Nov. 24, 1953 J. F. ZEISER 2,660,035

FENCE POST DRIVER AND DIGGER

Filed April 7, 1950 3 Sheets-Sheet 1

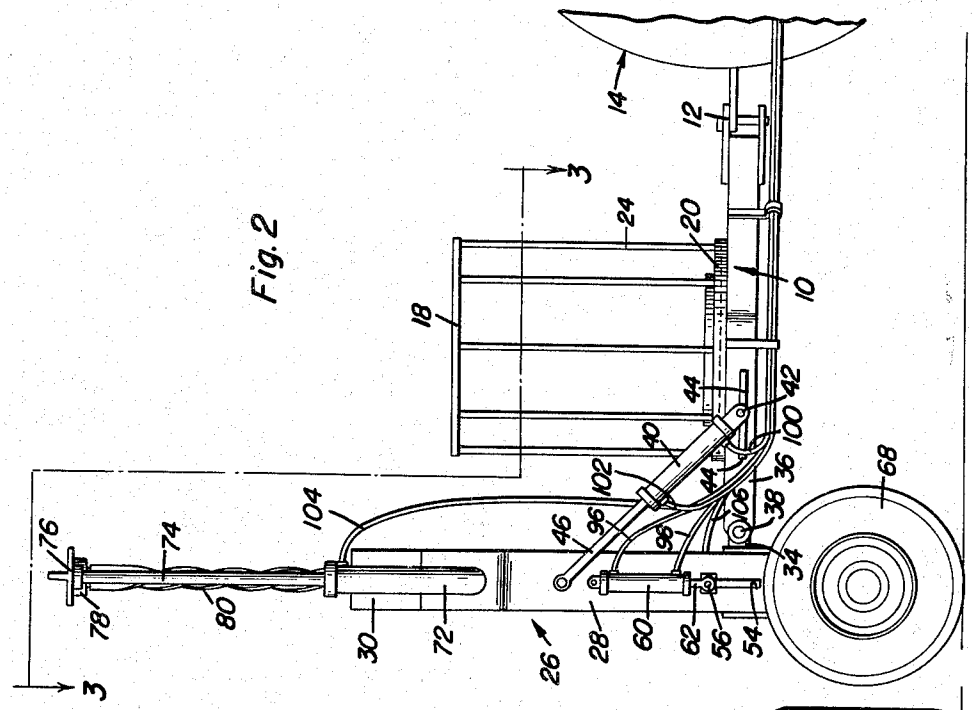


Fig. 2

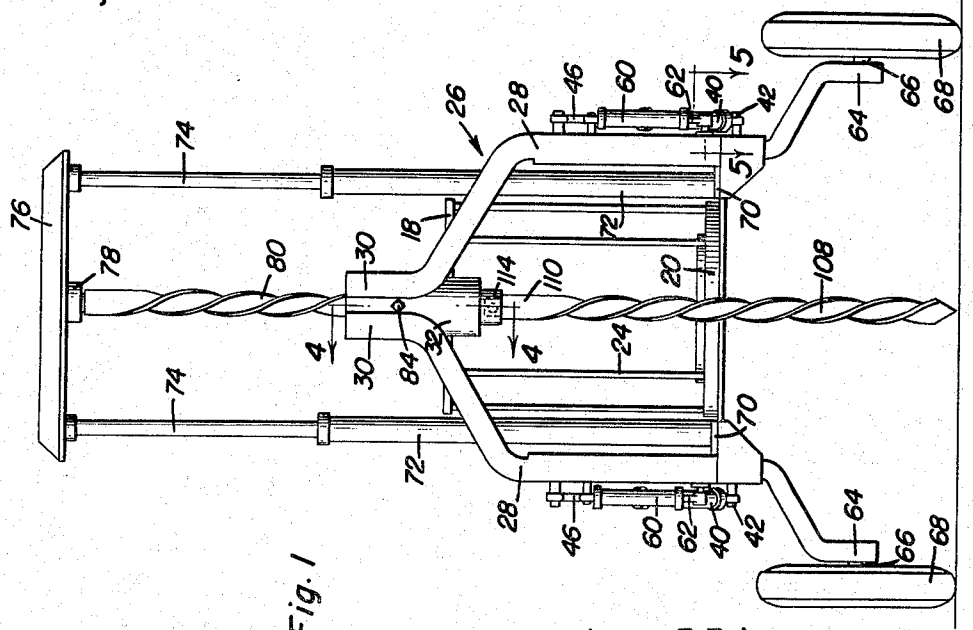


Fig. 1

James F. Zeiser INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson Attorneys

Nov. 24, 1953 J. F. ZEISER 2,660,035

FENCE POST DRIVER AND DIGGER

Filed April 7, 1950 3 Sheets-Sheet 2

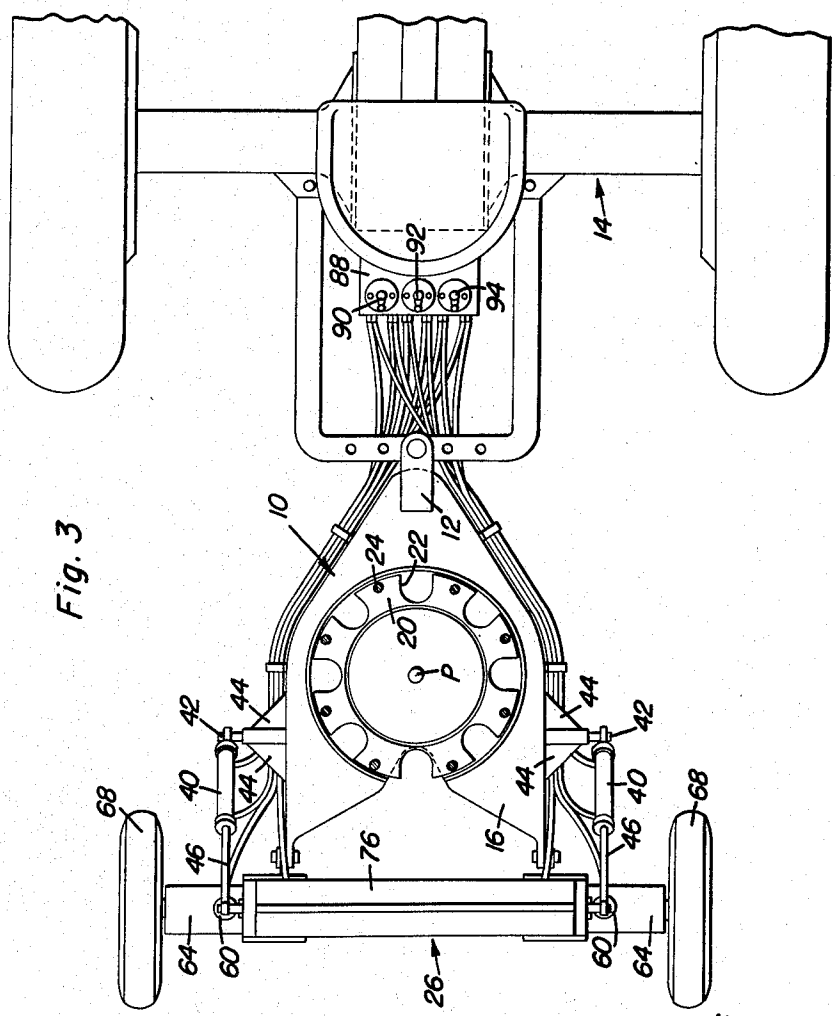


Fig. 3

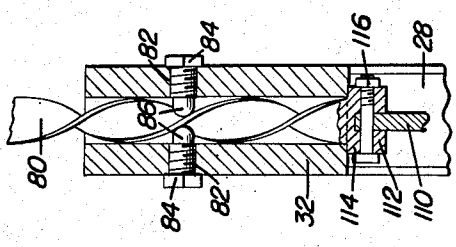


Fig. 4

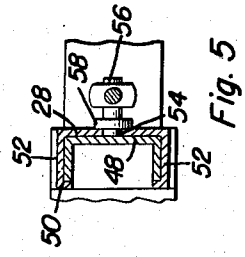


Fig. 5

James F. Zeiser
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Nov. 24, 1953 J. F. ZEISER 2,660,035

FENCE POST DRIVER AND DIGGER

Filed April 7, 1950 3 Sheets-Sheet 3

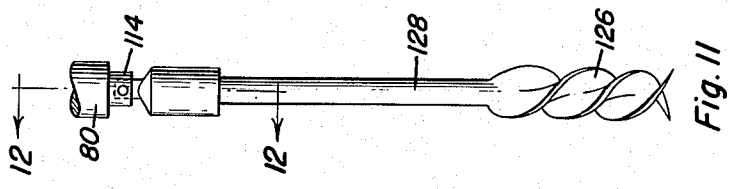


Fig. 11

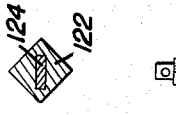


Fig. 10

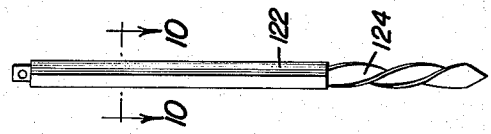


Fig. 9

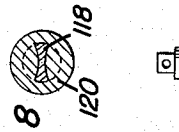


Fig. 8

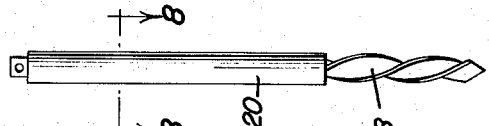


Fig. 7

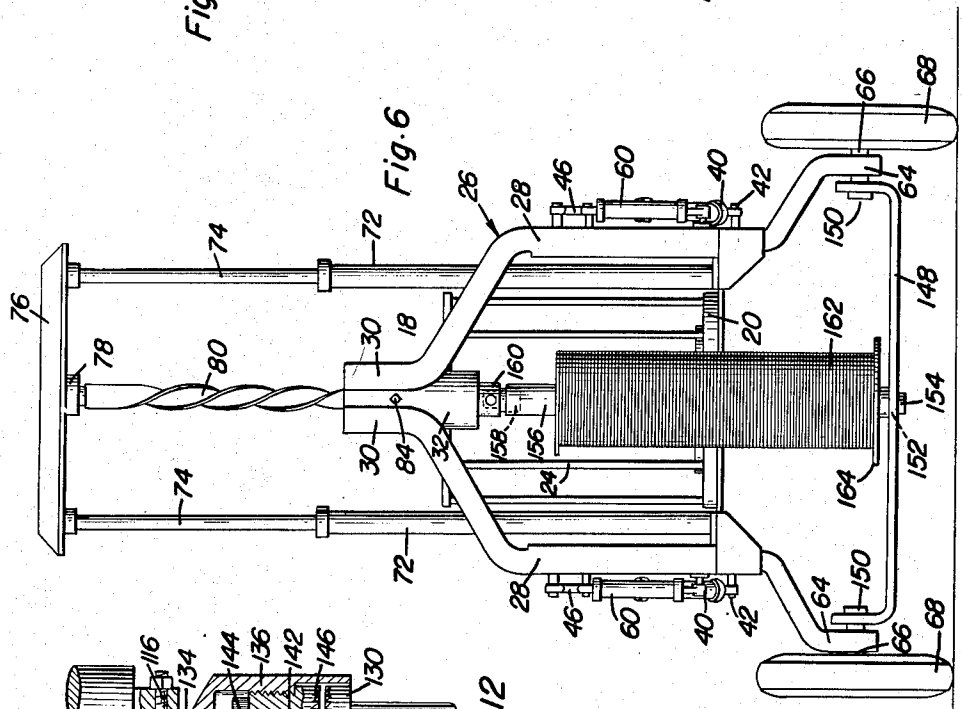


Fig. 6

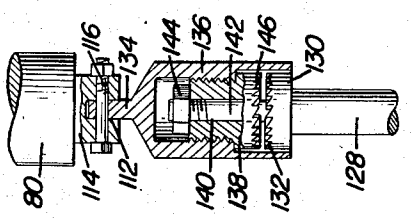


Fig. 12

James F. Zeiser INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson Attorneys

Patented Nov. 24, 1953

2,660,035

UNITED STATES PATENT OFFICE

2,660,035

FENCE POST DRIVER AND DIGGER

James F. Zeiser, Lafayette, Ind.

Application April 7, 1950, Serial No. 154,549

10 Claims. (Cl. 61—73)

1

This invention relates to new and useful improvements in post hole diggers and the primary object of the present invention is to provide a fence post and an apparatus for driving or screwing the fence post into or out of the ground.

Another important object of the present invention is to provide a device that will speed up construction and removal of fences, especially on farms where crop rotation is in effect and fences are changed from one acreage to another every few years.

Another object of the present invention is the provision of a fence post installer that operates on a ratchet principle pressing and screwing the fence post into the ground.

A further object of the present invention is to provide a device for drilling a hole or for installing fence posts including a support together with adjustable means for retaining the support in a vertical or vertically inclined position so that holes may be dug or posts installed in a vertical position on level or unlevel ground.

A still further aim of the present invention is to provide a fence post and an apparatus for installing the fence post or for digging holes that is simple and practical in construction, strong and reliable in use, small and compact in structure, efficient and durable in operation, inexpensive to manufacture, service and operate, 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 rear elevational view of the present invention;

Figure 2 is a side elevational view of Figure 1 and showing the invention attached to the rear of a tractor;

Figure 3 is a sectional view taken substantially on the plane of broken section line 3—3 of Figure 2;

Figure 4 is an enlarged detail sectional view taken substantially on the plane of section line 4—4 of Figure 1;

Figure 5 is an enlarged detail sectional view taken substantially on the plane of section line 5—5 of Figure 1;

2

Figure 6 is a view similar to Figure 1 but showing a cable support on the device rather than a post;

Figure 7 is an elevational view of one type fence post used in the present invention;

Figure 8 is an enlarged sectional view taken substantially on the plane of section line 8—8 of Figure 7;

Figure 9 is an elevational view of another type of fence post used in the present invention;

Figure 10 is an enlarged sectional view taken substantially on the plane of section line 10—10 of Figure 9;

Figure 11 is an elevational view of a digger used in the present invention and attached to the lower end of the feed screw; and

Figure 12 is an enlarged sectional view taken substantially on the plane of section line 12—12 of Figure 11.

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 frame the forward end of which is coupled, as at 12, to the rear end of a tractor 14. The frame 10 includes a platform or base plate 16 on which there is journaled for rotation a magazine composed of upper and lower plates 18 and 20 each having circumferentially spaced recesses 22. The plates 18 and 20 are joined by vertical rods 24. Suitable anti-friction means are received between the plate 20 and the platform 16 to permit convenient manual rotation of the magazine about its pivot P.

A support 26 is mounted for vertical swinging movement on the rear end of the frame 10 and includes a pair of channel members 28 whose upper portions are bent inwardly and then upwardly to provide offsets 30 between which there is suitably fixed a guide sleeve 32.

Ears 34 project laterally from the members 28 and are attached to the rear ends of the frame forming members 36 by horizontal pivots 38.

An adjustable connection is provided between the frame 10 and the support 26 so that the support may be retained in a selected rotated position about its pivots 38. This means consists of a pair of pumps 40 that are mounted on horizontal pivot pins or shafts 42 extending from the members 36. The pins 42 are strengthened by webs 44 that are secured to the pins and to the members 36. The pumps 40 include piston rods

46 that are pivoted to the channel members 28.

Vertical side members 48 are slidably received in the channel members 28. The members 48 are channel shaped and their edges contact inturned flanges 50 on the leg portions 52 of the channel members 28, as shown best in Figure 5 of the drawings. The web portions of the channel members 28 are provided with longitudinal slots 54 that slidably receive guides or rods 56 fixed to the web portions of the members 48 and on which there is mounted collars 58.

Hydraulic pumps 60 are pivoted on the channel members 28 and include piston rods 62 that are attached to the rods 56 whereby the side members 48 may be selectively raised or lowered. The lower portions of the side members 48 are bent outwardly and then downwardly to form offsets 64 that support horizontally disposed stub axles 66 on which there are mounted wheels 68.

Support plates 70 at the lower ends of the channel members 28 support upwardly extending pumps 72 having piston rods 74 the upper ends of which are joined by a cross-head 76. Medially the ends of the cross-head 76 there is provided a socket 78 that rotatably supports the upper cylindrical end of a feed screw or spiral member 80.

The guide sleeve 32 is provided with a pair of diametrically opposed internally threaded openings 82 that receivably engage threaded rods or bolts 84 having rounded inner end portions 86 that will engage the screw 80 to impart rotation to the screw as the screw is raised or lowered in the guide sleeve. Obviously, the sleeve 32 could be internally threaded for the same purpose.

A valve housing 88 is mounted on the rear of the tractor 14 and is connected to the hydraulic system of the tractor. Three two-way manually operated valves 90, 92 and 94 are positioned in the housing 88. A pair of conduits 96 and 98 is associated with each of the pumps 60 and enter the housing 88, and the flow of fluid through these conduits is controlled by the valve 90. Another pair of conduits 100 and 102 is associated with each of the pumps 40 and these conduits enter the housing 88 and the flow of fluid through the conduits 100, 102 is controlled by the valve 92. A further pair of conduits 104 and 106 is associated with each of the pumps 72 and these conduits also enter the housing 88 and the flow of fluid through the conduits 104 and 106 is controlled by the valve 94.

The valves 90, 92 and 94 are independently operated for selectively raising and lowering the side members 48 and the wheels 68; pivotal adjustment of the support 26; and for selectively raising and lowering the screw 80, respectively. Obviously, the pair of conduits associated with each pump communicate with the respective ends of the pumps so that the piston rods can be selectively moved into or out of their cylinders.

The present invention embodies a metallic spiral fence post 108 having an upper multi-sided end portion 110 that enters a multi-sided recess 112 in the enlarged lower end 114 of the screw 80 (see Figure 4). The end portion 110 is secured in the recess 112 by a removable fastener 116 that extends through the end 114 and an aperture in the end portion 110.

In practical use of the present invention, the support is first adjusted to a vertical position, regardless of the slope of the ground, and the wheels 68 are raised or lowered depending on the length of the fence post. The rods 74 are raised and the fence post attached to the screw by the fastener 116.

As the rods 74 are lowered, the members 84 impart rotation to the screw 80 and hence the post 108 and the post 108 is thereby screwed into the ground a predetermined amount, whereupon the fastener 116 is removed.

The tractor and frame are then moved and another fence post removed from the magazine and attached to the screw. The process is repeated until a predetermined number of posts have been driven.

Existing posts 108 can be removed by lowering the screw 80 and attaching the screw to the upper end of the fence post that is to be removed.

Figures 7 and 8 illustrate another type of fence past 118 the exposed portion of which is covered with a concrete coating 120. Figures 9 and 10 illustrate a fibrous fence post 122 having a spiral core 124 whose lower end extends below the post for penetrating the ground.

The apparatus described is also suitable for digging post holes, and in such an instance there is provided an auger 126 having an elongated shank 128 that supports a clutch member 130 having a clutch face 132. The recess 112 receives the multi-sided end 134 of an internally threaded socket 136, and the end 134 is secured in the recess 112 by the fastener 116.

Another clutch member 138 is threaded in the socket 136 and includes an axial bore 140 that slidably receives the upper reduced end 142 of the shank 128. A nut 144 is threaded on the end 142 and rests against the upper end of the clutch member 138.

The clutch face 146 of the member 138 is spaced from the clutch face 132 of the member 130 until the ground penetrating member 126 begins to enter the ground, at which time the clutch face 146 is lowered into engagement with the clutch face 132 and the member 126 rotates with the screw 80. As the screw 80 is raised, the clutch faces are disengaged so that soil will be raised by the auger 126.

Since wire is to be trained between adjacent posts, suitable attachments are included for such a purpose, as shown in Figure 6. These attachments include a U-shaped support 148 whose leg portion are received on extensions 150 on the offsets 64. The web portion of the support 148 is provided with a circular opening 152 that rotatably receives the lower, reduced, circular end 154 of a column 156. The upper end of the column 156 provided with a circular recess 158 in which there is received a cylinder 160 that is attached to the lower end of the screw 80.

Wire 162 is coiled about the column 156 and is supported upon a plate 164 attached to the lower end of the column. As the tractor and the frame are moved, the wire 162 being attached to a post, will unwind since the column 156 can rotate freely.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding 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 as 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 fence post driver and digger comprising a frame, a support pivoted on said frame for vertical swinging movement, a pair of side members slidably carried by the support, wheels supported on said side members, means adjustably connecting said side members to the support for raising and lowering the side members and the wheels, a guide carried by the support, a vertically slidable holder on said support and including a rotatable spiral screw, means in the guide for imparting rotation to the screw during raising or lowering of the holder, means adjustably securing the support to the frame for retaining the holder in a selected rotated position, and a ground penetrating member detachably secured to and rotatable with said screw.

2. A fence post driver and digger comprising a frame, a support pivoted to the frame for vertical swinging movement, an adjustable connection between the support and the frame for retaining the support in a selected rotated position, a pair of vertical side members slidably carried by the support, wheels on the lower ends of said side members, and another adjustable connection between said side members and said support for raising and lowering the side members and said wheels.

3. A fence post driver and digger comprising a frame, a support pivoted to the frame for vertical swinging movement, an adjustable connection between the support and the frame for retaining the support in a selected rotated position, a pair of vertical side members slidably carried by the support, wheels on the lower ends of said side members, another adjustable connection between said side members and said support for raising and lowering the side members and said wheels, and means slidably carried by the support for driving a post into the ground, said last named means including a feed screw, a guide sleeve on said support slidably and rotatably receiving said screw, and means on said sleeve for imparting rotation to said screw during sliding of said screw.

4. A fence post driver and digger comprising a frame, a support pivoted to the frame for vertical swinging movement, an adjustable connection between the support and the frame for returning the support in a selected rotated position, a pair of vertical side members slidably carried by the support, wheels on the lower ends of said side members, another adjustable connection between said side members and said support for raising and lowering the side members and said wheels, a pair of spaced parallel cylinders forming part of said support, a pair of rods slidably received in said cylinders, fluid pressure means operatively connected to the cylinders for selectively raising and lowering the rods, a cross-head joining the rods, a supporting member journaled for rotation on said cross-head and slidable with said rods and said cross-head, and means carried by said support for imparting rotation to said supporting member during sliding of said supporting member.

5. The combination of claim 2 wherein said support includes a pair of spaced parallel channel members, said side members being channel shaped and received in said channel members, said adjustable connection between said support and said side members including a guide secured to each side member, said channel members having longitudinal slots receiving said guides, and a telescoped member between each of said guides and each of said channel members.

6. The combination of claim 5 wherein said telescoped member includes a pump mounted on each channel member, and each of said pumps having a piston rod, said piston rods being attached to said guides.

7. A fence post driver and digger comprising a frame, a support pivoted on said frame for vertical swinging movement, a pair of side members slidably carried by the support, wheels supported on said side members, means adjustably connecting said side members to the support for raising and lowering the side members and the wheels, a guide carried by the support, a vertically slidable holder on said support and including a rotatable spiral screw, means in the guide for imparting rotation to the screw during raising or lowering of the holder, means adjustably securing the support to the frame for retaining the holder in a selected rotated position, a ground penetrating member, and means securing said ground penetrating member to said screw for rotation of the ground penetrating member with the screw only while the ground penetrating member is being driven into the ground.

8. A fence post driver and digger comprising a frame, a support pivoted on said frame for vertical swinging movement, a pair of side members slidably carried by the support, wheels supported on said side members, means adjustably connecting said side members to the support for raising and lowering the side members and the wheels, a guide carried by the support, a vertically slidable holder on said support and including a rotatable spiral screw, means in the guide for imparting rotation to the screw during raising or lowering of the holder, means adjustably securing the support to the frame for retaining the holder in a selected rotated position, a ground penetrating member, a socket secured to and rotatable with the screw, a clutch member threaded in said socket and having a clutch face, said ground penetrating member having an upper end slidably carried by the clutch member, and a further clutch member fixed to said ground penetrating member and having a clutch face for engaging the first named clutch face as the ground penetrating member engages the ground and the first member clutch member is lowered with the screw toward the clutch member on the ground penetrating member.

9. A fence post driver and digger comprising a frame having a means for attaching the same to a towing vehicle, a support mounted on the frame and including a pair of channel-shaped members pivoted at their lower ends to the frame for vertical swinging movement, said channel members including lower straight portions facing each other, channel-shaped side members slidably received in the lower straight portions and including lower offset ends, a wheel mounted on each of said lower offset ends, an adjustable connection between the support and the frame for adjusting the support about its pivot, and another adjustable connection between the support and the side members for adjusting the wheels and side members relative to each other.

10. A fence post driver and digger comprising a frame having a means for attaching the same to a towing vehicle, a support mounted on the frame and including a pair of channel-shaped members pivoted at their lower ends to the frame for vertical swinging movement, said channel members including lower straight portions facing

each other, channel-shaped side members slidably received in the lower straight portions and including lower offset ends, a wheel mounted on each of said lower offset ends, an adjustable connection between the support and the frame for adjusting the support about its pivot, another adjustable connection between the support and the side members for adjusting the side members within said lower straight portions, and means carried by the support for driving a post into the ground, said post driving means including a cross-head, and a pair of pumps mounted on the frame and extending through the support and having piston rods attached to said cross-head.

JAMES F. ZEISER.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
529,401	McCoy et al.	Nov. 20, 1894
669,340	Fyfe	Mar. 5, 1901
872,763	Smith	Dec. 3, 1907
1,052,359	McDonald	Feb. 4, 1913
1,397,324	Moore	Nov. 15, 1921
2,239,024	Vance	Apr. 22, 1941
2,369,910	Morgan	Feb. 20, 1945
2,384,557	Piper	Sept. 11, 1945
2,474,377	Shurtleff	June 28, 1949