M. R. RAWSON.

LOG TURNING MECHANISM.

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1,426,409. Patented Aug. 22, 1922.

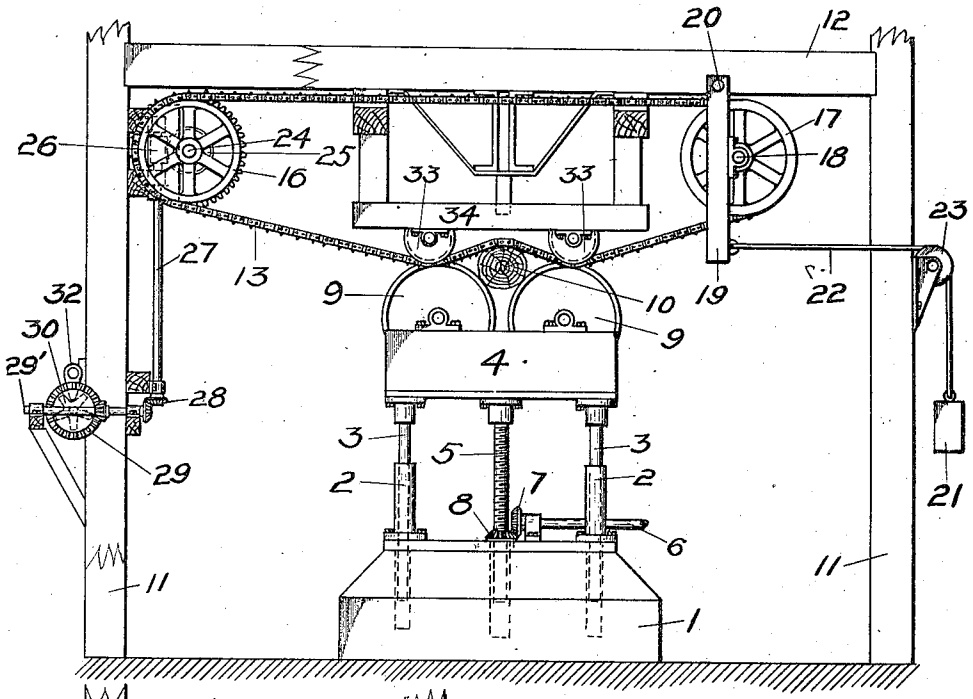


Fig. 1

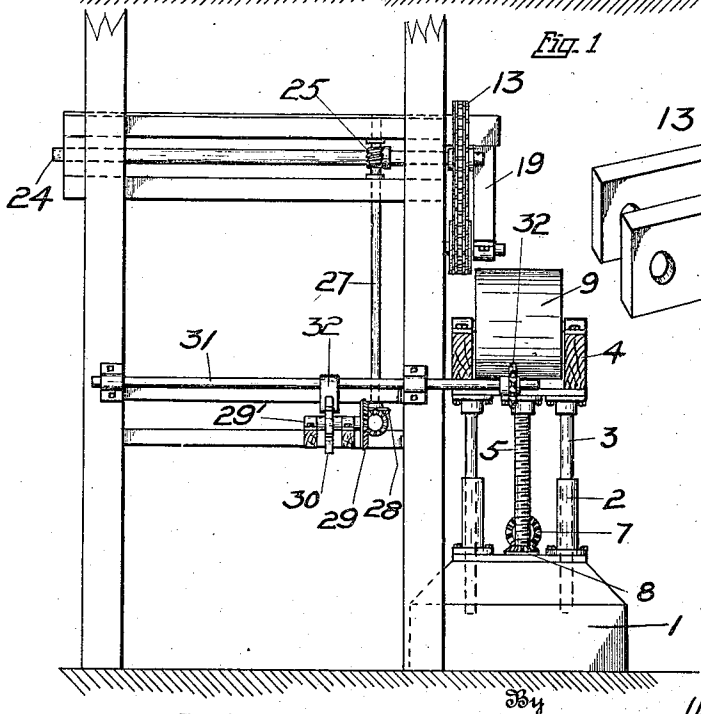


Fig. 2

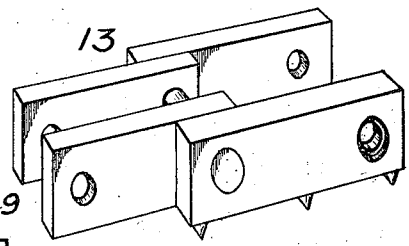


Fig. 3

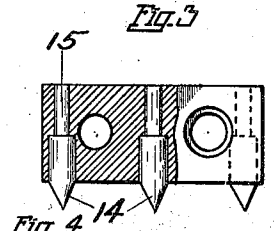


Fig. 4

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LOG-TURNING MECHANISM.

1,426,409. Specification of Letters Patent. Patented Aug. 22, 1922.

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To all whom it may concern:

Be it known that I, MYRON R. RAWSON, a citizen of the United States, residing at Spokane, in Spokane County, and State of Washington, have invented certain new and useful Improvements in Log-Turning Mechanisms, of which the following is a specification.

My present invention relates to improvements in log turning mechanisms designed particularly for use in pole puncturing machines where the poles are required to be turned or revolved on their axes in order that the circumferential periphery of the pole may be accessible for a vertically reciprocating puncture-head or device.

As is well known while the poles from felled trees are generally cylindrical shaped in cross section and taper longitudinally, yet there are irregularities and uneven portions in the pole that render difficult the turning or revolving of the pole on its axis, when positively acting devices are employed to engage and turn the pole.

In order that irregularities in the pole may be compensated for, I have invented a flexible device for engagement with the periphery of the pole, which, because of its flexibility will accommodate itself to the irregularities in the pole, and yet maintain the required frictional contact therewith for turning the pole.

To this end the invention contemplates a movable support, as a pair of revolable rollers spaced apart to receive the pole between them, and a positively driven endless chain or belt having means to engage the periphery of the pole and actuated to pass thereover and revolve or turn the pole on its supporting rollers which latter form a cradle therefor. The invention further consists in certain novel combinations and arrangements of parts whereby a transversely moving, endless chain or belt is passed over the pole and guided thereon, as will be hereinafter more fully described and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a view of the appliance looking at one end of the log or pole supported therein, or at the front of the machine.

Figure 2 is an elevation of the machine as seen from the left in Figure 1 with the pole omitted.

Figure 3 is a detail perspective showing two pairs of links of the chain properly jointed.

Figure 4 is a side view of one of the links of the chain, the link being broken away to disclose the manner of securing the turning spikes in the links of the chain.

The turning device is adapted for use with many different types or forms of puncturing machines, but I have herein illustrated it in connection with a vertically reciprocable support for the pole, which is erected on a concrete base or foundation 1 from which rises a set of corner sleeves 2, in which the complementary posts 3 are guided, and these posts support an elevator or platform 4 thereon. The elevator has a central screw bar 5 and through the medium of this bar the elevator may be adjusted or reciprocated vertically from the driving shaft 6 extending horizontally from the base 1. Gears 7 and 8, the latter in the form of a non-traveling nut, are driven from shaft 6 to actuate the elevator as will be readily understood.

On top of the elevator are journaled a pair of spaced rollers 9 adapted to receive and support the pole 10 between them, and it will be clear that the pole may be lifted or lowered by action of the elevator.

The turning mechanism for the pole is supported on a frame comprising uprights 11 and transverse bars 12, and the mechanism involves the use of a chain or belt 13 of the endless type, disposed transversely of the axis of the pole as shown in Figure 1. In Figures 3 and 4 it will be seen that the links of this chain are provided with spikes 14, their reduced shanks 15 being secured in the links, and the spikes project outwardly or away from the outer faces of

the links. The spikes are sharpened to engage the periphery of the pole, and when dulled, or broken, may be driven out of their sockets and replaced by new ones.

The endless chain is suspended between spaced supports at the sides of the pole, as driving sprocket wheel 16 and an idler pulley 17, the latter journaled on a shaft 18 secured in bearings on a hanger 19 that is pivoted at 20 from one of the cross bars 12 of the frame.

The chain is thus provided with a flexible suspension member in order that its lower or working flight may be extended or contracted to adapt it for turning large or comparatively small poles. That is, for a pole of large diameter a longer flight of chain is required for turning the pole than for a pole of smaller diameter, because the chain is flexed more over a large diameter than over a small diameter as will be seen in Figure 1. To compensate for this difference in flexure, the guide pulley is supported in a flexible suspension or hanger, and the slack in the lower flight of the chain is taken up by a weight 21 at the end of cord 22 which passes over the guide pulley 23 and is attached to the free end of the shaft hanger 19. By the utilization of the compensating device and its load, the lower or working flight of the chain is maintained in taut condition regardless of the size of the pole to be punctured.

The driving sprocket wheel 16 has a stationary axle 24 supported in the frame, and this shaft is provided with a worm wheel 25 that is engaged by a complementary worm screw 26 on the vertical shaft 27 supported in the frame. At its lower end the shaft 27 has a bevel gear 28 which is rotated by the complementary gear 29 on a stud shaft 29′, disposed at right angles to the shaft 27, and this stud shaft has a star wheel 30 which is intermittently rotated from the shaft 31 by a tappet 32 thereon. The shaft 31 has a sprocket wheel 32′ by means of which it is driven, and the transmission of power may be traced back from this shaft to the sprocket wheel 16 that moves the turning chain 13. It will be seen that the chain passes over the top and transversely of the pole in order that the spikes 14 may engage the periphery of the pole, and as they move transversely thereof, the pole will be turned as long as the chain moves.

For holding the lower or working flight of the chain down to its work on the pole, I utilize a pair of guide pulleys 33 33, supported at opposite sides of the pole in frame 34 for the purpose, and these spaced pulleys which are arranged at equidistant points from the center line between the supporting rollers 9 hold down the lower flight of the chain, which passes under them. As the diameter of the poles to be punctured is in all cases sufficient to position the top periphery of the pole above the bottom periphery of these two guide rollers 33 it will be apparent that the chain must be flexed between these two pulleys as indicated in Figure 1, and this flexing causes a positive engagement of the moving spikes with the turning pole, that portion of the lower flight between the two pulleys being the medium for turning the pole.

The pole puncturing mechanism is not illustrated, but will be understood as comprising pointed spikes in suitable number carried by a reciprocating head which is operated to descend, as by gravity, and drive the spike ends into the periphery of the supported pole, after which the head is lifted on an upward stroke. The mechanism for reciprocating the puncturing head is synchronized with the movement of the tappet and star wheel by means of which the chain is intermittently moved, i. e., after each working stroke of the puncturing head and before the next stroke, the tappet operates the star wheel and the chain actuating mechanism is thus moved to pass the chain across the top of the pole whereby the engagement therewith of the spikes on the chain revolve the pole on its revolvable supports. In this manner the pole is turned to present an unpunctured face to the descending puncturing device, until the circumferential area has been punctured; then the pole is moved longitudinally if necessary, and the same performance is repeated.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination in a pole turning device with rotatable means for supporting a pole, of an endless chain and means carried thereon to engage and rotate the pole, a driving suspending wheel and a supporting pulley for the chain, means co-acting with the pole for flexing the working flight of the chain and means for compensating for the flexure in the chain.

2. The combination in a pole turning device with spaced supporting rollers, of an endless chain and means thereon to engage a pole, a driving-suspending wheel and a supporting pulley for the chain, spaced guide pulleys for a portion of the lower flight of the chain co-acting with the pole to cause a flexure of the chain on a pole, and means for compensating for the flexure in the chain.

3. The combination in a pole turning device with rotatable means for supporting a pole, of an endless chain for engaging a pole, a driving-suspending wheel and a supporting wheel for the chain, a movable hanger for said wheel, a counterbalancing

device for said hanger, and a pair of spaced guide pulleys for the working flight of the chain, whereby said flight may be flexed by engagement with a pole for the purpose described.

4. The combination in a pole turning device with a pair of spaced rollers for supporting a pole, of an endless chain having spikes therein, a driving-suspending wheel and a supporting wheel for the chain, a pivoted hanger for the supporting wheel, a counterbalancing weight attached to said hanger, and a pair of stationary, spaced guide pulleys for the working flight of the chain whereby said flight may be flexed by engagement with a pole for the purpose described.

In testimony whereof, I affix my signature.

MYRON R. RAWSON.