

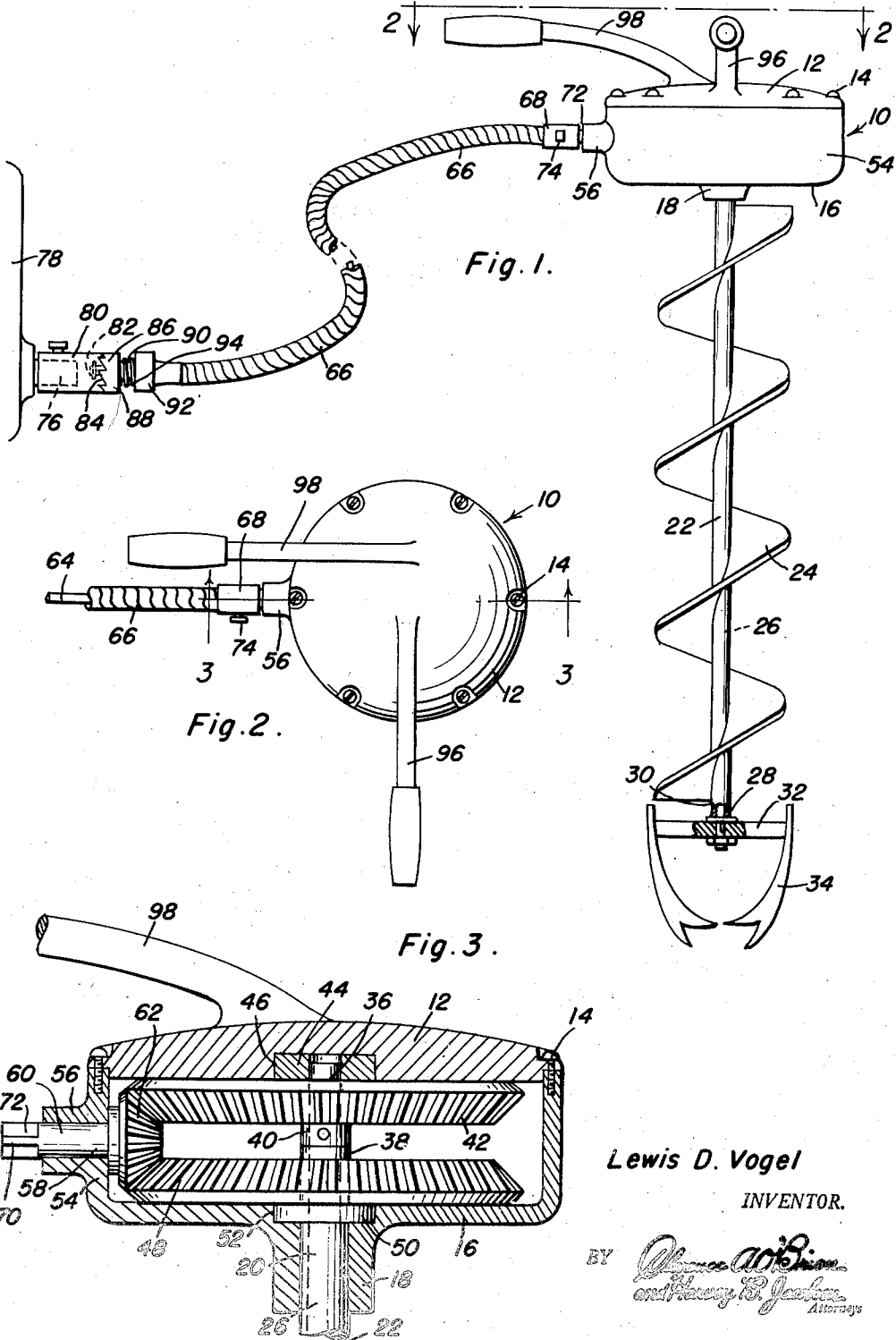
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COMBINATION POST HOLE DIGGER AND EARTH REMOVER

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COMBINATION POST HOLE DIGGER AND
EARTH REMOVER

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4 Claims. (Cl. 255—19.1)

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This invention relates to new and useful improvements in post hole diggers and the primary object of the present invention is to provide a post hole digger including novel and improved means for digging or boring a hole or the like and simultaneously removing the dirt from the hole being dug.

Another important object of the present invention is to provide a combination hole digger and dirt remover and embodying novel and improved means for operatively connecting the same to the power take-off of a tractor or the like in a convenient manner.

A further object of the present invention is to provide a post hole digger that is extremely small and compact in structure and which may be quickly and readily manipulated for boring post holes or the like in a selected vertical or vertically inclined position in the ground surface.

A still further aim of the present invention is to provide a post hole digger that is simple and practical in construction, strong and reliable in use, neat and attractive in appearance, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the present post hole digger applied to the power take-off of a tractor, and with parts of said digger broken away and shown in section;

Figure 2 is a fragmentary top plan view taken substantially on the plane of the section line 2—2 of Figure 1; and,

Figure 3 is an enlarged longitudinal vertical sectional view taken substantially on the plane of section line 3—3 of Figure 2.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents a preferably annular cup or dish-like housing generally, having a removable closure 12 secured thereto by fasteners or the like 14. Projecting outwardly from the lower wall 16 of the housing 10, is a journal sleeve 18 that rotatably supports the upper inner end 20 of a tubular shaft 22 having a spiral blade 24 rigidly secured thereon.

Journalled for rotation in the tubular shaft 22, is a driven shaft 26, the lower end 28 of which

projects outwardly from the lower end 30 of the tubular shaft 22. A support plate 32 removably secured on the lower end 30 of the shaft 26, rigidly supports a pair of arcuate earth digging members or blades 34. The upper end 36 of the driven shaft 26 projects outwardly from the upper end 38 of the tubular shaft 22, and fixedly supports an adjustable spacer collar or ring 40 that retains the end 36 of the driven shaft 26 spaced relative to the upper end 38 of the tubular shaft 22.

Fixed on the upper end 36 of the driven shaft 26, is an upper bevelled gear 42 having a central hub portion 44 that is rotatably positioned in an annular recess 46 provided in the closure 12. This gear 42 directly opposes a further bevel gear 48 that is fixed on the upper end 38 of the tubular shaft 22, and which is provided with a hub portion 50 that is rotatably mounted in an annular recess 52 provided in the bottom wall 16 of the housing 10.

Projecting outwardly from the annular flanged portion 54 of the housing 10, is a sleeve 56 preferably integrally formed with the housing 10. The axial bore provided in the sleeve aligns an opening 58 provided in the flanged portion 54. Journalled for rotation in the sleeve 56 and the opening 58, is a cylindrical bar 60 that fixedly supports a reduced bevel gear 62 that intermeshes with the gears 42 and 48. It should be noted, that the gears 42 and 48 are so arranged that the same will be actuated by the gear 62, to effect an opposite rotation of the driven shaft 26 and the tubular shaft 22, in order to reduce the normal vibration prevalent in the housing 10 during the use of the present post hole digger.

The numeral 64 represents a flexible driving shaft that is loosely embraced by a flexible protective and wear covering 66. A socket 68 fixed on one end of the flexible shaft 64 is provided with an internal groove or key-way (not shown) that slidably engages the key 70 fixedly carried by the outer end 72 of the cylindrical bar 60. A fastener 74 is employed for securing the socket 68 to the outer end 72 of the bar 60.

Removably secured for rotation with the power take-off shaft 76 of a tractor 78, is a sleeve 80 that rotatably supports the free end 82 of the flexible shaft 64. The outer toothed edge 84 of this sleeve 80 is normally interdigitated with the toothed inner edge 86 of a ring 88 that is provided with a tubular shank 90 which is slidably mounted on the shaft 64 but which is also fixed thereon to rotate with the flexible shaft 64. Adjustably mounted on the shaft 64, is a lock nut or the like 92, between which and the ring 88 there is

biased a coil spring 84 that normally retains the edges 84 and 86 in an engaged position for rotation of the flexible driving shaft 64 by the power take-off shaft 76. Should the blade 24 or blades 34 engage a relatively hard element or surface during the digging of a hole, the toothed edges 84 and 86 will tend to disengage, thereby sounding an alarm or effecting a noise that will indicate to the operator that the blades 24 or 34 are engaging other than a soft ground surface.

Rigidly secured to the closure 12 is a pair of elongated handles 86 and 88, the longitudinal axes of which are disposed at right angles to each other and to the longitudinal axis of the tubular shaft 22, to facilitate the convenient handling of the device for digging post holes or the like.

Obviously, the blades 34 will dig into the ground surface and the auger or blade 24 will remove the dirt dug by the blades 34 without permitting the dirt to fall back into the hole provided by the blades 34 to thus produce a manually operated earth digger and remover that is conveniently handled by a single person.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the construction, operation and advantages of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention what is claimed as new is:

1. A post hole digger comprising an auger having a tubular shaft, a driven shaft journaled for rotation in said tubular shaft, a housing in which the upper ends of said driven shaft and said tubular shaft are rotatably mounted, hand gripping means carried by said housing, gear means disposed within said housing and operatively connected to said tubular shaft and said driven shaft for rotation of said auger in an opposite direction

from said driven shaft, an earth digging member fixed on said driven shaft, and means operatively connecting said gear means to the power take-off of a tractor, said gear means including a drive beveled gear carried by the driving shaft, a first driven beveled gear carried by said tubular shaft, and a second driven beveled gear on said driven shaft and arranged oppositely than said first gear, said driven gears both engaging said drive beveled gear.

2. The combination of claim 1 wherein said last mentioned means includes a flexible shaft.

3. A post hole digger comprising an auger having a tubular shaft, a casing rotatably supporting one end of the tubular shaft, a driven shaft journaled for rotation in said tubular shaft, a pair of earth digging blades carried by the driven shaft, a driving shaft carried by the casing supporting a beveled gear that is located in the casing, a beveled gear carried by each of the driven shaft and the tubular shaft and positioned in the casing, said beveled gears carried by each of the driven and tubular shafts engaging said first mentioned beveled gear for rotation of said driven shaft and said tubular shaft, and a flexible shaft operatively connecting said driven shaft to the power take-off shaft of a tractor.

4. The combination of claim 3 and a clutch mechanism controlling said flexible shaft.

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