

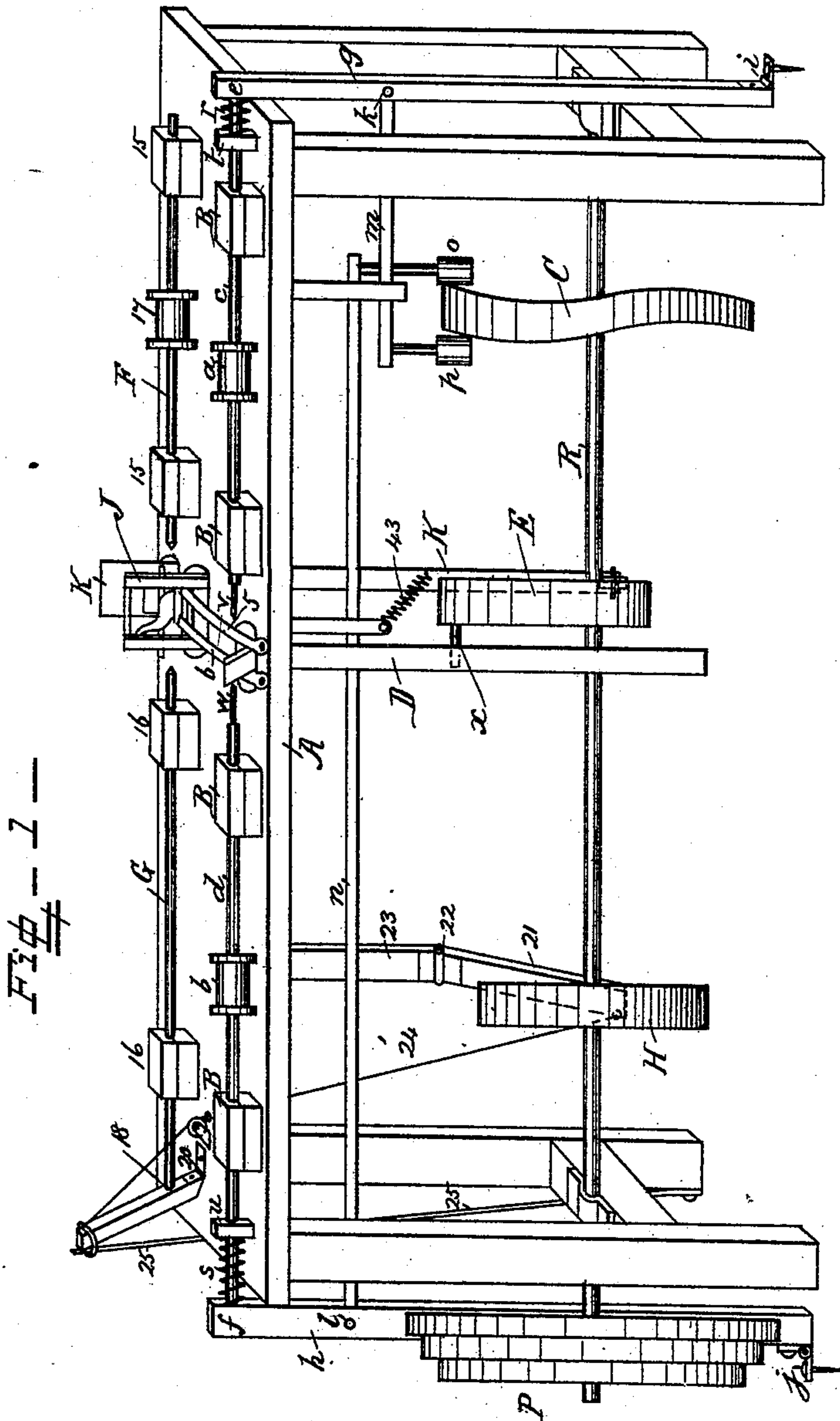
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3 Sheets—Sheet 1.

F. H. ROBINSON.
BORING AND TURNING MACHINE.

No. 420,665.

Patented Feb. 4, 1890.



WITNESSES

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Attorney

(No Model.)

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Fig. 2—

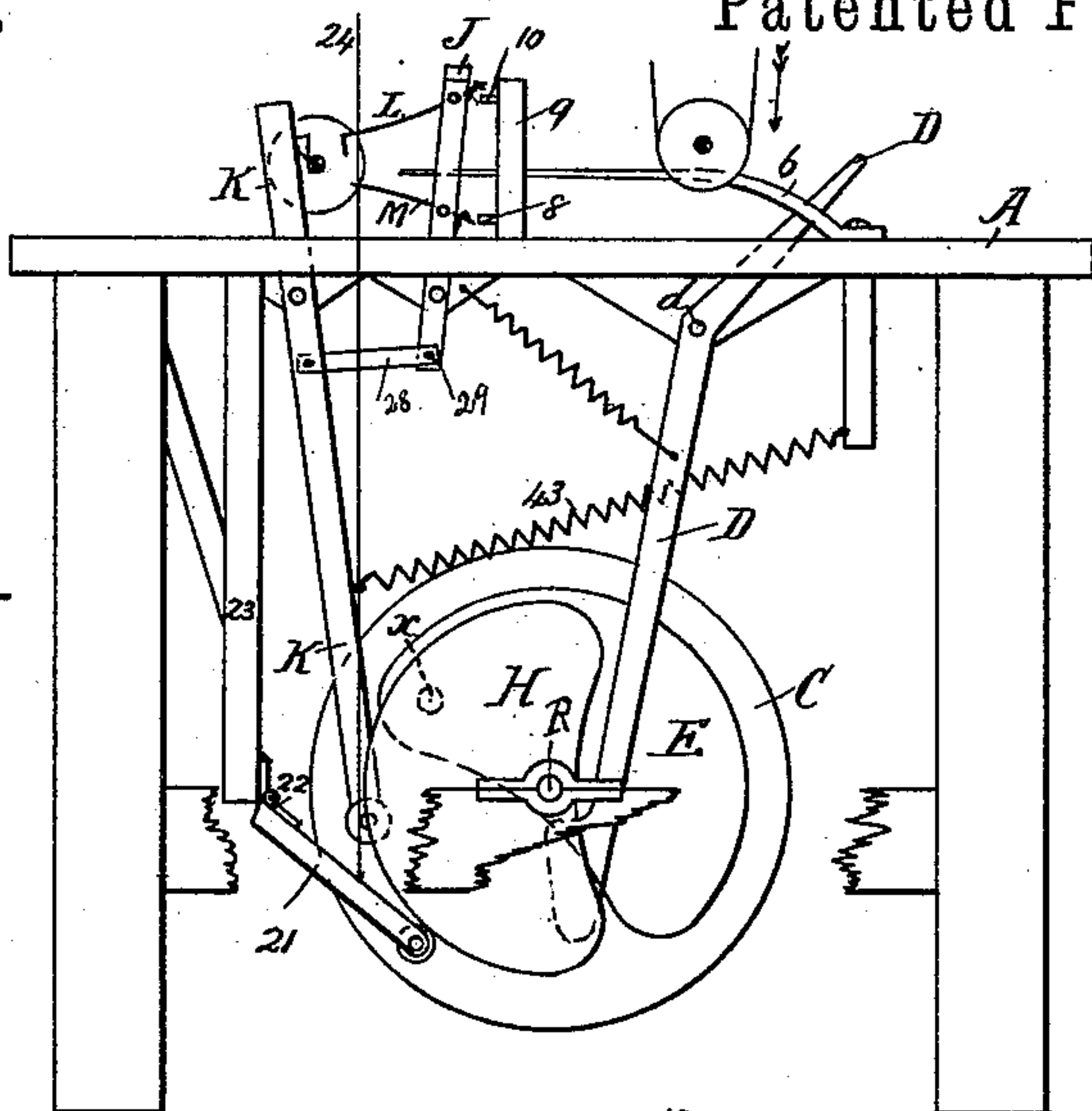
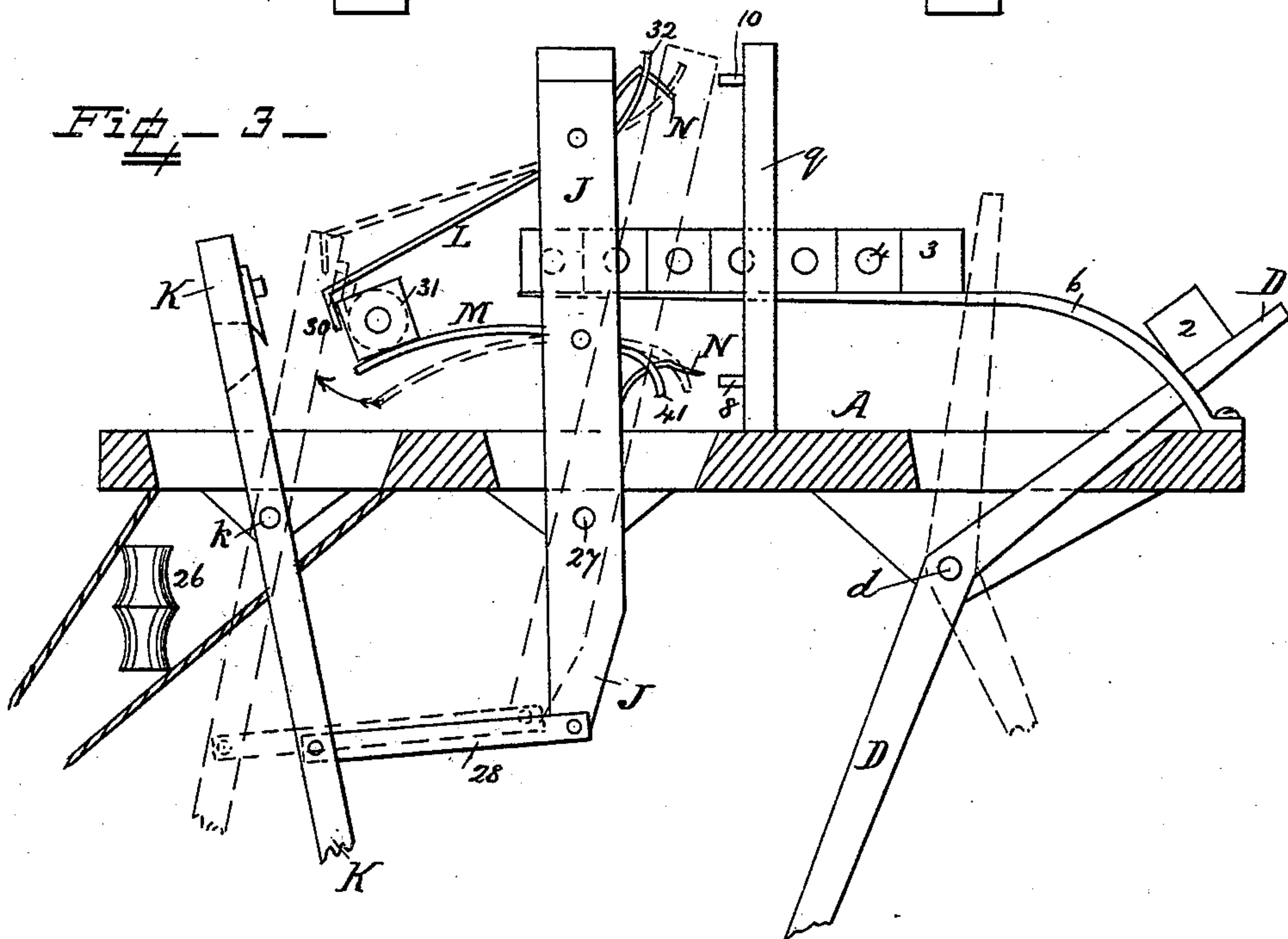


Fig. 3—



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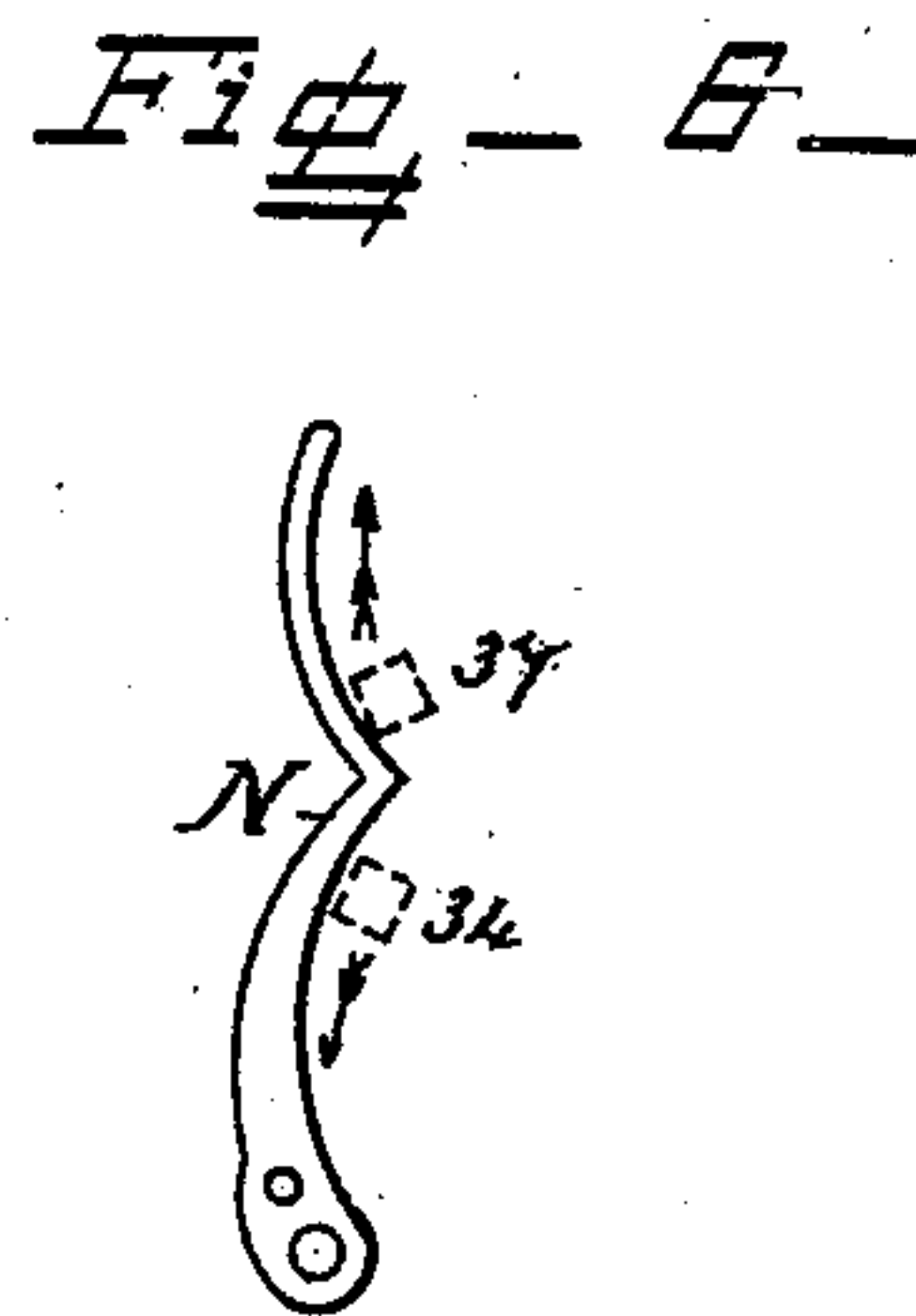
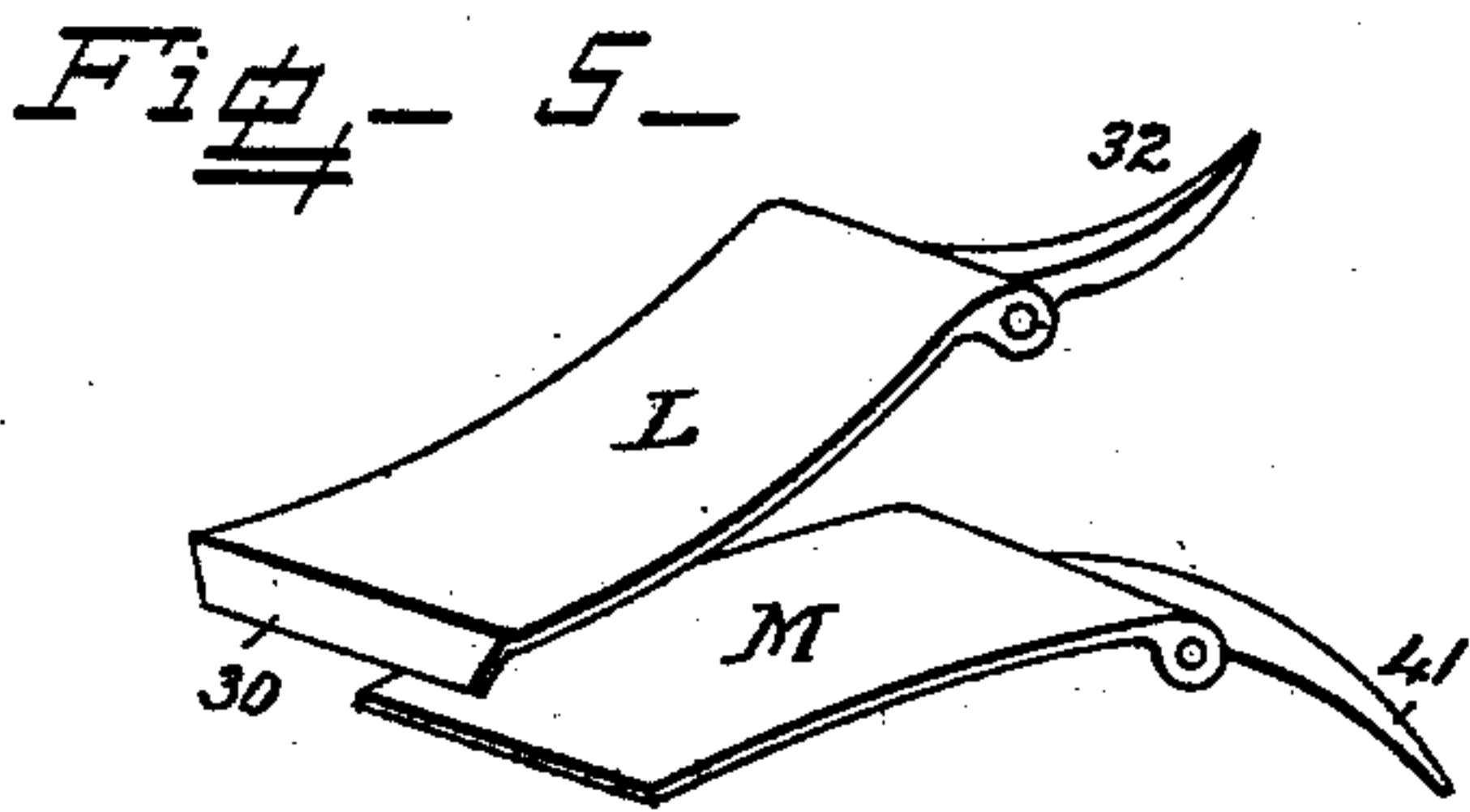
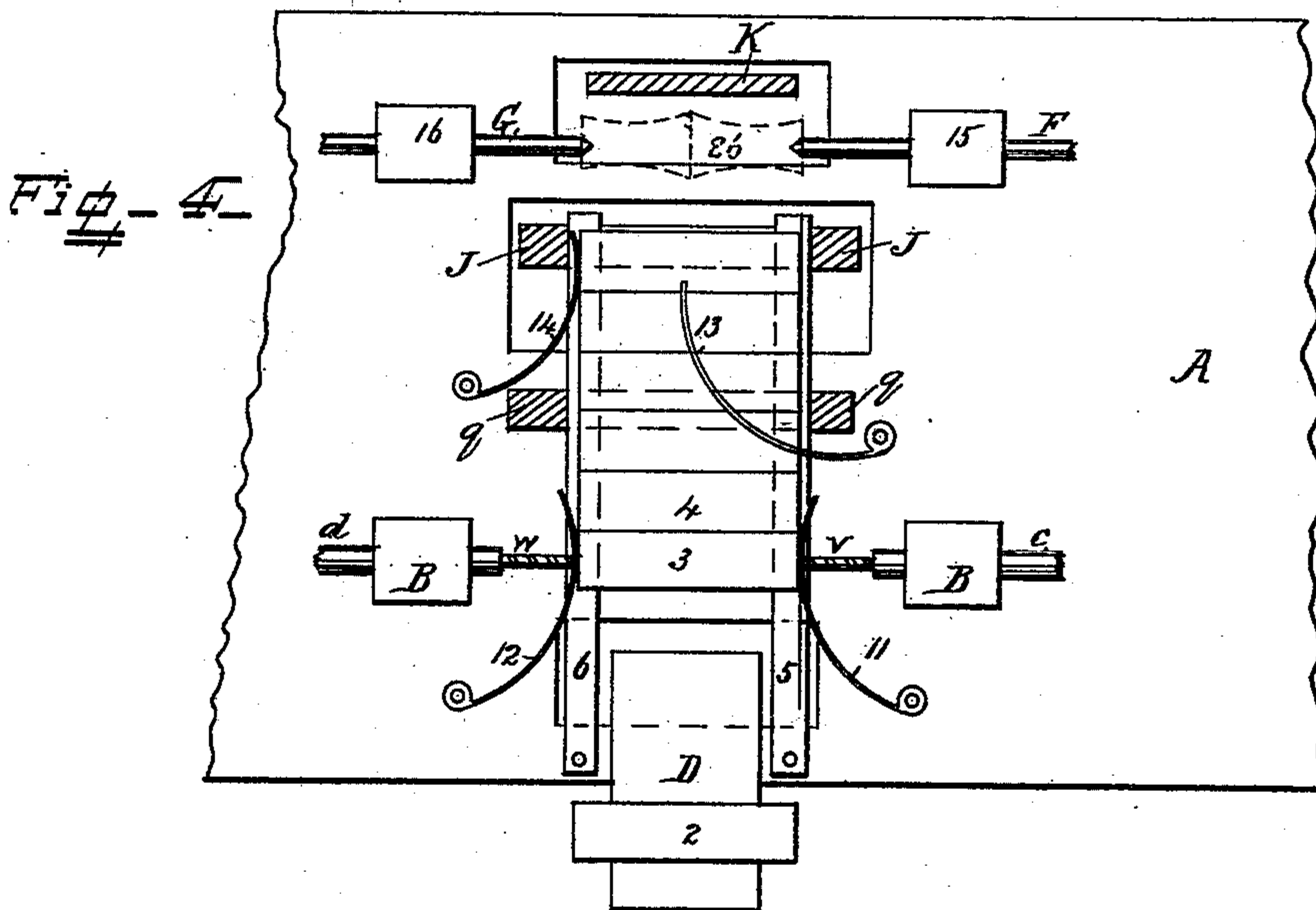
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3 Sheets—Sheet 3

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UNITED STATES PATENT OFFICE.

FRANK H. ROBINSON, OF NORTH EAST, PENNSYLVANIA.

BORING AND TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 420,665, dated February 4, 1890.

Application filed December 5, 1888. Serial No. 292,760. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. ROBINSON, of North East, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Boring and Turning Machines, of which the following is a specification.

This invention relates to boring and turning machines used in the manufacture of spools, pail-handles, and other similar articles; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a perspective view of the complete machine. Fig. 2 is an elevation of the left hand of the machine with some portions of the machine removed. Fig. 3 is a vertical cross-section through the machine, showing the devices for feeding the blanks. Fig. 4 is a plan view from above of the blank-feeding devices. Fig. 5 is a detail perspective view of the feeding-plates L and M, and Fig. 6 is a detail side view of one of the springs N.

A is the supporting-table.

B are bearings secured to said table, and *c* and *d* are longitudinally-movable boring-arbors journaled in said bearings in line with each other and revolved by means of belt-pulleys *a* and *b*. The arbors *c* and *d* have their ends pivotally secured from longitudinal movement in the swing-boxes *e* and *f*, formed in the upper ends of levers *g* and *h*, respectively. The levers *g* and *h* have their lower ends pivoted to the floor by hinges *i* and *j*, and *k* and *l* are pins which connect said levers with the horizontal bars *m* and *n*, respectively, which are provided with rollers *o* and *p* and a suitable supporting-bracket.

C is a side face-cam wheel secured upon shaft R between the rollers *o* and *p*. Springs *r* and *s* are interposed between the top ends of levers *g* and *h* and the fixed posts *t* and *u*, respectively, on the table, and keep the rollers *o* and *p* in contact with the sides of the cam C. The sides of this cam are so formed that the boring-bits *v* and *w*, secured to arbors *c* and *d*, approach each other and enter the ends of a blank of wood simultaneously. Then one bit is caused by the cam to penetrate the blank more quickly than the

other bit, reaching the center of the blank first and commencing to recede slowly. The other bit has its motion accelerated and passes the center while the first bit is thus receding, and then in turn recedes, and the speeds are so arranged that both bits finally leave the blank simultaneously.

D is the first feeder-lever, pivoted on pin *d* and having its upper end projecting through a hole in the table. The lower end of lever D is operated by the pin *x*, projecting from the side of the cam E, which is secured upon the shaft R.

Figs. 2 and 3 show the lever D in position to receive the blank or block 2 and carry it forward, and the dotted lines in Fig. 3 show the lever after it has been moved by the pin *x*, depositing block 2 in place of block 3 and pushing forward blocks 3 4, &c. The weight of lever D carries it back to its original position as soon as the pin *x* leaves it, and a spring may also be used to assist this motion, if desired.

Steel springs 5 and 6 are secured to the table on each side of lever D. These springs form a yielding support upon which the blocks are placed and carried forward, a raised edge on spring 5 forming a guide for said blocks. Springs 11 and 12 are secured to the table and hold the blocks endwise while being bored, and springs 13 and 14 guide the blocks in their passage through the machine after the boring operation is complete.

To the rear of the table are secured bearings 15 and 16, and F and G are centering-arbors journaled in said bearings, one or both being provided with a belt-pulley 17 for revolving it. The arbor G is adapted to slide longitudinally, and has its end pivoted in a swing-box 18, formed in a lever 19, which is hinged to the table at its lower end by the hinge 20. This lever moves the arbor G back and forth, and is provided with an india-rubber cord 25 or a spring for keeping it and the arbor drawn back. The arbor is moved forward by the cam H, secured upon shaft R. This cam depresses lever 21, which is pivoted to the stationary post 23 by the hinge 22, and 24 is a cord which connects the levers 19 and 21, so that the centering-arbor G is forced for-

ward, pressing a block against the centering-arbor F, which revolves said block while its surface is being turned. The turned blocks 26 fall down a chute, as shown in Fig. 3, as soon as the centering-arbors release them.

J is the second feeding-lever, pivoted on pin 27 and projecting upwardly through a hole in the table upon each side of the spring-supports 5 and 6.

K is the knife-bar, pivoted on pin k, and 28 is a rod which connects the knife-bar with pin 29 on the lower end of lever J, so that the said knife-bar and lever work simultaneously, but in opposite directions.

L and M are two plates pivoted to the lever J for the purpose of conveying the bored blocks from the spring-supports to the turning centers. The plate L has a flange 30 for retaining the blocks, as shown at 31 in Fig. 3, and a rearward projection 32.

N is a spring secured to lever J for the projection 32 to bear against. When the plate L is in a position to grasp a block, the projection 32 occupies the position shown by dotted lines 34 in Fig. 6, and the projecting central portion of the spring retains the projection and causes it to press in in the direction of the lower arrow, thereby holding the plate L in contact with the block. The plate M is provided with a rearward projection 41, which operates in connection with a second spring N, similar to that before described. When the lever J has been moved so that the block between plates L and M is between the centers, the said centers seize and revolve the block, and its square corners force apart the plates L and M. The springs N prevent the plates from again seizing the block and the lever J draws back the plates, leaving the block between the centers. The projection 32 of plate L takes the position shown by the dotted lines at 37 in Fig. 6 when the plates are forced apart, and the central portion of the spring presses the projection in the direction of the upper arrow and prevents the return of the plate. The second spring N operates in an exactly similar manner in connection with the plate M.

A stationary standard q is secured to the table and is provided with pins 10 and 8. When the plates arrive in a position to grasp another block resting on the ends of the spring-supports, the projections 32 and 41 strike against the pins 10 and 8, so that the plates may seize the block ready to carry it forward. The spring-supports are made to yield, so that the plates L and M may remove the blocks without any check or hinderance.

The knife-bar K carries a knife of the full length of the blocks and of suitable shape to give them the desired contour.

E is the cam which actuates the knife-bar and causes the knife to be pressed against the revolving block, and 43 is a spring which keeps the said knife-bar in contact with the cam.

P is a driving-pulley for revolving the shaft R, which is journaled in suitable bearings under the table.

The operation of the machine is as follows: The blocks or blanks are supplied to the machine, either by hand or from a hopper, at the rate of fifty or more a minute. The blocks are brought into position on the spring-supports by the first feeder D, and the central holes are bored in them by arbors c and d. The feeder D keeps on bringing on more blocks as fast as they are bored and pushes the bored blocks to the rear of the machine, where they are seized by the plates L and M and carried between the centering-arbors F and G. The knife-bar presses the knife against the blocks while they are revolving between the centers, and the reverse longitudinal movement of the centering-arbors permits the turned blocks to fall down the discharge-chute into a suitable receptacle.

What I claim is—

1. The combination, with the revoluble boring-spindle c and the pivoted lever g, connected to the end of spindle c and provided with bar m and roller p, of a similar boring-spindle d, in line with the first spindle, the pivoted lever h, connected to the end of spindle d and provided with bar n and roller o, and a single revoluble face-cam interposed between rollers o and p, for operating the spindles, substantially as and for the purpose set forth.

2. The combination, with the springs 5 and 6, secured at one end to the table for supporting the blanks, of the feeder D, pivotally supported by the table and having its upper end projecting between the said springs, and a revoluble disk provided with a projecting pin for operating the lower end of said feeder, substantially as set forth.

3. The combination, with the oscillating feeder J, pivotally supported by the table, of the lower spring-plate M, supported by the feeder, and the upper spring-plate L, also supported by the feeder and provided with the downwardly-bent end 30, said plates being adapted to disengage from the rectangular blank automatically directly the said blank is revolved, substantially as set forth.

4. The combination, with the oscillating feeder J, pivotally supported by the table, of the upper and lower spring-plates L and M, supported by said feeder and provided with double-acting springs N, adapted to hold said plates either open or closed, and a stationary standard provided with pins 8 and 10 and operating to close the spring-plates, substantially as and for the purpose set forth.

5. The combination, with the feeder J, provided with spring-plates L and M, of the bar K, provided with a knife, and the coupling-rod 28, both feeder and bar being pivotally supported by the table and oscillating simultaneously, substantially as and for the purpose set forth.

6. The combination, with the stationary revol-
oluble center bar F, of the sliding revoluble
center bar G, the pivoted lever 19, connected
to the end of the sliding center bar, the spring
5 25, for drawing back said center bar, the rev-
oluble cam H, the pivoted lever 21, and a
cord connecting said levers 19 and 21, where-

by the bar G is caused by the said cam to
approach the bar F at intervals, substantially
as set forth.

FRANK H. ROBINSON.

Witnesses:

A. I. LOOP,

C. D. GREENMAN.