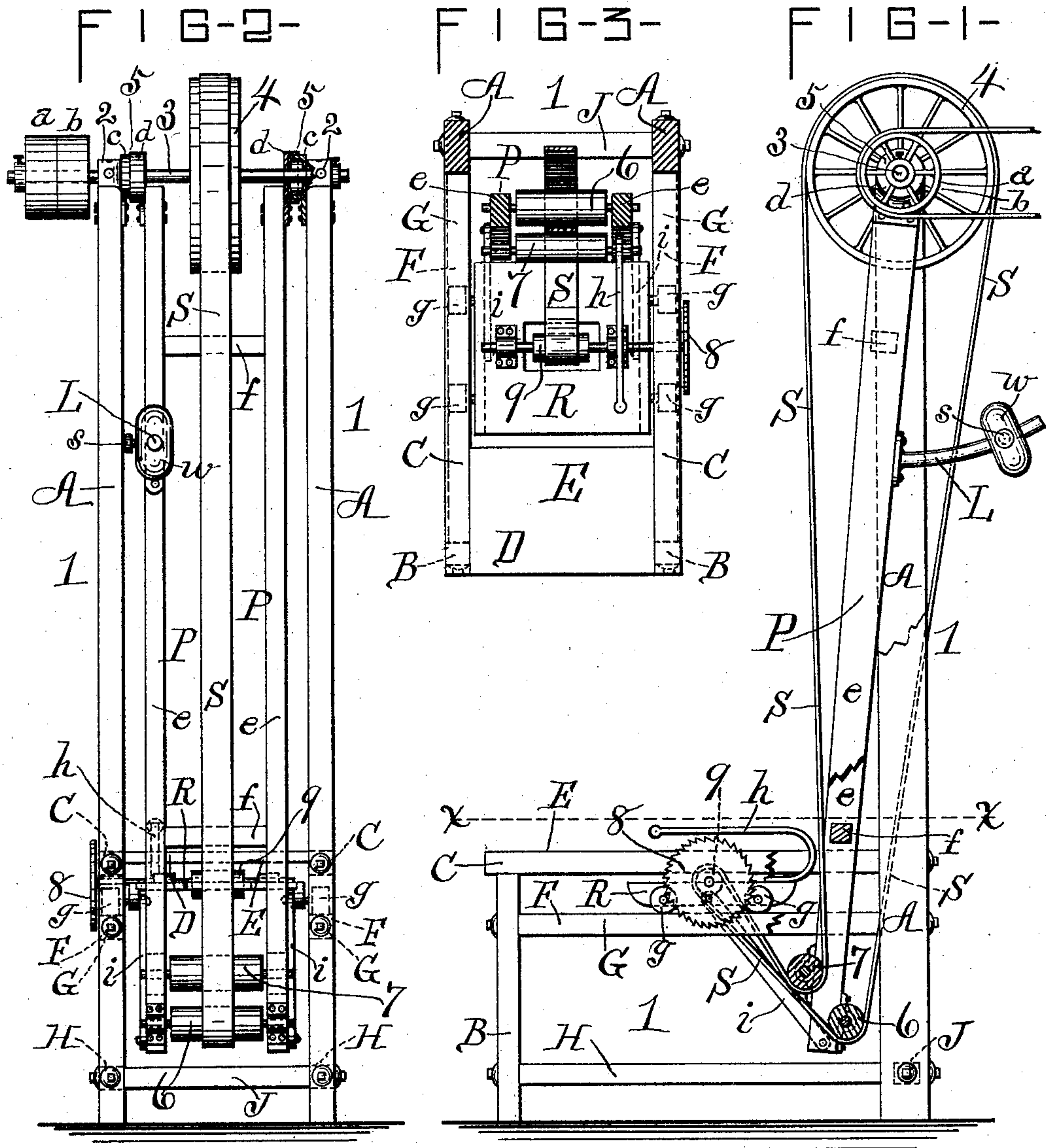


(No Model.)

J. H. RAYMOND.
SAWING MACHINE.

No. 437,138.

Patented Sept. 20, 1890.



Witnesses—

Morgan A. Dunn.
Part H. Vickers

Inventor—

John H. Raymond.
By his Attorney—
Wm. C. Raymond.

UNITED STATES PATENT OFFICE.

JOHN H. RAYMOND, OF SYRACUSE, NEW YORK.

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 437,138, dated September 23, 1890.

Application filed December 2, 1889. Serial No. 332,232. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. RAYMOND, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Sawing-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 appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved sawing-machine with portions of the frame, &c., shown broken away for better illustration; Fig. 2, a rear elevation of same; and Fig. 3, a top plan view of the base portion of my machine, taken upon line *x x*, Fig. 1.

Similar letters and figures of reference indicate corresponding parts throughout the several views.

My invention relates to that class or species of machines designed for the sawing of boards or other lumber into desired lengths, and which saw and its supporting-carriage is adapted to travel forward and rearward upon a trackway.

The object of my invention is to produce a sawing-machine of the class described that is of comparatively simple construction, and durable and effective, and allowing of ready and correct adjustment of its operative parts, which from its formation will permit of ready and easy travel of the saw-carriage and its circular saw forwardly with but little, if any, exertion upon the part of the operator, no matter how thick or hard the board may be upon which the saw is to operate, which carriage and saw will automatically travel rearwardly such distance as may be desired, assuming its normal position and ready for forward movement, as desired, and in certain improved details of construction, imparting increased effectiveness, ease of operation, and strength and durability to the machine.

My invention consists, essentially, in the several novel features of construction, operation, adaptation, and combination of parts hereinafter described, and which are specifically enumerated in the several clauses of claim hereunto annexed.

It is constructed as follows: 1 is the stationary frame of my machine, consisting of the rear vertical standards A A, of requisite elevation, which are parallel and situated a suitable distance apart from each other and leaving a passage-way between them, front vertical posts B B, parallel horizontal stringers C C, extending from the top of the front posts to the rear standards, as shown, and constituting at their forward portion, in combination with the attached slab D, the table E. At a suitable distance directly underneath the stringers C C are rails or ways F F, disposed horizontally and parallel to each other and extending from the posts B B to the standards A A and conjointly forming the trackway G, and H H and J are tie-pieces, preferably utilized by me to give additional stability and durability to the frame-work 1.

At the top of the rear standards A A of the frame I respectively secure stationary hangers 2 2, having adjustable pivotal boxes therein of ordinary construction, in which is mounted the transverse horizontal driving-shaft 3, that is provided about midway the parallel standards A A with a large drive-pulley 4 and at its projecting end with tight and loose pulleys *a b*.

Integrally with the hangers 2 2 (and secured to the adjacent standard) are oscillatory hangers 5 5, comprising, respectively, a stationary plate *c*, having an annular flange at its upper portion and a companion plate *d* of similar construction, but having its annular flanged portion of sufficiently greater circumference as to adapt its annular flange to inclose or overlap the annular flange projecting laterally from the immovable plate *c*, and whereby the plate *d* is adapted to rotate or oscillate. Centrally of the annular flanged portions of the plates *c d* of the respective hangers 5 there is an opening for the passage of the driving-shaft 3 and of such contour as will permit of the free rotation of the said shaft at all times. The hangers are provided with the customary apertures for the insertion of oil or other lubricants.

P is a pendulum or pendulum-frame pivotally hung in the passage-way lying between the adjacent standards A A of the frame 1 and adapted to oscillate toward and from the

operator standing at front of the table E. This pendulum-frame consists of the vertical parallel bars *e e*, disposed a suitable distance apart and longitudinally extending from the top of the standards A to within a short distance of their base, the said bars *e e* being retained and braced in proper relative position by cross-pieces *f f*, secured thereto transversely.

The afore-described pendulum P is oscillatorily suspended from the standards A A by the attachment of its bars *e e* at their top portion to the respective flat pendent portions of the oscillatory or rotary plates *d* of the oscillatory hangers 5 5.

At or near the bottom of the pendulum P, journaled in bearings upon the rear face of the respective bars *e e* and standing between the same, is a horizontal pulley 6, and slightly above the aforesaid pulley, but journaled in bearings upon the forward face of the bars *e e*, there is a pulley 7, horizontally mounted between the said bars and preferably of a size corresponding to that of the pulley 6.

R is the saw-carriage, constructed in the usual manner, provided with customary boxes, arbor, and a circular saw 8, and mounted on rollers *g g*, adapted to longitudinal travel upon the trackway G. This carriage is provided at its top with the usual opening to permit of the free rotation of the pulley 9 on the saw-arbor, and *h* is a curvilinear handle secured to the aforesaid carriage, its free extremity projecting forwardly, as shown.

The pendulum P is connected with the saw-carriage by means of parallel connecting-bars *i i*, respectively disposed at the outer sides of the bars *e e* of the pendulum and pivotally connected at their rear ends to the said bars *e e* at or about their lower portion and pivotally connected at their forward ends to a side of the saw-carriage diametrically beneath the axis of the saw-arbor, and usually to the interior of the carriage-frame, as shown.

S is the driving-belt, said endless belt passing around the drive-pulley 4 down to and around the pulley 7, thence to and around pulley 9 on saw-arbor, thence around the pulley 6, and thence to the starting-point, hereinbefore stated.

The exact points of connection of the parallel connecting-bars *i i* to the bars *e e* of the pendulum-frame is accurately determined by experimental tests, continued until it is definitely settled that the location of the pivotal attachment of the connecting-bars *i i* to the pendulum-frame is such as to insure the belts being equally as taut whatever may be the position of the saw-carriage (and mounted pulley) upon its trackway G, and thus obviating or avoiding undue tightness or slack of the driving-belt under every condition.

A few trials at the outset will demonstrate the correct pivotal connection requisite for the satisfactory working of the parts.

L designates a horizontally-disposed lever (or arm) projecting rearwardly from the pen-

dulum P and secured to one of the bars *e* thereof at its upper portion, and provided with a weight *w*, suitably perforated and adapted to slide thereon and retained in position at any desired point of the lever by means of a set-screw *s*. The object or function of this weighted lever is to regulate the thrust or travel of the saw (and connected parts) rearward, the adjusting of the weight nearer to the pendulum increasing the stroke of the pendulum's oscillation or travel rearward and conjointly the rearward travel of the carriage and its saw, while the adjusting of the weight farther from the pendulum produces a contrary effect. Additionally, the weight-provided lever tends to a certain degree in assisting the forward propulsion of the saw-carriage (and supported saw) when drawn forwardly along its trackway by the arm of the operator pulling upon the operative handle of the said carriage, thereby materially assisting the operator, the severe strain upon the operator's muscles of his arm and body incident to the manipulation of the commonly-constructed form of machines being obviated and the progress of the saw through a board or boards being of comparative ease. Moreover, there being no upward straining or lifting of the saw-carriage, as is more or less the case with the common forms of machines, a direct and easy forward movement of same is assured, for, as will readily be observed, the connection of the traveling carriage with the pendulum is such as obviates a lifting strain upon the operator, all that is entailed being a forward direct pull upon the carriage-handle by the operator, which forward movement of the carriage is assisted by the weighted pendulum and its connection with the carriage. The automatic rearward movement of the pendulum and its pivotally-connected saw-carriage may readily be adjusted or gaged by the operator to the width of the board or other timber which it is expedient the saw should clear after a cut or successive cuts merely by the proper adjusting of the movable weight upon the lever connected to the pendulum.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a sawing-machine, of the parallel vertical rear standards extending upward some distance and disposed apart and creating a longitudinal passage-way between them, vertical short posts standing forwardly of the aforesaid rear standards and in line therewith, horizontal stringers extending from said standards to the forward posts and constituting the machine-table, horizontal rails erected beneath the said stringers a suitable distance therefrom and forming a trackway, a horizontal driving-shaft journaled at the upper extremities of the rear standards, a drive-pulley keyed to said shaft midway the said standards, a vertically-disposed swinging frame or pendulum pivotally

suspended from the top portion of the parallel rear standards and adapted to oscillate in the passage-way between them, said swinging frame comprising two upright parallel bars disposed a distance apart and retained lineally with each other, a lateral lever or stem rigidly secured to one of the elongated upright bars of the swinging frame and provided with an adjustable weight thereon, a horizontal pulley journaled to the lower extremity of the swinging frame, a similar pulley journaled adjacent thereto on a higher plane, a saw-carriage provided with an arbor, a pulley and a circular saw secured to said arbor, and an operating handle connected to the carriage-body, the said saw-carriage being adapted to longitudinal travel on the trackway of the machine-bed by means of suitable carrying-rollers, parallel inclined bars disposed, respectively, at opposite sides of the swinging frame at its lower extremity and pivotally connected thereto and pivotally connected to the saw-carriage body at a point beneath the saw-arbor, and an endless driving-belt passing around the drive-pulley at the top of the rear standards down to and around a pulley on the lower portion of the swinging frame, then up and around the pulley on the saw-carriage, and thence downwardly and around the bottom pulley on the lower extremity of the swinging frame, and from thence upwardly to the starting-point—the drive-pulley—all said parts constructed and operating together substantially as described, and for the purposes specified.

2. The combination, in a sawing-machine, of the parallel rear vertical standards A A, disposed apart from each other and whose upper extremities terminate a suitable distance above the machine-bed, parallel low posts B B, standing apart from each other forwardly of the standards A A at a suitable distance therefrom and in line therewith, horizontal stringers C C, connected, respectively, with a front post and a rear standard, said stringers, conjointly with a front slab D, forming the table E of the machine, horizontal ways or rails F F, lying beneath and adjacent to the stringers C C and constituting a trackway G, a transverse horizontal driving-shaft 3, mounted in stationary hangers 2 2, secured to the upper extremities of the rear standards A A, a central drive-pulley 4, keyed to said driving-shaft, tight and loose pulleys *a b* at a projecting end of aforesaid shaft, oscillatory hangers 5 5, secured to the upper portion of the standards A A, adjacent to or integral with the stationary hangers, the said oscillatory hangers comprising, respectively, a stationary plate *c*, provided with a lateral annular flange or collar, and a companion oscillatory plate *d*, provided with a lateral annular flange or collar of sufficient diameter to circumferentially inclose the annular flange of the plate *c* of the oscillatory hanger and rotate thereon, a central perforation in the plates *c d*, admitting of the free rotation therein of

the driving-shaft 3, extending through said perforations, the pendulum or swinging frame P, comprising the vertical parallel bars *e e*, placed a suitable distance apart and provided with one or more cross-pieces *f*, said swinging frame P being oscillatorily suspended within the passage-way between the standards A A by the rigid attachment of its bars *e e* at their upper extremities to the plates *d d* of the oscillatory hangers 5 5, secured to upper ends of the standards A A, a lateral lever or stem L, attached to and projecting rearwardly from a bar of the swinging frame P at a suitable distance above the bed of the machine, and provided with a weight *w*, adapted to slide thereon and be retained in desired position by a set-screw *s*, the horizontal pulley 6, journaled to the swinging frame at its lower extremity, a similar pulley 7, adjacent thereto and slightly above the pulley 6, a saw-carriage having an arbor, a pulley 9, and a circular saw 8, secured thereto, and a handle secured to the carriage, said carriage being mounted on rollers supported by the trackway G, parallel bars *i i*, disposed, respectively, at opposite sides of the swinging frame P and pivotally connected thereto at its lower extremity and inclining upward and pivotally secured to the saw-carriage diametrically below the arbor thereof, and an endless driving-belt S, passing around the drive-pulley 4, down to and around the pulley 7, thence up and around the pulley 9, thence downwardly and around the pulley 6, and upward and onward to its starting-point, all constructed and operating together substantially as described and shown, and for the purposes specified.

3. The combination, in a sawing-machine, of the parallel vertical standards A A, standing a suitable distance apart from each other and rising a distance above the bed of the machine, short posts B B a distance forwardly of the standards A A and in line therewith and slightly apart one from the other, stringers C C, extending, respectively, from a rear standard A to a front post B, a slab D, secured to the front portion thereof, supporting-rails F F, disposed, respectively, a distance below the stringers C C and parallel thereto and constituting a trackway G for a saw-carriage, a horizontally-disposed driving-shaft 3, journaled in bearings at the upper ends of the rear standards A A, a drive-pulley 4 upon said shaft midway the said standards, oscillatory hangers 5 5, attached to the upper portion of the standards A A and comprising, respectively, a stationary plate *c*, having laterally an annular flange and bolted to the inner face of the standard and a companion plate *d*, having laterally an annular flange adapted to circumferentially inclose the annular bearing-flange of the rigid plate *c* of the oscillatory hanger and rotate thereon, a circular aperture in the respective plates *c d*, loosely surrounding the driving-shaft 3, extending through the perforations, a carrying pendulum-frame P, consisting of vertical par-

parallel bars *e e*, disposed a distance apart and bracingly connected together, said pendulum-frame being suspended within the passage-way between the standards *A A* by means of the connection of the top ends of the bars *e e* to the oscillating or rotary plates *d d* of the respective oscillatory hangers *5 5*, a pulley 6 upon the lower end of the pendulum-frame *P* and a corresponding pulley 7 upon said frame disposed at a point above the pulley 6, the saw-carriage *R*, mounted upon rollers standing on the trackway *G* of the machine-bed, the pulley 9 and circular saw 8, secured to an arbor on said carriage, a manipulating-handle *h*, connected to the carriage direct, inclined bars *i i*, arranged, respectively, at

either side of the carriage-body and pendulum-frame and pivotally connected to the pendulum-frame *P* at its lower end and pivotally connected forwardly to the carriage *R*, diametrically beneath the axis of the saw-arbor, and an endless belt extending to and around the various pulleys 4, 7, 9, and 6, all constructed, arranged, and operating together substantially as specified. 25

In testimony whereof I affix my signature, in presence of two witnesses, this 18th day of September, 1889.

JOHN H. RAYMOND. [L. S.]

Witnesses:

WM. C. RAYMOND,
PARKE W. WICKS.