

No. 825,315

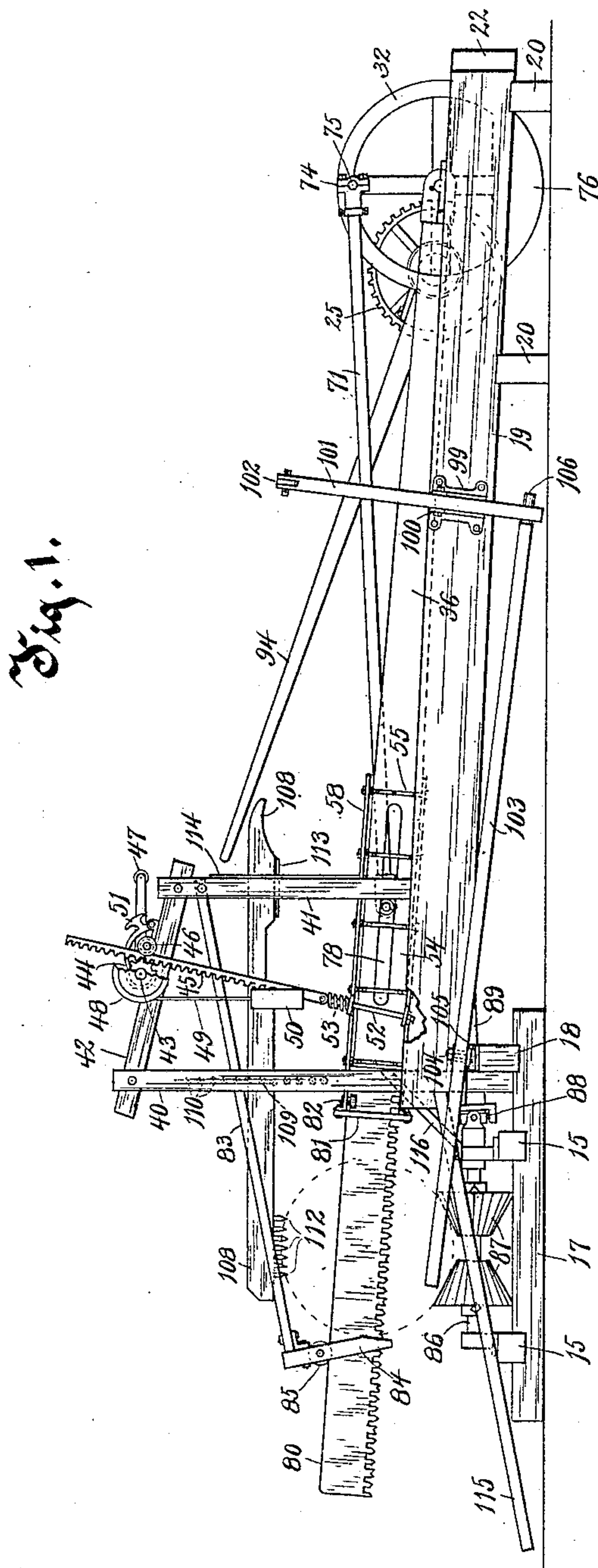
PATENTED JULY 10, 1906.

F. HAMACHEK.

DRAG SAW.

APPLICATION FILED SEPT. 22, 1904.

4 SHEETS—SHEET 1.



Witnesses.

C. A. Keeney.

R. J. Caldwell.

Inventor.

Frank Haischek

Wm. Benedict & Morrell
Attorneys.

Attorneys.

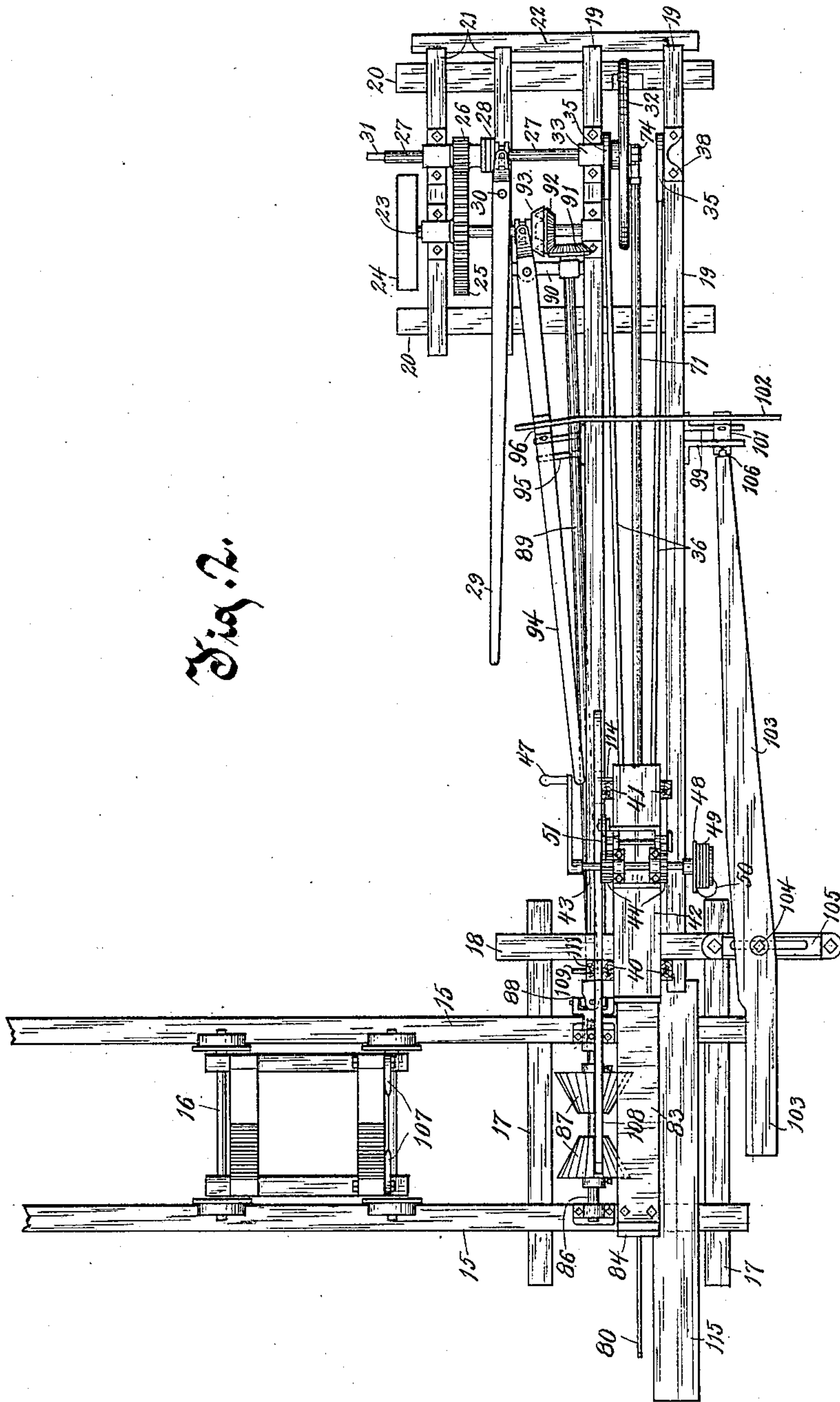
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4 SHEETS—SHEET 2.



Witnesses.

C. H. Keeney.

R. S. Caldwell.

Inventor.

Frank Hamachek

By Benedict & Morrell
Attorneys.

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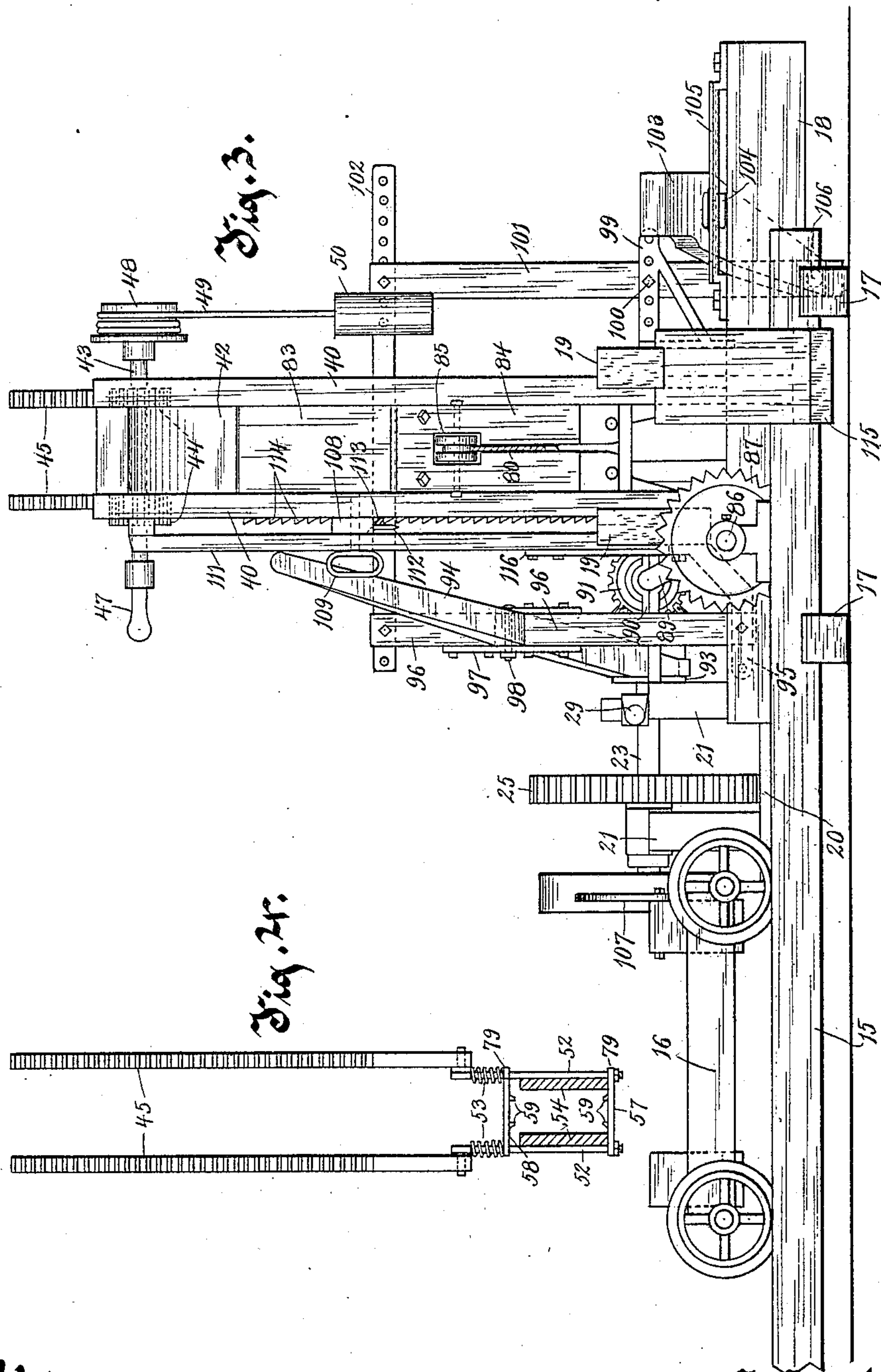
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4 SHEETS—SHEET 3.



Witnesses:
C. H. Kenney.
R. S. Caldwell.

Inventor:
Frank Hamacheck
By Benedict & Morrell
Attorneys.

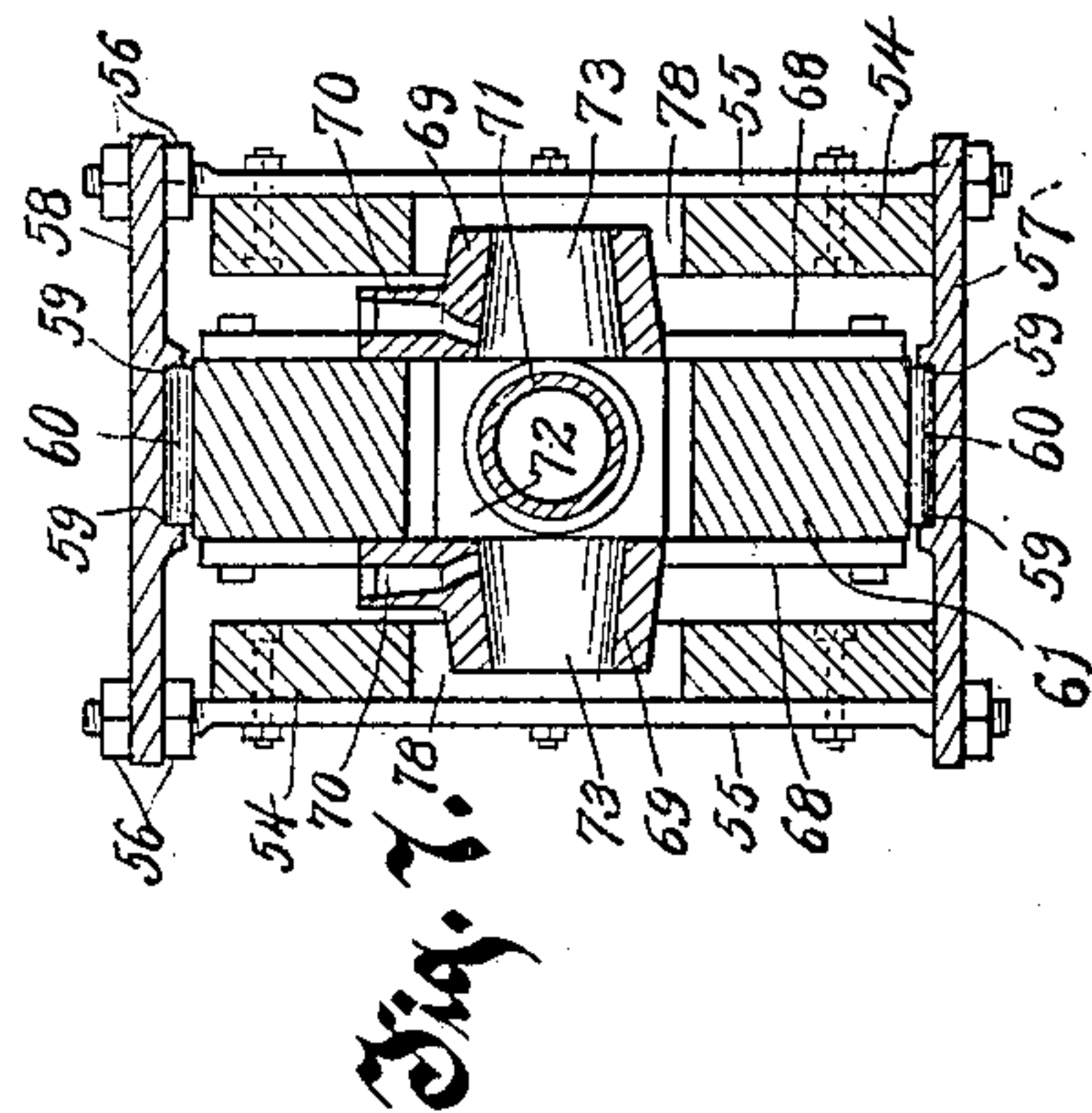
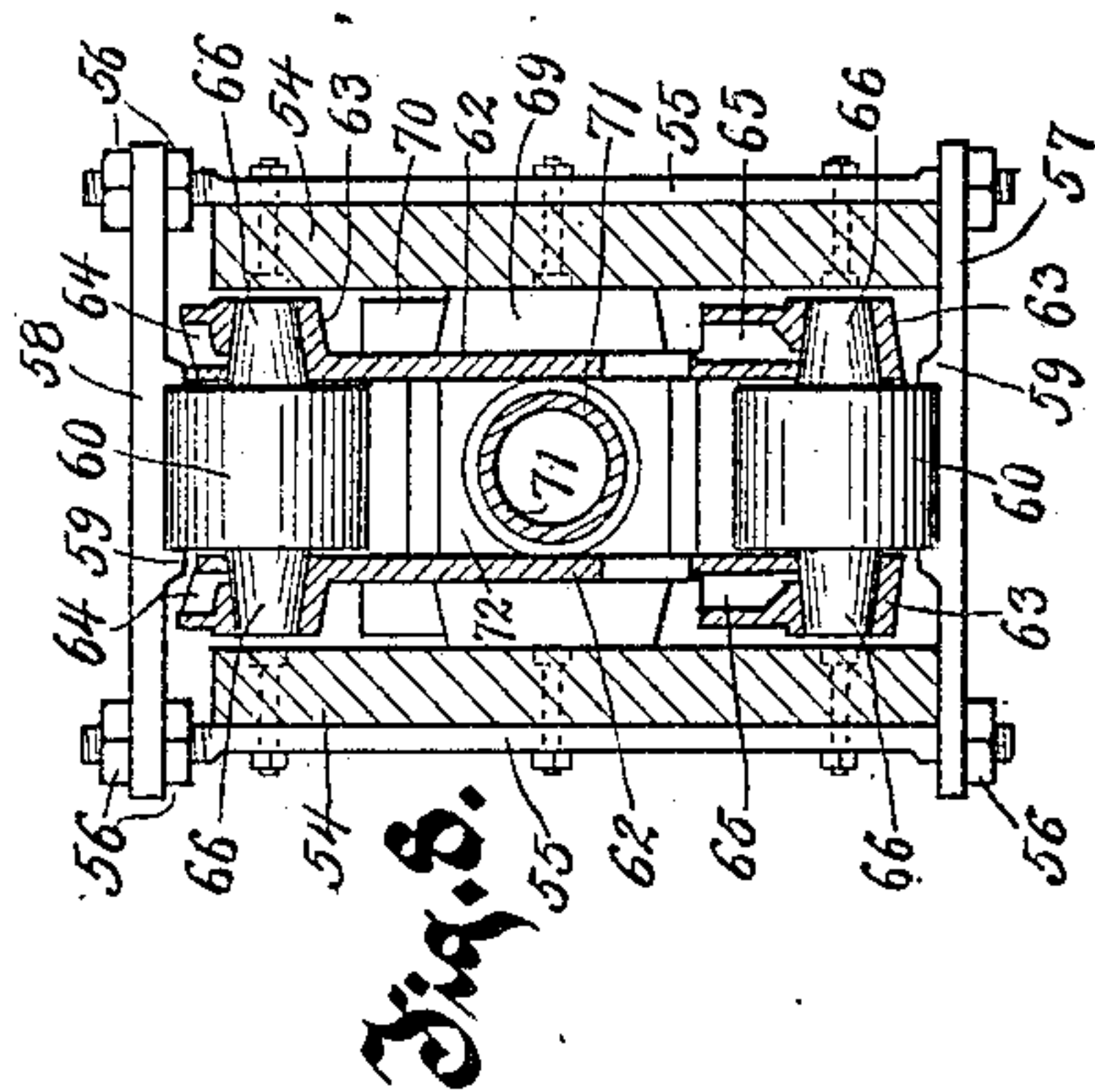
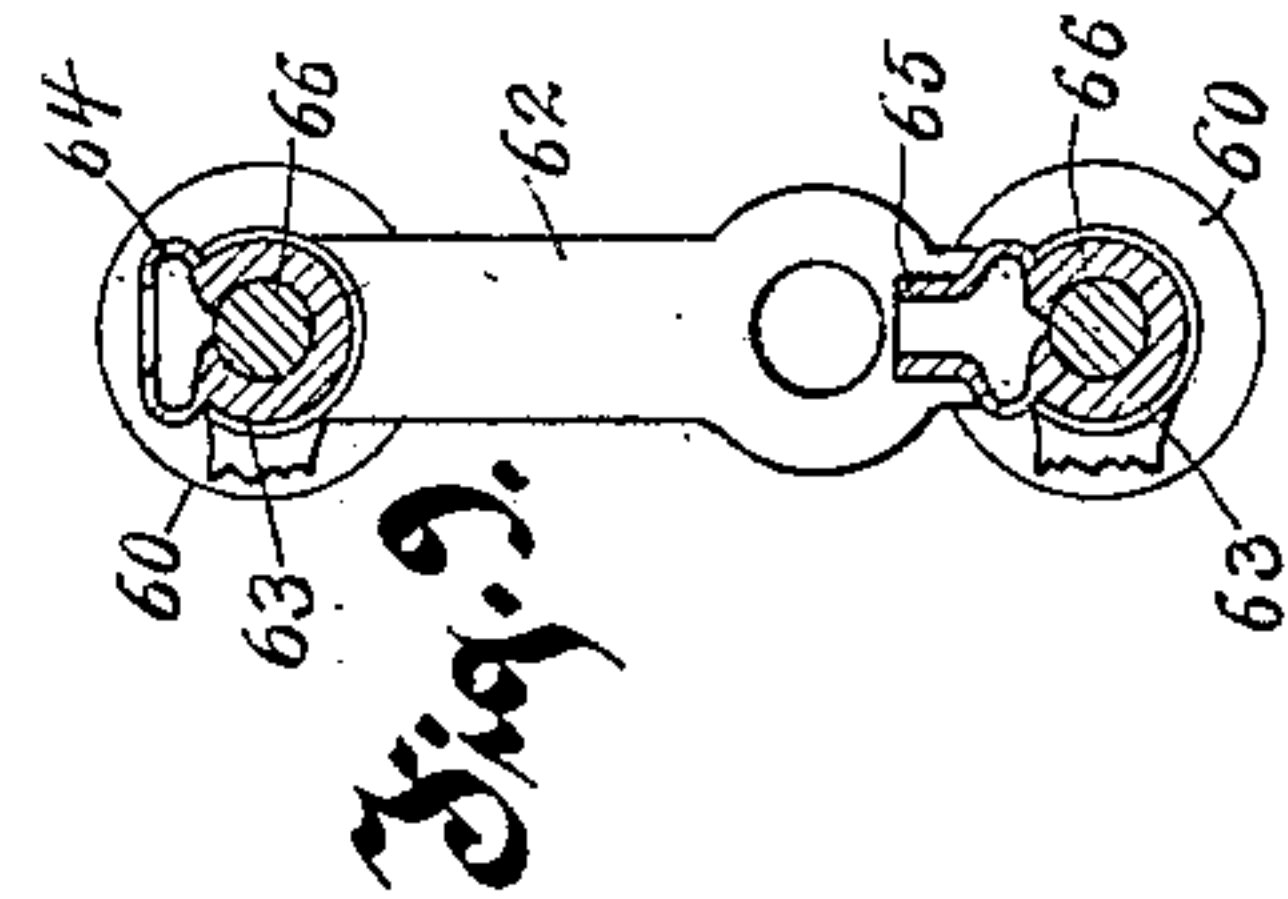
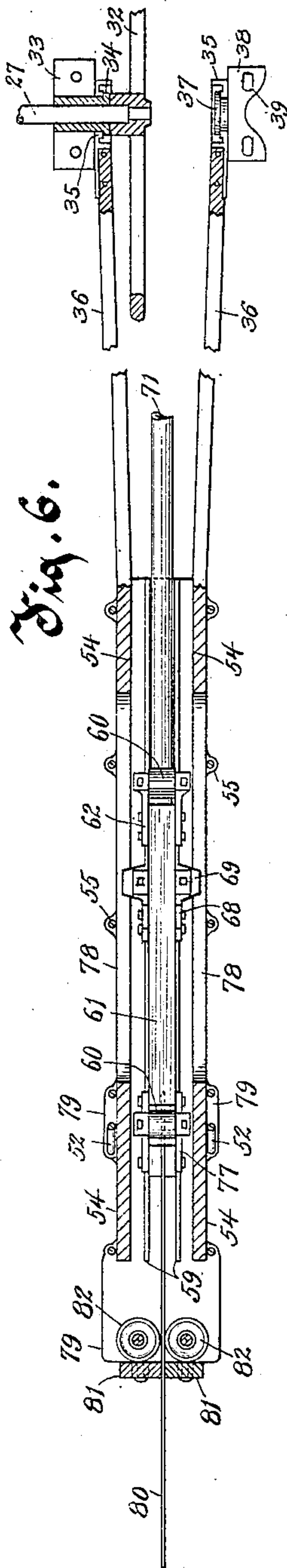
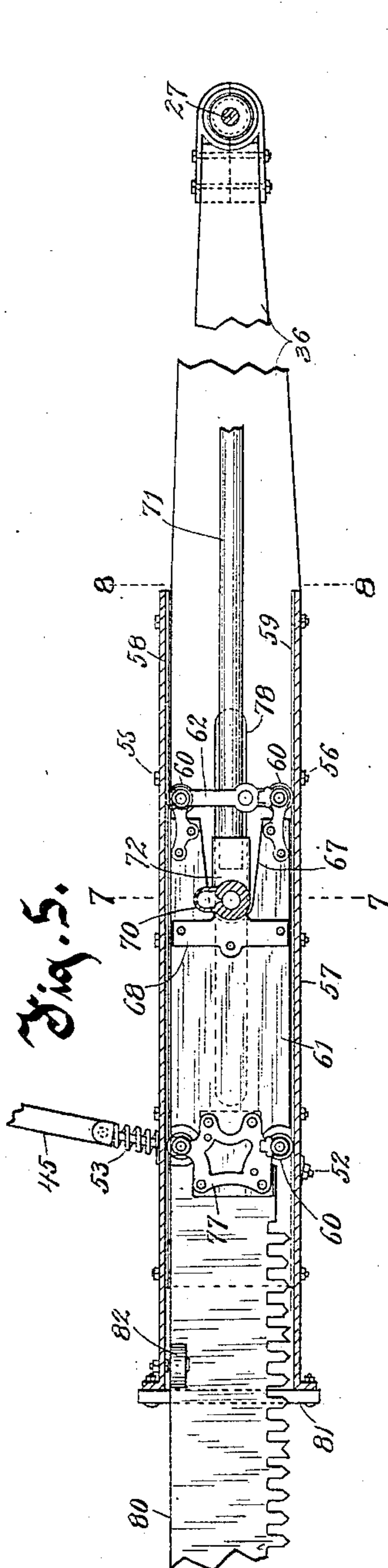
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4 SHEETS—SHEET 4.



Witnesses:
C. H. Key.
R. S. Caldwell.

Inventor:
Frank Hamachek
By Benedict & Morell
Attorneys.

UNITED STATES PATENT OFFICE.

FRANK HAMACHEK, OF KEWAUNEE, WISCONSIN.

DRAG-SAW.

No. 825,315.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed September 22, 1904. Serial No. 225,410.

To all whom it may concern:

Be it known that I, FRANK HAMACHEK, residing in Kewaunee, in the county of Kewaunee and State of Wisconsin, have invented new and useful Improvements in Drag-Saws, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

10 This invention relates to drag-saws, and has for its object to provide a device of this nature with automatic means for feeding the log to the saw at predetermined lengths and under the control of the operator.

15 Another object of this invention is to provide a reciprocating saw with a pivotal mounting without interfering with the mechanical driving means therefor.

20 Another object of this invention is to provide means for applying pressure to the saw during its operation.

25 Another object of this invention is to provide novel construction in a cross-head and its guides and their adjustments for use with a drag-saw.

Another object of this invention is to provide novel means for rigidly holding the log while being sawed and for guiding the saw-blade during the operation thereof.

30 With the above and other objects in view the invention consists in the drag-saw and its parts and combinations of parts and their equivalents, as hereinafter set forth.

Referring to the accompanying drawings, 35 in which like characters of reference indicate the same parts in the several views, Figure 1 is a side elevation of a drag-saw, showing an embodiment of the present invention, parts being broken away for clearness of illustration. Fig. 2 is a plan view thereof. Fig. 3 40 is an enlarged end elevation thereof. Fig. 4 is a detail view of the cross-head casing suspension rack-bars and their connection to the cross-head casing. Fig. 5 is a longitudinal 45 vertical sectional view of the cross-head-casing with the cross-head and saw-blade contained therein. Fig. 6 is a longitudinal sectional view thereof with the cross-head casing pivotal connections sectioned. Fig. 7 is a 50 transverse sectional view of the cross-head and casing therefor through the pitman connection on the line 7 7 of Fig. 5. Fig. 8 is a similar view thereof on the line 8 8 of Fig. 5, and Fig. 9 is a sectional elevation of a portion 55 of a guide-roller bracket.

In the drawings, 15 represents a pair of parallel stringers forming a trackway for the log-carriage 16 and resting upon a pair of parallel sills 17, which extend at right angles to the stringers 15 and are rigidly connected 60 thereto in any desirable manner. Also rigidly secured upon the parallel sills 17 and parallel with the stringers 15 is a front sill 18 of a main frame, which further comprises a pair of parallel stringers 19, which are connected at their rear ends by means of a pair of 65 parallel sills 20, extending therebeneath and at right angles thereto, and which sills 20 have rigidly secured thereto a pair of parallel bridge-trees 21 at one side of the pair of 70 stringers 19 and parallel thereto, while a combining tree 22 connects the rear ends of the bridge-trees 21 and the stringers 19.

Journalled in suitable boxes across the pair of bridge-trees 21 and one of the stringers 19 75 is a drive-shaft 23 with a pulley 24 on its end adapted to be driven by any suitable source of power. A gear-wheel 25 is mounted on the shaft 23 and meshes with a pinion 26, loosely mounted on a shaft 27, which is similarly 80 journalled across the pair of bridge-trees 21 and one of the stringers 19, parallel with shaft 23, and which is adapted to be connected with the pinion 26 by means of a sliding 85 clutch 28 thereon, operated by means of a lever 29, pivoted at 30 to the inside bridge-tree 21. The projecting squared end 31 of shaft 27 is adapted to receive a universal coupling, (not shown,) by which the machine may be operated from some suitable source 90 of power, and on the other end of the shaft 27, between the stringers 19, is mounted a crank-wheel 32.

The bearing 33 for the shaft 27 has a tubular shouldered extension 34 projecting over 95 the stringer 19, to which the bearing is secured, and pivotally mounted thereon and bearing against the shoulder thereof is a socket member 35, formed in sections connected together and to one of a pair of tapering straddle-boards 36, the other of said boards 36 being similarly pivotally mounted by means of 100 another sectional socket member 35, fitting upon a shouldered boss 37, carried by a plate 38, which is adjustably secured to the other 105 stringer 19 in axial alinement with the shaft 27. The adjustment of plate 38 is accomplished by means of longitudinal slots 39 therein, through which the securing-bolts pass, and is for the purpose of exactly cen- 110

tering the boss 37 in axial alinement with the shaft 27.

At the front end of the main frame are mounted a pair of front standards 40 and slightly to the rear thereof a pair of rear standards 41, the upper ends of the front and rear standards 40 and 41, respectively, being connected by an inclined top board 42. A shaft 43 is journaled in a frame across the top board 42 and carries a pair of pinions 44 to mesh with a pair of rack-bars 55, which are held into mesh with the pinions by means of flanged bearing-rollers 46 therebehind. The shaft 43 is adapted to be turned by means of a crank-handle 47 on one end thereof and is given a normal tendency to turn in one direction by means of a drum 48 on the other end, having wound thereon a rope or chain 49, with a weight 50 suspended thereby. One of the pinions 44 is made wider than is necessary to mesh with its rack-bar 45 to permit of its being engaged by a gravity-pawl 51, having a suitable handhold by which it may be brought into and out of engagement with the pinion 44 to prevent the turning thereof.

The lower ends of the rack-bars 45 are pivotally connected to a pair of bolts 52, which are slidingly connected to a cross-head casing, to be later described, and which have coil-springs 53 thereon to cushion their movements with relation to the cross-head casing. The cross-head casing above referred to comprises the front ends of the straddle-boards 36, which form side members 54 for the cross-head casing, having transversely-extending side straps 55 secured thereto with both ends threaded and holding to the side members by means of nuts 56 turned thereon, a bottom plate 57, and a top plate 58, the latter being held between pairs of nuts 56, so that it may be adjustable toward or away from the bottom plate 57. The top and bottom plates 58 and 57, respectively, are provided with the parallel flanges 59, forming between them smooth guideways or tracks in which guide-rollers 60 of the cross-head are adapted to travel.

The cross-head within the casing comprises a body portion 61, which is provided with rear brackets 62 on each side of its rear ends, which brackets are provided with conical bearing-sockets 63 at the upper and lower angles thereof, having oil-cups 64 and 65 formed integral therewith and leading thereto. The oil-cups 64 have inturned mouth edges, as shown in Fig. 9, and the oil-cups 65 have upwardly-extending contracted tubular mouth-openings, both designed to prevent the oil contained therein from being splashed from them during the rapid reciprocations of the cross-head. The guide-rollers 60 have conical hubs 66 fitting within the conical bearing-sockets 63 and receiving the lubricant from the oil-cups as required. The brackets 62 have their upper and lower angular portions extending forwardly, so as to

clamp the upper and lower rear extensions of the body portion 61, produced by a V-shaped opening or bifurcation 67, formed in the rear end of the body portion 61 to accommodate the pitman, the guide-rollers 60 thereby being located slightly to the rear of the body portion 61.

To the sides of the body portion 61 are rigidly clamped bearing-plates 68, which have slightly offset therefrom conical bearing-sockets 69, with integral oil-cups 70 thereabove and leading thereto, similar to oil-cups 64, but with a much reduced opening, as shown in Fig. 5, to prevent splashing of the oil therefrom. A pitman-rod 71, preferably tubular in form, has one end secured to a head 72, which carries oppositely-extending conical hubs 73, fitting within the conical sockets 69, and thereby forming a pivotal connection between the pitman-rod 61 and the cross-head. The other end of said pitman-rod is connected, by means of a box connection 74, with a crank-pin 75 on the crank-wheel 32, the weight of these parts being counterbalanced on the crank-wheel 32 by means of a counterweight 76.

The front end of the body member 61 is provided with bracket-frames 77, secured to its sides, which frames are provided with conical bearing-sockets, like sockets 63, to receive the conical hub 66 of other guide-rollers 60, and are provided with oil-cups, similar to oil-cups 64 and 65 of the rear bracket construction and for the same purpose.

The guide-rollers 60 of the bracket-frame 76 at the front end of the body member 61 and the guide-rollers 60 in the brackets 62 at the rear end of the body member 61 by traveling in the tracks therefor in the upper and lower plates 58 and 57, respectively, between the flanges 59 serve to guide the cross-head without lateral play. The side members 54 being formed by the parallel outer ends of the diverging straddle-boards 36, which are pivoted in axial alinement with the shaft 27, permit of the cross-head casing being always in radial position with relation to the shaft 27 in any of its elevations. The side members 54 are provided with longitudinal slots 78 to receive the conical sockets 69.

The bolts 52, before referred to as constituting pivotal connections between the cross-head casing and the rack-bars 45, pass freely through openings in side ears 79 in the top and bottom plates 58 and 57, respectively, with nuts 56 threaded to their end and with the coil-springs 53 confined between the top plate 58 and the enlarged pivotal heads of said rods, and by this means the cross-head casing may be raised or lowered on the pivotal connections formed by the straddle-boards 36 and about the axis of shaft 27 as a center. The rope or chain 49 is wound about the drum 48 in such a direction as to cause the weight 50 to partially counterbal-

ance the weight of the cross-head casing and its parts. The pawl 51 by engaging the teeth of the pinion 44 supports the cross-head casing and its parts in any position to which they may be raised by means of the crank-handle 47.

The front end of the body portion 71 of the cross-head is split vertically to receive the butt-end of a drag-saw blade 80, which is clamped thereto in any desirable manner, and at the front end of the cross-head casing the top and bottom plates 58 and 57, respectively, are extended beyond the side members 54 and have clamped thereto a pair of parallel closely-spaced guide-strips 81 to receive the saw-blade 80 between them and guide the same against lateral displacement or buckling during the sawing operation. Journaled to the under side of the top plate 58 is also a pair of guide-rollers 82 for a similar purpose.

A board 83 is pivoted at its rear end between the standards 41 and extending between standards 40 has bolted to its front end a guide-block 84, which is provided with a vertical slot extending upwardly from its lower edge to receive the outer end of the saw-blade 80 and constitute a guide therefor. Journaled in a recess of the slot of guide-block 84 is a grooved guide-roller 85, bearing upon the upper edge of the saw-blade 80 to cause the board 83 to swing upon its pivot and follow the raising and lowering motion of the cross-head casing and parts connected therewith.

Journaled across the stringers 15 in journal-boxes secured thereto is a shaft 86, on which is adjustably secured, by means of set-screws, a pair of corrugated conical rollers 87 with their smaller ends adjacent to constitute a V-shaped bearing for a log carried by the log-carriage 16, and on the end of said shaft 86 is a universal connection 88, connecting it to an inclined shaft 89, which extends rearwardly and is journaled in a cross-piece 90, extending between one of the bridge-trees 21 and one of the stringers 19. On the rear end of shaft 89 is a beveled gear 91, meshing with a beveled pinion 92, which is loosely mounted on the shaft 23 and is adapted to be clutched thereto by means of a friction-clutch 93, operated by a lever 94, which is pivoted to the cross-piece 90.

When the lever 94 is swung to complete the clutch connection between the pinion 92 and the shaft 23, said shaft drives the shaft 89 through the beveled gearing connection and by means of it turns the conical rollers 87 to feed the log along, the carriage 16 running on the stringers 15 to permit of the movement of the log. This feeding movement of the log may be controlled entirely by hand by means of the lever 94, or it may be automatically controlled by connections with the lever 94, to be now described, whereby

said lever will be swung to stop the feed of the log when the log has been advanced to a predetermined extent.

A bracket 95 is secured to the inside stringer 19 and extends at an angle thereto, preferably at right angles to the lever 94, and adjustably pivoted in one of several perforations in the two arm members of said bracket 95 is a lever 96, which is divided laterally to permit of the lever 94 passing between its two sections. The sections of lever 96 are clamped together by means of plates 97 on their sides, embracing the lever 94 with a pivotal bolt 98 extending through said plates 97 and the lever 94, with free play therein. By this construction the lever 94 is given a pivotal support by the lever 96, and the movements of the lever 96 are imparted to said lever 94. On the opposite side of the main frame, secured to the other stringer 19, is a bracket 99, between the two arms of which is pivotally mounted a lever 101 by means of a bolt 100 passing through one of a number of perforations through the arms of said bracket. At the upper end of said lever 101 is adjustably pivoted a bar 102, having a number of perforations therein for that purpose, which bar also adjustably and pivotally connects with the upper end of the lever 96 and is slightly bent at its intermediate portion, so as to pass through both levers 96 and 101 in the direction of their pivotal movement.

The lower end of the lever 101 below the bracket 99 is connected to an inclined lever 103, which has an adjustable pivotal connection 104 with an inclined slotted plate 105 on the front sill 18, the connection between said lever 103 and the lever 101 being formed by a rounded pin extension 106 of the lever 103, passing through a circular opening in the lower end of lever 101. The front end of lever 103 stands in the path of a log resting upon the conical rollers 87, so that as the log is fed forward by the rotation of said rollers this end of the lever 103 will be engaged thereby and swung upon its pivotal connection 104 to swing inwardly the lower end of lever 101. This causes the upper end of lever 101 to swing outwardly and communicate such movement to lever 96 by means of the rod connection 102 therewith, so that lever 94 is swung automatically in a direction to disengage the clutch connection 93 and stop the further movement of the conical rollers 87, and therefore the feed of the log.

The carriage 16 is provided with the usual hooked dogs 107 to hold the log steady thereon; but in addition thereto I have provided a means close to the sawing operation to steady the log, which means comprises a bar 108, adjustably pivoted by means of a pin 109, having a handhold by which it may be inserted in any one of a number of perforations 110 in one of the front standards 40 and in a

supplemental standard 111, secured thereto at a distance therefrom, which forms a vertical slot between them in which the rod 108 moves. The rod 108 carries at its front end a series of downwardly-extending engaging teeth 112 to be forcibly struck into the top of the log when the log has been fed beneath the saw to the proper extent, and in order that this engagement may be made secure the rear end of the rod 108 is provided with a downwardly-extending inclined metal blade 113 to engage with one of a number of ratchet-teeth on a ratchet-plate 114, secured to one of the rear standards 41. By this means the rod 108 after being lifted at its rear end to engage the teeth 112 into the log is sprung laterally, so that its blade 113 will engage the highest possible ratchet-tooth on the plate 114, which will thus lock the bar in its engagement with the log. When it is desired to release such engagement after the sawing operation has been performed, so that the log may be fed forward again, it is only necessary to spring the rod 108 out of engagement with the ratchet-teeth, when it may be swung downwardly to clear the teeth 112 from the log. The numerous perforations 110 are provided for changing the position of the pivotal pin 109 to adapt the rod 108 to logs of different sizes.

An inclined runaway-board 115 is mounted across the stringers 15 just beyond the plane of movement of the saw-blade and is adapted to lead the block off from the machine as it is sawed from the log to permit the log being fed forward for the next cut.

From the foregoing it will be seen that in operation a log is placed upon the log-carriage 16 with the dogs 107 engaging it and with its end resting upon the pair of conical rollers 87, and as power is applied to the pulley 24 the saw may be set in operation by the operator throwing the lever 29 to engage the clutch 28, so that the pinion 26 may be clutched with shaft 27 to rotate the crank-wheel 32 and by its crank-and-pitman connection reciprocate the cross-head carrying the saw-blade. The log may be now fed beneath the saw to the desired extent, for which the pivotal adjustments of levers 103, 101, and 96 have been set, by the operator swinging the lever 94 to operate the clutch 93 and drive the shaft 89 from the shaft 23 by means of the beveled gearing, so as to turn the conical rollers 87 and move the log forward with the carriage 16. In throwing the lever 94 the operator has also swung the lever 103 by means of the connection between them, so as to move the front end of lever 103 nearer the log, and as the log is fed forward it engages with this end of the lever 103 and forces it back, meanwhile throwing lever 94 to its original position by said connection therebetween to thus disconnect the clutch 93 and stop the operation of the conical rollers

87, so that the log comes to rest at the predetermined position. Now the rod 108 is operated to clamp the log in its position against turning in the manner just described and the reciprocating drag-saw is lowered into cutting relation with the log by the operator turning the crank-handle 47 after removing the pawl 51 from engagement with the pinion 44. The weight of the cross-head and its connected parts may be relied upon to feed the saw through the log; but where force is desired for this purpose the crank-handle 47 may be turned to cause the rack-bars 45 to swing the cross-head casing downward and force the saw through the log, the springs 53 forming a yielding connection between the cross-head casing and the rack-bars to steady the pressure applied to the saw in this manner. During the operation of the saw-blade 80 it is guided between the guides 81 and 82 between the log and the cross-head and the guide-block 84 beyond the log, so that there is no danger of the saw buckling. When the block has been cut from the log, it rolls off upon the runaway board 115 to free the front end of lever 103, so that the operator may again swing lever 94 to cause the further feed of the log in the same manner as before.

By the construction herein shown and described the cross-head casing is maintained in a radial position with relation to its drive-shaft 27 notwithstanding its vertical adjustment, and consequently the cross-head is always in position to receive the greatest effect from the crank motion of the crank-wheel.

Another feature of considerable importance in a machine of this nature is the rigid connection between the main frame and the frame for the log-carriage, which avoids all possibility of a derangement of these parts which would affect the efficiency of the device.

The construction of the cross-head and its casing is such that a free and easy working of the cross-head is assured, with self-contained means for lubricating the movable parts and with adjustment for wear, the top plate 58 of course being adjustable nearer to or farther from the bottom plate 57 by means of the nuts 56 on the side straps 55 to produce the exact fit of the guide-rollers 60 in their tracks.

While the details of construction and arrangement of parts herein shown and described are at present preferred by me for illustrating the invention, it is obvious that numerous changes may be made therein without departing from the spirit and scope thereof.

The object in adjustably mounting the corrugated conical rollers 87 on the shaft 86 by means of set-screws fitting into grooves of the shaft is to enable these rollers to be

moved nearer together or farther apart for smaller or larger logs, respectively.

In order that the movements of the saw may not move the log-frame with relation to the main frame, a brace 116 is secured to the supplemental standard 111 and connects with the inner bearing for the shaft.

What I claim as my invention is—

1. In a drag-saw, a cross-head casing, a cross-head slidable therein, a saw-blade connected to the cross-head, a crank, a pitman connecting the crank with the cross-head, a suitably-journaled shaft, a pinion thereon, and a rack-bar meshing with the pinion and having a yielding connection with the cross-head casing, said cross-head casing being movable by the rack-bar to bring the saw-blade toward or away from the log.

2. In a drag-saw, a cross-head casing, a cross-head slidable therein, a saw-blade connected to the cross-head, a crank, a pitman connecting the crank with the cross-head, means for pivotally mounting the cross-head concentrically with the crank, a suitably-journaled shaft, a pinion thereon, a rack-bar meshing with the pinion, a rod having a sliding connection with the cross-head casing and connected to the rack-bar, and a coil-spring on the rod between the cross-head casing and the rack-bar to form a yielding connection between the rack-bar and the cross-head casing.

3. In a drag-saw, a cross-head casing, a cross-head slidable therein, a saw-blade connected to the cross-head, a crank, a pitman connecting the crank with the cross-head, means for pivotally mounting the cross-head casing concentrically with the crank, a frame, a shaft journaled thereon, a crank for turning the shaft, a pair of pinions on the shaft, a pair of rack-bars meshing with the pinions, a pair of rods slidable in the cross-head casing and pivoted to the rack-bars, coil-springs on the rods between the cross-head casing and the rack-bars, idle rollers on the frame to hold the rack-bars in mesh with the pinions, a pawl pivoted on the frame adapted to engage one of the pinions to prevent rotation of the shaft, a drum on the shaft, a rope wound thereon, and a weight suspended by the rope.

4. In a drag-saw, a cross-head casing, a cross-head slidable therein, a saw-blade connected to the cross-head, a frame, a shouldered tubular bearing mounted on the frame, a shaft journaled therein, a crank on the shaft, a pitman connecting the crank with the cross-head, and means for pivotally connecting the cross-head casing with the frame comprising a pair of members extending from the cross-head casing and diverging from each other, a sectional socket member secured to the end of one member and pivotally mounted on the shouldered end of the tubular bearing, a sectional socket on the end of the other member, an adjustable plate

secured to the frame, and a shouldered boss thereon to which the second sectional socket is pivoted in axial alinement with the shaft.

5. In a drag-saw, a cross-head casing comprising pivotally-mounted side members, and top and bottom plates secured to the side members, said top and bottom plates being adjustable in relation to each other having parallel flanges forming tracks between them, in combination with a cross-head slidable in the cross-head casing, guide-rollers mounted on the cross-head and traveling in the tracks of the top and bottom plates, a saw-blade secured to the cross-head, and means for reciprocating the cross-head in the cross-head casing.

6. In a drag-saw, a cross-head casing comprising pivotally-mounted side members, side straps secured thereto, top and bottom plates secured to the side members by means of the side straps, nuts on the side straps for adjusting the top and bottom plates with relation to each other, and parallel flanges on the top and bottom plates forming tracks between them, in combination with a cross-head slidable in the cross-head casing, guide-rollers mounted on the cross-head and bearing in the tracks of the top and bottom plates, a saw-blade connected to the cross-head, and means for reciprocating the cross-head in the cross-head casing.

7. In a drag-saw, a cross-head casing comprising side members, top and bottom plates secured to the side members, and guide-tracks on the top and bottom plates, in combination with a cross-head slidable in the cross-head casing, brackets secured thereto and having conical bearing-sockets, guide-rollers fitting between the brackets and having conical hubs journaled in the conical sockets, said guide-rollers adapted to ride on the tracks of the top and bottom plates, a saw-blade secured to the cross-head, and means for reciprocating the cross-head in the cross-head casing.

8. In a drag-saw, a cross-head casing comprising side members, top and bottom plates secured to the side members, and tracks on the top and bottom plates, in combination with a cross-head slidable in the cross-head casing, brackets secured thereto and provided with conical sockets with integral oil-cups leading thereto, guide-rollers having conical hubs journaled in the conical sockets, said guide-rollers bearing on the tracks of the top and bottom plates, a saw-blade secured to the cross-head, and means for reciprocating the cross-head in the cross-head casing.

9. In a drag-saw, a cross-head casing comprising pivotally-mounted side members, top and bottom plates secured to the side members, and guide-tracks on the top and bottom plates, in combination with a cross-head slidable in the cross-head casing, and having a bifurcated rear end, rearwardly-extending

brackets secured to the projections of the cross-head formed by the bifurcation and having conical sockets therein, guide-rollers located between the brackets and having conical hubs journaled in the conical sockets, said guide-rollers bearing on the guide-tracks of the top and bottom plates, side plates secured to the cross-head and having conical sockets in line with the bifurcation of the cross-head, a crank, a pitman connected to the crank, a head on the pitman having laterally-extending conical bosses journaled in the conical sockets of the side plates, and a saw-blade secured to the cross-head.

10. In a drag-saw, a cross-head casing comprising pivotally-mounted side members, side straps secured thereto, top and bottom plates secured to the side members by means of the side straps, and guide-tracks formed on the top and bottom plates, in combination with a cross-head slidable in the cross-head casing and having a bifurcated rear end, pairs of front and rear brackets secured to the cross-head and having conical sockets with integral oil-cups leading thereto, guide-rollers mounted between the pairs of brackets and having conical hubs journaled in the conical sockets of the brackets, said guide-rollers bearing on the guide-tracks of the top and bottom plates, nuts threaded on the side straps for adjusting the top and bottom plates with relation to each other, a saw-blade secured to the cross-head between the pair of front brackets, side plates secured to the cross-head and having conical sockets in register with the bifurcation of the cross-head and traveling in longitudinal slots in the side members, a crank, a pitman connected to the crank, a head on the pitman having oppositely-extending conical bosses fitting within the conical sockets of the side plates, and oil-cups formed integral with the sockets of the side plates and leading thereto.

11. In a drag-saw, a cross-head casing comprising side members and top and bottom plates secured thereto, in combination with a cross-head slidable in the cross-head casing, means for reciprocating the cross-head in the cross-head casing, and a pair of parallel guide-strips secured to the top and bottom plates and forming a guide for the saw-blade.

12. In a drag-saw, a cross-head casing comprising side members and top and bottom plates secured thereto, a cross-head slidable in the cross-head casing, means for reciprocating the cross-head in the cross-head casing, a saw-blade secured to the cross-head, a pair of parallel guide-strips connecting the top and bottom casing and forming a guide for the saw, and a pair of guide-rollers mounted on the top plate and bearing against opposite sides of the saw.

13. In a drag-saw, a main frame, a saw suitably mounted at the front end of the

main frame, driving mechanism therefor suitably mounted at the rear end of the main frame, a log-carriage frame at the front end of the main frame, a log-feeding device journaled across the log-carriage frame, a shaft connecting the log-feeding device to the driving mechanism at the rear end of the main frame, a suitably-pivoted clutch-lever adapted to connect and disconnect the shaft with the driving mechanism, a bracket on the main frame, an upright lever adjustably pivoted thereto and connected to the clutch-lever, a bracket on the other side of the main frame, another upright lever adjustably pivoted thereto, a rod extending across the main frame and adjustably connected to the two upright levers, and a stop-lever having a pivotal connection with the main frame which connection is adjustable toward or away from the saw, one end of said stop-lever extending in the path of the log and the other end thereof being connected to the last-mentioned upright lever.

14. In a drag-saw, a main frame, a saw suitably mounted at the front end of the main frame, a driving mechanism therefor located at the rear end of the main frame, a log-carriage frame at the front portion of the main frame, a log-feeding device journaled across the log-carriage frame, a shaft connecting the log-feeding device with the driving mechanism, a suitably-pivoted clutch-lever adapted to connect and disconnect the shaft with the driving mechanism, a bracket on the main frame, an upright lever adjustably pivoted thereto and being divided to receive the clutch-lever between its sections, side plates connecting the sections of the upright lever and connected to the clutch-lever, a bracket on the other side of the main frame, an upright lever adjustably pivoted thereto, a bar extending across the main frame and adjustably connected to the upper ends of the two upright levers, an inclined slotted plate secured to the main frame, and an inclined stop-lever adjustably pivoted to the slotted plate so that its pivotal connection may be adjusted nearer to or farther from the saw, one end of said stop-lever extending in the path of the log and the other end thereof terminating in a pin extension fitting in an opening in the lower end of the second upright lever, the stop-lever being adapted in its several adjustments to stop the feed of the log at a predetermined distance beyond the saw on being swung thereby to throw the clutch-lever by means of the upright levers and their rod connection.

15. In a drag-saw, a suitably-operated pivotally-mounted saw, a guide-frame comprising front and rear standards between which the saw is adapted to swing, a lever pivoted to the rear standards and adapted to swing between the front standards, and a saw-

guide on the front end of the lever adapted to ride upon the saw beyond the log and to be raised and lowered by the saw.

16. In a drag-saw, a suitably-operated
5 pivotally-mounted saw, a frame comprising front and rear standards between which the saw-mounting is adapted to swing, a board pivoted to the rear standards, and swinging between the front standards, a saw-guide on
10 the front end thereof having a slot to receive

the saw beyond the log, and a roller journaled on the saw-guide adapted to ride upon the upper edge of the saw.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK HAMACHEK.

Witnesses:

R. S. C. CALDWELL,

ANNA F. SCHMIDTBAUER.