

No. 788,243.

PATENTED APR. 25, 1905.

C. E. BROWN.
LOG SAWING MACHINE.
APPLICATION FILED FEB. 26, 1904.

5 SHEETS—SHEET 1.

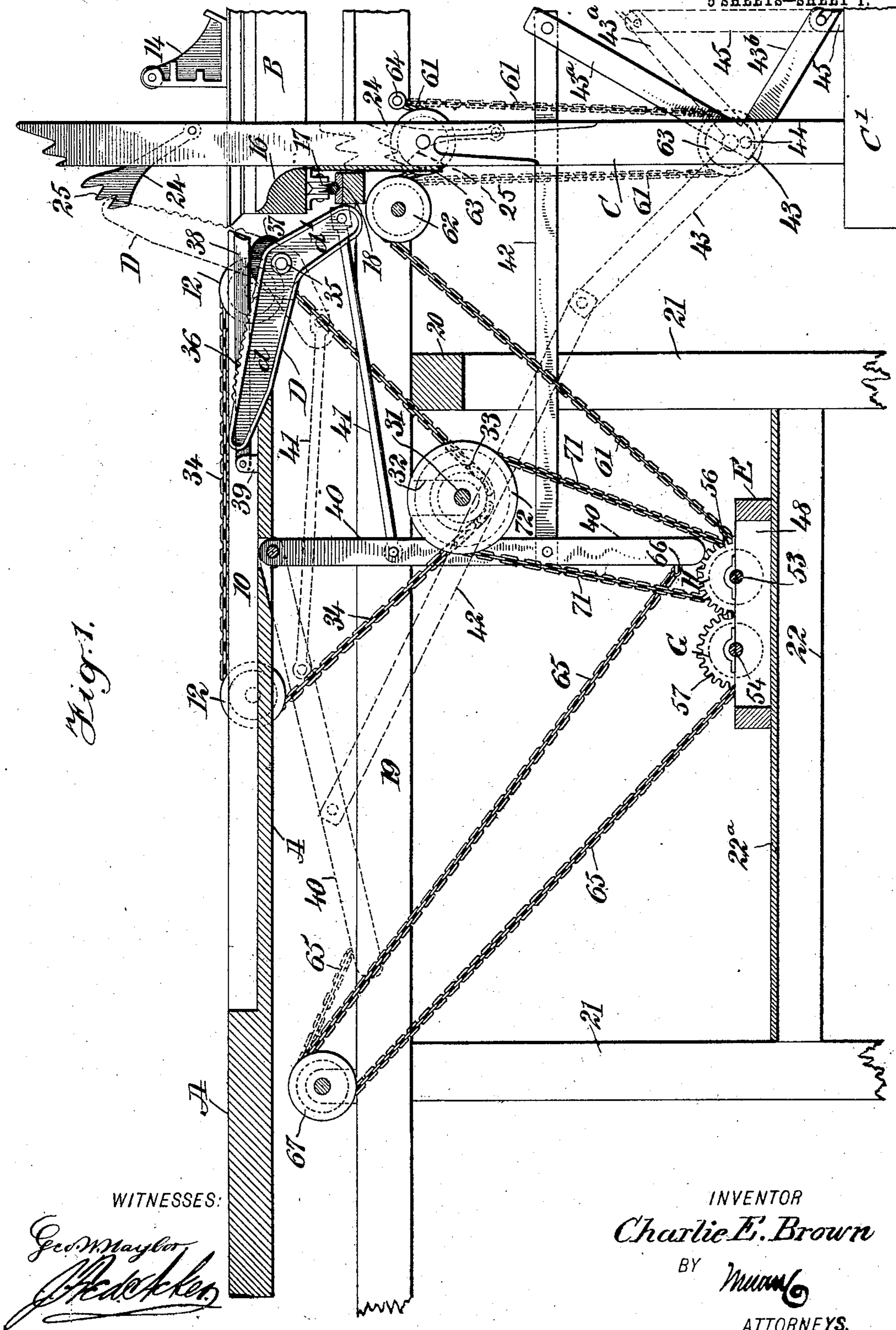


Fig. 1.

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J. H. K. Ken

INVENTOR

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BY

[signature]

ATTORNEYS.

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5 SHEETS—SHEET 2.

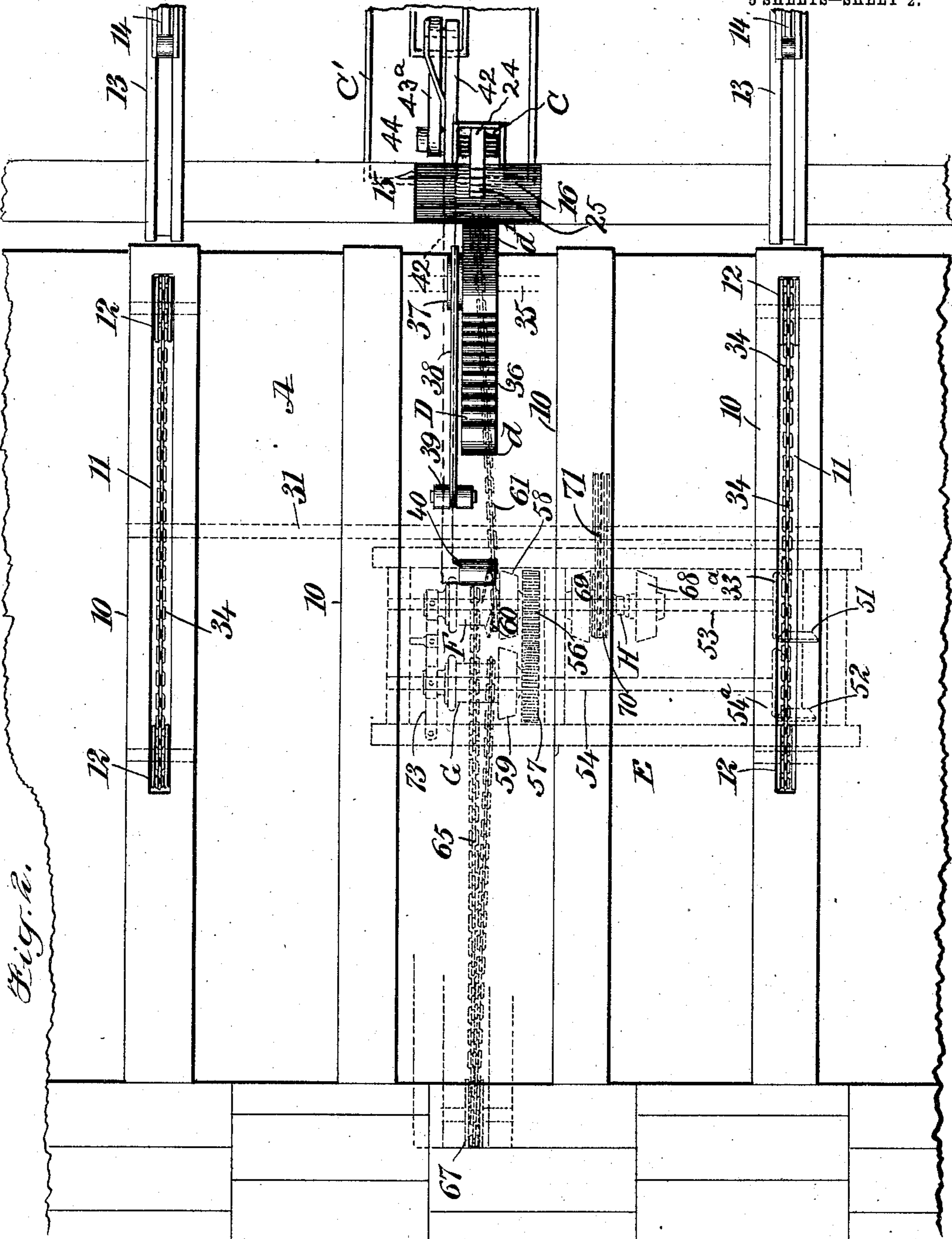


Fig. 2.

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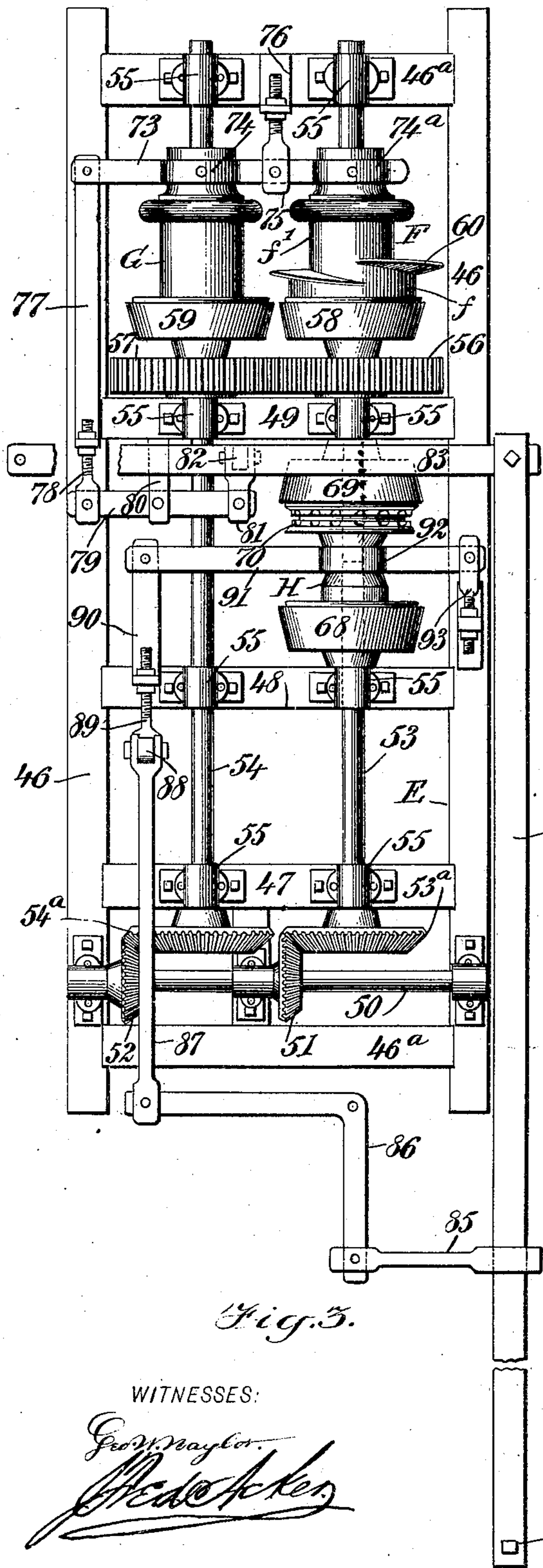
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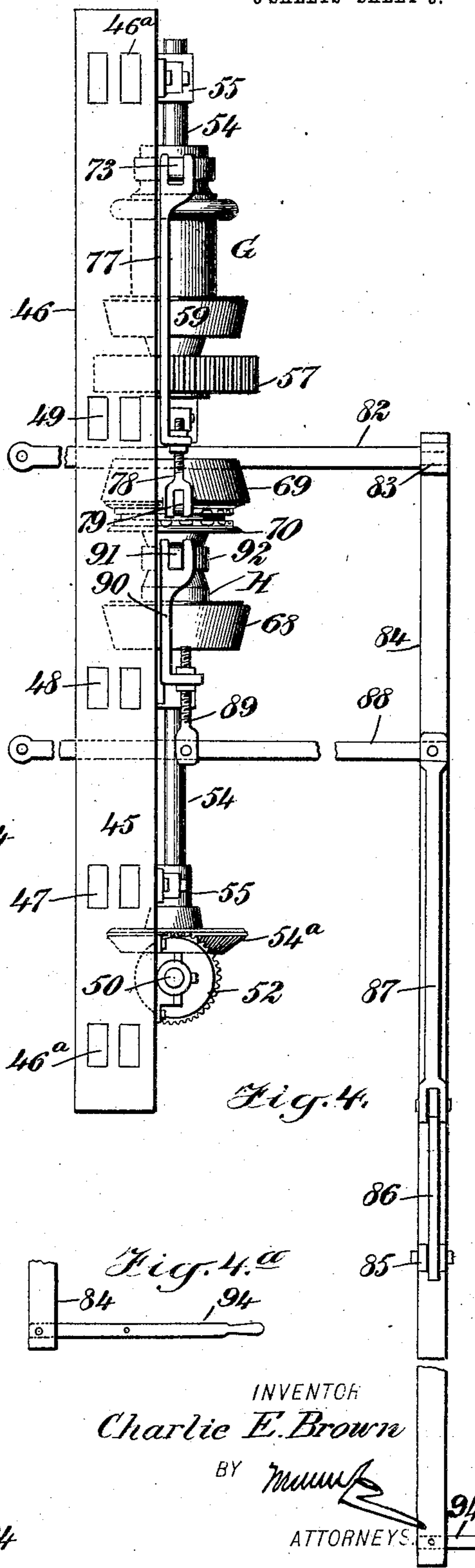
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5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4.

Fig. 5.

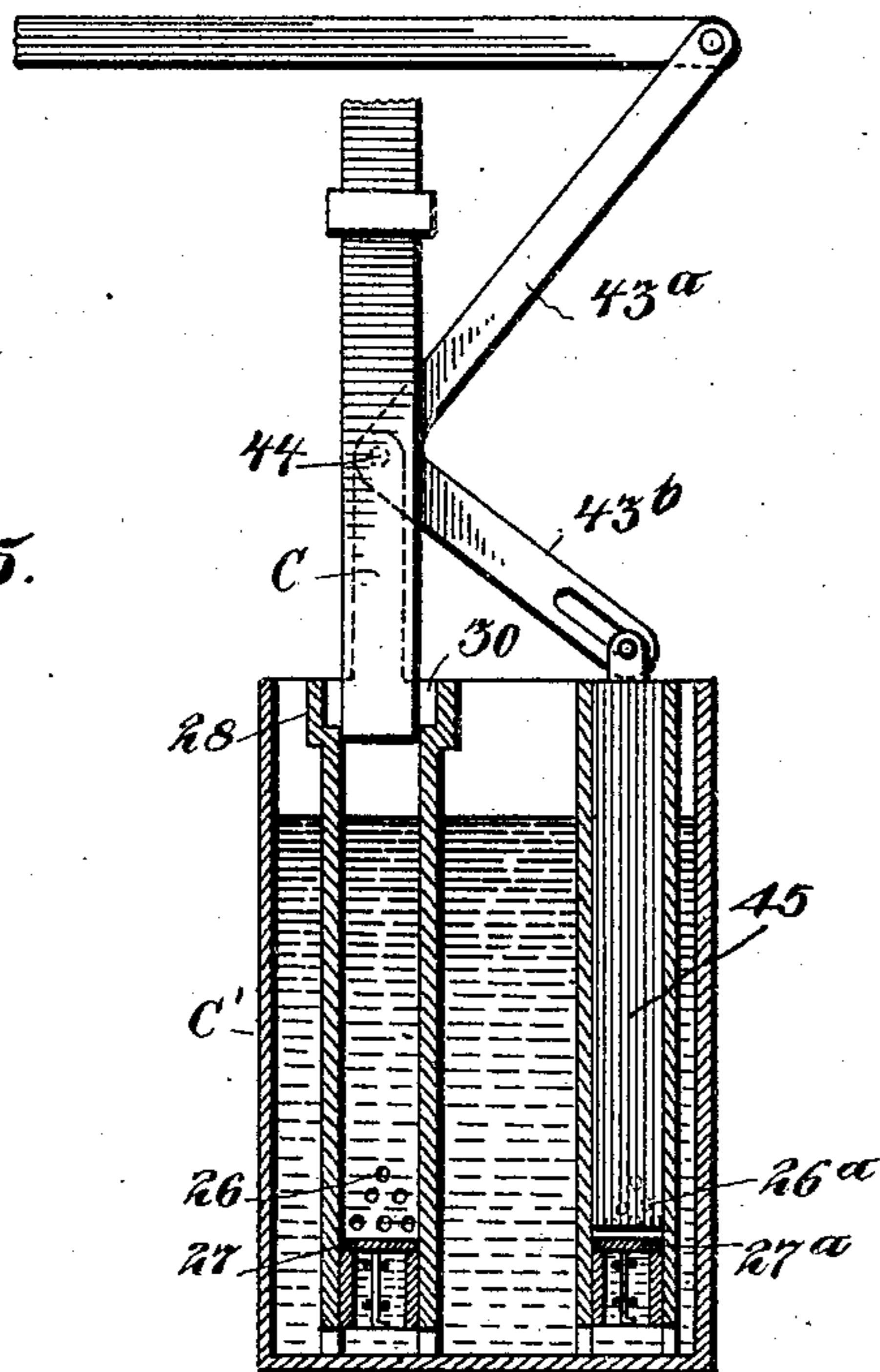
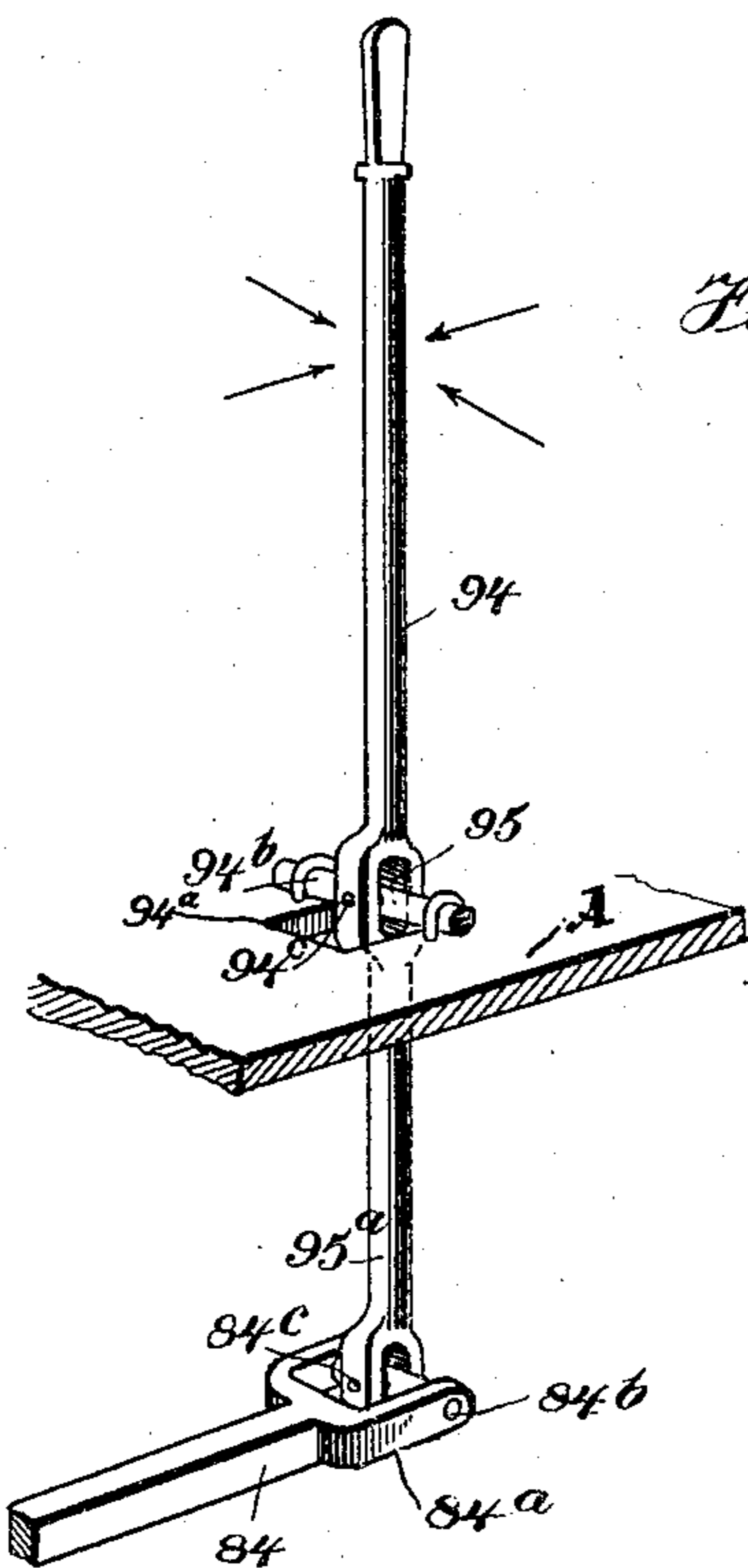


Fig. 8.



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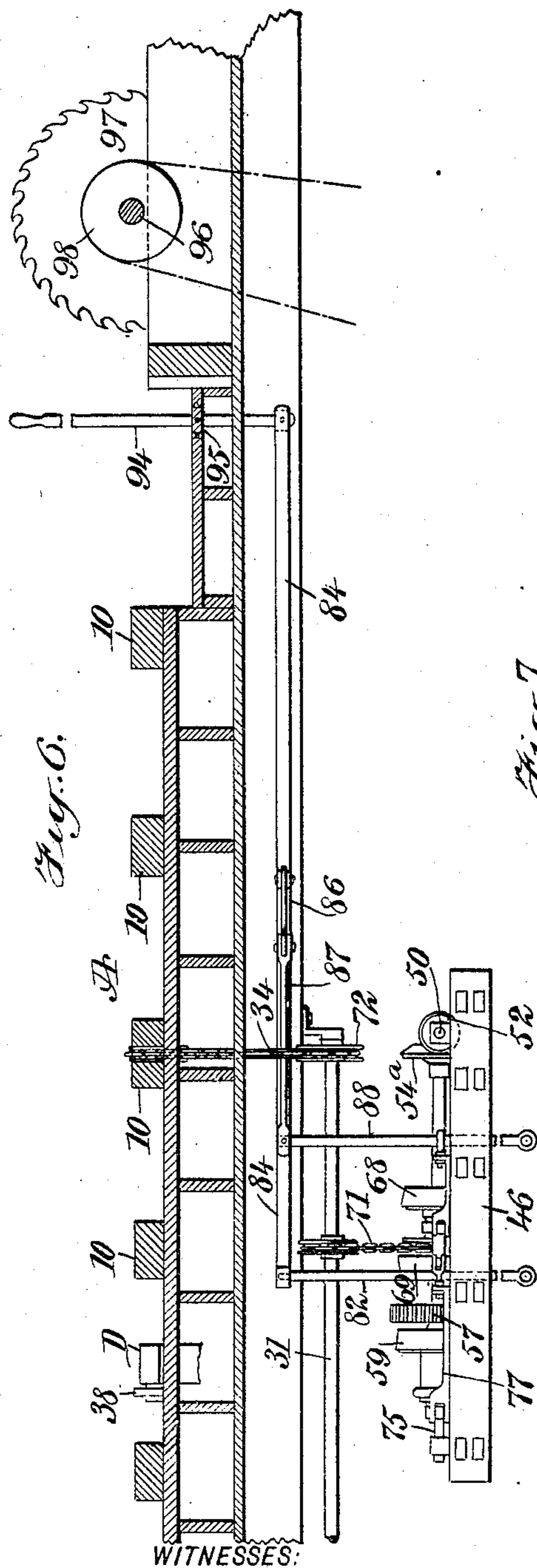
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5 SHEETS--SHEET 6.



Aug. 6.

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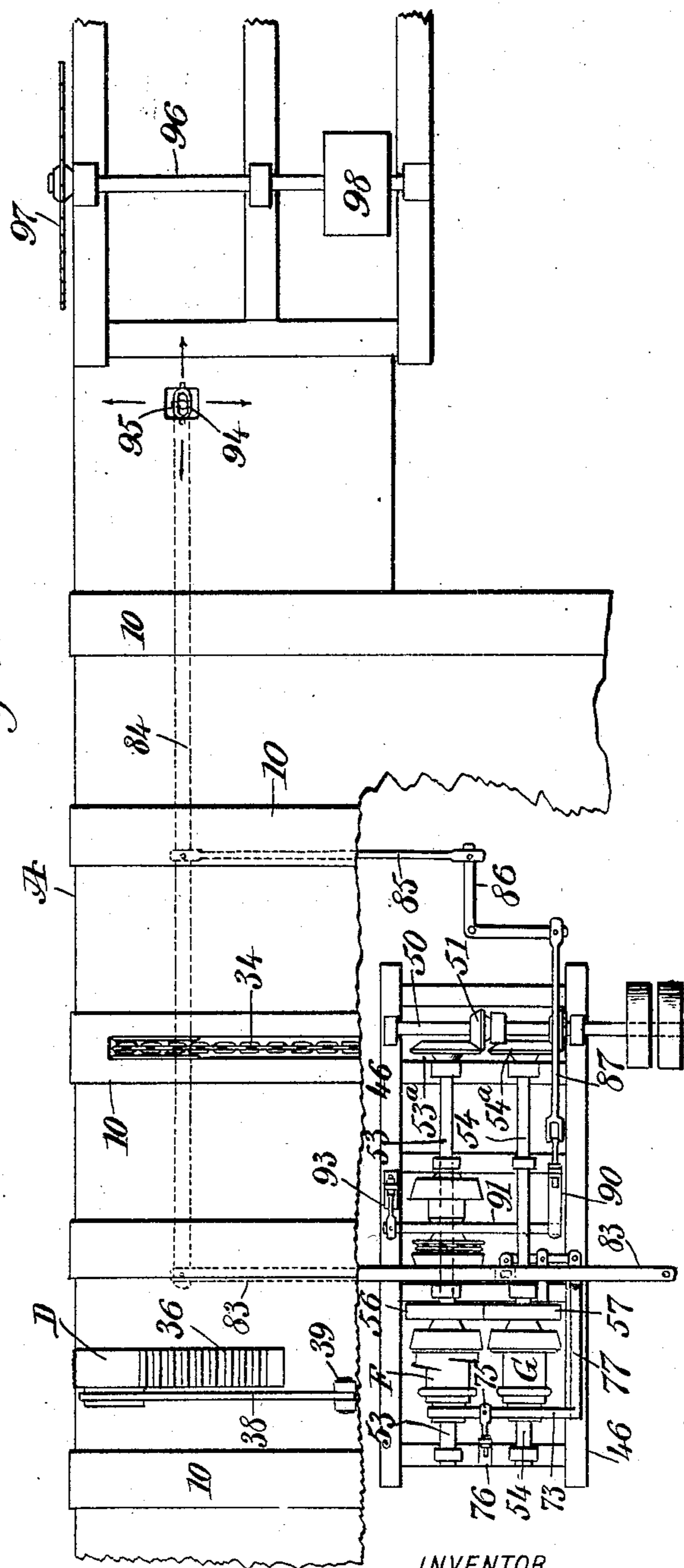


Fig. 7.

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UNITED STATES PATENT OFFICE.

CHARLIE ENOCH BROWN, OF STAYTON, OREGON.

LOG-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 788,243, dated April 25, 1905.

Application filed February 26, 1904. Serial No. 195,367.

To all whom it may concern:

Be it known that I, CHARLIE ENOCH BROWN, a citizen of the United States, and a resident of Stayton, in the county of Marion and State of Oregon, have invented a new and Improved Log-Sawing Machine, of which the following is a full, clear, and exact description.

My invention relates to log-sawing machines, and particularly to a machine in which is combined a friction-nigger, a cant-handler, and log-deck skid-chains.

The purpose of the invention is to provide a machine of the above character embodying the parts named which will be of simple, durable, and economic construction, wherein a nigger, cant-handler, and log-deck skid-chains are controlled by a single lever capable of operation in four directions, and wherein there are no steam pistons or joints to be kept in order, as in a steam-nigger, and wherein the log turns away from the nigger, preventing it from tearing off slivers, and wherein, further, the log falls upon the skids when turning, thereby avoiding jar to the carriage.

Another purpose of the invention is to so construct the machine that thin wide cants may be turned one at a time or wherein several cants may be turned at once, which is a great advantage in mills having no pony-saw.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical central longitudinal section through the machine. Fig. 2 is a plan view of the machine. Fig. 3 is a plan view of the spools for the nigger push-bar, skid-chains, and driving mechanism therefor and the frame in which said parts are mounted. Fig. 4 is a side elevation of the parts shown in Fig. 3 and a side elevation of a shifting device for bringing one or the other spools into action. Fig. 4^a is a detail view of a universal lever for operating the shifting devices. Fig. 5 is a transverse section through the hydraulic tank-cushions for the

nigger. Fig. 6 is a sectional side elevation of the machine, and Fig. 7 is a plan view of the parts shown in Fig. 6. Fig. 8 is a detail view illustrating the mounting of the shifting-lever.

A represents the log-table of the machine, which table is provided with longitudinal skids or offsets 10, formed at regular intervals upon its upper surface, and in the outer offsets or skids 10 longitudinal slots 11 are produced, extending through the table. At each end of each slot 11 peripherally-grooved pulleys 12 are mounted to revolve, which pulleys are practically idlers.

B represents the carriage, which is provided with slideways 13, offset from the upper face of the carriage, the said slideways 13 being opposite the outer ends of the slotted skids or offsets 10 on the log-table. In the slideways 13 head-blocks 14, of any suitable construction, are adjustably mounted.

Centrally between the slideways 13 in the inner edge of the carriage B, or the edge which faces the log-table A, an opening 15 is produced, and the bottom portion of the said opening is convexed in an outward direction, forming thereby a cam-surface 16. (Shown best in Fig. 1.) The said carriage B is provided with wheels 17, traveling on a track 18, which track is supported by a suitable transverse beam secured to the upper side beams 19, as is indicated in Fig. 1, and the said log-table is suitably supported on the said side beams 19 of the frame. The side beams 19 of the frame are in their turn supported by any desired number of cross-beams 20, and the cross-beams 20 are held in position by standards 21. Where the cross-beams 20 are not employed and the standards 21 are used, they may be carried directly up to an engagement with the side beams 19. Furthermore, lower bars or beams 22 are carried from standard to standard, and these are floored over, particularly below the central portion of the log-table A, as is shown at 22^a in Fig. 1.

The nigger C may be constructed of wood or of iron or partially of one material and partially of the other, as is shown in Fig. 1. The nigger C passes down through a suitable opening in the carriage B adjacent to the opening

15 in the inner edge of the said carriage, as is shown in Fig. 2, and the said nigger is provided with a slot 23 near its upper end extending through from one side to the other, and
 5 in this slot the inner end of a dog 24 is pivoted, which dog in action extends out beyond the inner face of the nigger, and its outer or free end is weighty and is wider than at its pivotal end, and at the outer end of the dog
 10 24 teeth 25 are formed. When the nigger is carried downward free from the carriage B, the dog 24 is carried entirely within the slot 23, as is shown by dotted lines in Fig. 1, by reason of the free end of the dog engaging
 15 with the cam 16 at the downward movement of the nigger, and when the nigger is carried upward for action through the opening in the carriage B the dog 24 will naturally drop downward into working position, as its outer end is
 20 the heaviest; but the dog 24 is prevented from dropping downward during its inactive period by engagement at such times with suitable guides on the frame of the machine.

The lower end of the nigger C is adapted to
 25 operate in a cushion-tank C', and this tank is preferably constructed as is illustrated in Fig. 5, in which it will be observed that the tank consists of a box-body having a series of apertures 26, and at the top of the box-body a cup-flange 28 is formed, and at the bottom a valve
 30 27 is located. Around the lower portion of the nigger a collar 29 is located, which collar is adapted to fit snugly in a chamber 30, made by the cup-flange 28, when the nigger is in its
 35 lowermost position. Thus it will be observed that a double cushion is provided for the nigger, and it receives comparatively little shock and creates no noise when it is carried to its lower position. The surplus cushion material
 40 passes out through the apertures 26 at the downward stroke of the nigger C', and at the upward stroke of the nigger additional cushion material is drawn up through the valve 27 in the bottom of the hydraulic-cushion tank.

45 A drive-shaft 31 is horizontally located beneath the upper beams 19 of the frame of the machine, and this shaft, as is shown in Fig. 2, is about central with respect to the slots 11 in the log-table A. The hangers 32 for the shaft
 50 31 are shown in dotted lines in Fig. 1. A sprocket-wheel 33 is located at each end of the shaft 31, and the log-deck skid-chains 34 are passed over the idlers 12 in the slots 11 in the log-table A and around the sprocket-wheels
 55 33 just described, the said log-deck skid-chains being endless.

The push-bar D is located adjacent to the inner edge of the nigger C and in horizontal alignment with the said nigger, and the said
 60 push-bar is of angular construction, its upper outer limb d being longer than its lower inner limb d' , as is shown in Fig. 1. The pivot-pin 35 for the said push-bar D is suitably supported beneath the log-table and passes through the
 65 said push-bar at the junction of its limbs.

On the upper longitudinal edge of the outer or upper limb d of the push-bar D teeth 36 are formed, and on one side of the said push-bar D at its pivot-point an eccentric 37 is produced. (Shown in Figs. 1 and 2.) This eccen- 70
 tric 37 as the upper limb of the push-bar is carried upward and toward the nigger, as is shown in dotted lines in Fig. 1, serves to raise the free end of a skid 38, the opposite end of the skid being suitably pivoted to the log-table, as is shown at 39 in Fig. 2, and when the
 75 free end of the skid 38 is raised by the raising action of the push-bar D the said free end of the skid 38 will be brought on about a level with the top of the carriage B, so that the logs carried
 80 by the chains 34 may be carried on to the carriage without interruption, and the slideways 13, which form skids on the carriage, prevent the carriage from receiving undue jar or shock when the logs are rolled thereon or when
 85 the logs are turned.

A hydraulic-cushion tank is provided for the push-bar D, constructed practically in the same manner as the tank C' described, except that the cup-flange is omitted, and such connection is made in the following manner: A
 90 swinging arm 40 is pivoted to the log-table A, extending downwardly therefrom when the push-bar is in its lower or normal position, and a rod 41 is pivoted to the link 40 near its upper end and to the lower or inner limb d' of the push-bar. A second link 42 is pivoted to the swinging arm 40 near the lower end of the latter, and the link 42 is carried beneath the carriage B beyond the nigger C and is pivotally attached to one member, 43^a, of an elbow-lever 43, the other member, 43^b, of the said elbow-lever being pivotally attached to a bar 45, which enters the hydraulic-cushion tank provided for the said push-bar. The pivot 105
 44 of the elbow-lever 43 is attached to any convenient support.

An auxiliary frame E is located on the platform 22^a, as is shown in Fig. 1, extending transversely of the machine, as is indicated in dotted lines, Fig. 2. This auxiliary frame consists of two side beams 46, end beams 46^a, and intermediate cross-beams 47, 48, and 49. A power-shaft 50 is journaled in suitable bearings on the side beams 46, between the end beam 46^a and the intermediate cross-beam 47, and the said power-shaft is provided with two bevel-gears 51 and 52 and a suitable driving-pulley. Two parallel shafts 53 and 54 are journaled in suitable bearings 55, located on the intermediate cross-beams and the end beam 46^a opposite that at which the lower shaft is located, as is best shown in Fig. 3. At one end of the shaft 53 a bevel-gear 53^a is secured, which meshes with the bevel-pinion 51, and at the corresponding end of the shaft 54 a beveled gear 54^a is secured, which meshes with the bevel-pinion 52.

Adjacent to the intermediate cross-beam 49, between said cross-beam 49 and adjacent 130

end beam 46^a, gears 56 and 57 are secured, respectively, to the shafts 53 and 54, and these gears are in mesh, as is also shown in Fig. 3, and on the shaft 53 adjacent to the gear 56 a friction-clutch 58 is secured, and a smaller clutch 59 is correspondingly placed on the shaft 54. It may be here remarked that the shaft 53 is in two sections, as indicated in Figs. 3 and 7.

A spool F is loosely mounted on the shaft 53 between the cross-beam 49 and end beam 46^a. This spool F has one section *f* of greater diameter than the other section *f'*, and where the two sections connect a spiral flange 60 is formed upon the said spool. The spool is movable on the shaft 53 to and from the clutch 58, and when in engagement with the clutch the said spool is rotated. This spool F is adapted to communicate upward movement to the nigger C, and to that end a chain 61 is attached to the larger section *f* of the spool, and this chain is carried upward over a pulley 62, mounted in the main frame of the machine below the push-bar D, as is shown in Fig. 1, and the said chain is then carried under and in engagement with a pulley 63, mounted to turn in the nigger C, and the other end of the chain is attached to the said frame at the rear of the nigger C, as is shown at 64 in Fig. 1.

The object of the dog 24 on the nigger C is to enable the nigger to turn small logs or cants which it could not otherwise turn. The spool F is constructed as above described in order that it may raise the nigger with great velocity until the nigger reaches the log, and at such time the chain winds up on the larger section *f* of the spool; but as soon as the log is reached the spiral flange 60 directs the chain to the smaller section *f'* of the spool, thus diminishing the speed of the nigger, but increasing its power. When the nigger is to be raised, the spool is thrown in engagement with the clutch 58, and when the nigger is to descend the spool is separated from the said clutch and the nigger will drop of its own weight.

A plain spool G is loosely mounted on the shaft 54, opposite the nigger-spool F, and the spool G as the shaft 54 is operated is adapted to operate to raise the push-bar D. The said spool G is therefore made movable to and from the clutch 59, being driven when in engagement with the clutch and remaining idle when carried out of such engagement.

A chain 65 is attached at one end to the lower portion of the swinging arm 40 in the system of links connected with the push-bar D, as is shown in Fig. 1, and this chain 65 is carried upward and inward over a pulley 67, suitably supported on the main frame of the machine, as is also shown in Fig. 1. The chain 65 is then carried downward and outward or forward to an engagement with the said spool G. When the spool is rotated by

engagement with the clutch 59, the lower end of the main link 40 is drawn upward, placing the series of links connected with it in the position shown by dotted lines in Fig. 1, and the push-bar D is then carried upward to the dotted position shown in the same figure. When the push-bar is to be dropped, the spool G is disconnected from the clutch 59, whereupon the push-bar D will fall by gravity to its normal position. (Shown in positive lines in Fig. 1.)

Between the cross-beams 48 and 49 two clutches (preferably friction-clutches 68 and 69) are secured to the opposing ends of the shaft 53, and between these clutches a spool H is held to slide on the sections of the shaft 53 for engagement with either of the said clutches 68 and 69, and at one end of this spool H a sprocket-wheel 70 is formed, as is best shown in Figs. 3 and 4. An endless chain 71 is passed around the said sprocket-wheel 70 on the spool H and is then carried upward and is passed around a larger sprocket-wheel 72, secured about centrally on the drive-shaft 31 for the log-deck skid-chains. Thus when the spool H is in engagement with one clutch—the clutch 68, for example—the log-deck skid-chains are made to travel in the direction of the nigger, and when the said spool H is in engagement with the other clutch, 69, the log-deck skid-chains are made to revolve in an opposite direction or away from the nigger. When the said spool H is out of engagement with both of the clutches 68 and 69, the said skid-chains remain idle.

The manner in which the spools F and G are shifted is shown in Figs. 3 and 4 and consists of a shifting-lever 73, having loops 74 and 74^a, receiving and secured, respectively, to the outer ends of the outer hub portions of the spools G and F, and the shifting-lever is fulcrumed between its loops upon a bar 75, adjustably secured to a hanger 76. Thus it will be observed by moving the shifting-lever 73 in one direction—outward, for example—the nigger-spool F will be placed in engagement with its clutch-disk 58 and the bar-spool G will be carried out of engagement with its clutch 59. When the shifting-lever is moved inward, the bar-spool G is placed in action and the nigger-spool F is carried out of action.

A link 77 is pivoted to the outer end of the shifting-lever 73, and the said link extends parallel with one of the said beams 46 and is adjustably and pivotally attached, by means of a threaded bar 78, to the outer end of a lever 79, fulcrumed at its center upon a horizontal bracket 80, and at the inner end of this lever 79 a connecting-bar 81 is pivoted. The said connecting-bar 81 is likewise pivoted to an upright link 82, fulcrumed at its lower end to a suitable support. The upper end of this link 82 is pivoted to an upper transverse bar 83, pivoted at one end to a proper support,

the other end being secured to the main shifting-bar 84, which extends parallel and a requisite distance from and above the opposite side beam 46 of the auxiliary frame E to a point beyond the end of the said auxiliary frame at which the drive-shaft is located.

The spool H, controlling the movement of the skid-chains, is operated in the following manner and from the same main shifting-bar 84, used for shifting the spools F and G. To that end a transverse link 85 is attached to the said main shifting-bar 84 and to a member of an elbow-lever 86, suitably fulcrumed at the junction of its members, and the other member of the said elbow-lever is pivotally attached to a link 87, extending longitudinally of the auxiliary frame E. This link 87 is pivotally attached to the upper end of a bar 88, fulcrumed to a suitable support at its lower end, and a screw-bar 89 is pivoted to the said pivoted bar 88 and connects said bar with a short link 90. This link 90 is pivotally attached to a shifting-lever 91, having a loop 92 between its ends which receives the sectional portion of the spool H. The opposite end portion of the shifting-lever 91 is pivoted to an adjustable bracket 93, as is shown in Fig. 3.

At the extreme outer end of the shifting-bar 84 a lever 94 is located, which lever is adapted to move in four directions, forward and rearward and to one or the other side, and, according to the direction in which the lever 94 is moved, one or the other of the main parts described will be brought into or carried out of action. To that end the lever 94 is passed down through an opening 94^a in the bed A, and where the lever passes through said opening a longitudinal slot 95 is made in the lever, and the lower end of the lever terminates in a fork 95^a. A short shaft 94^b is mounted for rotary motion on the bed A, which shaft crosses the opening 94^a in the bed and passes through the slot 95 in the lever, being pivotally connected with the lever by a pin 94^c, passing through the slotted portion of the lever and through the shaft, as is shown in Fig. 8. The shifting-bar 84 has a horizontal fork 84^a at its outer end, into which the fork 95^a of the lever 94 is entered, and a shaft 84^b is mounted to turn in the fork 84^a, and the fork 95^a of the lever 94 spans the shaft 84^b and is pivotally attached thereto by a pin 84^c.

In Figs. 6 and 7 I have shown the location of a saw-arbor 96, the saw 97 thereon, and the driving-pulley 98 for the arbor.

It is obvious that the log must turn forward upon the skid-chains as the nigger comes up through the carriage, as it cannot possibly go in any other direction, due to the direction of motion of the skid-chains. In turning three or more cants at the same time they are pushed back on the head-blocks before the nigger comes up.

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

1. In a log-sawing machine, a frame, a carriage mounted to travel upon the frame, a nigger mounted for movement on the frame and through the carriage, a hydraulic cushion for the nigger, a dog carried by the nigger, and means upon the carriage for closing the dog in the nigger at the downward movement of the latter, as described.

2. In a log-sawing machine, a frame, a carriage mounted upon the frame, a nigger mounted for movement in the frame and through the carriage, a hydraulic cushion for the nigger, a dog carried by the nigger, adapted to enter the same and drop therefrom by gravity, a cam-surface upon the carriage for directing the dog within the nigger at its downward movement, a driving mechanism, and a lifting connection between the said driving mechanism and the nigger, as described.

3. In a log-sawing machine, a frame, a carriage mounted upon the frame, a nigger mounted for movement in the frame and through the carriage, a hydraulic cushion for the nigger, a dog carried by the nigger, adapted to enter the same and to drop therefrom by gravity, a cam-surface upon the carriage for directing the dog into the nigger in its downward movement, a driving mechanism for the nigger, adapted to lift the same, which driving mechanism comprises a drive-shaft having a clutch thereon, a spool on the said shaft, a shifting device for the spool, pulleys located upon the frame and within the said nigger, and a flexible connecting medium between the said spool and the frame, which connecting medium engages with the pulleys, passing over the pulley on the frame and under the pulley carried by the nigger, as described.

4. In a log-sawing machine, a frame, a carriage mounted upon the frame, a nigger mounted for movement in the frame and through the carriage, a hydraulic cushion for the lower end of the nigger, a driving-shaft, a clutch secured to the driving-shaft, a spool mounted to slide on the driving-shaft, constructed in two diameters, a spiral flange located at the junction of the two diameters of the spool, a shifting device for carrying the spool to and from the clutch, a friction-roller on the frame, a second friction-roller mounted in the said nigger, and a chain attached to the said spool, which chain is passed over the pulley on the frame and under the pulley in the nigger to an attachment to the frame, whereby the initial upward movement of the nigger is rapid by reason of the chain winding on the larger portion of the spool, and whereby the final upward movement of the said nigger is slow and is increased in strength by reason of the chain winding at such time on the smaller diameter of the said spool, as described.

5. In a log-sawing machine, a frame, a nig-

ger mounted for movement in the frame, a hydraulic cushion for the bottom of the nigger, a dog carried by the said nigger, a pulley mounted on the frame, a second pulley 5 mounted in the nigger, a drive-shaft, a clutch on the said shaft, and a spool in two diameters and provided with a peripheral annular flange, adapted to impart differential speed, a shifting device for the spool, and a chain connected 10 with the spool and with the frame, which chain passes over the pulley on the frame and under the pulley carried by the nigger, as described.

6. In a log-sawing machine, a nigger, a hydraulic-cushion tank for the nigger, means for 15 moving the nigger and releasing the same, the nigger dropping by gravity, an angular push-bar pivoted in the frame, its upper member being provided with teeth and adapted in one position of the push-bar to incline in direc-

tion of the nigger, a controlling-bar in piv- 20 otal connection with the frame, a hydraulic cushion for the controlling-bar, a drive-shaft, a clutch secured on the drive-shaft, a spool loosely mounted on the drive-shaft, a shifting-lever connected with the said spool, a pulley 25 mounted on the frame, an operating device for the push-bar, and a chain connected with said spool, which chain is passed over the said pulley and is connected with the said operating device for the push-bar. 30

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

CHARLIE ENOCH BROWN.

Witnesses:

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