L. HUESSELMANN.

POST HOLE DIGGER.

APPLICATION FILED MAR. 9, 1917.

1,236,940. **Patented Aug. 14, 1917.**

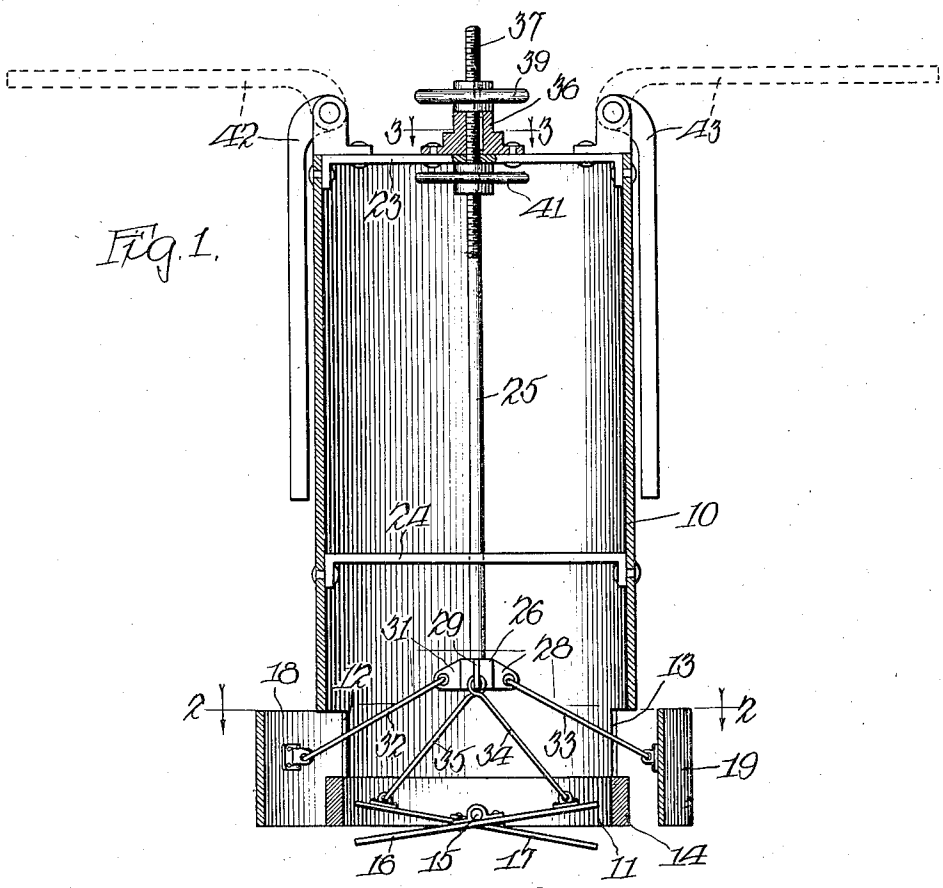


Fig. 1.

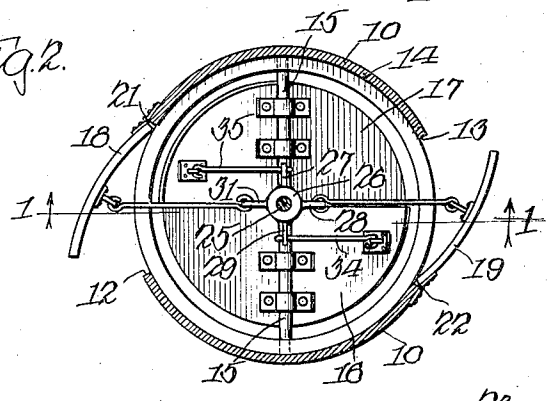


Fig. 2.

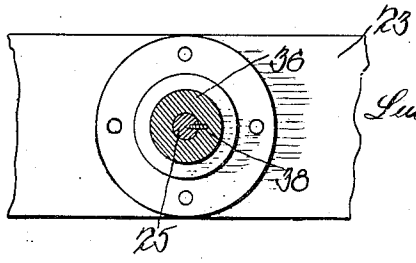


Fig. 3.

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UNITED STATES PATENT OFFICE.

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POST-HOLE DIGGER.

1,236,940. Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed March 9, 1917. Serial No. 153,627.

To all whom it may concern:

Be it known that I, LUDWIG HUESSELMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Post-Hole Diggers, of which the following is a specification.

My invention relates to post hole diggers and the like and has for its primary object the provision of an improved device of this character which shall have means for varying the diameter of the hole being dug.

Another object of the invention is the provision of means for varying the pitch of the digging plates in order that the device may accommodate itself for use in hard or soft earth.

A further object of the invention is the provision of a tubular frame which shall act as a container for the earth being dug to facilitate elevation of the earth from the bottom of the hole.

A further object is the provision of means whereby the bottom of said frame is substantially closed when the lateral cutting elements are outwardly extended.

A further object is the provision of means whereby the lateral cutting elements form side closures at the lower end of the frame when the digging plates are given their greatest pitch.

A further object of the invention is the provision of means whereby the lateral cutting elements and the bottom digging elements are simultaneously adjustable.

A further object of the invention is the provision of means whereby the lateral cutting elements and the bottom digging plates are simultaneously adjustable in opposite directions as relates to their digging functions.

Other objects and advantages of the invention will become apparent by reference to the following description taken in conjunction with the accompanying drawings.

In the drawings:

Figure 1 is a vertical section through my invention taken approximately on line 1—1 of Fig. 2;

Fig. 2 is a horizontal section taken on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary horizontal section on line 3—3 of Fig. 1.

Reference numeral 10 indicates a cylindrical frame having an open bottom 11 and, at its lower end, diametrically opposite side apertures 12 and 13. At the bottom of the frame a ring 14 is securely fastened to the inner surface of the tubular frame 10. This ring serves to rigidify the lower end of the structure and acts as a bearing for the opposite ends of a horizontal shaft 15 which traverses the device diametrically and upon which are journaled a pair of semi-circular plates 16 and 17 which, when in alined position, practically close the open lower end 11 of the digger.

In the apertures 12 and 13 are respectively mounted laterally extensible arcuate cutters 18 and 19 hinged on opposite vertical pintles 21 and 22, the cutters fitting their apertures when in closed position. Spaced upper and lower supports 23 and 24 diametrically traverse the frame 10, each being centrally apertured for passage of a vertical adjusting rod 25. At the lower end of this rod is secured a boss 26 having apertured arms 27, 28, 29 and 31 which project radially from the rod in pairs at right angles to each other. Links 32 and 33 connect the arms 31 and 28 to the cutters 18 and 19, respectively, while links 34 and 35 connect arms 27 and 29 to opposite ends of plates 16 and 17, respectively. The upper support 23 carries a boss 36. The upper end of rod 25 is threaded as at 37 and the rod and boss are oppositely channeled to receive a key 38 which is rigidly fixed in the boss and slidably engages the channel of the rod to permit vertical movement of the rod while preventing its rotation on its axis. An upper adjusting locking nut 39 is threaded upon rod 25 above boss 36 and a similar nut 41 is threaded upon the rod below support 23. Pivoted at the upper end of frame 10 are diametrically opposite operating handles 42 and 43 which may be folded against the outer side of the frame, as illustrated in full lines in Fig. 1 and, for the purpose of operating the digger, are extended into the dotted line positions shown.

In the operation of my invention, and considering the parts as shown in Fig. 1, power is applied to the handles 42 and 43 to rotate the device in a counter-clockwise direction. This will cause cutters 18 and 19 to cut slightly into the earth and outline the hole to be dug, the lower ends of plates

16 and 17 slipping over the ground without digging. Following this action the device is turned clockwise, the result being a digging of the lower points of plates 16 and 17 into the earth while cutters 18 and 19 slide about the periphery of the hole. The earth shaved off by the cutters in the counter-clockwise movement is projected by them centripetally onto the upper surfaces of plates 16 and 17, while the earth dug by plates 16 and 17 in the clockwise movement of the device is of course elevated onto the upper surfaces of the plates also. The plates are normally operated at such a slightly inclined angle that they will retain the earth upon them while the whole device is elevated and inverted upon the ground. Not only does my digger operate to sink a hole very rapidly but its use is less fatiguing to the operator than many diggers now in use, for the reason that the clockwise and counter-clockwise movements are alternated, thus relieving the operator from constant effort to rotate the device in a single direction. If it should be desired to reduce the diameter of the hole being dug nuts 39 and 41 are operated to elevate rod 25, the result being a retraction of the free ends of cutters 18 and 19 toward the center of the device and a greater angle or tilt in plates 16 and 17. The diameter of the hole being thus reduced the strength of the operator is adequate to rotate the device in the clockwise direction and more rapidly sink the hole because of the greater tilt of the plates 16 and 17. Conversely, when it is desired to increase the diameter of the hole the rod 25 is lowered and locked by nuts 39 and 41, thus swinging the cutters outwardly of the frame and simultaneously lessening the pitch of plates 16 and 17. This latter adjustment automatically conditions the machine to conserve the strength of the operator in that it lessens the speed with which the hole is sunk by reason of the reduced pitch of the digging plates. The operation of nuts 39 and 41 when tightened respectively downwardly and upwardly acts to set the cutters and plates in any given adjustment and to prevent their movement relative to the frame during the digging operation. Should the operator be digging in soft earth and continue the operation of the device until a very considerable quantity of earth is collected in the bottom of the tubular frame 10, he may prevent any loss of earth through the bottom during the elevation of the device from the hole by moving rod 25 downwardly to aline plates 16 and 17 in a horizontal plane. This action will substantially close the bottom of the device.

While I have illustrated and described the preferred embodiment of my invention, it is obvious that one skilled in the art may construct modifications thereof without departing from the spirit of the invention. I wish, therefore, not to be restricted to the precise form shown except in so far as the same is limited in the appended claims.

I claim:

1. In a digger the combination with a frame of laterally adjustable cutters and tiltable digging plates.

2. In a digger the combination with a hollow frame of laterally extensible cutters and tiltable digging plates.

3. In a digger the combination with a hollow frame of laterally extensible cutters at the lower end thereof and tiltable digging plates in the bottom thereof.

4. In a digger the combination with a hollow frame of laterally extensible cutters at the lower end thereof and oppositely tiltable digging plates in the bottom thereof.

5. In a digger the combination with a hollow frame having an open bottom and side apertures at its lower end of laterally extensible cutters in said apertures and oppositely tiltable digging plates horizontally journaled in said open bottom.

6. In a digger the combination with a hollow frame having an open bottom and diametrically opposite side apertures at its lower end of laterally extensible cutters mounted in said apertures and oppositely tiltable digging plates horizontally journaled in said open bottom.

7. In a digger the combination with a hollow frame having diametrically opposite side apertures at its lower end and an open bottom, of cutters fitting said apertures and respectively hinged to diametrically opposite vertical edges of said apertures, and oppositely tiltable digging plates horizontally journaled in said open bottom.

8. In a digger the combination with a hollow frame having opposite side apertures at its lower end and an open bottom, of cutters hinged to diametrically opposite edges in the respective apertures whereby they operate to cut when the frame is rotated in one direction, and oppositely tiltable digging plates horizontally journaled in said open bottom so that said plates dig into the soil when the frame is rotated in the opposite direction.

9. In a digger the combination with a frame of lateral cutting elements mounted to operate when said frame is rotated in a given direction, and inclined digging plates positioned to idle during the cutting rotation of said frame and to dig during the opposite rotation of the frame.

10. In a digger the combination with a hollow frame having opposite side apertures at its lower end and an open bottom, of cutters hinged to vertical diametrically opposite edges in said apertures, opposite

digging plates horizontally journaled in said open bottom, and means for adjusting said cutters and plates.

11. In a digger the combination with a hollow frame having opposite side apertures at its lower end and an open bottom, of cutters hinged to vertical diametrically opposite edges in said apertures, opposite digging plates horizontally journaled in said open bottom, and means for simultaneously adjusting said cutters and plates.

12. In a digger the combination with a hollow frame having opposite side apertures at its lower end and an open bottom, of cutters hinged to vertical diametrically opposite edges in said apertures, opposite digging plates horizontally journaled in said open bottom, and means for adjusting said cutters and plates in opposite directions with respect to their digging functions.

13. In a digger the combination with a hollow frame having diametrically opposite side apertures in its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, opposite digging plates horizontally journaled in said open bottom, and adjusting means for simultaneously varying the outward position of said cutters and the inclination of said plates.

14. In a digger the combination with a hollow frame having diametrically opposite side apertures in its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, opposite digging plates horizontally journaled in said open bottom, and adjusting means centrally positioned in said frame for simultaneously varying the outward swing of said cutters and the inclination of said plates.

15. In a digger the combination with a hollow frame having diametrically opposite side apertures in its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, opposite digging plates horizontally journaled in said open bottom, and adjusting means centrally positioned in said frame and vertically movable for simultaneously varying the outward swing of said cutters and the inclination of said plates.

16. In a digger the combination with a hollow frame having diametrically opposite side apertures in its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, opposite digging plates horizontally journaled in said open bottom, and adjusting means for simultaneously reducing the outward swing of said cutters and increasing the inclination of said plates.

17. In a digger the combination with a hollow frame having diametrically opposite side apertures in its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, opposite digging plates horizontally journaled in said open bottom, a vertical rod centrally mounted in said frame links, connecting the lower end of said rod to the respective cutters, and links connecting the lower end of said rod to diametrically opposite points on the respective plates.

18. In a digger the combination with a hollow frame having diametrically opposite side apertures in its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, opposite digging plates horizontally journaled in said open bottom, a vertical rod centrally mounted in said frame, links connecting the lower end of said rod to the respective cutters, links connecting the lower end of said rod to diametrically opposite points on the respective plates, and means for locking said rod in any vertical adjustment.

19. In a digger the combination with a hollow frame having diametrically opposite side apertures at its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, a horizontal shaft diametrically traversing said open bottom, a pair of complementary semi-circular digging plates journaled on said shaft, the shaft lying at right angles to the straight edge of each of said plates, a vertically adjustable element centrally mounted in said frame, links connecting the respective cutters to said element, and links connecting opposite ends of the respective plates to said element.

20. In a digger the combination with a hollow frame having diametrically opposite side apertures at its lower end and an open bottom, of cutters vertically hinged by diametrically opposite edges in the respective apertures, a horizontal shaft diametrically traversing said open bottom, a pair of complementary semi-circular digging plates journaled on said shaft, the shaft lying at right angles to the straight edge of each of said plates, a vertically adjustable element centrally mounted in said frame, links connecting the respective cutters to said element, links connecting opposite ends of the respective plates to said element, and means for securing said element in any vertical adjustment.

21. In a digger the combination with a cylindrical frame having diametrically opposite side apertures at its lower end and an open bottom, of arcuate cutters fitting said apertures and vertically hinged therein by diametrically opposite edges, a horizontal shaft diametrically traversing said open bottom, complementary semi-circular digging plates substantially closing said bottom and

journaled upon said shaft, said shaft lying at right angles to the parallel straight edges of said plates, upper and lower supports positioned in the frame and concentrically apertured, a vertically adjustable rod mounted in said supports, links connecting the lower end of said rod with the respective cutters, links connecting the lower end of said rod with opposite ends of the respective plates, means carried by one of said supports for preventing rotation of said rod, and devices for vertically adjusting said rod.

22. In a digger the combination with a cylindrical frame having diametrically opposite side apertures at its lower end and an open bottom, of arcuate cutters fitting said apertures and vertically hinged therein by diametrically opposite edges, a horizontal shaft diametrically traversing said open bottom, complementary semi-circular digging plates substantially closing said bottom and journaled upon said shaft, said shaft lying at right angles to the parallel straight edges of said plates, upper and lower supports positioned in the frame and concentrically apertured, a vertically adjustable rod mounted in said supports, links connecting the lower end of said rod with the respective cutters, links connecting the lower end of said rod with opposite ends of the respective plates, means carried by one of the said supports for preventing rotation of said rod, devices for vertically adjusting said rod, and opposite handles at the upper end of said frame.

23. In a digger the combination with a cylindrical frame having diametrically opposite side apertures at its lower end and an open bottom, of arcuate cutters fitting said apertures and vertically hinged therein by diametrically opposite edges, a horizontal shaft diametrically traversing said open bottom, complementary semi-circular digging plates substantially closing said bottom and journaled upon said shaft, said shaft lying at right angles to the parallel straight edges of said plates, upper and lower supports positioned in the frame and concentrically apertured, a vertically adjustable rod mounted in said supports, links connecting the lower end of said rod with the respective cutters, links connecting the lower end of said rod with opposite ends of the respective plates, means carried by one of said supports for preventing rotation of said rod, devices for vertically adjusting said rod, and opposite handles pivotally mounted at the upper end of said frame and foldable against the same.

24. In a digger the combination with a hollow frame having an open bottom, of a horizontal shaft diametrically traversing said open bottom, complementary semi-circular plates journaled on said shaft, a vertically adjustable rigid rod concentric with the frame, and stiff links connecting diametrically opposite ends of the respective plates to the lower end of said rod.

In testimony whereof I have affixed my signature.

LUDWIG HUESSELMANN.