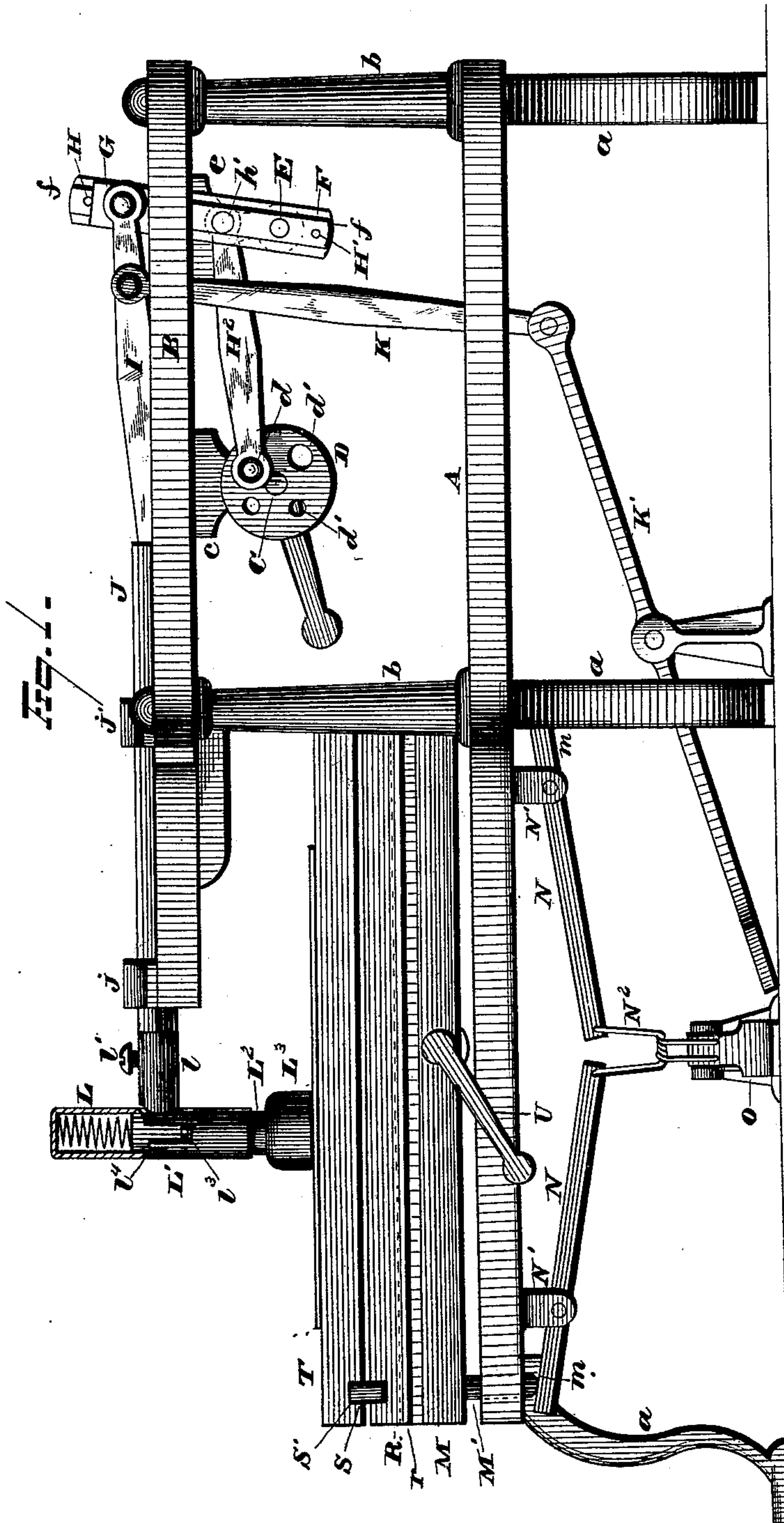


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Polishing-Machine.

No. 222,325.

Patented Dec. 2, 1879.



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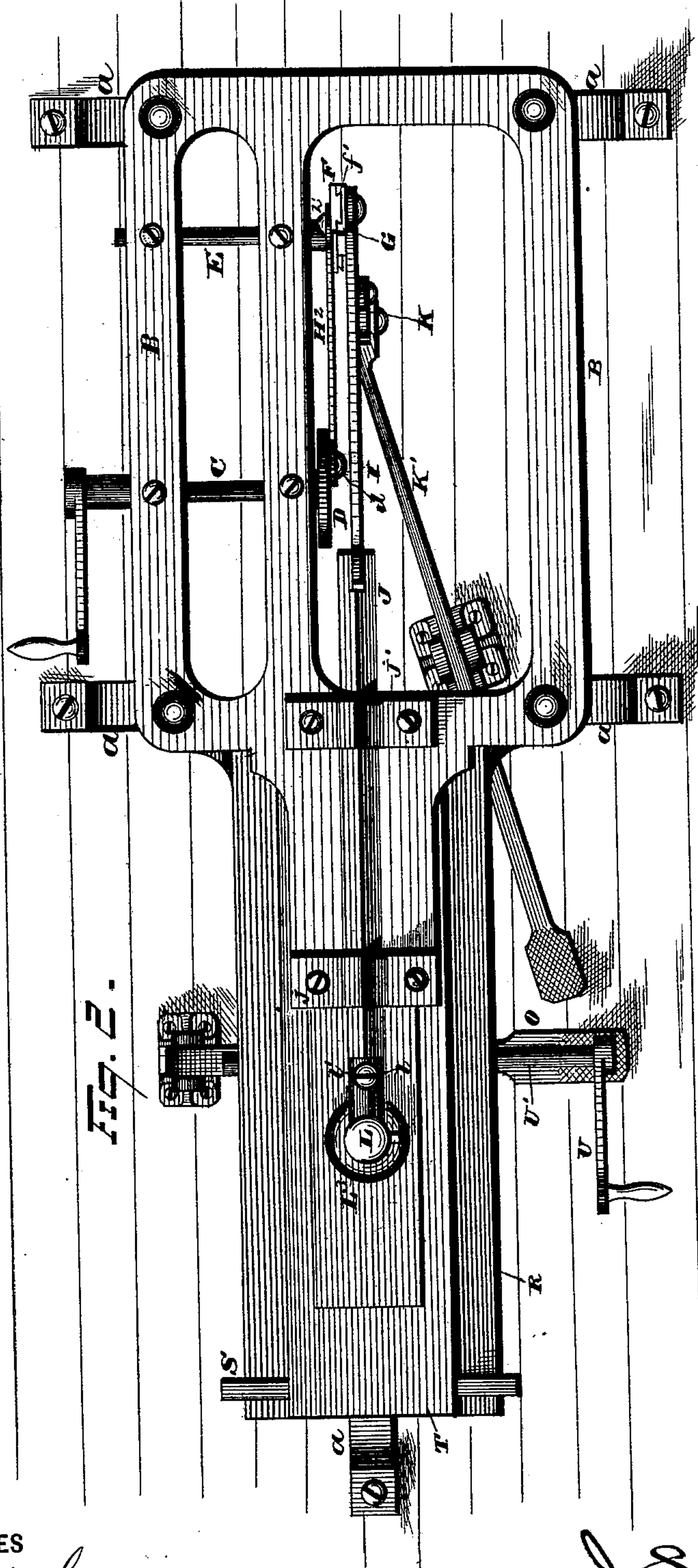
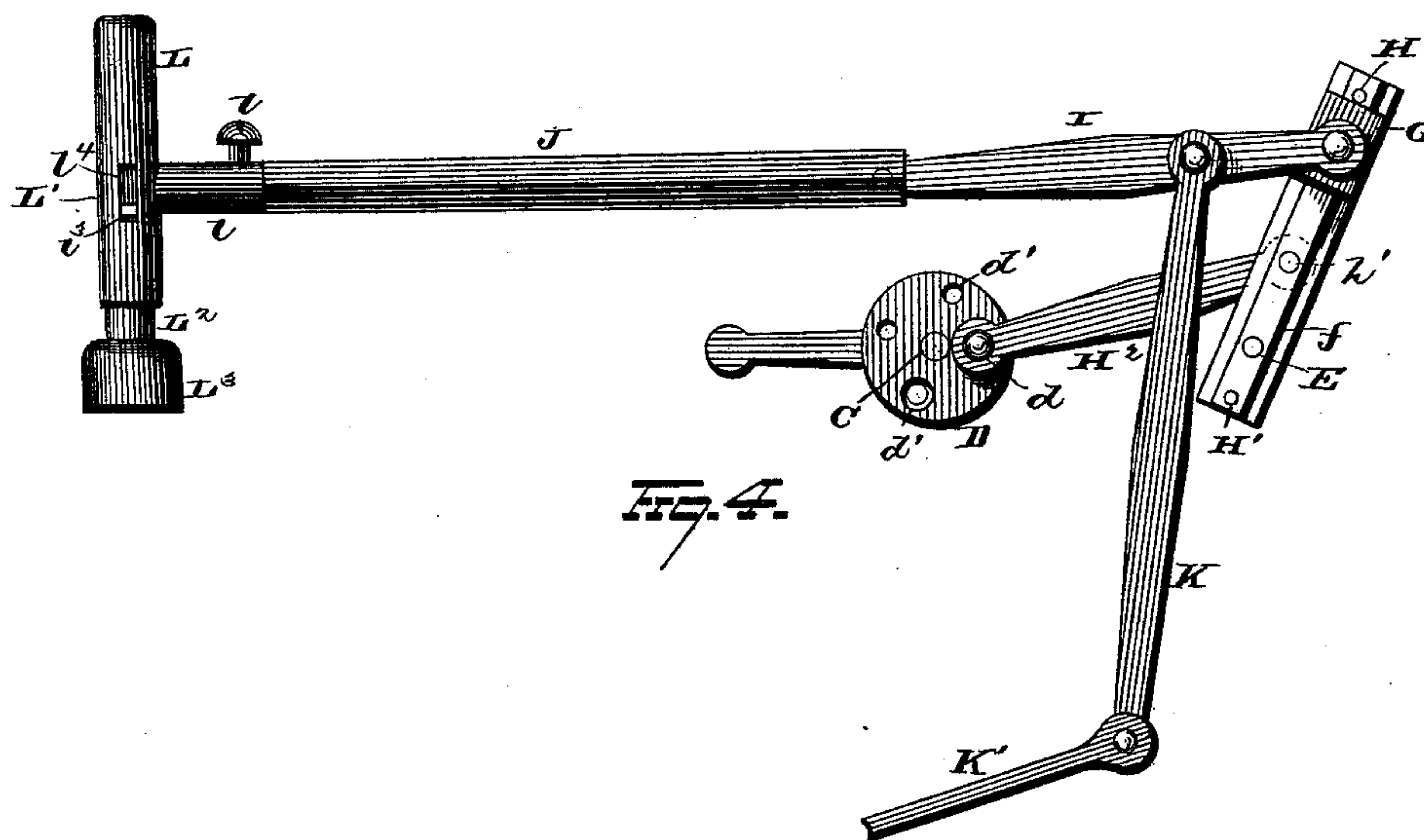
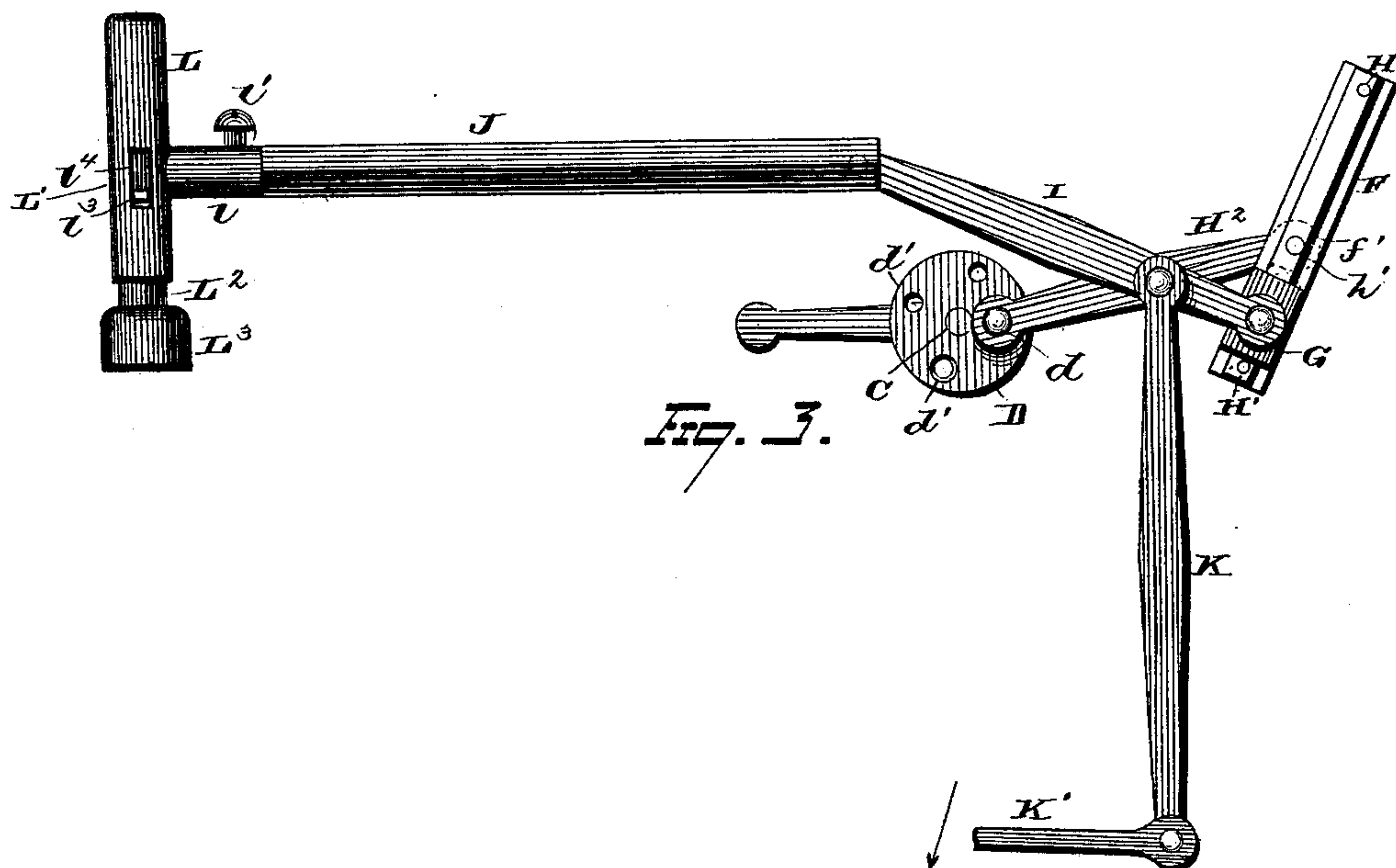


FIG. 2.

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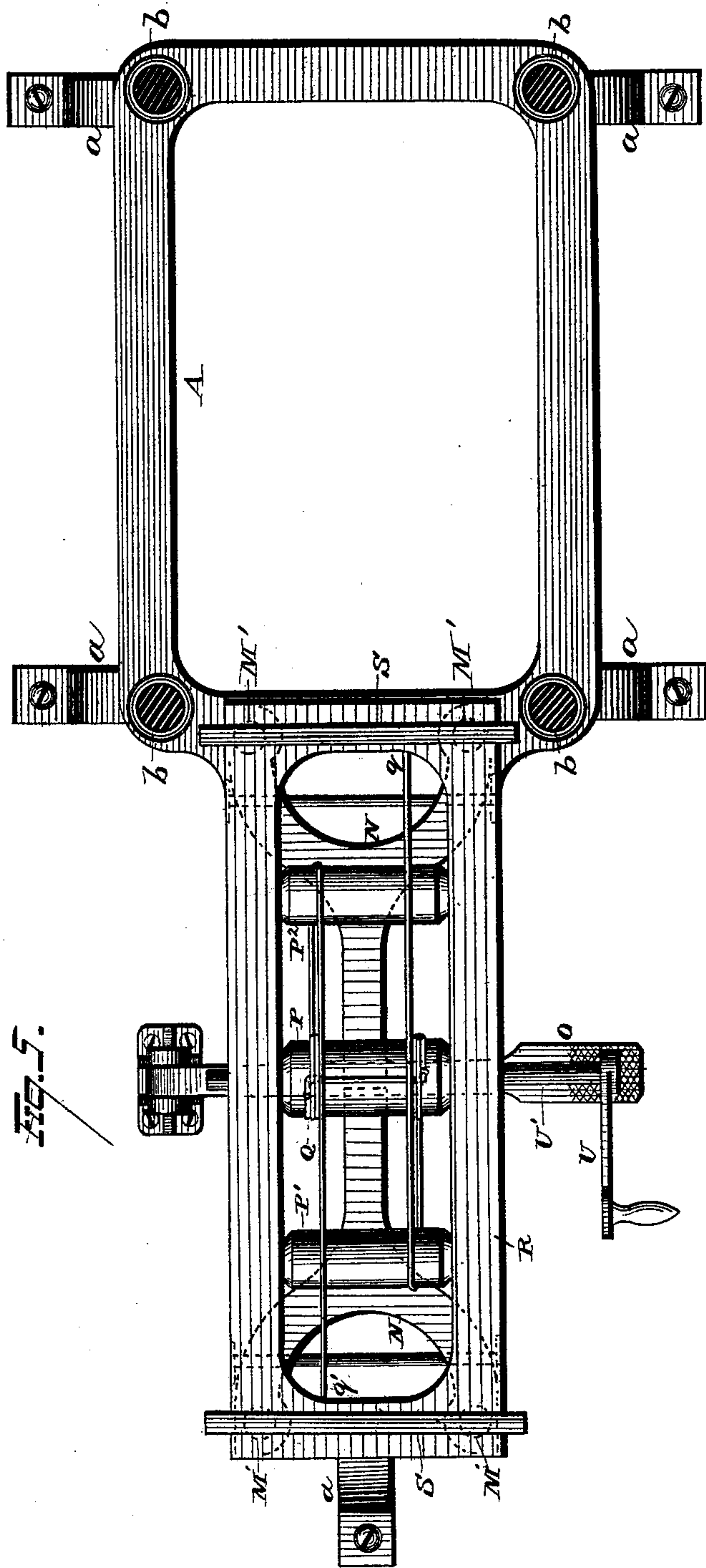
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UNITED STATES PATENT OFFICE.

JEREMIAH STEVER, OF BIRMINGHAM, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN POLISHING-MACHINES.

Specification forming part of Letters Patent No. **222,325**, dated December 2, 1879; application filed October 4, 1879.

To all whom it may concern:

Be it known that I, JEREMIAH STEVER, of Birmingham, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Polishing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in polishing-machines, the object being to provide a polishing-machine of such construction that the length of the stroke of the rubbing pad or block may be readily changed while the machine is in motion; and, further, to allow the object or article being polished to be moved either longitudinally or transversely with relation to the stroke of the rubbing-pad, and thereby present the entire surface of such article to the desired action of the rubbing block or pad.

My invention consists in the several details of construction and combinations of parts, as will hereinafter be described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved polishing-machine. Fig. 2 is a plan view of the same. Fig. 3 is a detached view of the mechanism for reciprocating the rubbing-pad, showing the parts adjusted in such a manner that the pad is held stationary while the oscillating bar or frame is in motion. Fig. 4 is a similar detached view, showing the parts adjusted to impart the maximum length of stroke to the rubbing-pad or polishing-block. Fig. 5 is a plan view of the frame for supporting the laterally-adjustable bed, the latter being removed to show the mechanism for imparting a reciprocating movement to its frame.

A represents the lower portion of the frame of the machine, which is supported upon legs or standards *a*. Upon one end of frame A is supported an upper frame, B, by the corner-posts *b*.

C is the main driving-shaft, supported in the machine by suitable suspension-brackets *c*. The outer end of driving-shaft C is provided with a crank, cog-wheel, or band-pulley for transmitting power to the machine. To the opposite end of shaft C is attached a disk, D, having a wrist-pin, *d*, attached to its outer face. Disk D is provided with a series of holes, *d'*, to allow of the wrist-pin being secured at different distances from the center of the disk, and thus allow for the adjustment of the stroke. Instead of the disk D, I may use a crank with holes formed therein for the variable adjustment of the wrist-pin.

E is a counter-shaft supported in brackets *e*, and arranged parallel with main shaft C. To one end of the counter-shaft E is rigidly keyed or otherwise secured a bar or frame, F, which is provided with a tongue, *f*, with undercut sides *f'*, thereby affording a sliding bearing for the slide-block G, which is fitted thereon. H H' are stops secured at opposite ends of the bar or frame F, to limit the movement of the sliding block G.

H² represents a connecting-rod, one end of which is journaled upon the wrist-pin *d*, attached to the face of disk D, while its opposite end is attached to a pin, *h'*, secured to the rear side of the bar or frame F at any desired distance from its center of movement, whereby the bar or frame F has an oscillating movement imparted thereto when the disk D on the main driving-shaft is rotated. I is a connecting-rod, having one of its ends pivoted to the rear end of a sliding bar or rod, J; or it may be pivoted to a cross-head, to which the sliding bar is attached, and its opposite end attached to a pin secured to the slide-block G.

To the connecting-rod I is pivoted the upper end of an adjusting-rod, K, the lower end of which is pivoted to the long arm of the treadle K'.

Slide-bar J is of angular form in cross-section, and reciprocates within suitable guides *j j'*, and to its outer end is removably secured the holder L, which latter is provided with a socket, *l*, which fits upon the forward end of the slide-bar, and is secured thereto by a set-

screw, L' , or by an equivalent fastening device. Holder L consists of a vertical tube, L' , within which is received the cylinder L^2 , the latter having a block, L^3 , formed solid therewith; or it may be made separate and attached thereto. A spring is interposed between the upper end of cylinder L^2 and upper end of the tube L' , and serves to allow of the yielding movement of the polishing-block. The block is retained within the tube by means of a pin, L^4 , secured to the cylinder and working in an elongated vertical slot, L^5 , formed in the tube.

M is a vertically-adjustable frame, having guide-rods M' secured to its ends, said guide-rods extending downward through the lower portion, A , of the frame of the machine. The lower end of guide-rods M' rest upon the ends of the arms m of the bifurcated levers N , which latter are pivoted to brackets or lugs N' , and their inner ends connected by the links N^2 with the foot-treadles O . By depressing the treadle the inner ends of bifurcated levers will be depressed and their outer ends raised, thereby operating to raise the opposite ends of the frame M simultaneously, the object being to retain the frame M in a horizontal position throughout its varied vertical adjustments.

Frame M is furnished with the rollers P P' P^2 , the journals of which are supported in the sides of the frame.

Q is a metal band, rope, wire, or chain, fastened to the central roller, P , and one end passing around roller P' , and from thence extending to the end q of the longitudinally-adjustable frame R , to which it is secured, while the other end passes around the roller P^2 , and is secured to the end q' of frame R .

The sides of the frame M are provided with tongues or trackways r , which enter corresponding grooves in the sides of frame R . Anti-friction rollers may be placed between said frames, if desired. Upon the ends of frame R are secured the transverse ways S , which fit in groove S' , formed in the ends of the laterally-adjustable table T . Thus it will be observed that the table T may be readily moved either at right angles to or in line with the line of movement of the rubbing-pad or polishing-block, as may be desired.

Having described the construction and relative arrangement of the several parts of my improved machine, I will now proceed to describe its operation.

The article to be polished is secured by clamps, or in any desired manner, to the table T . Motion is imparted to the main driving-shaft, and through the disk, connecting-rod, and counter-shaft an oscillating movement is imparted to the bar or frame F . The sliding block, adjustably connected with the bar F , is lowered to rest upon the lower stop, and in such position the pin on the sliding block, and to which the connecting-rod is secured, will be in line with the center of the counter-shaft, and hence, in this position, no motion will be

given the rubbing pad or block. Everything being in readiness, the treadle K' is depressed by the foot of the operator, which serves to move the sliding block toward the outer end of the oscillating bar or frame F , and thus imparts a reciprocating movement to the rubbing-pad. Crank U , attached to the shaft U' , connected with the middle roller, P , of the vertically-adjustable frame M , is then turned to adjust the frame to present the article to be operated upon in desired horizontal position, and the desired lateral adjustment is given the table T , upon which the article is secured. The treadle O is then depressed, and the work is raised and subjected to the action of the polishing block or pad.

The degree of pressure on the treadle O may be varied according to the character of work to be produced.

It is often the case that different strokes of the polishing-block are required to secure a uniform and even-polished surface, and it is desirable that such operation may be effected without rendering it necessary to stop the machine.

By my improved machine long or short strokes of the polishing pad or block may be secured at will by simply varying the pressure on the treadle K' , and hence the machine is rendered specially adapted for polishing sewing-machine tablets and other kinds of wood-work, though it is evident that it may also be used for polishing glass, stone, and metals.

The polishing block or pad may be constructed to have a combined lateral and vertical yielding movement.

Again, different forms of construction and arrangement of parts may be substituted for that shown and described for varying the adjustment of the sliding block, to which one end of the connecting-rod is attached.

A rack-bar may be attached to the face of the oscillating frame or bar, and by means of a pinion and hand-lever the rack-bar could be raised and lowered. By pivoting the end of the connecting-rod to the rack-bar the desired result could be effected, and variable strokes imparted to the rubbing pad or block.

I am aware that a shaping-machine has been constructed with an adjustable crank device, a pitman pivoted thereto, and a slide provided with its cutting-tool, the parts being arranged and adapted for varying the stroke of the cutting-tool; but in such construction the adjustment of the crank device is in line with the stroke of the cutter, and the adjustment is effected by means of screws and bevel-gearing. The adjusting-screw in such case not only serves to adjust the crank device, but serves to receive the entire resistance exerted on the cutting-tool. While such construction of parts may be adapted for shaping-machines it is not adapted for polishing-machines, where it is essential that the stroke of the rubber may be readily and quickly varied at will, and at slight expenditure of power, and hence I would have

it understood that I make no claim to adjusting mechanism of the character used in shaping-machines as above set forth.

In my improved polishing-machine the adjustable slide-block is connected with an oscillating arm, and the block adapted to be adjusted practically at right angles to the stroke of the rubber, whereby the resistance encountered by the rubber in its work is transmitted to the oscillating bar and sustained thereby, and the power required for regulating the adjustment of the slide-block is simply such an amount as will suffice to lift the weight of the slide-block and one end of the connecting-rod.

I am also aware that valve-gearing has been constructed with a connecting-rod adjustably secured to an oscillating bar to shift or vary the stroke of the cut-off valve either while the engine is in motion or at rest; but I would have it understood that I make no claim to any improvement in valve-gearing, or to any construction or combination of parts heretofore employed in valve-gearing, as my improvement consists in certain new and useful features and combinations of parts in a polishing-machine.

It is evident that many slight changes in the construction and arrangement of parts might be resorted to without departing from the spirit of my invention, and hence I would have it understood that I do not limit myself to the exact construction and arrangement of parts shown and described; but,

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

1. In a polishing-machine, the combination, with an adjustable supporting bed or table, and a rubbing-pad or polishing-block located

over said bed or table and attached to a sliding bar or rod, of a connecting-rod having one end directly or indirectly connected with said sliding bar and its opposite end pivoted to a sliding block attached to an oscillating bar, and means for adjusting said sliding block toward or from the center of motion of the oscillating bar and practically at right angles to the stroke of the rubbing-pad or polishing-block, substantially as set forth.

2. In a polishing-machine, the combination, with an adjustable bed or table and any suitable rubbing-pad or polishing-block, located over said bed or table, of a sliding bar or rod connected at one end to the rubbing-pad or polishing-block, a connecting-rod having one end directly or indirectly connected with said sliding bar, and its opposite end pivoted to a sliding block adjustably secured to an oscillating bar, an adjusting-rod pivoted at one end to said connecting-rod, and at its opposite end to a treadle for raising and lowering the sliding block, and thereby varying the stroke of the rubber at will while the machine is in motion, substantially as set forth.

3. In a polishing-machine, the combination, with a frame having guide-rods secured to its ends, of bifurcated levers and a treadle for imparting simultaneous vertical movement to the opposite ends of said frame, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of October, 1879.

JEREMIAH STEVER.

Witnesses:

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H. D. MORSE.