(No Model.) 3 Sheets—Sheet 1.

D. CHASE.

SAW MACHINE.

No. 547,769. Patented Oct. 15, 1895.

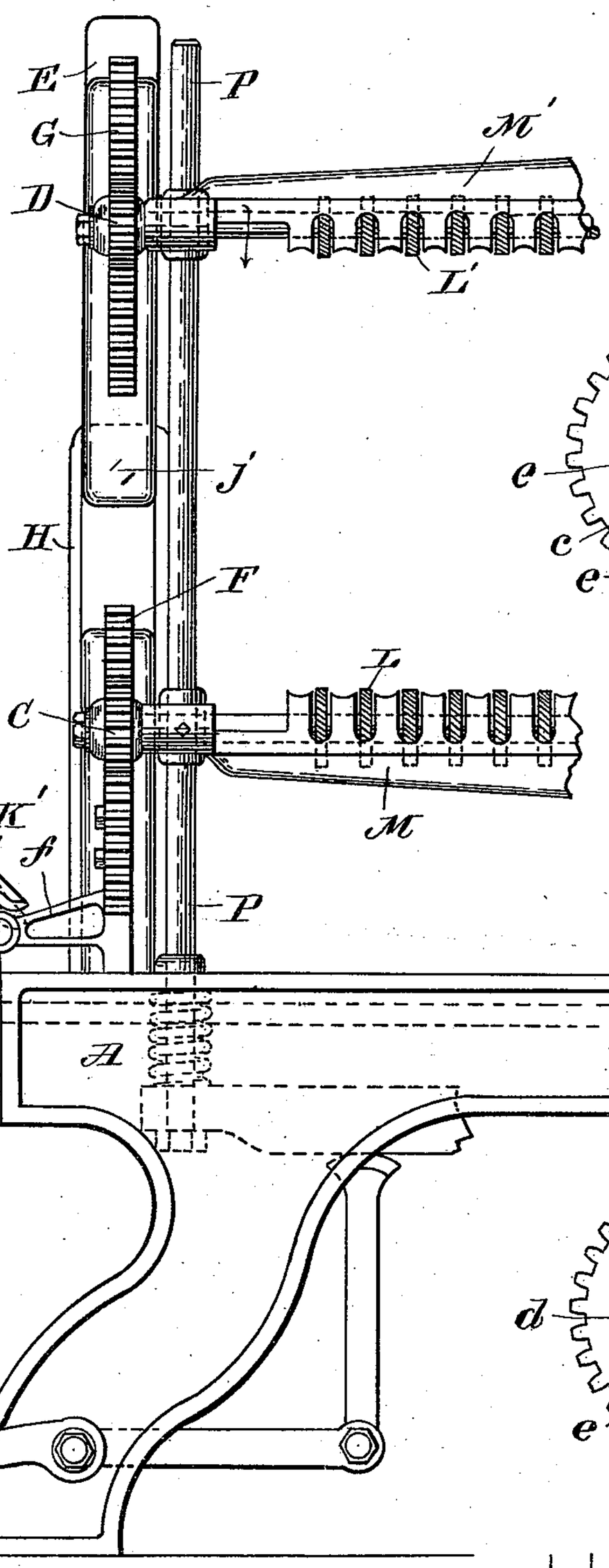

Fig. 1.

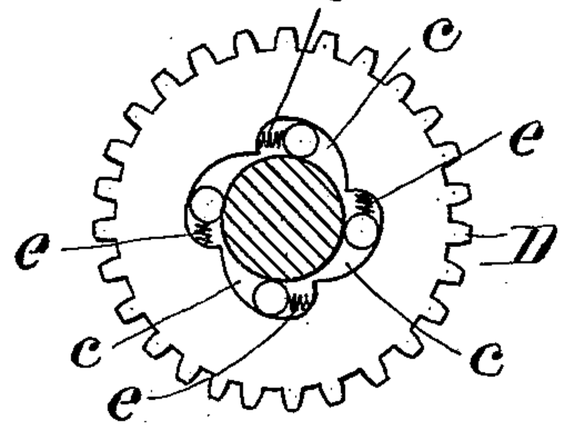

Fig. 4.

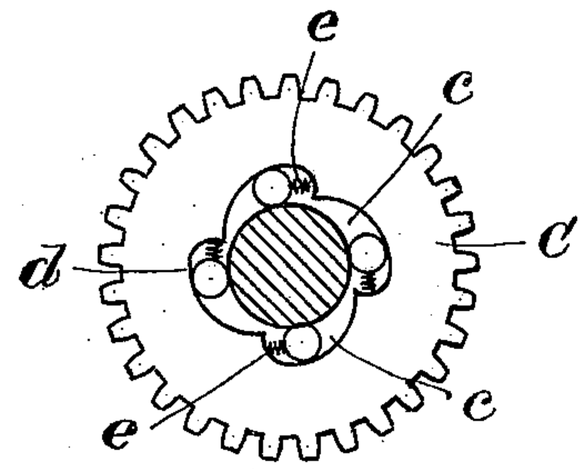

Fig. 3.

Witnesses.

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his attorney

(No Model.)

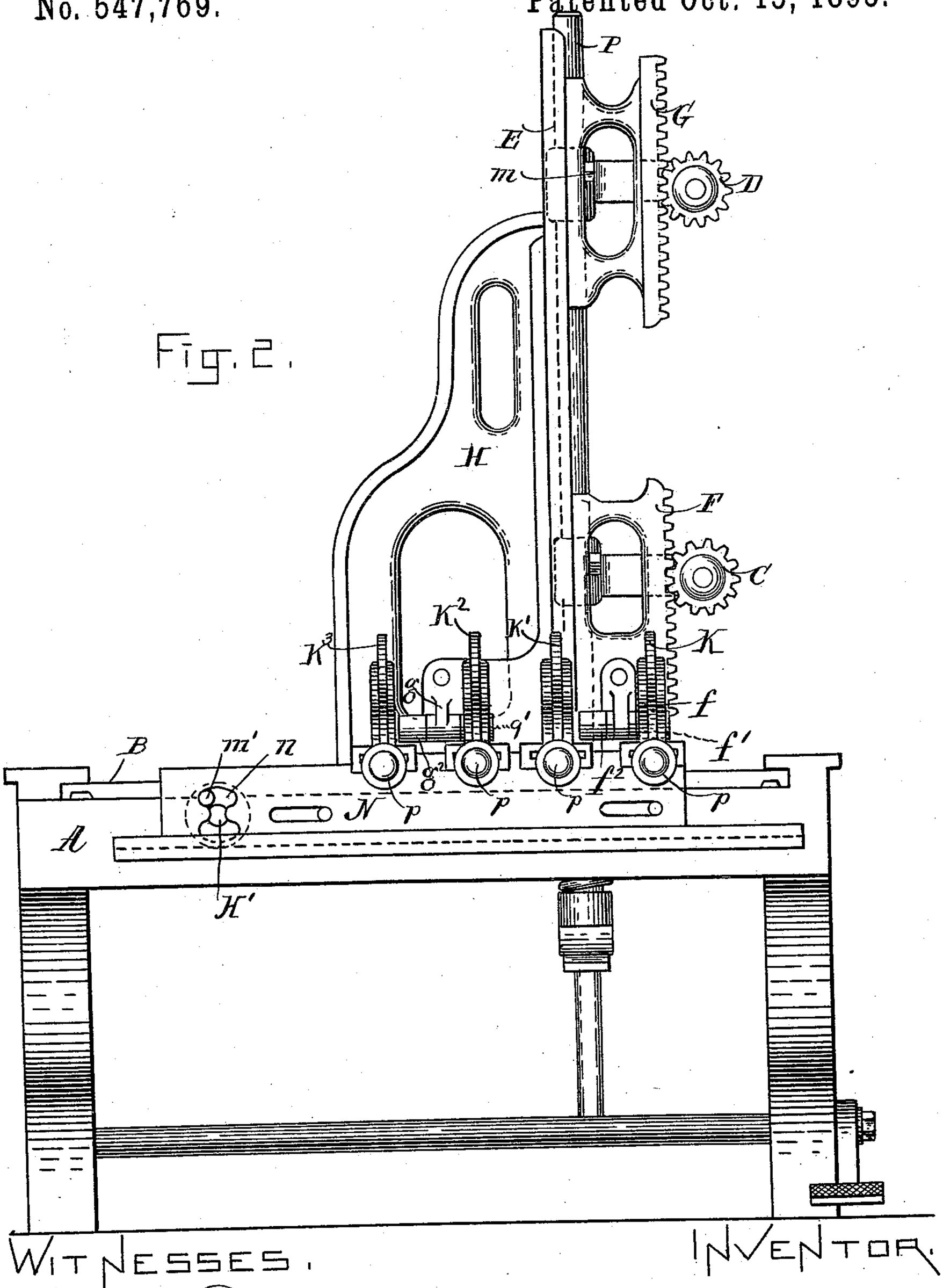
3 Sheets—Sheet 2.

D. CHASE.

SAW MACHINE.

No. 547,769. Patented Oct. 15, 1895.

Fig. 2.



WITNESSES.

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(No Model.)

3 Sheets—Sheet 3.

D. CHASE.

SAW MACHINE.

No. 547,769. Patented Oct. 15, 1895.

Fig. 5.

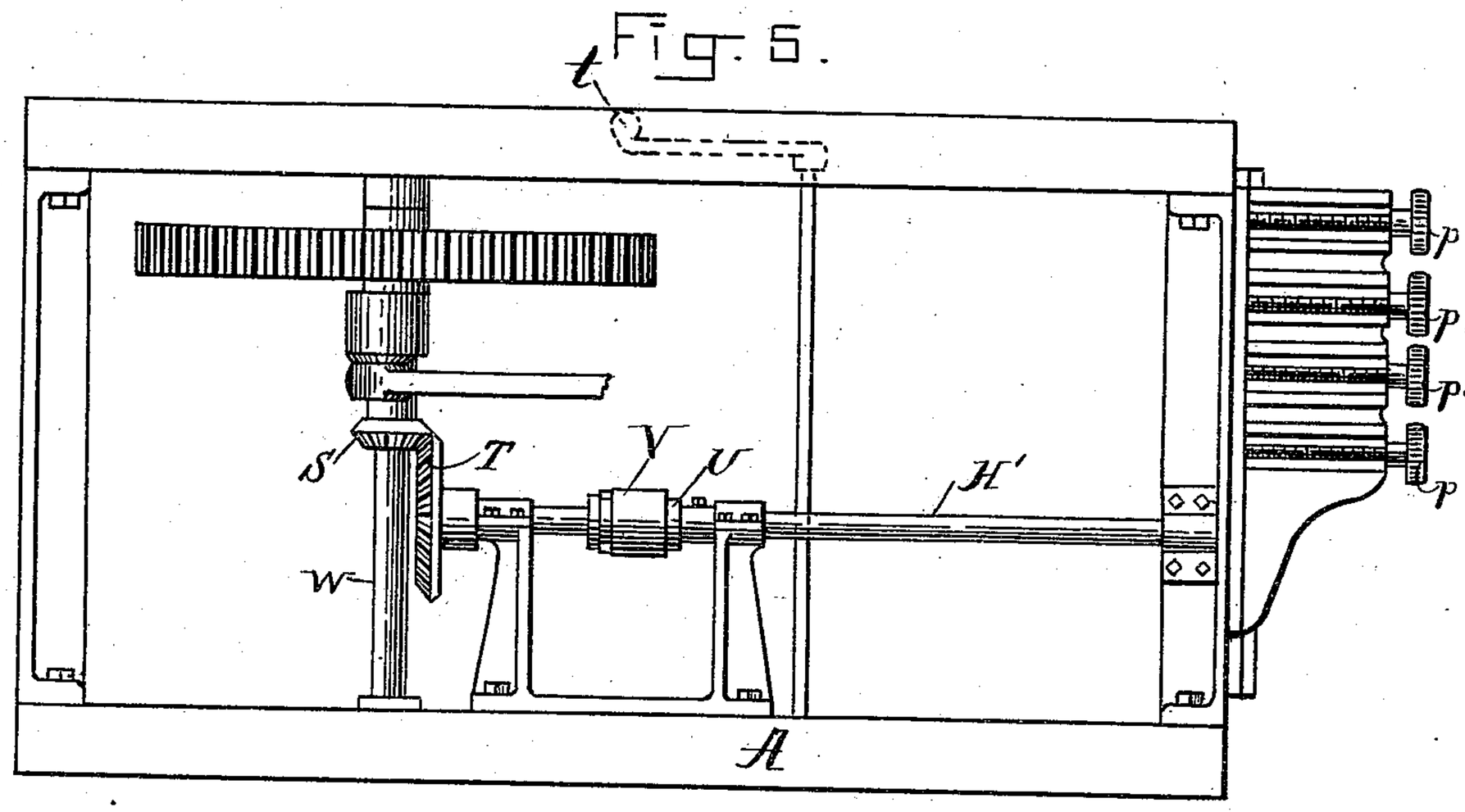


Fig. 9.

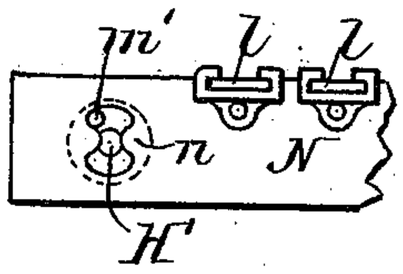


Fig. 6.

Fig. 7.

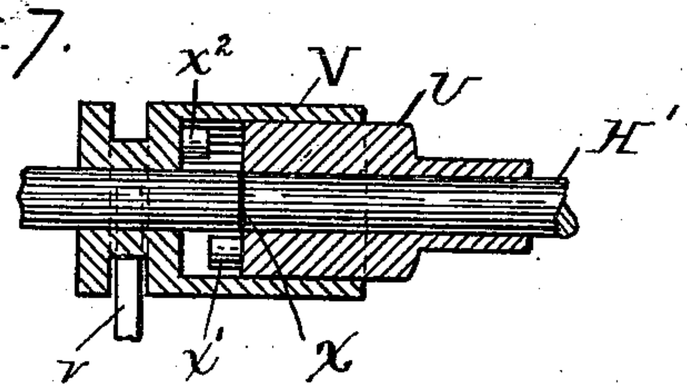
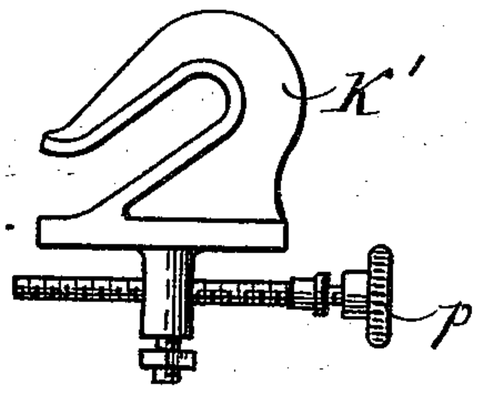


Fig. 8.



WITNESSES.

Hubert A. Trowbridge

Chas. F. Perkins

INVENTOR.

Denison Chase

by Chas. F. Perkins

his attorney

UNITED STATES PATENT OFFICE.

DENISON CHASE, OF ORANGE, MASSACHUSETTS.

SAW-MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,769, dated October 15, 1895.

Application filed May 27, 1895. Serial No. 550,788. (No model.)

To all whom it may concern:

Be it known that I, DENISON CHASE, a citizen of the United States, residing at Orange, in the county of Franklin and State of Massachusetts, have invented a new and useful Improvement in Saw-Machines, of which the following is a specification.

My invention consists particularly of improvements in the mechanism for feeding the block, whereby the thickness of the stock to be cut may be regulated with greater accuracy and there is no lost motion in the operation of the feed.

The class of machines to which my invention is especially applicable is illustrated by that shown in Letters Patent of the United States issued to me for improvements in machines for sawing shingles, dated February 19, 1889, and numbered 398,230, to which reference is made for a general description of the machine.

In the accompanying drawings, Figure 1 is a front elevation of portions of the carriage and frame of a shingle-machine. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical section of the pinion C. Fig. 4 is a vertical section of the pinion D. Fig. 5 is a plan view, and Fig. 6 a side elevation of the shaft H′ and its connections that reciprocate the inclines K K′. Fig. 7 is a longitudinal section of the coupling V on the shaft H′. Figs. 8 and 9 are detail plan views of the mechanism for adjusting and operating the inclines K K′.

A is the frame of a saw-machine, in which is journaled a circular saw and upon which is mounted the usual means of applying the power and of reciprocating the carriage, all of which it is unnecessary to illustrate in explaining the invention herein claimed.

B is the base of the carriage, which slides in grooves in the frame.

E is a perpendicular post secured to the base B, upon which the frames of the racks F and G are supported and arranged to slide vertically. The frame of the rack F has a T-shaped arm *f* bolted to its lower end, having two rolls f' f^2 thereon. The brackets lettered, respectively, K K′ K^2 K^3 have inclined slots which serve to lift the rack-frames F G when the rolls f' g' are forced into the slots and up their inclined surfaces by the backward motion of the carriage.

H is a casting which is connected to the frame of the rack G by the bolt *j* through a vertical slot in the post E. The rack-frame G slides on the bolt *m*, fixed to the post E and projecting through a slot in the rack-frame G. At the bottom of the casting H is bolted or otherwise secured a T-shaped arm *g*, like the arm *f*, having rolls g' g^2, which work in the brackets K^2 and K^3 for the purpose of lifting the rack-frame G precisely as the rack-frame F is lifted by its corresponding parts.

The set-rolls L L′ are supported in bearings in the hangers M M′, which in turn are supported upon upright rods P P, by means of which and the treadle N′ the upper set-rolls L′ are lifted, substantially in the manner shown in said Letters Patent No. 398,230, at the will of the operator for the purpose of removing or replacing a block. Upon one end of the lower set-roll L is fitted loosely the pinion C, in the hub of which are recesses *c c*, tapering, as shown in Fig. 3, each of which has a ball *d* therein held toward the smaller end of the recess by the coiled spring *e*. The upper set-roll L′ has a similar pinion D, (shown in Fig. 4,) except that the recesses *c* therein taper in the opposite direction. The rack F operates the pinion C, and it is obvious that when the rack is lifted the pinion C will bind upon the shaft of the set-rolls L and rotate it forwardly, and when the rack descends the pinion C will be free to turn on the shaft of the set-roll, which will remain stationary until the next upward motion of the rack F. The great advantage of this arrangement over a ratchet and pawl now in general use is the accuracy accomplished in setting the block for any thickness of material to be cut. No changes of adjustment can be made with the ratchet and pawl, except as determined by the distance between the teeth of the ratchet, whereas no limitations of adjustment exist in the use of my arrangement. There is also no lost motion in the operation of my feeding mechanism. At the instant the rack starts the set-rolls begin to feed. The feeding of the block by the upper set-rolls L′ is accomplished by the downward stroke of the rack G, which is apparent upon an examina-

tion of the construction indicated of the pinion D. The incline brackets K K′ K² K³ are adjustable longitudinally in grooves *l l* in the sliding plate N, which latter is reciprocated in grooves in the frame of the machine by means of the lug *m′* on the end of the shaft H′, operating in the slotted hole *n* in the sliding plate N. The length of the stroke of the racks F and G is determined by the distance which the rolls on the arms *f g* travel up the inclined surface of the brackets K K′ K² K³. This distance is regulated by the longitudinal adjustment of the brackets K K′ K² K³ by means of the thumb-screws *p*. By the reciprocation of the plate N the rolls *f′ f²* on the end of the arm *f* alternately enter the inclined slot of one of the brackets K K′—that is to say, on the backward stroke of the carriage the roll *f′* would enter the bracket K, and upon the succeeding backward stroke the roll *f²* would enter the bracket K′ and then the roll *f′* would pass between the brackets K K′, leaving the roll *f′* outside of the slot. The purpose of this is to feed the block different distances alternately and to cut different thicknesses of stock.

The operation just described takes place with the rolls on the arm *g* and the brackets K² K³ for the purpose of feeding the upper end of the block at different distances alternately. When it is desired to cut stock of uniform thickness, then the sliding plate N is not reciprocated and the rolls on the ends of the forked arms *f g* enter the same brackets on every backward stroke of the carriage. The same operation takes place when all the brackets K K′ K² K³ are adjusted alike and the plate N is reciprocated. The shaft H′ is journaled in the frame of the machine and is rotated by means of the beveled gears T S upon the shaft H′ and the counter-shaft W, respectively. The gears T S are so proportioned that one stroke of the sliding plate N is accomplished just as each backward motion of the carriage is completed. The shaft H′ may be rotated or not at the will of the operator by means of a coupling, the male portion of which U is fast to the shaft H′ and the female portion V slides thereon, having a longitudinal groove, into which a feather upon the shaft is fitted. The shaft H′ is broken at X and is not rotated except when the coupling is found by sliding the female portion so that the lugs X′ X² will engage. The coupling is operated by means of the lever *t*, shipper-rod *s*, and fork *v*.

The operation of my invention is as follows: If it is desired to saw stock of uniform thickness throughout, the block having been entered between the set-rolls, the shaft H′ is uncoupled by throwing the lever *t* and two of the sliding brackets K K′ K² K³ are set by the thumb-screws *p p*, so as to cause the rolls on the forked arms *f* and *g*, which are in line with their inclined slots, to travel a sufficient distance therein to give the motion to the set-rolls sufficient to feed the block to the required thickness. The carriage is then set in motion, and upon its backward stroke one of the rolls on each of the forked arms *f* and *g* will enter an inclined slot. As the rack F is lifted thereby, the lower end of the block will be fed the required distance, and as the carriage starts forward and the rolls descend from the slots the rack G on its downward stroke will feed the upper end of the block the same distance as the lower has been fed. This operation will be repeated at each stroke of the carriage until the block has been sawed up. When it is desired to saw shingles or other articles having a thick and a thin edge, then the shaft H is coupled to the counter-shaft W, as described. The brackets K K′ are then adjusted, so that one is nearer to the carriage than the other, and the bracket K² is adjusted in the same position as the bracket K′, and the bracket K³ in the same position as the bracket K. On the backward stroke of the carriage a roll on the arm *f* would enter the inclined slot of the bracket K and a roll on the arm *g* would enter the inclined slot in the bracket K², which have different adjustments. The bottom of the block would thereby be fed to one thickness and the top to another, which would be required in sawing shingles. On the next backward stroke of the carriage the rolls would enter the inclined slots of the brackets K′ K³, which would reverse the operation of the feed, and present a thick edge in place of the thin and a thin one in place of the thick, and so on alternately till the block is sawed up.

In sawing shingles, when it is desired to saw all the butts from one end of the block and all the tips from the other, as in the case of a tapering block, the brackets K K′ should be adjusted alike and the brackets K² K³ alike, or else the shaft H′ should be uncoupled, so that the plate N will remain stationary. If the butts are to be sawed from the bottom of the block, the brackets K K′ should be adjusted so that the rolls will travel farther into their slots than into those of the brackets K² K³. If the tips are to be sawed from the bottom, then the adjustment of the brackets should be reversed.

The construction of the friction-clutch pinions C D may be varied in the number of the recesses *c*, the form of spring *e*, and other details, and operate the same in all essential respects.

I am aware that the use of a friction-clutch device similar to that in the pinions C and D is old in other things, and I make no claim to it separately considered from the combination with other elements of the mechanism for feeding the block which I have invented and described. On the contrary, my invention is not limited to its use with the particular form of saw-machine shown in the drawings, as it could be used with any form of carriage and means for reciprocating it.

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

1. In a saw machine the combination of two set rolls for holding and feeding the block, a friction clutch pinion on the end of each set roll, said clutches operating to feed the block when rotated in opposite directions, the racks F, G, meshing into said pinions and secured to vertically sliding frames having rolls f', g', on the lower ends thereof, two brackets, as K, K^2, having inclined slots, said brackets being located so that the rolls f', g', will travel in said slots on the backward motion of the carriage and thereby lift the racks, substantially as described.

2. In a saw machine, the longitudinally and independently adjustable brackets K, K′, K^2, K^3, having inclined slots therein, combined with the plate N, sliding in a direction at a right angle to the adjustment of said brackets, said plate N, having a slotted hole n, therein, the shaft H′, rotated by the gears T, S, said shaft having a lug m', on its end working in the hole n, in the sliding plate N, so as to reciprocate the plate N, substantially as described.

DENISON CHASE.

Witnesses:
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JAMES D. KIMBALL.