

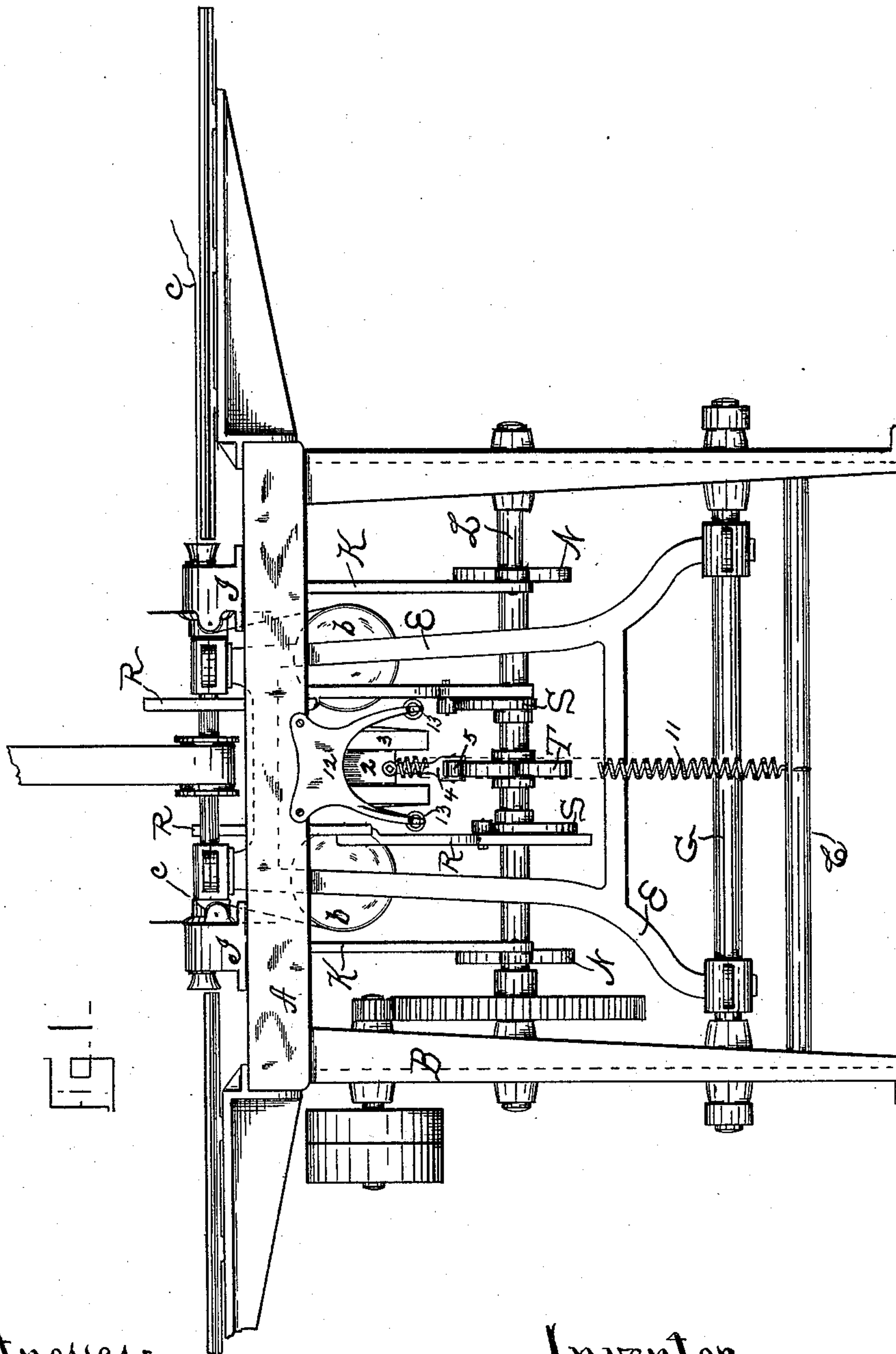
(No Model.)

4 Sheets—Sheet 1.

J. H. MORRISON.  
AUTOMATIC SAWING OFF MACHINE.

No. 351,518.

Patented Oct. 26, 1886.



Witnesses:

Frank K. Allen.

Laurence F. Stanley.

Inventor

J. Henry Morrison

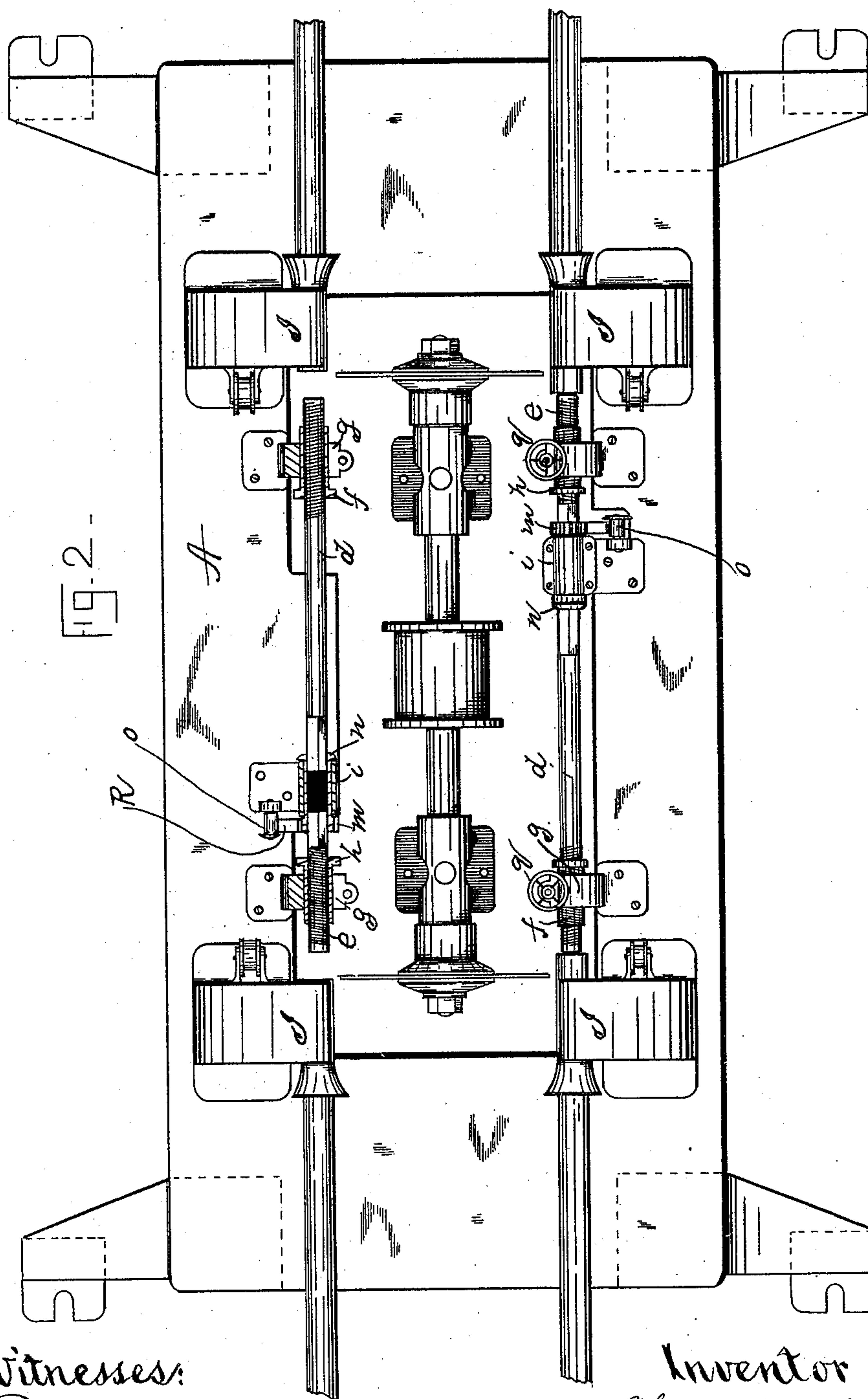
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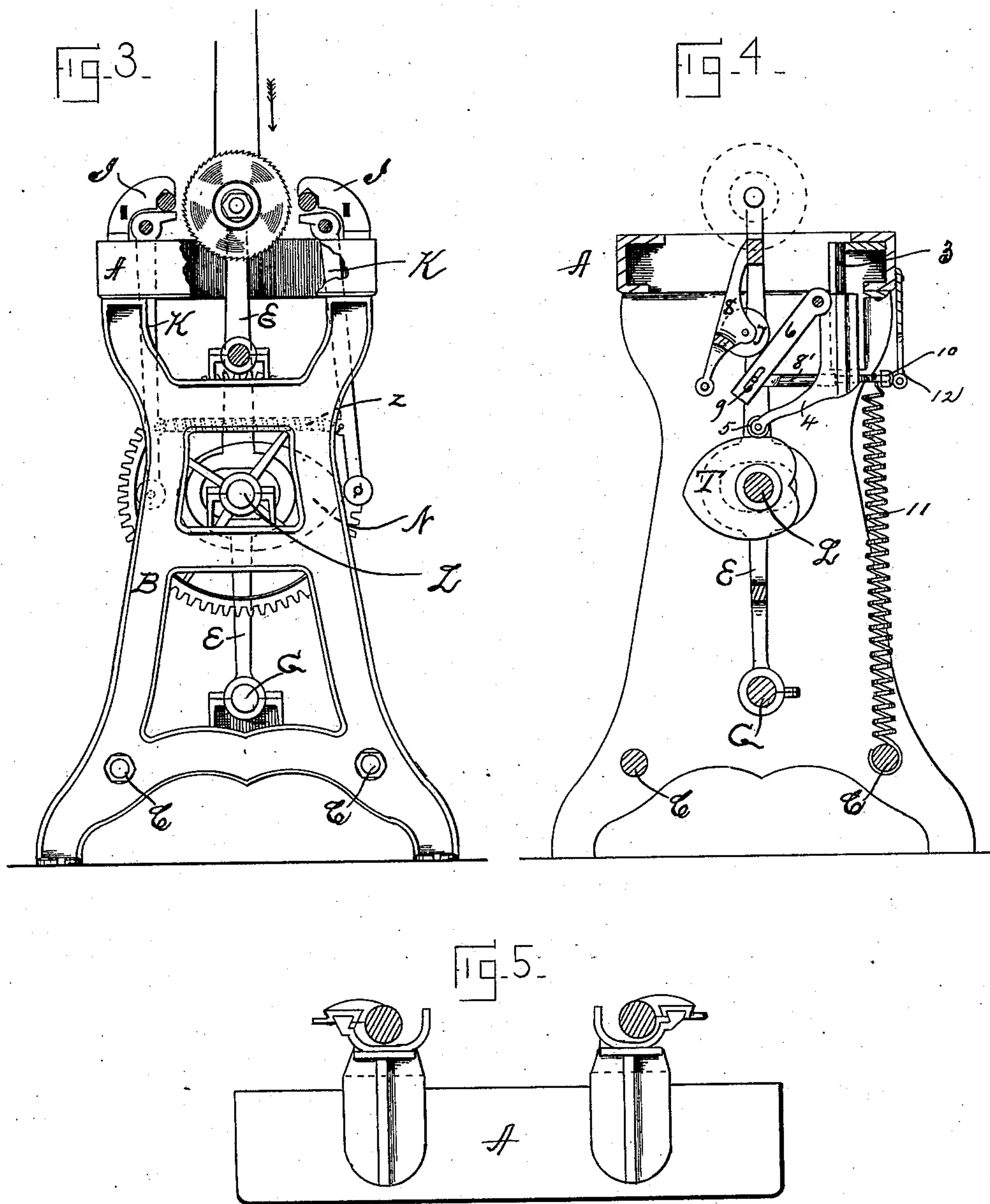
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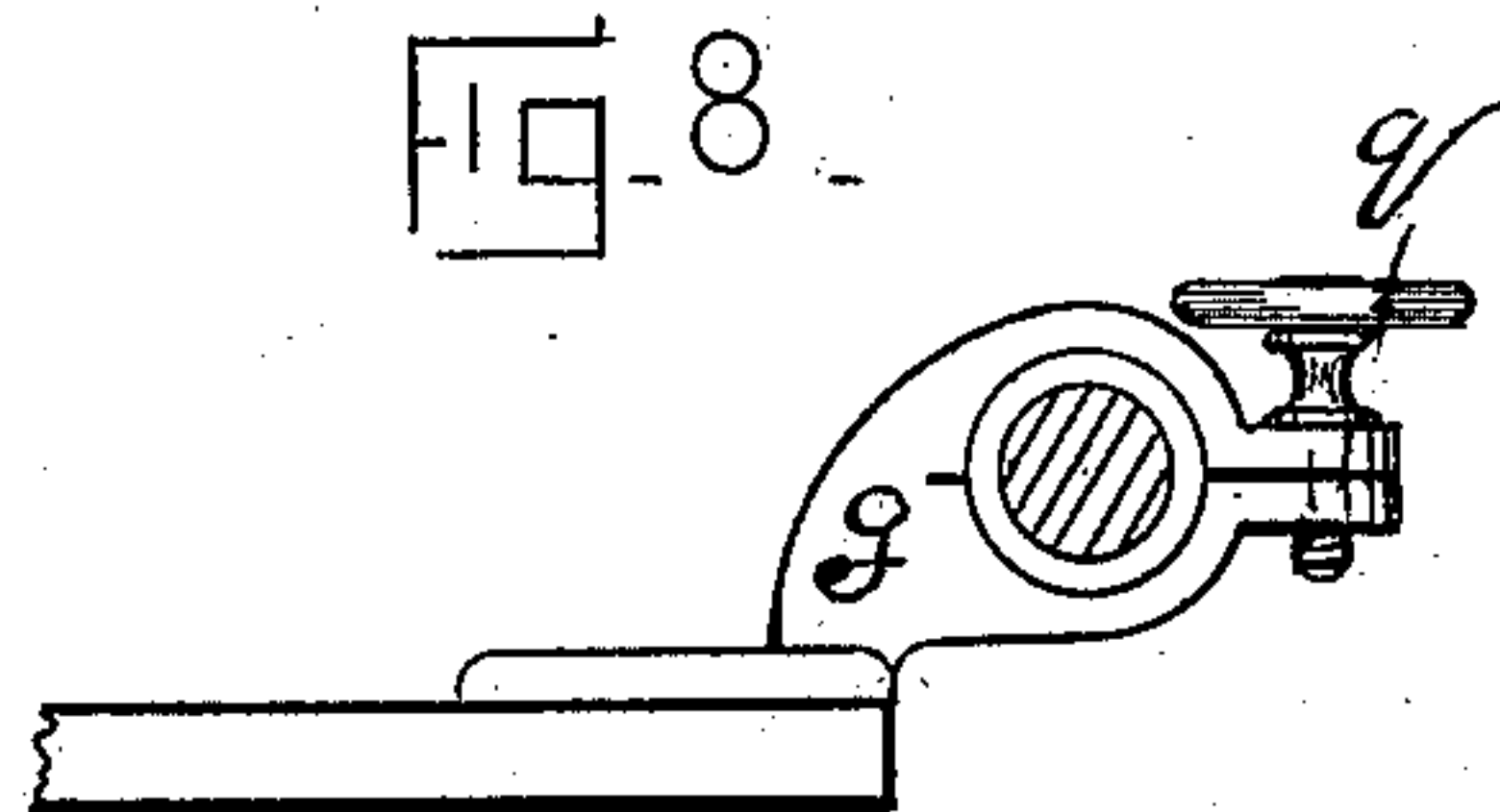
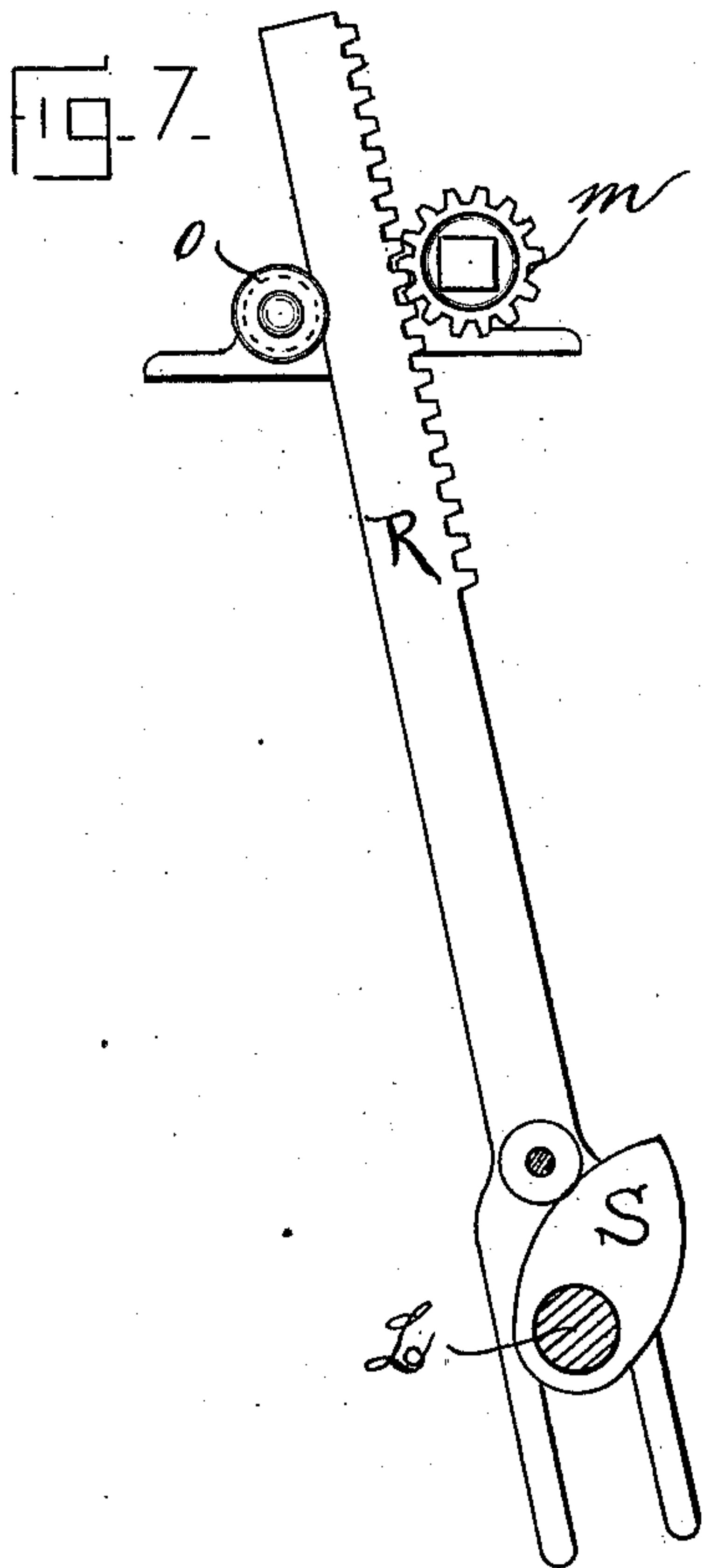
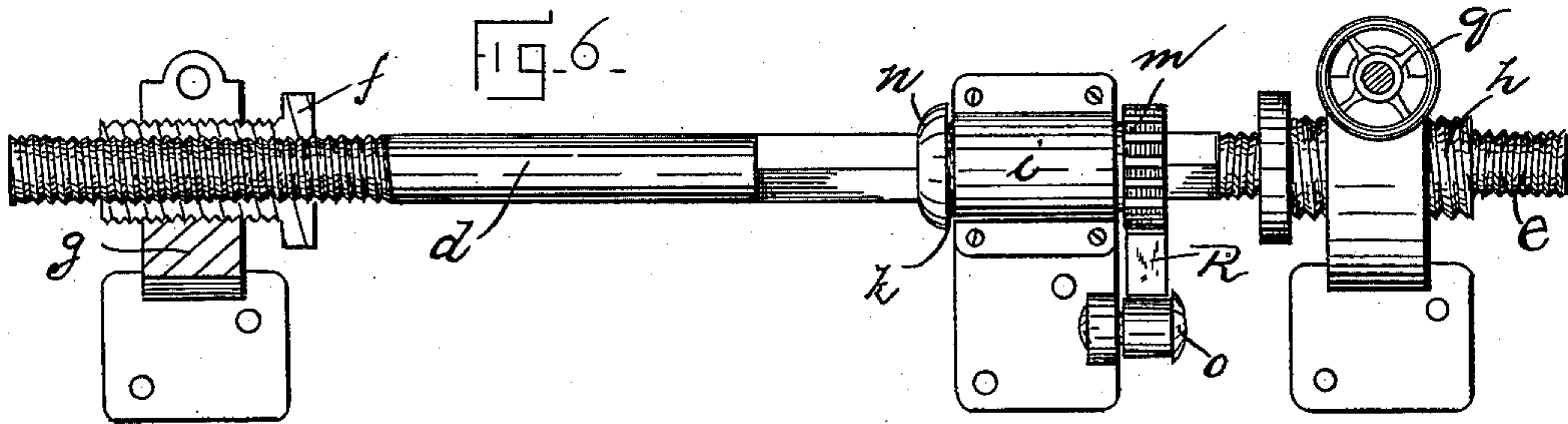
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Frank H. Allen -  
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Inventor  
J. Henry Morrison



# UNITED STATES PATENT OFFICE.

J. HENRY MORRISON, OF NORWICH, CONNECTICUT, ASSIGNOR TO THE ALLEN SPOOL AND PRINTING COMPANY, OF SAME PLACE.

## AUTOMATIC SAWING-OFF MACHINE.

SPECIFICATION forming part of Letters Patent No. 351,518, dated October 26, 1886.

Application filed November 20, 1885. Serial No. 183,381. (No model.)

*To all whom it may concern:*

Be it known that I, J. HENRY MORRISON, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Automatic Sawing-Off Machines, which improvements are fully set forth and described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of said improved machine, with the gages for limiting the forward movement of the rounded rods removed, but showing the racks which operate said gages, as hereinafter described and shown. Fig. 2 is a top or plan view of the bed of the machine, considerably enlarged, showing in their respective places the vibrating saw-arbor, the rounded wooden rods entering the machine to be sawed, and the mechanism employed to automatically stop said rods, and thus gage the length of the sections cut off. Fig. 3 is a view of Fig. 1 from the left-hand end, with driving-pulleys and feed-troughs removed, and is intended to illustrate the vibrating saw-arbor frame, the jaws by means of which the rounded wooden rods are held while the saw is in the act of completing a cut, and the cam which actuates the movable jaws. Fig. 4 is a cross-section of Fig. 1 on line *x x*, and illustrates the peculiar mechanism by which the vibrating frame *E* is moved backward and forward, and also shows a means for quickly altering the length of stroke of said vibrating frame. Fig. 5 is an enlarged endwise view of the bed *A*, showing the construction of the feed-troughs and the follower which forces the wooden rods forward in said trough. In order to fully explain the construction and operation of the gaging mechanism above referred to, I have shown in Fig. 6 an enlarged detached top view of said mechanism, the screw-adjusting advice at one end being shown in section, and in Fig. 7 I have illustrated the rack and pinion which control and operate said gaging mechanism. Fig. 8 is an endwise view of the split nuts, in which the adjusting-thimble is screwed, and shows the means made use of to clamp said thimble in a given position after the proper adjustment has been attained.

The machine, in which are embodied the several improvements hereinafter described as new, belongs to that class by means of which wooden rods previously rounded are automatically moved to a desired place and a section of said rods sawed off, the sections thus severed being used as blanks from which spools, braid-rolls, and other analogous articles may be formed.

My purpose is to improve materially the gaging devices, the mechanism which holds the rounded rods, and the mechanism which moves the vibrating saw-arbor.

Referring to the annexed drawings, the letter *A* represents a table or bed secured to and supported by legs *B B*, said legs being connected and stiffened by cross ties or girders *C*. A considerable portion of bed *A* is cut away, and within the opening thus formed a frame, *E*, carrying a saw-arbor, *F*, is located, the lower end of said frame being journaled on a shaft, *G*, hung in the legs *B B*. The upper end of the saw-arbor frame thus journaled may be swung forward and backward to bring the saws into engagement with the sticks to be cut, the principle thus far described being substantially identical with that shown and described in Patent No. 307,736, issued to myself and Edwin Allen, November 11, 1884. In this present case, however, I have provided a saw on each end of the vibrating arbor, and have arranged to have two sticks enter from each end of the machine, one on each side of each saw. (See Fig. 2.) The troughs in which the sticks lie and the followers which force said sticks forward are the same as those described in the Patent 307,736, above referred to.

The spools or barrels *b*, containing the springs which operate cords *c*, are located in this newly-improved machine immediately under the bed *A*, instead of at the bottom of the legs *B B*, as in said former patent; but their action is precisely the same and needs no further explanation here.

At the four points on bed *A* opposite the delivery-end of the feed-troughs are metallic blocks *I*, whose upper end is considerably overhung, (inward,) and is provided with an angular cut to form a rigid holding-jaw, as will be understood by reference to Fig. 3.



Immediately below said fixed jaw is hinged a right-angular lever, K, whose shorter arm forms a movable jaw to coact with said fixed jaw, to hold the rounded stick firmly while the saw advances to make a cut. The longer arm of lever K reaches downward to a point opposite to a shaft, L, arranged to rotate in suitable bearings in legs B B. On this shaft are cams N N, which as they rotate force the free ends of the long arms of levers K outward, thereby opening the jaws and releasing the wooden rods. (See jaw at right-hand side of Fig. 3.) While the cams hold the jaws open for an instant, the rods are forced forward by their respective followers, and as the cams continue their round the jaws are again closed by a strong spiral spring, z, which connects said long arms near their free ends. The gages proper, which limit the forward movement of the wooden rods, consist of right and left hand screw-shafts *d e*. Shaft *d* is provided with a right-hand thread, which travels in a thimble, *f*, whose outer surface is cut with a left-hand thread, and is screwed into a split nut, *g*, secured to bed A. The companion shaft *e* and thimble *h* are provided, respectively, with left and right threads, being in this respect the opposites of shaft *d* and thimble *f*, just described.

The inner end of shafts *d e* is squared for a considerable distance and enters a square central hole in an elongated collar, *k*, which collar is journaled in a box, *i*, secured to bed A. One end of collar *k* carries a gear or pinion, *m*, and the opposite end a flanged head, *n*, thus preventing any longitudinal movement of said collar.

R represents a toothed rack, which passes upward through bed A and engages pinion *m*, being held in engagement with said pinion by a pulley, *o*, located in the rear of said rack. (See Figs. 2 and 7.) Rack R is forced upward at the proper instant by a cam, S, on shaft L, which engages an anti-frictional roller, *p*, on said rack. This upward movement of the rack should occur just at the instant when the holding-jaws release the rounded wooden stick and allow it to shoot forward against the gages. Collar *k* is now rotated by the upward movement of rack R, thus rotating the shafts *d e*, which, traveling in their threaded supports, move slightly outward, forcing the rounded sticks before them to a desired point, where they (the sticks) are grasped by the holding-jaws and held until after the next cut is completed, the gages meanwhile receding as the rack returns to its lowered position.

When it is necessary to alter the length of the blanks which are to be cut off from the rounded sticks, the hand-wheels *q*, Figs. 2 and 3, are turned to loosen the clamps which retain the threaded thimbles *f h*, and said thimbles are then rotated slightly either to the right or left hand, as the case may be, in order to vary the starting-point of the gage-shafts *d e*. After thus adjusting the gages the hand-wheels *q* are again screwed home.

Having now described the holding-jaws and their operating-cams and the stop-gages and their operating mechanism, I will proceed to describe my new method of moving the saw-arbor frame back and forth at stated intervals of time and with a strong and regular movement; also the means provided to vary quickly the length of stroke.

Referring to Fig. 4, 2 represents a carriage which is arranged to slide vertically in grooves in a frame, 3, secured to the bed A. The lower portion of carriage 2 is formed with an extension, 4, which has pivoted in its free end a roller or pulley, 5. This pulley 5 rests on cam T, carried by shaft L, and it will be understood that at each revolution of cam T the carriage 2 will raise and lower in its bearings or ways. Pivoted to or in the upper end of carriage 2 is a bar, 6, forming an inclined plane, on which travels a pulley, 7, said pulley 7 being pivoted in a frame, 8, formed as an integral part of the saw-arbor frame, or secured rigidly thereto. The inclined bar 6 is supported at its lower end by a rod, 8', one end of which enters a hole in carriage 2, the other end being flattened and provided with trunnions, which engage slots 9 in bar 6. On the opposite side of carriage 2, and in longitudinal alignment with rod 8', is a thumb or set screw, 10. When it is desired to vary the pitch of the inclined bar 6, this set-screw is turned outward or inward, as the case may be. If turned inward, the saw-arbor frame is caused to travel farther as it oscillates, and if turned outward a shorter swing of said arbor-frame is attained.

In order to hold the pulley 5 firmly on cam T, I have attached to the set-screw 10 a strong spiral spring, I I, whose other end is secured to one of the girders C. This spring acts with a constant downward tension. It will be evident that some means should also be provided to hold pulley 7 in constant engagement with the inclined bar 6, and to meet this requirement I have connected the lower forked ends of frame 8 with a corresponding rigid frame, 12, by spiral springs, which straddle the carriage 2 and its operating mechanism, (see 13, Fig. 1.) As cam T revolves the inclined bar 6 is forced upward, crowding frame E to the left hand, as illustrated in Fig. 4, and as said cam continues its round and spring 11 brings bar 6 downward again said frame E is gradually brought back by springs 13 and swings to the right hand to make a cut on that side, this vibratory movement being repeated at each revolution of cam T.

My complete machine is timed as follows: While the holding-jaws I K are open the wooden rods slip forward until they abut the gage-screws, when the jaws close and clasp said rods. The gage-screws are then rotated by racks R, and, as they travel slightly lengthwise, force the rods outward to a desired position ready to be severed. The frame E now swings forward, bringing with it the saws, which cut off a section of the wooden rods and recede.



During the operation of cutting off two blanks on one side the wooden rods on the opposite side are being moved inward and gaged and clamped ready for the saws on their return-stroke, so that no time is wasted. The cut-off sections fall to the floor or into suitable chutes and are carried to proper bins or other receptacles.

I claim as new and wish to secure by Letters Patent—

1. In combination with the oscillating frame E, having secured thereto the frame 8, carrying pulley 7, a frame supported in suitable ways and capable of vertical movement, as described, means, substantially as described, for imparting a vertical reciprocating movement to said frame, a spring tension device for holding said frame in engagement with its operating mechanism, and an inclined plane hinged to said vertically-moving frame, adapted to engage pulley 7, and capable of adjustment to vary the inclination or angle, as described, and for the object specified.

2. The shaft G, the oscillating frame E, carrying a saw-arbor and saws, as described, and having secured thereto frame 8, carrying pulley 7, a frame capable of vertical reciprocating movement, and provided with an inclined plane which engages pulley 7, means, substantially as described, for moving said inclined plane up and down, and a spring tension device which acts to hold pulley 7 in engagement with said inclined plane, all being combined substantially as herein described, and for the purpose specified.

3. In combination with means, substantially as herein described, for feeding, holding, and

sawing wooden rods, gage-rods *d e*, located between and in longitudinal alignment with the holding mechanisms, and supported at one end in threaded bearings, as described, a pinion having an angular central opening adapted to receive the correspondingly-shaped inner ends of said gage-rods, a rack adapted to engage said pinion, as described, and means, substantially as specified, for moving said rack longitudinally, for the object set forth.

4. In combination with means, substantially as described, for feeding, holding, and sawing wooden rods, gage-rods located between and in longitudinal alignment with the holding mechanism, and supported in threaded thimbles having independent means for longitudinal adjustment, as described, and means, as described, consisting of a pinion, *m*, rack R, and cam S, for operating said gage-rods, all being as and for the objects specified.

5. In combination with means, substantially as described, for feeding and holding wooden rods, pinion-gear *m*, having an elongated hub with square central hole, gage-rods *d e*, having one end squared to enter said square central hole, and the other end threaded, as described, stationary thimbles *f h*, in which said threaded rods may rotate and travel longitudinally, rack R, arranged to engage said pinion-gear, and a cam, S, on the driving-shaft, which at each revolution of said shaft engages and raises said rack, substantially as and for the the object set forth.

J. HENRY MORRISON.

Witnesses:

LAURENCE F. STANLEY,  
FRANK H. ALLEN.