United States Patent [19]

Guest

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[54] **SELF-PROPELLING MECHANISM**

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[52] **U.S. Cl.** ..... **180/8 C,** 180/4

[51] **Int. Cl.** **B62d 57/02**

[58] **Field of Search** ..... 180/4, 8 C, 8 D, 8 R

[56] **References Cited**

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[57] **ABSTRACT**

A self-propelling mechanism for use with a skid mounted core drilling apparatus is provided that includes a skid with a frame carried core drilling apparatus slidably mounted thereon, a pair of feet pivotedly secured to the core drilling apparatus selectively engageable with the skid and hydraulically operated linkage mechanism connecting the skid and the frame for self-propelling of the skid.

6 Claims, 6 Drawing Figures

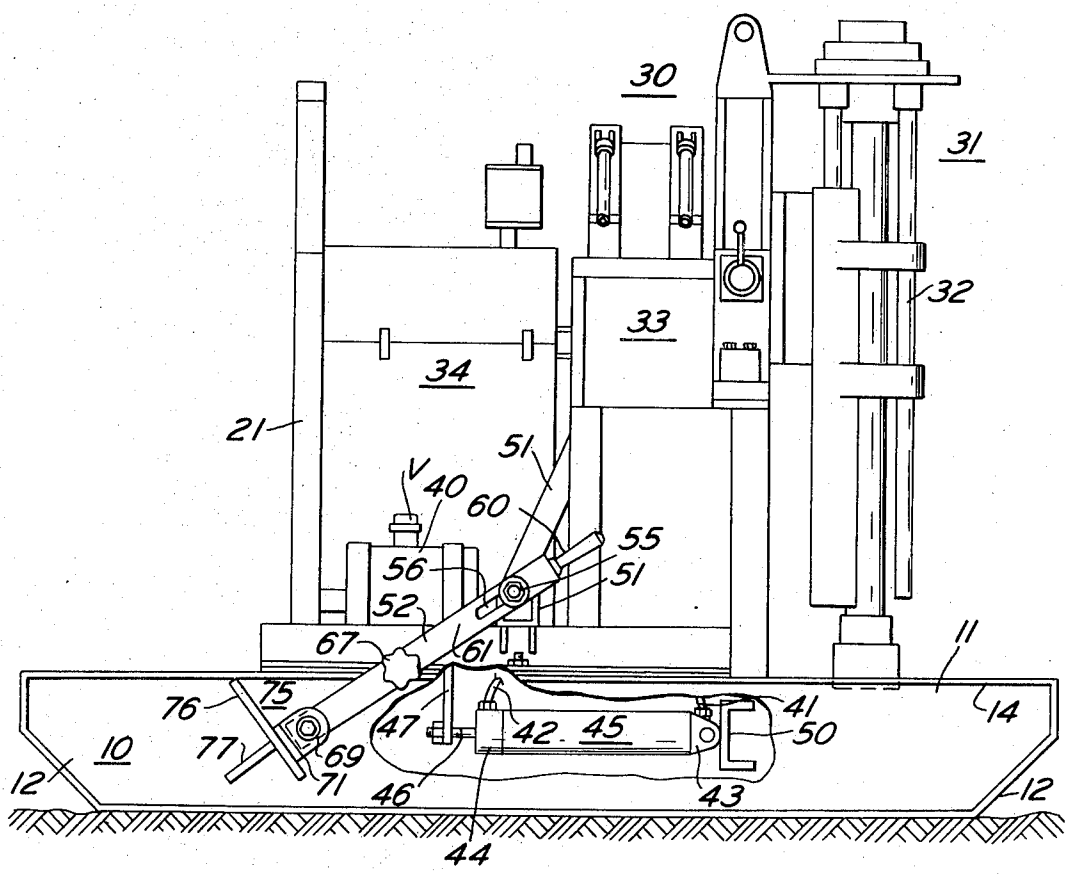
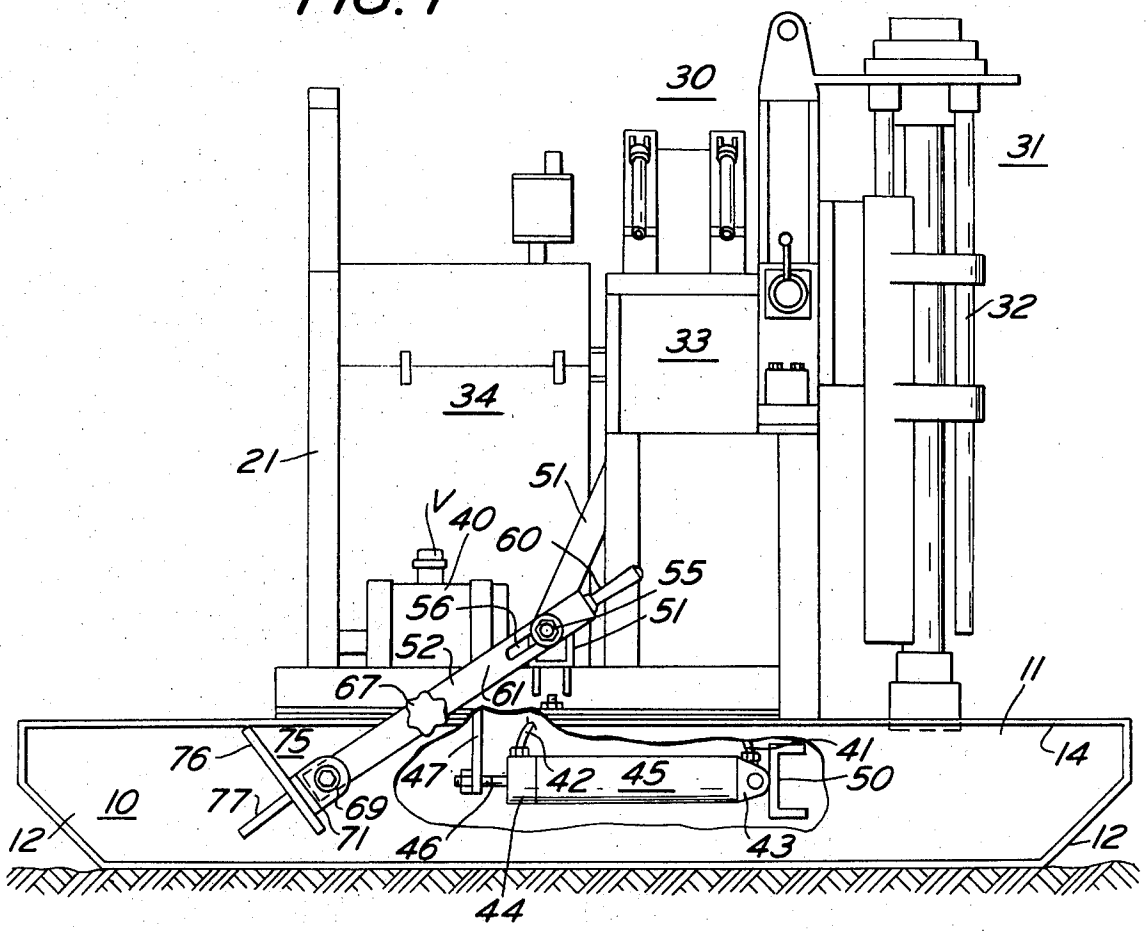


FIG. 1


30
31
32
33
34
21
51
V
40
60
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56
51
52
67
61
11
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76
75
47
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71
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44

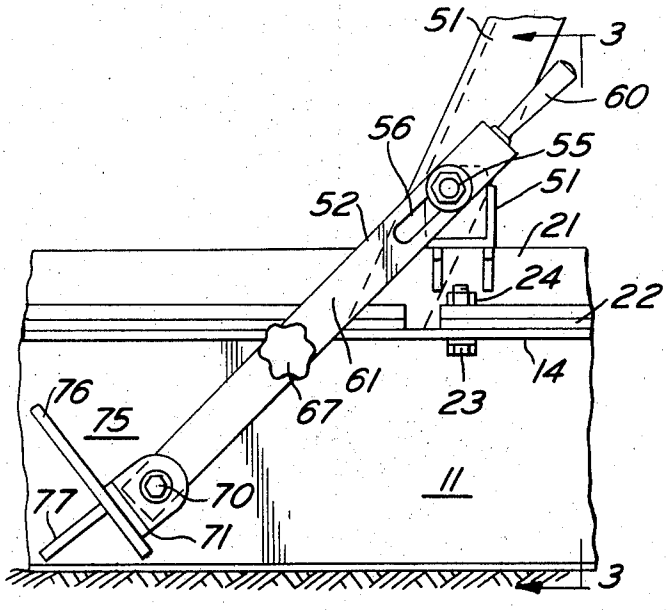
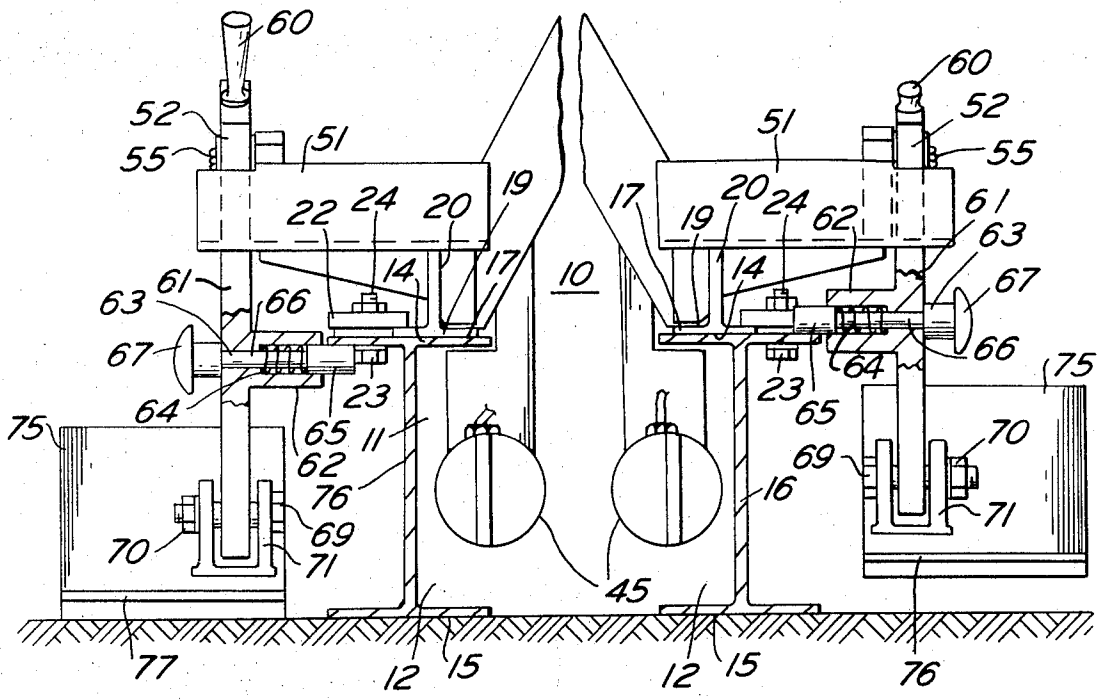

51
3
60
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55
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21
24
22
61
14
76
67
23
75
11
77
70
71
3

FIG. 2

FIG.3



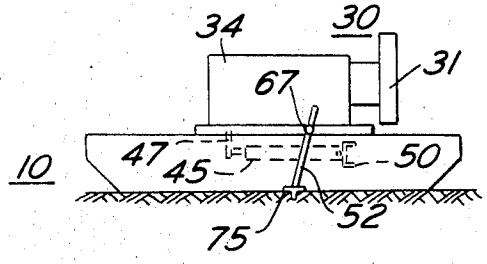


FIG.4

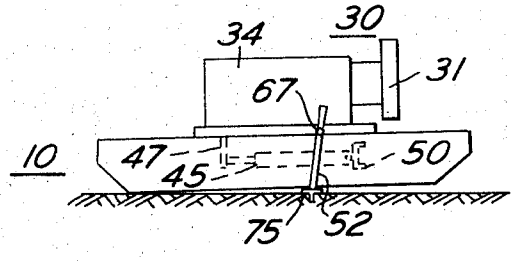


FIG.5

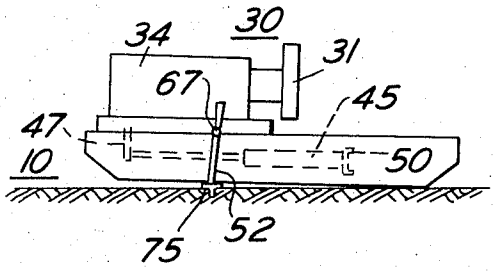


FIG.6

SELF-PROPELLING MECHANISM

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a hydraulically operated mechanism for self-propelling a skid and the apparatus carried thereon.

2. Description of the Prior Art

It has been common practice to mount core drilling apparatus onto a skid. The skid mounting provides a sturdy platform for drilling which can be used in rough terrain or where heavy surface loading could cause the apparatus to sink or mire down. The skids are commonly moved by a tractor or truck which often becomes stuck and is not suitable when it is desired to move the skid a limited distance. It has also been proposed to move the skid by a sheave and rope attached to the apparatus and to a nearby tree. Rollers and pry bars are also sometimes used to move the skid. None of these methods have proven wholly satisfactory for a variety of reasons.

The core drilling apparatus is usually slidably mounted to the skid and movable back and forth along its longitudinal axis a limited distance by hydraulic cylinders mounted to the skid and the apparatus frame.

The self-propelling mechanism of my invention provides for movement of the skid without outside assistance forwardly or on a pivotal axis about one of the skid runners.

SUMMARY OF THE INVENTION

This invention relates to self-propelling mechanism used in conjunction with a skid mounted core drilling apparatus wherein a pair of feet pivotedly secured to each runner of the skid are actuated by the action of hydraulic cylinders connected between the skid and core drilling apparatus frame for skid movement.

The principal object of the invention is to provide a self-propelling mechanism which is entirely self contained.

A further object of the invention is to provide a self-propelling mechanism which is fast and positive in its operation.

A further object of the invention is to provide a self-propelling mechanism that is simple to construct and relatively free from maintenance problems.

Other objects and advantageous features of the invention will be apparent from the description and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The nature and characteristic features of the invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part hereof, in which:

FIG. 1 is a side elevational view of the apparatus in accordance with the invention illustrating the self-propelling mechanism in an inactive position;

FIG. 2 is a fragmentary, side elevational view, enlarged, showing a portion of the self-propelling mechanism in position for use;

FIG. 3 is a vertical sectional view taken approximately on the line 3—3 of FIG. 2;

FIG. 4 is a side elevational view on a reduced scale illustrating the self-propelling apparatus beginning to move the skid along the ground;

FIG. 5 is a view similar to FIG. 4 showing the skid moved further along the ground; and

FIG. 6 is a view similar to FIG. 5 showing the skid in a position where the self-propelling mechanism is fully extended.

It should, of course, be understood that the description and drawings herein are illustrative merely and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now more particularly to the drawings, the apparatus therein illustrated includes a drag skid base **10** having runners **11** connected with end plates **12.** The runners **11** are preferably fabricated of structural steel I beams with top and bottom flanges **14** and **15** and a vertical connecting web or plate **16.** The top flanges **14** each has an upper surface **17** which carries flanges **19** of beams **20** of slide frame **21.** The flanges **19** are retained by plates **22** fastened to flanges **14** by bolts **23** and nuts **24** and are restrained from transverse movement but may move along the flanges **14.** The slide frame **21** has cross members (not shown) to retain the beams **20** in fixed and spaced relation to each other.

A core drilling apparatus **30** of conventional type is carried by the frame **21** and includes a drill head assembly **31** with vertically movable drill rod head **32** connected to a transmission **33** which is secured to a power plant **34** such as a diesel engine all carried on and movable with the slide frame **21.** The power plant **34** has a hydraulic circuit associated with it which includes a pump and its sump **40** with a manually operable control valve V providing a supply of fluid under pressure with lines **41** and lines **42** connected to the pump **40** and valve V and to opposite ends **43** and **44** of a pair of hydraulic cylinders **45** with piston rods **46** connected to the vertical plates **47** of beams **20** and at end **43** to plates **50** on the runners **11** of skid base **10** to provide controlled back and forward movement of the slide frame **21** along the skid base **10.** The hydraulic cylinders **45** are primarily used to move the drill head assembly **31** to a convenient position to permit raising and lowering of drilling tools and also for driving and withdrawal of casing to and from the drilled hole. The hydraulic cylinders **45** are also operated to move the frame **21** forward to drilling position as desired and for self-propulsion as hereinafter explained.

The self-propelling mechanism includes two brackets **51** secured to the slide frame **21** at or near the power plant **34.** The brackets **51** each has an arm **52** pivotally secured thereto by pivot bolts **55** carried in elongated slots **56** in the arms **52** permitting the arms to pivot about bolts **55** and move the length of the slots **56.**

The arms **52** each has a handle portion **60,** a main portion **61** which has the slot **56** therein, and inwardly extending bosses **62** carrying pins **63** which have springs **64** urging them inwardly towards the center of the base **10.** The pivot pins **63** each has an end **65,** a central portion **66** and a knob **67.** The pivot pins **63** by retraction against the force of the springs **64** and release can be positioned above the plates **22** as in FIG. **1** in an inactive position or in an inactive position below

the flanges 14 to serve as fulcrums and provide slidable support of the skid base.

The arms 52 at their ends opposite the handles 60 have a bolt 69 and nut 70 therethrough pivotedly connecting the arm to brackets 71 on feet 75.

The feet 75 are of a type suited to the terrain and for soft earth can be of T-shape with a transverse bearing plate 76 to which the brackets 71 are secured and a plate 77 secured to plate 76 on the side opposite to brackets 71 for engagement with the earth.

The mode of operation will now be pointed out.

In normal use when the apparatus is at rest the arms 52 have their pivot pins 63 extended inwardly and resting on top of the plate 22 holding the feet 75 above and out of engagement with the ground. When it is desired to move the skid base 10 to a new location the operator pulls out the pivot pins 63 against the springs 64 and moves the arms 52 until the pivot pins are under the flanges 14 when the pins are released. Prior to movement of the base 10 the cylinders 45 are in the retracted position as seen in FIGS. 2 and 4. To move base 10 fluid under pressure is supplied to the cylinders 45 by pipes 41 and the piston rods 46 are advanced to the left (FIG. 5) causing the frame 21 and thereby plates 77 of feet 75 to dig into the ground as arms 52 pivot about pins 63, the slots 56 accommodating angularity. Further movement of rods 46 and frame 21 to the left causes the skid base 10 to be lifted off the ground and move forward pivoting about the pivot pins 63. When the rod 46 is in fully extended position the pivot pins 63 are pulled out and fluid pressure in cylinders 45 is reversed causing the slide frame 21 to move to the right to retracted position pulling the feet 75 out of ground engagement. The cycle can be repeated as desired.

If it is desired to turn the skid base 10 then the arm 52 on the side to which the turn is desired is not moved to ground engaging position but left with pivot pin 63 on top of plate 22 and the skid base 10 will pivot by the action of the active arm 52 as the piston rod 46 advances as described above.

It will thus be seen that self-propelling apparatus has been described with which the objects of the invention are achieved.

I claim:

1. The combination of a core drilling mechanism mounted on a frame slidably carried on a skid base, means for moving said mechanism along said skid base, and means for moving the skid base along the ground, comprising

a pair of arms pivotedly mounted to said slide frame on opposite sides thereof and of a length to engage the ground,

fulcrum means carried by said arms for selective positioning in active and inactive engagement with respect to said skid base, and

ground engaging means carried by said arms, said fulcrum means when in active engagement being responsive to movement of the slide frame relative to the skid base to cause engagement of the arms with the ground and lift and slidably support the skid base whereby continuance of said relative movement advances the skid base relative to ground.

2. Apparatus as defined in claim 1 in which

said means for moving said frame is power operated

and

said power operated means is effective when said fulcrum means is in said active engagement for moving said skid base along the surface of the ground.

3. Apparatus as defined in claim 2 in which

said arms are provided with elongated slots, and

pivot members are provided in engagement with said frame and in said slots.

4. Apparatus as defined in claim 2 in which

said arms are provided with handle portions.

5. Apparatus as defined in claim 2 in which

said fulcrum means comprise retractible resiliently urged pins carried in bosses on said arms.

6. Apparatus as defined in claim 1 in which

said ground engaging means are feet pivotedly mounted to said arms at end portions thereof.

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