

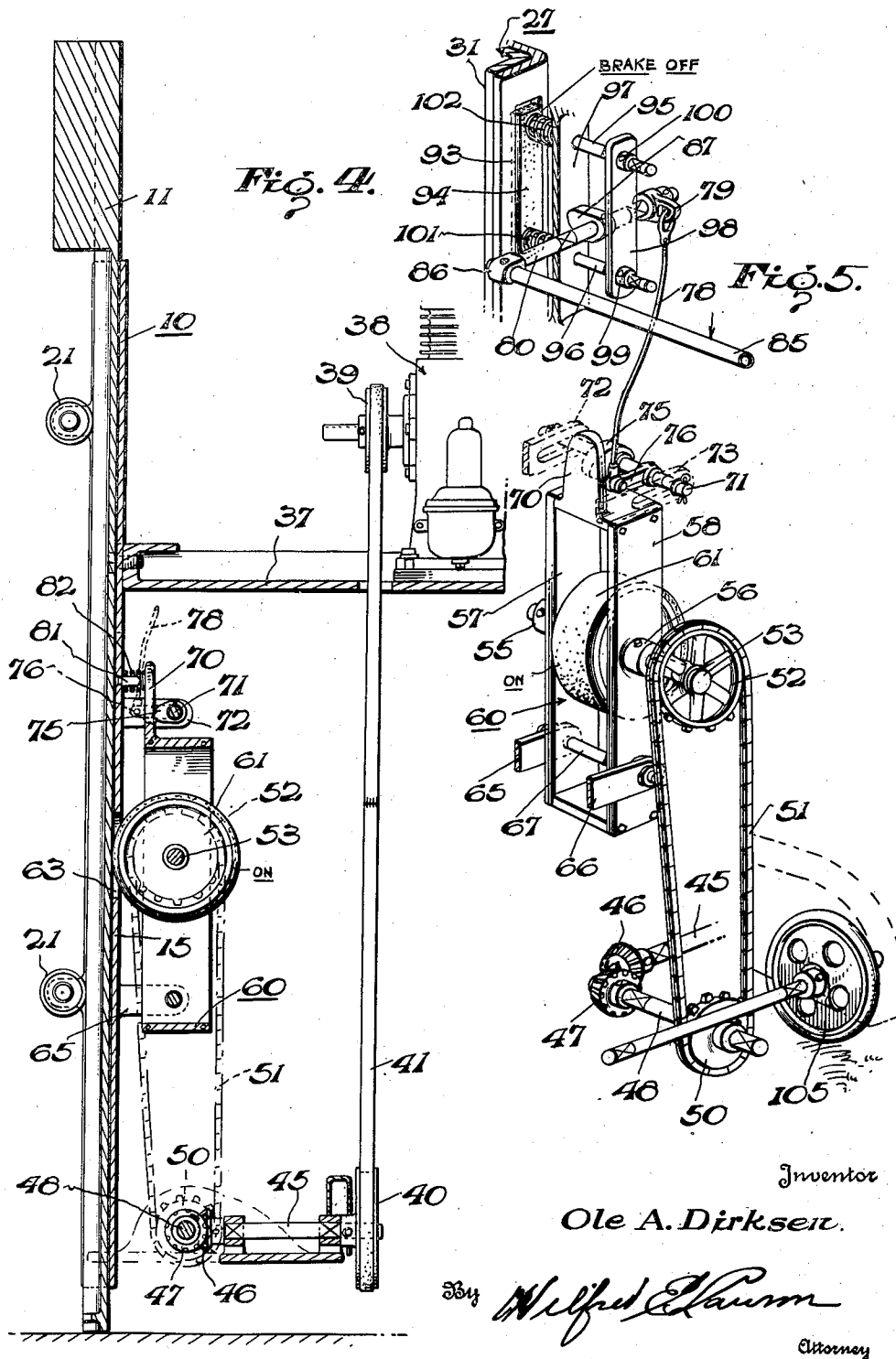
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POST DRIVER

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POST DRIVER

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4 Claims. (Cl. 61—74)

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My invention relates to post drivers and more particularly to improvements in fence post drivers.

An object of my invention is to provide novel control means for the hammer of the post driver, whereby there is accurate regulation of the length of the stroke or drop of the hammer.

Another object is to provide novel means, whereby one lever controls operation of both the brake and lift mechanism of the hammer.

For example, heretofore with the old style drivers there is no way of regulating the length of stroke or drop of the hammer, and also the old style drivers require the use of both hands to operate the brake and lift mechanisms, which requires considerable skill and much practice. Accordingly, another object is to provide improvements in fence post drivers, wherein unskilled labor may use a post driver of the present novel type with efficiency equal to a skilled laborer using the old style post driver.

With these and other objects in view, the invention consists in the construction, arrangement and combination of parts hereinafter described and particularly pointed out in the claims, it being understood that I do not intend to limit myself to the details of construction.

In the drawings, like parts throughout the several views are given like numerals and are thus identified in the following detailed description of one embodiment of my invention.

Figure 1 is a perspective view of my novel post driver.

Figure 2 is a cross section view taken on the line 2—2 of Figure 1.

Figure 3 is a cross section view taken on the line 3—3 of Figure 1.

Figure 4 is a vertical cross section view of a guide channel and the post driving hammer slidably mounted therein, together with the drive mechanism for raising the hammer.

Figure 5 is a fragmentary view of the device, particularly of the novel interconnected brake and hammer raising and lowering mechanism operable by the lever.

Referring in detail to the drawings and first with particular reference to Figures 1 and 4, the device comprises a fixed elongated hammer guide channel 10 for a fence post hammer 11.

The fixed hammer guide channel 10 comprises side walls 12 and 14 bent at substantially right angles to a back web 15 of the channel. Integrally formed from the edges of each of the side walls are oppositely facing pairs of ears 16 and 17 and 18 and 19, respectively. Each of the

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ears has an opening in which is mounted an axle stud 20 for rotatably supporting rollers 21. The peripheries of the rollers 21 overhang and contact the top edges 25 and 26 of a second channel member 27, having side walls 30 and 31 and a connecting elongated back web 32. This second channel 27 is the hammer carrier and is slightly smaller, but similar in shape to channel 10, so that the hammer carrier channel 27 may telescopically slide up and down within the larger channel 10 which is fixed to a support. At the top of channel 27 is mounted the hammer 11.

The channel 10 has side bracket plates 35 and 36 for rigid attachment of the channel to a supporting platform 37, on which is mounted a drive motor 38. This motor has a power take-off pulley 39, which drives a pulley 40 through a belt 41. The pulley 40 in turn imparts power to a shaft 45 on an end of which is a bevel gear 46 in mesh with another gear 47 on a shaft 48 to which is keyed a sprocket wheel 50. The sprocket 50 drives a chain 51, a larger sprocket wheel 52, and a shaft 53.

The shaft 53 is journaled in a pair of bearings 55 and 56, see Figure 5, mounted in aligned openings in the side bars 57 and 58 of a frame 60. Keyed to the shaft 53 between the side bars 57 and 58 is a friction drive wheel 61. A portion of the rim of this wheel is mounted to be brought into contact with the rear flat surface of the back web 32 of the movable hammer carrying channel 27. This contact is made possible by providing an elongated opening 63, see Figure 4, in the back web 15 of the fixed guide channel 10.

The entire frame 60 is pivoted between elongated ears 65 and 66, see Fig. 5, which ears are apertured to receive a bar 67 on which the frame 60 is pivotally mounted adjacent one end of the bars 57 and 58.

The opposite end of the frame 60 has an integrally formed exteriorly extending tongue 70. Across the tongue is mounted a cam shaft 71 in a pair of side bearing lugs 72 and 73, as shown in Fig. 5. These lugs 72 and 73 have elongated slots 74 therein to permit limited lateral sliding movement of the cam shaft 71.

Mounted on the cam shaft is a cam 75 and a link 76, the cam 75 being shaped with a high point adapted to depress the tongue 70 toward the back webs of the channel members 10 and 27, and the link 76 being pivoted to the end of a connecting rod 78, which rod 78 connects to a second link 79 on a second cam shaft 80 of a brake system hereafter to be described.

Between the outer end of the tongue 70, and

the adjacent back web 15 of the channel 10, and coiled around a stud 81 carried by channel 10, is a spring 82. One end of the coiled spring 82 seats against the back web 15 and the other end against the adjacent face of the tongue 70, to thereby normally expand and tend to hold the tongue, and the top part of the frame 60 outwardly from the web 15 with the friction drive wheel 61 out of contact with the back web 32 of hammer carrier channel 27. Thus even though the friction wheel is being driven by the motor 38 no raising movement will be imparted to the hammer until the cam 75 moves the tongue 70 against the tension of the spring 82, and the periphery or rim of the friction drive wheel 60 contacts the back web 32 of the hammer carrier 27.

The cam shaft 71 is rotated or oscillated by connecting rod 78, which is actuated by a hand lever 85. The hand lever 85 is mounted in a coupling 86 on the end of the second cam shaft 80, and on which is also mounted a brake actuator cam 87, see Figure 5. The second cam shaft 80 is journaled for turning in the wall of a brake housing 90, see Fig. 1.

The housing 90 is fastened to the side of the fixed channel 10, around an elongated aperture in the side wall of the channel 10, the brake shoe 93 may be forced by spring tension forwardly into braking contact with the side wall 31 of the hammer carrying channel 27, see Fig. 3.

The brake shoe 93 is on a carrier plate 94 secured to the ends of a pair of aligned parallel brake rods 95 and 96. The rods extend through openings in a fixed plate 97 and a movable equalizer plate 98 coupled at its ends to the rods by couplings 99 and 100. Interposed between the brake shoe plate 94 and the fixed plate 97 and coiled around the brake rods are coiled springs 101 and 102. The springs are under tension and normally tend to return to their expanded positions, so as to hold the brake against the side wall 31 of the hammer carrier 27. When the high point of the cam 87 contacts and presses against the fixed plate 97 it compresses the springs further, thereby disengaging the brake shoe.

Operation

In operation the platform 37 may be attached to a vehicle, such as a truck, not shown. When the hammer 11 is positioned over the end of the fence post, not shown, the driving action of the hammer 11 is regulated by my novel interconnected brake and drive arrangement, by the raising or lowering of the hand lever 85 after the motor 38 has been started.

For example, by pushing the hand lever 85 way down it automatically releases the brake 93 and at the same time moves cam 75 through connecting rod 78, thus pushing the friction drive wheel in against the back web 32 of the movable hammer carrier channel 27, thereby raising the hammer 11. When the hammer is raised to a desired height above the top end of a fence post, a release of pressure on the hand lever 85 moves cam 75 back, so that coil spring 82 pushes the tongue 70 and the frame 60 with friction wheel 61 back allowing the hammer 11 to fall.

The hammer 11 may be stopped in any position by applying the brake 93. The brake is applied by releasing the hand lever 85 from a raised position, which allows the brake shoe 93 to move into frictional holding engagement with the side wall 31 of the hammer channel 27, while simul-

taneously the connecting rod 78 moves the lower cam 75 back to cause release of drive wheel 61.

Thus, by moving the single control lever 85, the operator can raise the hammer to any desired height, and can also stop the hammer in any position; whereas, in the old style post driver there was no way of regulating the length of the stroke or drop of the hammer.

While the several features of my invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims.

What I claim is:

1. Apparatus of the character described, comprising a vertical guide, a sliding member carried thereby, a driving head carried by the member, an oscillatable member carried by the guide, rotary driving means carried by the oscillatable member for driving connection with said sliding member when the oscillatable member is moved in one direction, a movable thrust means adapted to engage and move the oscillatable member in the said one direction, a movable braking element supported by the guide for engagement with the sliding member to secure the latter against movement, and a link and rod coupling between the thrust means and the braking element which upon movement to release position transmits movement of the braking means to the thrust means to cause said oscillatable member to assume either of two positions, one of such positions maintaining the driving means free of driving connection with the sliding member and the other position establishing driving connection between the driving means and the sliding member.

2. A post driving apparatus of the character stated comprising a fixed vertical guide, a slide member supported by the guide for vertical movement, a hammer carried by the slide member, a friction brake secured to the vertical guide and movably supported for frictional contact with the slide member, means normally urging movement of the friction brake into operative engagement with the sliding member, means for effecting movement of the brake away from the slide member, a constantly rotating friction wheel supported upon the guide for rocking movement relative to the slide member, the friction wheel when rocked in one direction having driving connection with the slide member, means constantly urging movement of the friction wheel away from the slide member, a thrust means for effecting movement of the friction wheel into driving connection with the slide member, an operative coupling between the friction brake moving means and said thrust member and a control lever for simultaneously effecting movement through said operative coupling of the thrust means and the brake moving means whereby the friction brake may be selectively applied and released and the friction wheel may be selectively engaged with and disengaged from the slide member.

3. Apparatus of the character described comprising a suitably supported guide member, a sliding member operatively engaged therewith for up and down movement, a hammer head carried by the sliding member, the sliding member and head dropping by gravity, a constantly moving rotatable means supported for movement relative to the sliding member for engaging the same and applying up thrust thereto, resilient means constantly urging movement of the rotatable means away from engagement with the sliding member, a movable thrust means for urg-

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ing movement of the rotatable means into engagement with the sliding member against the resilient means, a friction brake carried by the guide member for contact with the sliding member, resilient means constantly urging movement of the brake in one direction relative to the sliding member, a movable thrust means for urging movement of the brake in the opposite direction, a coupling between the two thrust means by which the two thrust means may be actuated simultaneously, and an operating member connected with one thrust means.

4. Apparatus of the character described, comprising a suitably supported guide member of channel form having a web portion and side flanges, a slide member of channel form disposed within the guide for movement between said flanges, a hammer carried by the sliding member, a constantly rotating friction wheel supported by the guide for oscillatory movement into and out of driving contact with the sliding member, spring means normally urging movement of the wheel out of driving contact with the sliding member, oscillatable thrust means adapted when turned in one direction for moving the friction wheel into driving connection with the sliding member, said guide having one flange thereof provided with an opening across which a portion of the sliding member moves, a friction brake

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supported for movement through said opening into braking contact with the sliding member, spring means normally urging movement of the friction brake in one direction, an oscillatable thrust means adapted when oscillated in one direction to effect movement of the friction brake in the opposite direction against the spring means, a rigid coupling between the two thrust means, the two thrust means being held by the rigid coupling in a predetermined relation in which the friction wheel thrust means is turned in a direction to move the wheel into driving connection with said sliding member when the friction brake thrust means is oscillated oppositely to the direction in which it effects movement of the friction brake into operative connection with the sliding member, and a control lever connected with one of the two thrust means.

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