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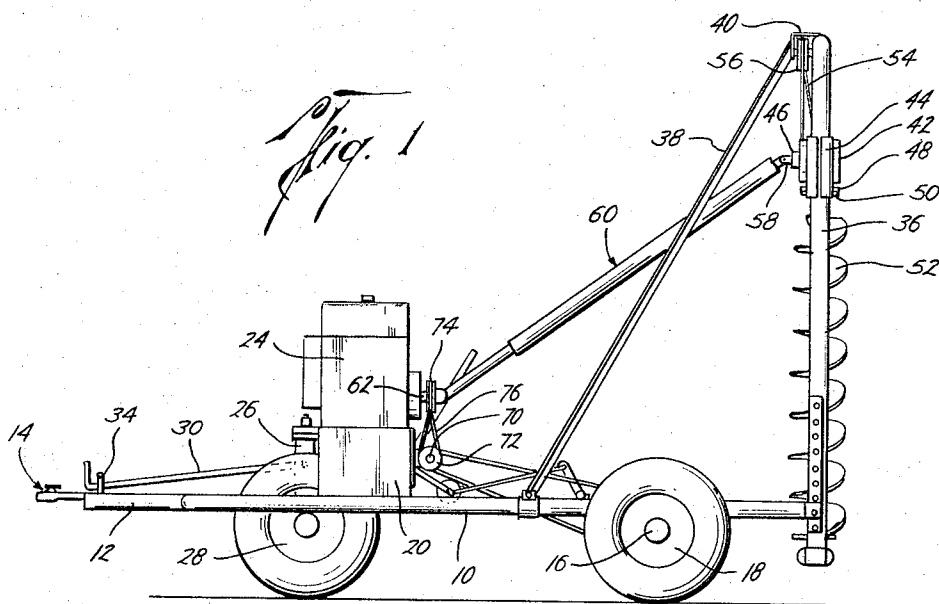
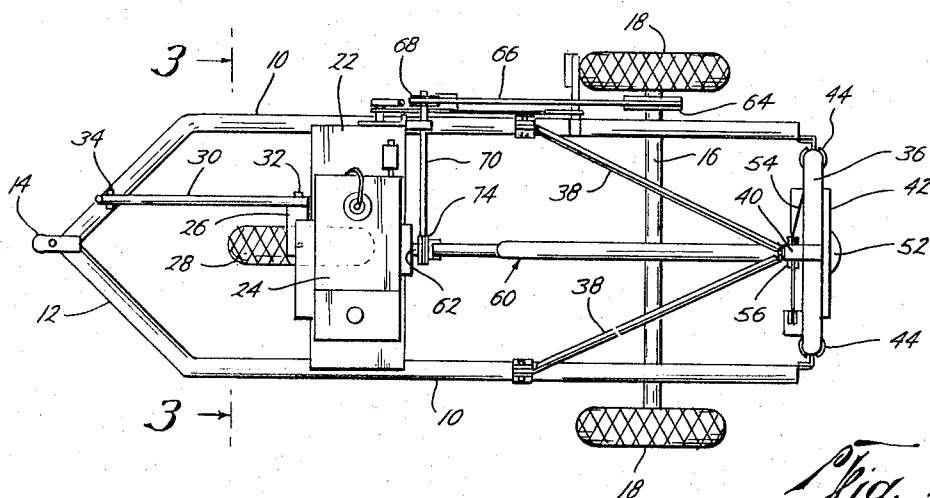
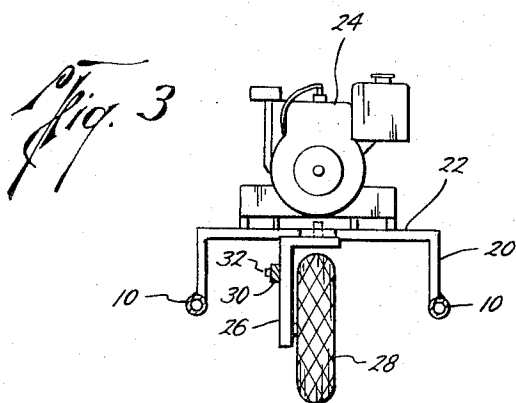
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3,306,372

POST HOLE DRILLING MACHINE

Filed Jan. 29, 1964

2 Sheets-Sheet 1



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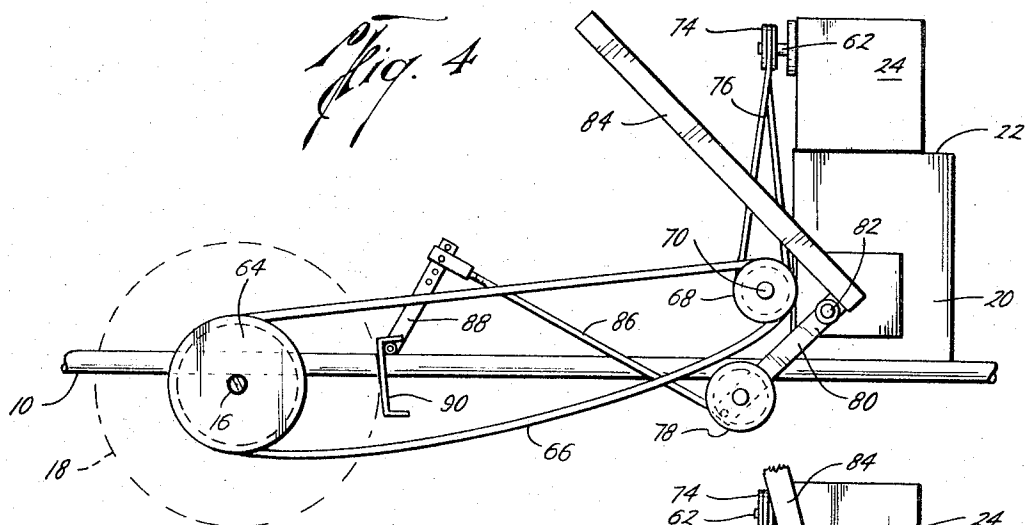
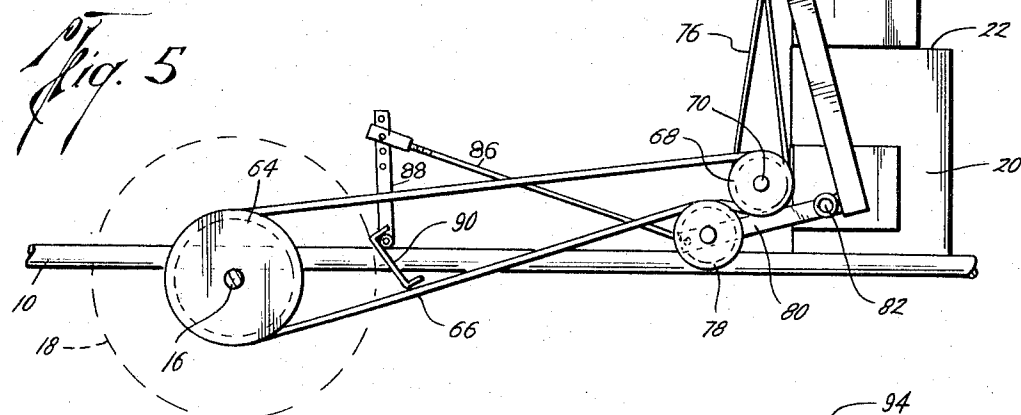
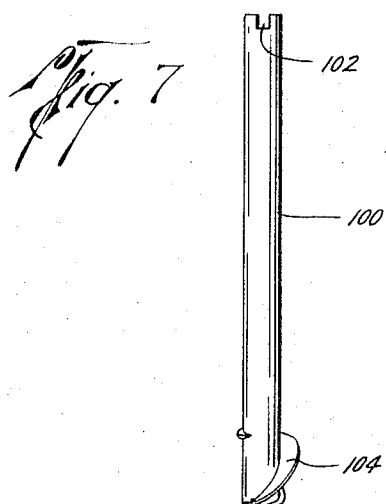
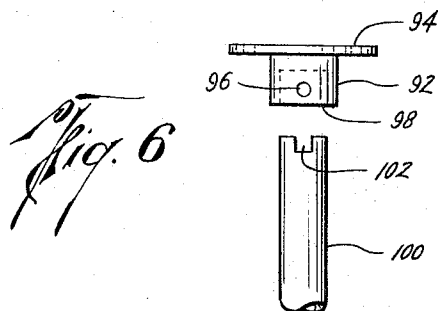
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2 Sheets-Sheet 2



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POST HOLE DRILLING MACHINE

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Filed Jan. 29, 1964, Ser. No. 341,011

1 Claim. (Cl. 173-25)

This invention relates to a post hole digger, and more particularly to a machine for drilling post holes and which may be converted for use in inserting self setting posts in the ground.

The invention has for an important object the provision of a post hole digger of the auger type which is mounted to be moved about as a trailer attached to an automobile or truck, and which is also adopted for self propulsion when desired.

Another object of the invention is to provide a post hole digger of the type which is adapted to be towed about and which is also furnished with a power source for drilling post holes and with means for propelling the digger from said power source independently of the towing vehicle.

A further object of the invention is the provision of a post hole digger of the auger type which may be used to produce post holes and which may be easily and quickly converted for use in inserting posts of the self setting type in the ground without first drilling holes for the same.

The above and other important objects and advantages of the invention will be apparent from the following detailed description, constituting a specification of the same, when considered in conjunction with the annexed drawings, wherein

FIGURE 1 is a side elevational view of the post hole drilling machine of the invention;

FIGURE 2 is a top plan view of the invention as illustrated in FIGURE 1;

FIGURE 3 is a cross-sectional view, taken along the line 3-3 of FIGURE 2 looking in the direction indicated by the arrows;

FIGURE 4 is a fragmentary, side elevational view, on a somewhat enlarged scale, looking at the right hand side of FIGURE 2, showing the self-propelling mechanism of the digger in its non-driving condition;

FIGURE 5 is a view, similar to that of FIGURE 4 showing the self-propelling mechanism of the digger in its driving condition;

FIGURE 6 is a fragmentary side elevational view of an enlarged scale showing a portion of the upper end of a post of the self-setting type and the post setting or driving attachment by which the same is inserted in the ground with the drilling machine of the invention, the attachment being shown detached from the machine; and

FIGURE 7 is a side elevational view of a post of the self-setting type which is adapted to be inserted into the ground by the use of the machine of the invention.

Referring now to the drawings in greater detail, the post hole drilling machine of the invention is of the type which uses an auger to drill a post hole, and in which the auger may be detached and replaced by a rotatable element, which is designed for coaction with a post provided with an auger-like portion, by which the post may be inserted into the ground by rotation of the post without first drilling a hole for the same.

The post hole drilling machine includes a frame having side frame members 10, and an end portion 12, which may be of V-shape, connecting the members 10 at one end and to whose apex a suitable towing hitch, generally designated 14 is attached for releasable connection to a vehicle, such as an automobile or truck by which the machine is adapted to be towed about.

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The frame is provided near its rear end with an axle 16 upon which wheels 18 are journaled, and has cross-member 20 of generally inverted U-shape, which connects the side members 10 together forwardly of the axle 16 and forms an elevated platform 22 upon which a power source, such as the internal combustion engine 24, of conventional type, is mounted.

A bracket 26 is rotatably attached at its upper end to the platform 22 for rotation about a vertical axis, and extends downwardly therefrom to support a forward wheel 28, rotatably mounted on the lower end of the bracket. The frame of the machine is thus supported on the wheels 18 and 28 for rolling movement along the ground and to be guided by the wheel 28 by turning the bracket, as by means of a lever 30 suitably attached thereto. The lever 30 has a pivotal connection with the bracket, as shown at 32, whereby the lever may swing vertically, so that the lever may rest at its forward end on the forward portion 12 of the frame between spaced, upwardly extending lugs 34 thereon, when the wheel 28 is positioned to guide the frame straight forwardly.

An upright, auger supporting member 36, of inverted U-shaped extends upwardly from the rear end of the frame, connecting the side members 10, which member is held in an upright position by braces 38, whose upper ends are connected centrally to the bottom of the U, as by means of a bracket 40, and at their lower ends to the side frame members 10. By this construction it will be seen that the rear end of the frame is left open between the side members 10 and between the upright arms of the U-shaped member 36. An auger supporting and driving carriage 42 is slidably supported on the arms of the U-shaped member 36, extending between the arms, and connected thereto by generally tubular, sleeve-like elements 44 for vertical sliding movement. The carriage 42 carries a right angle drive 46 of conventional type, having a vertical shaft, not shown, which carries at its lower end a perforated flange 48 to which a perforated flange 50 on the upper end of an auger 52, is bolted, whereby the auger is supported between the arms of the U-shaped member 36 with its lower end positioned to enter the ground when the carriage 42 is lowered and the auger rotated to drill a post hole. The carriage 42 is movably supported by a cable 54, which passes over a pulley 56 rotatably mounted on the bracket 40 whereby the carriage may be raised and lowered on the U-shaped member 36 as desired.

The right angle drive 46 has a horizontally extending shaft 58, shown in FIGURE 1, to which the upper end of a telescoping drive shaft 60 is connected, as by means of a universal joint, which drive shaft is connected at its lower end to the drive shaft 62 of the engine 24, as by means of another universal joint, whereby the auger may be rotated as it is lowered to drill the post hole. The drive shaft 60 may be of a conventional type formed in two telescopically interfitted parts which may be splined together in the usual manner to permit the shaft to be extended and retracted while its parts are rotating together.

It will be apparent that by the above described arrangement the auger 52 may be lowered while being rotated by the engine 24 to drill a post hole and thereafter elevated to withdraw the auger so that the machine may be moved to a new location for the drilling of another such hole.

For the purpose of moving the machine about, independently of any towing vehicle, as when the machine is to be moved from one post hole to a location for the drilling of another such hole, the driving mechanism particularly illustrated in FIGURES 4 and 5 is provided, wherein the axle 16 is provided with a pulley 64 about

which a driving belt 66 passes. The belt 66 also passes about a pulley 68 mounted on a shaft 70 for rotation therewith, which shaft extends inwardly from one side of the frame of the machine in suitable bearings, not shown, to a location adjacent the drive shaft 62 of the engine 24. The shaft 70 has a pulley 72 mounted thereon for rotation with the shaft beneath a pulley 74 mounted on the shaft 62 of the engine 24, and a belt 76 passes about the pulleys 72 and 74 to rotate the same together.

For the purpose of tightening and loosening the belt 66, an idler pulley 78 is rotatably mounted on an arm 80 of a lever pivotally attached to the frame, as shown at 82, and having an arm 84 by which the arm 80 may be rocked to move the pulley 78 into engagement with the belt to tighten the same or out of such engagement to allow the belt to slip on the pulleys 64 and 68.

It will be apparent that when it is desired to move the machine from one location to another, the arm 84 may be moved from the position of FIGURE 4 to that of FIGURE 5 to tighten the belt 66, whereupon the axle 16 will be rotated by the engine 24 through the pulley 74, belt 76, pulley 72, shaft 70, and pulleys 68 and 64 through belt 66. When the machine reaches the desired location the arm 84 may be swung back to the position of FIGURE 4 to relax the belt 66 to allow the machine to stop.

The arm 80 may be extended beyond the pulley 78 and connected at its outer end to a rod 86 which is in turn connected to a brake lever 88 mounted on a shaft pivotally carried on the frame of the machine and to which a brake shoe 90 is attached for movement into contact with one of the wheels 18 upon rotation of the shaft in one direction to arrest rotation of the wheel and out of such contact upon rotation of the shaft in the other direction. Thus, upon movement of the arm 84 from the position of FIGURE 1 to that of FIGURE 2 the brake shoe 90 will be moved out of braking engagement with the wheel 18 and the belt 66 will be tightened to propel the machine, and upon movement of the arm 84 back to the position of FIGURE 1 the belt 66 will be relaxed and the brake applied to stop the machine.

The machine of the invention is also designed to be used without the auger 52 to insert posts of the self-setting type illustrated in FIGURE 7. For this purpose the auger 52 is removed by unbolting the flanges 48 and 50, and replaced by a post rotating head, which may take the form of an attachment as shown in FIGURE 6, consisting of a short piece of pipe 92 provided at one end with a perforated flange 94 adapted to be bolted to the flange 48, and having a cross-pin 96 located inside of its open lower end 98. The pipe 92 is sufficiently large in internal diameter to the upper end of the post 100 whose upper end is provided with an end notch 102 into which the cross-pin 96 fits when the upper end of the post is inserted in the lower end of the pipe to cause the post to rotate with the attachment. The post 100 is provided at its lower end portion with an auger like, spiralled, external flange 104, shaped and positioned to cause the post to penetrate the ground when the post is rotated and moved downwardly between the arms of the U-shaped member

26 with the lower end of the post in engagement with the ground. Upon rotation of the post to the right, as viewed in FIGURE 7, with the lower end of the post in engagement with the ground, the spiralled flange or screw 104 will be screwed into the ground to cause the post to enter the ground without the necessity of first drilling a hole to receive the post. Thus, by substituting the fitting of FIGURE 6 for the auger 52, the machine may be adapted to set posts of the type illustrated in FIGURE 7 without first drilling post holes for the same.

It will thus be seen that the invention provides a post hole machine which is of simple design and rugged construction, which may be towed about by an automobile or propelled under its own power, and by which posts may be set by first drilling holes for the same, or by setting the posts by screwing them into the ground without first drilling holes to receive them.

The invention is disclosed herein in connection with a certain particular construction of the same, but it will be understood that this is intended by way of illustration only and that the machine is capable of various modifications within the spirit of the invention of the scope of the appended claim.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

In a post hole drilling machine a frame, an axle rotatably mounted on the frame, wheels mounted on the axle for rotation therewith, a pulley mounted on the axle for rotation therewithin, a pulley rotatably mounted on the frame for rotation in a common plane with said axle mounted pulley, a driving belt passing about said pulleys, belt tightening means movably mounted on the frame for movement to one position in engagement with said belt to tighten the belt about the pulleys to cause the pulleys to rotate together and to another position to allow the belt to relax to permit the pulleys to rotate independently, power means on the frame, means forming a driving connection between said power means and said frame mounted pulley, and brake means on said belt tightening means positioned for engagement with one of said wheels upon movement of said belt tightening means to said other position to hold the wheels against rotational movement.

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