

(No Model.)

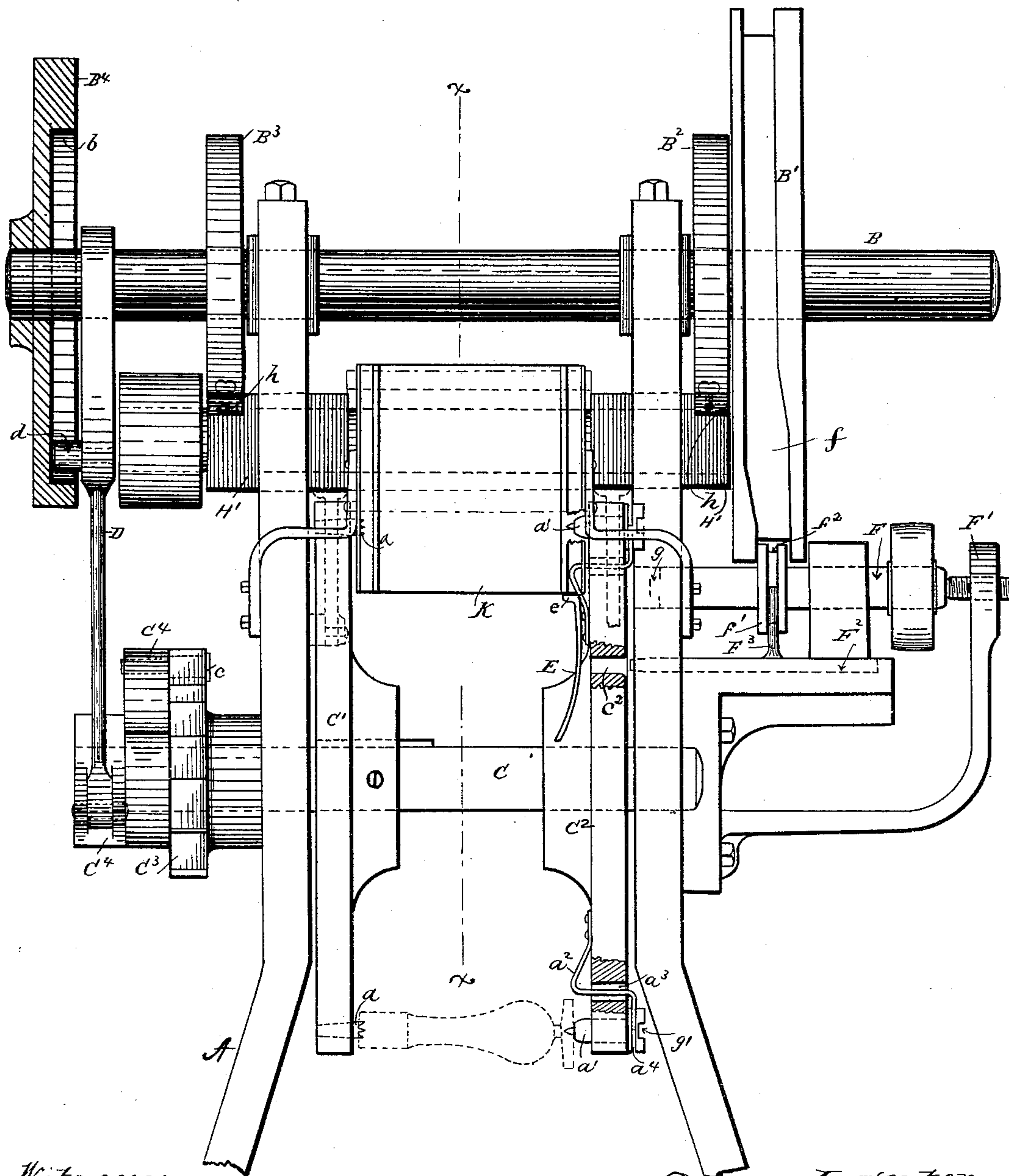
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J. D. CAREY.
WOOD TURNING MACHINE.

No. 481,661.

Patented Aug. 30, 1892.

Fig. 1.



Witnesses.

W. R. Edslen,
Ward Hoover.

Inventor.

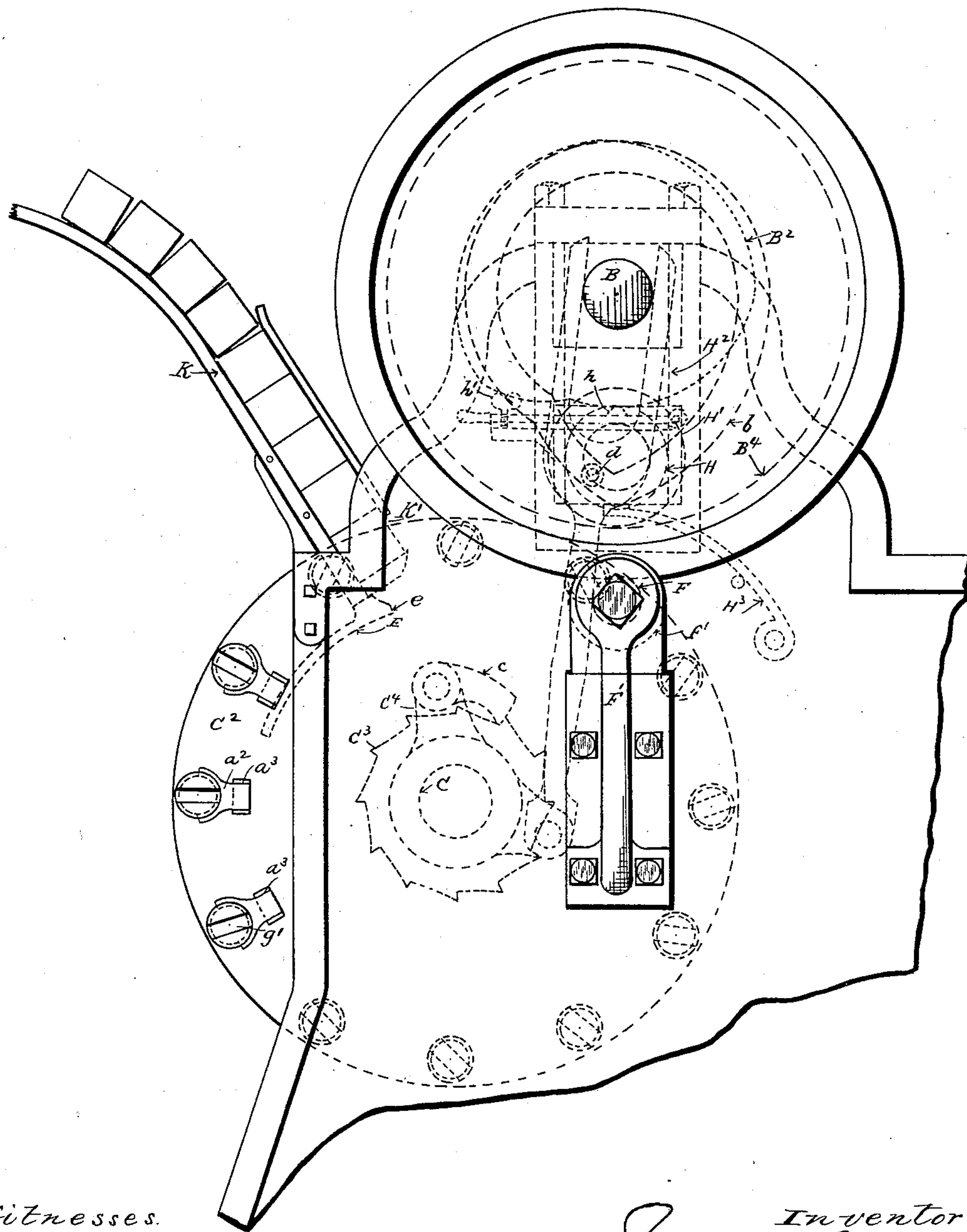
James D. Carey
By Leggett & Leggett,
Attys

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Fig. 2.



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(No Model.)

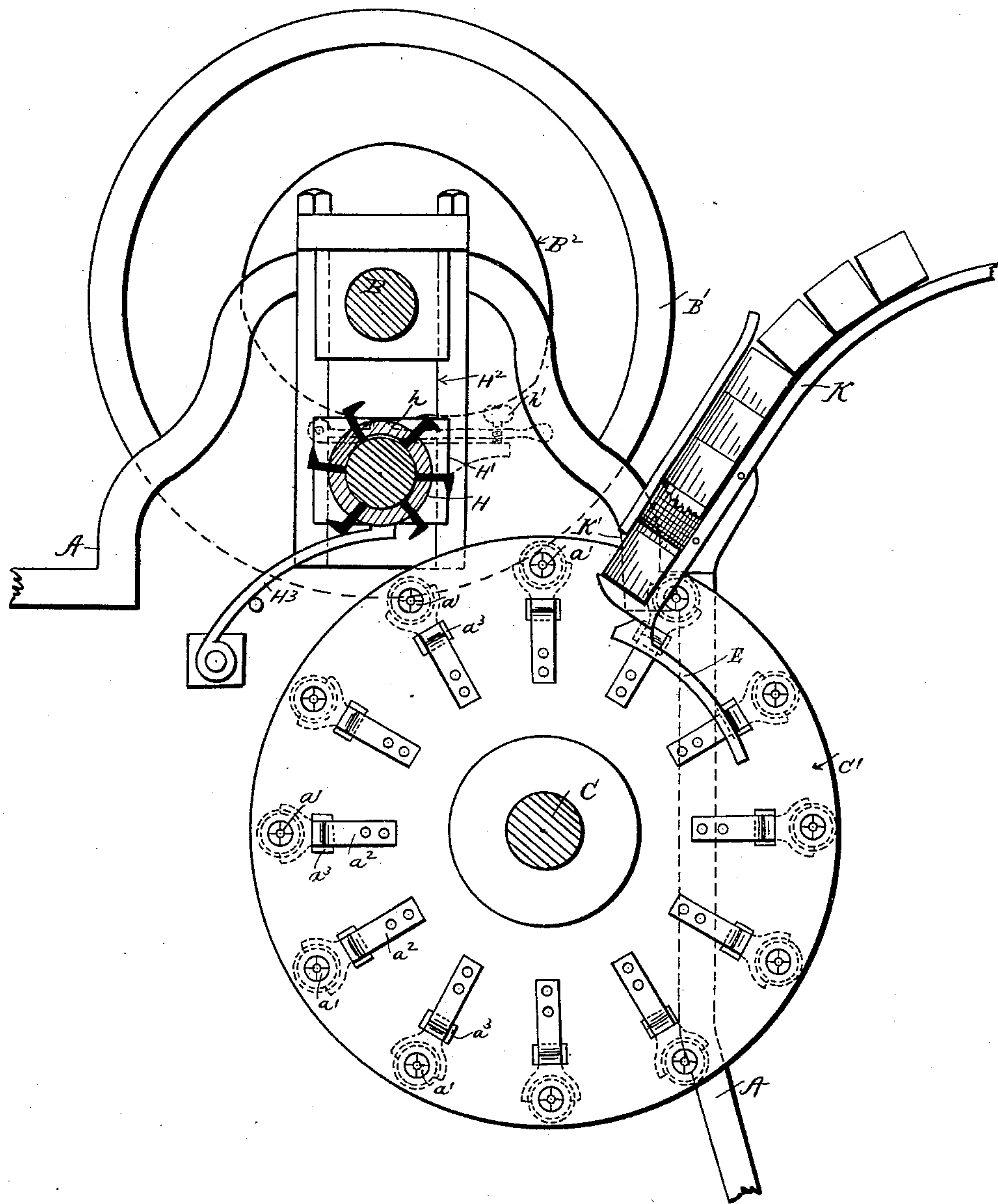
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Fig. 3.



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4 Sheets—Sheet 4.

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Fig. 4.

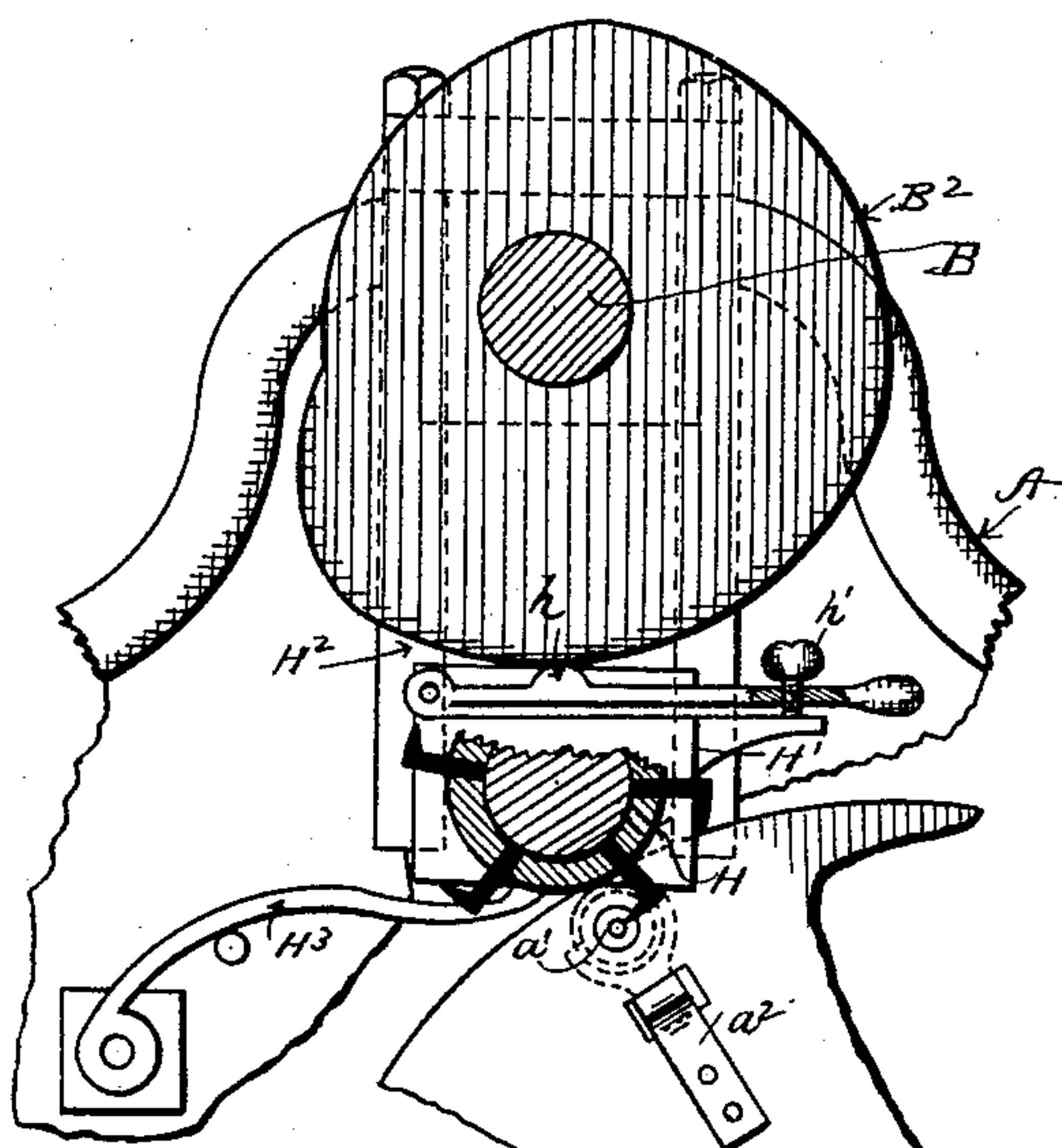


Fig. 5.

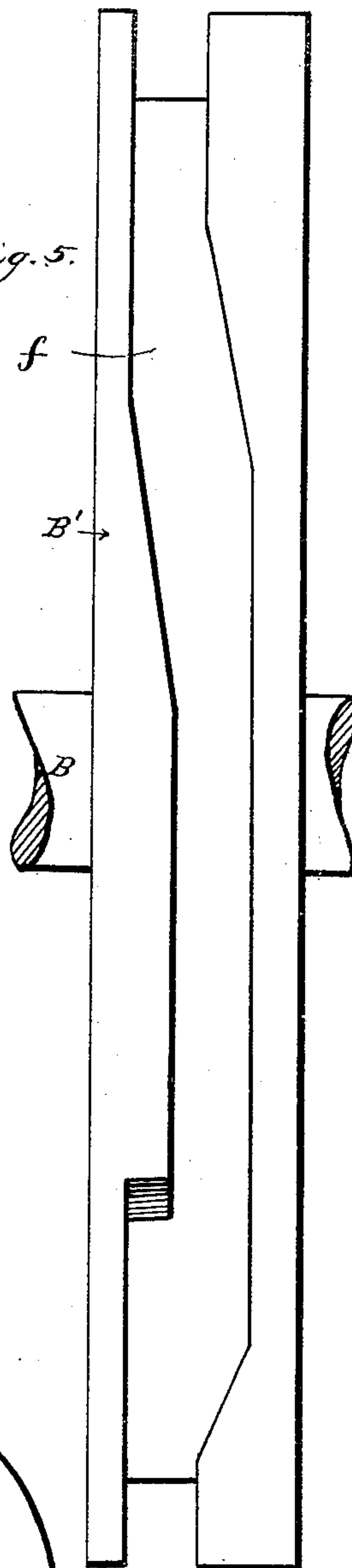


Fig. 6.

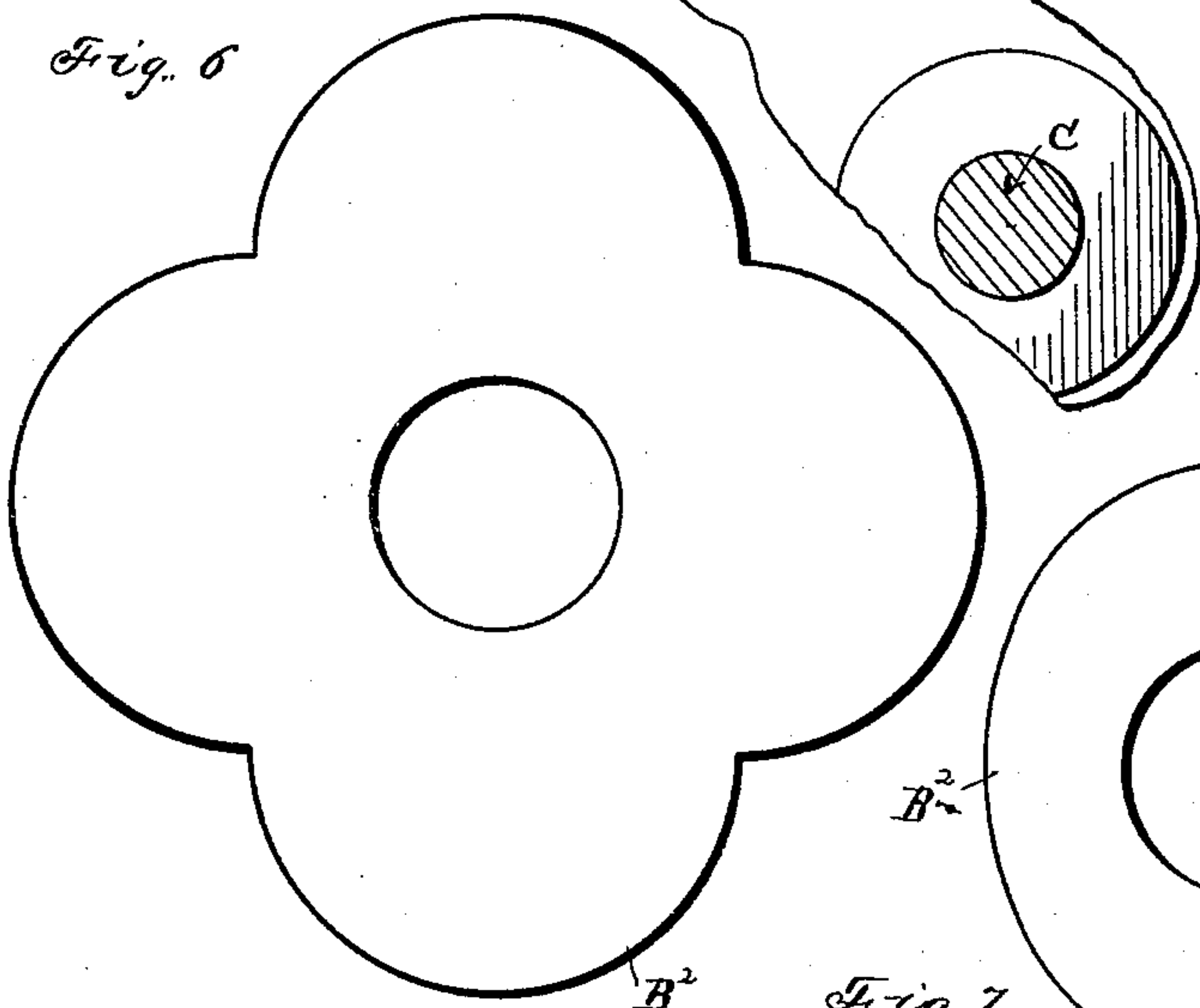
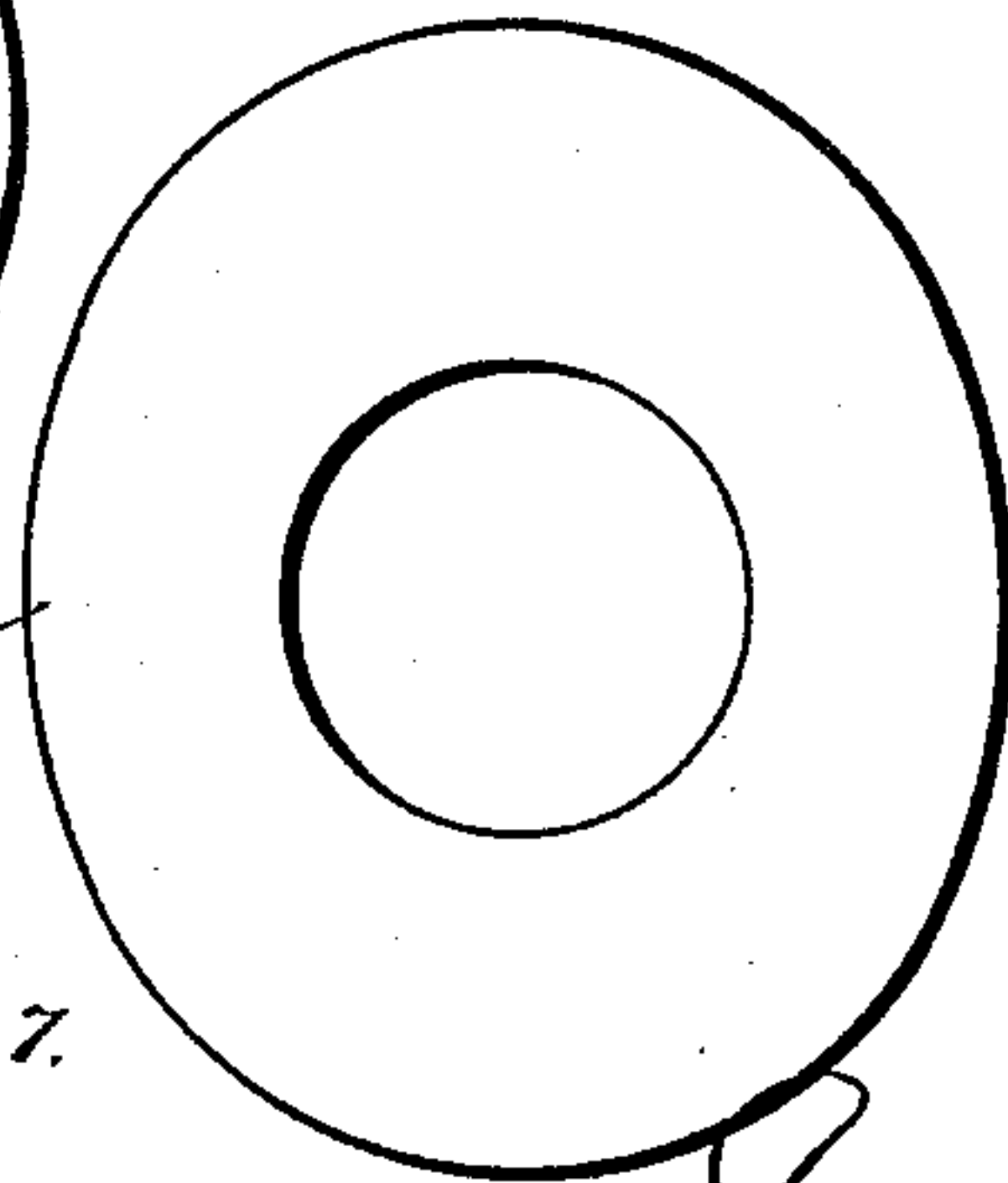


Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES D. CAREY, OF CLEVELAND, OHIO.

WOOD-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,661, dated August 30, 1892.

Application filed October 11, 1890. Serial No. 367,790. (No model.)

To all whom it may concern:

Be it known that I, JAMES D. CAREY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful
5 Improvements in Wood-Turning 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 the
10 same.

My invention relates to machines for turning wood into shapes either cylindrical or irregular in cross section, and more particularly to turning-machines wherein the blanks are
15 automatically fed to and revolved in juxtaposition to an advancing revolving cutter or shaper; and it consists in the peculiar construction and operation of said machine, as will be more fully set forth and pointed out
20 in the specification and claims.

In the drawings, Figure 1 is a view in elevation of my improved machine. Fig. 2 is a view in elevation looking at the machine from one side, and Fig. 3 is a view looking at the
25 same from the opposite side. Fig. 4 is a sectional view showing in detail parts of my machine not clearly set forth in the other figures and also showing the revolving cutter in position to operate on the blank. Fig. 5 is an
30 enlarged view of cam B' . Figs. 6 and 7 are views of cams designed to be substituted for the cams B' B^2 when it is desired to shape the blank so that the finished product of the machine will be of other contour in cross-section
35 than cylindrical.

A A represents the frame of my machine mounted in suitable bearings. At the upper end of the frame A is a shaft B.

Secured on the shaft B outside of the bearings are four cam-wheels B' , B^2 , B^3 , and B^4 ,
40 which receive their motion from or are revolved by the shaft B. The operation of and functions performed by these cams will be fully set forth hereinafter.

45 Journalled in the lower part of frame A and in suitable bearings is a shaft C. This shaft C is provided with two disks C' C^2 , both driven by and revolving with the shaft. The disk C' is, however, so secured to the shaft
50 as to allow of its being adjusted nearer to or farther from the disk C^2 , the object of which will hereinafter appear; also, secured to the

shaft C near its outer end is a ratchet-wheel C^3 , which is engaged and operated by the pawl c , the said pawl c being in turn pivoted
55 to one end of and oscillated by the lever C^4 , secured to and oscillating on the outer end of the shaft C. The other end of the lever C^4 is pivotally connected to one end of a pitman D, the other or upper end of the pitman D
60 being bifurcated and straddling the shaft B and having a roller wrist or pin d located so as to engage the cam-groove b in the face-cam B^4 . The shape of the groove b is such as to alternately lift and lower the pitman D, and
65 thus oscillate the lever C^4 , and with it the pawl c , which in turn engages the teeth of the ratchet-wheel C^3 and partially rotates it, which partial rotation is imparted to the shaft C and thence to the disks C' and C^2 , driving
70 them forward a predetermined distance.

a a are what are known as "dead-centers" the same being of the usual form used in wood-turning lathes. These dead-centers are secured to the disk C' equidistant from each
75 other and at or near the periphery of said disk.

Directly opposite to and in line with the dead-centers a a are what are known as "live-centers" a' , the same being also of the usual
80 form used in wood-turning lathes, but journaled equidistant from each other and at or near the periphery of the disk C^2 . These live-centers a' are preferably provided with springs a^2 , which may be constructed as shown
85 in the drawings—viz., secured to the inner face of the disk C^2 , and from thence extending inward and toward the periphery of the disk and then turning at a right angle and through
90 a hole a^3 in the disk, then turning outward and having bifurcated ends which engage in annular grooves a^4 , formed around the heads of the live-centers a' . The tendency of the
95 springs a^2 is to always force the live-centers inward.

E is a cam-bar so located and adjusted as to at the proper time impinge against the
springs a^2 and force them outward, and with them the live-centers a' .

F is a shaft journaled, preferably, in a
100 bracket extending out to one side of the frame. This shaft F is so located and adjusted that its axis coincides with the axes of the live-centers a' and dead-centers a when said centers

are brought opposite the said shaft. The shaft F is also so journaled in its bearings that it is free to revolve and at the same time move back and forth in a longitudinal direction, being actuated in its back and forth longitudinal movement by the groove formed in the periphery of the cam-wheel B', engaging an annular collar or flange f' on the shaft F. That end of the shaft F nearest the disk C² is provided with a reduced irregular-shaped nib or projection g of such shape and so located that when the shaft F is moved toward the disk C² by the action of the cam B' this nib or projection g will engage a corresponding irregular-shaped socket g' , formed in the heads of the live-centers a' and revolve them in the direction that shaft F is revolved.

F' is a spring engaging the end of the shaft F and always tending to force the said shaft F toward the disk C².

F² is a sliding locking-bar having a bifurcated arm F³ projecting from it at a right angle, said arm F³ engaging with an annular groove f^2 , formed in the periphery of the collar or flange f' on shaft F. It will thus be seen that the longitudinal motion of the shaft F is imparted to the locking-bar F². The function of the locking-bar F² is to engage a hole or sockets c^2 , formed in the disk C², at the same time that the projection g of the shaft F engages the end or socket g' of a live-center a' and lock the disk until the shaft F is withdrawn.

H is a revolving cutter of ordinary construction, having the usual shaft cutter-head and removable and adjustable knives, the contour of the cutting-edge of the knives being modified according to the desired contour of the work to be done. The shaft of the revolving cutter, however, is journaled in vertically-sliding boxes or bearings H', which move in housings H². The lower end of the bearings or boxes H' are supported by springs H³, these springs having sufficient strength to support the boxes and revolving cutter and hold the cutter away from the work. The upper surfaces of the boxes H' are acted upon by cams B² B³, which in connection with springs H³ feed the revolving cutter to the work or allow it to recede, as the desired contour of the work to be done requires.

Located between the upper ends of the boxes H' and the cams B² and B³ are adjustable shoes or contact-pieces h , the same being preferably constructed as shown—viz., being hinged at one end to the boxes H' and having an adjusting-screw h' at the other end. This construction is shown more clearly in Fig. 4.

K is a hopper or feed-box adapted to hold the blanks. The bottom of the feed-box K is just low enough to allow the lower blank to occupy such a position that its axis is in line with the axes of the live-centers a' and the dead-centers a when any of said centers are opposite the ends of the blank. An opening

K' is formed in the lower end of the box K of sufficient size to allow of the free passage of a single blank, this opening being on the side of the box facing the direction in which the disks C' C² rotate.

Having thus described my preferred mode of constructing my machine, I will now proceed to set forth the operation of the machine, as described above. The blanks, having been cut to the proper size, are fed to the hopper or box K, being laid one on the other, as shown in the drawings, Fig. 2, the lower blank being then in position to be grasped between a dead-center a and a live-center a' . The spring a^2 , having passed the heel of the cam-bar E, allows the live-center to be forced inward by the spring a^2 , causing the live-center a' to engage the blank and move it toward the dead-center a , thus grasping the blank between the two centers. Meanwhile the cam-groove b in the cam-wheel B⁴ has revolved to such a position as to act on the pin d of the pitman D, so as to force the pitman downward, and through its connection with the lever C⁴, this downward movement causes the lever C⁴ to partially rotate or oscillate with the pawl c , which pawl c in turn engaging with one of the teeth of the ratchet-wheel C³ the disks C' C² are driven toward the revolving cutter H, as is also the blank held between the live and dead centers. As the blank reaches a position to be acted upon by the revolving cutter H, the pitman D has traveled its full stroke and starts to recede, and hence the disks C' C² are at a stand. The cam-wheel B' now comes into play and allows the spring F' to force the shaft F toward the disk C² and causes the nib or projection g to engage the socket g' in the live-centers, and as the shaft F is being revolved by any suitable means—viz., a pulley or gearing—the live-center a' , and with it the blank, is revolved at a predetermined speed, depending on the size and shape of the finished product. At one and the same time that the shaft F is moved toward the disk C² the locking-bar F² is driven in the same direction and its end forced into the recess or socket c^2 in the disk C², thus locking the disk. The cam-wheel B' has by this time reached a point when it acts directly on the collar or flange f' and forces the shaft F and locking-bar F² securely and firmly into position by positive action and keeps the said shaft and locking-bar in position until the revolving cutter has finished operating on the blank. The cams B² and B³ have by this time started to force the revolving cutter down toward the revolving blank, where it is fed until the cutter has reached its lowest point and the blank is turned into a finished product of the machine. The cutter then is allowed to recede far enough to clear the next blank as it is moved into position to be operated upon, as just described. Meanwhile the cam-wheel B' has withdrawn the shaft F and locking-bar F², thus leaving the disks C' C² free to

be again moved forward by the pitman and intervening mechanism, as hereinbefore described.

In the case of the present described machine the finished product is held between the centers until the disks C' C^2 have made almost a complete revolution. When the spring a^2 of the live-center a' has reached the cam-bar E, it is forced outward by said cam-bar and the live-center is driven outward, thus releasing the turned piece, as shown more clearly in Fig. 1.

Although I have shown and described a machine embodying my invention setting forth a construction that I prefer to use, I do not desire to limit myself to the details of construction or precise arrangement of parts as herein described, as it is apparent that many of the parts may be modified or altered and still perform their several functions without departing from the scope of my invention.

The cams B^2 B^3 may be of such contour that they will cause the cutter H to advance and recede any number of times during the operation of the cutter on the blank, depending on the work to be done and the shape of the desired product. (See Figs. 6 and 7.) I may also place several revolving heads located at different places around the disks C' C^2 by duplicating the parts, as I do not desire to limit myself to any number of operations on the blank.

As hereinbefore mentioned, the disk C' is so secured to the shaft C that it may be shifted along said shaft. This object is secured by "feathering," and allows of the space between the disks C' C^2 being adjusted to adapt the machine to different lengths of blanks.

What I claim is—

1. In a wood-turning machine, the combination, with a rotary blank-carrier and means connected therewith for holding blanks, of a rotary reciprocating shaft arranged to engage and impart motion to said blanks, means for throwing this shaft in and out of engagement with the blank-holders, and a locking device connected with said reciprocating shaft for locking the blank-holder, substantially as set forth.

2. The combination, with a rotary blank-holder and live-centers adapted to engage the blanks, of a reciprocating rotary shaft adapted to engage the live-centers and rotate the latter when in contact therewith, a shaft having a cam thereon adapted to co-operate with the rotary reciprocating shaft to impart endwise movement to the latter, and a locking-bar connected with the reciprocating shaft and adapted to lock the blank-holder when the reciprocating shaft engages one of the live-centers, substantially as set forth.

3. The combination, with a disk having slots therein and perforations in proximity to the slots, of centers extending loosely through the perforations, springs secured to the disk and passed through the slots and connected with the centers, said springs bowed away from the disk, and a cam in position to be struck by the bowed portions of the springs, whereby the centers are thrown outward, substantially as set forth.

4. The combination, with a rotary blank-holder, a feed-spout, and means for automatically engaging said blanks, of means for locking the holder and rotating the blanks, a cutter-head, and cam mechanism for throwing the latter in position to operate upon the blank being rotated, substantially as set forth.

5. The combination, with a main shaft carrying a series of cams, of a cutter-shaft mounted in movable bearings, each of the latter being engaged by a cam on the main shaft, a carrier for the blanks, means connecting the carrier-shaft with the main shaft for imparting intermittent rotary movement to said carrier-shaft, a shaft for rotating the carrier-centers, and a cam on said main shaft for imparting a longitudinal movement to the shaft which rotates the centers, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 27th day of August, 1890.

JAMES D. CAREY.

Witnesses:

C. H. DORER,

W. E. DONNELLY.