W. S. HAHN.

DRAG SAWING MACHINE.

APPLICATION FILED JUNE 8, 1911.

1,015,175.

Patented Jan. 16, 1912.

4 SHEETS—SHEET 1.

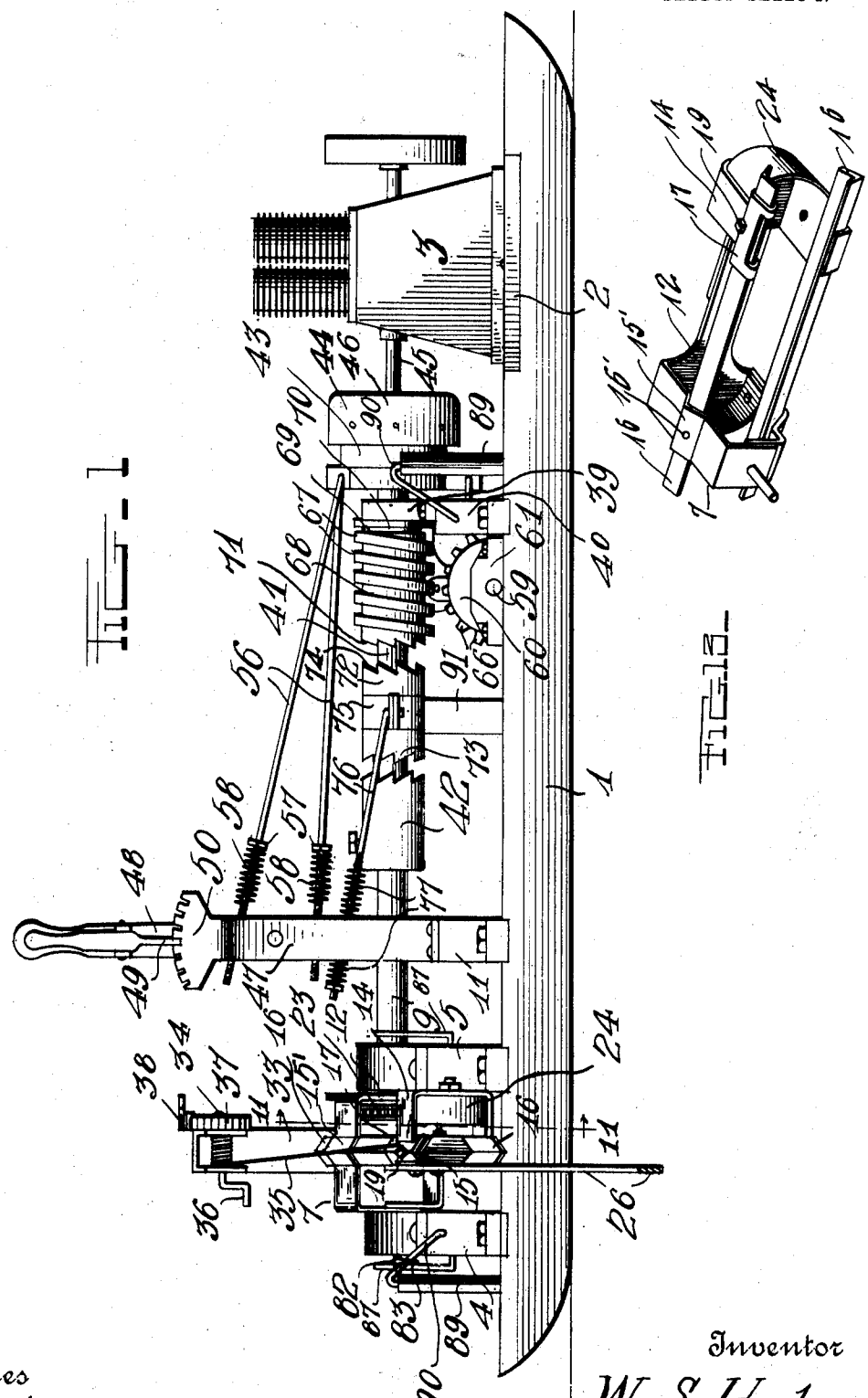

FIG. 1

FIG. 1a

Witnesses

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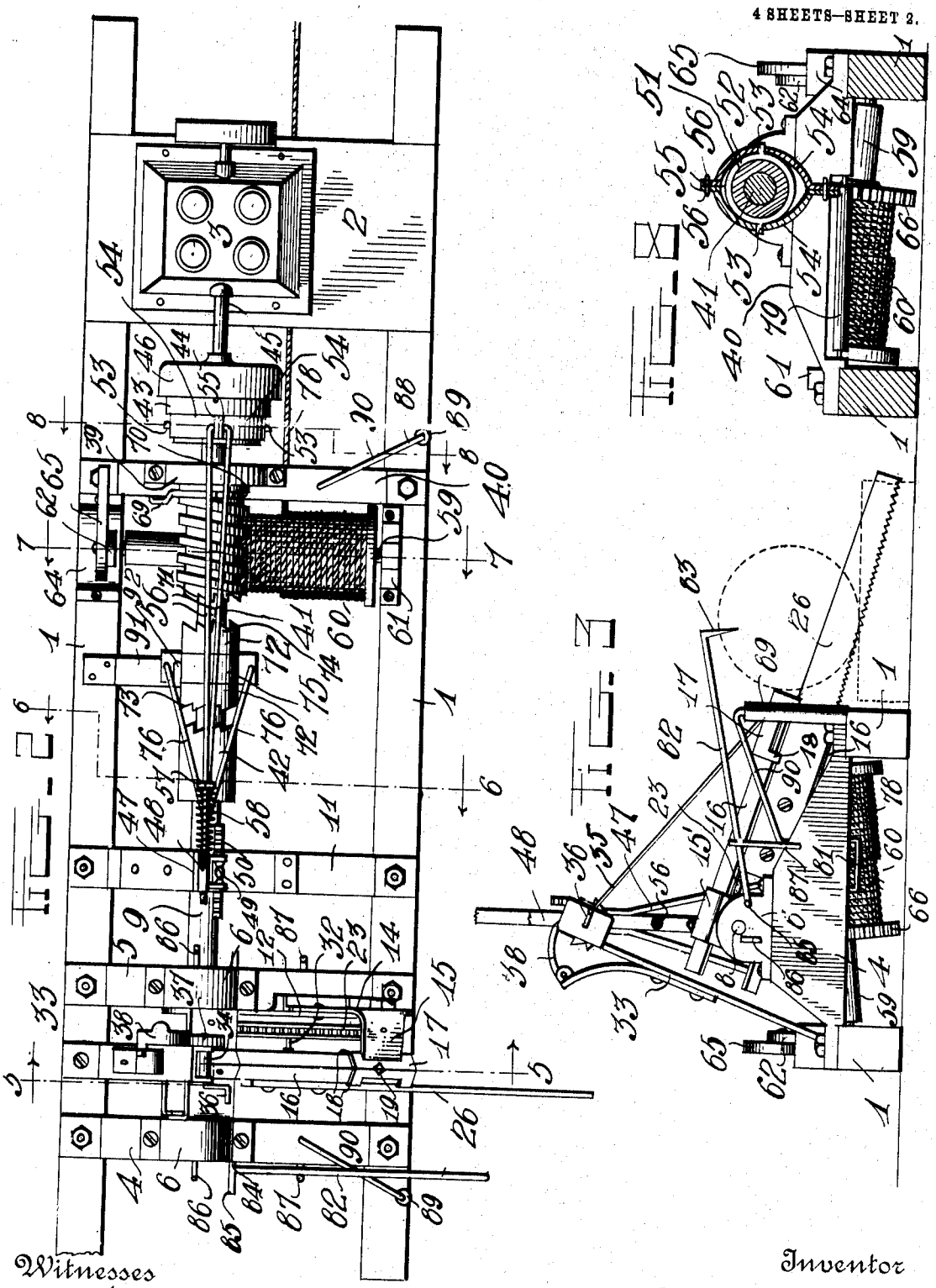
4 SHEETS—SHEET 2.



Witnesses

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4 SHEETS—SHEET 3.

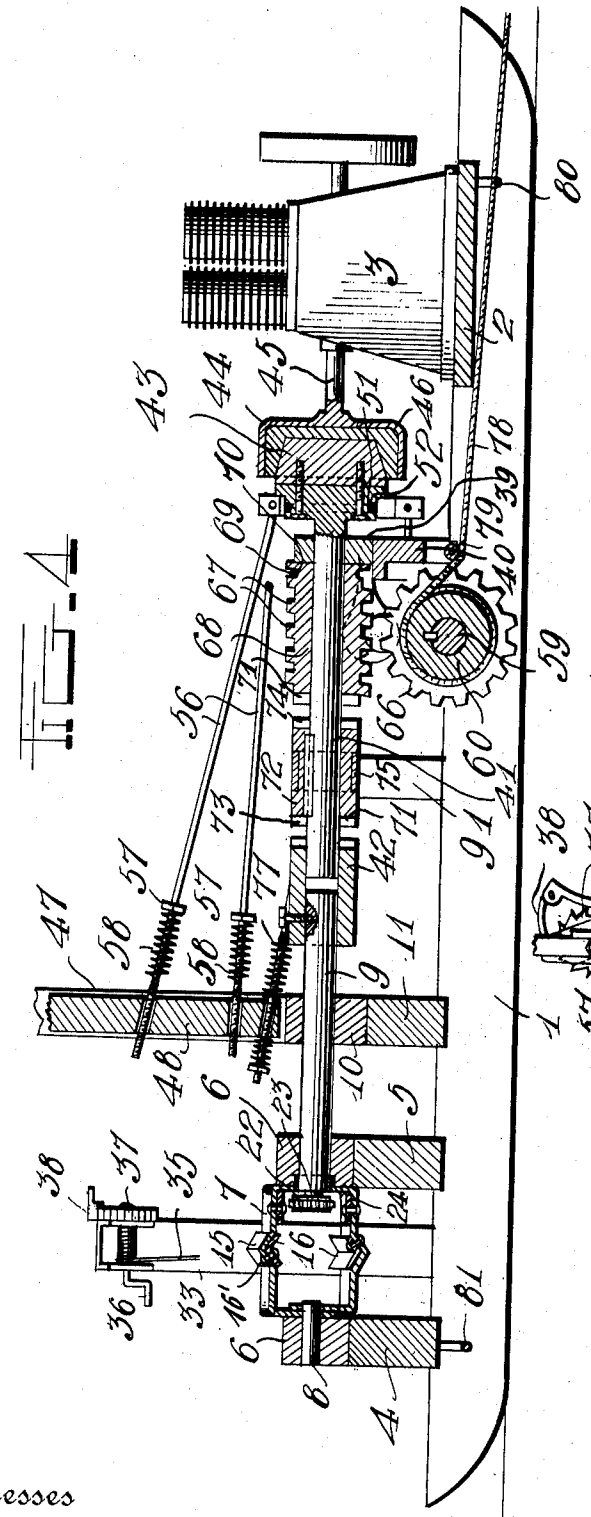

FIG. 4.

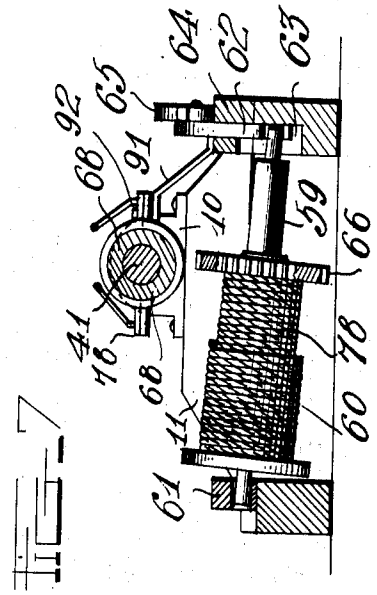

FIG. 7.

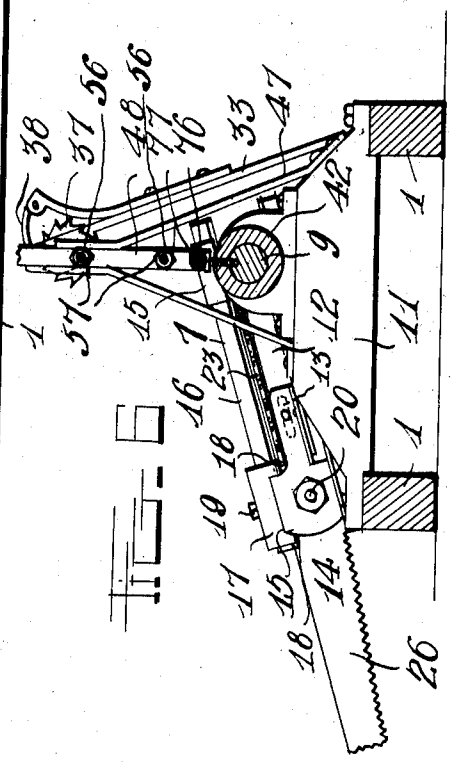

FIG. 6.

Witnesses

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APPLICATION FILED JUNE 8, 1911.

1,015,175.

Patented Jan. 16, 1912.

4 SHEETS—SHEET 4.

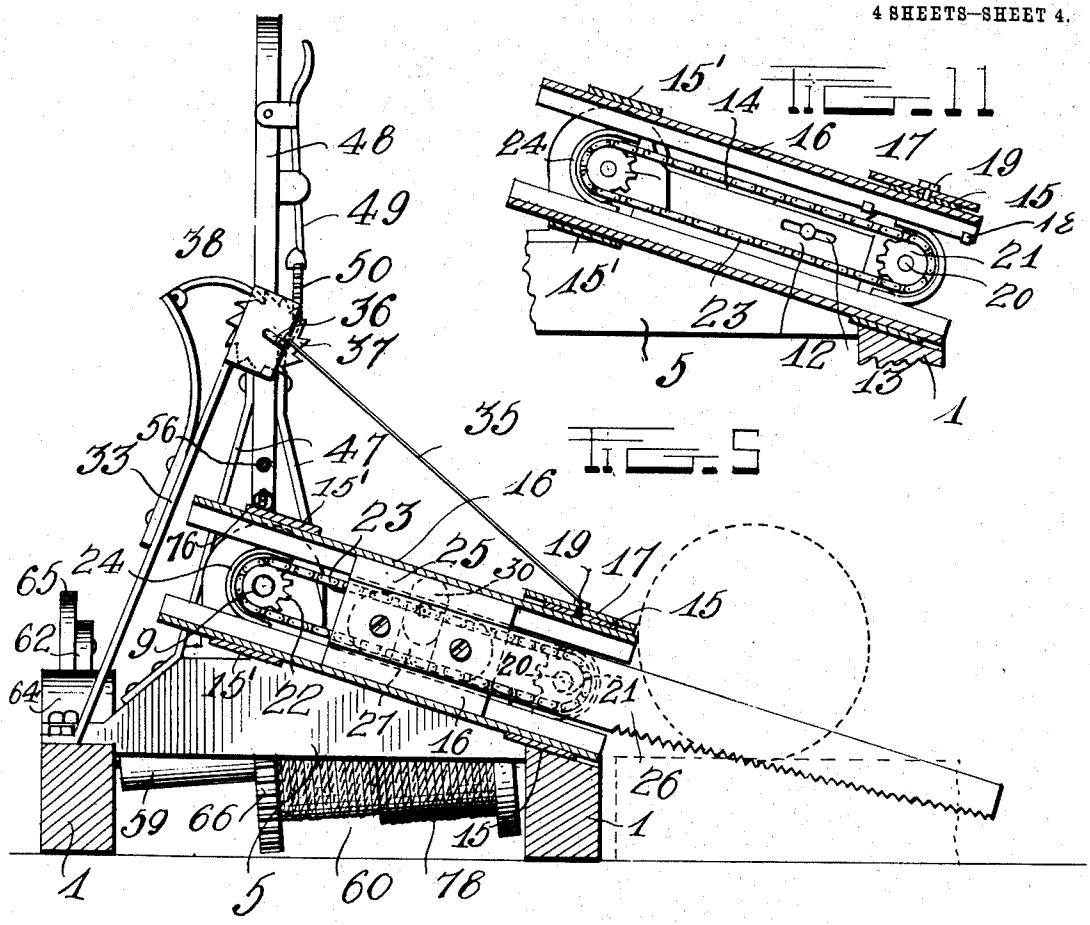


FIG. 11

FIG. 5

FIG. 9

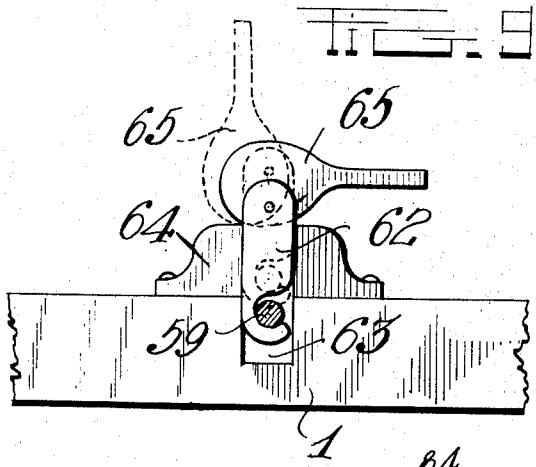
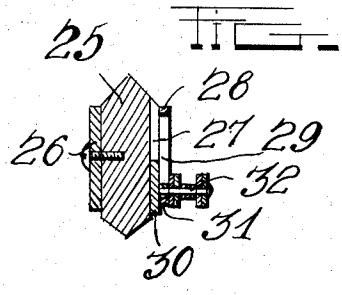


FIG. 10



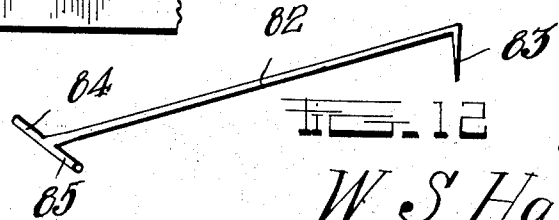


FIG. 12

Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM STANLEY HAHN, OF MOUNTAIN DALE, OREGON.

DRAG SAWING-MACHINE.

1,015,175. Specification of Letters Patent. Patented Jan. 16, 1912.

Application filed June 8, 1911. Serial No. 631,957.

To all whom it may concern:

Be it known that I, WILLIAM STANLEY HAHN, a citizen of the United States, residing at Mountain Dale, in the county of Washington and State of Oregon, have invented certain new and useful Improvements in Drag Sawing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in drag sawing machines.

One object of the invention is to provide a machine of this character having an improved construction and arrangement of driving mechanism whereby the saw is operated from the engine shaft without the necessity of providing power transmitting gears or counter shafts.

Another object is to provide a machine of this character which will be simple, strong and durable in construction, light in weight and adapted to be readily transported from place to place.

With these and other objects in view the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a side view of my improved drag sawing machine; Fig. 2 is a top plan view thereof; Fig. 3 is an end view of the saw end of the machine; Fig. 4 is a central vertical longitudinal section; Fig. 5 is a vertical cross section on the line 5—5 of Fig. 2; Fig. 6 is a similar view on the line 6—6 of Fig. 2; Fig. 7 is a similar view on the line 7—7 of Fig. 2; Fig. 8 is a similar view on the line 8—8 of Fig. 2; Fig. 9 is a detail view showing the adjusting mechanism for throwing the cable winding drum into and out of gear; Fig. 10 is a detail view of the sliding saw actuating head; Fig. 11 is a detail vertical sectional view on the line 11—11 of Fig. 1 showing more clearly the arrangement of the saw operating chain and gears; Fig. 12 is a detail perspective view of the attaching bar for fastening the saw end of the machine to a log. Fig. 13 is a perspective detail of the frame.

In the embodiment of the invention, I provide a supporting frame comprising a pair of runners 1, on which near the rear end is arranged a platform 2 adapted to receive an engine 3 or other form of motor whereby the machine is operated. On the opposite end of the runners from the platform 2 are secured parallel cross bars 4 and 5 on which are bearings 6. Between the cross bars 4 and 5 is arranged a saw guiding and supporting frame 7 one side of which is secured to a short pivot shaft 8 mounted in the bearing 6 of the cross bar 4, while the other side of said frame is loosely mounted on the outer end of a saw operating shaft 9 which is revolubly mounted in the bearing 6 of the cross bar 5 and in a bearing 10 on a cross bar 11 arranged on the runners adjacent to the bar 5 as shown.

On the side of the frame 7 adjacent to the cross bar 5 is formed an arm or extension 12 in the outer portion of which is formed a longitudinal slot 13. Adjustably secured to the slotted arm 12 is a bearing plate 14 having on its upper and lower edges right angularly bent guide supporting lugs 15, the outer ends of which are bent to form substantially V-shaped channels with which are engaged the outer ends of upper and lower parallel saw head guides 16 the inner ends of which are rigidly secured by rivets 16′ within similar lugs 15′ at the upper and lower sides of the frame 7. The lugs 15 loosely embrace the guides 16 thus permitting the bearing plate 14 to be adjusted on the arm 12 for a purpose hereinafter described. Engaged with the upper guide 16 and the adjacent end of the upper lug 15 is a clamping member 17 comprising a plate having on its opposite ends laterally projecting hook shaped lugs 18 which are adapted to engage under the adjacent inner edges of the upper guide. In the clamping member 17 is formed a threaded passage with which is engaged a set screw 19 adapted to be screwed into engagement with the upper lug 15 thereby clamping the same into rigid engagement with the upper guide 16 and also drawing the lugs 18 of the clamping member into engagement with the lower edges of the guide thereby securely clamping the bearing plate to the saw guides.

In the bearing plate 14 is arranged a stub shaft 20 having mounted thereon a sprocket gear 21 around which and around a similar gear 22 fixed on the outer end of the saw operating shaft 9 is arranged a saw operating sprocket chain 23. Secured to the lugs 15 of the bearing plate 14 and to the upper and lower sides of the frame 7 are curved guard plates 24 which cover the chain 23 when passing around the sprockets and prevent the chain from jumping off or becoming disengaged from the sprockets.

Slidably mounted in the guides 16 is a saw operating head 25, said head comprising a block having V-shaped upper and lower edges which fit in and are slidably engaged with the guides 16. To one side of the head 25 is bolted or otherwise rigidly secured the inner end of the saw 26. In the opposite side of the head 25 is formed a transversely disposed groove 27 over which and secured to the adjacent side of the head is a plate 28 having therein opposite the groove 27 a slot 29. Slidably engaged with the groove 27 is a chain attaching plate 30 having formed thereon a laterally extending boss 31 in which is secured a chain attaching pin or bolt 32 which is adapted to be engaged with the saw operating chain 23. The pin 32 when thus engaged with the chain forms one of the pivots between the links of the chain as shown. By thus connecting the chain 23 with the saw head 25 the chain will be permitted to slip back and forth on the head when passing around the sprocket gears, thus obviating any binding between these parts. By adjustably connecting the bearing plate 14 with the arm 12 of the frame 7 and with the saw head guides, said plate may be adjusted to take up any slack which may occur in the chain 23 and the latter maintained in proper condition for reciprocating the saw head and saw in the guides 16.

Secured to one of the runners in line with the inner end of the guides 16 is a bearing standard 33 in the upper end of which is revolubly mounted a short cable winding shaft 34 on which is adapted to be wound a saw raising and supporting cable 35, the outer end of which is connected in any suitable manner to the outer end of the upper saw head guide 16. On one end of the shaft 34 is arranged a crank handle 36 while fixedly connected to the opposite end of the shaft is a ratchet 37 with which is adapted to be engaged a locking pawl 38 whereby the shaft may be locked against retrograde movement to prevent the cable from unwinding therefrom when wound up to support the saw. When it is desired to lower the saw the pawl is thrown back out of engagement with the ratchet thus permitting the shaft 34 to be reversed.

Revolubly mounted in a suitable bearing 39 on a cross bar 40 arranged on the runners 1, near the platform 2 is a main drive or power transmitting shaft 41, the inner end of which is revolubly engaged with and supported in one member 42 of a double clutch mechanism hereinafter described. On the outer end of the shaft 41 is fixedly mounted the tapered or frusto-conical shaped head 43 of the friction clutch, the socket member 44 of which is fixedly secured to the shaft 45 of the engine or motor 3 on the platform 2. The head 43 and socket 44 are preferably formed of wood and said socket member is provided with a metal casing 46 which is bolted or otherwise secured to the socket and forms a protection for the same.

Pivotally mounted in a supporting standard 47 arranged on the cross bar 11 is a clutch shifting lever 48 having arranged on its upper end a locking pawl 49 adapted to be engaged with a segmental rack 50 formed on the upper end of one side of the standard 47 as shown. In the reduced inner end of the head 43 of the friction clutch is formed an annular groove 51 with which is engaged a shifting ring 52 having thereon laterally projecting pivot lugs 53 which are engaged with a shifting yoke 54. The yoke 54 is preferably constructed in the form of two semi-circular metal straps having on their opposite ends apertured lugs 55. The straps are brought together around the reduced portion of the head and have the lugs 55 on the lower ends thereof pivotally connected by a staple or other fastening device with the cross bar 40 as shown. The lugs 55 on the upper ends of the yoke members have connected thereto the outer ends of upper and lower clutch shifting rods 56 the inner ends of which are slidably engaged with transverse passages formed in the lever 48 above and below the pivotal connection thereof with the standard 47. The inner ends of the rods 56 are threaded for a short distance and the threads engaged by stop nuts 57, and between these and the lever springs 58 are coiled on the rods 56 as seen in Fig. 4. By adjusting the nuts the position of the springs may be regulated. The latter when in their normal expanded condition with one end resting against the nuts are too short to touch the lever when it stands upright or between its extreme of movement, but when it is moved to either side it strikes one of the springs and projects that rod 56 on which the spring is mounted so that the conical head 43 of the clutch is pushed into the socket member 44 thereof with yielding pressure and these clutch members are thrown into frictional engagement. By this means the drive shaft of the engine is connected with the main shaft 41 and the latter through the splined

sleeve 72 with the mechanism being driven, and yet the clutch connection is of such nature as to permit its members to slip upon each other in case the saw should become clogged in the log or the machinery should be stopped abruptly.

Arranged transversely across the machine below the shaft 41 is a drum supporting shaft 59 on which is fixedly mounted a cable winding drum 60. One end of the shaft 59 has a revoluble engagement with a bearing 61 arranged on one of the runners of the machine, while the opposite end of said shaft is revolubly engaged with a bearing plate 62 slidably mounted in a guide recess 63 formed in the inner side of the opposite runner and in a guide block 64 secured to the runner as shown. The upper end of the plate 62 projects above the block 64 and is connected to a cam lever 65 adapted to bear on the upper side of the block 64 whereby when said lever is swung backwardly and forwardly the plate 62 and adjacent end of the shaft 59 will be raised and lowered to bring the drum 60 on said shaft into and out of engagement with an operating mechanism hereinafter described. The operating mechanism for the shaft 59 and the drum 60 comprises a worm gear 66 arranged on the inner end of the drum 60 and adapted to be engaged with a worm thread 67 formed on a sleeve 68 loosely mounted on the main drive shaft 41 as shown. By pivotally mounting one end of the shaft 59 in the adjustable bearing plate 62, said shaft may be raised and lowered to bring the gear 66 thereon into and out of engagement with the worm thread on the sleeve 68 whereby said drum is operated. The sleeve 68 is held in position on the shaft 41 by a curved arm 69 secured to the adjacent side of the cross bar 40 and having a loose engagement with an annular groove 70 formed in the adjacent end of the sleeve 68 as shown. On the opposite end of the sleeve 68 is formed another member 71 of the double clutch hereinbefore referred to and by means of which either the cable winding mechanism or the saw operating shaft 9 may be thrown into and out of operative engagement with the main drive shaft 41.

The main member of the double clutch comprises a sleeve 72 which is splined to the shaft 41 and has on one end clutch teeth 73 adapted to be engaged with the teeth of the clutch member 42 on the end of the saw operating shaft 9 when the sleeve is shifted in one direction thereby connecting said saw operating shaft with the main drive shaft 41. On the opposite end of the sleeve 72 are formed clutch teeth 74 which are adapted to be engaged with the teeth of the clutch member 71 on the adjacent end of the sleeve 68 having the worm thread 67 whereby when the sleeve 72 is shifted toward said sleeve 68 the latter will be operatively connected with the main drive shaft 41 and the movement of said shaft thereby transferred through the worm gear to the cable winding drum 60. The sleeve 72 is provided with an annular groove with which is loosely engaged a shifting yoke 75 to the opposite ends of which are connected the outer ends of a bifurcated shifting rod 76 the inner end of which projects through and is connected with the lower end of the lever 48 through the medium of coiled springs 77 arranged on the rod between the opposite sides of the lever and suitable stops on the rod as shown. By providing a yielding connection between the lever and the clutch shifting rod as herein shown and described the clutch sleeve 72 may be shifted in one direction or the other and yieldingly held in engagement with the clutch member on the saw operating shaft or the clutch member of the drum operating sleeve. If at any time when shifting the clutch sleeve 72 into engagement with either the sleeve 42 or the sleeve 68 by the lever 48 the teeth of either of the clutch members should engage at their points or outer ends, the springs 77 will permit the lever to be pushed farther forwardly or pulled farther rearwardly as the case may be. This further movement of the lever will force the friction clutch member 43 into a sufficiently tight engagement with the socket clutch member 44 on the engine shaft to operatively connect the shaft 41 with the engine shaft which will bring the teeth of the clutch members into operative engagement.

Connected at one end with the winding drum 60 on the shaft 59 is a machine shifting cable 78. The cable 78 passes from the drum under a guide roller 79 revolubly mounted on the lower side of the cross bar 40 and is adapted to be connected at its outer end to the log whereby when the cable is wound on the drum the machine will be drawn along on its runners and thus shifted to the positions for making the successive cuts through the log. When the machine is to be moved rearwardly the cable will be engaged with and wound from the upper side of the drum and will pass from the latter under the roller 79 and back through the guide loop 80 arranged on the under side of the engine platform. From the loop 80 the cable is extended and connected in any suitable manner with the adjacent end of the log. When it is desired to shift the machine in the opposite direction the cable will be engaged with and wound from the lower side of the drum and will be extended forwardly beneath the machine and through a guide loop 81 on the front cross bar 4 and from thence will be extended to and connected with this end of the log. When it is desired

to unwind the cable from the drum the cam lever 65 is swung around on the block 64 in the proper direction to permit the bearing plate 62 to drop in the recess 63 thus permitting this end of the shaft 59 to lower thereby disengaging the worm gear on the drum 60 from the worm thread on its operating sleeve 68. After thus disengaging the worm gear connection between the drum and its operating sleeve, the drum and its supporting shaft are revolved manually in the bearings of the latter thus permitting the cable to be readily pulled off or unwound from the drum.

In order to secure the front or saw end of the machine to the log, I provide an attaching rod or bar 82 having on its outer end a log engaging dog 83 adapted to be driven into the side of the log adjacent to the point where the saw engages the same, said rod or bar having on its inner end oppositely projecting bearing pintles 84 and 85 which are adapted to be engaged with suitable bearing apertures formed in the cross bars 4 and 5. When the machine is to be shifted forwardly for making the successive cuts through the log, the rod 82 is pivotally connected by the pintle 84 with the bearing aperture in the cross bar 4, thus permitting the dog to be engaged with the main portion of the log in advance of the cut to be formed therethrough. Arranged in the outer side of the cross bar 4 adjacent to the pivotal connection of the rod 82 therewith is a rod supporting hook 86 which is provided to receive and support the rod 82 when swung back out of engagement with the log to permit the machine to be shifted for the next cut. When the machine is to be shifted in the opposite direction the pintle 85 of the rod 82 is engaged with the bearing aperture in the cross bar 5, and when thus arranged the dog on said rod is adapted to be engaged with the main portion of the log in the same manner as when the rod is connected with the cross bar 4. Arranged in the cross bars 4 and 5 adjacent to the pivotal connections of the rod 82 therewith are upwardly projecting guide arms 87 which are provided to hold the rod 82 in operative engagement with either the cross bar 4 or the bar 5. Arranged at suitable points on the runner of the machine next to the log are two or more vertically disposed bearing standards 88 on which are revolubly mounted log engaging rollers 89 whereby the runners or other parts of the machine are prevented from coming into contact with the side of the log and thus interfering with the shifting of the machine. The upper ends of the standards 88 are preferably braced by brace rods 90 connected thereto and to the adjacent cross bars of the machine as shown.

In order to prevent the yoke 75 on the clutch sleeve 72 from being turned by the movement of said sleeve and thus twist or strain the bifurcated outer end of the shifting rod 76, I preferably provide a yoke holding standard 91 which is secured at its lower end to one of the runners of the machine and has formed on its upper end a guide lug 92 between which and the upper end of the standard is slidably engaged the adjacent laterally projecting lug of the yoke whereby the latter is prevented from turning with the clutch sleeve, but is not prevented from being moved longitudinally by the shifting rod for shifting said sleeve on the drive shaft 41 of the machine.

From the foregoing description taken in connection with the accompanying drawings the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having thus described my invention, what I claim is:

1. In a sawing machine, the combination with a driving shaft having a sprocket wheel on its end, a bearing supporting this shaft and another adjacent to but spaced from said wheel, a saw blade, a saw head secured thereto and having an upright groove, and a block movable in said groove; of a supporting frame having one side of its inner end mounted on said shaft and its top and bottom provided with channeled lugs and extended into the other side of the frame, a pivot shaft carried by this side and engaging the outer bearing in line with the driving shaft, an extension from the first-named side, a bearing plate adjustably secured to said extension and having similar channeled lugs, top and bottom guides connecting said lugs in pairs and loosely embracing the saw-head, an idle sprocket carried by said plate, a chain inclosing the idle sprocket and that on the driving shaft, and a pin in one of its links engaging the block on the saw-head.

2. In a sawing machine, the combination with the driving shaft having a wheel on its end, a saw blade, and a head secured thereto; of a supporting frame having its inner end mounted on said shaft, top and bottom lugs carried by the inner and outer ends of this frame, upper and lower guides connecting said lugs in pairs and loosely embracing the saw-head, a clamp carried by the outer end of the frame and having hooks embracing the uppermost lug at either side of the guide therein, a set screw through

this clamp onto the guide, means for adjusting the outer and inner ends of said frame with respect to each other, a wheel in the outer end, a belt connecting this wheel with that on the driving shaft, and connections between said belt and saw-head.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM STANLEY HAHN.

Witnesses:
GEO. R. BAGLEY,
WM. G. HARE.