No. 737,646. PATENTED SEPT. 1, 1903.

J. MOREAU.

ROSSING MACHINE.

APPLICATION FILED SEPT. 23, 1901.

NO MODEL. 5 SHEETS—SHEET 1.

FIG. 1.

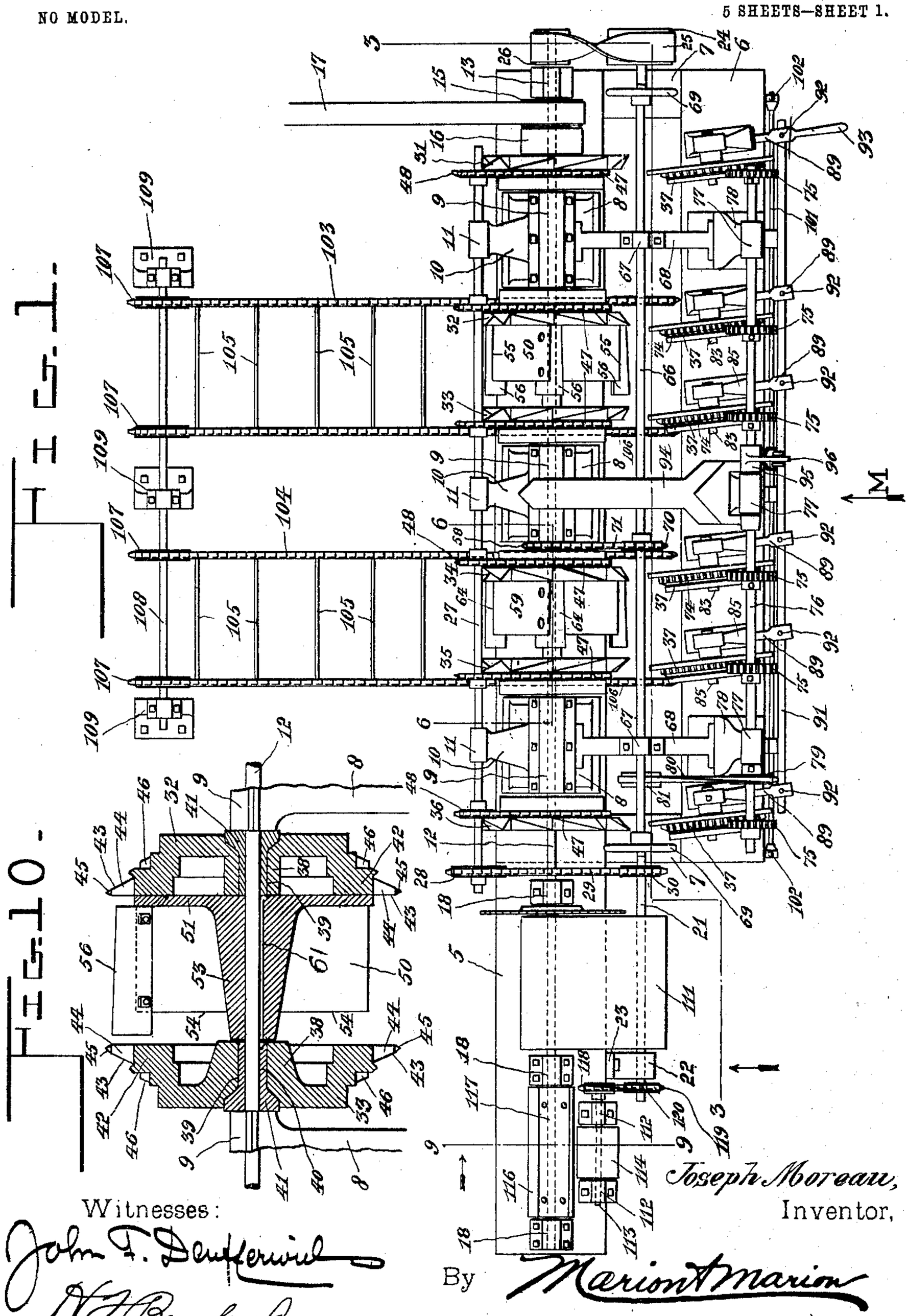

FIG. 10.

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NO MODEL. 5 SHEETS—SHEET 2.

FIG. 2.

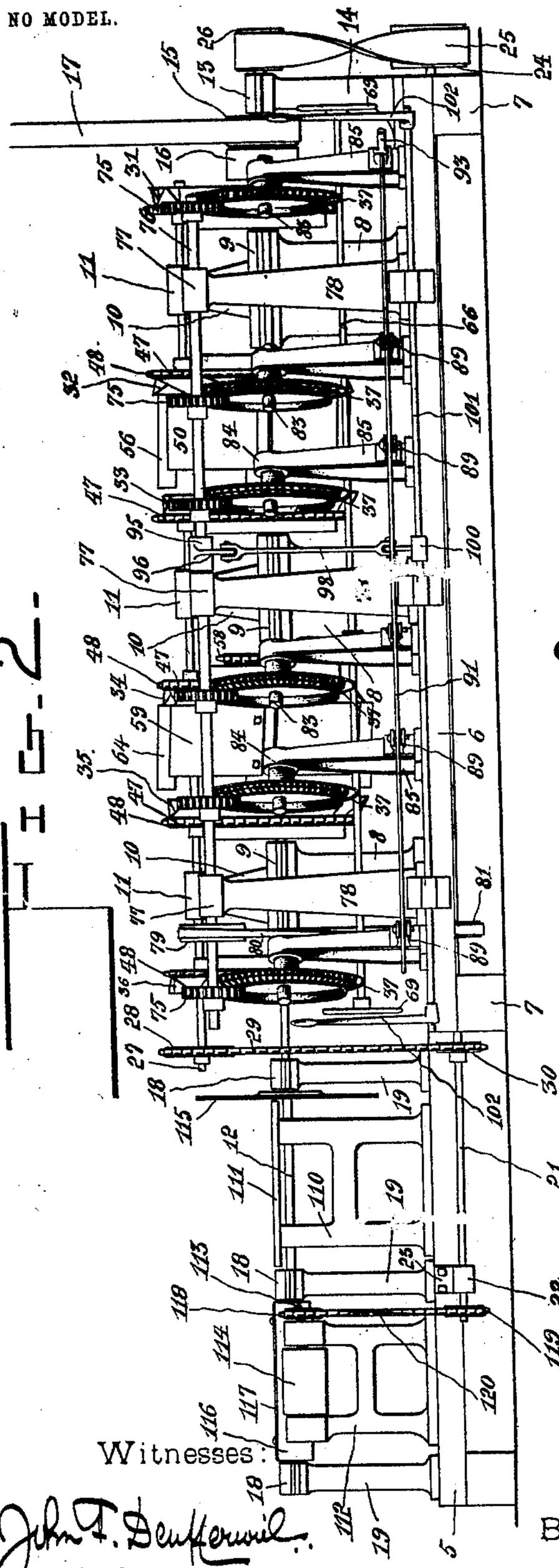
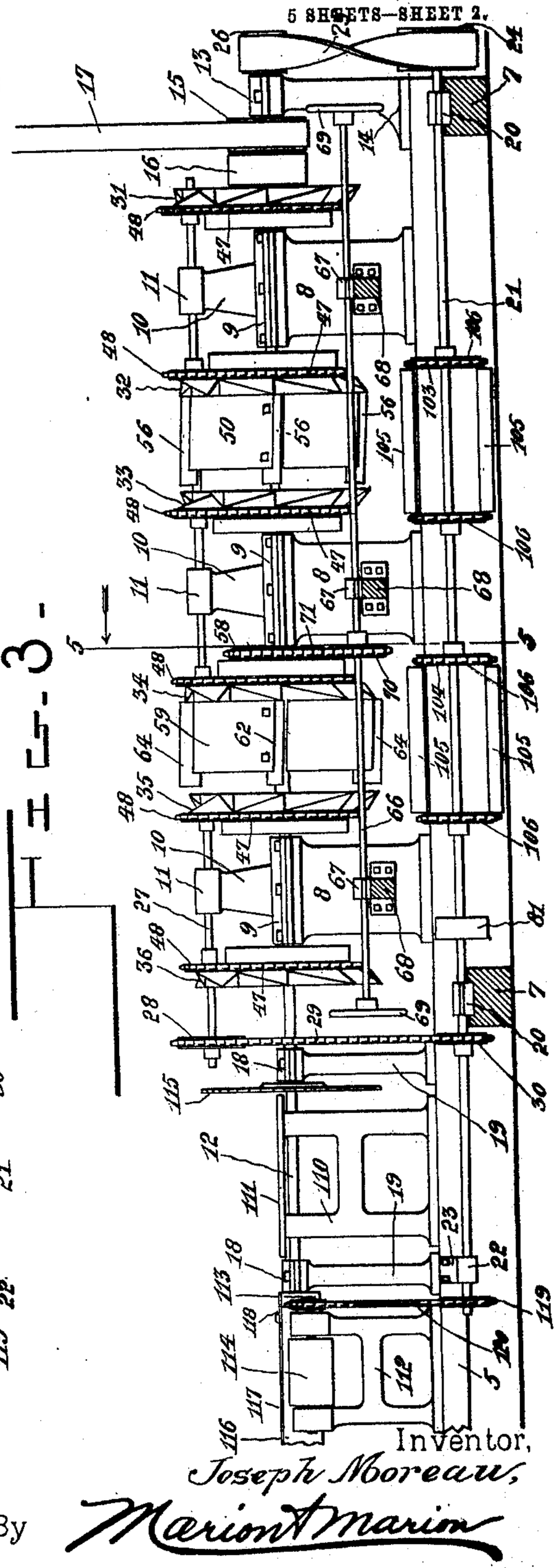


FIG. 3.



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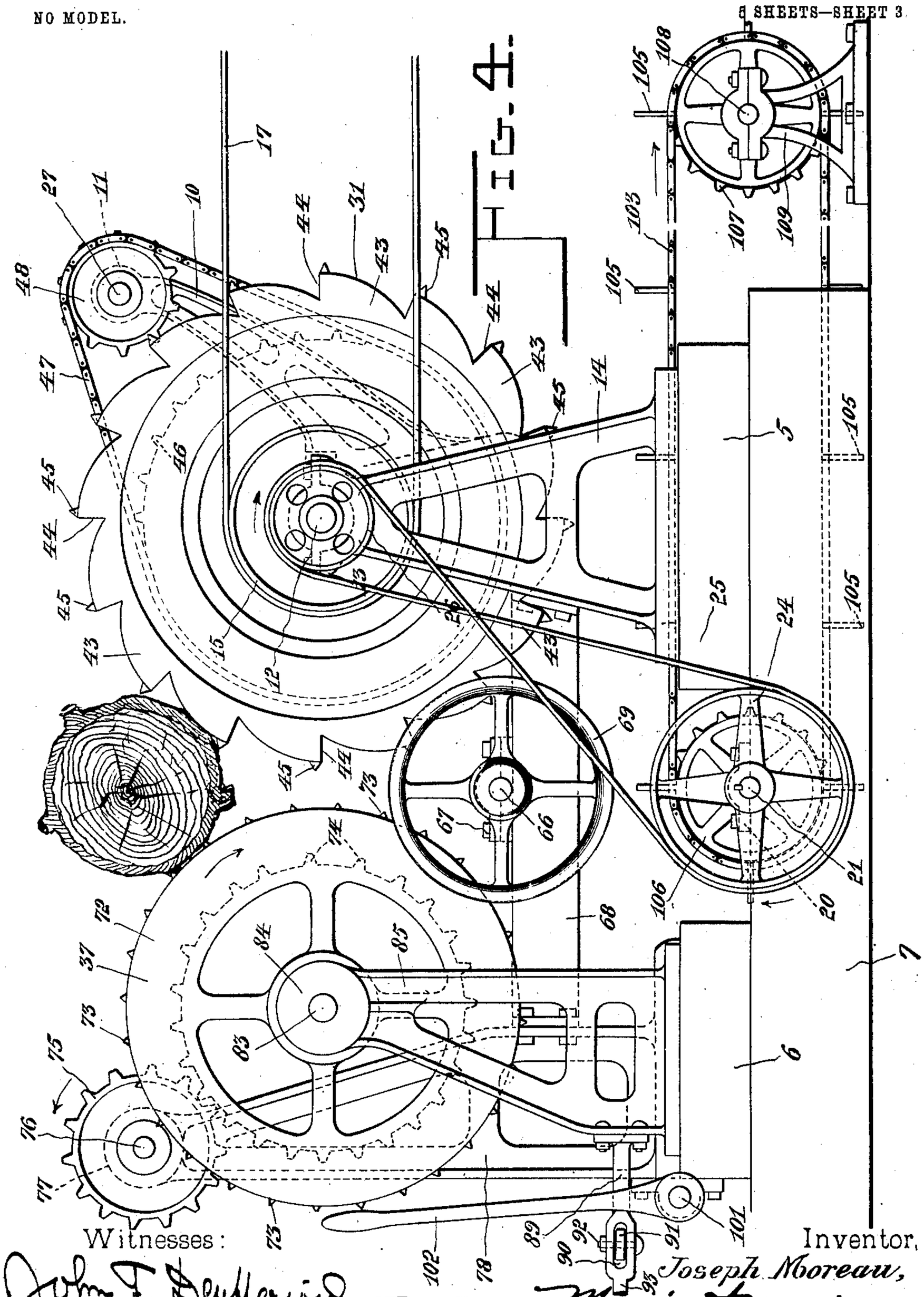
NO MODEL. 6 SHEETS—SHEET 3.

FIG. 4.



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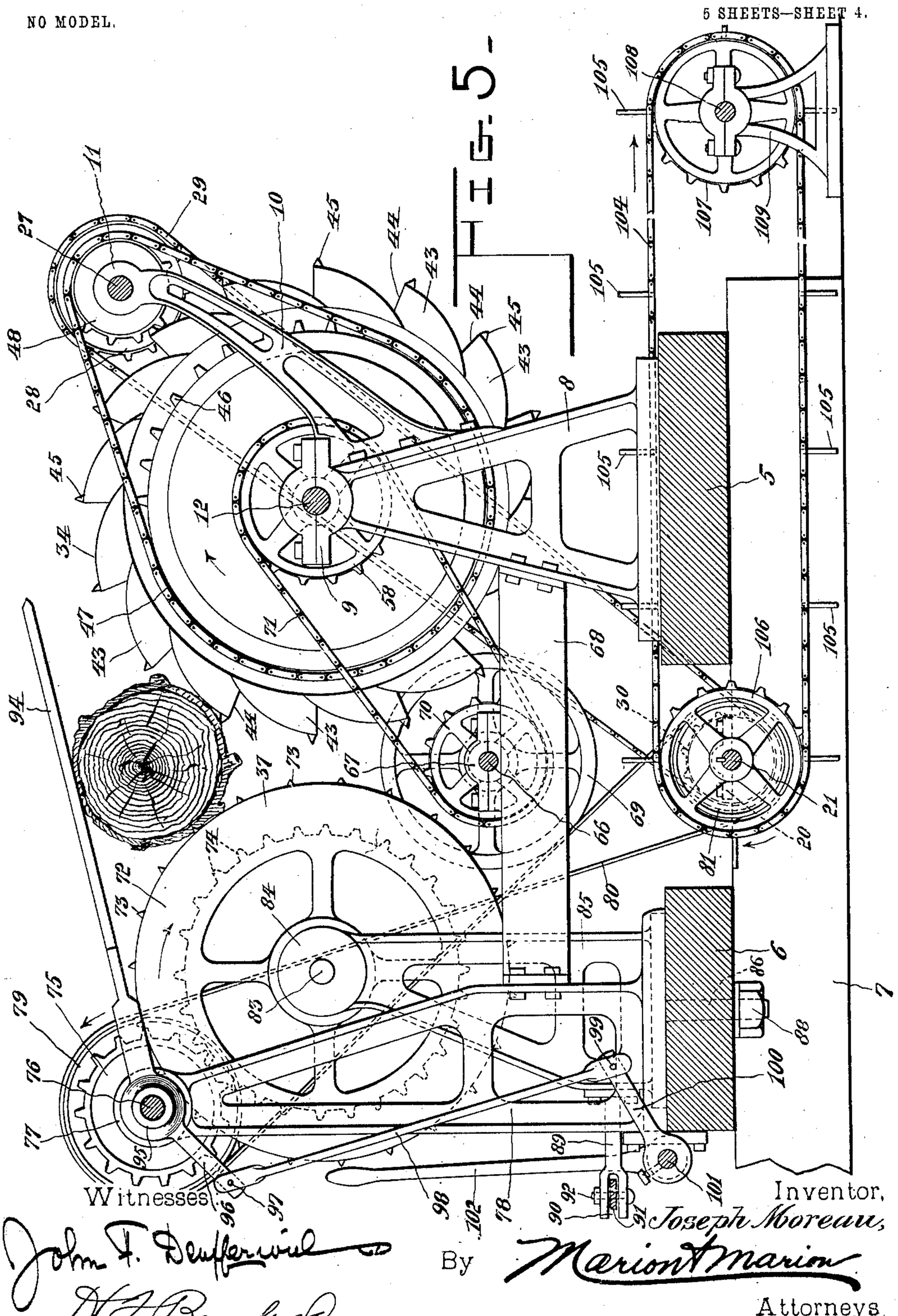
NO MODEL. 5 SHEETS—SHEET 4.



Witnesses

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APPLICATION FILED SEPT. 23, 1901.

NO MODEL. 5 SHEETS—SHEET 5.

FIG. 9.

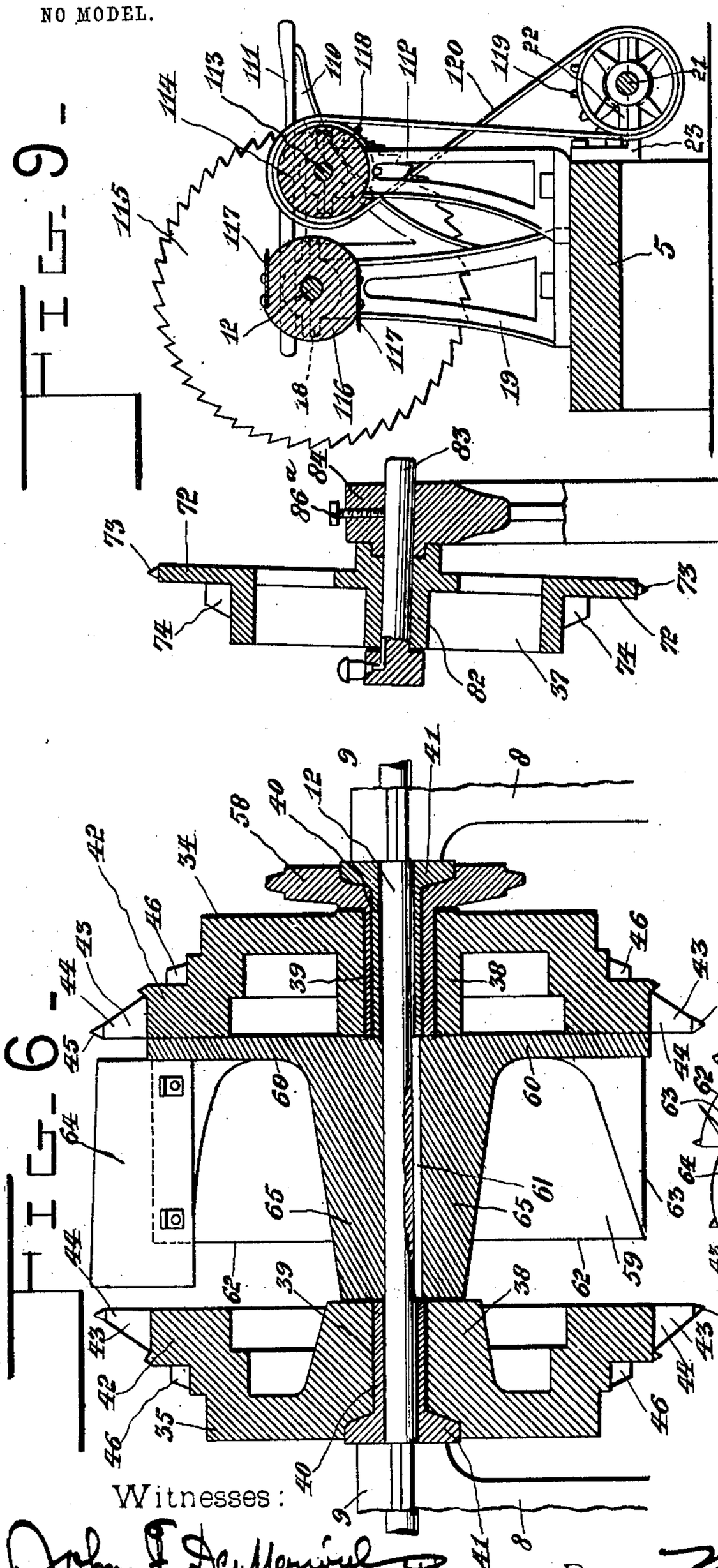

FIG. 11.

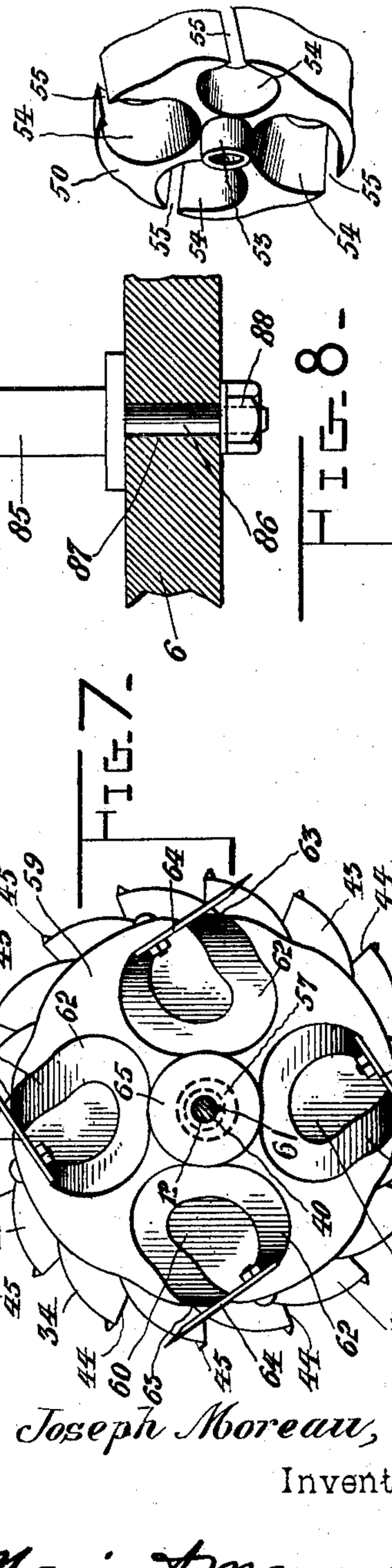

FIG. 8.

FIG. 7.

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No. 737,646. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

JOSEPH MOREAU, OF ST. ANNE DU SAULT, CANADA.

ROSSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 737,646, dated September 1, 1903.

Application filed September 23, 1901. Serial No. 76,306. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MOREAU, a subject of His Majesty the King of Great Britain, residing at St. Anne Du Sault, county of Arthabaska, Province of Quebec, Canada, have invented certain new and useful Improvements in Rossing-Machines; and I do hereby declare that the following is 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 improvements in rossing-machines of that class wherein a rotary cutter is employed in connection with means for rotating a log with relation to such cutter, whereby the bark is removed from or peeled off the log by the action of the cutter, because the log is turned continuously or progressively, so as to present new surfaces to the cutter.

One object that I have in view is the provision of improved means for feeding the log in an endwise direction simultaneously with the operation of rotating the log on its axis.

A further object is to construct the feed or log-advancing mechanism in such a way as to vary (increase or decrease) the speed of the advancing or feeding movement imparted to the log, thus adapting the machine to properly peel the bark from crooked or irregular-shaped logs wherein it is necessary to give a relatively slow advancing movement, while in the case of straight and symmetrical logs the speed may be increased in order to amplify the productive capacity of the machine, it being understood that such variation in the speed of the advancing log is obtainable without affecting or changing the speed of the main shaft or other parts of the machine.

A further object is the provision of means for cutting off the knots, the stumps of boughs, and other excrescenses on the log, particularly on irregular-shaped pieces of work, such trimming of the log being performed automatically on the same and in advance of the rossing or bark-removing operation, thus reducing logs to a condition which is best calculated to secure good results when the work is fed to the rossing-cutter and obviating any interference with such cutter by the knots and other excrescenses on the log.

A further object of the invention is the provision of an emergency work-depressing device which in case a crooked or badly-shaped log is placed in the machine is adapted to be manipulated so as to force the log in a downward direction, so as to make the feed mechanism have positive engagement with such log, whereby the latter may be rotated and advanced to good advantage.

A further object of the invention is to provide means for regulating the depth of penetration by the rossing-cutter into the bark and the log, and thereby adjust such cutter to secure good results, such regulation of the cutter mechanism being easily performed while the machine is at work.

A further object is to equip the machine with means for carrying away the bark and other matter removed from the work; furthermore, to provide means for cutting the peeled logs into sections of suitable length and to provide a supplemental or auxiliary peeling device which may be advantageously used to remove any bark that may remain on crooked logs after the latter shall have been subjected to treatment in the main machine.

With these ends in view the invention consists in the novel combination of mechanisms and in the construction and arrangement of the various parts for service, as will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated a preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of the complete machine for trimming logs, removing or "rossing" the bark therefrom, cutting the logs into sections of the required length, and for peeling the bark, if necessary, from short sections of the log. Fig. 2 is an elevation taken from one side of the machine, the same being a view looking in the direction of the arrow M on Fig. 1. Fig. 3 is a longitudinal sectional elevation taken in the plane of the dotted line 3 3 on Fig. 1 looking in the direction of the arrow. Fig. 4 is an elevation looking at the right-hand end of the machine shown by Figs. 1 to 3, inclusive. Fig. 5 is a vertical transverse section taken in the plane of the dotted line 5 5 on Fig. 3 looking in the direction of the arrow. Fig. 6 is an

enlarged longitudinal sectional elevation through the rossing-cutter and the parts associated therewith for the regulation of the cut on the work, the plane of the section being indicated by the dotted line 6 6 on Fig. 1. Fig. 7 is a view in end elevation of the rossing-cutter, the same looking at the left-hand end of the cutter shown by Fig. 6. Fig. 8 is a vertical cross-section through one of the feed-wheels and the means for adjusting the same. Fig. 9 is a vertical cross-section through the supplemental peeling device, the plane of the section being indicated by the dotted line 9 9 on Fig. 1 looking in the direction of the arrow. Fig. 10 is a detail sectional view through the knot-removing cutter. Fig. 11 is a detail perspective view of the cutter-head forming the knot-removing cutter.

The same numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

5 6 designate the longitudinal sills or platforms, which are suitably secured upon the cross-sills 7. The sill 5 is somewhat wider than the sill 6, and the two sills are spaced at proper intervals one from the other, although they are disposed in parallel relation The wide longitudinal sill 5 supports a series of substantial bearing-posts 8, which are firmly secured upon the sill and are provided at their upper portions with the shaft-bearings 9, each bearing-post having an offstanding bracket-arm 10, which extends upwardly and rearwardly therefrom, each bracket-arm of the bearing-posts terminating in a shaft-bearing 11. The shaft-bearings 9 at the upper ends of the series of bearing-posts 8 are arranged in alinement with each other longitudinally of the machine for the accommodation of the main shaft 12, the same extending the full length of the machine, so as to occupy an operative relation to the sawing mechanism and to the supplemental peeling mechanism. The right-hand extremity of the main shaft 12 also finds a bearing 13 in an additional bearing-post 14, and this right-hand extremity of the main shaft is equipped with the fast and loose pulleys 15 16, respectively, around either of which may be adjusted the driving-belt 17. The left-hand portion of the shaft 12 also finds support in the bearings 18 of the additional posts 19, and these bearings are disposed beyond the left-hand portion of the main rossing-machine, so as to assist in supporting said left-hand end of the main shaft in proper relation to the sawing mechanism and to the supplemental peeling mechanism.

The cross-sills 7 are provided with shaft-bearings 20 at points between the longitudinal sills or platforms 5 6, and in these bearings is journaled the counter-shaft 21, the latter being arranged in a horizontal position between the longitudinal platforms and extending in the direction of the length of the machine, (see Figs. 2, 3, and 4,) the extreme left end of said counter-shaft being journaled in a bearing 22, which is provided on a bracket-arm 23, that is fastened to the inner edge of the longitudinal sill 5, said bracket being provided at a point between the sawing mechanism and the supplemental peeling mechanism. (See Figs. 2, 3, and 9.) The right-hand portion of the counter-shaft is provided with a pulley 24, that is encompassed by a crossed belt 25, the latter being driven by a pulley 26, that is secured to the right-hand extremity of the main shaft 12, thus driving the counter-shaft directly from the main shaft. The counter-shaft has operative connection with the knot-removing cutter, the rossing-cutter, the two series of feed-wheels, the bark and refuse removing conveyers, and an element of the supplemental peeling mechanism, which operative connections will hereinafter more fully appear.

27 designates a counter-shaft, the same arranged in a horizontal position at the upper right-hand side of the machine, so as to lie above and parallel with the main shaft 12. Said counter-shaft 27 is journaled in the alined shaft-bearings 11, which are provided in the series of bracket-arms 10, that extend upwardly and outwardly from the bearing-posts 8, and this counter-shaft 27 is provided at its left-hand end with a sprocket-wheel 28, around which passes a sprocket-chain 29, that is operatively fitted to a sprocket-wheel 30, which is secured on the counter-shaft 21, whereby the counter-shaft 27 is geared to and driven from the counter-shaft. (See Figs. 1 and 3.)

31 32 33 34 35 36 designate one series of feed-wheels, which are loosely mounted on the main shaft 12 and are thereby supported in operative relation to the work and on one side of the latter. The feed mechanism also contemplates another series of feed-wheels, which are indicated by the numeral 37, the last-named series of feed-wheels being disposed in opposing relation to the first-named series of feed-wheels 31 to 36, inclusive, and said feed-wheels 37 being shiftable with relation to the line of feed or advancement of the log, whereby the feed-wheels 37 may be disposed at an angle to the path of feed, while the feed-wheels 31 to 36, inclusive, rotate constantly in a given position with relation to the path of the feed. The feed-wheels 37 and the means for adjusting the same will be hereinafter more fully described.

Each of the feed-wheels 31 to 36, inclusive, is provided with a hub 38, said hub having an axial opening 39 which exceeds the diameter of the shaft 12, and in this axial opening of the hub is loosely fitted a bushing 40, the same arranged next to the shaft 12 and loosely supporting the feed-wheel thereon, so as to minimize friction and wear on the parts and to prevent the constant motion of the shaft 12 from affecting the feed-wheel. I prefer to provide each bushing with a flange 41 at one end, which flange is adapted to bear

against one of the shaft-bearings 9, all as more clearly shown by Figs. 6 and 10. Each of the series of feed-wheels 31 to 36, inclusive, is furthermore provided with a solid rim 42 and with a series of circumferential spiral ribs 43. It is to be understood that each feed-wheel has its working circumference formed with a number of these spiral ribs, each rib being disposed in an inclined or spiral direction across the circumference of the wheel and having a tapered form—that is to say, the advancing or front end of the spiral rib is of less height than the following or rear end of the same rib, as clearly shown by Fig. 4. The rear end of the rib terminates in an abrupt shoulder 44 and is equipped with a spur or tooth 45, which extends outwardly beyond the plane of the rib. The spiral disposition of the series of ribs 43 makes the following or rear ends of the ribs disposed in overlapping relation to the advancing ends of the series of ribs, and thus the shoulders at the rear ends of the ribs, as well as the spurs or teeth at said ends of the ribs, are adapted to have proper engagement with the work or log in a manner to rotate the latter on its axis and at the same time enable the spiral ribs to assist in giving the forward feed or endwise movement to the log.

Each feed-wheel of the series 31 to 36, inclusive, is also provided with a series of sprocket-teeth 46, with which engages an endless sprocket-chain 47, that is driven by a sprocket-pinion 48, made fast on the counter-shaft 27, a series of these sprocket-wheels 48 being secured to this shaft in positions to aline with the sprocket-teeth on the series of feed-wheels. The described series of feed-wheels rotate constantly in a given direction with relation to the path of the feed of the work. The feed-wheels are positively driven from the counter-shaft 27, and said feed-wheels are driven at the same angular velocity in order that the work may be steadily and progressively advanced endwise in a uniform manner.

By reference to Figs. 1 and 3 it will be seen that the pair of feed-wheels 32 33 are disposed between two adjacent bearing-posts 8. The pair of feed-wheels 34 35 are similarly disposed between two other bearing-posts 8, while the feed-wheels 31 36 are mounted on the main shaft 12 at points outside of the series of three bearing-posts 8. The work is introduced into the machine at the right-hand end thereof, so that it will be engaged by the feed-wheels 31, 32, 33, 34, 35, and 36 successively, and hence the work passes by the feed-wheels 32 33 before it is fed to the wheels 34 35. I take advantage of this fact by introducing the knot-removing cutter in operative relation to the feed-wheels 32 and 33, so that said cutter will operate on the log before the work is in position to be acted upon by the rossing-cutter, which is operatively disposed with relation to the feed-wheels 34 and 35, thus combining in the machine two cutters, one of which serves to trim the log and reduce it to the proper condition for action upon the log by the other cutter. The knot-removing cutter is shown by Figs. 1, 3, and 10, and it consists of a recessed cutter-head 50, the radial limbs of which are united at one end by a web 51 and which is rotatively fixed to the main shaft by a key 52, fitted in its hub 53. The cutter-head is provided with suitable recesses 54, which recesses open through the circumference of the cutter-head to form the throats 55, adapted to receive the blades or knives 56, the latter being secured to the cutter-head within the throats thereof, all as more clearly shown by Fig. 10.

The blades or knives 56 of the knot-removing cutter-head are arranged to have their beveled or operative edges terminate at or close to the active edges of the feed-wheels 32 33, and the parts of the knot-removing cutter-head 50 are thus adapted to operate on a log, which is advanced endwise past the cutter-head in a manner for the knives to remove the knots or short boughs which may remain on the log, thereby trimming the latter to a substantially uniform or symmetrical condition, which will enable the rossing-cutter to operate to the best advantage in removing or peeling the bark from the logs.

The rossing-cutter occupies a similar relation to the pair of feed-wheels 34 35 that the knot-removing cutter does to the feed-wheels 32 33, and this rossing-cutter is similar in construction and operation to the knot-removing cutter, except that the blades of the rossing-cutter are made to project beyond the active edges of the feed-wheels 34 35 and also except that I have provided suitable means for regulating the depth of penetration into the work by the knives or blades of this rossing-cutter.

By referring to Fig. 6 of the drawings it will be seen that around the bushing 40 of the feed-wheel 34 is placed an eccentric sleeve 57, the same corresponding in length to the bushing 40 of said feed-wheel 34, and it is provided at its outer end with a sprocket-wheel 58, the latter being exposed at one side or face of the feed-wheel 34. This eccentric sleeve constitutes a tubular shaft for the feed-wheel 34, said eccentric sleeve or shaft having an axial bore adapted to loosely and snugly fit upon the bushing, while the external cylindrical circumference of the sleeve is eccentric to the axis of the bushing 40 and the main shaft 12. The recessed cutter-head 59 of the rossing-cutter is provided at one side with a web 60, uniting the radial limbs thereof, and is also provided with a series of openings or recesses 62, which extend through the cutter-head from one side thereof toward the web 60, and these recesses open through the circumference of the cutter-head 59 by the formation of openings which constitute throats 63. Through the throats of the cutter-head pass the blades or

knives 64, which are fastened firmly to the cutter-head by bolts or screws. The cutter-head 59 is provided with a sleeve or hub 65, mounted on the main shaft 12 and rotatively secured thereto by a key 61. The blades or knives 64 of the cutter-head 59 lie between the two feed-wheels 34 35, and they are disposed so that the active edges of said knives will project beyond the active edges of the ribs 43 on said feed-wheels 34 35. The extent of the projection of the knives or blades 64 on the cutter-head beyond the feed-wheel 35 may be regulated by changing the position of the eccentric sleeve or tubular shaft 57, and this adjustment of the sleeve or shaft may readily be effected while the machine is in motion by the operator, who can manipulate the adjusting-shaft 66, which is geared to the sprocket-wheel 58 on the sleeve 57 and arranged in the following manner: This shaft is arranged in a horizontal position between the two series of feed-wheels and below the plane of the axes thereof, so that the adjusting-shaft is at all times out of the way of the work, said adjusting-shaft being journaled in suitable bearings 67, that are provided on the stationary cross-pieces 68 of the machine-frame. The shaft is provided at each end with a hand-wheel 69, and at or near its middle the shaft is equipped with a sprocket-wheel 70, that is in alinement with the sprocket-wheel 58 on the eccentric sleeve or tubular shaft 57, and the two sprocket-wheels 70 58 are operatively connected together by an endless sprocket-chain 71. (See Figs. 3 and 5.) The provision of the hand-wheels 69 at opposite ends of the shaft enables the rossing-cutter to be adjusted and regulated by an attendant stationed at either end of the machine.

I will now proceed to describe the other set of feed-wheels 37, the means for supporting the same, and the means for adjusting them, reference being had to Figs. 1, 2, 4, 5, and 8. Each feed-wheel 37 is provided with a radial flange 72, the same having a working edge formed by the series of spurs or teeth 73, and each feed-wheel is furthermore provided within the working edge thereof with a series of long or deep gear-teeth 74, the same adapted to have intermeshing engagement (notwithstanding the angular relation of the feed-wheel to the line of feed) with gear-pinions 75, that are mounted on the feeder-driving shaft 76. This feeder-driving shaft is arranged in a horizontal position and on the opposite side of the machine from the cutter-driving shaft 27, the said shaft 76 being journaled in bearings 77, which are provided at the upper ends of the vertical posts 78, the latter being erected upon the longitudinal sill 6. The feeder-driving shaft has the pinions 75, secured at intervals corresponding to the spaced positions of the series of feed-wheels 37, and this shaft 76 is provided at one end with a belt-pulley 79, which is encompassed by a crossed belt 80, that is fitted to a pulley 81 on the counter-shaft 21, whereby the shaft 76 is driven from the counter-shaft 21.

Each feed-wheel is furthermore provided with a central hub 82, that is loosely fitted on a short stub shaft or axle 83, the latter being fitted in a bearing 84, which is provided at the upper end of a bracket 85, said shaft or axle 83 being held securely in the bearing of the bracket by means of a set-screw 86[a]. (See Fig. 8.) It will be understood that a series of the brackets 85 are employed for the support of the series of feed-wheels 37 and that said feed-wheels are mounted individually by short shafts, which are separately fastened to the brackets. The series of feed-wheels and the brackets are so arranged on the longitudinal sill 6 that the working edges 73 of the feed-wheels are in opposing relation to the active ribbed edges of the feed-wheels 31 to 36, inclusive; but instead of mounting the series of feed-wheels 37 for movement in a constant plane I have provided means whereby the relation of the feed-wheels 37 to the line of feed may be shifted in order that said feed-wheels 37 constituting one series may be simultaneously caused to assume angular positions with relation to the line of the feed. It is therefore to be understood that the feed-wheels 37 of one series employed in the machine may be shifted to different angular positions with relation to the feed-wheels of the other series 31 to 36, inclusive, and at the same time the series of feed-wheels 37 are positively driven by gearing the same to the feeder-driving shaft 76, the dimensions and form of the gear-teeth on the feed-wheels 37 and the gear-pinions 75 being such as to permit of the intermeshing and operative relation of the feed-wheels to the shaft 76 at all points in the different positions of said feed-wheels to the line of feed and to the opposing series of the feed-wheels 31 to 36, inclusive. In lieu of the gear-pinions 75 and the gear-teeth on the feed-wheels 37 I may employ other forms of gearing to connect the feed-wheels 37 operatively with the shaft 76—as, for instance, sprocket-wheel and chain gearing may be employed or pulley-and-belt gearing may be substituted therefor.

In order to shiftably support the feed-wheels 37, the brackets 85 therefor are provided with the pivotal bolts 86, the same extending loosely through openings 87 in the sill 6 and provided with the nuts 88, whereby the brackets are pivotally mounted on the sills 6. These brackets are shiftable in horizontal planes around the vertical axes afforded by the pivotal bolts 86, and each bracket 85 of the series is provided with an outwardly-extending arm 89, said arms having slots 90, which loosely receive the shipper-rod 91. This shipper-rod is arranged in a horizontal position at one side of the machine, and it is attached to the entire series of arms (through the slots of which it loosely extends) by means of the pivotal pins 92, thus operatively connecting the shipper-rod to each of the pivot-

ed brackets of the series. The arm 89 of the pivoted bracket on the right-hand end of the machine is extended beyond the shipper-rod 91 in order to form a handle 93 for the convenient manipulation of the shipper-rod, the movement of which affects all the pivoted brackets so as to simultaneously adjust all the series of feed-wheels 37.

By reference to Figs. 1, 4, and 5 it will be seen that the feed-wheels of the two series are grouped in pairs, which are disposed in opposing relation, and the active edges of these pairs of alined feed-wheels are brought quite closely together, as more clearly shown by Figs. 4 and 5, so that the log is adapted to rest upon and to be supported by said series of opposing feed-wheels. The feed-wheels of the two series are driven to rotate in the same direction, each series of feed-wheels being positively rotated by intermediate gearing connections with the common counter-shaft, and the effect of the combined operation of these two series of feed-wheels is to rotate the log upon its axis in a direction contrary to that of the cutters and at the same time to give the log an endwise advancing movement in the direction of the length of the machine. The rotary motion of the log is due to the engagement of the active edges of the two series of feed-wheels which rotate in one direction; but the advancing endwise movement imparted to the log is due in part to the presence of the inclined ribs on the series of feed-wheels 31 to 36 and to the angular relation of the feed-wheels 37 to the line of feed. By shifting the series of feed-wheels 37 simultaneously, so as to increase the angle of inclination of the feed-wheels 37 to the line of feed, said feed-wheels are caused to coact with the other series of feed-wheels in a manner to increase the speed of the endwise movement of the log; but by decreasing the angular inclination of said feed-wheels 37 to the coöperative other series of feed-wheels 31 to 36, inclusive, the feed-wheels 37 are made to act in a manner so as to decrease the speed of advancement of the work.

When the machine is operating on crooked logs, it sometimes happens that the active edges of the feed-wheels cannot have proper engagement with certain portions of the log in order to effect the desired feed thereof. From practical experiments which I have made it is found that if pressure is exerted on the log which is sustained by the two series of feed-wheels the latter may have proper engagement with the work in order to rotate and advance the same. In the present machine I employ a pressure device which normally remains inactive and which is adapted to be brought by manual adjustment into service. This pressure device is in the form of a long arm 94, arranged centrally in the machine and adapted to extend over the series of feed-wheels. This pressure-arm 94 is loosely sleeved at 95 upon the feeder-driving shaft 76, as shown more clearly by Fig. 5, and, furthermore, the pressure-arm is provided with a short lug 96, to which is pivoted at 97 the upper end of a pitman 98, the latter having pivotal connection at 99 to an angular arm 100, which is fastened to a rock-shaft 101, the same being journaled in suitable bearings at one edge of the sill 6. The rock-shaft is provided at either end with an upstanding lever 102, thus making provision for operation of the pressure-arm by the attendant when stationed at either end of the machine.

It is well known that machines of this class when they remain in service for any considerable length of time cause the accumulation of a large quantity of bark and chips around the floor; but to obviate the necessity for constantly cleaning away the accumulation of refuse I have provided off-bearing conveyers 103 104, which are arranged to traverse the sill or platform 5 directly below the knot-removing cutter and the rossing-cutter. These conveyers are provided with lags 105 or the equivalents thereof, which are arranged to travel or to sweep close to the upper side of the platform or sill 5, and said conveyers are preferably embodied in the form of endless sprocket-chains, which are fitted to the driving-sprockets 106 and to the idler-sprockets 107, the former being secured to the counter-shaft 21, while the latter are mounted on the idle conveyer-shaft 108, which is journaled in the pillow-blocks 109. The endless conveyers travel in the direction indicated by the arrow in Fig. 5, so as to carry the bark, chips, knots, and other substances removed from the log away from the platform and from beneath the knot-removing cutter and the rossing-cutter, thus keeping the space below the machine practically clear.

From the early part of this specification it will be recalled that the main shaft 12 was described as extending through bearings 18 on the standards 19 at the left-hand end of the machine, and at this end of the machine I have erected a suitable framework 110, adapted to support the saw-table 111, as well as the framework 112 for the support of the shaft 113 of the feed-roll 114, all as clearly shown by Figs. 1, 2, 3, and 9. The main shaft 12 carries a rotary saw 115, which has operative relation to the saw-table 111, and after a log shall have emerged from the two series of feed-wheels provided in the main machine said log may be placed on the table 111 and fed to the saw 115, so as to be cut thereby into proper lengths.

The main shaft 12 extends in front of the feed-roll 114, which is journaled in the framework 112 at the extreme left-hand end of the platform 5, and on this main shaft 12 is secured a rotary cutter-head 116, the same having blades 117. (See Fig. 9.) This cutter-head is in opposing relation to the feed-roll 114, and this cutter-head and the feed-roll constitute an ordinary bark-peeling mechanism, the cutter-head being driven by the shaft

12 of the main machine. The feed-roll shaft 113 is provided at one end with a sprocket-wheel 118, disposed in alinement with the sprocket-wheel 119 on the counter-shaft 21, and these two sprockets are operatively connected together by a belt or chain 120.

The supplemental peeling mechanism, consisting primarily of the cutter-head 116 and the feed-roll 114, is employed on short lengths of log which have had the bark rossed or removed imperfectly therefrom, and it is therefore to be understood that this supplemental peeling mechanism is not used constantly in the operation of the machine, but, on the contrary, its use depends entirely upon the condition of the log after it emerges from the machine.

This being the general construction of my improved machine, the operation may be described briefly as follows: The log is placed on the opposing pair of feed-wheels 31 37 at the right-hand end of the machine, and these feed-wheels operate on the log to rotate and impart endwise movement thereto until the log shall have been moved into position to be engaged by the next pair of feed-wheels 32 37, and this operation is continued as the log advances through the machine, because it is successively engaged with the successive pairs of feed-wheels. As the log moves endwise past the cutter-head 50 the knives thereon act upon the knots, &c., in order to trim the log to a proper condition, and the continued advancing movement of the log through the machine brings its surface opposite to the cutter-head 59, the blades of which operate on the log in order to peel and remove the bark therefrom. It is evident that the depth of the cut by the blades 64 may be regulated by adjusting the position of the feed-wheel 34 from the shaft 66. The bark and other refuse which are removed from the log are carried from the machine by the conveyers 103 104. The log may be thrust down upon the feed-wheels 33 34 35 by manipulating the rock-shaft lever 102 in a manner to depress the arm 94, thus bringing it into engagement with the log and forcing the latter in a downward direction. When the log emerges from the machine, it may be placed on the table 111 and cut by the saw 115 into sections of the desired length, and, if necessary, the sections of certain logs may be placed in the supplemental peeling mechanism in order to further remove the bark therefrom.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention is embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described my invention, what I claim as new is—

1. In a machine for removing bark, a feed mechanism consisting of a series of feed-wheels having their axes alined and revoluble constantly in fixed planes, transverse to the line of feed, another series of feed-wheels disposed in coöperative relation to the first-named series and revoluble in the same direction also transverse to the line of feed, and means for shifting the feed-wheels of the last-named series independently of those of the first-named series to different angular positions relative to the path of the feed, in combination with a cutter mechanism disposed in operative relation to the path of feed, substantially as described.

2. In a machine for removing bark, a feed mechanism comprising a series of feed-wheels having alined axes and revoluble constantly in a given fixed position transverse to the line of feed, another series of feed-wheels also transverse to the line of feed and having means for simultaneously changing the angular relation thereof to the feed-wheels of the first-named series and to the line of feed, and means for driving the last-named series of feed-wheels in the same direction as the first-named series of feed-wheels are driven, in combination with a cutter mechanism disposed adjacent to the path of feed of the work, substantially as described.

3. In a machine for removing bark, a feed mechanism consisting of a series of feed-wheels disposed at right angles to the path of feed of the work and revoluble constantly in a given fixed plane, another series of feed-wheels in coöperative relation to the first-named series of feed-wheels and each disposed at an angle to the line of feed of the work and to the companion feed-wheel of the other series, means for simultaneously shifting the feed-wheels of the second-named series to change the angular relation thereof to the line of feed, and means for rotating the feed-wheels of the two series in the same direction, in combination with a cutter mechanism situated adjacent to the path of feed, substantially as described.

4. In a machine for removing bark, the combination of a feed mechanism comprising two series of feed-wheels which are disposed in coöperative relation transverse to the line of feed and adapted to sustain, rotate and advance a log, and independent cutter mechanisms located between two or more pairs of the feed-wheels of one series and each occupying normally an operative relation to the path of feed, substantially as described.

5. In a machine for removing bark, the combination of a feed mechanism comprising two series of feed-wheels disposed in opposing relation and arranged transversely to the line of feed and the opposing wheels being adapted to sustain, rotate and advance a log, a rossing-cutter disposed between a pair of adjacent feed-wheels of one series, a knot-removing cutter also disposed between another pair of feed-wheels of the same series and situated in advance of the rossing-cutter, and means for rotating the feed-wheels of the two series

and the two cutter mechanisms in the same direction, substantially as described.

6. In a machine for removing bark, the combination of a main shaft, a series of feed-wheels loosely mounted on the shaft and transverse to the line of feed, rotary cutters disposed between certain of the feed-wheels and also loosely mounted on the shaft, a series of feed-wheels mounted independently of, and disposed in coöperative relation to, the first-named series of feed-wheels and also transverse to the line of feed, means for shifting the second-named series of feed-wheels to different angular positions with relation to the path of feed, and means for driving the feed-wheels of the two series and the cutter mechanisms in the same direction, substantially as described.

7. In a machine for removing bark, a feed mechanism consisting of a series of feed-wheels mounted on a continuous shaft and revoluble normally in given planes transverse to the line of feed, a series of shiftable brackets, another series of feed-wheels individually mounted on the brackets and disposed in coöperative relation to the feed-wheels of the first-named series and also transverse to the line of feed, means for simultaneously shifting the series of brackets to vary the angular relation of the second-named series of feed-wheels to the path of feed, cutter devices disposed between certain feed-wheels of the first-named series, and means for driving the feed-wheels of the two series in the same direction, substantially as described.

8. In a rossing-machine, a feed mechanism comprising a series of feed-wheels revoluble normally in fixed positions transverse to the line of feed and having alined axes, a series of pivoted brackets, a shipper mechanism connected to said brackets of the series and having a handle adapted to simultaneously change the position of all the brackets, another series of feed-wheels individually mounted on the brackets and disposed in cooperative relation to the feed-wheels of the first series and also transverse to the line of feed, and means for driving the feed-wheels of the second series in the same direction as the feed-wheels of the first series, in combination with a cutter mechanism adjacent to the path of feed, substantially as described.

9. In a machine for removing bark, a feed mechanism comprising a series of feed-wheels revoluble in one direction in planes transverse to the direction of feed and each provided with spiral ribs having toothed active edges, another series of feed-wheels disposed in coöperative relation to the first-named series of feed-wheels, and means for driving the feed-wheels of the two series in the same direction, in combination with a cutter mechanism disposed adjacent to the path of feed, substantially as described.

10. In a machine for removing bark, a feed mechanism comprising a series of feed-wheels each having its active surface formed by ribs occupying a spiral relation to the path of feed, another series of feed-wheels having their active edges disposed in coöperative relation to the feed-wheels of the first series, both said series of wheels being generally transverse to the line of feed, means for changing the angular relation of the second series of feed-wheels to the path of feed, and means for driving the feed-wheels of the two series in one direction, combined with a cutter mechanism situated adjacent to the path of feed, substantially as described.

11. In a machine for removing bark, a feed mechanism comprising a series of feed-wheels revoluble in planes transverse to the line of feed and having spiral ribs thereon, another series of feed-wheels disposed in coöperative relation to the first-named series and each having a toothed active edge, means for shifting the angular relation of the feed-wheels of the second series with relation to the first series, and means for driving the feed-wheels of the two series in the same direction, in combination with a cutter mechanism disposed adjacent to the path of feed, substantially as described.

12. In a machine for removing bark, the combination of a main shaft, a counter-shaft, separate driving-shafts disposed on opposite sides of the counter-shaft and driven therefrom, a series of feed-wheels idly mounted on the main shaft and geared to one of said driving-shafts, another series of feed-wheels mounted in shiftable and coöperative relation to the feed-wheels of the first series and geared to the other driving-shaft, both said series of wheels being generally transverse to the line of feed and cutter mechanisms disposed between pairs of the feed-wheels of the first series, substantially as described.

13. In a machine for removing bark, the combination of a main shaft provided with a series of feed-wheels, an eccentric sleeve loosely fitted on the shaft, a rossing cutter-head fixed on the main shaft and disposed between a pair of the feed-wheels one of which turns loosely on said eccentric sleeve, an adjusting-shaft having gear connections with said eccentric sleeve, means for independently rotating said feed-wheels, and another series of feed-wheels mounted in coöperative relation to the first-named series and shiftable to different angular positions with relation thereto, substantially as described.

14. A machine for removing bark comprising a main shaft, a feed mechanism having one series of feed-wheels mounted loosely on the shaft and another series of feed-wheels disposed in shiftable relation to the first-named series, cutter-heads alternating with certain feed-wheels of the first series, a sawing mechanism having a saw mounted on the main shaft to be propelled thereby, a rotary cutter-head also mounted on the main shaft and a supplemental feed mechanism comprising a coöperating feed-roll geared to a coun-

ter-shaft which serves to drive the feed-wheels and the cutter-heads, substantially as described.

15. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels having their centers in a line parallel to the first series and adjacent thereto and also transverse to the line of feed, each wheel of the second series being mounted on an independent pivot perpendicular to its axis, and levers connecting said independent pivots of the second series, whereby the angular relation of the second series may be changed with relation to that of the first series.

16. In a machine for removing bark from logs, a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels adjacent to the first series and having their centers in a line parallel thereto and also transverse to the line of feed, a vertical pivot upon which the axle of each wheel of the second series is independently mounted, a lever-arm adapted to turn said wheel about its axis, and means connecting all the lever-arms, whereby the wheels of the second series may be simultaneously turned to vary their vertical planes while preserving parallel relation.

17. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels mounted adjacent to the first series on independent pivots and having their centers in a line parallel thereto and also transverse to the line of feed, a standard upon which each wheel of the second series is journaled, said standard being mounted to revolve in a plane perpendicular to the plane of rotation of the wheel, a lever-arm connected to each of said standards and adapted to turn the same about its pivot, a parallel bar connecting the outer ends of all said lever-arms, and a hand-lever connected to said bar to enable all of the wheels of the second series to be rotated to change their angular relation to the first series of wheels while preserving parallel relation to each other.

18. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels mounted adjacent to the first series on independent pivots and having their centers in a line parallel thereto and also transverse to the line of feed, a standard upon which each wheel of the second series is journaled, said standard being mounted to revolve in a plane perpendicular to the plane of rotation of the wheel, a lever-arm connected to each of said standards and adapted to turn the same about its pivot, a parallel bar connecting the outer ends of all said lever-arms, a hand-lever connected to said bar to enable all of the wheels of the second series to be rotated to change their angular relation to the first series of wheels while preserving parallel relation to each other, means for driving all of said feed-wheels in the same direction, and means for removing the bark from a log located adjacent to the line of feed.

19. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels mounted adjacent to the first series on independent pivots and having their centers in a line parallel thereto and also transverse to the line of feed, a standard upon which each wheel of the second series is journaled, said standard being mounted to revolve in a plane perpendicular to the plane of rotation of the wheel, a lever-arm connected to each of said standards and adapted to turn the same about its pivot, a parallel bar connecting the outer ends of all said lever-arms, a hand-lever connected to said bar to enable all of the wheels of the second series to be rotated to change their angular relation to the first series of wheels while preserving parallel relation to each other, means for rotating all of said wheels in the same direction, rotary cutter-knives mounted between pairs of wheels of said first-mentioned series, and means for rotating said cutter-knives.

20. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels mounted adjacent to the first series on independent pivots and having their centers in a line parallel thereto and also transverse to the line of feed, a standard upon which each wheel of the second series is journaled, said standard being mounted to revolve in a plane perpendicular to the plane of rotation of the wheel, a lever-arm connected to each of said standards and adapted to turn the same about its pivot, a parallel bar connecting the outer ends of all said lever-arms, a hand-lever connected to said bar to enable all of the wheels of the second series to be rotated to change their angular relation to the first series of wheels while preserving parallel relation to each other, means for rotating all of said wheels in the same direction, a rotary cutter-head mounted coaxially with the wheels of the first series, cutter-knives adapted to project slightly beyond the same into the line of feed, and means for rotating said cutter-head.

21. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels mounted adjacent to the first series on independent pivots and having their centers in a line parallel thereto and also transverse to the line of feed, a standard upon which each wheel of the second series is journaled, said standard being mounted to revolve in a plane perpendicular to the plane of rotation of the wheel, a lever-arm connected to each of said standards and adapted to turn the same about its pivot, a paral-

lel bar connecting the outer ends of all of said levers, a hand-lever connected to said bar to enable all of the wheels of the second series to be rotated to change their angular relation to the first series of wheels while preserving parallel relation to each other, means for rotating all of said wheels in the same direction, a rotary cutter-head mounted coaxially with the wheels of the first series, cutter-knives adapted to project slightly beyond the same into the line of feed, means for rotating said cutter-head, and means for adjusting said cutter-head to cause the knives to project more or less into the line of feed.

22. A machine for removing bark from logs comprising a series of feed-wheels coaxially mounted and transverse to the line of feed, a second series of feed-wheels mounted adjacent to the first series on independent pivots and having their centers in a line parallel thereto and also transverse to the line of feed, a standard upon which each wheel of the second series is journaled, said standard being mounted to revolve in a plane perpendicular to the plane of rotation of the wheel, a lever-arm connected to each of said standards and adapted to turn the same about its vertical pivot, a parallel bar connecting the outer ends of all of said lever-arms, a hand-lever connected to said bar to enable all of the wheels of the second series to be rotated to change their angular relation to the first series of wheels while preserving parallel relation to each other, means for rotating all of said wheels in the same direction, a rotary cutter-head mounted coaxially with the wheels of the first series, cutter-knives adapted to project slightly beyond the same into the line of feed, means for rotating said cutter-head, and a knot-removing cutter mounted between another pair of wheels of the first series in advance of said first-named cutter, whereby to trim the log previous to removing the bark.

23. A machine for removing bark from logs comprising a series of feed-wheels loosely mounted on a single shaft, a second series of feed-wheels arranged in a line parallel to the first series and adjacent thereto, both series being generally transverse to the line of feed, a counter-shaft arranged adjacent to each of said series of feed-wheels, gearing connecting each of said counter-shafts with the individual wheels of the respective series, and a third counter-shaft to which power is applied located centrally of the machine and having operative connections to each of said counter-shafts.

24. A machine for removing bark from logs, comprising a series of feed-wheels loosely mounted on a single horizontal shaft and transverse to the line of feed, a second series of feed-wheels having their line of centers parallel to said shaft and said wheels being adjacent to the wheels of said first series and also transverse to the line of feed, whereby to support a log between them in the manner described, a vertical standard upon which each of the wheels of the second series is journaled, each of said vertical standards being mounted by a swivel-joint in the base-plate of the machine, a parallel bar having suitable connections with each of said standards, whereby the same may be turned simultaneously about their vertical pivots to maintain the wheels of said second series in parallel relation while changing their vertical planes of rotation, appropriate means connected with said bar for operating the same back and forth by hand to adjust the position of the wheels of said second series, a gear-wheel carried by each of the wheels of said second series coaxially therewith, a counter-shaft mounted parallel to the wheels of said second series and having gears thereon intermeshing with said first-mentioned gears, whereby their vertical planes may be altered without affecting the gear-meshing, a second counter-shaft connected by gearing with each one of the wheels of the first-mentioned shaft respectively, and a power-shaft connected with each of said counter-shafts and adapted to operate the same.

25. A machine for removing bark from logs comprising two parallel series of feed-wheels with connections for turning them all in the same direction and adapted to support and turn a log placed thereon, a pressure-arm pivoted at one side of the machine and extending over the position of the log, a hand-lever mounted on a jack-shaft, a second lever mounted on said jack-shaft, a link connecting the outer end of said last-mentioned lever with the pressure-arm, whereby said hand-lever may be operated to cause the pressure-arm to press upon the log, and cutting means mounted between the feed-wheels of one of the series.

26. In a machine for removing bark from logs, the feed mechanism comprising two parallel sets of feed-wheels between which the log is adapted to rest, means for rotating all the feed-wheels simultaneously in the same direction, and a series of helical ribs formed on one or more of said wheels whereby the log is advanced along the series of feed-wheels.

27. In a machine for removing bark from logs, a feed-wheel mounted transverse to the direction of feed and having ribs with sharpened edges around its periphery, said ribs having a spiral contour with relation to the center of the wheel and a helical direction with respect to the axis thereof, whereby to simultaneously rotate a log and advance it in the direction of its length.

28. In a machine for removing bark from logs, a feed-wheel mounted transverse to the direction of feed and having ribs with sharpened edges around its periphery, said ribs having a spiral contour with relation to the center of the wheel and a helical direction with respect to the axis thereof, and each rib

having a projecting point upon its outer extremity and being terminated by an abrupt shoulder.

29. In a machine for removing bark from logs, two parallel series of feed-wheels arranged side by side and adapted to support a log between them and to rotate and advance the same, the wheels of one of said series having disk-shaped edges against which the log rests and being mounted on independent parallel axes and said axes being mounted to turn about vertical axes, and means for adjusting said wheels about said last-mentioned axes, whereby to change the rate of feed or advancement of the log.

30. In a machine for removing bark from logs, two parallel series of feed-wheels arranged side by side and adapted to support a log between them and to rotate and advance the same, the wheels of one of said series having disk-shaped edges against which the log rests and being mounted on independent parallel axes and said axes being mounted to turn about vertical axes and means connecting all of said last-mentioned axes for turning the same simultaneously, whereby to maintain the parallel relation of the wheels of said series while simultaneously adjusting their angular relation to the line of feed to change the rate of advancement of the log.

31. A machine for removing bark from logs comprising a main shaft carrying a series of feed-wheels loosely mounted thereon, a knot-removing cutter-head carrying blades mounted coaxially between one pair of said feed-wheels, a bark-removing cutter-head mounted likewise coaxially between another pair of said feed-wheels rearwardly of said knot-removing cutter-head, blades carried by each cutter-head, means for supporting the log against the feed-wheels to be acted on by both of said series of blades, and means for rotating said feed-wheels and cutter-head.

32. A machine for removing bark from logs comprising a main shaft carrying a series of feed-wheels loosely mounted thereon, a knot-removing cutter-head carrying blades mounted coaxially between one pair of said feed-wheels, a bark-removing cutter-head mounted likewise coaxially between another pair of said feed-wheels rearwardly of said knot-removing cutter-head, blades carried by each cutter-head, means for supporting the log against the feed-wheels to be acted on by both of said series of blades, means for rotating said feed-wheels and cutter-head, and an eccentric sleeve within the hub of one of said feed-wheels, whereby the same may be advanced or withdrawn toward or from the line of feed.

33. A machine for removing bark from logs comprising a main shaft longitudinal of the machine, a series of feed-wheels mounted thereon, a second series of feed-wheels parallel to the first series and adjacent thereto, both series being generally transverse to the line of feed whereby to support a log between them, a counter-shaft mounted centrally and below the two series of wheels, independent connecting means with each of the wheels of each series, whereby the latter may be turned from said counter-shaft, and an off-bearing conveyer-belt to remove waste material mounted on a wheel carried on said counter-shaft and extending outwardly of the machine.

34. In a machine for removing bark from logs, the combination of two adjacent series of feed-wheels in parallel lines generally transverse to the line of feed and adapted to support a log between them, a bark-pit located between said wheels, a longitudinal horizontal counter-shaft extending through said bark-pit and having individual connections with each of said feed-wheels, a conveyer-wheel mounted on said counter-shaft, a second conveyer-wheel mounted exterior to the frame of the machine, and a conveyer-belt carrying flights or blades thereon and mounted on said wheels and operating to remove the bark from said pit.

35. In a machine for removing bark from logs, the combination of two adjacent series of feed-wheels in parallel lines generally transverse to the line of feed and adapted to support a log between them, a bark-pit located between said wheels, a longitudinal horizontal counter-shaft extending through said bark-pit and having individual connections with each of said feed-wheels, a conveyer-wheel mounted on said counter-shaft, a second conveyer-wheel mounted exterior to the frame of the machine and a conveyer-belt mounted on the wheels and carrying blades and turning in a direction so as to carry off the bark from said pit with its lower reach and by means of the blades thereof.

36. In a machine for removing bark from logs, two parallel series of feed-wheels mounted side by side and adapted to support a log between them and to rotate and advance the same and turning constantly in a substantially vertical plane, the wheels of one of said series being mounted on independent parallel axes and said axes swiveled on vertical axes, and means for adjusting said wheels about said last-mentioned axes whereby to change the rate of feed or advancement of the log.

37. In a machine for removing bark from logs, a feed-wheel rotatable on an approximately horizontal axis, and a vertical swivel-mounting for said axis, whereby it may be rotated about the vertical axis, in conjunction with means at one side of said feed-wheel and coacting therewith to support a log between them.

38. In a machine for removing bark from logs, a disk-shaped feed-wheel rotatable on an approximately horizontal axis, and a vertical swivel-mounting for said axis whereby it may be rotated about the vertical axis, in conjunc-

tion with means at one side of said feed-wheel and coacting therewith to support a log between them.

39. In a machine for removing bark from logs, a feed-wheel having a substantially disk-shaped edge against which the log rests and mounted to rotate on a horizontal axis and generally transverse to the line of feed, means for continuously rotating said wheel about its axis during the operation of the machine, means coacting with said feed-wheel at one side thereof to support a log between them, and a support for said axis swiveled to rotate about a vertical axis, substantially as described.

40. In a machine for removing bark from logs, a feed-wheel having a substantially disk-shaped edge against which the log rests and mounted to rotate on a horizontal axis and generally transverse to the line of feed, means for continuously rotating said wheel about its axis during the operation of the machine, means coacting with said feed-wheel at one side thereof to support a log between them, a support for said axis swiveled to rotate about a vertical axis, and manual adjusting means connected with said swiveled support whereby the plane of rotation of said feed-wheel is altered with respect to the line of feed.

41. In a machine for removing bark from logs, the combination of a series of feed-wheels having their centers in a line parallel to the line of feed and rotating in planes generally transverse to the line of feed, means at one side of said feed-wheels coacting therewith to support a log between them, means for continuously rotating said wheels during the operation of the machine, vertically-swiveled supports carrying the axes of said wheels, and manual adjusting means connected with said supports for adjusting the plane of rotation of said wheels while preserving them parallel to each other.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOSEPH MOREAU.

Witnesses:
EDOUARD ARCHAMBEAULT,
XAVIER PINARD.