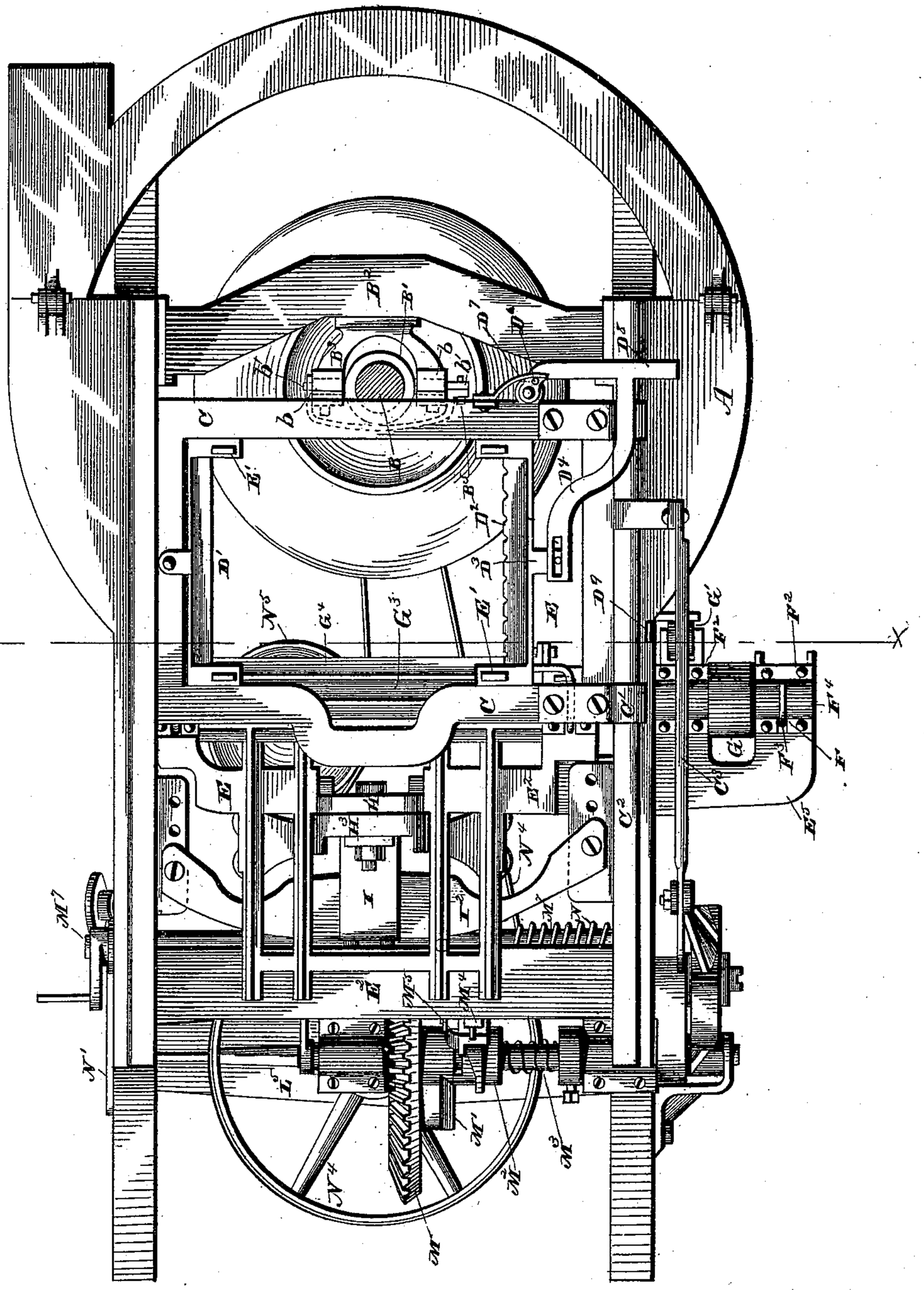
(No Model.) 5 Sheets—Sheet 1.

W. J. PERKINS.

SHINGLE SAWING MACHINE.

No. 355,710. Patented Jan. 11, 1887.



WITNESSES

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(No Model.)

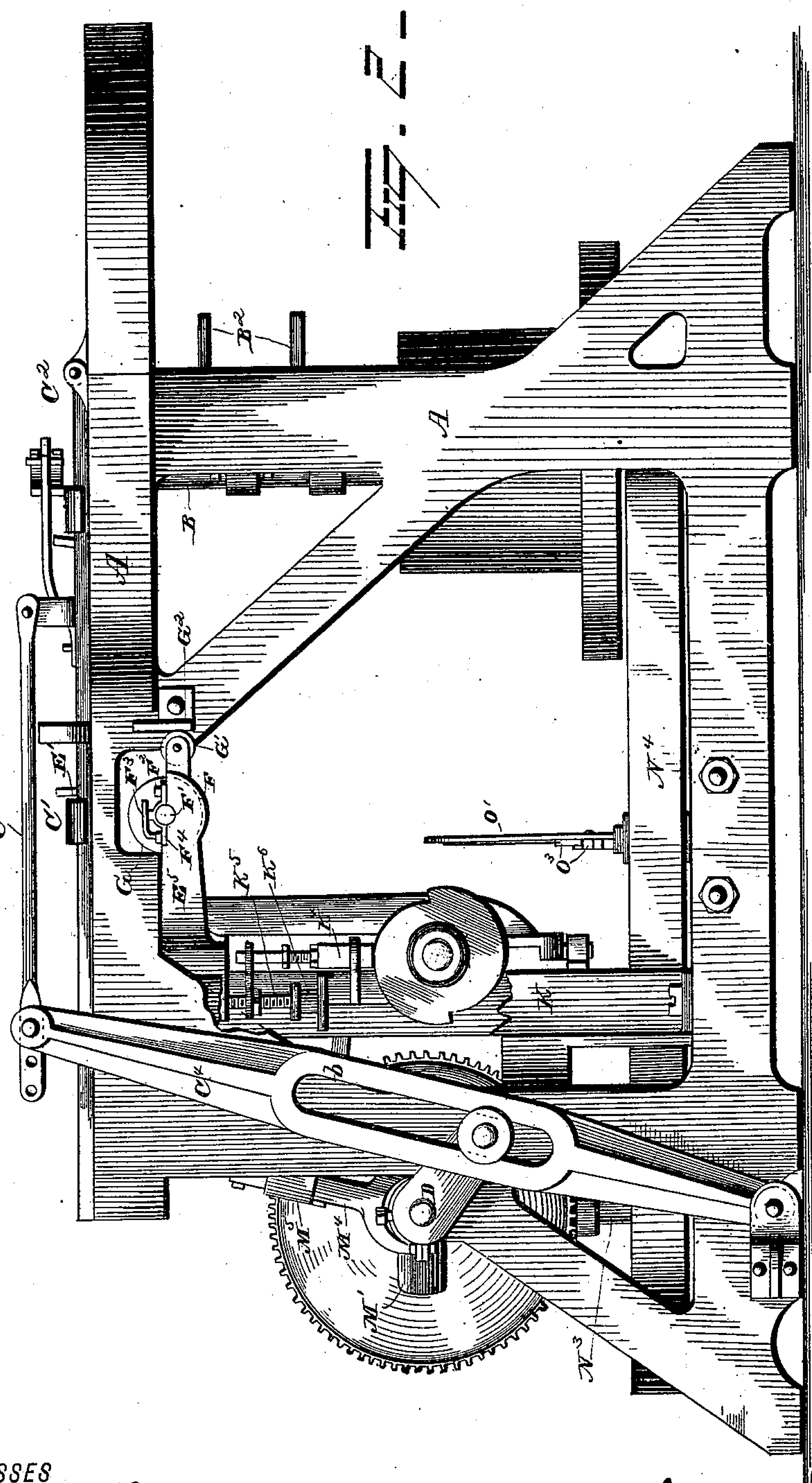
5 Sheets—Sheet 2.

W. J. PERKINS.

SHINGLE SAWING MACHINE.

No. 355,710.

Patented Jan. 11, 1887.



WITNESSES

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(No Model.) 5 Sheets—Sheet 3.

W. J. PERKINS.

SHINGLE SAWING MACHINE.

No. 355,710. Patented Jan. 11, 1887.

Fig. 3.

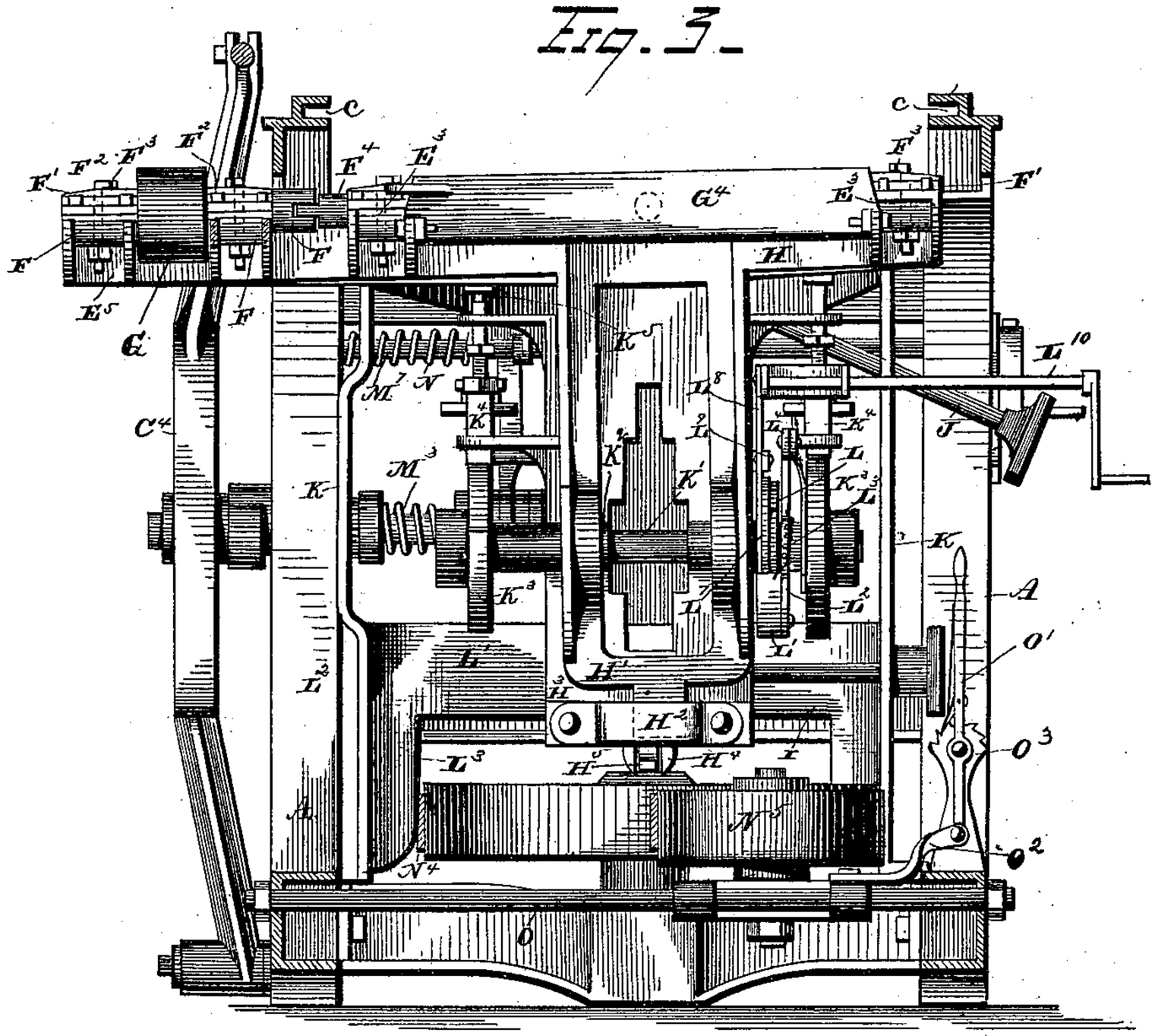
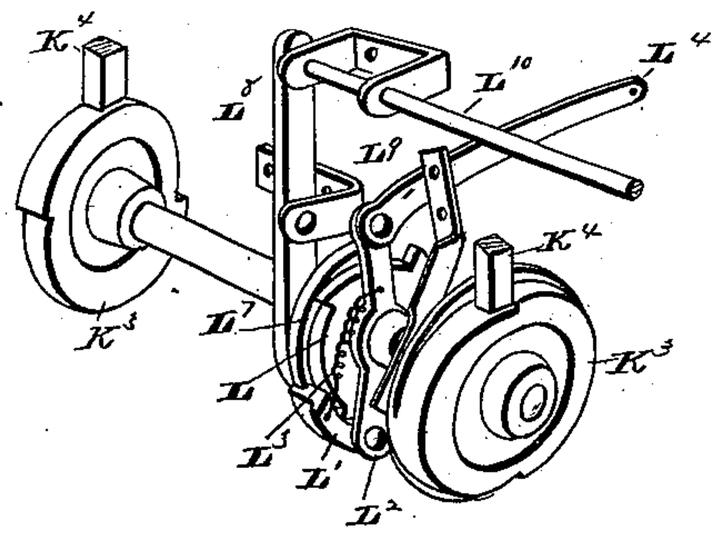


Fig. 5.



WITNESSES

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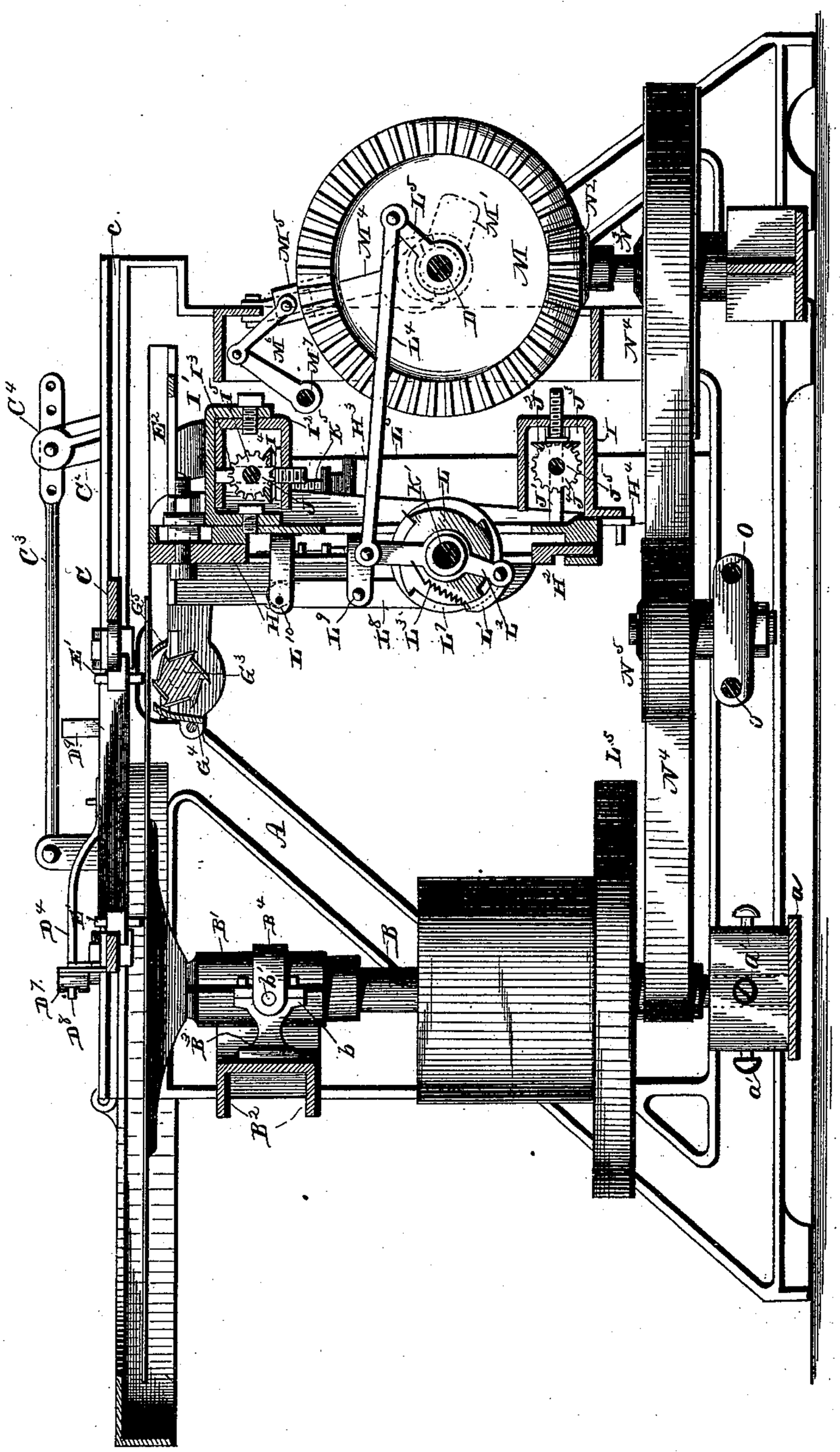
(No Model.) 5 Sheets—Sheet 4.

W. J. PERKINS.

SHINGLE SAWING MACHINE.

No. 355,710. Patented Jan. 11, 1887.



WITNESSES

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(No Model.) 5 Sheets—Sheet 5.

W. J. PERKINS.

SHINGLE SAWING MACHINE.

No. 355,710. Patented Jan. 11, 1887.

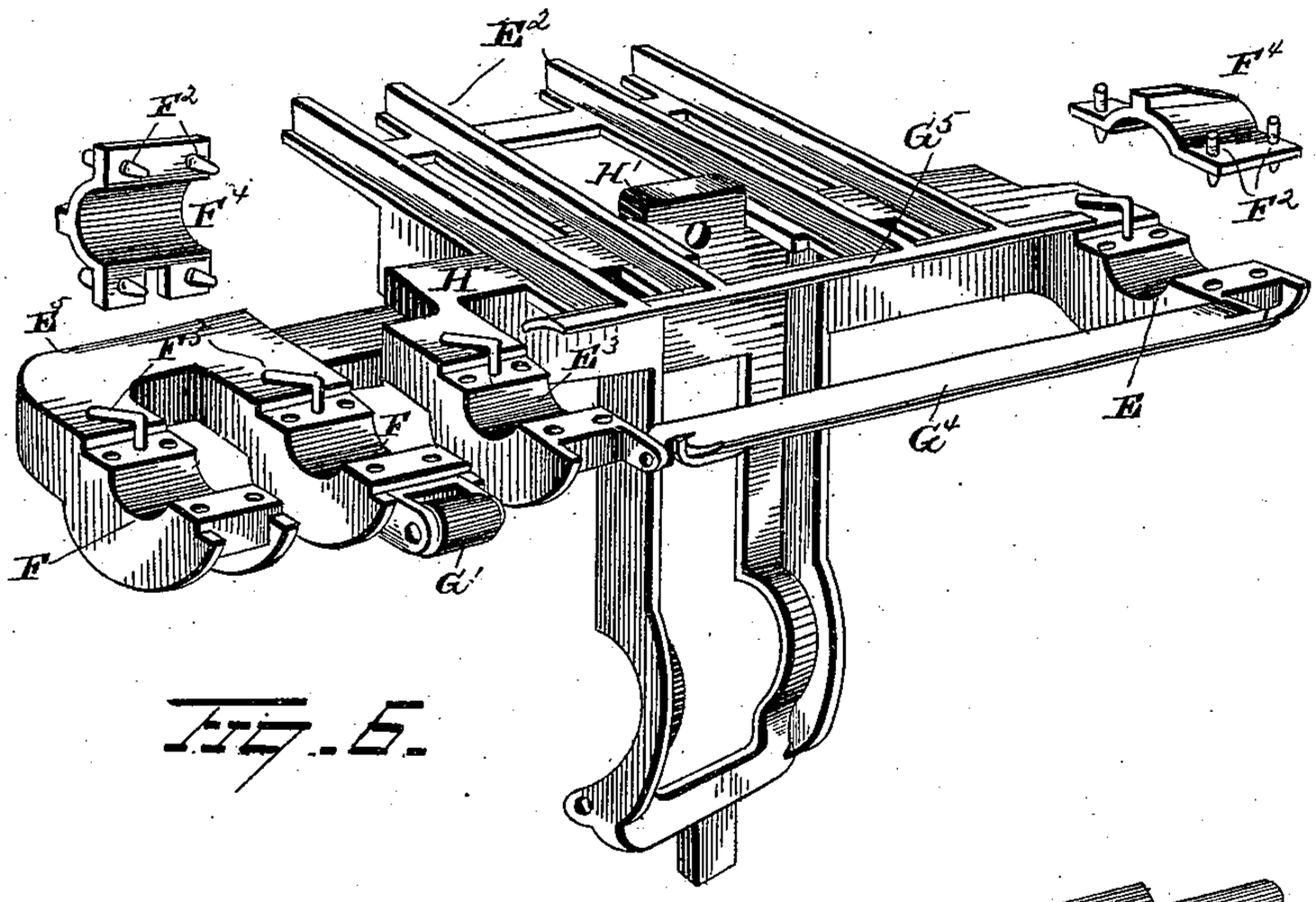


Fig. 6.

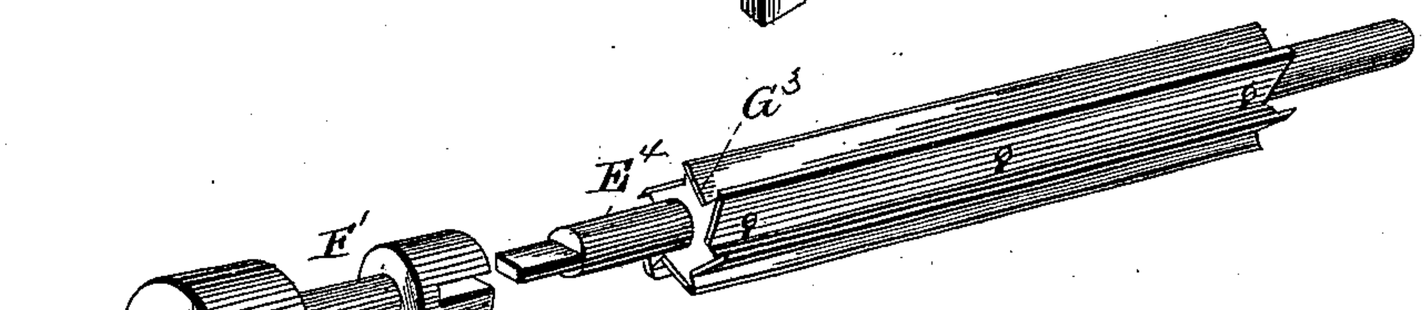


Fig. 7.

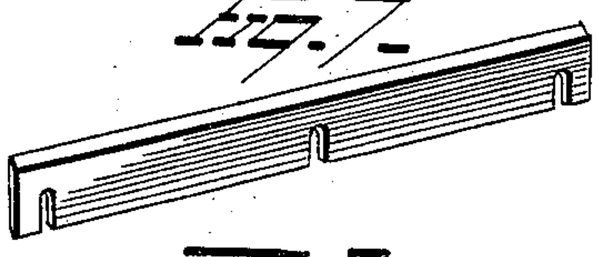


Fig. 8.

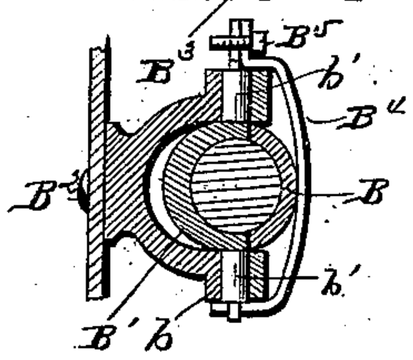
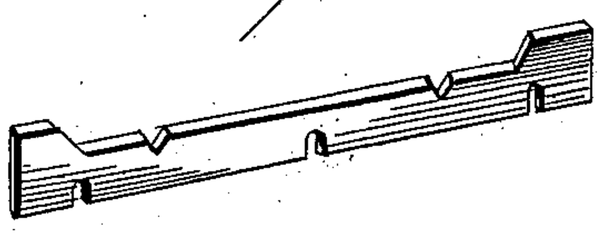


Fig. 9.



WITNESSES

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G. F. Downing.

INVENTOR

Willis J. Perkins

By Geo. H. Strong

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIS J. PERKINS, OF GRAND RAPIDS, MICHIGAN.

SHINGLE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 355,710, dated January 11, 1887.

Application filed November 15, 1884. Renewed August 17, 1885. Serial No. 174,644. (No model.)

To all whom it may concern:

Be it known that I, WILLIS J. PERKINS, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Shingle-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.

My invention relates to an improvement in shingle-machines, the object of the same being to provide a machine capable of sawing a shingle and planing one surface thereof at a single operation.

A further object of my invention is to provide a shingle sawing machine with an attachment for planing one face of the shingle and marking a coursing line or lines thereon.

A further object of my invention is to provide a shingle-sawing machine with an attachment for planing one face of the shingle and beveling the butt and equalizing the length of the shingle at one operation.

A further object of my invention is to provide simple devices for operating and controlling the movements of the tilt-table, also for lining the saw; and with these ends in view my invention consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my invention with arbor-head removed. Fig. 2 is a view in side elevation. Fig. 3 is a transverse vertical section on the line *x x*, looking toward the front. Fig. 4 is a longitudinal section of the machine. Fig. 5 is a detached view of the mechanism for operating the tilt-table. Fig. 6 is a detached view of the tilt-table and planer. Fig. 7 is a view of one form of planer-knife. Fig. 8 is a detached view of the saw-arbor bearing, and Fig. 9 is a detached view of another form of planer-knife.

A represents the frame of the machine, of any suitable shape and size, provided near its rear end with the cross-beam *a*, having a central bearing or step, *a'*, in which the lower end of the saw-arbor B rests. This saw-arbor is supported near its upper end below the saw in the two-part bearing B', pivotally secured to the bifurcated bracket B^3, which in turn is pivotally secured to the cross-girt B^2, at or near the center thereof. The bracket B^3 is provided at its outer ends with the boxes *b*, in which the trunnions *b'* of the two-part bearing B' are journaled. One of the trunnions *b'* projects beyond its bearing and is rounded, while the other trunnion projects beyond its bearing, said projecting portion having a plane face and a screw-threaded opening. The other portion of the box or bearing B' corresponds in shape and size to the pivoted portion of the box, and is held thereagainst by the bent spring B^4, one end of which is provided with an opening adapted to receive the rounded trunnion, while the opposite end is provided with an opening for the regulating-screw B^5, which latter enters the trunnion and holds the two parts of the box together. By tightening the screw the loose portion of the box is forced evenly against the shaft throughout its entire length by the predetermined tension of the spring, and hence all danger of binding or heating the journal is obviated.

The lower box, *a'*, is provided with four screws bearing against the lower end of the arbor, for the purpose of moving the lower end of the arbor forward or backward, or to the right and left. Thus it will be seen that when the lower end of the saw-arbor is moved the position of the saw and upper adjustable box is correspondingly changed, and hence I am enabled to change the lead of the saw as often as necessity demands.

The frame A is provided on its upper surface with the grooves *c*, in which the side edges of the carriage C rest and move, and the carriage is provided on one side with the fingers or guards C', which latter overlap the ridge or rail C^2 on the top of the frame on the movable dog side, and prevent the carriage from moving sidewise. The edge of the carriage on the stationary dog side, or the side away from the power that propels the carriage, never touches the side of the guide, and hence the power can be applied to the carriage on one side without binding the carriage or causing it to deviate the least from a straight line.

The carriage is operated by the pitman C^3, adjustably connected to the upper end of the vibrating lever C^4, the lower end of which is pivoted to the frame of the machine. This

lever is provided with an oblong slot, *b*, in which the crank of the shaft D moves. The dog D′ is rigidly secured to the carriage, while the other dog, D^2, is free to slide back and forth to accommodate itself to inequalities in the lengths of the bolts from which the shingles are cut to hold it while the shingle is being sawed and to release it to set the next shingle.

The movable dog D^2 is provided at its outer edge with the projection D^3, having a pin projecting therefrom, which latter enters and rests in the above slot of the bell-crank lever D^4. This bell-crank lever is pivoted by its short arm to the carriage, and is provided with projecting lugs D^6, against which rests the free end of the spring D^7. To the bell-crank lever is rigidly attached the arm D^8, adapted to come in contact with the stop D^9. The spring tends to hold the movable dog in contact with the bolt, and this tendency is overcome when the arm D^8 comes in contact with the stop D^9. When the carriage is in motion, this arm strikes the stop at or near the end of each stroke and releases the bolt and permits the latter to settle down on the tilt-table. As soon as the arm leaves the stop the spring again forces the movable dog in contact with the bolt and holds the latter securely in place.

From the foregoing it will be seen that the spring has but a limited motion, and consequently its tension against the dog is nearly the same whether the dogs be close together or widely separated.

Instead of employing the bell-crank, the spring-actuated or movable dog can be provided with an arm having a roller thereon, which latter at every stroke comes in contact with an inclined guide, which draws the movable dog away from the bolt.

The dogs D′ and D^2 are each provided at opposite ends with the downwardly-projecting stops E′, adapted to prevent the spalt from leaving the carriage while the latter is moving in either direction. It frequently happens that the spalt remaining in the carriage after the last shingle has been sawed is too small to be grasped by the dogs, and is consequently free to move from the carriage onto the saw. As the saw revolves at a high rate of speed, the spalt is liable to be thrown out with considerable force, and is consequently dangerous, but when the end stops are employed the spalt cannot leave the carriage and all danger therefrom is obviated.

E^2 is the tilt-table, provided at its inner end in this case with bearings E^3, in which the planer-shaft E^4 is journaled, but by omitting the bearing the device forms a perfect tilt-table for ordinary shingles. This tilt-table is also provided with a laterally-projecting portion, E^5, which latter terminates outside of the frame A, and is provided with boxes F, in which the outer section, F′, of the planer-shaft E^4 is journaled. These bearings are adapted to support the shafts, and are each provided with four recesses, into which the inner ends of the liner-screw F^2 rest, and with the bent spring-key F^3, adapted to be turned over the cap and hold the latter in position. Each cap F^4 is provided with four liner-screws registering with the recesses in the boxes and adapted to hold the caps away or out of contact with the boxes. The caps are also inclined on their top surfaces, and hence by forcing the spring-keys up said inclines, as shown in Fig. 3, the caps are held tightly in place and the shaft prevented from displacement. As the bearings wear the caps can be lowered to compensate for the wear.

The planer-shaft is preferably made in two parts coupled together, one of said parts, containing the planer-cylinder, being located between the sides of the frame to permit of its ready removal from the machine, while the other portion passes below one side of the upper portion of the frame, and is provided with a drive-pulley, G, by means of which motion is imparted thereto. The projecting portion E^5 of the tilt-table E^2 is provided with a roller, G′, adapted to bear against the guide G^2 and permit the projecting end of the tilt-table—that is, the projection from the tilt-table—to move up and down without binding, and also to prevent the driving-bolt from moving it laterally or exerting any strain whatever on the tilt-table supports. The planer-cylinder G^3 is preferably provided with six knives, but may have any suitable number, and is partly inclosed at the rear by the hinged hood G^4, which can be tilted rearwardly when it is desired to remove the planer-cylinder from the machine, and is bounded in front by the chip-breaker G^5, formed integral with the tilt-table. This planer is located under and near one edge of the saw, and hence the two operations of planing and sawing are carried on simultaneously without operators touching the shingle or decreasing the capacity of the machine.

The tilt-table E^2 is provided with the transverse brace H, to which the depending post H′ is rigidly secured. The lower end of this post H′ is considerably reduced in size, and rests within the oblong box H^2 of the depending standard H^3, which prevents the table from tilting backward and forward, but permits it to tilt laterally. The table is loosely secured at its upper end to the upper end of the depending standard for the purpose of permitting the table to tilt without moving the standard H^3. This standard is also considerably reduced at its lower end, or provided with a slotted projection, H^4, in which the rearwardly-projecting finger H^5, rigidly secured to the transverse brace I, rests. This finger prevents the standard from vibrating laterally, but permits it to be adjusted back and forth. Thus it will be seen that the depending post moves with the tilt-table when the latter is rocked sidewise, and the post and standard move therewith when it is tilted at its front and rear ends; and as the boxes or bearings supporting the planer-cylinder are rigidly secured to or formed inte-

gral with the tilt-table, it follows that the former follows the movements of the latter, and is consequently always in position to operate on one face of the shingle.

The upper end of the depending standard H^3 is rigidly secured to one end of the bent spring I′, the opposite end of which is rigidly secured to the front face of the upper brace, I^2. This spring passes over the brace and rests on the upper end of the screw I^3, the lower end of which latter passes through a screw-threaded bevel-wheel, I^4, which latter is prevented from moving up with the screw. As the screw is held against rotary motion, it follows that by turning the bevel-wheel the screw will be elevated. As the screw rises the end of the spring attached to the tilt-table rises, and consequently vertically adjusts the tilt-table. When the bevel-wheel is turned in the opposite direction, the screw descends and the spring carries the tilt-table in the same direction.

The bevel-wheel I^4, which is located in a boxing on the upper brace, I^2, is operated by the bevel-wheel I^5, rigidly secured to the inner end of the shaft J, the outer end of which terminates outside of the machine-frame. The lower end of the standard H^3 bears against the rear end of the screw J′, the front end of which passes through a female screw-threaded bevel-wheel, J^2, located within the box J^3 of the lower brace, I. This screw is prevented from turning and the bevel-wheel is prevented from moving with the screw, and hence when the bevel-wheel is turned the screw is moved longitudinally. When the screw is moved rearwardly, or toward the saw-arbor, it moves the lower end of the standard in the same direction, and consequently tips the front end of the tilt-table downwardly, and when the screw is moved in the opposite direction the tension of the spring I′ causes the lower end of the standard to follow the movement of the screw. The bevel-wheel J^2 is operated by the bevel-wheel J^4, rigidly secured to the inner end of the shaft J^5, the outer end of which terminates outside of the machine.

From the foregoing it will be seen that by simply turning one shaft the tilt-table can be adjusted toward or away from the carriage, and consequently cut shingles of different degrees of thickness, and by turning another screw it can be adjusted in a horizontal inclination to accommodate itself to the lead of the saw and produce a shingle of uniform thickness in the direction of its width.

The tilt-table and the standard and post are supported on the upper and lower braces, I I′, which latter are connected by the vertical braces K. These braces and the parts attached thereto are adjustably attached to the machine-frame to permit them to be moved toward the saw as the latter wears away.

K′ is a shaft journaled in boxes K^2, rigidly secured to the rear face of the standard H^3. This shaft is provided at or near its opposite ends with the tappet-wheels K^3, on which the tilting-screws K^4, respectively, rest. These screws are made in two or more parts to enable them to be lengthened or shortened, to enable them to decrease or increase the thickness of the point of the shingle. The tilting-screws are supported in bearings projecting from the sides of the depending standard, and are adapted to bear at their upper ends against the lower tilt-face of the table. The tappet-wheels are arranged to operate the tilting-screws alternately, and hence while one screw is holding one side of the tilt-table up the other screw is lowered, thereby permitting the opposite side of the table to drop. These screws regulate the thickness of the points of the shingle, while the screws K^5, mounted in the rigid bearings K^6, regulate the thickness of the butts thereof. The thickness of the butt of the shingle can be increased or diminished by lowering and elevating these screws. As soon as one of the tilting-screws leaves or moves off the tappets on the tappet-wheel it drops, and the other tilting-screw elevates its side of the tilt-table, the opposite side descending by its own weight until said latter side strikes against the butt-screw K^5, where it remains until again moved upward by the tilting-screw. Instead of making the screws adjustable lengthwise, the screws or other devices can be provided with adjustable fingers adapted to move in contact with the tappets and produce precisely the same results, or the tappet-wheels K^3 may be arranged to be adjusted vertically independently, and accomplish same results as making screws extensible.

The tappet-wheels are liable to be rotated backward by friction of the pawl in contact therewith. To overcome this objection, I provide the tappet-wheels with notches, into which the extensible screws drop and prevent this backward rotation.

L is a ratchet-wheel rigidly secured on the shaft K′, preferably between the tappet-wheels K^3. This wheel is preferably provided with four teeth, for the purpose of turning the shaft one quarter revolution at each stroke of the pawl L′, which operates the ratchet. The pawl L′ is pivotally secured at its lower end to the lower end of the lever L^2, journaled on the shaft K′, and is held in position in contact with the ratchet-wheel by the spring L^3, one end of which is attached to the free end of the pawl, while the opposite end thereof is connected to the lever L^2. The upper end of the lever L^2 is connected to one end of the pitman L^4, the opposite end of which is journaled to the crank L^5 on the driving-shaft. Thus it will be seen that the pawl is moved in contact with a tooth of the ratchet once at each revolution of the driving-shaft, and hence the shaft K′ is rotated once to every four revolutions of the driving-shaft. The pawl L′ is considerably wider than the ratchet-wheel, so as to overlap it on one side, for the purpose of permitting the pawl to be held out of engagement with the ratchet-wheel.

While sawing shingles knots are frequently encountered; and it is essential to the produc-

tion of a good shingle to have the butt thereof free from knots. If the table be tilted while sawing a bolt with a knot at one end, one shingle will have the knot at the point, the next have the knot at the butt, and so on. This difficulty can be overcome by providing means for disconnecting the tilt-table from the operating mechanism, and thereby permitting the butts to be taken from one end of the bolt and the points from the other end. I accomplish this by means of a guard, L^7, which latter rests under the overlapping or projecting portion of the pawl, and is adapted to move and hold the pawl out of contact with the ratchet-wheel, and thereby automatically stop the movements of the tilt-table. This guard is rigidly secured to the lower end of the lever L^8, which latter is pivoted to the bracket L^9, rigidly secured to the depending post. The upper end of the lever L^8 is connected to a cranked end of the shaft L^{10}. By turning the shaft in one direction the guard is moved in or away from the pawl, and permits the latter to uninterruptedly engage the ratchet-wheel, and by turning it in the other direction the guard is moved rearwardly and holds the pawl out of contact with the ratchet-wheel, and consequently stops the motion of the tilt-table.

The vibrating-lever C^4 is operated by the crank-shaft D and drives the carriage. The crank-shaft D is journaled in boxes, and is provided near its inner end with the loose bevel-wheel M, provided with a cam, M′, on one face thereof, and with a hub having projections thereon with which the sliding clutch M^2 meshes. This clutch is held against rotary movement independently of the shaft, and is forced against the recessed hub by the spiral spring M^3. The clutch is provided with a peripheral groove in which the lower bifurcated end of the swinging arm M^4 rests. This arm is pivotally secured at its upper end to the machine-frame, and is provided with the sliding intermediate cam, M^5, pivotally connected to the finger M^6 of the rock-shaft M^7, journaled in the machine-frame. This shaft is encircled for a short distance by the spiral spring N, one end of which is secured to the shaft, while the opposite end is secured to the machine-frame. This spring tends to hold the sliding intermediate cam in an elevated position, out of the reach of the cam on the bevel-wheel, and when it is so elevated it does not interfere with the movement of the parts. When, however, it is desired to stop the travel of the carriage without stopping the operating mechanism, the shaft M^7 is turned, which movement lowers the sliding cam until it occupies a position in the line of travel of the cam on the bevel-wheel M, and hence the latter cam disengages the clutch from the hub of the bevel-wheel, and consequently stops the travel of the carriage. The sliding intermediate cam can be held in a depressed position by the dog N′ engaging the outer cranked end of the shaft M^7.

The bevel-wheel M is driven by the small bevel-wheel N^2, secured to the shaft N^3, carrying the drive-pulley. This pulley is connected to a pulley on the saw-arbor B by the belt N^4, which runs in contact with the belt-tightener pulley N^5. This pulley is mounted on bearings journaled on parallel bars O, and is operated by the lever O′, which latter is connected by pitman O^2 to the bearing on which the tightener is mounted. The lever O′ is pivoted to the upwardly-extending bracket O^3, and is provided with a dog adapted to engage the sector rigidly secured to the bracket. By releasing the lever the wheel can be moved in and out, as necessity demands.

The planer-knives can be of ordinary construction; but I prefer to provide them with a series of grooves near opposite ends. These grooves make ribs on the shingle near the butt and point, which ribs form coursing-lines from which the shingle can be laid, thereby dispensing with the ordinary chalk-line. It is also desirable to bevel the opposite ends of the knives, as shown at Fig. 9, for the double purpose of beveling the butts of the shingles and making all the shingles of uniform length.

This machine is comparatively simple in construction and easy to operate, is durable in use, and turns out a better grade of shingles than the ordinary machine without decreasing its capacity.

It is evident that many slight changes in the construction and arrangement of the different parts of my improvement might be resorted to without departing from the spirit of my invention, and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described. I make no claim in this application to pushing or holding blocks located at right angles to the dogs, as the same forms the subject-matter of my pending application, Serial No. 204,486.

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

1. In a shingle-sawing machine, the combination, with a machine-frame, a saw mounted thereon, devices for determining the form of shingle, and a shingle-bolt carriage adapted to travel over one face of the saw, of a planer-cylinder located in advance of and to one side of the cutting-edge of saw and at an incline to the plane of said saw, the said cylinder being adapted to plane one face of the shingle while the shingle-bolt is moving.

2. In a shingle-sawing machine, the combination, with a machine-frame, a saw journaled therein, a shingle-bolt carriage, and devices for determining the general form of the shingle, of a rotary cylinder journaled to the machine below the bolt-carriage and provided with one or more knives which form one or more coursing-lines on one face of the shingle while the shingle-bolt is moving.

3. In a shingle-sawing machine, the combination, with a machine-frame, a saw journaled therein, a bolt-carriage mounted on the frame,

and devices for regulating the form of the shingle, of a planer-cylinder located to one side of the bolt-carriage and carrying knives for planing one face of the shingle and for cutting the shingles of uniform length.

4. In a shingle-sawing machine, the combination, with a machine-frame, a saw journaled therein, devices for regulating the form of the shingle, and a bolt-carriage mounted on the machine-frame to one side of the saw, of a planer-cylinder located to one side of the bolt-carriage, and knives on said planer which cut the shingles of uniform length and bevel the ends thereof, substantially as set forth.

5. In a shingle-sawing machine, the combination, with a tilt-table and a saw, of a planer-cylinder journaled in bearings formed integral with or attached to said tilt-table.

6. In a shingle-machine, the combination, with a tilt-table and a saw, of bearings formed integral with or attached to said tilt-table, and a planer-cylinder removably secured in said bearings, substantially as set forth.

7. In a shingle-sawing machine, the combination, with a tilt-table, of a planer-cylinder journaled to the tilt-table, and mechanism for simultaneously adjusting the tilt-table, and planer-cylinder, substantially as set forth.

8. In a shingle-sawing machine, the combination, with a tilt-table for regulating the form of the shingle and a saw, of a planer-cylinder journaled in bearings on the tilt-table, and a hinged hood for partly inclosing the planer-cylinder.

9. In a shingle-sawing machine, the combination, with a tilt-table for regulating the form of the shingle and a saw, of a planer-cylinder journaled in bearings on the tilt-table, the caps having adjusting-screws therein, and spring-fingers for holding the caps on the bearings.

10. In a shingle-sawing machine, the combination, with a tilt-table for regulating the form of the shingle and a saw, of a planer-cylinder journaled in bearings on the tilt-table, and a chip-breaker, substantially as set forth.

11. In a shingle-sawing machine, the combination, with a tilt-table for regulating the form of the shingle, having journal-boxes, of a planer-cylinder mounted in said boxes, removable caps for covering the boxes, and spring-fingers for holding the caps in position on the boxes.

12. In a shingle-machine, the combination, with a depending standard adjustably secured to the machine-frame and having an oblong box at its lower end, of a tilt-table and a post depending from the tilt-table, the lower end of said post resting and moving in the oblong box on the standard.

13. The combination, with a tilt-table adjustably secured on a depending standard and a suitable supporting-brace whereby it is attached to the machine-frame, of one or more springs connecting the depending standard to the brace, and a screw or an equivalent device for elevating one end of the spring and thereby the depending standard and table.

14. In a shingle-sawing machine, the combination, with a machine-frame, a depending standard adjustably attached at or near its upper end to the machine-frame, and a tilt-table secured to said standard, of an adjusting-screw seated in the frame and resting in contact with one face of the standard.

15. In a shingle-sawing machine, the combination, with a centrally-pivoted tilt-table, a transverse shaft located below the tilt-table, and two cams or tappet-wheels located on said shaft and adjusted relatively to each other, as described, of the extensible pin resting on the cams or tappet-wheels, substantially as set forth.

16. In a shingle-sawing machine, the combination, with a machine-frame, a tilt-table, a transverse shaft located below the tilt-table, and two cams or tappet-wheels mounted on said shaft, of a bearing-plate located between the tilt-table and cams or tappet-wheels, and extensible pins resting on said cams or tappet-wheels and passing through said bearing-plate, substantially as set forth.

17. In a shingle-sawing machine, the combination, with a tilting table and a shaft provided with devices for tilting the table, of a ratchet-wheel secured to the shaft, a pawl engaging the ratchet for turning the shaft, and a guard suitably located and adapted to be projected beyond the ratchet-wheel for holding the pawl out of contact with it.

18. In a shingle-sawing machine, the combination, with a machine-frame, a saw, and a tilt-table, of point-supporting rods located under the table, tappet-wheels or equivalent devices for operating the point-supporting rods, a ratchet-wheel secured on the tappet-wheel shaft, and a movable pawl for operating the ratchet-wheel, substantially as set forth.

19. In a shingle-sawing machine, the combination, with a machine-frame, a saw-arbor adjustably secured at its lower end to said frame, and a bracket secured to the frame above the lower end of the saw-arbor, of a box pivoted to said bracket, a cap, and a spring for holding the cap on the box, substantially as set forth.

20. In a shingle-sawing machine, the combination, with a machine-frame, a saw, and a saw-arbor journaled at its lower end, of a box supporting the upper portion of the arbor, a cap, a spring for holding the cap in place, and a screw for adjusting the spring, substantially as set forth.

21. In a shingle-machine, the combination, with a machine-frame having a stop thereon, and a carriage having a movable dog, of a bell-crank lever pivoted at one end to the carriage-frame, and provided at its opposite end with an elongated slot for its attachment to the movable dog of the carriage, and a spring se-

cured to the carriage and bearing against the bell-crank lever near the pivotal connection of the latter with the carriage.

22. In a shingle-machine, the combination, with a machine-frame, a depending standard secured thereto, a tilt-table attached to said standard, and cams or tappet-wheels secured on a supporting-shaft, of point-supporting rods resting on the cams or tappet-wheels and passing through bearings on said standards.

23. In a shingle-sawing machine, the combination, with a machine-frame, a tilt-table, and a spring connecting the table and frame, of a screw for vertically adjusting the table, substantially as set forth.

24. In a shingle-machine, the combination, with a machine, a standard yieldingly secured to said frame near its upper end, and a tilt-table secured to said standard, of devices for vertically adjusting the table, and a screw bearing against the lower end of the standard for tilting the table longitudinally, substantially as set forth.

25. In a shingle-sawing machine, the combination, with a machine-frame, a standard, and a tilt-table, the parts composing the latter being formed integral or rigidly secured together, of shingle-butt regulating-screws mounted in said standards, and devices for tilting the table passing through bearings in said standard, substantially as set forth.

26. In a shingle-sawing machine, the combination, with a machine-frame and a saw journaled therein, of a cross-girt adjustable toward and away from the saw, and a tilt-table supported on said girt, substantially as set forth.

27. In a shingle-machine, the combination, with a tilt-table, a shaft located below the tilt-table and provided with cams or tappet-wheels and a ratchet-wheel, devices resting on the cam or tappet-wheels for tilting the table, a pawl engaging the ratchet, and a lever for operating the pawl, of a guard located alongside of the ratchet-wheel for holding the pawl out of contact with the ratchet-wheel, substantially as set forth.

28. In a shingle-sawing machine, the combination, with a tilt-table the opposite sides of the bolt-bearing surface of which are rigid with relation to each other, and independent adjustable butt-supporting devices for said table, of vertically independently adjustable point-supports having a predetermined amount of vertical thrust and engaging said table on opposite sides of its vibratory axis, substantially as set forth.

29. In a shingle-machine, the combination, with a machine-frame, a stop secured thereto, and a bolt-carrying carriage having a movable dog, of a bell-crank lever pivotally connected at one end to the carriage and provided at its opposite end with an elongated slot in which a lug connected with the movable dog rests, and a spring for forcing the dog inwardly, substantially as set forth.

30. In a shingle-sawing machine, the combination, with a depending standard, a centrally-pivoted tilt-table, having free vertical motion on said standard and secured indirectly to the machine-frame, of a shaft, cams, and intermediate devices adapted to transmit motion to said table, and journal-bearings for said cam-shaft on said depending standard.

31. In a shingle-sawing machine, the combination, with a machine-frame, of a supporting-standard, a post connected with said standard having a vibratory movement, and a tilt-table secured to said post, of a guide secured to the machine-frame and engaging the lower end of the standard so as to maintain it in perpendicular position.

32. In a shingle-sawing machine, the combination, with a tilt table the opposite sides of the bolt-bearing surfaces of which are rigid with relation to each other, the said table having a vibratory motion from a central longitudinal axis, of independent butt-controlling devices, and independent point-controlling devices located on each side of the axis of the tilt-table, substantially as set forth.

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

WILLIS J. PERKINS.

Witnesses:
GEORGE COOK,
S. G. NOTTINGHAM.