March 12, 1957 E. J. FREEMAN 2,784,944

EARTH BORING AUGER AND HEAD THEREFOR

Filed July 10, 1953

Fig. 1.

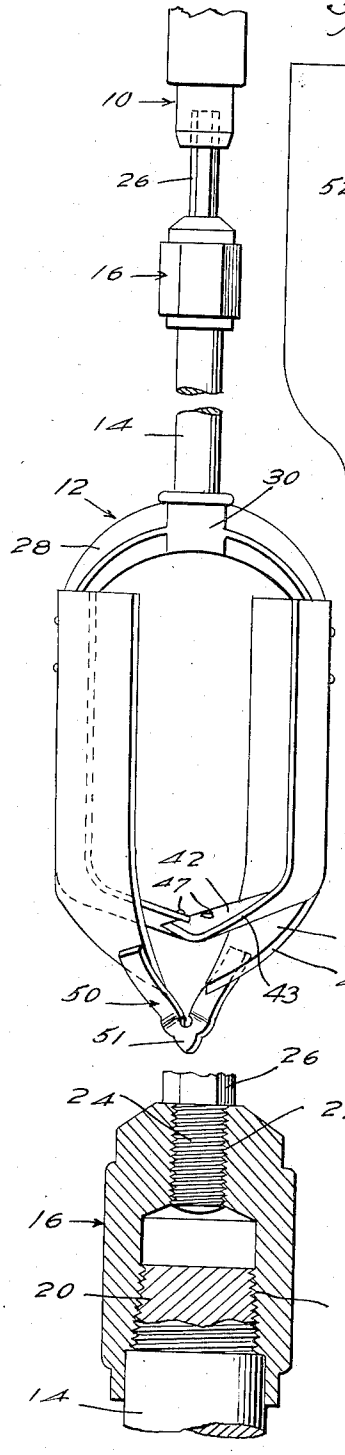


Fig. 4.

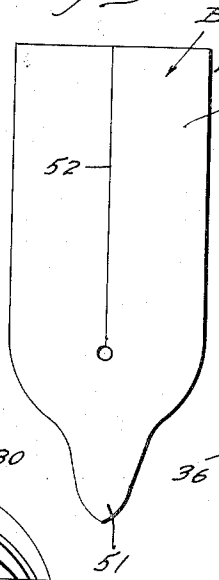
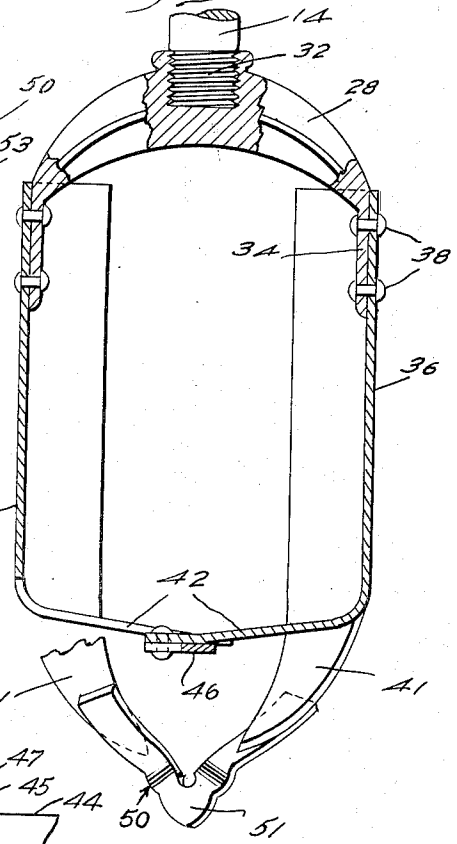


Fig. 2.



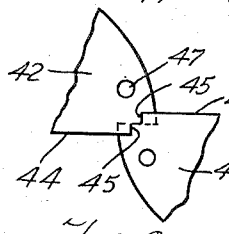


Fig. 3.

Fig. 6.

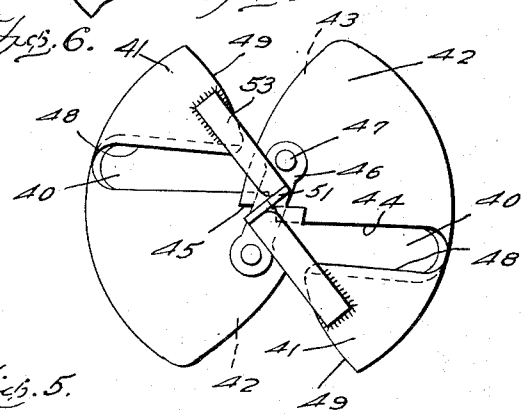


Fig. 5.

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ATTY.

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EARTH BORING AUGER AND HEAD THEREFOR

Eugene J. Freeman, Van Nuys, Calif.

Application July 10, 1953, Serial No. 367,160

1 Claim. (Cl. 255—67)

This invention relates generally to earth boring tools and is directed particularly to improvements in tools of this character designed for forming post holes or other holes in the earth.

The present invention is an improvement upon my Post Hole Digger Attachment for Electric Drills forming the subject matter of application Serial No. 310,211, filed September 18, 1952, and now abandoned and a principal object of the present invention is to provide a novel lead member for such digger whereby the digger or auger is readily started into the ground without necessity of having to apply pressure thereto in addition to the pressure which would be applied by the weight of the tool itself.

Another object of the invention is to provide in an earth auger or digger attachment for electric and other types of rotary drills, a lead member which is formed in a novel manner and is readily attached to the blades of the earth drilling tool or auger.

Other objects and advantages of the invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

In the drawing:

Figure 1 is a view in elevation of an earth digger or auger constructed in accordance with the present invention and showing the starter member attached thereto.

Figure 2 is a detail view on an enlarged scale showing the shovel members in longitudinal section, together with sectioned portions of the connecting yoke between the shovels.

Figure 3 is a bottom plan view of the invention applied to the earth auger.

Figure 4 is a plan view of the blank from which the starter member is formed.

Figure 5 is a detail sectional view of the head member employed for connecting the tool carrying shaft with the chuck of a rotary power tool.

Fig. 6 is a fragmentary plan view of the inner ends of the upper pair of blades showing how they are notched.

Referring now more particularly to the drawing the numeral 10 generally designates a conventionally illustrated chuck such as forms a part of any standard electric drill with which the present tool is designed for attachment.

The earth auger or post hole digging tool comprises a head portion which is generally designated 12 and with which is connected one end of a shaft 14.

The opposite end of the shaft 14 is connected in a suitable manner with the drill chuck 10. The preferred means of connecting the tool shaft with the chuck is here shown as comprising a tubular head 16 of hexagonal

shape and having a tapered threaded socket 18 in one end in which is threadably engaged the tapered threaded end portion 20 of the shaft. The opposite end of the head 16 has a threaded axial bore 22 in which is threadably engaged the threaded stem portion 24 of a hexagonal coupling bar 26, the opposite end of the bar being secured in the power tool chuck in the manner illustrated.

As previously stated, the means here shown for connecting the auger with the power tool is preferred but it is to be understood that the invention is not limited to this type of coupling.

The auger head comprises an arcuate yoke 28 which is provided midway of its ends with an internally threaded socket 30 in which the threaded lower end portion 32 of the shaft 14 is engaged as shown in Figure 2.

The two ends of the yoke 28 are provided with the longitudinally extending terminal attaching plates 34, which plates are in spaced parallel relation and extend longitudinally with respect to the shaft 14 and away from or beyond the lower end thereof.

The auger head also includes the two elongate shovels 36, each of which is transversely curved or is of arcuate cross section and each shovel has one end positioned with its concave face against the outer side of an attaching plate 34, as shown, to which it is securely fastened by rivets 38, or in any other suitable manner.

The lower, or digging ends of the shovels 36, are each provided with a longitudinal slot 40 which is located upon one side of the longitudinal center of the shovel and the two portions of the shovel which are thus formed by the slot, are bent inwardly to provide the two blades 41 and 42.

The blades 42 are materially larger than the blades 41 and are of greater length than the blades 41 as is clearly shown in Figures 1 and 2. These longer blades 42 are each formed to provide a curved cutting edge 43 and a straight radial edge 44, which is the edge forming one side of the slot 40. The inwardly directed corners of the blades 42, where the edges 43 and 44 intersect, are cut out to form notches 45. The tip of each blade 42 is notched by making two intersecting cuts, each substantially normal to one of the edges 43 and 44 producing an angular notch with straight sides which are approximately perpendicular to each other, as shown in Fig. 6. These inner corners of the blades 42 are brought together in mutually overlapping relation so that the notches 45 fit one into the other. The blades cross each other, so that the extreme inner tip of each blade is spaced a short distance below the other blade. The back sides of notches 45, which are parallel to edges 44, bear against each other.

In addition to the interlocking connection of the notches 45, of the blades 42, there is provided a short coupling strap 46, which extends across the overlapped notched corners of the blades and is riveted, at its ends, as indicated at 47 to the blades 42.

As is clearly shown in Figures 1 and 2, the larger and connected, blades 42 are extended inwardly toward the longitudinal center of the auger at a slightly obtuse angle to the length of the shovels of which they form a part. However, the shorter blades 41 extend inwardly and downwardly on a relatively wide arc as clearly shown in Figures 1 and 2.

Each of the shorter blades 41 has a straight advancing cutting edge 48 which forms the opposite side of the slot 40 from the straight edge 44 and a trailing curved edge 49.

When the auger is rotated clockwise (counterclockwise when viewed as in Fig. 3) the cutting edges of the shorter blades 41 will work into the earth in advance of the longer blades 42, the wide sweeping cutting edges 43 of which larger and longer blades cut away the center part

of the hole being formed after the shorter blades have cut in around the axial center of the hole.

In order to facilitate the starting of the auger into the earth and also the maintenance of the auger on a straight cutting path, the ends of the shorter blades **41** are connected by the lead member which is generally designated **50**.

This lead member **50** is formed from a single elongate sheet of metal of suitable weight which is illustrated in Figure 4, and which is generally designated B. In the formation of the lead member the piece of metal or blank B is suitably tapered at one end to provide a point **51** and it is split from the center of the opposite end edge, longitudinally as indicated at **52** through the major portion of its length, the inner end of the split **52** lying on a transverse line passing approximately across the points along the longitudinal edges of the blank where the taper for the point **51** begins.

The splitting of the blank along the line **52** thus forms two elongate wings **53** and these wings are pulled apart as shown in Figures 1 and 2 so that the lead member assumes substantially a **V** form.

The outer ends of the wings **53** are secured against the underfaces of the short blades **41** as shown, so as to place the point **51** on the longitudinal center of the auger, and of course, directed away from the connected blades **42** or in the direction in which the auger is to travel.

From the foregoing it will be seen that by the provision of the pointed or substantially **V**-shaped lead member **50**, the auger when placed in position on the ground and rotated, will maintain its position and start the hole exactly in the desired spot due to the centering or leading action of the lead member **50**. Lead member **50** has a tapered end section **51** which is relatively thin and has a sharp point. It penetrates the ground easily because of its shape and small size, and digs a hole in advance of blades **41**. Once in the ground, the leading corner at each side edge of section **51** acts as a cutting edge. As the lead member descends, these leading corners scrape away the soil to dig a hole of increasing diameter and allow the lead member to advance. Because of the taper to the sides of section **51**, lead member digs both vertically and horizontally as the auger rotates. At the same time the lead member fits snugly within the bore hole it makes to resist any lateral movement of the auger as a whole, thus assisting the operator to hold it in a selected spot and start the hole properly. Likewise the member **50** will continue to function to keep the auger in a straight path during its penetration into the earth. Thus it will be seen that in order to start the auger it is not necessary for the operator to apply any special pressure to keep the auger in starting position.

I claim:

An earth auger comprising: a yoke; a shaft secured at one end to the center of the yoke and having a longitudinal axis about which the auger is rotated; a pair of elongate shovels each secured at one end to one end of the yoke and extending away from the yoke in a direction generally parallel to said axis; a pair of radially inwardly directed blades carried by each shovel at the end thereof away from the yoke, one blade of each pair being more remote than the other from the yoke; a strap crossing the axis of rotation and joining the inner ends of the blades of each pair nearer to the yoke; and a pointed lead member connecting the inner ends of the more remote blades of each pair, said lead member comprising a flat, thin terminal section having a point located on the axis of rotation of the auger and two flat wing members extending in opposite directions from the flat sides of the terminal portion, each wing member sloping upwardly and lying against the outer face of one of the more remote blades to which the wing member is secured.

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