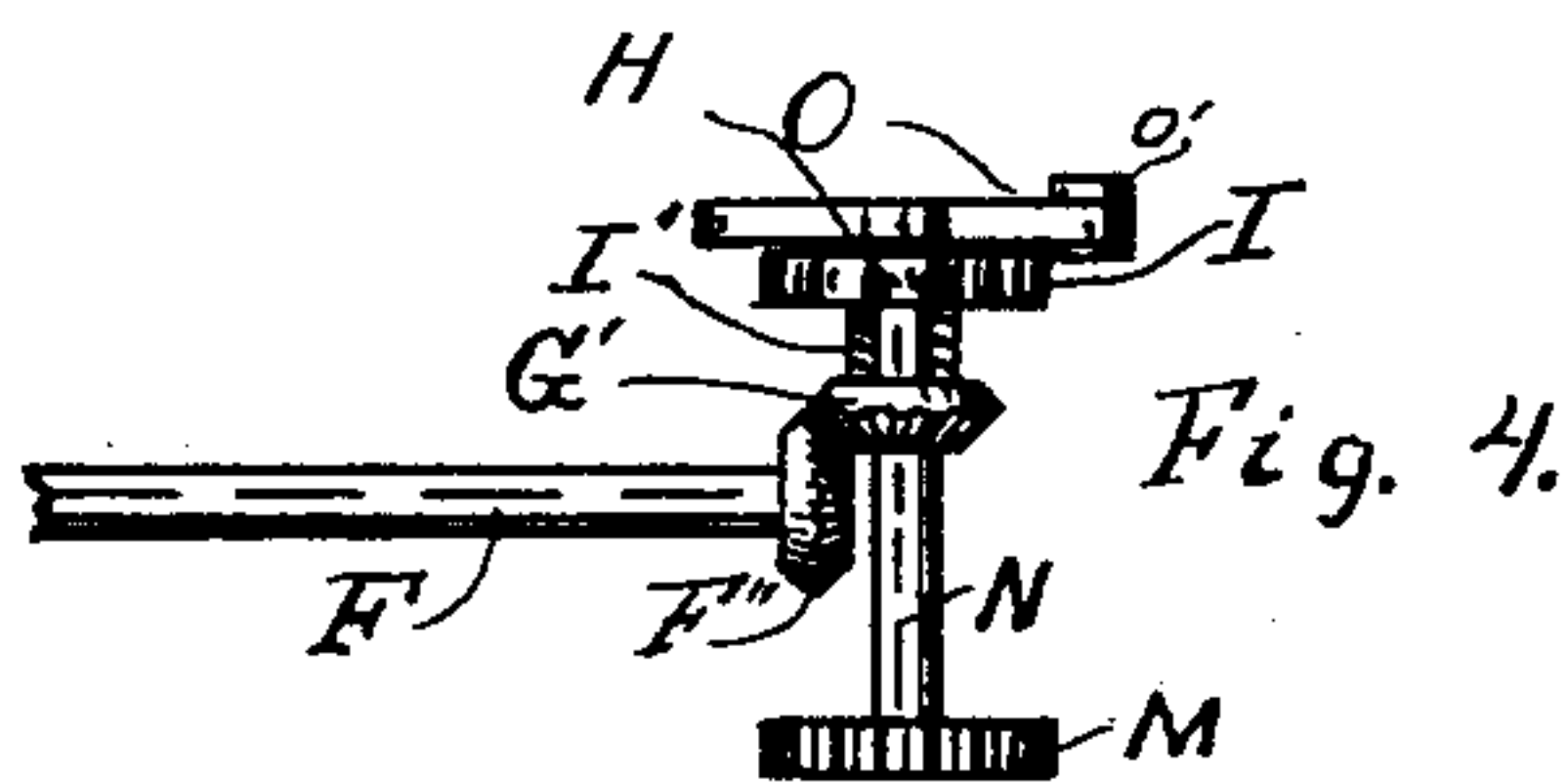


Fig. 4.

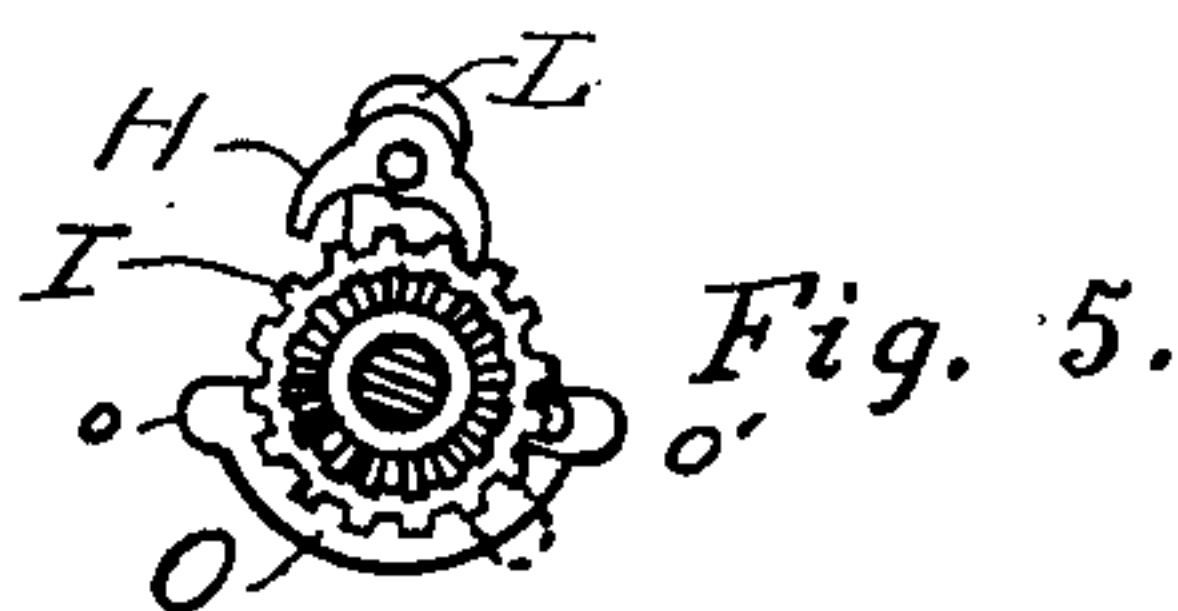


Fig. 5.

Witnesses:

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# UNITED STATES PATENT OFFICE.

JOHN ARTHUR GIDDINGS, OF GRAND RAPIDS, MICHIGAN.

## IRON-SHAPER.

SPECIFICATION forming part of Letters Patent No. 593,522, dated November 9, 1897.

Application filed January 29, 1895. Serial No. 536,573. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN ARTHUR GIDDINGS, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Iron-Shapers, of which the following is a specification.

My invention relates to improvements in the feed-works of iron-shapers; and its object is to avert the necessity of changing the feed mechanism to correspond with the various lengths of stroke of the shaper. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the upper portion of a shaper. Fig. 2 is a plan of the same. Fig. 3 is a reverse view of Fig. 1, showing the position of the friction-cam that actuates the feed mechanism. Fig. 4 is a plan of the actuating mechanism, showing the longitudinal shaft connected directly with the shaft that supports the actuating-cam; and Fig. 5, an elevation of the actuating-cam, the pawl and ratchet that actuate the supporting-sleeve, the bevel connecting-gear, and a section of the supporting-shaft.

Similar letters refer to similar parts throughout the several views.

A is the top of an ordinary shaper-frame. B is the ram or carriage, that supports and carries the cutting-tool, and B' is the adjustable head, that is pivoted to the end of the ram and is fitted to be turned to give to the feeding of the cutter any desired angle. The main feature of my invention consists in automatically feeding this head at any desired angle by means of a friction-cam so arranged that it will act positively upon the feed mechanism without alteration, regardless of the distance traveled by the ram B.

O is the actuating-cam and is supported upon the cross-shaft N in position to bear snugly upon the upper surface of the frame A and so attached to the shaft that the shaft will turn freely but snugly in it, so that the turning of the shaft will act with the friction of the cam upon the frame to turn the cam and throw its arm L over one way or the other for the purpose of carrying the feed mechanism to feed the head and tool as desired. On the opposite end of the shaft N, I secure a small gear-wheel M, arranged to mesh in a

rack N' to revolve the shaft first one way and then the other as the ram is carried in one direction or the other, and I place a stop, as o and o', on each end of the cam to prevent it from being carried over too far in either direction.

My immediate means of feeding the tool to and from the work consists of the usual screw-threaded bevel-gear E, fitted to mesh freely upon the feed-screw D, the corresponding bevel-gear F' on the longitudinal shaft F having a corresponding bevel-gear F'' on its opposite end, all of which is old and forms no immediate part of my invention except as necessary in combination with other elements to attain the desired results, my invention being the manner of operating these elements.

I do not desire to restrict myself to a specific means of transmitting motion from the cam O to the longitudinal shaft F and thence to the feed-screw D, but show in the accompanying drawings two forms of connection. In Fig. 1 the arm L of the cam is shown as projecting up and being connected with the arm J on the shaft G by means of a connecting-rod K in such a manner that any motion of the cam will be transmitted to the shaft G. This arm has a pawl H, pivoted to its side in position to be made to engage with the ratchet-wheel I, which latter is securely attached to the shaft G to turn the shaft in either direction, as desired, the arm being secured to turn freely upon said shaft. To the opposite end of this shaft I secure a bevel-gear G' in position to mesh freely with and transmit motion from the shaft G to the shaft F and thence to the feed-screw. I provide for lengthening or shortening the stroke of the feed with this form of connection by slotting the arms, as shown, so that the connecting-rod K can be raised or lowered and thus the sweep of the arms regulated to the distance required.

My second manner of transmitting motion from the cam to the longitudinal shaft F consists of securing the ratchet I to one end of the sleeve I' and the bevel-gear G' to the other end and placing the sleeve on the shaft N, and securing the pawl H to the arm L of the cam in position to be made to engage with the ratchet, so that the motion of the cam will be transmitted directly to the bevel-gear G' on the shaft that supports the cam,



and the longitudinal shaft F is lengthened to bring the bevel-gear F'' in contact to mesh freely with the gear G', as indicated in Fig.

4. I provide for varying the length of feed by making the stop o' to slide from place to place and be secured in the desired position on the cam, as indicated by the dotted lines in Fig. 5.

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

1. In a vertical feed for shapers, a vertical feed-screw, a nut mounted to mesh centrally with said screw and having a bevel-gear on its outer surface, a horizontal shaft in the ram of the shaper at right angles with the feed-screw and provided at one end with a bevel-gear to mesh with the bevel-gear on the nut and at the other end with a bevel-gear to mesh with a bevel-gear on a lateral shaft, a lateral shaft mounted in the ram and having a bevel-gear at one end to mesh with the bevel-gear on the before-mentioned horizontal shaft and a pawl, a ratchet and an arm on the opposite end, a second lateral shaft mounted in the ram back of the first and carrying a cam, an arm on said cam connected by a rod with the arm on the first-mentioned lateral shaft said cam adjusted to travel upon the bed of the shaper to produce sufficient friction to actuate the pawl and ratchet and through them the feed-screw of the shaper, substantially as and for the purpose set forth.

2. In a vertical feed for shapers, a vertical feed-screw, a nut mounted to mesh centrally with said screw and having a bevel-gear on its outer surface, a horizontal shaft mounted in the ram of the shaper and a bevel-gear at one end to mesh with the bevel-gear on the nut and a bevel-gear on the other end to mesh with a corresponding gear on a lateral shaft, a lateral shaft mounted in the ram of the shaper, a bevel-gear on one end to mesh with the gear on the horizontal shaft and an actuating-arm carrying a pawl, and a ratchet on the other end, a second lateral shaft mounted in the ram, a friction-cam mounted on said shaft and actuated by friction upon the bed of the shaper, an arm upon said cam connected by a rod with the arm that supports the pawl, a pinion on the cam-shaft and a rack on the

bed of the shaper to assist the cam in actuating the feed mechanism, substantially as and for the purpose set forth.

3. In a vertical feed for shapers, a vertical feed-screw, a nut mounted to mesh centrally on said screw and provided with a bevel-gear on its surface, a horizontal shaft mounted in the ram of the shaper and having a bevel-gear at one end to mesh with the nut-gear and a bevel-gear at the other end to mesh with a corresponding gear on a lateral shaft, a lateral shaft mounted in the ram at right angles with the horizontal shaft, a bevel-gear at one end of said shaft, an arm loosely fitted on the other end of said shaft, a pawl pivoted to said arm and a ratchet on the shaft in position to be actuated by said pawl, a second lateral shaft mounted in the ram back of the first, a cam fitted to work on one end of said shaft, an arm on said cam, a rod connecting said arm with the arm that supports the pawl, said cam adjusted to bear upon the bed of the shaper with force to produce sufficient friction to actuate the feed-screw, a stop on each end of the cam, and a gear and rack auxiliary to said cam, substantially as and for the purpose set forth.

4. In a vertical feed for shapers, a bevel-gear threaded to mesh with the feed-screw, a longitudinal shaft within the ram, a bevel-gear on one end of said shaft to actuate the feed-gear and a bevel-gear on the other end to mesh with a corresponding gear on a cross-shaft to actuate said longitudinal shaft, a cross-shaft supported in the ram, a friction-cam loosely supported on one end of said shaft, a pawl upon said cam, a ratchet on the shaft in position to engage said pawl, a bevel-gear connected with said ratchet in position to mesh with the gear on the longitudinal shaft and actuate the shaft, a gear-wheel on the cross-shaft to assist in actuating the cam, and a rack on the shaper-frame to actuate the gear-wheel, substantially as, and for the purpose set forth.

Signed at Grand Rapids, Michigan, this 21st day of January, 1895.

J. ARTHUR GIDDINGS.

In presence of—

P. J. VANDERLINDA,  
ITHIEL J. CILLEY.