Dec. 12, 1961 F. C. GAINES, JR 3,012,620

MACHINE FOR SINKING ANCHORS FOR GUY LINES

Filed Sept. 9, 1958 2 Sheets-Sheet 1

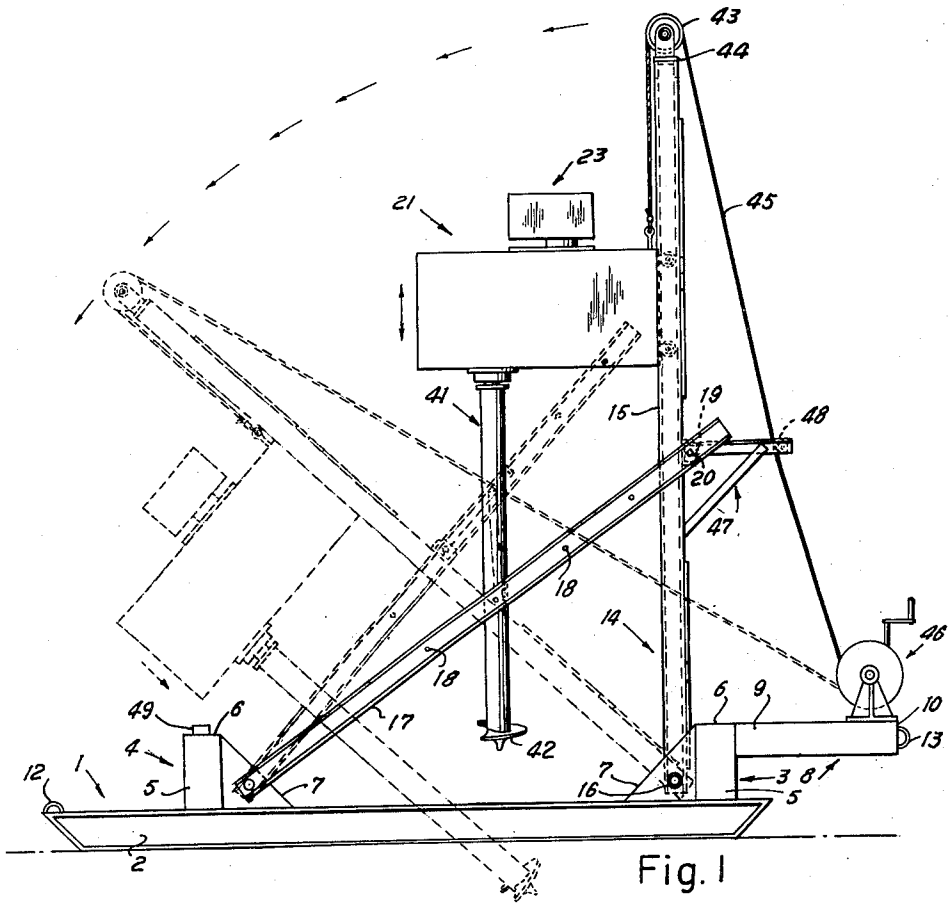


Fig. 1

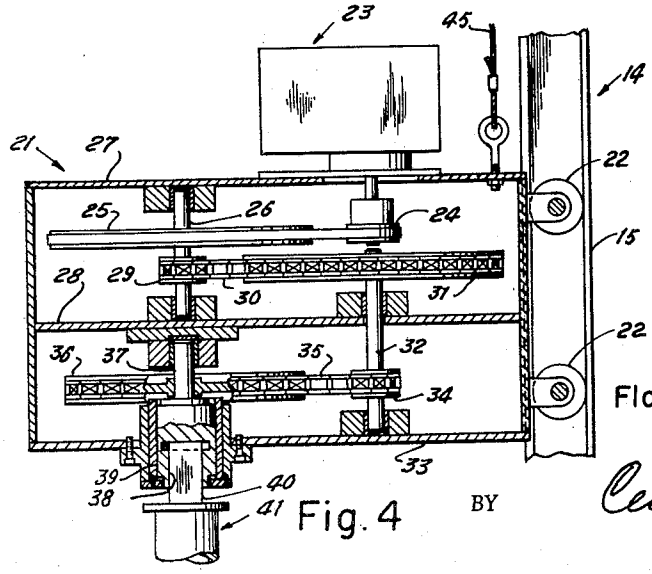


Fig. 4

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MACHINE FOR SINKING ANCHORS FOR GUY LINES

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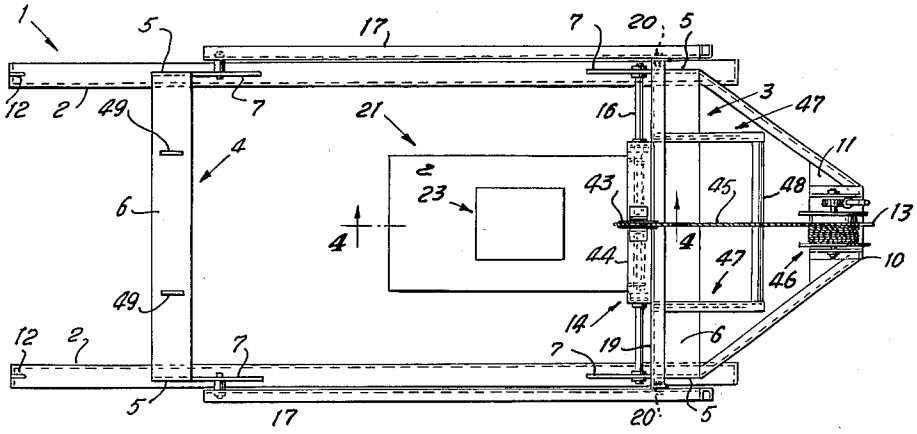


Fig. 2

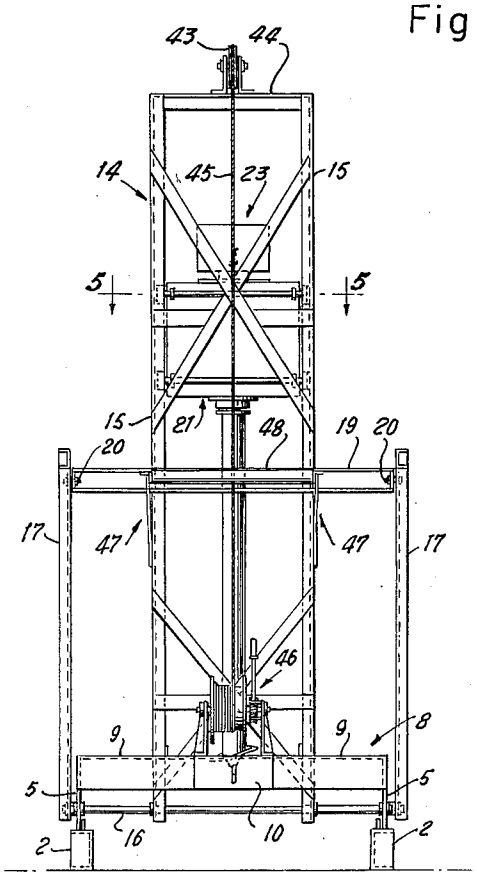


Fig. 3

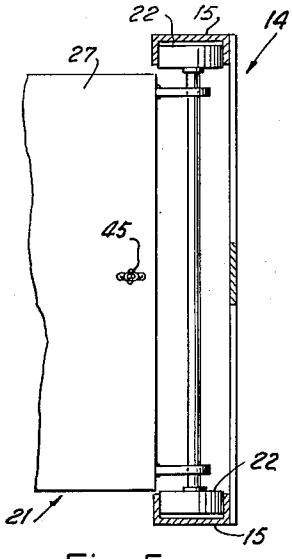


Fig. 5

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MACHINE FOR SINKING ANCHORS FOR GUY LINES

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1 Claim. (Cl. 175—170)

This invention relates to a machine for sinking anchors for guy lines, and it concerns more particularly a portable, motor-driven device, adjustable to different operating positions, having means for rotating a screw type guy line anchor about its axis, to thereby sink it in the earth, while supporting the anchor in predetermined position.

In anchoring guy lines for utility poles and the like in the earth, it is common practice to employ as anchors hollow rods or lengths of pipe, which are driven in the earth and are usually inclined relative to the vertical plane, being positioned substantially at right angles to guy lines which are subsequently secured thereto.

A comparatively recent innovation in guy line anchors consists essentially of a hollow rod or length of pipe having a single ribbon-type screw thread arranged spirally about its lower end, which is pointed, whereby the anchor may be screwed in the earth, usually by means of pipe tongs or the like.

An object of this invention is to provide a portable, motor-driven device, adjustable to different operating positions, having means for rotating a screw-type guy line anchor about its axis, to thereby sink it in the earth, while supporting the anchor in a selected position in which it is either disposed vertically or inclined at a predetermined angle relative to the vertical plane.

Another object of the invention is to provide a machine for the purpose described comprising a supporting frame, a boom having a pair of parallel, spaced apart side rails pivotally connected at one end to an end portion of the frame, the side rails being channel-shaped in transverse section and the side flanges of the respective side rails being mutually opposed, a pair of parallel, spaced apart elongated braces, on opposite sides of the boom, pivotally connected at one end to an end portion of the frame opposite the first mentioned end portion and having longitudinally spaced openings therein, a beam arranged transversely relative to the side rails of the boom and rigidly connected intermediate its ends to the side rails intermediate their ends, fastening devices connected to opposite ends of the beam and each selectively engaging an opening of one of the braces whereby the boom is removably and adjustably connected intermediate its ends to the braces, a carriage having wheels engaging the side rails of the boom whereby the carriage is movable longitudinally relative to the boom, a motor on the carriage, speed-reducing means on the carriage operatively connected to the motor, and means for drivingly connecting the motor, through the speed-reducing means, to an end portion of a screw-type guy line anchor opposite its threaded end.

Another object of the invention is to provide a structure as described in which the means for drivingly connecting the motor, through the speed-reducing means, to an end portion of a screw-type guy line anchor opposite its threaded end includes a drive shaft operatively connected to the speed-reducing means and having an end portion providing a polygonal socket for engagement with a correspondingly shaped end portion of the guy line anchor opposite its threaded end.

Another object of the invention is to provide, in the structure described, a pulley wheel on the end of the boom opposite its pivot, a cable strung over the pulley wheel and connected at one end to the carriage, and a

hand winch mounted on a longitudinal extension of the frame, on the opposite side of the boom from the carriage, acting on the cable whereby the carriage may be raised and lowered.

Another object of the invention is to provide, in the structure described, a pair of brackets each rigidly connected to one of the side rails of the boom and to the transverse beam, and extending outwardly therefrom, the brackets being positioned on the same side of the boom as the winch, and a transverse bar connected at its ends to the brackets, in spaced relation to the beam, the cable being passed between the beam and the bar, the arrangement being such that the boom is capable of being suspended from the cable, by engagement of the cable with the bar, upon movement of the boom about its pivot, and the boom is capable of being raised and lowered by manipulation of the winch.

The invention will be readily understood by referring to the following description and the accompanying drawing, in which:

FIGURE 1 is a side elevational view of a machine embodying the invention;

FIGURE 2 is a top plan view;

FIGURE 3 is an end elevational view;

FIGURE 4 is a fragmentary sectional elevational view, on an enlarged scale, taken on the lines 4—4 of FIGURE 2; and

FIGURE 5 is a fragmentary sectional plan view, on an enlarged scale, taken on the lines 5—5 of FIGURE 3.

Referring to the drawing, the numeral 1 designates generally a supporting frame, which is in the form of a skid having a pair of runners 2 which are connected in parallel, spaced apart relation to each other as hereinafter described.

The runners 2 are connected to each other by a pair of upstanding bench-like structures, indicated generally by the numerals 3 and 4, respectively. The bench-like structures 3 and 4 each consist of a pair of upstanding end members 5 and a top member 6, the top member 6 being rigidly connected at its ends to the upper ends of the end members 5. The lower ends of the end members 5 are rigidly connected to the upper surfaces of the runners 2, and the structure is additionally reenforced by a pair of gusset plates 7, which are each rigidly connected to a side edge of one of the end members 5 and to the upper surface of one of the runners 2.

The bench-like structure 3 is positioned adjacent the front ends of the runners 2, and the bench-like structure 4 is positioned rearwardly thereof. In operation, the top member 6 of the rearward bench-like structure 4 is sufficiently high above the ground to clear the upper end of a guy line anchor which has been sunk in the earth as hereinafter described.

A forward extension of the frame 1, indicated generally by the numeral 8, consists of a pair of forwardly converging side members 9, which are channel-shaped in transverse section and are rigidly connected at their rearward ends to side edges of the end members 5 and the top member 6 of the forward bench-like structure 3, and a front plate 10 and a top plate 11 each rigidly connected at its ends to the forward ends of the side members 9.

A pair of eyes 12 are rigidly connected to the upper surfaces of the runners 2 adjacent the rearward ends thereof, and an eye 13 is rigidly connected to the front face of the front plate 10, for use in lifting the device.

A boom, which is indicated generally by the numeral 14, has a pair of side rails 15, which are channel-shaped in transverse section and are arranged in parallel, spaced relation to each other wtih the side flanges of the respective side rails 15 in mutually opposed relation to each other. The side rails 15 are rigidly connected at one

end to intermediate portions of a transverse shaft 16, which is journaled at its ends in bearings provided therefor in the gusset plates 7 of the forward bench-like structure 3.

A pair of elongated braces 17, which are channel-shaped in transverse section and have a plurality of longitudinally spaced openings 18 therein, are pivotally connected at one end to the gusset plates 7 of the rearward bench-like structure 4. The braces 17 are positioned on opposite sides of the side rails 15 of the boom 14.

A transverse beam 19, which is channel-shaped in transverse section, is rigidly connected intermediate its ends to the side rails 15 of the boom 14 intermediate their ends. Bolts 20, which are connected to opposite ends of the transverse beam 19, each selectively engage an opening 18 of one of the braces 17, whereby the boom 14 is removably and adjustably connected intermediate its ends to the braces 17.

A carriage 21, which is in the form of a closed rectangular box, has two pairs of wheels 22 which engage the side rails 15 whereby the carriage 21 is movable longitudinally relative to the boom 14.

A motor 23, which advantageously may be a single cylinder gasoline engine, is mounted on the carriage 21. The shaft of the motor 23 has a small pulley wheel 24 rigidly connected thereto. The pulley wheel 24 is connected by a belt to a larger pulley wheel 25, which is rigidly connected to a shaft 26.

The shaft 26 is rotatably mounted in bearings provided therefor in the top wall 27 of the carriage 21 and in a horizontally disposed central partition 28, respectively. A small sprocket 29, which is rigidly connected to the shaft 26 and turns therewith, is connected by a chain belt 30 to a larger sprocket 31, which is rigidly connected to a shaft 32. The shaft 32 is rotatably mounted in bearings provided therefor in the central partition 28 and in the bottom wall 33 of the carriage 21, respectively. The upper end portion of the shaft 32, to which the sprocket 31 is connected, extends upwardly above the central partition 28. A small sprocket 34, which is positioned below the central partition 28, is rigidly connected to the shaft 32 intermediate its ends and turns therewith. The sprocket 34 is connected by a chain belt 35 to a larger sprocket 36, which is rigidly connected to a shaft 37. The shaft 37 is rotatably mounted in bearings provided therefor in the central partition 28 and in the bottom wall 33 of the carriage 21, respectively.

A polygonal socket 38 is formed in an enlarged end portion 39 of the shaft 37. A correspondingly shaped end portion 40, which is formed on a screw-type guy line anchor 41 having a helical flange or screw flight 42 on its opposite end, is receivable in the polygonal socket 38, whereby the anchor 41 is capable of being screwed into the earth by operation of the motor 23.

A pulley wheel 43 is mounted on a cross bar 44, which is rigidly connected to the ends of the side rails 15 of the boom 14 opposite the transverse shaft 16. A cable 45, which is strung over the pulley wheel 43, is connected at one end to the carriage 21. The opposite end of the cable 45 is wound on a hand winch 46, which is mounted on the top plate 11, so that the carriage 21 is movable longitudinally relative to the side rails 15 by manipulation of the winch 46.

A pair of brackets 47 are each rigidly connected to one of the side rails 15 of the boom 14 and to the transverse beam 19, and extend outwardly therefrom. The brackets 47 are positioned on the same side of the boom 14 as the winch 46. A transverse bar 48 is rigidly connected at its ends to the brackets 47, in spaced relation to the beam 19. The cable 45 is passed between the beam 19 and the bar 48. The boom 14 is capable of being suspended from the cable 45, by engagement of the cable 45 with the bar 48, upon movement of the boom 14 about its pivot, and the boom 14 is capable of being raised and lowered by manipulation of the winch 46.

The portion of the cable 45 which extends between the pulley wheel 43 and the winch 46 does not extend in a straight line, but is caused to change direction as it passes under the bar 48. The cross bar 44 limits upward movement of the carriage 21 relative to the boom 14.

The carriage 21 acts as a counter weight, upon raising and lowering the boom 14 by the action of the winch 46, whereby the falling of the boom 14, as the cable 45 is unwound from the winch 46, is retarded by resistance of the carriage 21 to upward movement relative to the boom 14.

Assuming that the boom 14 is in an inclined position, it may be raised to a vertical position by manipulation of the winch 46, after first disengaging the bolts 20. The carriage 21 may be raised to its uppermost position relative to the boom 14 simultaneously with movement of the boom 14 upwardly about its pivot. Thereafter the boom 14 may be further raised as desired by operation of the winch 46.

In lowering the boom 14, the winch 46 may be secured against rotation and the boom 14 may be swung downwardly about its pivot by pushing it manually, after first disengaging the bolts 20, while at the same time the carriage 21 may be raised to its uppermost position. Thereafter the boom 14 may be further lowered as desired by operation of the winch 46. After securing the bolts 20 the position of the carriage 21 relative to the boom 14 may be adjusted as desired by means of the winch 46.

A pair of upstanding, longitudinally spaced lugs 49, which are attached to the top member 6 of the rearward bench-like structure 4, are adapted to engage opposite sides of the carriage 21, in one position thereof, to thereby prevent lateral displacement of the carriage 21 and the boom 14, while supported on the bench-like structure 4, for use in transporting the device.

The invention may be modified in various ways without departing from the spirit and scope thereof.

What is claimed is:

A machine for sinking anchors for guy lines comprising a supporting frame, a boom having a pair of parallel, spaced apart side rails pivotally connected at one end to an end portion of the frame, the side rails being channel-shaped in transverse section and the side flanges of the respective side rails being mutually opposed, a pair of parallel, spaced apart elongated braces, on opposite sides of the boom, pivotally connected at one end to an end portion of the frame opposite the first mentioned end portion and having longitudinally spaced openings therein, a beam arranged transversely relative to the side rails of the boom and rigidly connected intermediate its ends to the side rails intermediate their ends, bolts connected to opposite ends of the beam and each selectively engaging an opening of one of the braces whereby the boom is removably and adjustably connected intermediate its ends to the braces, a carriage having wheels engaging the side rails of the boom whereby the carriage is movable longitudinally relative to the boom, a motor on the carriage, speed-reducing means on the carriage operatively connected to the motor, means for drivingly connecting the motor, through the speed-reducing means, to an end portion of a guy line anchor having a screw flight on its opposite end whereby the anchor is adapted to be rotated about its axis, a pulley wheel on the end of the boom opposite its pivot, a cable strung over the pulley wheel and connected at one end to the carriage, a hand winch mounted on a longitudinal extension of the frame, on the opposite side of the boom from the carriage, acting on the cable whereby the carriage may be raised and lowered, a pair of brackets each rigidly connected to one of the side rails of the boom and to the transverse beam, and extending outwardly therefrom, the brackets being positioned on the same side of the boom as the winch, and a transverse bar connected at its ends to the brackets, in spaced apart relation to the beam, the cable being passed between the beam and the bar, the arrangement being

such that the free end of the boom is capable of being supported by the cable, by engagement of the cable under the bar, upon movement of the boom about its pivot, and the boom is capable of being raised and lowered manually by operation of the winch.

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