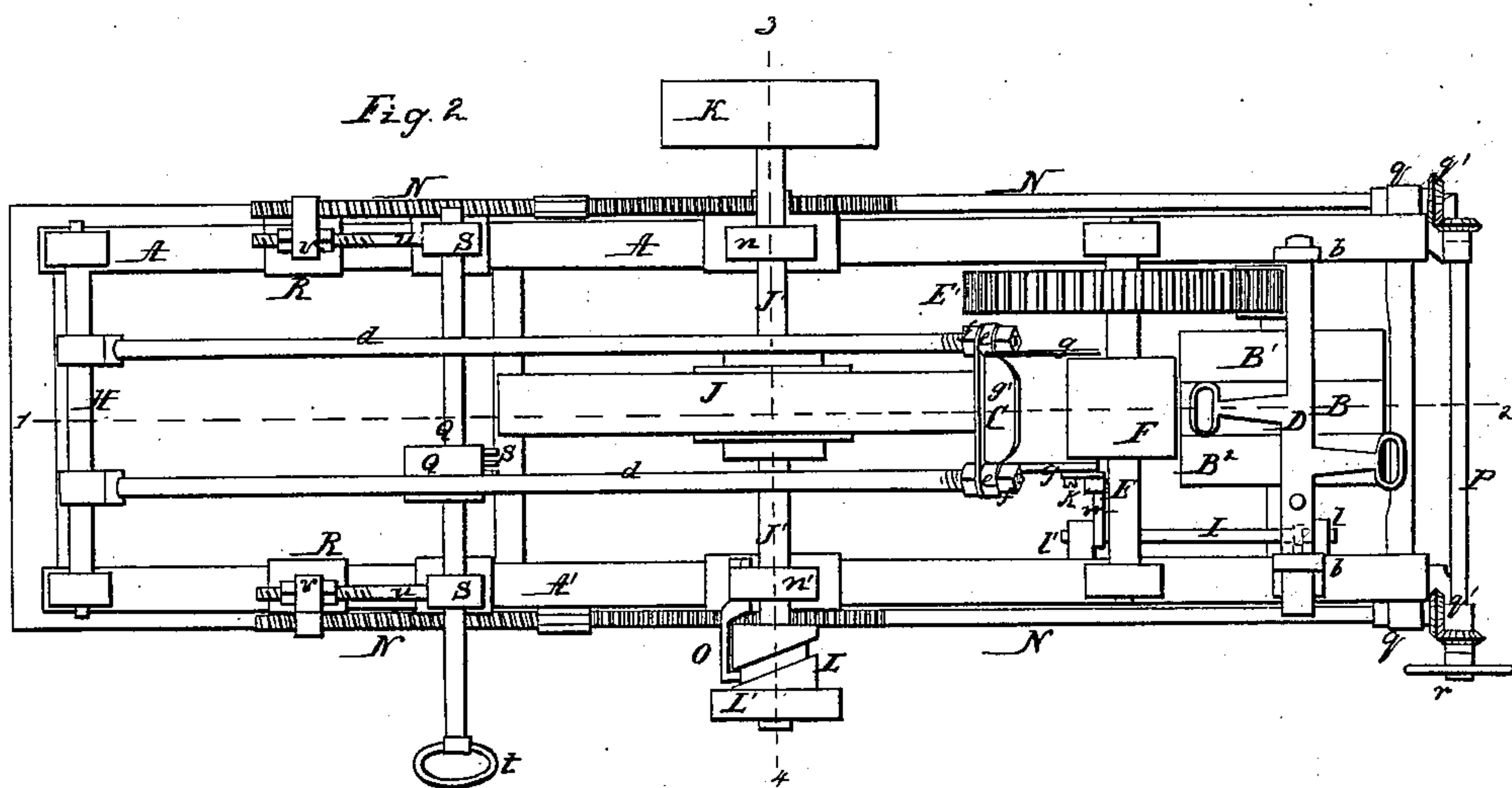
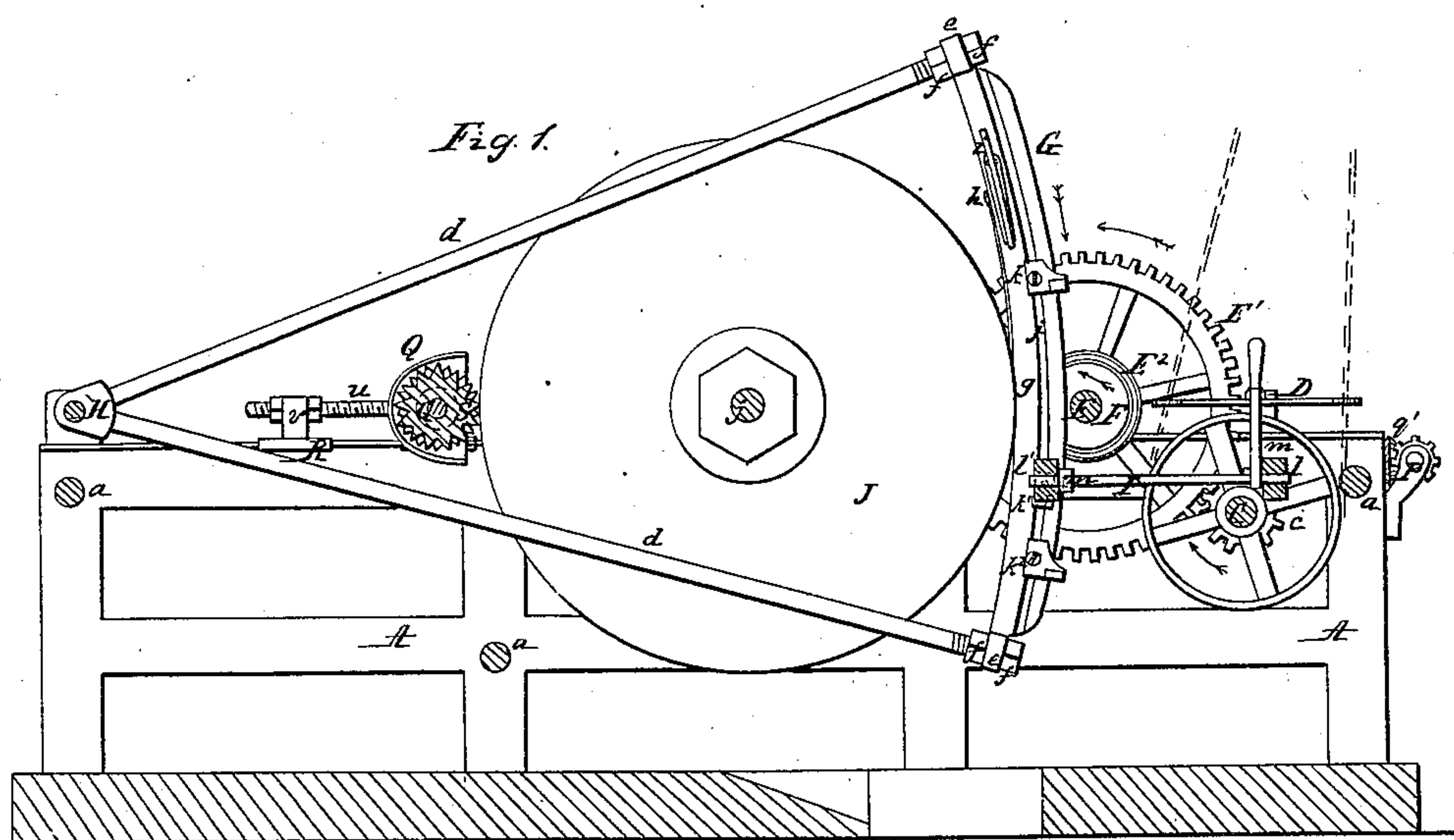


2 Sheets—Sheet 1.

J. G. Baker,  
Grinding Saws.

No 53,725.

Patented Apr. 3, 1866.



Witnesses:  
Albert Steel  
John Parker

Inventor:  
J. G. Baker  
By H. H. Howden

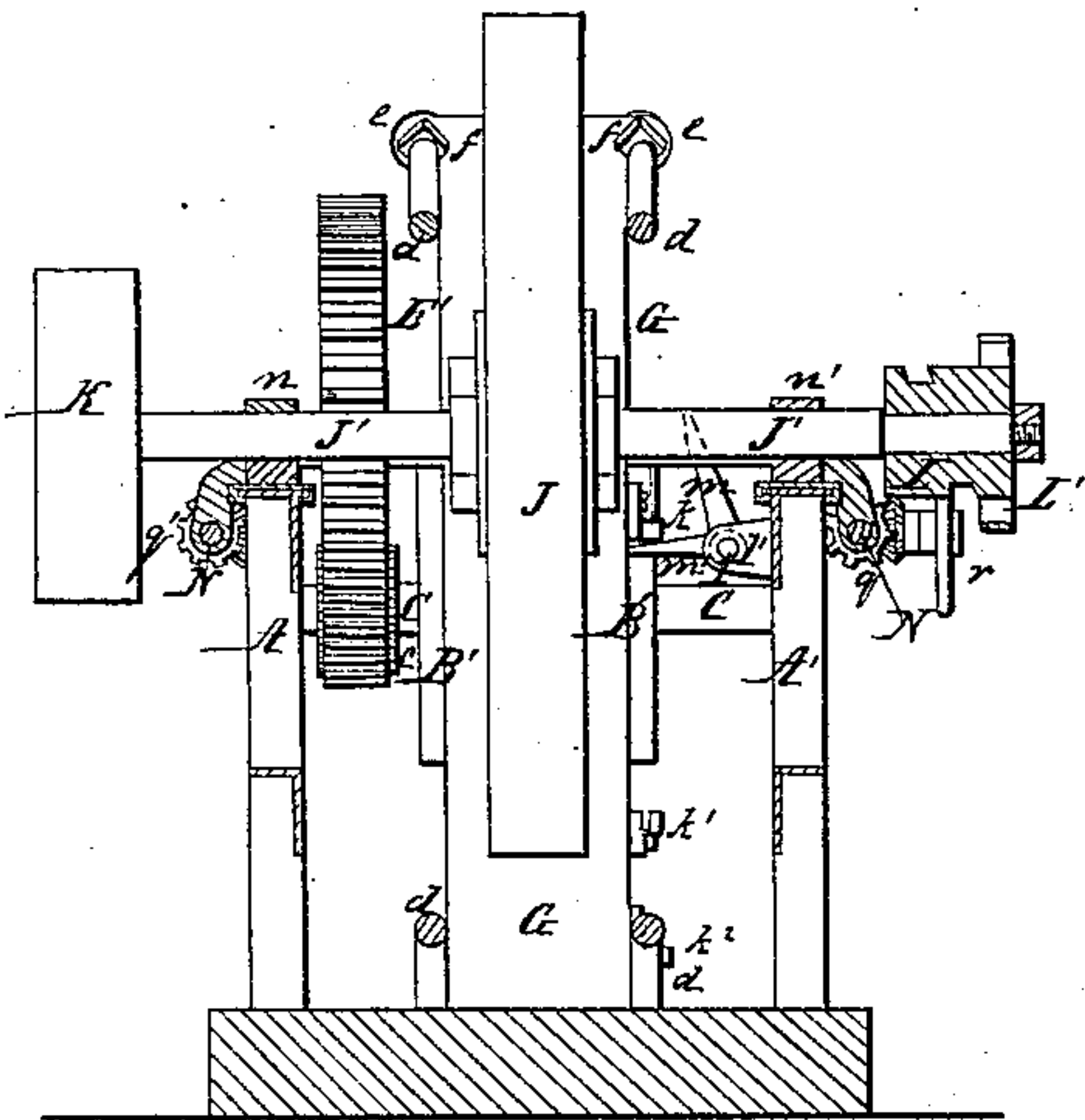
2 Sheets-Sheet 2.

*J. G. Baker,*  
*Grinding Saws.*

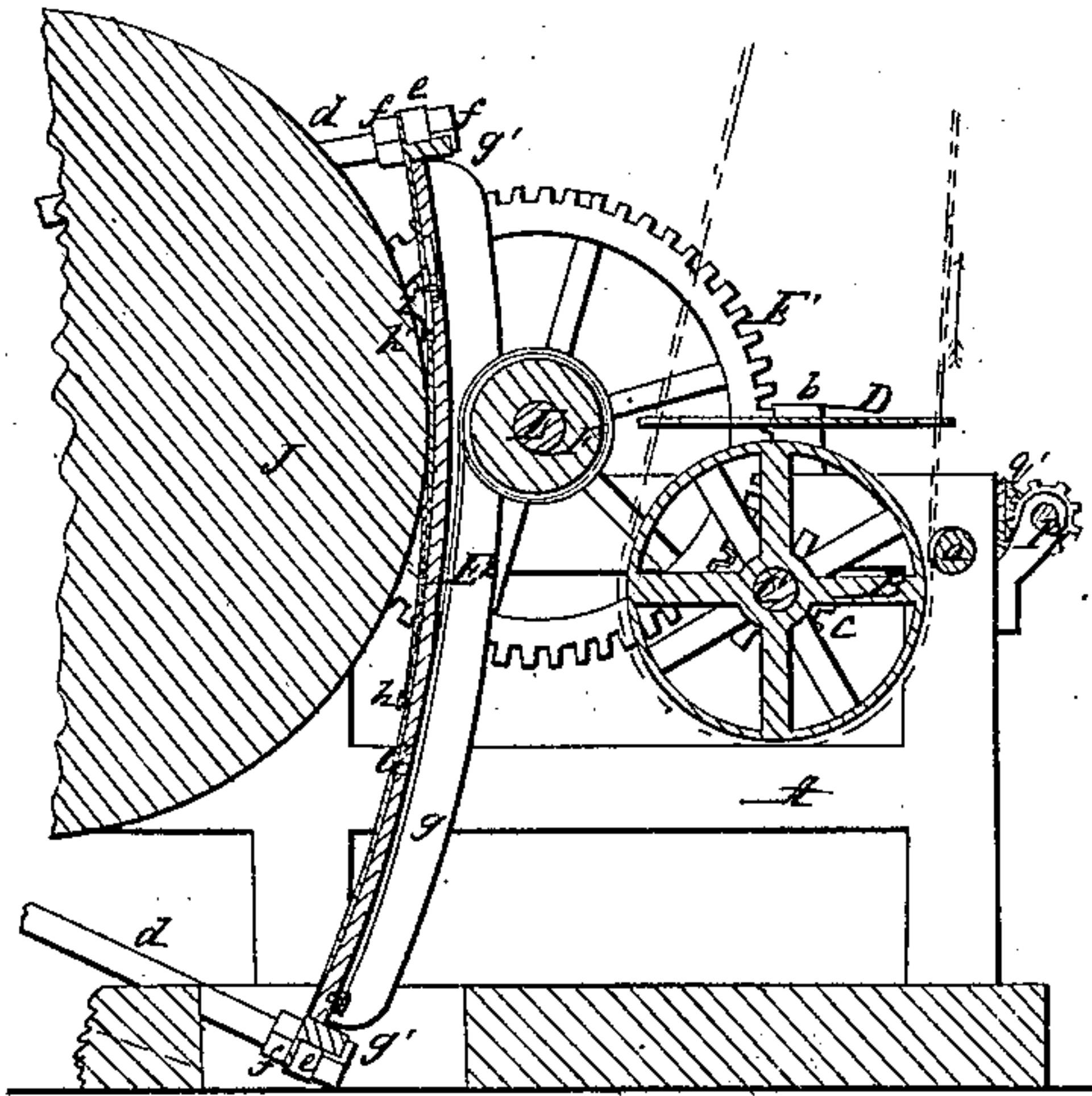
*N<sup>o</sup> 53,725.*

*Patented Apr. 3, 1866.*

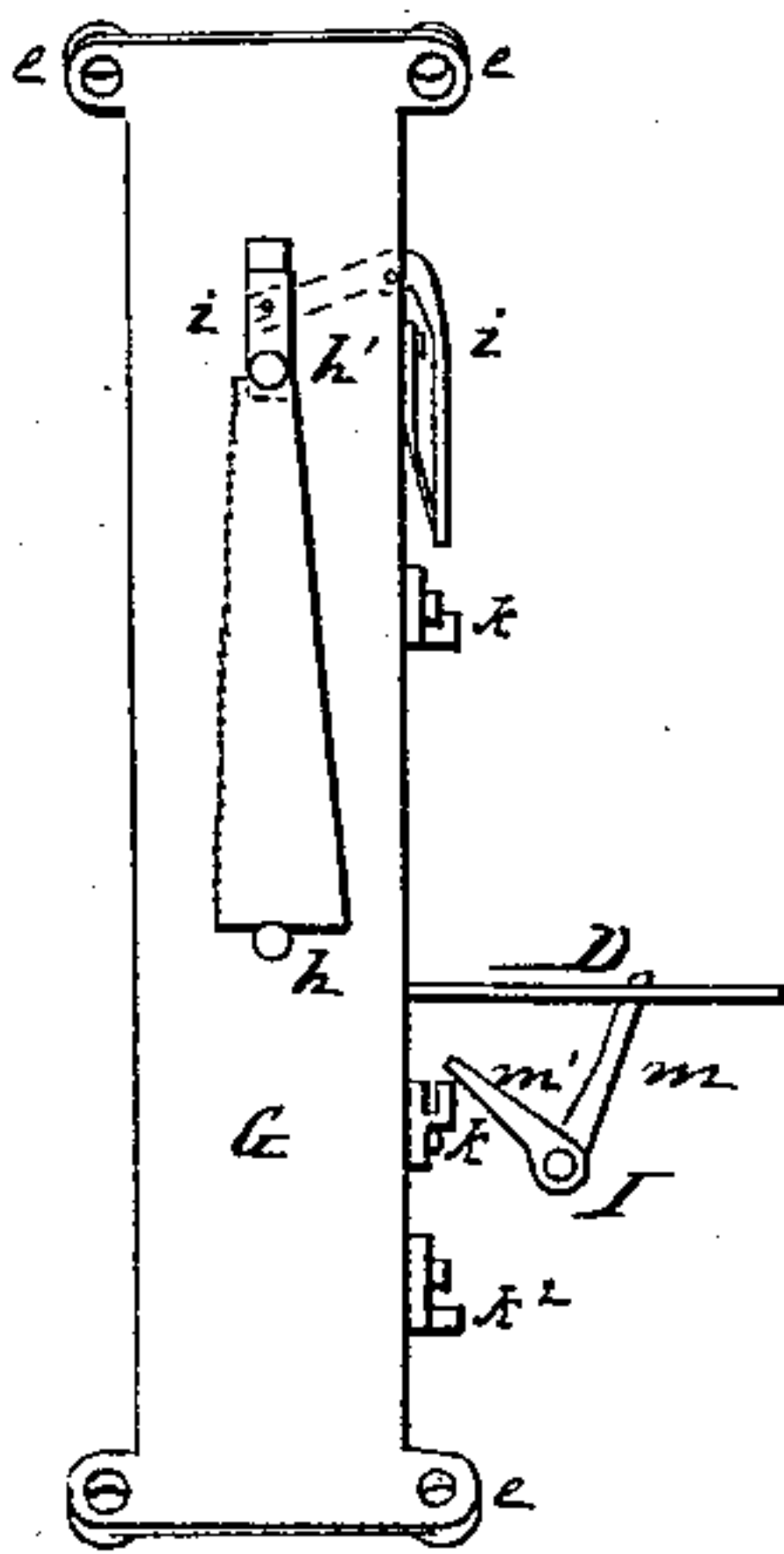
*Fig 4.*



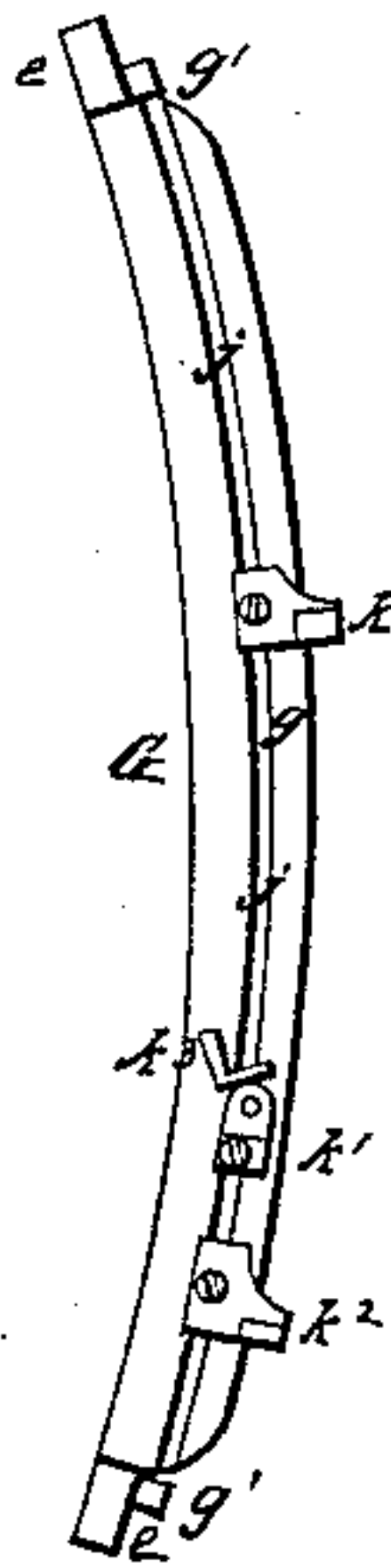
*Fig 3.*



*Fig 5.*



*Fig 6.*



*WITNESSES:*  
*Wm. Albert Steel*  
*John Parker*

*Inventor:*  
*J. G. Baker*  
*By his Atty*  
*H. H. Howard*



# UNITED STATES PATENT OFFICE.

JOHN G. BAKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HENRY DISSTON, OF SAME PLACE.

## IMPROVEMENT IN SAW-GRINDING MACHINES.

Specification forming part of Letters Patent No. 53,725, dated April 3, 1866.

*To all whom it may concern:*

Be it known that I, JOHN G. BAKER, of Philadelphia, Pennsylvania, have invented an Improved Saw-Grinding Machine; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists of certain mechanism, fully described hereinafter, for grinding saw-blades and reducing them to the desired taper.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1, Drawing No. 1, is a side view of my improved saw-grinding machine with one of the frames removed. Fig. 2 is a plan view of Fig. 1. Fig. 3, Drawing No. 2, is a vertical section of part of the machine on the line 1 2, Drawing No. 1; Fig. 4, a transverse vertical section on the line 3 4, Fig. 2; Fig. 5, an inside view of the segment, showing the saw-blade in its proper position; Fig. 6, an edge view of the same.

Similar letters refer to similar parts throughout the several views.

A and A' are the opposite side frames of the machine, and are connected together at suitable points by the cross-bars *a a a*. B is a driving-pulley secured to the shaft C, on which are two loose pulleys, B' and B<sup>2</sup>, one on each side of the pulley B, the said shaft C turning in the opposite frames of the machine. A belt-shifter, D, is arranged to slide in staples *b* on the oppositeside frames, and is furnished with the usual belt-guides. On the shaft C is a pinion, *c*, which gears into a cog-wheel, E', on a shaft, E, the journals of which revolve in suitable boxes on the opposite side frames, A and A'. On this shaft E is a pulley, F, to which is secured one end of a belt, E'', of gutta-percha or other suitable material, the other end of which is secured to the lower end of a segment, G, the latter being connected to a rock-shaft, H, by the four rods *d d d d*, and the center of this shaft coinciding with the center of the segment. One end of each of the rods *d* passes through a lug, *e*, there being one lug on each corner of the segment. (See Fig. 5.)

The segment G consists of a plate strengthened by the ribs *g* and the end pieces, *g'*. The saw-blade to be ground is placed against the concave face of the segment G and held securely in its position by the set-screws *h* and *h'*, the latter being attached to a movable plate, *i*, which is held in position by the bell-crank lever *i'* one arm of which is acted on by a spring secured to the edge of the segment. The projecting ends of the set-screws *h* and *h'* are beveled to correspond to a bevel made on each end of the saw, so that however thin the latter may be ground it cannot escape from the projecting ends of the set-screws.

On one side of the segment is cut a groove, *j*, (see Fig. 6,) adapted to the reception of adjustable dogs *k*, *k'*, and *k<sup>2</sup>*, and to the dog *k'* is hinged an L-shaped catch, *k<sup>3</sup>*, the object of which will be rendered apparent hereinafter.

Passing through projections *l l'* on the inside of the frame A' is a rod, I, having two projections, *m* and *m'*, Fig. 5, the former of which is inserted into an opening in the belt-shifter D, the end of the other arm, *m'*, being so situated as to be in the range of the dogs *k* and *k<sup>2</sup>*.

A grindstone, J, is secured to a shaft, J', which turns and is permitted to have a limited end movement in boxes *n* and *n'*, one end of this shaft having a driving-pulley, *k*, and on the other end a scroll cam-wheel, L, and a pulley, L', which can revolve together independently of the shaft. On the box N' is an arm, O, having a bent end, which projects into the groove of the scroll cam-wheel L. The boxes *n* and *n'* are attached to slides on the opposite side frames of the machine, and have projections with internal screw-threads adapted to those on a shaft, N. Each of these screw-shafts turn in a projection, *q*, on the frames, and each has a bevel-wheel, *q'*, gearing into a similar wheel on a shaft, P, which is provided with a suitable hand-wheel, *r*, and which turns in projections on the ends of the side frames.

Q is a stone picker or dresser, consisting of a series of wheels, *s*, which have pointed teeth, and which are hung loosely upon a stationary spindle, Q', and are inclosed on a box or casing situated at the rear of the grindstone. This spindle passes through guides S S, which are adjustable one on each frame of the machine, and one end of the spindle is provided with an appropriate handle, *t*, and is prevented from



turning by a key in one of the adjustable guides fitting into a groove on the spindle. These adjustable guides are connected to slides by screw-rods *u*, which are bolted to projections *v* on the said slide *R*, there being a nut on each side of the projection, so that the boxes *S* and slides *R* may be adjusted from and toward each other at pleasure. The screw-shafts *N* pass through the said projections *v*, the latter having internal threads adapted to the threads of the shaft.

**Operation:** By pressing upon the long arm of the spring-lever *i'* the projecting end of the set-screw *h'* may be raised sufficiently to allow a saw-blade to be laid against the face of the segment, the lower beveled end of the screw being inserted beneath the beveled projecting end of the set-screw *h*. As soon as the saw-blade is thus adjusted the pressure upon the lever *i'* is withdrawn, the pin *h'* is depressed by the spring, its beveled head fitting against the beveled end of the saw-blade, which is thus securely held between the two set-screws. Two driving-belts are used, one crossed and the other straight, in connection with the pulleys *B*, *B'*, and *B<sup>2</sup>*, these belts being guided by the projections on the shifter *D*. Supposing the straight driving-belt to be turning the pulley *B* in the direction of its arrow, the belt *E''* must be unwound from the pulley *F*, and consequently the segment *G* must move downward by its own weight in the arc of a circle of which the shaft *H* is the center, the saw-blade being subjected to the action of the grindstone during this movement.

When the adjustable dog *k* comes in contact with and moves the arm *m'* on the rod *I* the arm *m* will so operate the belt-shifter as to transfer the straight belt onto a loose pulley and the crossed belt onto the fast pulley *B*; hence the motion of the shaft *C* must be reversed, and the segment must commence its upward vibration until the plate *k'* strikes the arm *m'*, when the position of the belt will be again reversed and the segment will descend, and this vibration is continued until the saw has been completely ground.

While the dogs *k* and *k''* are used to operate the arm *m'* the catch *k<sup>3</sup>* is thrown back, as seen in Fig. 6, so as to be beyond the range of the said arm *m'*; but should it be necessary to impart a shorter vibrating movement to the segment *G* the catch *k'''* is moved forward and serves the purpose of a dog to reverse the movement of the segment while the latter is rising.

When the stone becomes worn and requires dressing an attendant grasps the handle *t* of the spindle *Q* and slides the latter backward and forward in the guides *S S*, thereby causing the sharp teeth of the disks *s* to act on the stone and hack or dress the same.

The screw-threads of the portions of the shafts *N* which control the position of the stone

are one-half the pitch of those threads of the same shaft which control the position of the dressing apparatus; hence as the grindstone wears away and is moved by the said screw-shafts toward the segment *G* the dressing device is simultaneously moved, and to such an extent as to be always in a proper position for acting on the stone.

One of the most important features of my invention is the mode of adjusting the segment so that any desired taper may be imparted to the saw, this adjustment being effected by the nuts *f f*, which serve to secure the outer ends of the rods *d* to the segment. It will be readily seen that by the turning of these nuts, and thereby altering the position of the segment in respect to that of the grindstone, the saw-blade may be so reduced as to be thicker at the cutting-edge than at the back, and so as to be thicker near the handle than at the end.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, with a grindstone, *J*, of a segment, *G*, for holding a saw-blade on its concave surface, to which segment a vibrating motion in the arc of a circle having a fixed center is imparted by the mechanism described, or any equivalent to the same, for the purpose specified.

2. The combination of the rock-shaft *H*, rods *d d*, segment *G*, and the nuts *f f*, or their equivalents, for adjusting the said segment on the rods.

3. The combination of the reversible pulley *F*, belt or band *E''*, and segment *G*.

4. The combination of the segment, its set-screw *h*, the sliding piece *i*, with its set-screw *h'*, and spring-lever *i'*, the whole being arranged for the retention and release of the saw-blade, substantially as and for the purpose herein set forth.

5. The combination of the segment *G* and its adjustable dogs *k* and *k''* with the devices herein described, or the equivalent to the same, for shifting the driving-belts.

6. The grindstone-dresser composed of a number of disks, *s*, with pointed teeth, adapted to the sliding spindle *Q'*, and operating substantially as and for the purpose herein set forth.

7. The screw-shafts *N N*, having threads of different pitches, those of one pitch controlling the position of the grindstone and those of the other pitch controlling the position of the dressing device, all substantially in the manner and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN G. BAKER.

Witnesses:

HENRY HOWSON,  
JOHN WHITE.