

Sept. 20, 1971

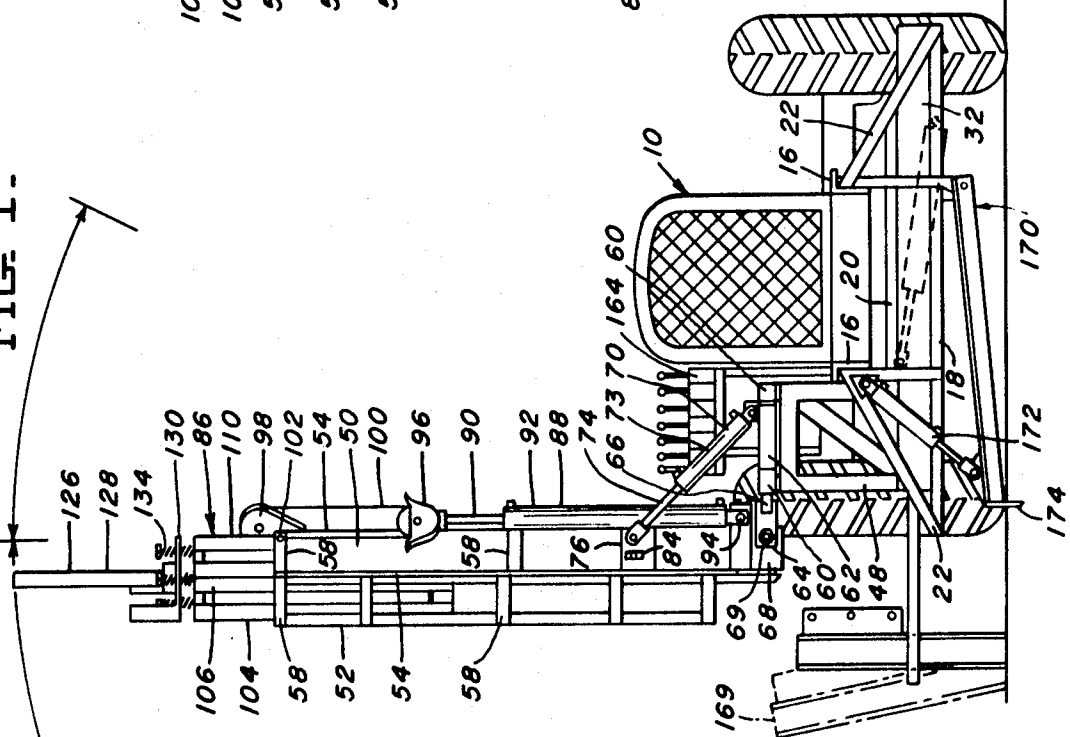
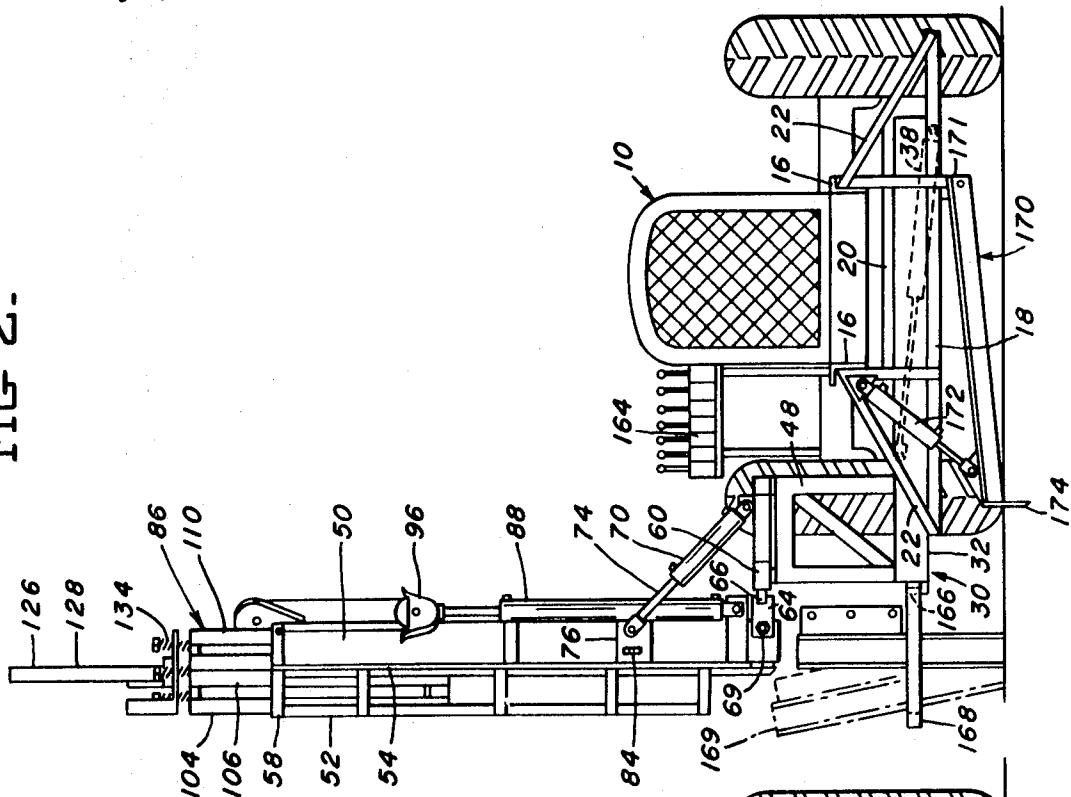
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3,605,912

POST SETTING APPARATUS

Filed May 5, 1970

6 Sheets-Sheet 1



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POST SETTING APPARATUS

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FIG. 3.

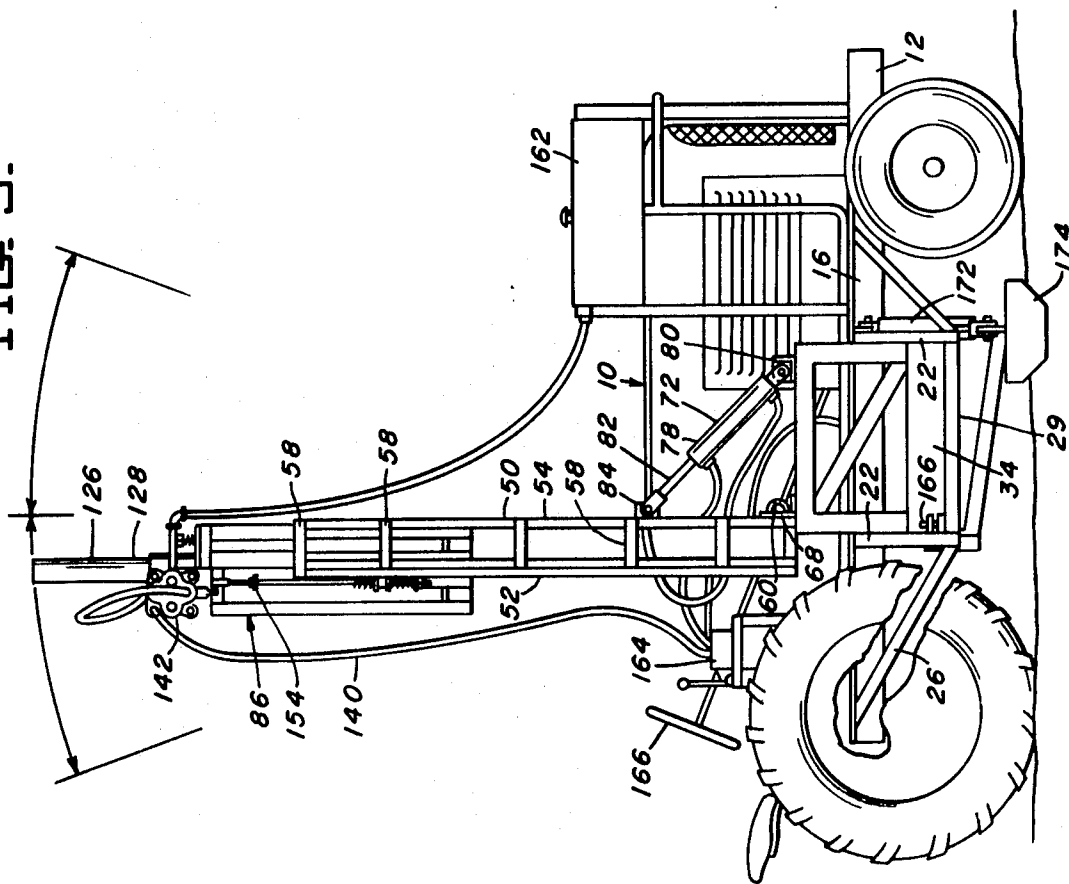
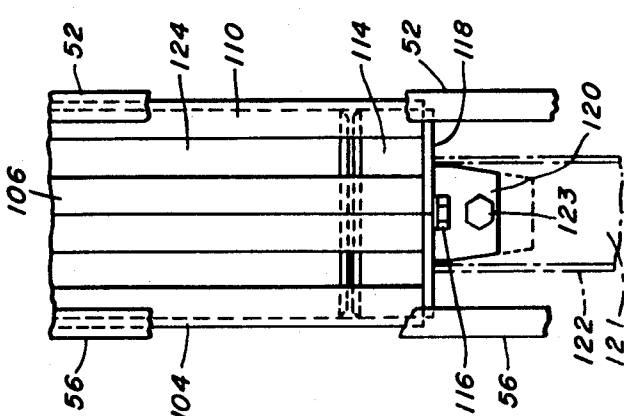


FIG. 8.



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POST SETTING APPARATUS

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FIG. 4.

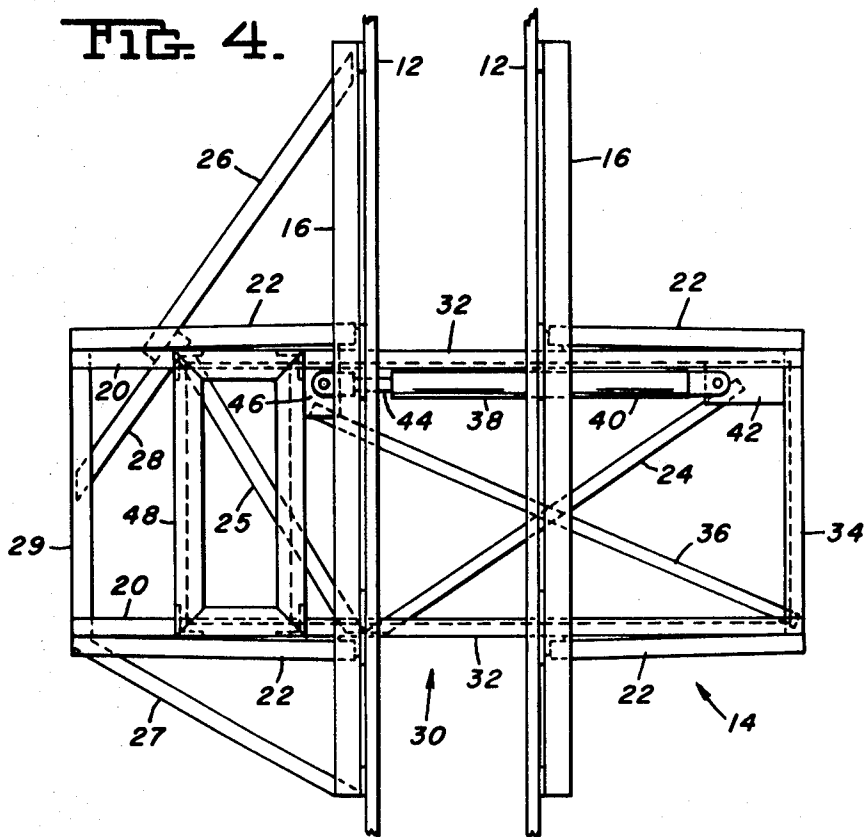
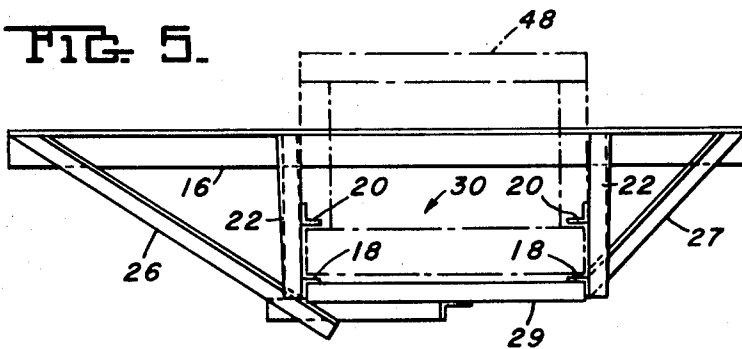


FIG. 5.



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POST SETTING APPARATUS

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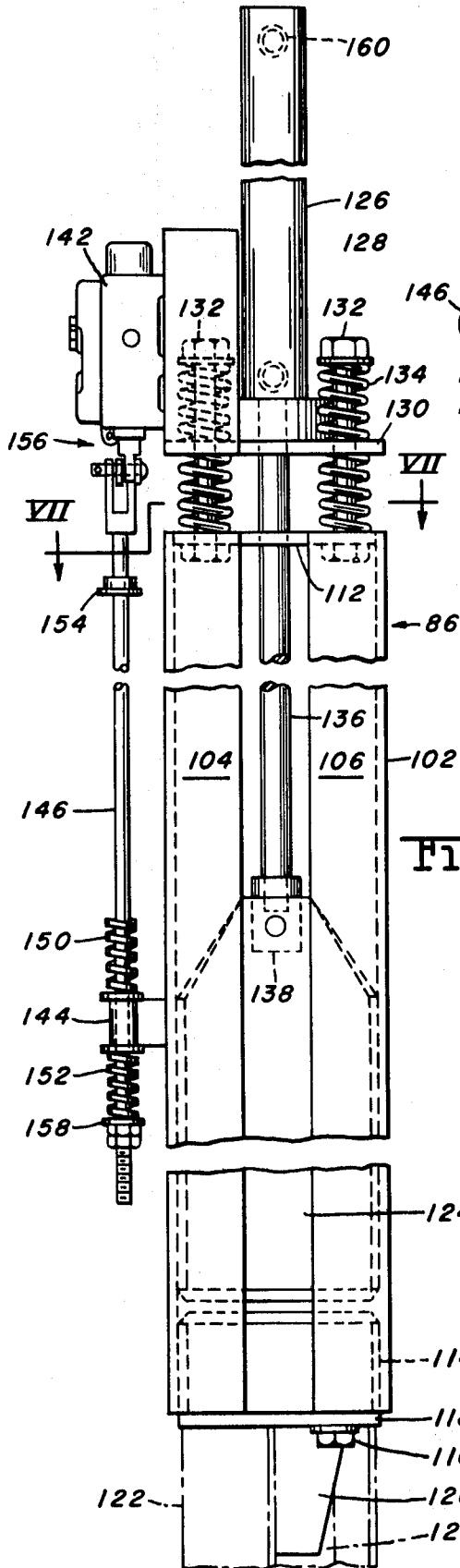


FIG. 6.

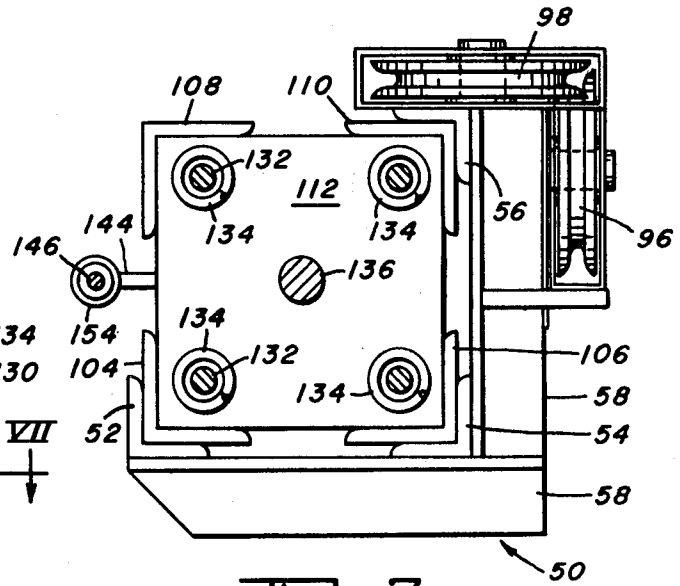


FIG. 7.

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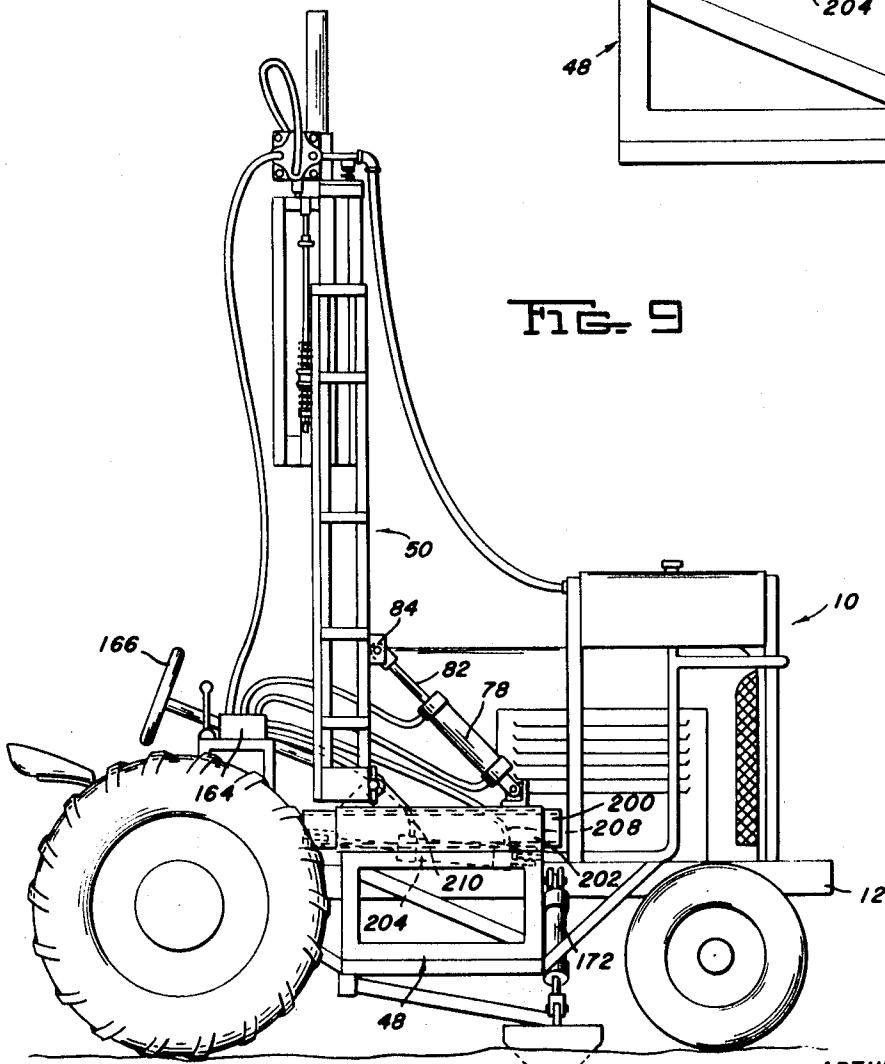
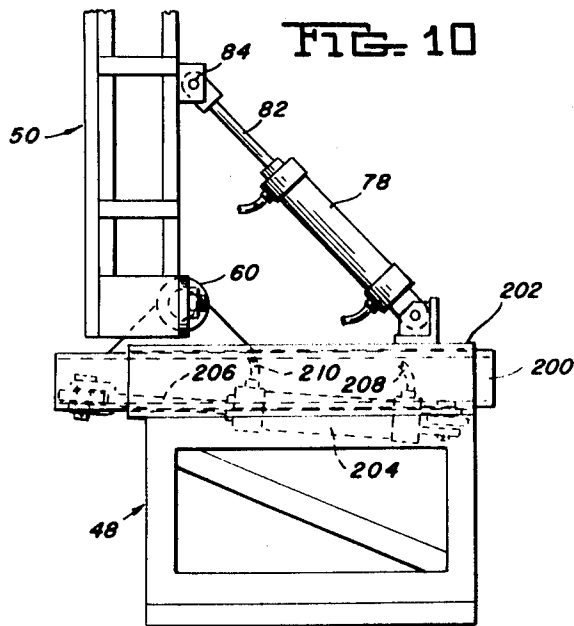
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POST SETTING APPARATUS

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6 Sheets-Sheet 5



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POST SETTING APPARATUS

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FIG. 11

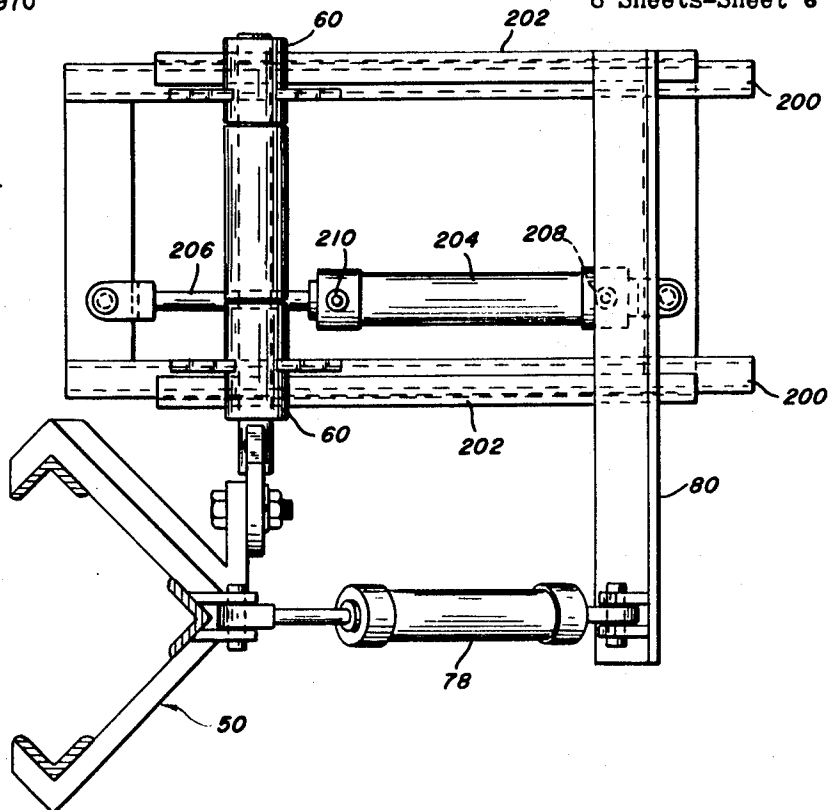
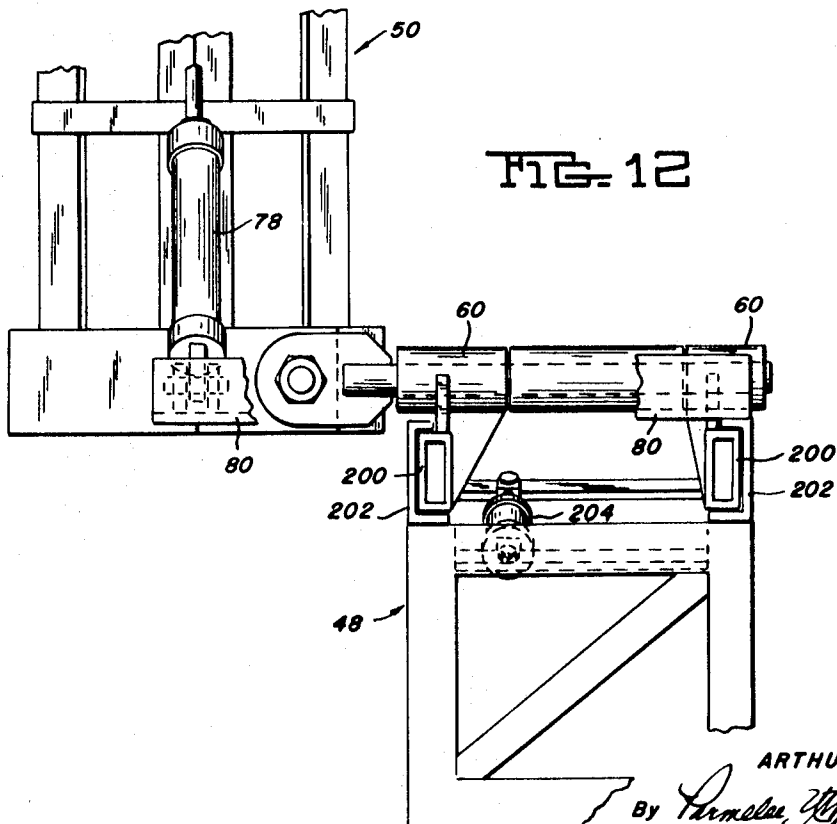


FIG. 12



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POST SETTING APPARATUS

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Continuation-in-part of application Ser. No. 749,853,

Aug. 2, 1968. This application May 5, 1970, Ser.

No. 34,752

Int. Cl. E02d 7/10; E21c 11/02

U.S. Cl. 173—23

8 Claims

ABSTRACT OF THE DISCLOSURE

An attachment for a self-propelled tractor for use in setting posts is disclosed. The attachment comprises a frame structure detachably securable to the chassis of the tractor and the frame has a pair of slide rails extending crossways of the chassis when the frame structure is secured thereto. A slide is reciprocally supported on the rails for movement laterally of the chassis. A mast is supported for universal movement on the slide and a post driving unit is mounted in the mast for delivering a percussion blow to a fence post or the like. Also, the mast and post driving unit assembly is selectively movable forwardly or rearwardly of the tractor for alignment of the post driving unit with a post.

BACKGROUND OF THE INVENTION

This application is a continuation-in-part application of my copending application for Post Setting Apparatus, Ser. No. 749,853 filed Aug. 2, 1968, and now abandoned.

FIELD OF THE INVENTION

This invention relates to an apparatus for setting posts. More particularly, the invention is concerned with a self-propelled vehicle adapted for repairing, installing and generally maintaining highway guard barriers or fences along highways, but applicable also to setting other fence posts, either wood or metal.

DESCRIPTION OF THE PRIOR ART

Steel posts are largely replacing wooden posts on the guard fences of highways. These posts are generally I-beam sections about seven feet long that are driven into the ground with about a thirty inch projection. The guard fence, usually comprises parallel cables which are clamped to a bracket removably bolted to the traffic side of these posts. There is a particular problem with such posts, due to the fact that especially in cold climates, the metal readily conducts cold and heat deep into the ground intensifying the freezing and thawing to loosen the posts and cause them to heave and move out of line. Also, these posts are at times moved out of line by vehicles hitting them or the guard fences attached to the posts. As a result of these and other maintenance factors, there is a need for an apparatus capable of rapidly and economically resetting the posts, and, where necessary, replacing damaged ones, or even setting posts for new fences.

Various post driving apparatus have heretofore been designed for use on tractors or other vehicles but such apparatus have certain drawbacks that impede the rapid setting or resetting of posts. In some instances, as for example, in apparatus where there is a percussion tool or driver arranged at the front or rear of a tractor, the tractor must be turned to a position where the end of the tractor on which the driver is mounted confronts the post to be set so that the tractor cannot travel parallel with the guard fence from one post to the next. In other constructions, such as disclosed in Patent 3,117,635, which are designed to travel parallel with the fence with the driver at the side of the vehicle and hung from a horizontal boom projecting from a vertical mast, trees, road signs and tele-

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graph posts outside the guard fence may require considerable maneuvering of the vehicle to get from one post to another and to get the driver in position to engage a selected post without interference from such obstacles. In addition, while such an arrangement is more advantageous in many respects than those where the driver is on the end of the tractor, the center of gravity is unfavorable to the use of such equipment in many instances, especially where the apparatus is used not only to drive posts, but to set them straight.

SUMMARY

The present invention provides a post driver at the side of the tractor wherein the tractor may travel parallel with the fence from one post to the next with little maneuvering and in most cases reset a post without distributing the parallel cables other than detaching the brackets for the cables from the posts. Moreover, the center of gravity is low and close to the longitudinal axis of the tractor so that the apparatus may be used with safety along the berm of the highway, and even be used to pull an outwardly leaning post into vertical position, or push an inwardly leaning post out to a vertical position with the forces reacting against the tractor below the level of the tractor chassis and close to the ground where the tractor has maximum stability.

Briefly explained, my invention in preferred form provides a cross frame structure attached to the underside of the tractor chassis between the front and back wheels of the tractor. There is a slide assembly movable along this frame through a limited distance with power means for effecting such movement. At one end of the slide structure, preferably the right end, there is a rigid upright supporting pedestal the top of which is but a little higher than the normal level of the tops of the fence posts, about 40 inches or so above ground level. A vertically extending mast of structural section is mounted on this pedestal for universal angular adjustment in a vertical plane with the axis of the mast at the base of the mast laterally offset beyond the pedestal. There is a vertically adjustable driver unit movable axially in the mast.

With this arrangement, the tractor may travel along the road close to the fence with the slide assembly retracted to a position where the pedestal is close in to the side of the vehicle and the mast, offset outwardly from the pedestal, is still close in to the side of the tractor. When the pedestal is along side a post to be set, the slide is moved to the right, moving the bottom of the mast out over the cables to a position above which the post, when it is vertical, will be driven. In most cases the slide can be moved in or out, with a connection from the slide to a post for pulling or pushing the post to a vertical position before the post is driven.

By having the mass thus carried on a pedestal and offset laterally from the top of the pedestal, the mast can "reach over" the fence, which it may not do where the same is pivoted to the tractor close to the ground, and it can be moved in and out with little interference from other obstacles, such as may be encountered in certain prior constructions where the driver is hung from a boom projecting from a mast so that the boom must be swung in an arc to bring the boom from its position parallel with the fence when the tractor is moving to a transverse position where the driver can then be located over the post.

As an optional feature to my invention, I provide a support arrangement for the mast whereby the mast and driver unit may be moved together towards the fore or aft of the tractor. Thus, the tractor may be positioned close by the post hole and the mast moved backward or forward for final alignment of the post with the hole. This feature eliminates the need for "inching" the tractor to get final alignment.

Further advantages and capabilities of the invention will become apparent from the following description, taken in conjunction with the accompanying drawings showing certain preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of the front end of a self-propelled post setting vehicle according to the present invention showing the slide on which the mast is mounted retracted such as it would be when the tractor is going along the highway. Some parts of the apparatus have been omitted in this view for convenience of illustration;

FIG. 2 is a front elevational view similar to FIG. 1, but illustrating the slide extended to the right relative to the vehicle and to the left as viewed in the figure positioning the mast in a post driving position;

FIG. 3 is a view in side elevation of the post setting apparatus shown in FIGS. 1 and 2 showing parts not seen in FIGS. 1 and 2;

FIG. 4 is a plan view of the frame and slide structure illustrating the structural interrelationship of the frame, slide and chassis of the post setting vehicle of FIGS. 1-3;

FIG. 5 is a view in side elevation looking into the left side in FIG. 4 with the slide being shown in broken lines;

FIG. 6 is an enlarged view of the cartridge unit omitting the mast and as it would be seen looking at a 45° angle into the mast in FIG. 3;

FIG. 7 is a sectional view taken along the line VII-VII of FIG. 6 and including in plan view the mast illustrating the fixed and traveling sheaves seen in FIGS. 1 and 2;

FIG. 8 is a fragmentary elevational view of the mast and cartridge as they would be seen looking into the left side of FIG. 3;

FIG. 9 is a fragmentary side elevational view of the post setting apparatus as shown in the above described figures, showing the mast arranged for reciprocal movement fore and aft of the tractor;

FIG. 10 is a detailed side elevational view of the pedestal of the post setting apparatus;

FIG. 11 is a detailed plan view of the pedestal of the post setting apparatus; and

FIG. 12 is a detailed elevational view of the pedestal of the post setting apparatus taken from the front of the vehicle as shown in FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings wherein like reference numerals refer to like parts throughout the several views, 10 designates generally a self-propelled utility tractor of known construction having front and rear wheels and parallel longitudinal beams 12 comprising the chassis of the tractor.

Supported on the chassis of the tractor is a frame structure 14 (best seen in FIGS. 4 and 5) comprising longitudinally extending parallel side members 16, spaced slide rails 18 which are oppositely disposed and suspended beneath the chassis beams 12 and extend laterally at a right angle with respect to the longitudinal axis of the chassis, guide rails 20 positioned above the rails 18 and bracing bars 22. The structural members of which the frame 14 is made up comprise rigid channel and angle bars which are joined together as by welding. Other structural bracing members are provided to supply stability and rigidity to the frame 14 and these are designated by the numerals 24, 25, 26, 27, 28 and 29. The frame assembly 14 is detachably secured to the chassis or beams 12 of the tractor as by bolting the side members 16 to the chassis beams 12 so that if the transmission, for example, needs any attention, the frame can be dropped from the chassis by removing a few bolts and pulled out from under the tractor. The chassis on tractors of the type with which this invention is concerned are usually the same,

but adapters may be necessary to adapt the frame 14 as an attachment to any particular make of tractor or other vehicle.

A slide structure or member, shown generally at 30, is reciprocally supported by the rails 18 for movement therealong crosswise or transversely of the chassis of the tractor and it is guided in its movement by the guide rails 20. The slide member 30 is thus suspended from the chassis 12 intermediate the ends of the tractor and between the front and rear wheels. The slide 30 comprises spaced side members 32 connected by cross member 34 and diagonal bracing member 36. There is a power means or hydraulic cylinder and piston unit 38 having a cylinder 40 connected to a plate 42 on frame 14 and a piston rod 44 connected to a plate 46 on slide 30 for moving the slide structure 30 back and forth along the slide rails 18 from a retracted to an extended position with respect to the tractor 10.

At the off-side or outside of the slide structure 30 there is a vertical support pedestal 48 on which is supported an elongated mast 50 comprising three angle iron members 52, 54 and 56 (see FIG. 7) joined together as by welding by a ladder of cross braces 58. The fourth side of the mast 50 is open. The mast 50 is offset laterally and supported for universal movement on the pedestal 48 to permit the mast to be positioned with respect to the chassis of tractor 10 so that when the tractor is on any grade other than level the mast can be oriented to assume a true vertical position or a position slightly off true vertical when the posts are to be driven into the ground perpendicular to the slope of the highway. To this end, at the top of the pedestal 48 there are two spaced bearing blocks 60. Between these bearing blocks 60 there is a sleeve 62. There is a clevis 64 on the projecting end of a shaft 66 that passes through the sleeve 62 and the shaft 66 is journaled for rotation about its longitudinal axis in the bearings 60, the axis of the shaft 66 being disposed in a substantially vertical plane oriented at right angles to the longitudinal axis of the chassis. The clevis 64 is pivotally mounted to a bracket 68 as at 69 on the lower end of the mast 50. With this arrangement the mast can be tilted in one direction, transversely, by the pivotal connection between the clevis 64 and the bracket 68, the range of tilting is indicated generally by the arrows above the mast in FIG. 1, and the mast can be tilted in the other direction, fore and aft, by the shaft 66 rotating in the bearings 60, the range of which is generally indicated by the arrows in FIG. 3.

To effect these movements, two plumbing or stabilizing hydraulic cylinder and piston units 70 and 72 are provided. The unit 70 has a cylinder 73 connected to the sleeve 62 and has a piston rod 74 connected to a bracket 76 on the mast 50 and this unit is for rocking the mast sideways with respect to the pedestal. The unit 72 is at right angles to unit 70 and has a cylinder 78 connected to a section of angle iron 80 which projects laterally beyond the end of the pedestal 48. The piston rod 82 of the unit 72 is connected to a bracket 84 provided on the mast. The unit 72 is for effecting the tilting of the mast fore and aft or in the direction of the length of the tractor.

Accordingly, the two hydraulic units are connected to the mast and are capable of moving the mast to secure any desired angular position of the mast with respect to the tractor 10.

A post driving unit 86 is reciprocally mounted within the mast 50 for movement longitudinally thereof. The post driving unit 86 is shown in FIGS. 1-3 in a raised post receiving position with its upper end extending above the uppermost cross braces 58 of the mast 50. The driving unit 86 is moved up and down in the mast 50 through the operation of a hoist cylinder and piston rod unit 88. This hoist unit 88 has a piston rod 90 that moves up and down within a cylinder 92 which is anchored to a fixed point relative to the mast as at the bottom of the mast at

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94. Mounted on the piston rod 90 for movement therewith is a sheave 96 and fixedly secured to the mast 50 is another sheave 98. A cable 100, which is deadended at the top of the mast at 102, is reeved under sheave 96 on piston rod 90, then over sheave 98 on mast 50, and down to a connecting point on the post driving unit 86. This connecting point is not shown but it may be at any convenient location on the driving unit 86 and is preferably at a point near the bottom of the unit 86. With this arrangement, when the piston rod 90 is moved down, the driver unit 86 will be raised, and by reason of the multiple pulley effect, each increment of movement of the piston will raise or lower the driver unit a multiple of this increment in the mast 50. Accordingly, an operator can raise or lower the driving unit to whatever height required to accommodate for the height of the post to be driven.

As best seen in FIGS. 6, 7 and 8, the post driving unit 86 includes an elongated cartridge or cage 102 comprising four angle iron section 104, 106, 108 and 110 which are joined together at their tops by rectangular plate 112 as by welding and at their bottoms by impactor block 114 as by welding. Attached to the bottom of block 114 by bolts 116 is a driving head bracket or plate 118 having a depending bifurcated bracket 120 into which the web 121 of a post 122 to be driven may be entered, and a clamping bolt 123 will clamp the impact block 114 to the top of the web of the post.

An impactor weight 124 is reciprocally mounted within the cage 102 for movement axially thereof. An impactor cylinder and piston rod unit 126 is operatively connected to the weight 124 and is selectively actuable to effect movement of the weight 124 with respect to the cage 102. The unit 126 has a cylinder 128 mounted on a bracket 130 which is secured to plate 112 by bolts 132 and held in spaced relation with respect to plate 112 by coil springs 134. There is a piston rod 136 movable up and down with cylinder 126 and the lower end of the piston rod is secured to the weight 124 at 138. The impactor cylinder unit 126 is supplied with hydraulic fluid under pressure through a flexible conduit 140 through a valve 142, which is also mounted on bracket 130, and this will raise the piston rod 136 and weight 124. Weight 124 has a laterally extending arm 144 which projects through the space provided between angle iron sections 104 and 108 and which is slidably received on a valve control rod 146 which is connected through a linkage 148 to the valve 142. A pair of impact springs 150 and 152 are also provided on the rod 146, one above and one below the arm 144. As the piston rod and weight move upwardly the spring 150 and arm 144 travel with the weight to strike a limit stop 154 provided on the rod 146. This action will trip the valve 142 through the linkage 148 to release the fluid pressure under the piston of unit 126 allowing the weight 124 to drop free fall and strike the impact block 114 a heavy blow. The weight 124 upon reaching the bottom of its travel will cause arm 144 to strike the lower spring 152 resting on a lower limit stop 158 and this action will trip the valve 142 to allow fluid under pressure to enter the cylinder 128 to again raise the impactor weight 124. The limit stops 154 and 156 can be positioned along the rod 146 to set the limits of travel or stroke of the weight 124. The valve 142 and cylinder 128 are supported on the springs 134 so as to reduce or arrest the shock caused by the impactor weight 124 striking down on the impactor block 114 which if not checked, would damage the valve and conduit couplings and also the linkage 156.

The valve 142 is an automatic valve available on the market, and the details of which form no part of the invention. It will be noted that the cylinder 128 has a breather opening 160 at its top for permitting the entrance and escape of air as the piston moves up and down, and is of small diameter since the impactor weight 124 requires little force for raising it and therefore relatively little fluid is used in creating the necessary pressure.

Consequently, as soon as hydraulic pressure is released,

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with the weight 124 in a raised position, fluid from cylinder 128 is immediately expelled through conduit 140 and valve 142 and offers very little resistance to the dropping of the weight 124.

The hydraulic system for operating the various cylinder units is conventional and all of the cylinder and piston rod units described with the exception of impactor cylinder and piston rod unit 126 are double acting in that fluid under pressure can be supplied and drained on each side of the piston, and each unit is supplied with fluid under pressure through flexible conduits from a pump (not shown) and a source of hydraulic fluid 162 on the tractor. The hydraulic controls for all functions described are grouped in a control console 164 just forward of the steering wheel 166.

Another feature incorporated into the self-propelled post driver of the present invention is the provision for straightening guard post which have been bent or leaned over. On the corner of the slide 30 beneath the mast 50 there is an upstanding pin 166. Cooperating with this pin 166 is L-shaped bar 168 having an opening at one end which permits the bar 168 to be detachably secured to the pin 166 and slide 30. With the slide 30 moved towards an outwardly leaning post 169 as seen in FIG. 2, the bar 168 is secured to the slide 30 and the short leg thereof is "hooked" about the post 169. The cylinder and piston rod unit 38 is then supplied with hydraulic pressure causing the slide 30 to move to the right thus pulling the post into vertical position as is shown in FIG. 1. If the post to be straightened is leaning inwardly, the slide can be positioned against the post for pushing it into a vertical position or a connection with a modified form of bar 168 can be made between the slide and the post for this purpose.

A stabilizer, shown generally at 170, is provided on the tractor 10 which stabilizes the tractor whenever the need arises when straightening a post. This stabilizer is pivotally connected to frame 14 at 171 and is lowered to the ground by a cylinder and piston rod unit 172. A blade-like portion 174 at the front of the stabilizer is driven into the ground by actuation of unit 172 to hold the tractor against moving sideways.

From the foregoing it will be seen that the present invention provides a self-propelled post setting vehicle well suited for the purpose of installing and repairing highway guard posts. Because the pedestal 48 which supports the mast 50 can be moved sideways, the mast can be retracted close to the tractor when the tractor is going along a highway so that the overall width of the tractor 10 is less than eight feet permitted by highway regulations. The tractor 10 can travel parallel with the guard fence, usually along the shoulder of the highway, and when necessary, the slide can be extended out sideways either to place it in position for straightening a bent over post or for positioning the mast for driving a post.

As seen in FIGS. 1 and 2, the pedestal 48 on slide 30 has a height greater than the maximum height of the guard fence with which the apparatus is to be used, but less than the overall height of the tractor. Because of this arrangement, the mast 50, which is supported on the pedestal 48 with its lower end offset laterally from the pedestal and with its lower end higher than the maximum height of the guard fence, can be extended over the guard fence and any guard fence cables when the pedestal is moved close to the fence and be set in position to drive any raised post on the side of the cables away from the traffic side. Because the mast can be positioned at a right angle with reference to the terrain on which the tractor is set, posts can be driven into the ground vertically or on a slope. The driving of posts can generally be accomplished without releasing the cables from any of the posts other than the one being worked on and without interfering with the free-flow of traffic along the highway. When a new post is to be driven, the cartridge may be raised and a post entered into the open side of the mast to be secured and suspended from plate 118. A final

plumbing of the mast can be effected to adjust it to the proper angle and the cartridge and post may be lowered in the mast until the post rests on the ground by the operator releasing the hydraulic pressure in cylinder 88. Then the impactor cylinder 126 may be operated to rapidly raise and lower weight 124.

Mounting the slide 30 for movement laterally of the chassis of the tractor on rails suspended beneath the chassis provides for a lower center of gravity thereby giving a better weight distribution and prevents up-ending of tractor as is the tendency when the weight of the percussion tool and its supporting structure is mounted either on the front or rear of the vehicle. Also, operator visibility is enhanced due to this arrangement giving him greater control over the positioning of the mast with a minimum of direction from helpers. Furthermore, there will be no tendency for the tractor to pivot about its front or rear wheels when straightening a post as would be the case if the mast were mounted at the front or rear of the tractor.

An added feature to the self-propelled post driver of the present invention is shown in FIGS. 9-12, and relates to a support arrangement for the post driving assembly including the mast 50 and all elements associated with it, the actuating cylinders 70 and 72, and the universal mounting supports (bearing blocks 60, sleeve 62, etc.) whereby the post driving assembly may be selectively moved toward the fore and aft end of the tractor. Most of the elements shown in FIGS. 9-12 are the same as those described earlier and bear the same reference numerals. The difference is that the mast 50 is mounted for universal movement on base frame 200 which is slidably arranged on the top of pedestal 48 for reciprocal movement fore and aft of the pedestal. One each of a pair of angle members 202 is secured on the inner and outer ends of pedestal 48 and serve as guides for the base frame 200. The bearing blocks 60 are suitably fixed to the base frame 200 as is angle iron 80 which secures the end of cylinder 78. Thus, the power drive assembly is supported by base frame 200 which in turn is supported by pedestal 48. A double acting cylinder 204 is arranged below the base frame 200 for moving the frame back and forth. The closed end of the cylinder 204 is suitably fixed to the inside of the forward top member of the pedestal 48 and the end of the rod 206 of cylinder 204 is fixed to a portion of the rear end member of base frame 200. The cylinder 204 receives and dumps hydraulic fluid through hoses 208 and 210 leading to a hydraulic fluid reservoir through control console 164. Actuating the cylinder 204 will effect the movement of base frame 200 and all the elements supported by it. Accordingly, the post driving assembly may be aligned with a post hole without having to "inch" the tractor backwards or forwards.

While I have particularly shown and described one particular embodiment of the invention, it is to be distinctly understood that the invention is not limited thereto but that modifications may be made within the scope of the invention and such variations as are covered by the scope of the appended claims.

I claim:

1. A guard fence post setting apparatus comprising
 - (a) a wheeled vehicle having a chassis and front and rear wheels,
 - (b) a slide structure movable crosswise of the vehicle attached to and positioned below the chassis between the front and rear wheels.
 - (c) a mast supported on one end of the slide structure with its lower end projecting laterally beyond the end of the slide structure,
 - (d) the lower end of the mast being at a level entirely above the level of the slide structure and above the height of the guard fence with which the apparatus is to be used, and
 - (e) a post driving unit movable up and down in the mast.
2. A self-propelled post setting apparatus comprising,

- (a) a self-propelled tractor having a chassis and spaced front and rear wheels,
- (b) a frame assembly supported by and suspended from the chassis between the front and rear wheels, said frame comprising a pair of spaced rails extending crosswise of the chassis,
- (c) a slide reciprocally supported by the rails for movement therealong,
- (d) means operatively connected to the slide to effect movement thereof,
- (e) supporting means mounted on the slide at one end thereof for movement therewith,
- (f) a vertically-elongated mast formed of structural sections,
- (g) means mounting the lowermost end of the mast on the support means for universal movement with respect thereto with the lowermost end of the elongated mast entirely above said slide and offset laterally from the support means,
- (h) means operatively connected to the mast to effect movement thereof,
- (i) a post driving unit reciprocally mounted within the mast for movement longitudinally thereof, the post driving unit including an elongated cage, an impactor weight reciprocally mounted within the cage for movement axially thereof, and means connected to the impactor weight selectively operable to effect movement of the the impactor weight with respect to the cage, and
- (j) means operatively connected to the post driving unit to effect movement thereof with respect to the mast.
3. A guard fence post setting apparatus comprising
 - (a) a self-propelled vehicle having a chassis and front and rear wheels,
 - (b) a slide structure suspended from the chassis between the front and rear wheels for movement in a direction crosswise of the chassis between a retracted position and an extended position,
 - (c) the slide structure having an upright supporting pedestal thereon which is positioned between the front and rear wheels of the vehicle close in to the side of the vehicle when the slide is retracted and moved outwardly away from the chassis as the slide structure moves toward its extended position,
 - (d) power means for moving the slide structure between the retracted and extended positions,
 - (e) the pedestal being of a height greater than the maximum height of the guard fence with which the apparatus is to be used but less than the overall height of the vehicle,
 - (f) a mast supported on the pedestal with its lower end offset laterally from the pedestal and with its lower end higher than the maximum height of the guard fence whereby the lower end of the mast may extend over the guard fence when the pedestal is close to the fence, and
 - (g) a post driving unit arranged to be moved up and down in the mast.

4. A guard fence post setting apparatus as defined in claim 3 wherein said mast is secured to the pedestal through a universal mounting at the lowermost end of the mast whereby the top of the mast may be selectively moved through an arc from a vertical position in a fore-and-aft direction relative to the length of the vehicle and in an arc transverse to the axis of the vehicle while the lower end of the mast rotates about the universal mounting with no effective change crosswise or longitudinally relative to the vehicle and relatively to the pedestal.

5. A guard fence post setting apparatus as defined in claim 3 wherein the bottom of said mast has a shaft projecting therefrom across the top of the pedestal, the top of the pedestal having bearings thereon in which said shaft is rotatably secured to enable the mast to be tilted in a direction fore-and-aft of the vehicle, and means

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for moving the mast from a vertical position to a forwardly-tilted or a rearwardly-tilted position.

6. A guard fence post setting apparatus as defined in claim 3 including support means slidably mounted on said pedestal and reciprocally movable thereon toward the fore-and-aft ends of said vehicle for supporting said mast; power means for selectively moving said support means and said mast together as a unit.

7. A guard fence post setting apparatus comprising, (a) a self-propelled vehicle having an elongated chassis and front and rear wheels;

(b) a support structure suspended from the chassis between the front and rear wheels;

(c) an upright pedestal assembly supported by said support structure for movement laterally of said chassis from a retracted position adjacent the side of the vehicle to an extended position away from the vehicle;

(d) power means for moving said pedestal between the retracted and extended positions;

(e) said pedestal being of a height greater than the maximum height of the guard fence with which the apparatus is to be used but less than the overall height of the vehicle;

(f) a mast assembly supported on said pedestal and including an upright mast structure offset beyond the end of said pedestal away from the chassis; said

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mast assembly including universal means for mounting the lower end of the mast structure on the pedestal for universal movement with respect thereto with the lower end of the mast structure disposed above the top of the pedestal;

(g) power means for moving said mast structure on said universal means;

(h) a post driving unit movable up and down in the mast structure.

8. A guard fence post apparatus as defined in claim 7 wherein said mast assembly further includes a base member mounted on said pedestal for reciprocal movement longitudinally of said chassis; said mast structure and universal means being mounted on said base member; and drive means for selectively moving said mast assembly longitudinally of said chassis.

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