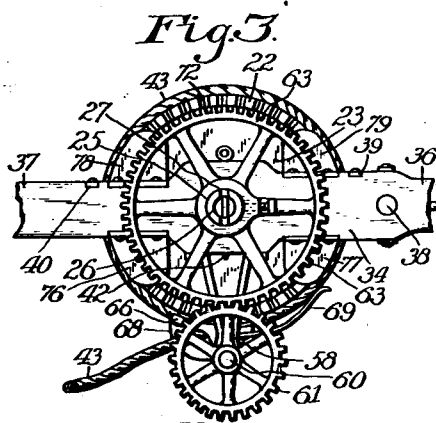
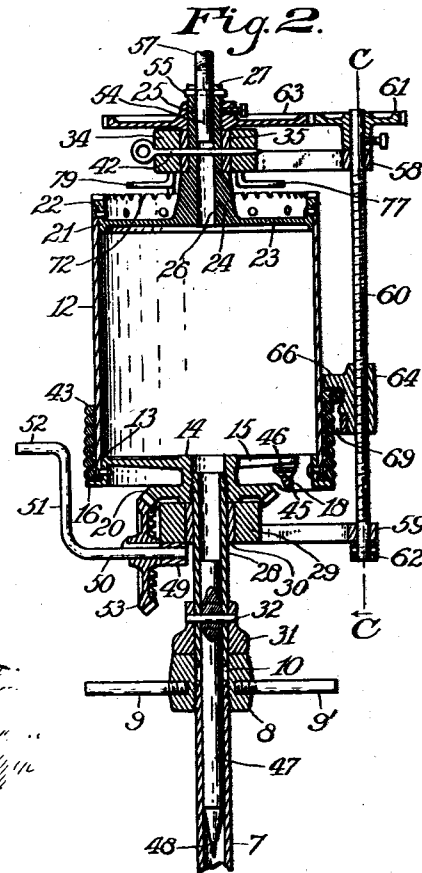
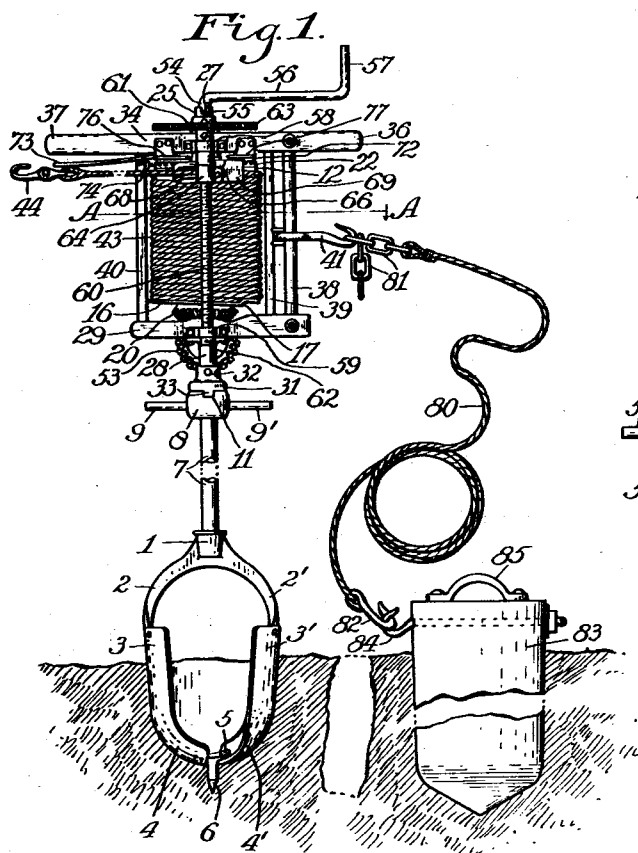


H. F. HOLTMAN.
HORSE POWER POST HOLE AUGER.
APPLICATION FILED DEC. 21, 1911.

1,051,330.

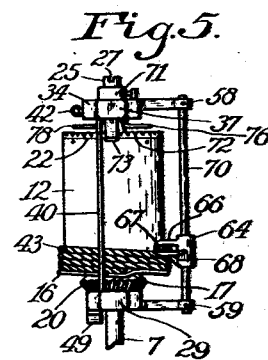
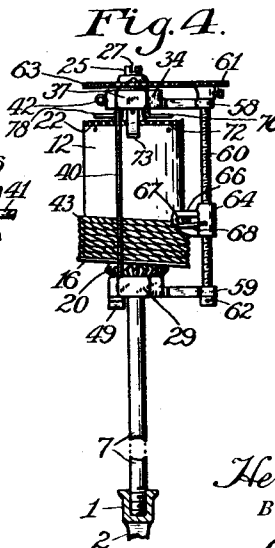
Patented Jan. 21, 1913.

2 SHEETS—SHEET 1.



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INVENTOR:

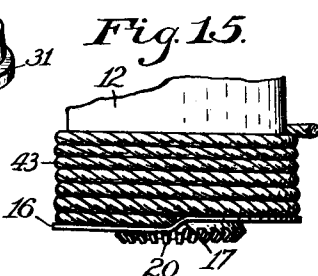
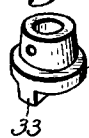
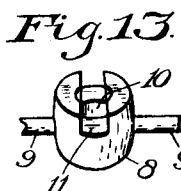
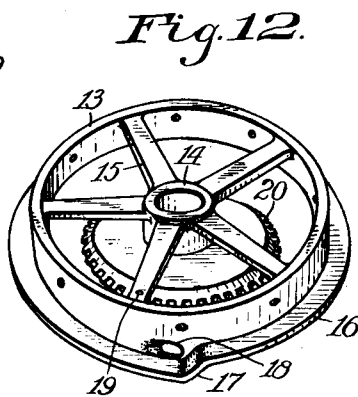
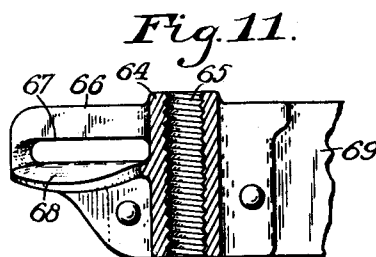
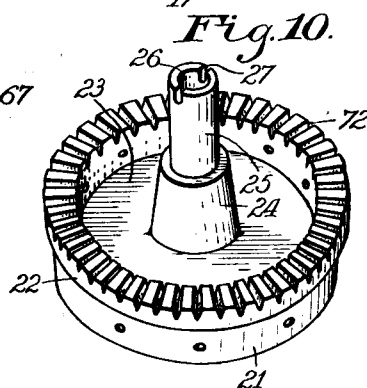
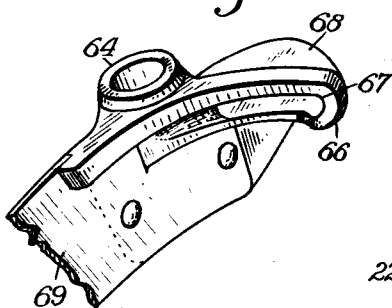
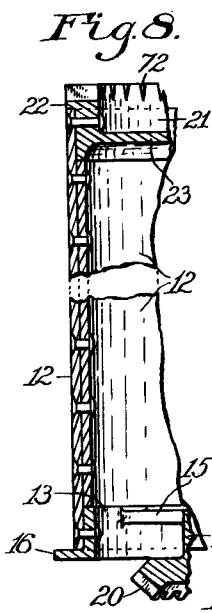
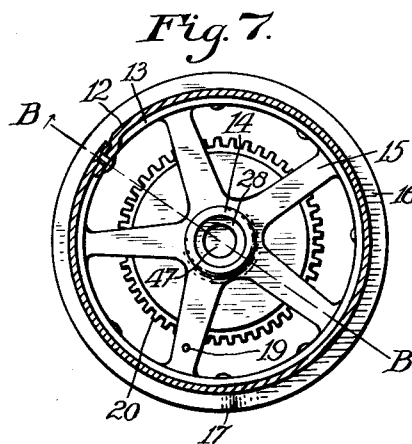
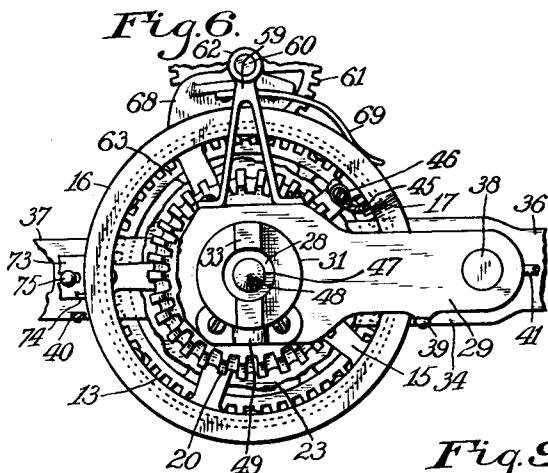
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2 SHEETS—SHEET 2.

1,051,330.



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UNITED STATES PATENT OFFICE.

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HORSE-POWER POST-HOLE AUGER.

1,051,330.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed December 21, 1911. Serial No. 667,140.

To all whom it may concern:

Be it known that I, HENRY F. HOLTMAN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Horse-Power Post-Hole Auger, of which the following is a specification, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

This invention relates to portable hand controlled machines or implements for boring post-holes in the ground, the invention having reference more particularly to means whereby the boring operations may be accomplished by means of horse power.

The object of the invention primarily is to provide a post-hole boring-machine that will be so constructed as to be capable of boring rapidly and economically, a particular object being to as far as possible dispense with manual labor in the operations of providing the holes for fence posts, or for telegraph or other poles.

A further object of the invention is to provide an improved post-hole auger that will be so constructed as to be very powerful and adapted to be actuated by one or more horses, or if desired, by means of a traction engine, a still further object being to provide a power machine of the above mentioned character that will be adapted to be easily shifted manually from place to place and adjusted or controlled by hand, and which may be constructed simply and cheaply and be durable in use.

The invention consists in a power post-hole auger comprising a boring-implement provided with a power-drum for rotating the implement, the drum being mounted in a controlling-head and having an actuating cable connected thereto for rotating the drum, the head being adapted to be used by the attendant for controlling and handling the machine; and the invention consists further in the novel parts and combinations and arrangements of parts as hereinafter particularly described and pointed out in the accompanying claims.

Referring to the drawings, Figure 1 is a side elevation of the improved post-hole auger as preferably constructed; Fig. 2, a vertical central sectional view of the driving mechanism of the machine; Fig. 3, a top plan of the machine in which the controlling handles are broken away; Fig. 4,

an elevation of the machine slightly modified; Fig. 5, a fragmentary elevation of the machine in a more simplified form; Fig. 6, an inverted plan of the power machine for driving the boring-implement; Fig. 7, a sectional view of the drum approximately on the line A A in Fig. 1; Fig. 8, a fragmentary section of the drum on the line B B in Fig. 7; Fig. 9, a perspective view of a modified form of cable-guide partially broken away; Fig. 10, a perspective view of one of the parts of the drum; Fig. 11, a fragmentary sectional view of the preferred form of cable-guide; Fig. 12, a perspective view of another one of the parts of the drum; Fig. 13, a perspective view of one of the clutch members for detachably connecting the driving mechanism to the shaft of the boring-implement; Fig. 14, a perspective view of a companion clutch member for detachably connecting the driving mechanism to the shaft of the boring-implement, and Fig. 15, a fragmentary elevation of the drum with the cable thereon.

Similar reference characters in the different figures of the drawings indicate corresponding elements or features of construction herein referred to.

The boring-auger or tool may be variously constructed in detail, as may be desired, a preferable construction comprising a socket 1, having two oppositely extending arms 2 and 2' thereon to which are secured two curved boring-blades 3 and 3' respectively, the blades having inwardly curved end portions 4 and 4' adapted to bore into the earth, the end portions being secured to a connecting-plate 5 provided with a downwardly extending centering point 6. A shaft 7 of suitable length is connected to the socket 1 and preferably is composed of a piece of pipe screwed into the socket. As preferably constructed, the shaft 7 has a clutch member 8 thereon provided with two handles 9 and 9' on opposite sides thereof for manually lifting the auger from the post holes, or for inserting the auger into the holes and removing loose earth therefrom. The end of the clutch member 8 has a guide-opening 10 therein, and preferably the member is screwed onto the end of the shaft 7. The end of the clutch member has a recess 11 therein to receive a portion of a companion clutch member. In some cases, especially in the smaller size of machine, the clutch member may be omitted from the shaft 7.

A power-drum or spool is provided which is of novel construction and of light weight, and it preferably comprises a cylindrical shell 12 formed of sheet metal to the inner side of one end portion of which a cylindrical head member 13 is secured which is provided with a hub 14, the head member preferably having openings therein so as to provide arms or spokes 15 connecting the hub with the ring-like peripheral portion of the head member, said portion having an outwardly extending flange 16 thereon which extends spirally about the axis of the drum, said flange having an obliquely extending portion 17 adjacent to which a hole 18 is formed in the head part 13, one of the arms 15 preferably having a bolt-hole 19 therein which is in proximity to the hole 18. Preferably the hub 14 has an outwardly facing bevel gear-wheel 20 thereon whereby to turn the drum for re-winding the cable thereon. A cylindrical head member 21 is secured to the inner side of the opposite end portion of the shell and preferably as a flange 22 thereon which extends outwardly against the end of the shell, a web 23 extending from the member 21 so as to close the normally upper end of the drum, the web having a hub 24 thereon from which extends a journal 25 in which is a bore 26, and preferably the end of the journal has a notch or recess 27 therein at the side of the bore. A hollow journal 28 extends from the hub 14 outwardly, being preferably composed of a piece of pipe screwed into the hub, and it is journaled in a bar 29 constituting a portion of the controlling-head, said bar preferably being composed of wood and in such case is provided with a journal box 30. A clutch member 31 is secured to the outer end portion of the hollow journal 28, preferably by means of a pin 32, the journal preferably extending slightly beyond the clutch member into the guide-opening 10 of the clutch member 8, the clutch member 31 having a projection or lug 33 removably inserted in the recess 11, so that the journal or shaft 28 may rotate the shaft 7. Another bar 34 constituting a portion of the controlling-head preferably is composed of wood and in such case is provided with a journal box 35 in which the journal 25 is rotatably mounted, the bar having horizontally extending handle portions 36 and 37 on opposite end portions thereof whereby to manually lift and control the machine. A metallic bar 38 is rigidly secured to the bars 29 and 34 in proximity to the drum and constitutes a part of the controlling-head, two tie rods 39 and 40 preferably being employed also and secured to the bars 29 and 34 at opposite sides of the drum. A hook 41 is connected to the middle portion of the bar 38, for a purpose hereinafter explained.

In order to enable the attendant to di-

rectly turn the drum and thereby turn the boring-implement, as when cleaning out a post-hole, a locking pin 42 is removably inserted in suitable openings in the member 34 of the controlling-head, the pin extending through the journal 25 so as to lock the drum temporarily to the controlling-head.

A cable or rope 43 is provided which has a hook 44 on one end thereof, the opposite end 45 of the cable being passed through the hole 18 in the head member 13 and secured to one of the arms 15 by a bolt 46 inserted in the hole 19. The cable is of suitable length to cover the drum without overlapping itself when coiled about the surface of the drum. In order to facilitate the winding of the cable on the drum, the journal shaft 28 preferably has a solid extension 47 secured therein, preferably by the pin 32, the extension having a centering point 48 thereon which may be placed upon a block of wood and enable the attendant to conveniently rotate the drum in upright position. It should be understood, however, that instead of detachably connecting the drum with the shaft 7 by means of the clutch members, with the extension 47 extending into the shaft 7, the shaft 7 may be connected to the hub 14 and be journaled in the bar 29, in which case the point 6 of the boring-implement may be placed upon the block of wood while the cable is wound onto the drum. It should be understood, however, that when re-winding the cable onto the drum the shaft 7 or the extension 47 may be placed upon a trestle, and an axial rod may be inserted into the bore 26 and placed upon another trestle so as to permit the drum to rotate in horizontal position. In order to readily rewind the cable a journal box 49 is secured to the under side of the bar 29 and a shaft 50 is removably inserted rotatably therein, the shaft having an arm 51 thereon provided with a crank handle 52, said shaft having a bevel pinion 53 secured thereto which is removably connected with the gear-wheel 20. This provides ample power for the purpose in the larger machines, but in smaller machines may be omitted and the winding operations performed by means of a shaft 54 removably inserted in the bore 26 and provided with a lug 55 that is removably inserted in the notch or recess 27, the shaft 54 having an arm 56 thereon provided with a crank handle 57.

In order to facilitate the operations of re-winding the cable it is preferable to provide a cable-guide, and for this purpose a bracket 58 is mounted on the bar 34 and a similar bracket 59 is mounted on the bar 29 of the controlling-head, a feed screw 60 preferably being journaled in the brackets and provided at one end with a pinion 61 and on the opposite end with a guide collar 62, a

gear-wheel 63 being secured to the journal 25 in mesh with the pinion 61, so that the screw is rotated when the drum is rotated. A guide head 64 having screw threads 65 therein is mounted on the screw and is provided with a guide wing 66 in which is a guide slot 67, a guide lip 68 extending laterally from the guide head at the lower side of the slot. The cable 43 extends through the guide slot 67 and slides freely upon the lip 68 during operation, and is guided along the surface of the drum by means of the rotating screw, the cable being held closely to the drum by means of a broad leaf brake-spring 69 secured to the head 64 and extending oppositely from the wing 66. In a cheaper form of construction, however, the positive guiding gearing may be omitted and a smooth guide bar 70 may be secured to the brackets 58 and 59 in place of the screw 60, in which case the head 64 slides freely along the bar and does not require screw-threads therein. When the gearing is employed the wheel 63 serves as a guide collar in contact with the bar 34, and when the gearing is omitted it will be understood that a guide collar 71 preferably is secured to the journal 25 in place of the wheel, as seen in Fig. 5.

In order to prevent the drum from accidentally turning in the controlling-head while handling the machine with the cable wound up the head member 21, including the face of the flange 22 has V shaped notches 72 therein, and a latch bar 73 is mounted on the inner side of the bar 34 and has a projection 74 thereon that is adapted to enter the notches and be forced therefrom when the drum is forcibly rotated, the latch-bar 73 being suitably guided by means of a guide pin 75 extending through it and secured to the handle portion 37. The attendant when grasping the handle portion may move the latch-bar 73 to the handle portion 37 and thereby withdraw the projection 74 from the notch 72 in which it may be, this being desirable while the cable is being drawn out to rotate the drum.

In order to prevent the fingers of the attendant from being injured by the edges of the notches 72, suitable guards 76, 77, 78 and 79, are secured to the upper member of the controlling-head so as to extend over the portions of the notched end of the drum that are in proximity to the handle portions 36 and 37, thus preventing the attendant from accidentally placing his fingers between the end of the drum and the member 34 of the head.

A stay-rope or cable 80 is provided at one end with a suitable number of links 81 adapted to be connected to the hook 41, the opposite end of the cable or rope being provided with a hook 82. An anchor-post 83 is provided which has a hook 84 connected

thereto to which the hook 82 may be connected, the post having a handle 85 on its top for carrying it from one place to another, the post being adapted to be placed into one of the post-holes while boring another hole, and the cable 80 is of suitable length so as to serve to measure the distance between the post-holes.

In practical use, the cable 43 is first wound upon the drum and the latter is ordinarily prevented from turning accidentally while being handled by the spring latch engaging the notched end of the drum. The point 6 of the boring-tool is placed at the position of the first hole required, the shaft 7 being held approximately vertical or slanting if required by the attendant. The cable 80 is temporarily anchored in any suitable manner and then one of the links 81 is connected to the hook 41 with the cable in taut condition. A horse is then hitched to the hook 44 and driven away directly in line with the cable 80, which causes the cable 43 to unwind from and rotate the drum and also the boring-tool, the tool boring a hole of the required depth by the time the cable is unwound from the drum. If, however, it is desired to bore further, obviously the cable may be re-wound and the boring operation continued, or the attendant may in some cases turn the boring tool by hand. While the machine is in operation an attendant grasps the handle portions 36 and 37 of the controlling-head and thereby steadies the machine and holds it in the required upright position. After completing a hole the driving apparatus and the boring implement are lifted together, or in some cases the driving apparatus may be first disconnected from the shaft 7 before removing the boring tool from the ground. The anchor post 88 is then placed in the bored hole and the machine is carried and placed in the required position for boring another hole, the cable 43 in the meantime having been re-wound upon the drum, the tie rods 39 and 40 assisting in preventing the cable from overlapping upon itself while being re-wound. A second hole having been completed, the operations are continued until all the holes required have been bored.

Having thus described the invention, what is claimed as new is:—

1. A portable boring-machine including a boring-tool provided with a manually transportable head having a controllable handle, a driving-drum for rotating the boring-tool mounted in the head, and a cable connected to the driving-drum for rotating it.

2. A portable boring machine including a boring-tool having a shaft provided with a manually transportable controlling head having handles on opposite sides thereof, a drum rotatably mounted in the controlling head and operatively connected with and

normally supported by the shaft, and a cable connected to the drum.

3. A portable boring-auger including a controlling head provided with a controlling handle and also a flexible stay-cable, an anchor-post connected to the stay-cable, a driving drum rotatably mounted in the controlling head, a cable connected to the driving-drum, and a boring-tool operatively connected with and normally supporting the driving-drum.

4. A portable boring-machine including a boring-tool provided with a detachably connected manually transportable driving drum for rotating the boring-tool, a controlling head having handles for guiding the boring-tool, a cable connected to the driving-drum for rotating it, and means coöperating with the controlling head and the driving drum for yieldingly preventing rotation of the driving-drum.

5. A portable boring machine including a boring auger having an operating shaft, a clutch member having a carrying handle and secured to the shaft, a driving-drum provided with a clutch member detachably connected with the clutch member that is secured to the shaft, and a manually transportable controlling head for the driving-drum having a carrying handle.

6. A post-hole boring machine including a boring-auger, a controlling-head, a driving-drum rotatably mounted in the controlling-head and operatively connected with the boring-auger, an operating-cable connected to one end portion of the driving-drum, and a cable-guide movably mounted on the controlling-head.

7. A horse-power post-hole auger including a boring-implement having a centering point, a controlling-head having handle portions, a drum rotatably mounted in the controlling head and operatively connected with the boring-implement, a cable connected to the drum and wound thereon for rotating the drum in one direction, and a device detachably connected with the drum for rotating the drum in the opposite direction to wind the cable thereon.

8. A horse-power post-hole auger including a boring-implement provided with a clutch member, a controlling-head provided with a stay-cable, an anchor-post connected to the stay-cable, a drum rotatably mounted in the controlling-head and provided with a clutch member detachably connected with the clutch member of the implement, a driving-cable connected to the drum, and a spring-brake mounted on the controlling-head and extending into contact with the driving-cable.

9. A horse-power post-hole auger comprising a boring-implement having an operating-shaft provided with a clutch member having two handles thereon, a controlling-head provided with a hook, a stay-cable

having a chain connected thereto that is removably connected to the hook, a drum having an axial shaft that is journaled in the controlling-head and extends into the clutch member, the shaft having a pointed extension that extends into the operating-shaft, a clutch member secured to the axial shaft and engaging the clutch member of the operating-shaft, and a cable connected to the drum.

10. In a post-hole boring-machine, the combination of a controlling-head, a drum rotatably mounted in the controlling-head, a boring-implement operatively connected with the drum, a cable connected to the drum, an anchor-post, and means adjustably connecting the anchor-post with the controlling-head.

11. In a post-hole boring-machine, the combination of a controlling-head having handle portions, a drum rotatably mounted in the controlling-head, a boring-implement operatively connected with the drum to be rotated thereby, a cable connected to the drum, and means for temporarily locking the drum against rotation in the controlling-head.

12. In a post-hole auger, the combination of a controlling-head provided with a journal-box, a drum rotatably mounted in the controlling-head and having a bevel gear-wheel fixedly connected thereto, a cable connected to the drum, a boring-implement operatively connected with the drum, and a crank-shaft removably mounted in the journal-box and having a bevel pinion fixed thereon that is removably connected with the gear-wheel.

13. In a post-hole boring-machine, the combination of a controlling-head provided with a guide-bar, a drum rotatably mounted in the controlling-head adjacent the guide-bar, a boring-implement operatively connected with the drum to be rotated thereby, a guide-head movably mounted on the guide-bar and having a wing provided with a guideway, and a cable connected to the drum and extending through the guideway.

14. In a post-hole auger, the combination of a controlling-head, a drum having a hollow journal rotatably mounted in the controlling-head, the end of the journal having a recess therein, a boring-implement operatively connected with the drum to be rotated thereby, a cable connected to the drum, and a crank-shaft removably inserted in the hollow journal and having a lug thereon removably inserted in said recess.

15. In a post-hole auger, the combination of a controlling-head, a drum rotatably mounted in the controlling-head and having notches in one end thereof, a latch-bar movably mounted on the controlling-head and having a projection thereon for entering the said notches to retard rotation of the drum,

a cable connected to the drum, and a boring-implement operatively connected with the drum to be rotated thereby.

5 16. In a post-hole boring-machine, the combination of a controlling-head provided with a guide-bar, a drum rotatably mounted in the controlling-head adjacent the guide-bar, a boring-implement operatively connected with the drum to be rotated thereby,
10 a guide-head movably mounted on the guide-bar and provided with a guideway, a cable connected to the drum and extending through the guideway, and a plate-spring mounted on the guide-head and pressing the cable to
15 the drum.

17. In a post-hole boring-machine, the combination of a controlling-head provided with brackets, a screw-threaded guide-bar rotatably mounted in the brackets and hav-

ing a toothed wheel fixed thereon, a drum 20 rotatably mounted in the controlling-head adjacent the guide-bar and having a toothed wheel fixedly connected therewith that meshes with the toothed wheel on said guide-bar, a boring-implement operatively con- 25 nected with the drum to be rotated thereby, a guide-head having screw-threads and movably mounted on said screw-threaded guide-bar, said guide-head being provided with a guideway, and a cable connected to said 30 drum and extending through said guideway.

In testimony whereof, I affix my signature in presence of two witnesses.

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