

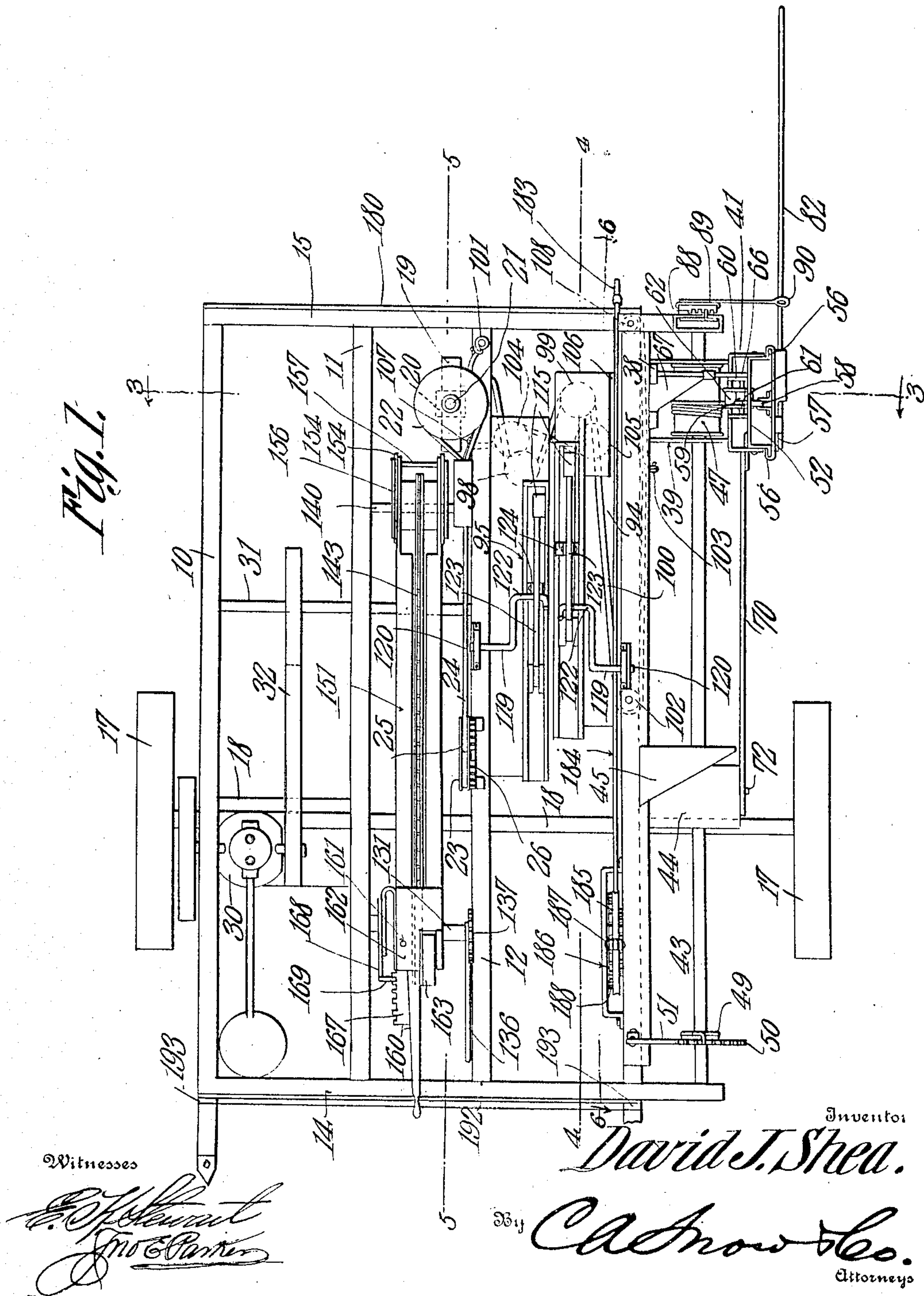
DRAG SAW.

APPLICATION FILED AUG. 14, 1908.

919,389.

Patented Apr. 27, 1909.

5 SHEETS—SHEET 1.



919,389.

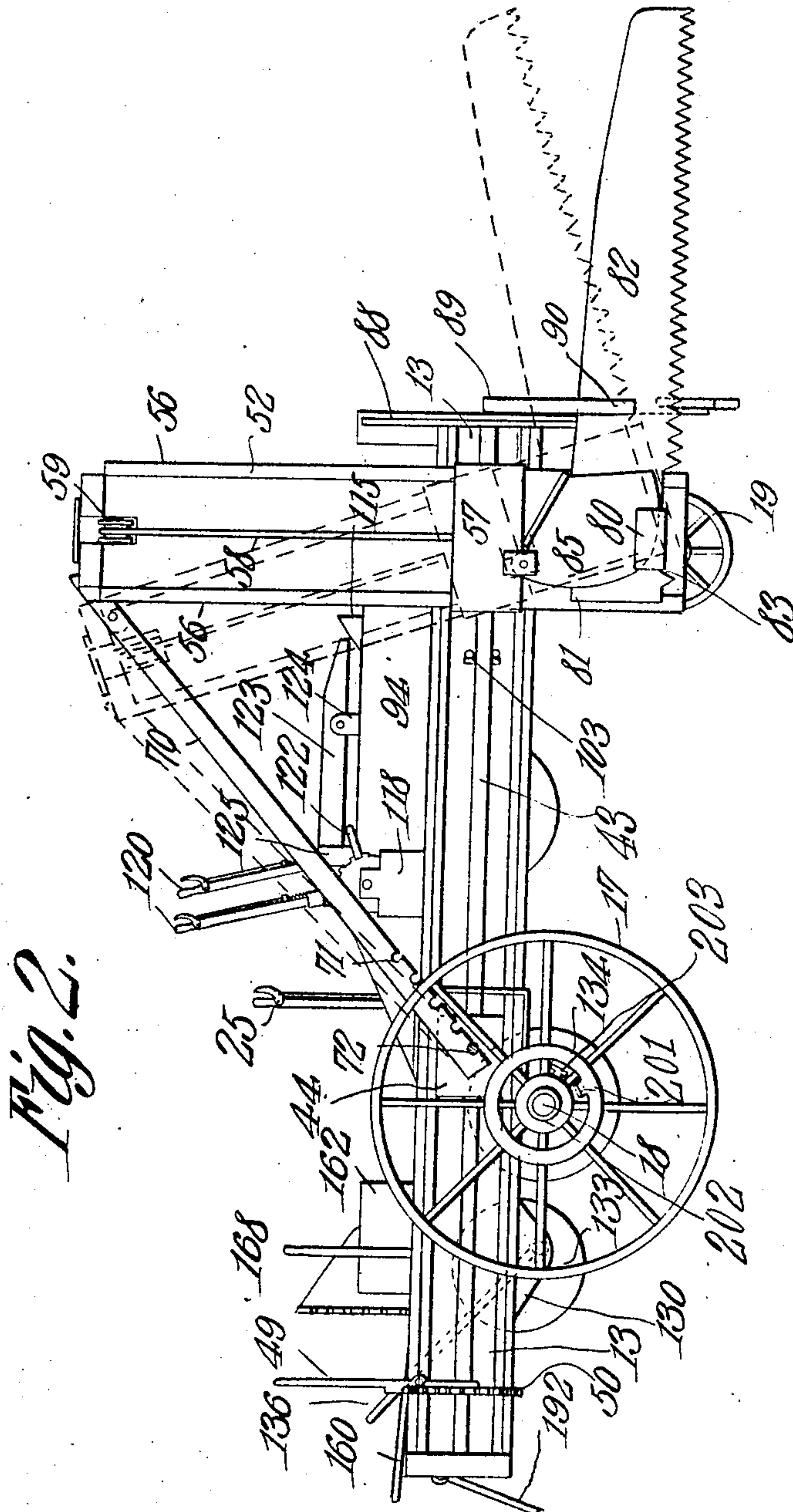
D. J. SHEA.

DRAG SAW.

APPLICATION FILED AUG. 14, 1908.

Patented Apr. 27, 1909.

5 SHEETS—SHEET 2.



Witnesses

E. J. Sheehan
J. M. Parker

Inventor

David J. Shea.

By

C. A. Snow & Co.

Attorneys

D. J. SHEA.
DRAG SAW.

APPLICATION FILED AUG. 14, 1908.

Patented Apr. 27, 1909.

5 SHEETS—SHEET 3.

919,389.

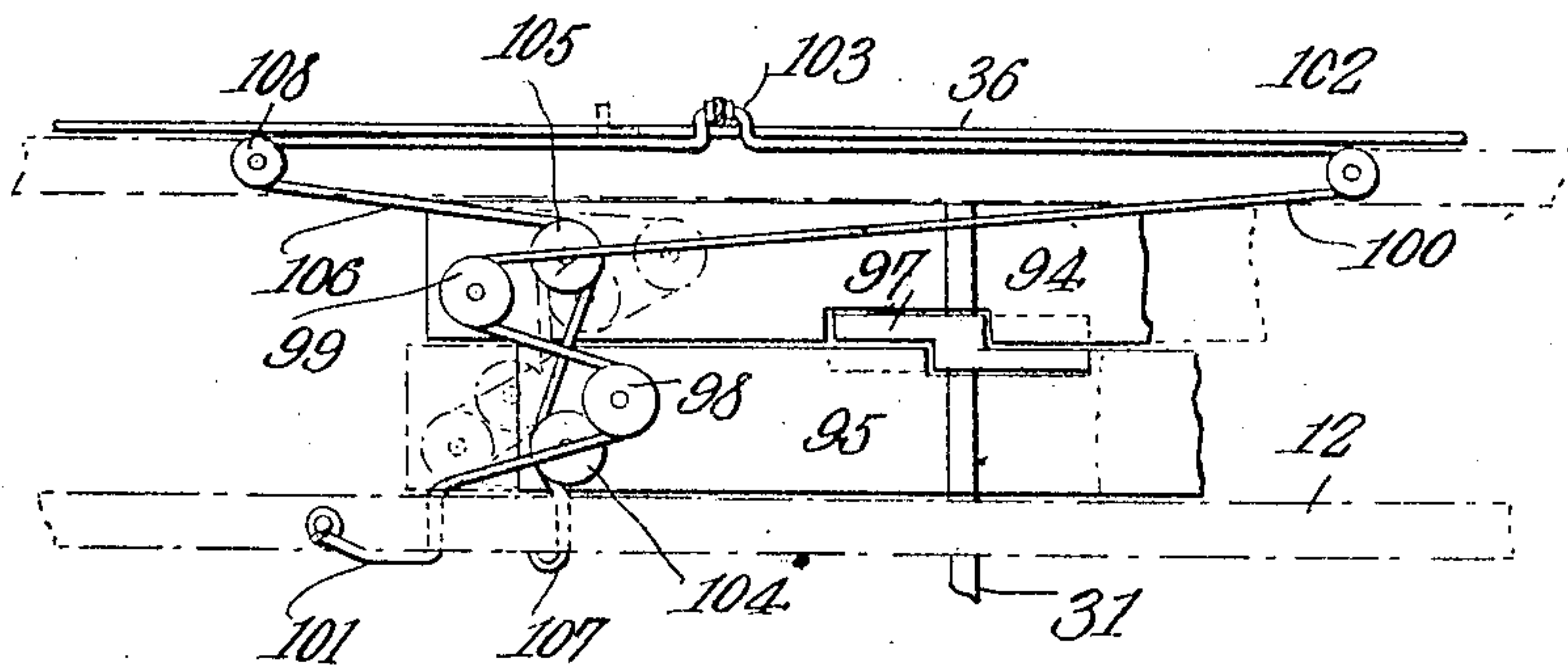
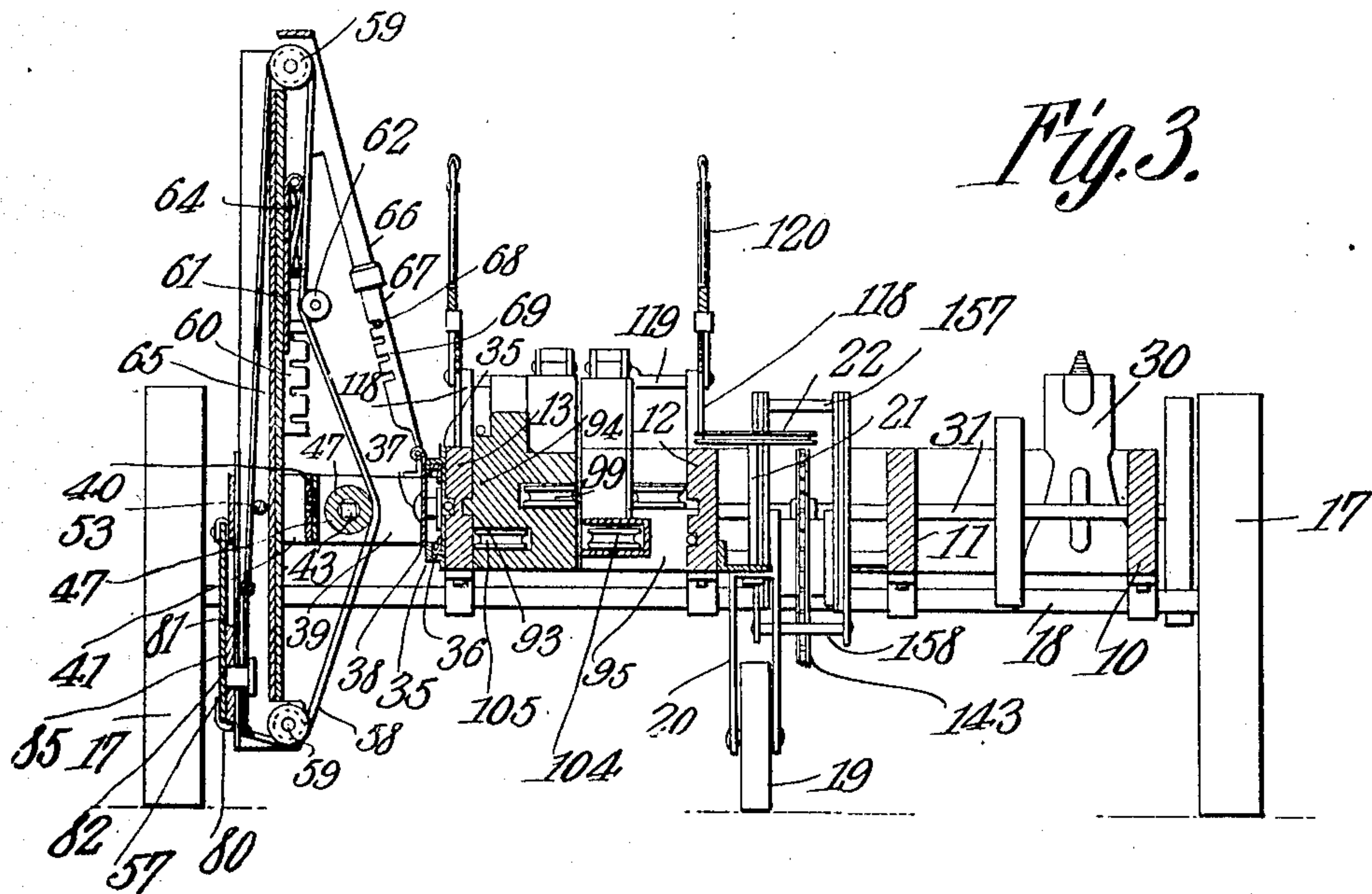


Fig. 7.

Witnesses

E. H. Hunt
Wm. E. Parker

Inventor

David J. Shea.

By

C. A. Snow & Co.

Attorneys

919,389.

D. J. SHEA.
 DRAG SAW.
 APPLICATION FILED AUG. 14, 1908.

Patented Apr. 27, 1909.
 5 SHEETS—SHEET 4.

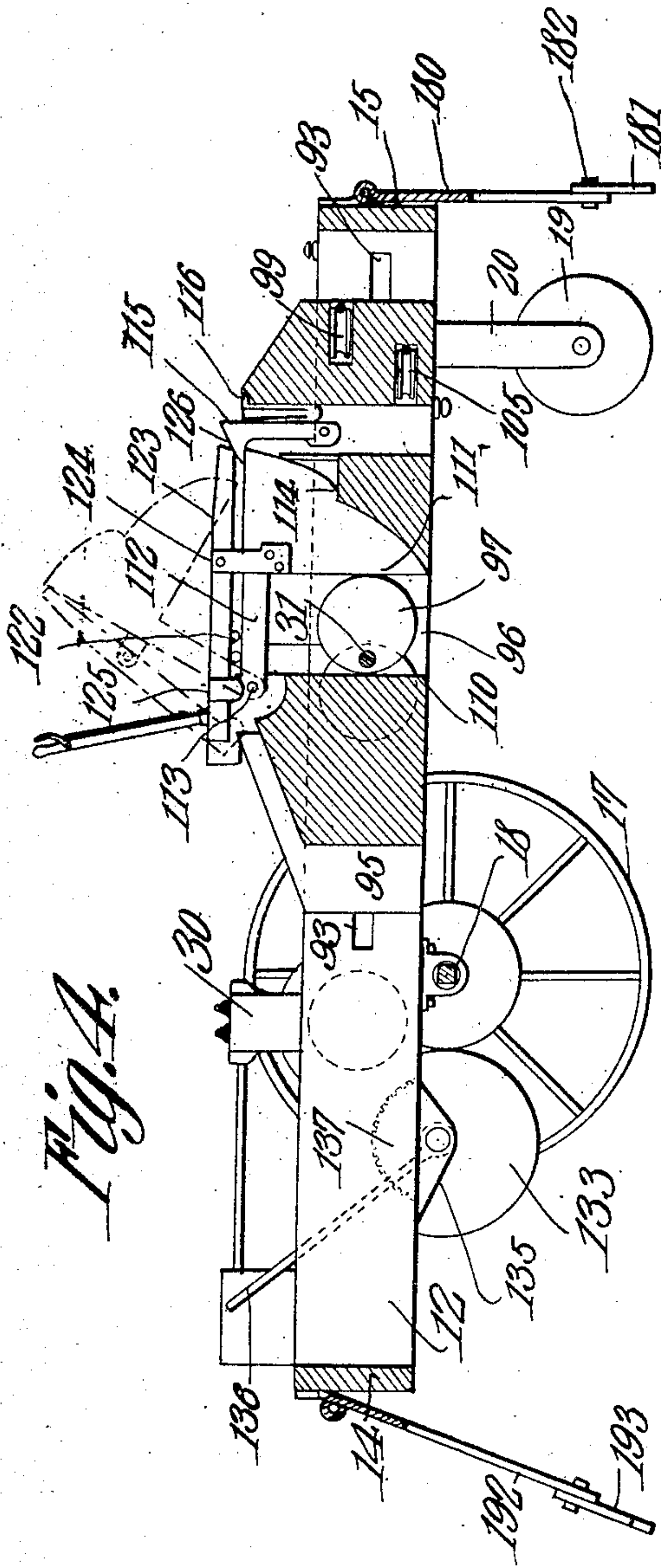


Fig. 4.

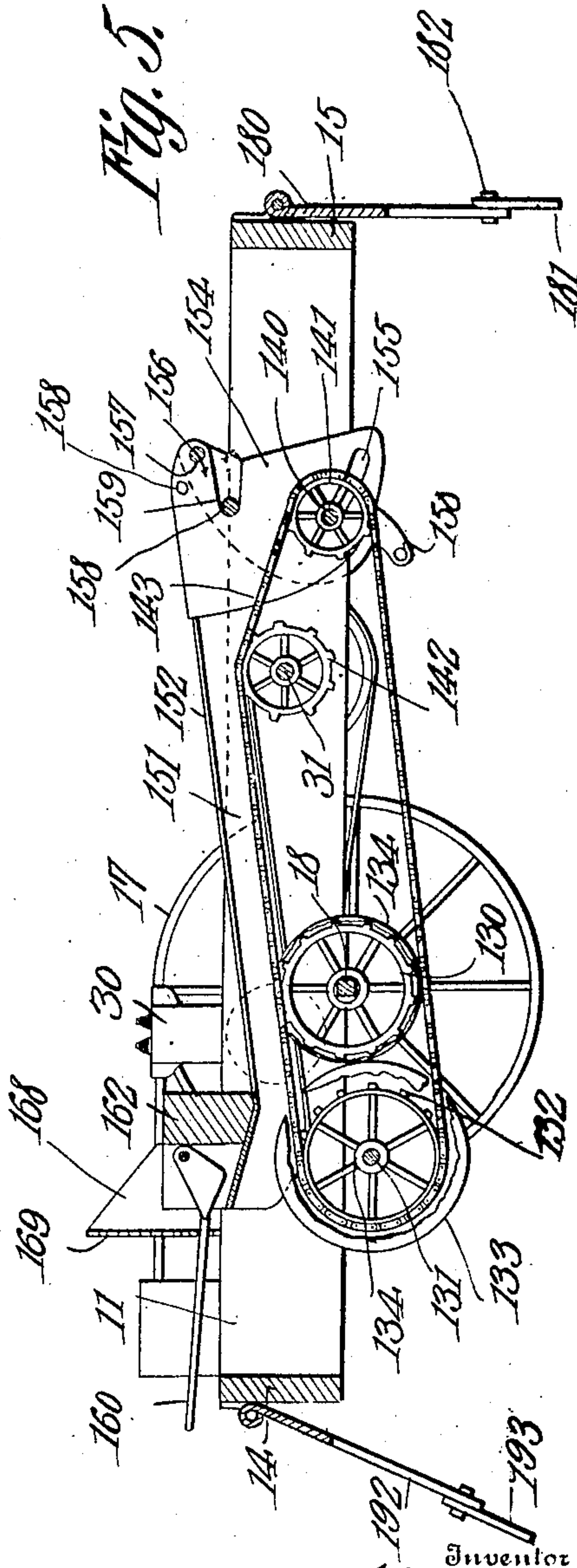


Fig. 5.

Witnesses

E. J. Shear
J. M. Clark

David J. Shea.

Inventor

By

C. A. Snow & Co.
 Attorneys

919,389.

D. J. SHEA.
 DRAG SAW.
 APPLICATION FILED AUG. 14, 1908.

Patented Apr. 27, 1909.
 5 SHEETS—SHEET 5.

Fig. 6.

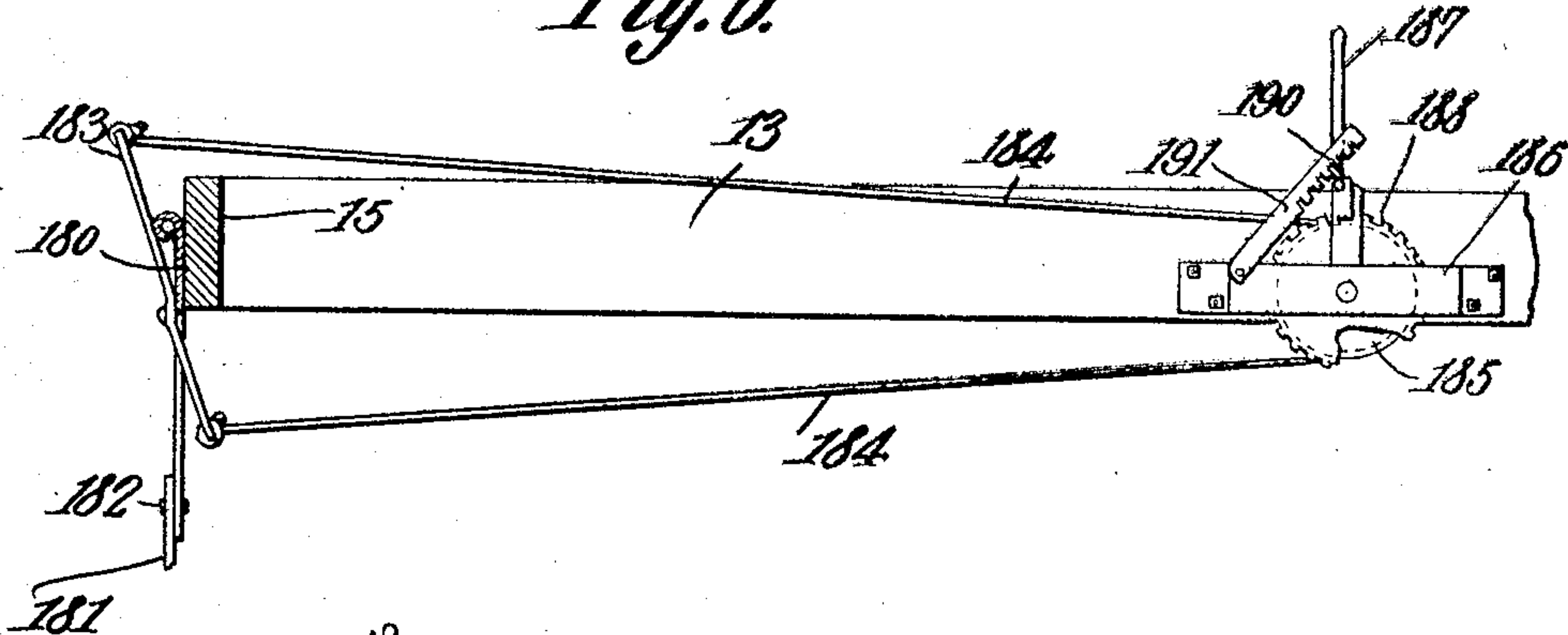


Fig. 8.

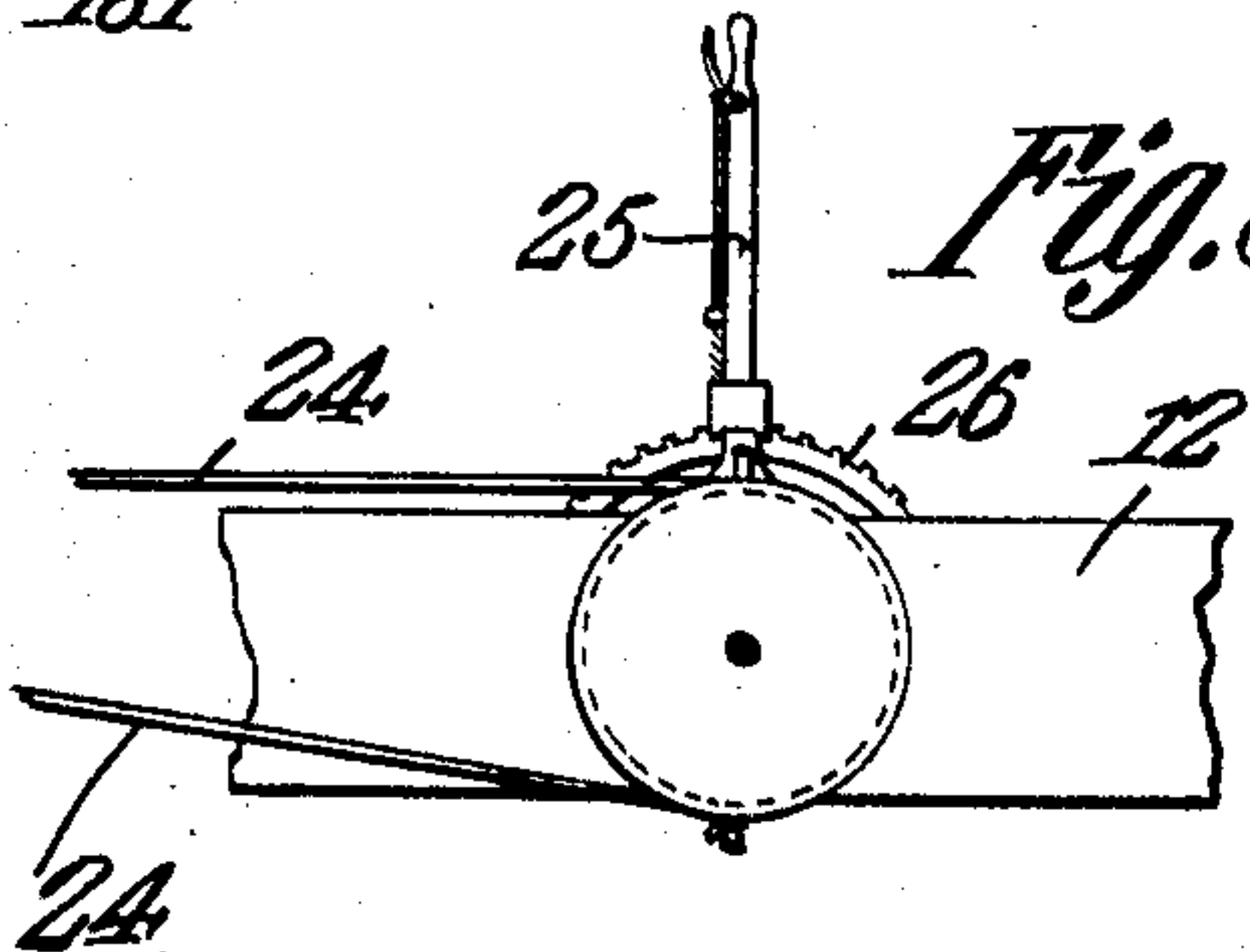


Fig. 9.

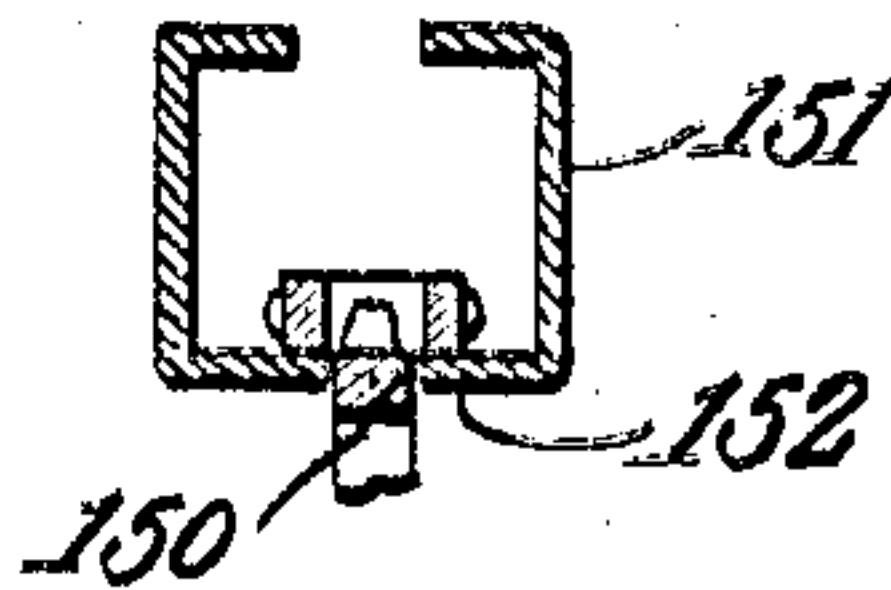


Fig. 10.

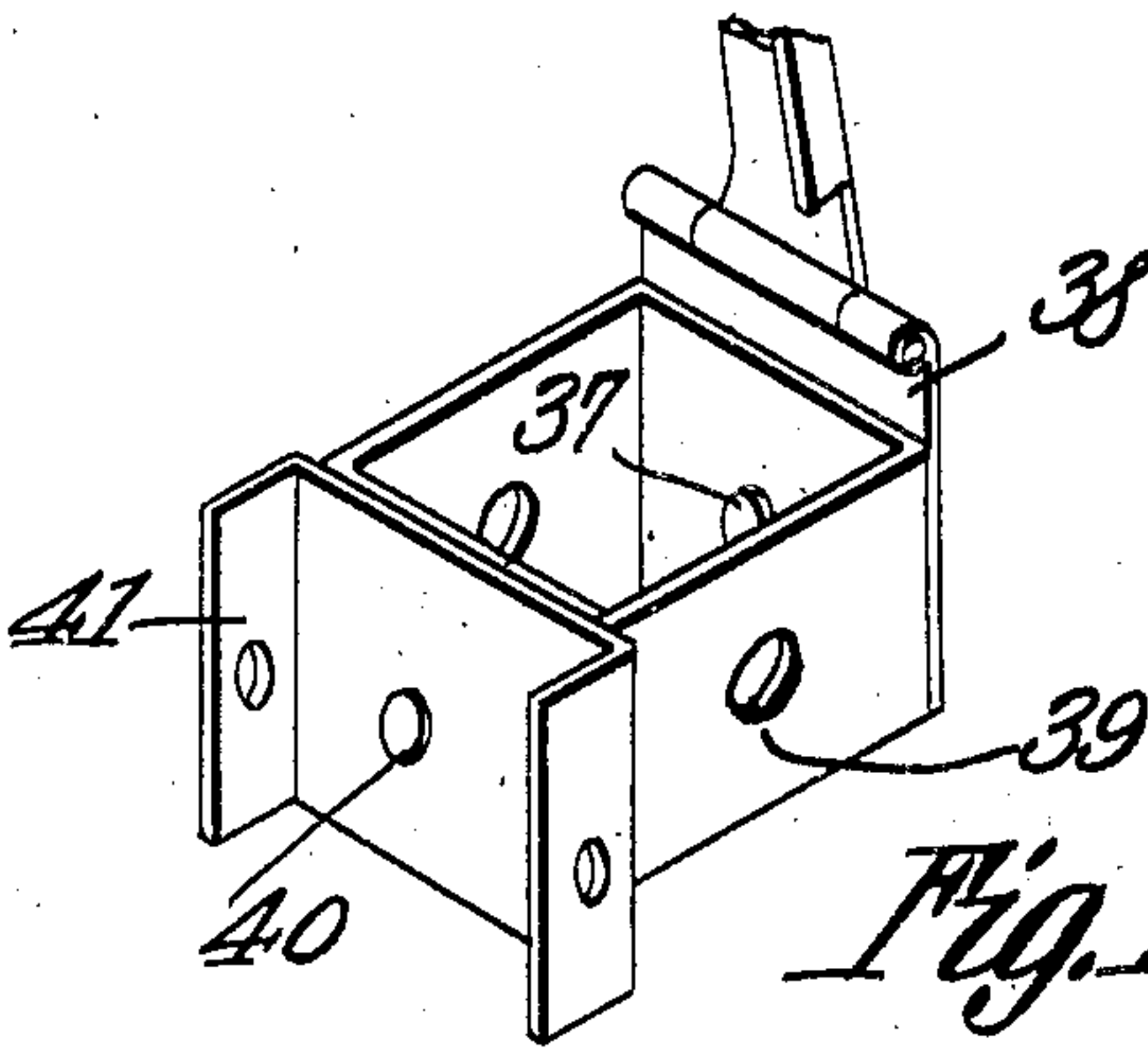
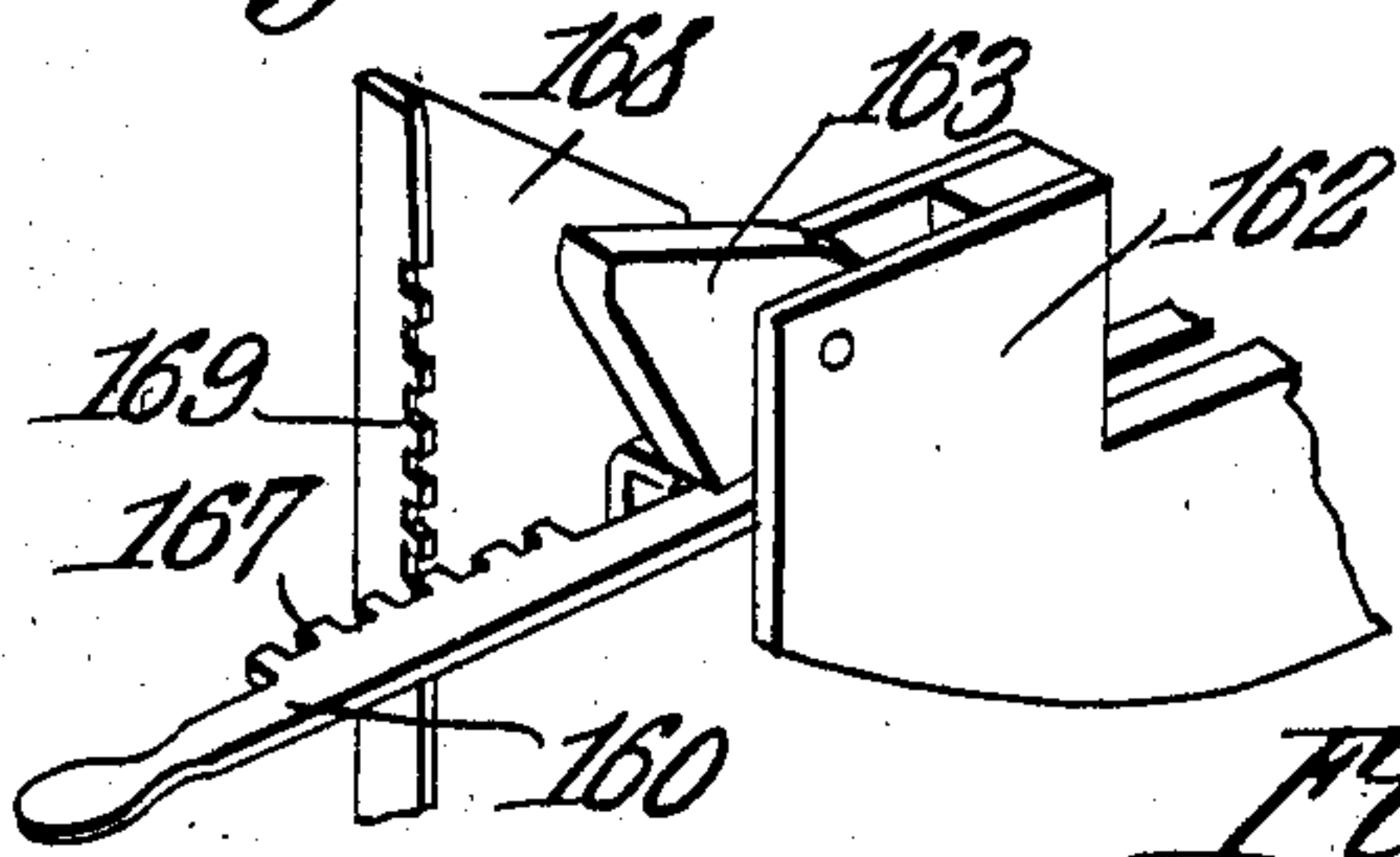


Fig. 11.

Fig. 12.



Witnesses

[Signature]
[Signature]

Inventor

David J. Shea.

By

Chas. H. Deo.
 Attorneys

UNITED STATES PATENT OFFICE.

DAVID JOSEPH SHEA, OF MARIANNA, ARKANSAS.

DRAG-SAW

No. 919,389.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed August 14, 1908. Serial No. 448,577.

To all whom it may concern:

Be it known that I, DAVID J. SHEA, a citizen of the United States, residing at Marianna, in the county of Lee and State of Arkansas, have invented a new and useful Drag-Saw, of which the following is a specification.

This invention relates to drag saws and has for its principal object to provide a machine that may be readily transported from place to place and adjusted for the purpose of cutting logs placed in different positions.

A further object of the invention is to provide an improved means for holding and clamping the saw and for guiding the saw while at work.

A still further object of the invention is to provide a novel form of saw actuating means and to so arrange the mechanism that the movement of the saw may be readily stopped without stopping the operation of the motor mechanism.

A still further object of the invention is to provide an improved means for controlling the connections between the motor and the saw and the traction wheels of the device so that the motor may be connected to or disconnected from the saw and its power utilized for propelling the mechanism as a whole from place to place.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a plan view of a drag saw constructed in accordance with the invention. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse section of the machine on the line 3—3 of Fig. 2. Fig. 4 is a longitudinal section view on the line 4—4 of Fig. 1. Fig. 5 is a similar view on the line 5—5 of Fig. 1. Fig. 6 is a longitudinal sectional view on the line 6—6 of Fig. 1, showing principally the mechanism for adjusting the end braces. Fig. 7 is a plan view partly in the nature of a diagram, illustrating the saw reciprocating

mechanism. Fig. 8 is a longitudinal section showing drum and lever of steering device. Fig. 9 is a detail cross section of the chain operating hollow lever. Fig. 10 is a perspective of the hand operating end of the chain operating hollow lever. Fig. 11 is a perspective of the frame and support for saw carrying mechanism. Fig. 12 is a detail view of a preferred construction of driving chain.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the machine are supported by a substantially rectangular framework which, in the present instance is formed of a plurality of longitudinally disposed bars 10, 11, 12, and 13 which are connected at the ends by transverse bars 14, 15, any suitable number of cross braces being employed for strengthening purposes.

The machine is designed to travel by its own power from place to place, and for this purpose is provided with a pair of carrying wheels 17 that are secured to an axle 18, while at the front of the machine is a smaller wheel 19 carried by a steering fork 20 which may be turned for the purpose of guiding the course of the machine. The steering fork is carried by a vertically disposed bar 21 at the head of which is a sheave 22 that is connected to a segment 23 by a tiller rope 24. The segment is provided with an operating lever 25 that carries a latch bolt of the ordinary construction which may be moved into and from engagement with a locking quadrant with a locking quadrant 26 on the bar 12.

The frame of the machine carries a motor preferably in the form of an internal combustion engine and the main shaft of the motor is connected to a counter-shaft 31 by means of a belt 32. From this counter-shaft motion is imparted to all of the operating parts of the machine and the connections are controlled in the manner more specifically pointed out hereinafter. The front bar 13 of the frame carries a pair of spaced Z-bars 35 which are designed for the reception of a longitudinally movable slide 36 which in the present instance is formed of a long thin plate reinforced at each edge by angle bars as shown in Fig. 3. Extending from the slide is a pivot pin 37 on which is mounted a plate 38, and the rear wall of an

open frame 39, the latter being of substantially rectangular form and being provided at its front end with a pivot pin 40 on which is mounted a bracket 41. In practice the plate 38 and the bracket 41 are free to tilt on their alining pivots for the purpose, as will subsequently appear, of adjusting the saw to different angular positions, while the central open frame 39 remains stationary so far as tilting movement is concerned, the frame, of course, being carried by the slide as the latter is reciprocated during the operation of the machine.

Arranged in front and parallel with the bar 13 of the frame is a shaft 43, the ends of which are mounted in bearings formed in the forwardly projecting ends of the frame bars 14 and 15, and auxiliary bearings are also provided for the shaft, one of the bearings being in the form of a block 44 that projects from the front frame bar 13 and straddles the slide. The shaft is of square or other non-circular form in cross section at that end adjacent the saw and extends through a similar shaped opening formed in a winding drum 47. The ends or hub members of this drum extend through openings formed in the open frame 39 so that the drum is free to rotate when turned by the shaft and will move endwise on the shaft as the slide is reciprocated. The shaft 43 is used for the purpose of adjusting the vertical position of the saw and it is manipulated by a lever 49 fulcrumed loosely on the shaft and provided with a pawl that engages a ratchet wheel 50 rigid on the shaft. Also by turning this lever the saw may be forced down to its work under greater or less pressure as desired. After the ratchet wheel has been turned to the desired extent it is held in place by a locking pawl 51 that is pivoted to the upper edge of the frame bar 13.

Returning now to the saw carrying mechanism proper 52 indicates a frame that is connected to the bracket 41 by a transversely disposed pivot pin 53, the pin 53 having its axis at a right angle to the axes of the pivot pins 37 and 40 so that the frame 52 is practically mounted for universal adjustment. The frame is in the form of a channel bar the side webs of which are provided with outwardly directed flanges 56 and these serve for the reception of a vertically movable slide 57. The slide is connected at top and bottom to a cord or chain 58 that extends over guiding sheaves 59 at the top and bottom of the frame and is thence wound around the drum 47 so that as the drum is turned in one direction or the other the slide 57 will be moved vertically on the frame 52. Projecting from the rear of the frame is a pair of parallel webs or flanges 60 between which is guided a slide 61 that carries a sheave 62. On the slide is a spring catch 64 that is ar-

ranged to engage in any one of a series of locking notches 65 that are formed in one of the side flanges 60, so that the slide may be readily moved in the direction of the length of the frame and then locked in adjusted position. The sheave 62 carried by this slide extends over a rope or chain 58 and its function is to maintain the chain or rope in taut condition.

In order to adjust the frame 52 on the pivot pin 53 the upper portion of the frame is connected to the top of the plate 38 by means of a brace that is formed of two sections 66 and 67 and both sections are pivotally connected at their outer ends to the plate and frame respectively. One of these sections is provided with a pin 68 and the other with a series of notches 69 so that the length of the brace may be adjusted and the brace then locked in adjusted position. This permits tilting of the frame 52 so that the latter may be presented to varying angles to the vertical.

Extending from the upper portion of the frame 52 is a pivoted brace bar 70, the lower end of which is provided with a plurality of notches 71 arranged to engage a locking pin 72 that projects from the bearing block 44, and by moving this lever or brace the frame 52 may be turned with the two pivot pins 37 and 40 as an axis of movement, the frame being adjusted to any desired angle and then locked in place by engaging the pin 72 in one of the notches 71.

The lower portion of the slide 57 is provided with an upwardly bent tongue 80, and above this tongue the slide carries a shoulder 81, the shoulder being arranged to engage with the back of the saw 82. The lower edge of the rear end of the saw is notched to fit over the tongue 80 and at the end of the notches are abrupt shoulders 83 which by engaging with the side walls of the tongue will prevent independent longitudinal play of the saw. Pivoted to the slide is a locking plate 85 that is arranged to swing down over the rear portion of the saw blade and the edge of the plate enters the space between the saw and the tongue 80 so that the latter will serve to hold the plate in locking position while the saw will be confined and rigidly held from independent movement in any direction.

The mechanism thus far described will permit the raising and lowering of the slide 57 in the frame 52 for the purpose of adjusting the saw vertically, while the frame 52 may be tilted in two directions each at a right angle to each other for the purpose of adjusting the saw to any angular position.

On the projecting end of the transverse frame bar 15 is a vertically disposed guide 88 on which is mounted a vertically movable slide 89 having a pin 90 that over hangs the back of the saw and which serves as a guide for the saw during its reciprocatory move-

ment. The slide is free to move up and down in order to follow the similar movement of the saw, but in all cases will aid in maintaining the saw in a direct line.

5 The inner faces of the two frame bars 12 and 13 are provided with longitudinally extending parallel grooves 93 arranged for the reception of a pair of slides 94 and 95. Each of these slides is provided with a recess 96 at
10 a point about midway of its length, and in these recesses are cams 97 that are disposed diametrically opposite each other, as shown in Fig. 4, the two shafts being permanently secured to the counter-shafts 31 so that as
15 the latter is rotated the two slides will be simultaneously reciprocated in opposite directions respectively.

Mounted on the slide 95 is a sheave 98, and on the slide 94 is a sheave 99. Around these
20 two sheaves passes a cable or chain 100 having one end permanently secured to the bar 12 of the frame at 101 while the opposite end extends around a sheave 102 carried by the bar 13 and its end is permanently secured to
25 the saw carrying slide 36 at 103. The slide 95 further carries a sheave 104, and slide 94 carries a sheave 105. Around these two sheaves passes a cable or chain 106 having one end secured to the bar 12 at 107 while
30 the opposite end of the cable passes around a sheave 108 in the frame bar 13, and its end is secured to the saw carrying slide at 103. It will be noted that the two cables are passed
35 around the guiding sheaves of the slides in opposite directions respectively, so that as the slides are reciprocated the cables will be so operated as to effect reciprocatory movement of the saw carrying slide, and as one cable is drawn in one direction the other will
40 be slackened to a corresponding extent in the other direction.

The cams 97 in the slide recesses 96 operate on one side directly against one wall of the recess as indicated at 110 in Fig. 4, while the
45 working face at the opposite side is formed by a plate 111 that is carried by an arm 112 pivoted on a stud 113 on the slide. The plate 111 may be swung into and out of the recess, and the outer edge of the plate is curved to
50 fit against a corresponding curved wall of the recess while a shoulder 114 is formed on the rear of the plate to abut against a corresponding shoulder in the slide and prevent excessive downward movement of the plate.
55 In order to lock the plate against upward movement a latch 115 is employed, said latch being pivoted within the slide and having its upper end forced into engagement with the upper edge of the plate 114 through the
60 medium of a spring 116.

On each of the frame bars 12 and 13 is a small vertical bracket 118 in which is journaled a shaft 119 and to each shaft is secured an operating lever 120 having a latch bolt

which may be engaged with a stop locking 65 quadrant. The inner end of each shaft 119 is provided with a crank pin 122 that fits under a bar 123 that is pivoted between a pair of ears 124 rising from the plate 114. The rear end of the bar is provided with a
70 downwardly extending lug or block 125 which strikes against the top of the main slide for the purpose of limiting downward movement. The front end of the bar normally rests against the incline face 126 of
75 the upper end of the latch 115 and as the crank shaft is turned by its operating lever for the purpose of raising the crank pin 122 the lever will be swung on its pivot and the forward end of the lever will ride against the
80 cam face 126 forcing the latch 115 to release position. When the lever 123 has been moved to such position as to release the latch its latch engaging end will bind against the top of the plate and as the upward move-
85 ment of the crank pin is then continued the plate will be lifted with the pin 113 as a center of movement and will be lifted out of engagement with the cam so that the latter is then free to rotate idly without reciprocating
90 the slide. This mechanism is of value in that it permits the stoppage of the saw while the motor continues to rotate. The saw actuating mechanism may be set into operation at any time by lowering the two plates 111. 95

On the wheel axle 18 is a sprocket wheel 130, and arranged to the rear of the wheel axle is a shaft 131 carrying a large sprocket wheel 132. This latter sprocket wheel is formed integral with or is rigidly secured to
100 a friction disk 133 which when necessary may be moved into engagement with a friction disk 134 on the shaft 18 when it is desired to run the entire machine backward on its carrying wheels. The shaft 131 is mounted
105 eccentrically in a pair of sleeves 134 that are journaled in hangers 135 depending from the cross bars 11 and 12 of the frame. To one of these sleeves is secured a lever 136 carrying a latch bolt which may be engaged with a
110 locking quadrant 137 so that the sleeves may be turned for the purpose of moving the friction disk into or out of engagement with each other and locking the lever in adjusted position so as to hold the disk frictionally
115 engaged or in released position.

Extending across between the members 11 and 12 of the frame is a stationary shaft 140 on which is mounted an idler sprocket 141. The counter-shaft 31 carries a sprocket
120 wheel 142 and around the several sprocket wheels 130, 132, 141 and 142 passes a link belt 143 which when in the position shown in Fig. 5 engages the upper portions of two sprocket wheels 130 and 142 and extends
125 around the sprocket 132 and 141, the lower run of the chain being at all times out of engagement with the two sprocket wheels 130

and 142. The upper portions of the rims of the two wheels 130 and 142 extend into a slot 150 that is formed in the lower face of a hollow lever 151 and on either side of and forming the walls of the slot are oppositely disposed approximately horizontal flanges 152 that form supports for the upper run of the link belt 143 for nearly the entire length of the latter or at least for that portion of its length which extends between the two sprocket wheels 130 and 142. The forward end of the lever is provided with a pair of spaced segmental plates 154 which straddle the sprocket wheel 141 and which are provided with arcuate slots 155 through which the shaft 140 extends. Pivoted on the shaft 140 at opposite sides of the two plates 154 is a pair of plates 156 and the upper ends of these plates form ears to which the upper ends of the plates 154 are connected by a pivot pin 157. The two plates 156 are connected near the upper and lower ends by cross bars 158, and the upper cross bar extends into a pair of recesses 159 that are formed in the forward edges of the segmental plates 154, so as to form a stop to limit the forward movement of the lever. At the rear end of the chain guiding wheel is a handle 160 that is pivoted on a pin 161 carried by the lever and is free to swing in an approximately horizontal plane. The inner end of the lever is partly inclosed in a small casing 162 that will prevent the lever swinging too far in one direction, while movement in the opposite direction may be prevented by a pivotally mounted cam 163 that is carried by the lever and is under the control of the operator. Extending from the lever is a notched bar 167 which co-acts with a plate 168 that is secured to the frame bar 11; the plate 168 has an inwardly extending flange 169 provided with notches with which the notches of the bar 167 may interlock so as to hold the lever in adjusted position; and in this connection it may be remarked that the lever has two movements, one a simple vertical swing with the pivot pin 157 as a center of movement; and the other a back and forth movement in which the plates 156 swing on the shaft 140 for the purpose of carrying the pivot 157 in an arcuate path. When the lever is simply moved up the upper run of the chain 143 is raised out of engagement with the sprocket wheel 130 so that no movement can be transmitted from the chain through the sprocket wheel 134 to the propelling wheels of the machine, and thus the normal position of the parts when the saw is in operation. When, however, the machine is to be traveled forward the chain is allowed to engage with the sprocket wheel 134 and from thence to axle 18 into the two main propelling or carrying wheels. When it is desired to back the machine the lever

is raised so as to disengage the chain from the sprocket wheel 134, while the chain still remains in engagement with the sprocket wheel 132 and then the lever 136 is moved for the purpose of forcing the two frictional disks 133 and 134 into engagement with each other so that the machine will be moved backward. When it is desired to throw all of the mechanism out of gear and allow the motor to run idly the chain carrying or guiding lever is first raised and then drawn backward so that the plates 156 will be carried rearward, and will thus elevate the pivot pin 157 which supports the forward end of the chain carrying lever. This will raise the front end of the lever and the chain will be lifted out of engagement with the sprocket wheel 142 on the counter-shaft 31 so that no movement will then be transmitted from the counter-shaft to the chain, and the parts may be allowed to remain in this position so as to drive only the saw.

At the front of the machine is pivoted a plate 180 carrying ground engaging spurs 181 which are adjustably secured to the plate by bolts 182. Secured to the plate is a two armed lever 183, the two arms extending above and below the pivot point of the plate and being connected to the opposite ends of a cable or chain 184 that extends around and is secured to a wheel 185, said wheel being journaled in a bracket 186 on the inner face of the frame bar 13. The periphery of the wheel is provided with teeth 188 which may be engaged by a pawl on the lever and by manipulating the latter the ground engaging spurs may be forced tightly into the ground or the plate as a whole may be raised so as to permit free travel of the machine. The lever 187 is provided with a projecting pin 190 arranged to enter notches formed in a lever 191 that is pivoted to the bracket 186. To the rear of the machine is a second plate 192 carrying spurs 193 which may also be forced into engagement with the ground so that the machine may be firmly braced and held in order to resist movement under the working of the saw.

The supporting wheels 17 are preferably mounted loosely on their axles, and each is provided with a ring 200 that carries an inwardly projecting lug 201. Secured to the shaft is a collar or hub 202 having an outwardly projecting lug 203 that is arranged to engage with the lug 201 for the purpose of transmitting rotative movement to the wheel when the vehicle is to be propelled. This construction permits one of the wheels to move slightly in advance of the other, and is advantageous in turning curves.

What is claimed is:—

1. In a drag saw, a main frame, a reciprocatory slide carried thereby, a saw carrying frame pivotally connected to the slide and

adjusted to varying angular positions, means for locking said frame in adjusted position, a saw clamp on the saw carrying frame, and means for adjusting the clamp in the direction of the length of said saw carrying frame.

2. In a drag saw, a main frame, a reciprocatory slide carried thereby, a saw clamp, a frame on which the clamp is slidably mounted, a universal connection between the clamp carrying frame and the slide, and means for locking said clamp carrying frame in adjusted position.

3. In a drag saw, a reciprocatory slide, means for supporting the same, a frame having universal pivotal connection with the slide, means for locking the frame in adjusted position, a saw clamp carried by the frame, and means for adjusting the clamp in the direction of the length of the frame.

4. In a drag saw, a reciprocatory slide, a box frame pivoted thereto, a bracket pivoted to the box frame, a saw carrying frame pivotally connected to the bracket the pivots between the saw frame and the bracket and between the bracket and box frame being disposed at a right angle to each other, a drum mounted in the box frame, a saw clamp slidably mounted on the saw carrying frame, a flexible adjusting device wound around the drum and connected to the clamp, and an operating shaft extending through the drum and on which said drum is longitudinally movable.

5. In a drag saw, a reciprocatory slide, means for supporting the same, a box frame pivoted to the slide, a bracket pivoted to the box frame, a saw carrying frame pivoted to the bracket, a saw clamp slidably mounted on the saw carrying frame, a drum mounted in the box frame, flexible connections between the drum and clamp, and adjustable means for holding said connections taut, and a pair of adjustable bracing members disposed at a right angle to each other and serving to connect the saw carrying frame to the slide and to maintain said frame in the position to which it is adjusted.

6. In apparatus of the class described, a saw carrying clamp having a saw receiving recess provided at one side with a shoulder and at the opposite side with a tongue, a saw notched to fit within the recess, and a movable clamping plate arranged to fit over the saw and maintain the same within the recess the edge of the plate fitting below the edge of the tongue.

7. In a drag saw, a saw carrying slide, a pair of reciprocatory slides arranged to move in opposite directions respectively, sheaves carried by the reciprocatory slides, and flexible members extending around the sheaves and having one end connected to the saw slide and the opposite end to fixed points.

8. In a drag saw, a pair of cam actuating

slides arranged to move in opposite directions respectively, sheaves on the slides, a reciprocatory saw carrying slide, and flexible members connected to the saw carrying slide at one end and extending around the several sheaves the opposite end of the said members being connected to fixed points.

9. In a drag saw, a cam shaft, cams thereon, a pair of reciprocatory slides through which motion is imparted to the saw said slides being grooved for the reception of the cams, and movable plates fitting within the recess and adapted to be engaged by the cams said plates being movable out of engagement with the cams to stop the transmission of movement to the slides.

10. In a drag saw, a frame, a pair of cam actuating slides guided in the frame, cams for actuating the slides, pivot plates carried by the slides and arranged to be engaged by the cams, latches locking said plates in position, latch releasing levers pivoted to the plates having operating cranks arranged to engage said levers to first effect release of the latches and then to move the plates out of cam engaging position.

11. In a drag saw, a main frame, saw supporting and actuating means upon the frame, a member mounted for swinging movement upon the frame at one end thereof, foot plates carried by the member and arranged to engage the ground to hold the main frame against movement, means carried by the swinging member and extending above and below the same, and means connected with the ends of the member for swinging the same into or out of position to so engage with the ground.

12. In a drag saw, a main frame, supporting wheels therefor, saw supporting and actuating means on the frame, a member supported upon the frame at one end thereof for swinging movement, foot plates carried by the member and arranged at their lower ends to engage into the ground to hold the main frame against movement, a member fixed upon the swinging member and having portions extending above and below the same, a connection secured at each end of the member, and a winding drum about which the connection is passed, the said drum being rotatable to exert a pull upon either end of the member through the medium of the connection and thereby impart swinging movement to the swinging member whereby to move the plates into or out of position to engage with the ground.

13. In a drag saw, a main wheel frame, pivoted bracing feet on the frame, a two-armed lever connected to the feet, flexible members extending from the lever and means for adjusting said flexible members to move the feet into or from engagement with the ground.

14. In a drag saw, a main frame, a reciprocating slide supported thereby, a saw clamping member carried by the slide, means for adjusting said saw clamping member and a saw guide mounted on the frame and adjustable with the saw and clamp.

In testimony that I claim the foregoing as

my own, I have hereto attixed my signature in the presence of two witnesses.

DAVID JOSEPH SHEA.

Witnesses:

W. W. WORD,

BEN B. BONNER.