

(No Model.)

J. W. SMITH.  
GIN SAW GUMMING MACHINE.

No. 437,628.

Patented Sept. 30, 1890.

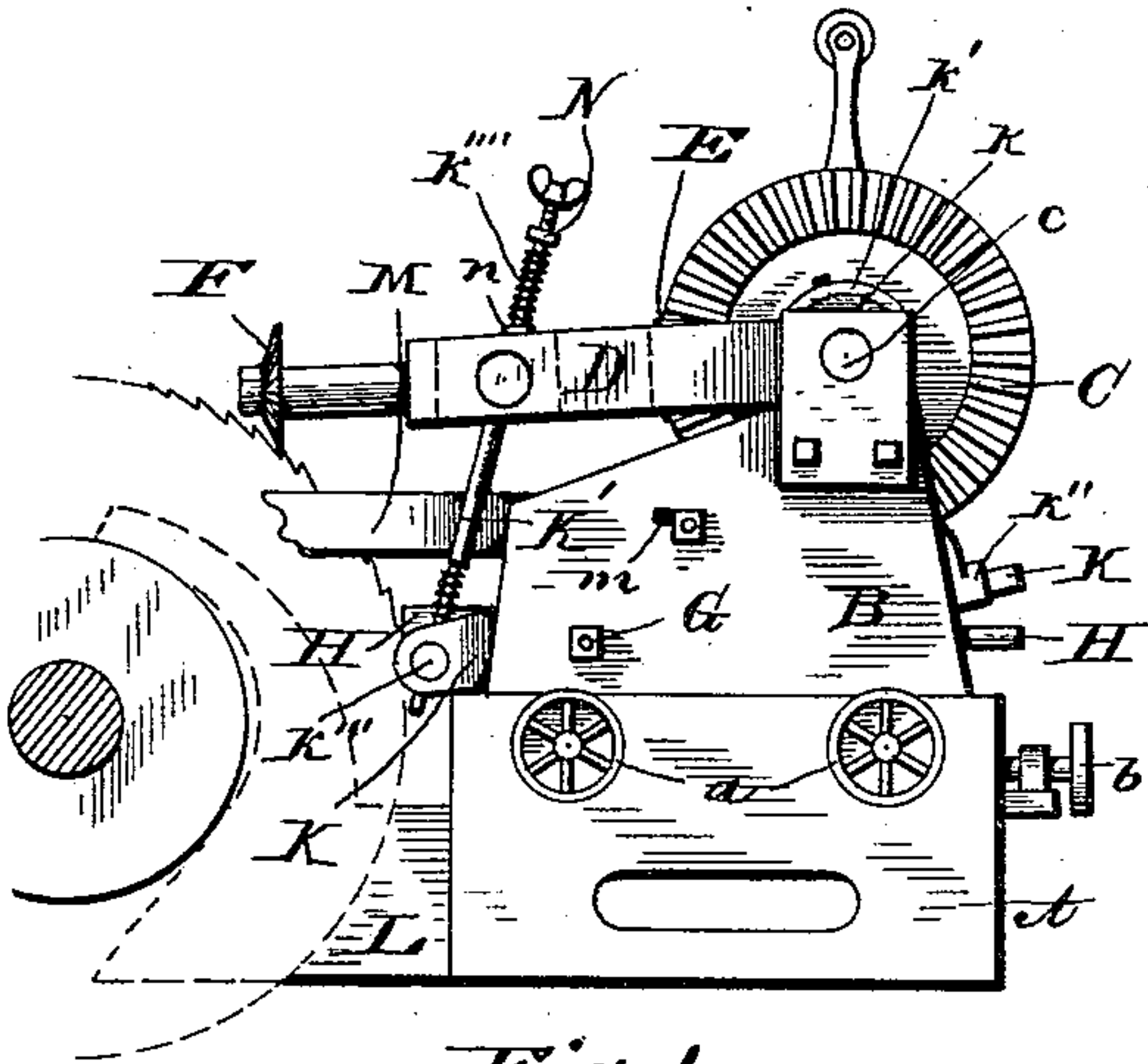


Fig. 1.

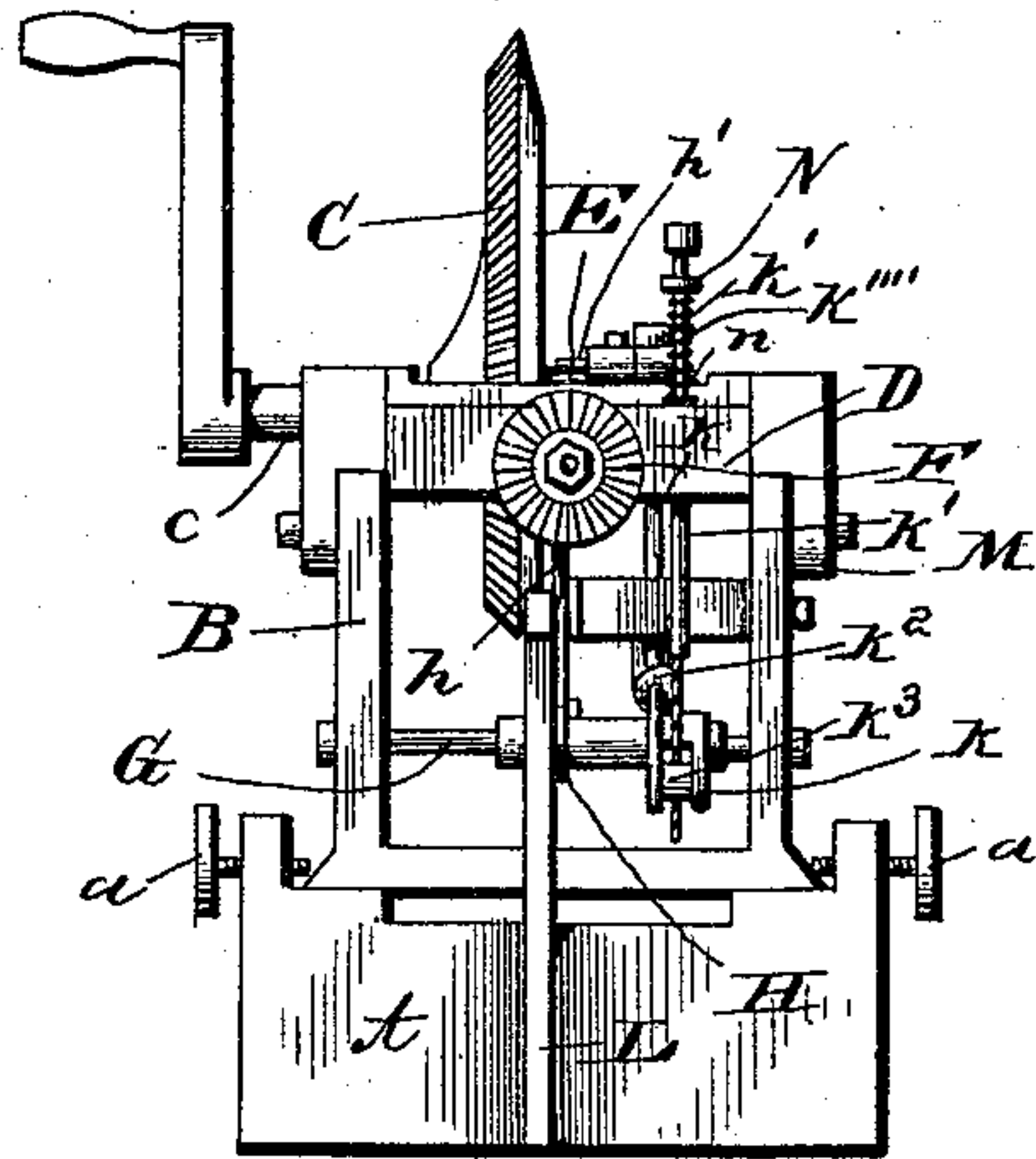


Fig. 2.

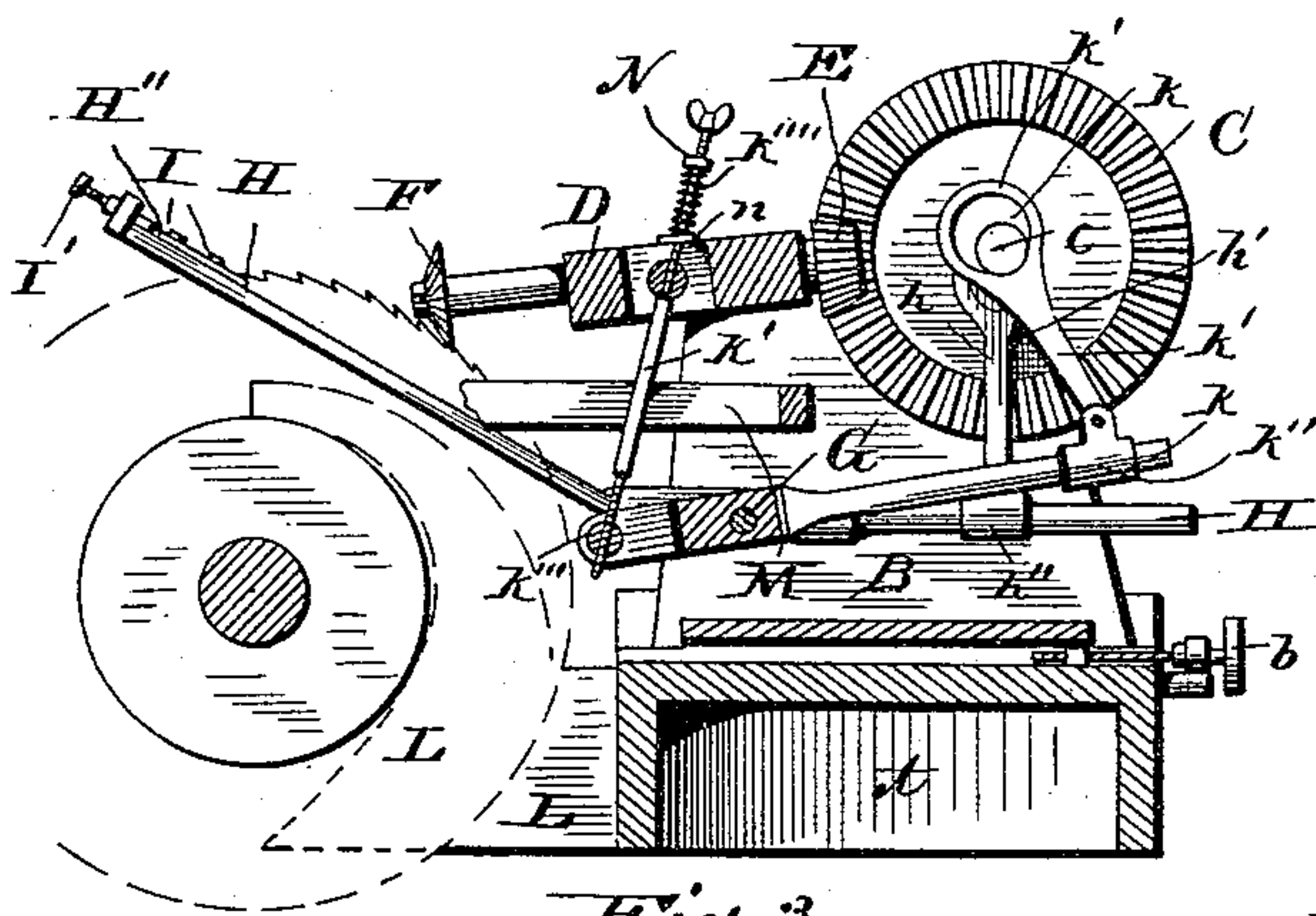


Fig. 3.

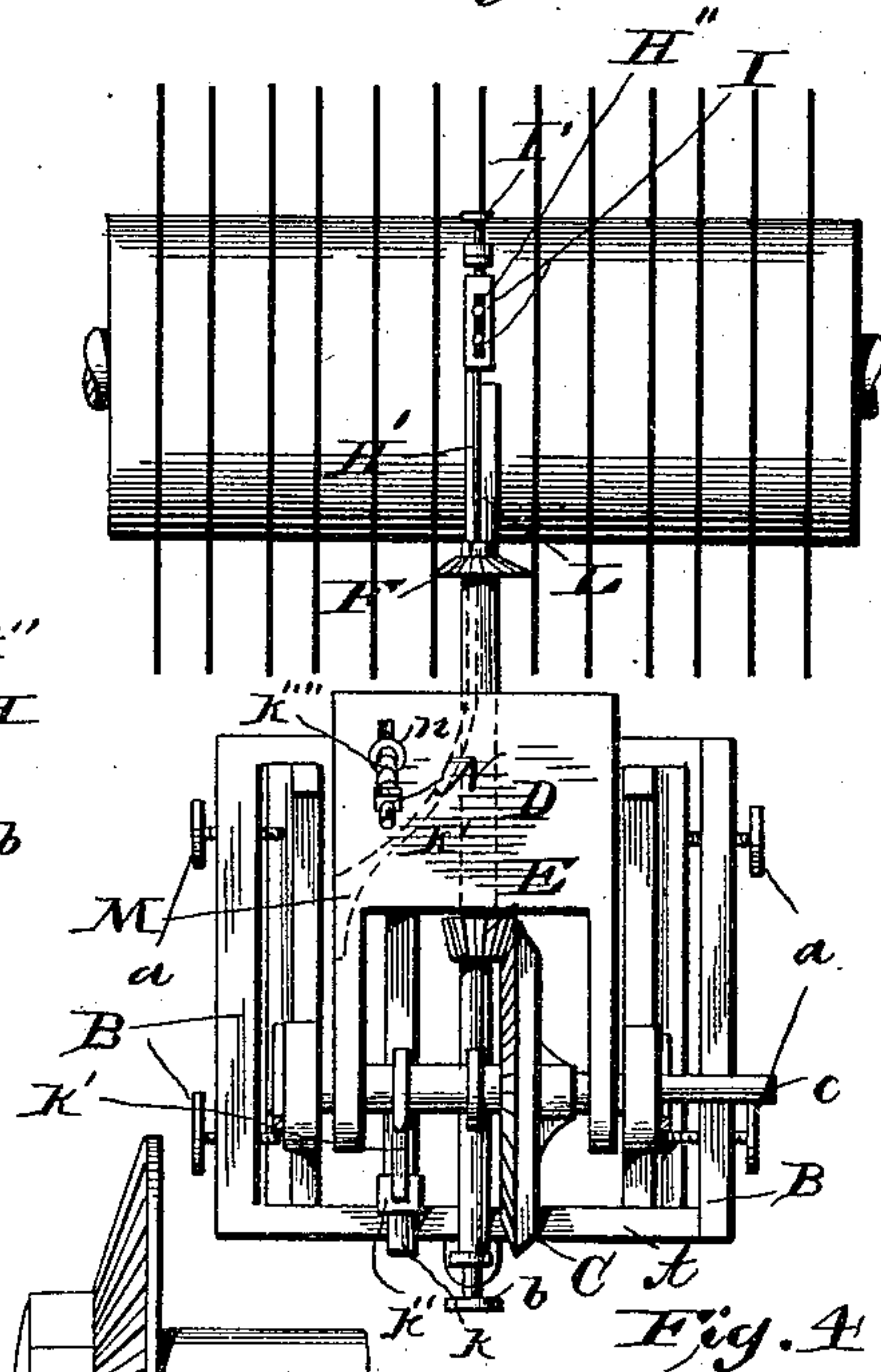


Fig. 4.

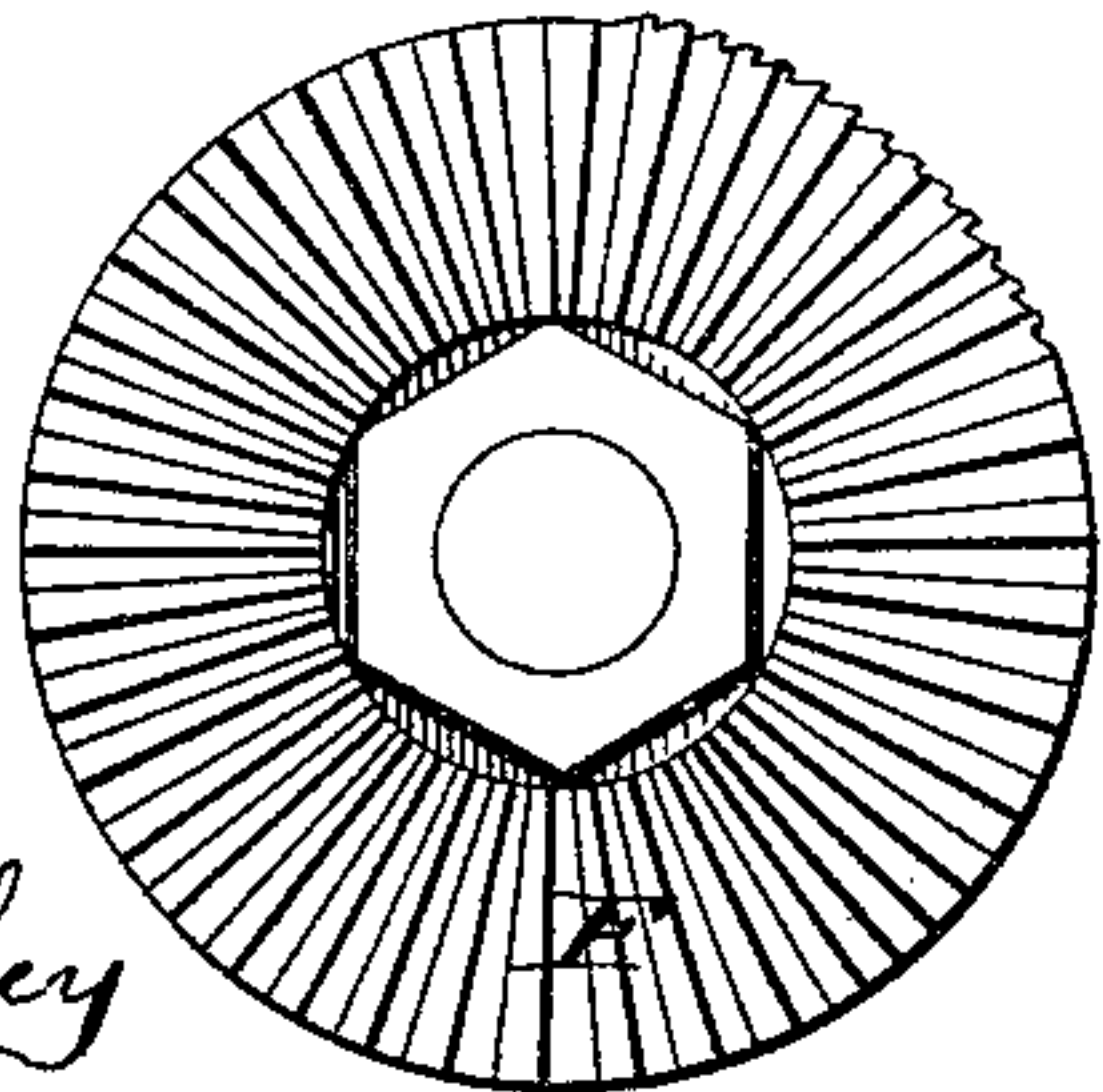


Fig. 5.

Witnesses:

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# UNITED STATES PATENT OFFICE.

JEREMIAH W. SMITH, OF ATHENS, GEORGIA.

## GIN-SAW-GUMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 437,628, dated September 30, 1890.

Application filed February 24, 1890. Serial No. 341,619. (No model.)

*To all whom it may concern:*

Be it known that I, JEREMIAH W. SMITH, a citizen of the United States, and a resident of Athens, in the county of Clarke and State of Georgia, have invented certain new and useful Improvements in Gin-Saw Gummers; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form part of this specification.

This invention relates to the class of saw-gummers in which a circular abrading-instrument is used, its axis being at a right angle to that of the saw; and it consists of peculiar form and means for operating said cutter and for holding and revolving the saw that is being operated on, the object being to facilitate the operation and to get better results than have heretofore been obtained.

In the accompanying drawings, Figure 1 is a side elevation showing many details of the machine and a saw to which it is applied. Fig. 2 is a front elevation of the machine, showing the face of the file, the lateral adjustment, and many other details. Fig. 3 is a vertical section through the machine on the line  $x$ , Fig. 4. Fig. 4 is a plan of the machine, showing most of its details. Fig. 5 is an enlarged front view of the file or circular cutter, the milling-teeth on its edge being shown in only a portion of its circumference. Fig. 6 is an edge view of the cutter, also showing a portion of its shaft.

In the figures, like reference-marks indicating corresponding parts in the several views, A is a base, on which rests the frame B, that is adjustable thereon in every horizontal direction by the screws  $a$  and  $b$ . The shaft  $c$  of the gear C is journaled on the frame B, and on this shaft is pivoted the vertically-swinging frame D, carrying the shaft of the pinion E, to which is also attached the cutter F. On the round bar G, that passes through the frame B, are pivoted the feed-lever H and the lever K, that raises the cutter out of each tooth after it is finished. These levers are operated by the eccentrics  $h$  and  $k$ , respectively, through the pitmen  $h'$  and  $k'$ , having

strap-connection with the eccentrics and by the hinged sleeves  $h''$  and  $k''$  with the levers H and K. The sleeves  $h''$  and  $k''$  are adjustable lengthwise on the levers H and K for the purpose of regulating their throw on their forward ends. To the lever H is attached the feed-pawl H'. The feed-plate H'', attached to the pawl H' by the screws I, is made thin on the working edge to cause it to enter the interdental spaces, and is adjustable by the screw I' to cause the saw to be fed forward each time, so that the file or cutter F will enter and do its work between the teeth, as will be hereinafter explained. To cause the pawl H' to take one tooth and no more at each stroke, the sleeve  $h''$  is adjusted on the lever H to the proper distance from the fulcrum of said lever, according to the distance between the teeth, and the sleeve  $k''$  is adjusted on the lever K to cause the file to lift the required distance in passing from one tooth to another.

On the base A is the forwardly-projecting bifurcated arm L, that enters between the saws and bears against the space-blocks, as shown, the forked shape of this arm insuring the correct location and steadiness of the front end of the machine, while the base should rest on a bench or trestle of such a height as to make the machine approximately level. The cutter F should be so placed as to be central over one side of the arm L, and the cutter should rotate in the direction that will cause the half that is directly over said arm to move downwardly. This will cause the cutter, when the machine is constructed as shown, to operate on the saw that is on the left of the bifurcated arm and in the direction that will push the saw away from the said arm. To resist the thrust of the cutter, the adjustable arm M is pivoted and attached by a bolt through the slot  $m$  to the frame B, the forward end pressing against the side of the saw at a point just below the tooth that is being operated on and being vertically adjustable for that purpose. The horizontal adjustment of the frame B on the base A will permit the horizontal adjustment of the arm M to accommodate between it and the arm L saws of different thickness and to produce any desired amount of friction on said saw as it is revolved by the feed.



It will be observed by reference to Fig. 6 that the cutter is flat on one side and beveled on the other, and that the frame by which it is carried is pivoted on a level with its axial line, in order that both sides of the cutter may have an inclination to its line of movement, which line is circular, the central point being the shaft *c*. This arrangement also causes the gearing, the pinion *E* being carried by the frame *B*, to work correctly without reference to the inclination or depression of the cutter.

The teeth *f* are around the edge of the cutter, a few of which are shown in Fig. 5 and are in form like the teeth of a milling-cutter, are intended to mill in the bottom of the space between the teeth, while the file-teeth *f'*, which are on both sides of the cutter, form and smooth the top and bottom edges of the teeth. To cause the cutter to do its work at a different point on its circumferential surface at each of its revolutions to prevent all the wear coming in one place, the gearing is so proportioned that the pinion cannot be exactly multiplied into the larger gear, preferably missing by one tooth only, by reason of which, the feed-eccentrics being on the shaft of the larger gear, the cutter will not make an exact number of revolutions at each revolution of the feed-cams. The frame *D*, being pivoted on the frame *B* and carrying the cutter *F*, is lifted at each revolution of the shaft *c*, while the saw is being moved forward by means of the cam *k*, pitman *k'*, sleeve *k''*, lever *K*, and connecting-rod *K'*. The rod *K'* has a pivotal connection, as shown, to the lever *K* and the frame *B*, the length between said pivotal points being governed by the distance which the screw-rod *K'* is screwed into the pivot *k'''*, and the downward pressure of the cutter on the saw is imparted thereto by the spring *k''''*, which bears on the frame *D* by contact with the washer *n*, which lies across the slot through which passes the rod *K'*, and at its other end bears on the nut *N*, which operates on the thread on the upper end of the said rod *K*. The time at which the cutter will re-enter the tooth is regulated by setting the cam *k* on the shaft *c*.

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

1. The combination of the base *A*, the bifurcated arm *L*, projecting from said base, the adjustable frame *B*, supported by said base, the cutter *F*, the arm carrying said cutter and

hinged to said frame, and the mechanism for rotating said cutter, substantially as shown and described.

2. In a gin-saw-gumming machine, the combination of the supporting-frame *B*, the shaft *c*, journaled therein, the pitman *h'*, eccentrically journaled on said shaft, the lever *H*, pivoted to said frame and connected with said pitman, and the pawl *H'*, operated by said lever, substantially as specified.

3. In a gin-saw-gumming machine, the combination of the supporting-frame *B*, the shaft *c*, journaled therein, the pitman *h'*, eccentrically journaled on said shaft, the lever *H*, pivoted to said frame and adjustably connected with said pitman, the pawl *H'*, operated by said lever, and the plate *H''*, adjustably attached to said pawl, substantially as specified.

4. In a gin-saw-gumming machine, the combination of the supporting-frame *B*, the shaft *c*, journaled therein, the cutter *F*, the arm carrying said cutter and hinged to the said shaft, and the mechanism for intermittently raising and lowering said arm, substantially as and for the purpose specified.

5. In a gin-saw-gumming machine, the combination of the supporting-frame *B*, the shaft *c*, journaled therein, the cutter *F*, the arm hinged to the shaft *c* and carrying said cutter, the pitman *k'*, eccentrically journaled on said shaft, the lever *K*, pivoted to said frame and connected with said pitman, and the screw-rod *K'*, connecting the free end of the lever with the cutter-arm, substantially as and for the purpose specified.

6. In a gin-saw-gumming machine, the combination of the frame *B*, the cutter *F*, the arm hinged to the said frame and carrying the said cutter, the mechanism for intermittently raising and lowering said arm, and the mechanism for intermittently rotating the saws, substantially as specified.

7. In a gin-saw-gumming machine, the combination of the base *A*, the bifurcated arm *L*, projecting from said base, the adjustable frame *B*, carried by said base, the arm *M*, projecting from said frame, and the gumming mechanism carried by said frame, substantially as shown and described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JEREMIAH W. SMITH.

Witnesses:

ROBT. B. PORTER,  
Z. C. HAYES.