Feb. 6, 1951 T. G. ROGERS 2,540,994

HOLD-DOWN APPARATUS FOR POLES

Filed March 17, 1949 2 Sheets-Sheet 1

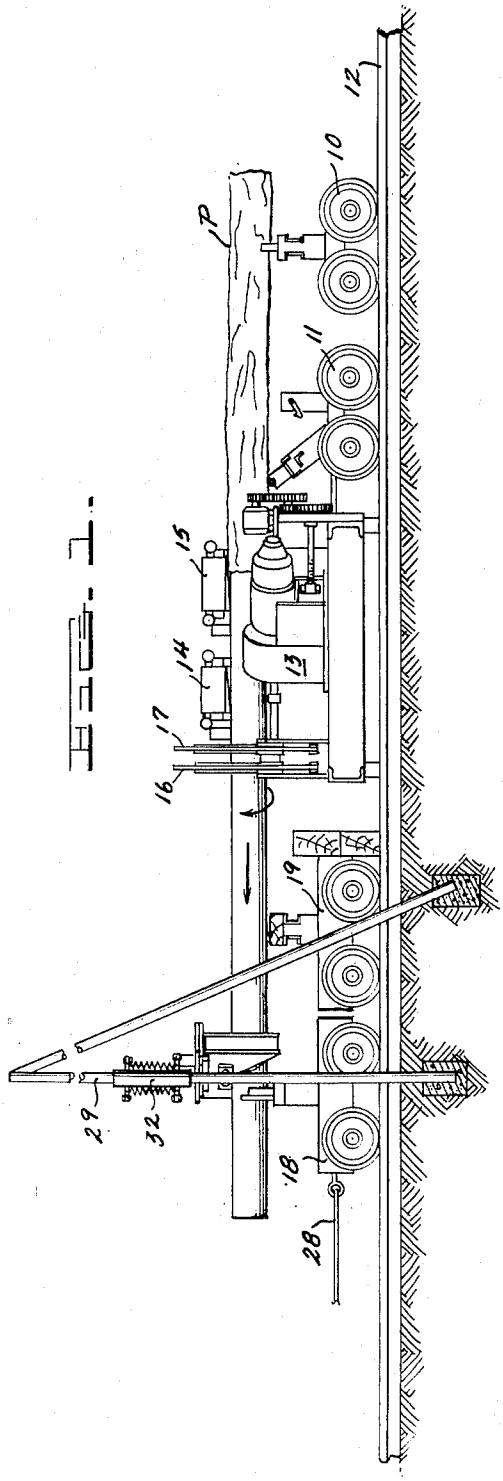

FIG. 1.

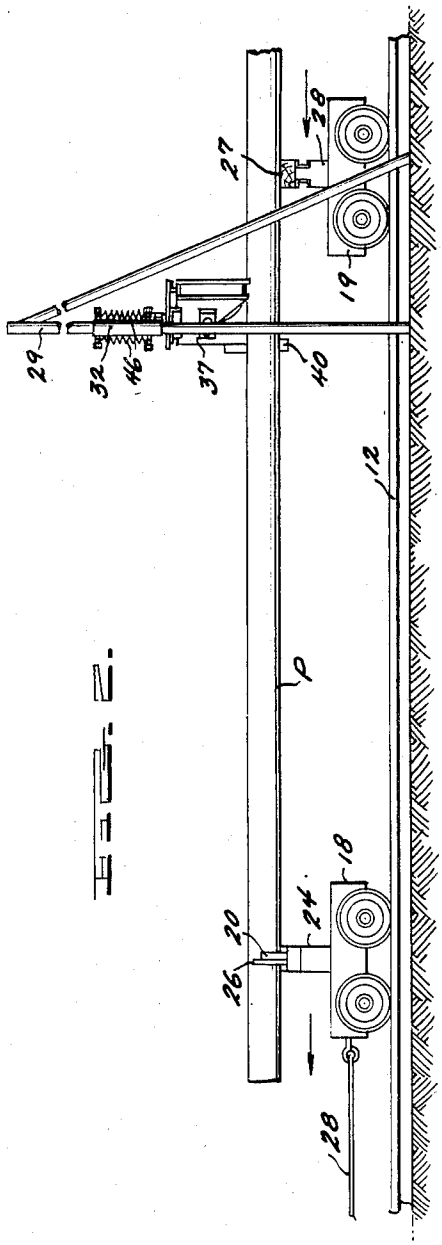

FIG. 2.

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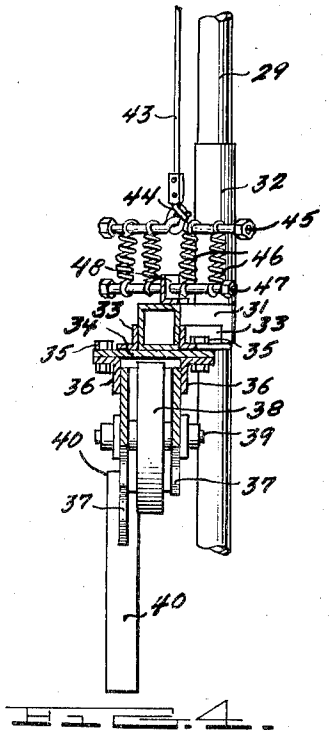

FIG. 4.

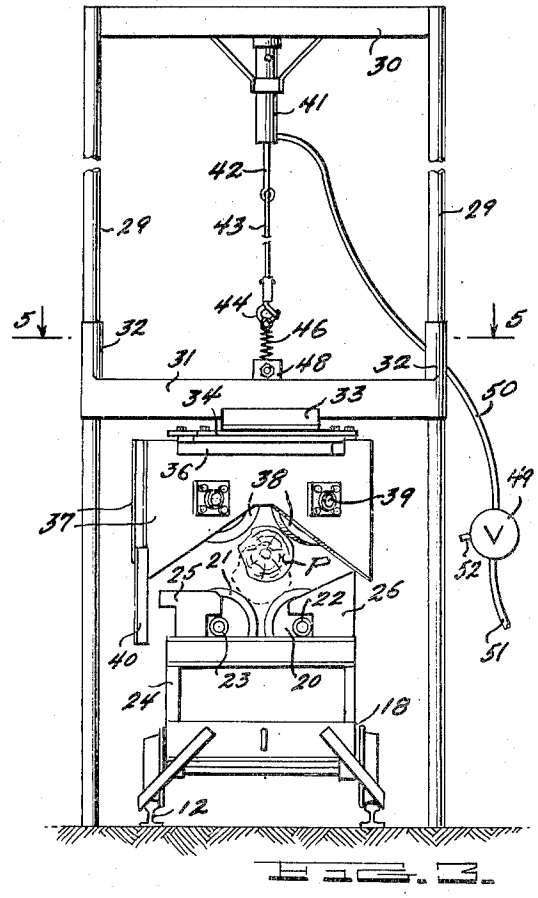

FIG. 3.

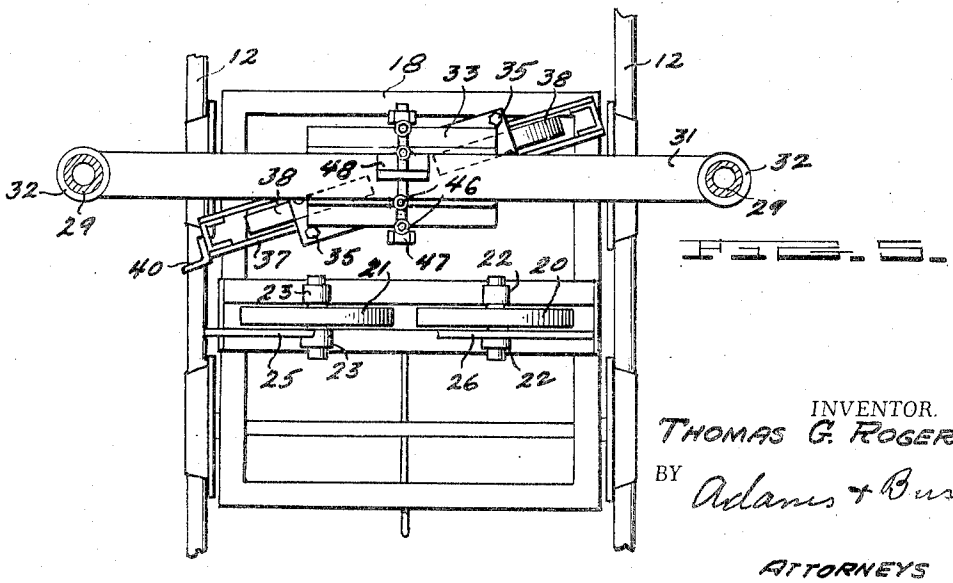

FIG. 5.

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2,540,994

UNITED STATES PATENT OFFICE

2,540,994

HOLD-DOWN APPARATUS FOR POLES

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Application March 17, 1949, Serial No. 81,865

4 Claims. (Cl. 144—208)

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This invention relates to hold-down apparatus for poles as they are passing through rossing machines to prevent them from whipping and getting out of control while they are rotating during the rossing operation. The idea is to provide a dependable hold-down device for poles which are being rossed in a machine of the type which rotates the poles while they are being fed longitudinally through the machine.

Another object of the invention is to provide a weighted hold-down device of the type set forth, which will eliminate hazardous manual labor heretofore required for the same purpose.

Other aims and advantages of the invention will appear in the specification, when considered in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevation of apparatus embodying the invention;

Fig. 2 is another side elevation showing a rossed pole being conveyed from the rossing machine with the hold-down in its raised position;

Fig. 3 is a front elevation showing the hold-down device engaging a pole;

Fig. 4 is a fragmentary vertical sectional view showing the hold-down device; and

Fig. 5 is a horizontal sectional view, taken on the line 5—5 of Fig. 4.

Referring more particularly to the illustrated embodiment of the invention, the improved hold-down device is shown as being used in conjunction with a well known type of pole rossing or debarking machine which has provision for rotating and feeding the poles therethrough while rotary cutters remove the bark. Experience has demonstrated that the rossed ends of the poles will whip as they emerge from the machine and not only cause damage to the machine, but expose the workmen to some danger of being injured by poles which whip themselves out of control. It is practically impossible to confine such poles to rotate on their longitudinal axis by using ordinary steady-rests, such as are employed on lathes. Heretofore, it has been necessary to employ two extra laborers using lengths of pipe or the like as hold-down levers on opposite sides of the rossed end portions of the poles to prevent them from whipping out of control. This expedient involves some danger, especially if the poles are crooked.

This invention eliminates the foregoing disadvantages by providing a rugged mechanically controlled hold-down device which effectively eliminates the whipping action of poles as they emerge from the machine.

In accordance with this invention, the hold-down device is employed in combination with a rossing machine which is identical with that disclosed in the patent to Taylor et al., No. 2,230,336, dated February 4, 1941.

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Referring to Fig. 1 of the drawings, the machine is shown in the process of rossing a pole P, which is delivered to it on a pair of buggies 10 and 11 mounted on a track 12, as disclosed in the aforesaid patent.

The machine embodies motor driven feeder mechanism within a housing 13 which is mounted at an angle to the longitudinal axis of the pole and simultaneously rotates and feeds it axially through the machine, while a pair of rotary cutters 14 and 15 perform the rossing operation. The cutters are controlled by a pair of levers 16 and 17.

As disclosed in the aforesaid patent, the rossed pole is delivered from the machine onto a pair of buggies 18 and 19, also mounted on the track 12. The front buggy 18 is provided with a pair of rollers 20—21 journaled in bearings 22—23 on the frame 24. An upstanding plate 25 on one side of the buggy has a horizontal upper edge over which the poles are rolled off onto skids. An upstanding triangular plate 26 extends above the level of the rollers on the opposite side of the buggy to prevent the poles from rolling off on that side and to help confine the poles between rollers. The back buggy 19 carries a rest block 27 on its frame 28. The height of the receiving buggies is such that a pole initially clears them and the front buggy is moved or pulled forwardly by a cable 28 under the forward end of the pole until the pole rests on its rollers. When the pole emerges from the machine, its rear end falls on the rear buggy. Then, it is conveyed on the buggies to a skid or ramp where it is unloaded or kicked off as described in my co-pending application Ser. No. 77,911, filed February 23, 1949, entitled Pole Kicking Apparatus.

In accordance with this invention, the improved hold-down device is located at a distance of about eight or ten feet from the delivery end of the rossing machine and is suspended for up and down movement to straddle and engage the upper side of the pole. Referring to Figs. 1, 3 and 4, the hold-down device is shown as being slidably mounted on a pair of uprights or standards 29, anchored in the ground on opposite sides of the track 12 and having a cross bar 30 at their upper ends. The hold-down device is shown as being supported on a suspended cross-head member 31 which has a pair of guide sleeves 32 slidably mounted on the uprights 29. The cross-head is shown as carrying angles 33 secured to a horizontal plate 34 which is connected by bolts 35 to structural angles 36 on a housing having a pair of vertical plates 37 which are V-shaped at their bottom edges and which carry a pair of spaced rollers 38 suitably journalled on shafts 39 extending through the plates. The rollers 38, as shown in Fig. 3, project into the V-shaped notches in the plates 37 and are adapted to en-

gage and straddle the upper side of the pole. One side of the hold-down housing carries a depending horn 40 to prevent the pole from whipping off on the roll-off side of the front buggy 18. It is the purpose of the hold-down device to confine the pole to rotate between the two rollers on the front buggy 18 and the rollers 38 carried by the hold-down bracket plates. However, crooked poles may whip out of the axial position shown in Fig. 3, toward either side of the hold-down device and the buggy.

As shown in Fig. 3, the hold-down device is adapted to be raised by a power operated hoist, shown as comprising an air cylinder 41 suspended from the cross bar 30 and having a piston rod 42 connected to a suspending cable 43 having a hook 44 connected to an upper bar 45 carrying a plurality of tension springs 46 connected at their lower ends to a bar 47. The lower bar projects through an angle clip 48 on cross-head 31. The air motor is controlled to hoist the hold-down device by a three-way valve 49 connected to a conduit 50 leading to the cylinder. Air under pressure is supplied through a conduit 51 and exhausted through a nipple 52. The valve is adapted to exhaust the air to lower the hold-down device into engagement with a pole emerging from the machine.

In accordance with the invention, the hold-down device is mounted at an angle to a plane normal to the axis of the pole. The angle is determined by the pitch of the helical path of the surface of the rotating pole as it is fed through the machine. In this instance, the angle of the plane of the rollers to the axis of the pole is shown as being between 15° and 30°. The purpose of this is to prevent the forward or axial movement of the pole from exerting excessive lateral trust on the rollers while the weight of the hold-down device is supported on the pole. The suspension springs 46 connected to the suspending cable 43 serve to eliminate excessive shock due to falling movement of the hold-down device when a crooked pole whips. In other words, the springs prevent the hold-down device from falling freely on the pole after it has raised the hold-down device above its normal contacting position on the pole. Furthermore, the hold-down device has sufficient weight to ride smoothly on the pole as it tends to whip and restrains the whipping movement. It will thus maintain the axis of the pole above the bight between the rollers on the front buggy, or in its proper position to be lowered on the rollers of the buggy as the pole emerges from the machine.

It will be understood that when the forward end of a rossed pole emerges from the machine, it will clear both of the buggies 18 and 19 by a few inches. The operator of the machine will then lower the hold-down device by operation of the valve 49 so that the rollers 38 contact the pole. Some space is allowed for the pole to whip between the rollers of the buggy 18 and the hold-down rollers 38 until after the front buggy has been moved on the track 12 a substantial distance from the delivery end of the machine. Then, the forward end of the pole will naturally rest upon the rollers of the front buggy and whipping action of the pole will be restrained by the hold-down device, including the V-shaped edges of the plates. Furthermore, the pole cannot whip out of control because of its confinement between

the hold-down rollers and the rollers on the front buggy.

From the foregoing description, it will be understood that the hold-down device is rugged in construction and automatic in its operation. It eliminates the necessity to employ extra workmen and also the hazards connected with the use of ordinary manual levers heretofore employed. Also, the use of the hold-down device will prolong the life of a rossing machine by eliminating the damage which would be caused by poles whipping out of control.

Obviously, the invention is not limited to the particular embodiment thereof herein shown and described.

What is claimed is:

1. In combination with a pole rossing machine which rotates and feeds a pole longitudinally therethrough and a pair of buggies to receive and transport the rossed poles away from the delivery end of the machine, the front free end of a pole being rossed being adapted to rest upon the front one of said buggies while the rear end of a completely rossed pole is adapted to rest upon the rear one of said buggies; a hold-down device at the delivery end of said machine and spaced therefrom comprising a weighted, pole straddling member positioned above the rossed end portion of the pole; horizontally spaced, anti-friction rollers carried by said straddling member positioned to engage opposite side portions of the rossed portion of the pole as it rotates and is fed longitudinally thereunder and coacting with said front buggy to restrain whipping action of the rossed end portion of the pole; and upright guides confining said straddling member to move in a vertical plane.

2. The combination, as set forth in claim 1, wherein a cable suspends the straddling member; and hoisting means connected to the cable to raise said straddling member above the pole to permit the buggies to convey it away from the delivery end of the machine.

3. The combination, as set forth in claim 1, wherein the straddling member is carried by a cross head slidably mounted on said upright guides; cable and spring means suspending said cross head; and a pneumatic motor connected to the cable to lift said straddling member out of engagement with the pole.

4. The combination, as set forth in claim 1, wherein the straddling member is substantially V-shaped and the rollers are disc-shaped; and means supporting the straddling member with the disc-shaped rollers at an angle to a plane normal to the axis of the pole corresponding to the pitch angle of the helical movement of the pole.

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