

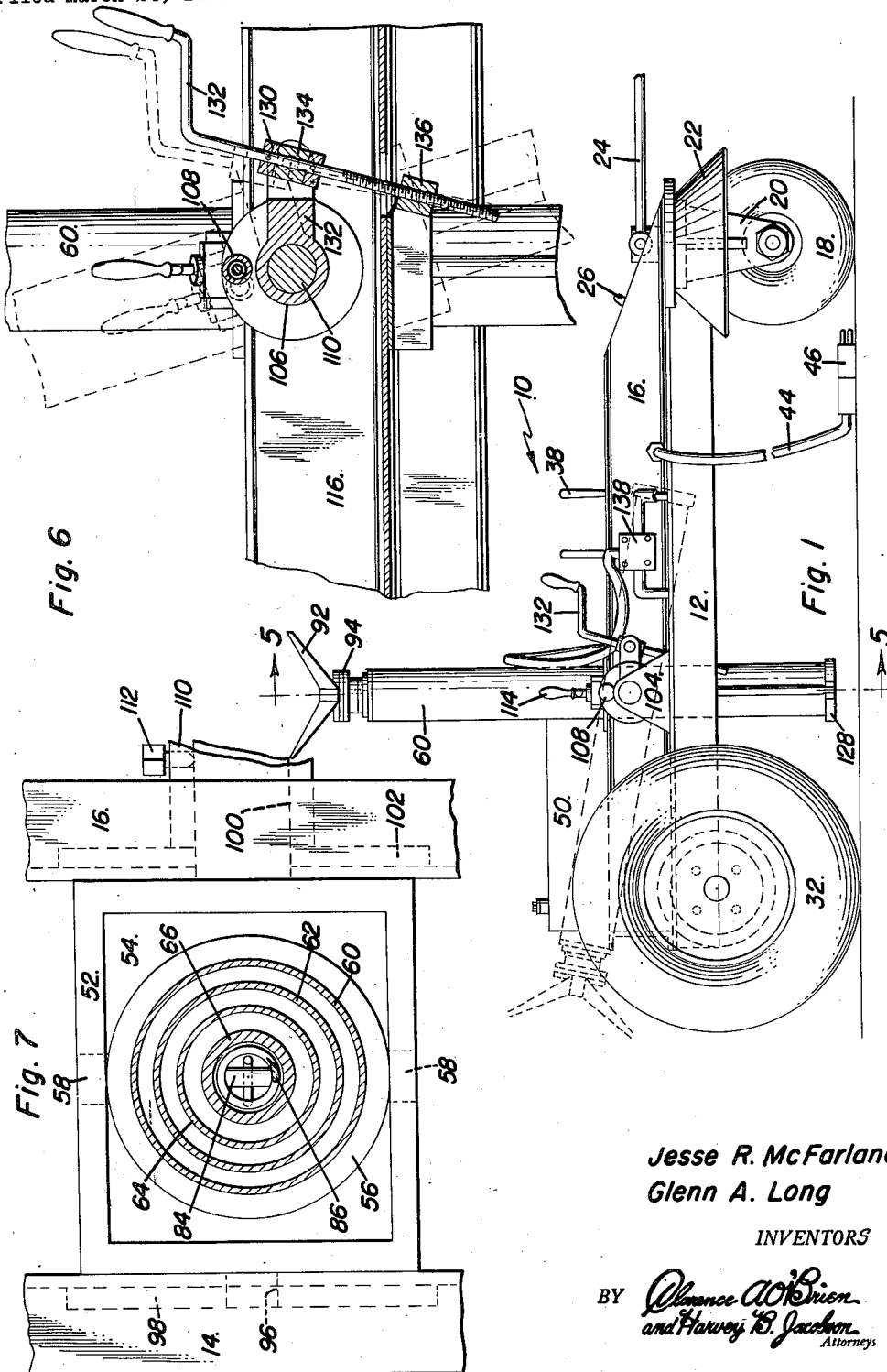
July 15, 1952

J. R. MCFARLAND ET AL
MINE TIMBER SETTING MACHINE

2,603,373

Filed March 24, 1950

4 Sheets-Sheet 1



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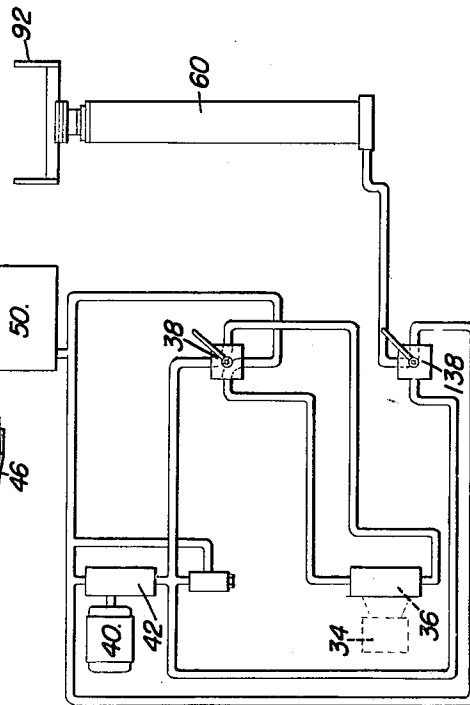
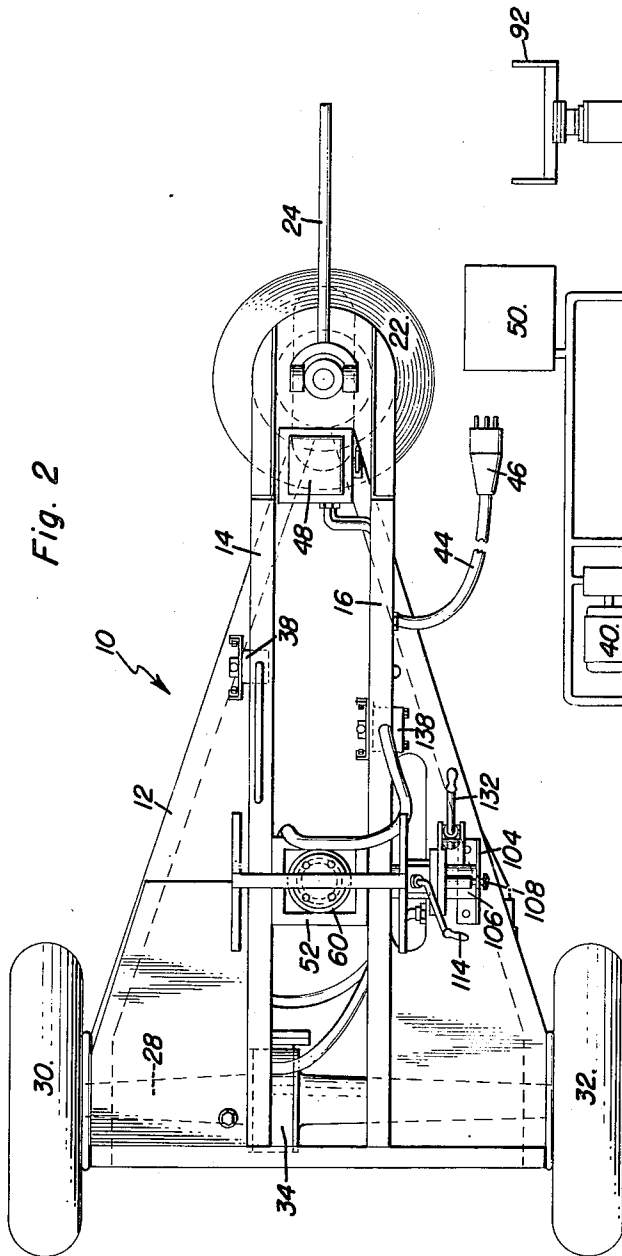
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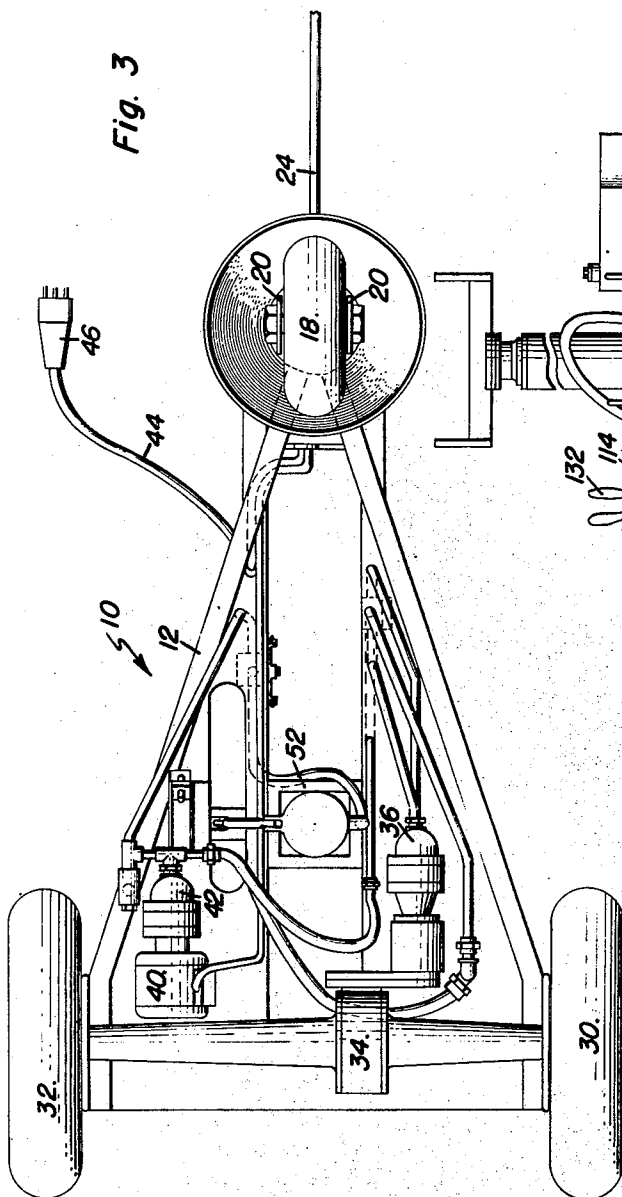


Fig. 3

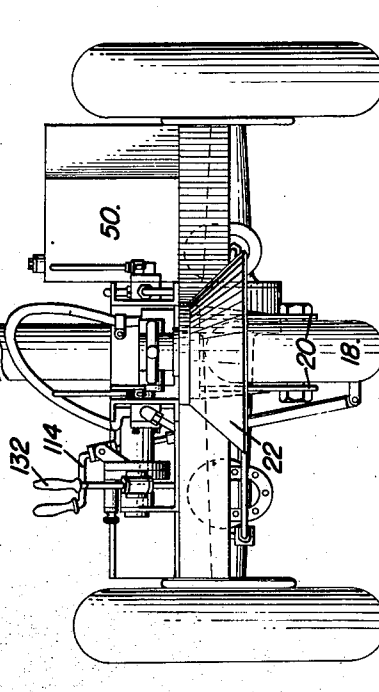


Fig. 4

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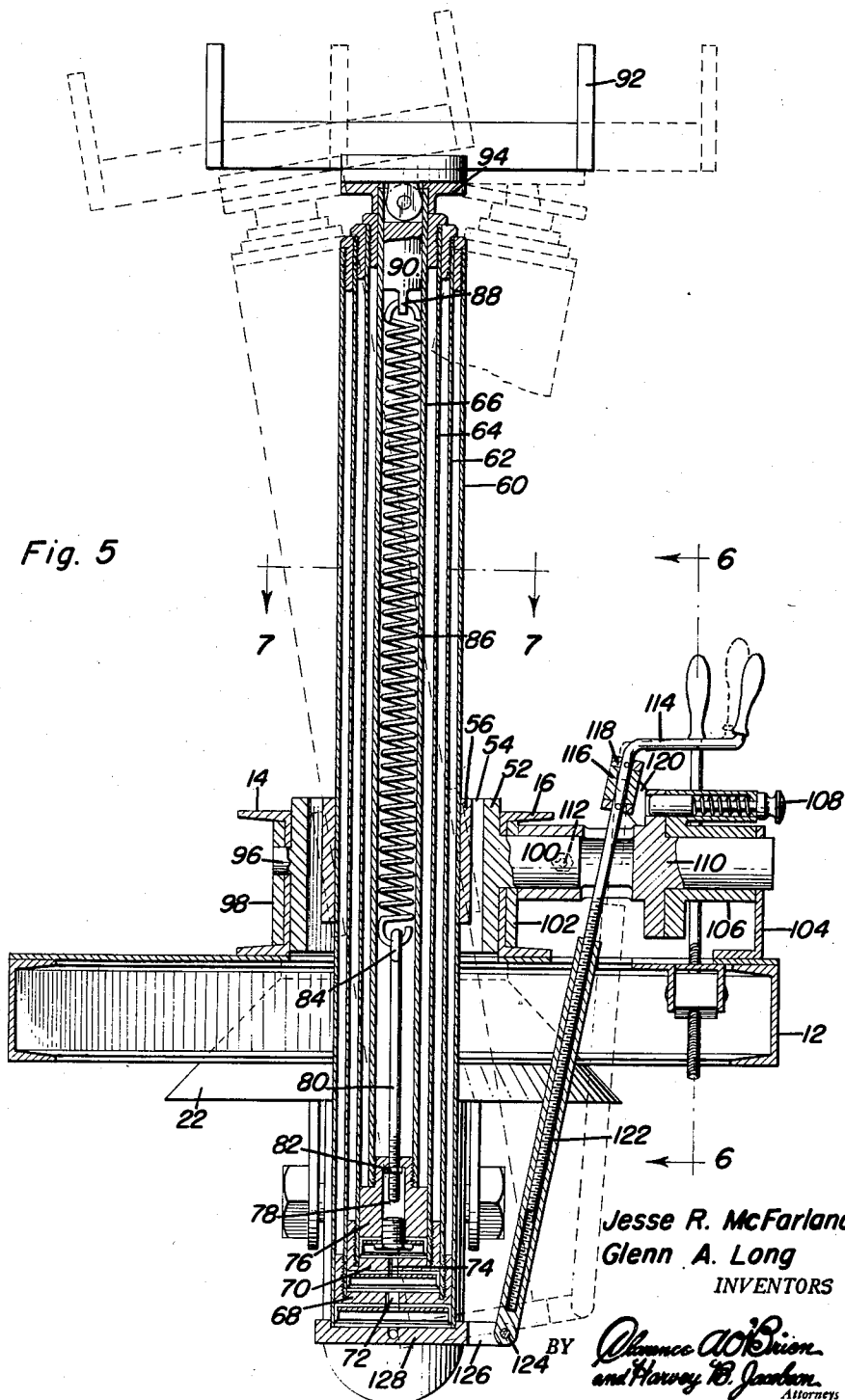
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4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

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MINE TIMBER SETTING MACHINE

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4 Claims. (Cl. 214-95)

1

This invention relates to mine machinery, and more particularly to a timber setting machine.

An object of this invention is to provide a machine for raising timbers which are to be applied to the roof of a mine and thereafter fixed in place for supporting the roof.

Another object of the invention resides in the provision of a machine for raising and holding timbers in place until they are securely supported by props, the machine having a jacking mechanism which is pivotally connected to the frame of a vehicle, which jacking mechanism is capable of being pivoted to hold the timber in any desired location.

Yet another object of this invention is achieved by the provision of a platform pivotally attached to a jacking mechanism, which platform is continuously urged by spring means to maintain a predetermined position relative to the jacking member.

Yet another object of the invention is to provide means for selectively releasing the jacking mechanism so that such may be rotated to a position substantially parallel to the frame of the vehicle on which the jacking mechanism is pivotally secured.

Still further objects of the invention reside in the provision of a machine for setting timber in a mine that is strong, durable, highly efficient in operation, simple in construction and design, capable of being used for various divergent purposes, and which employs an electrically operated prime mover for actuating hydraulic means for raising and lowering the jacking mechanism and also for propelling the vehicle.

These, together with the various ancillary objects of the invention are attained by the timber setting machine, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a side elevational view of the invention;

Figure 2 is a top plan view of the device as shown in Figure 1;

Figure 3 is a bottom plan view of the timber setting machine;

Figure 4 is a rear elevational view of the invention;

Figure 5 is a vertical sectional view as taken along the line 5-5 in Figure 1, the figure illustrating the jacking mechanism in particular and being enlarged to show the various elements thereof in greater detail;

Figure 6 is a vertical sectional view as taken along the line 6-6 in Figure 5;

Figure 7 is an enlarged horizontal sectional

2

view as taken along the line 7-7 in Figure 5; and Figure 8 is a schematic diagram of the hydraulic conduit system used in actuating the present invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 generally designates the machine comprising the present invention which is adapted to raise and hold timbers in place until they are securely supported by props so as to support the roof of a mine. The machine 10 comprises a vehicle having a yoke-like frame 12 having a pair of longitudinally extending parallel support members 14 and 16 positioned thereon.

The front wheel 18 is journaled in brackets 20 which extend downwardly from the longitudinal frame members 14 and 16. A conical shield 22 is provided for shielding the wheel so as to prevent injury to the operator of the device or damage to the machinery. The machine 10 is steered by means of the tiller rod 24 which is operatively connected to the front wheel 18.

A brake lever 26 is operatively emplaced between the members 14 and 16, and the brake rods attaching the brake lever 26 to the brake shoes extend along inside the frame 12. Journaled in the frame 12, is a drive shaft 28 to which the rear wheels 30 and 32 are secured. The wheels 30 and 32 are driven by the drive shaft 28 which, in turn, is driven by the differential assembly including a ring gear and pinion generally designated by the reference numeral 34. The pinion gear of this differential assembly is driven by the hydraulic motor 36 which is reversible and which is controlled by valve 38 mounted on the frame.

An electric motor 40 is mounted on the underside of the frame 12 and drives a pump 42 that will furnish hydraulic fluid under pressure to the motor 36 to drive the wheels 30 and 32. The hydraulic pump has a pressure regulating valve which may be set at the desired pressure. The electric motor 40 is supplied with current through cable 44 which is attached by a plug 46 to a suitable source of current. A switch box 48 is mounted on the forward portion of the frame for controlling the flow of current through the motor 40. Suitable conduits are provided for connecting the pump 42 with a fluid supply reservoir 50 suspended from the frame.

Between the members 14 and 16 and centrally located on the vehicle there is pivotally mounted the sleeve member 52. The sleeve 52 has a square

aperture 54 and within this aperture a tubular casing bracket 56 is pinned by means of pins 58. Secured to the bracket 56 is the cylinder 60 of the hydraulic jacking mechanism which includes extensible pistons 62, 64 and 66 concentrically disposed in the cylinder 60. The pistons 62 and 64 are provided with bottom plates 68 and 70 which have apertures 72 and 74 therein, respectively, permitting the passage of hydraulic fluid under pressure. The bottom plate 76 of the piston 66 is provided with a recess 78 therein and an aperture through which a bolt 80 is inserted and secured by a nut 82 in the recess 78. The bolt 82 is provided with an eye 84 at its upper end for retention of one end of a coil spring 86, the other end of which is connected through an eye 88 formed in a piston-like mounting 90 to which there is pivotally attached a supporting platform 92. As the upper end of the piston 66 is provided with a shelf or shoulder 94, the spring 86 continuously urges the platform 92 into engagement with the shelf 94 and hence into a position substantially perpendicular to the jacking mechanism within the cylinder 60. Thus, when the jacking mechanism is tilted from a position substantially vertical, the platform 92 may still engage a vertical roof, thus permitting a timber to be held in proper position.

As can be readily seen, the sleeve member 52 is provided with a pin 96 which is engageable within a plate 98 held between the flanged edges of channel member 14. Further, the sleeve member 52 has a tubular portion 100 extending therefrom opposed to the pins 96 which extends through the member 16, plate 102 and through a bracket 104 welded or otherwise secured to the frame member 12. Secured to the bracket 104 is a flanged member 106 having a spring-pressed pin 108 extending therethrough for selective engagement with a collar member 110 forming a part of the member 100, the member 110 being secured to the member 100 by means of set screw 112. Thus it can be seen that the spring-pressed pin 108 selectively retains the members 106 and 110 in engagement. When the spring 108 is withdrawn, this permits the jack mechanism to be rotated rearwardly to the position as is shown in dotted lines in Figure 1.

Extending through a slot formed in the member 110 is positioned a crank 114 which is pinned to a bearing 116 journaled in housing 118. The housing 118 is rigidly secured by suitable brackets 120 to the member 110. The other end of the crank 114 is threadedly engaged within a tubular member 122 which is pivotally connected as at 124 to an extension 126 of the bottom plate 128 of the cylinder 60. Hence, upon rotation of the crank 114, the position of the tubular member 122 will be changed and the jacking mechanism will be tilted or rocked from right to left.

In order to rock or tilt the jacking mechanism from front to rear, there is provided a bearing casing 130 to which there is secured an arm 132 extending from member 106. A crank 132 extends through the casing 130 and is secured to a bearing 134 journaled within the casing 130. The threaded end of the crank 132 is threadingly engaged within a threaded block 136 secured to the frame 12. Thus, with the pin 108 in its engaging position, upon rotation of the crank 132, the jacking mechanism may be rocked or tilted from the front to the rear.

As can be readily understood, the hydraulic fluid from the pump 42 is supplied to the jacking mechanism cylinder 60 through a suitable in-

let conduit and a valve 138 is provided for actuating or deactivating the jacking mechanism.

The timber setting machine can be used for numerous other purposes, due to the way the platform 92 is cap-screwed to the shelf or shoulder 94 so it can be disengaged and other type platforms 92 can be cap-screwed to 94 for auger drills, jack hammer drills, pushing in roof bolts or holding square timber, or even I-beams and channel iron in the construction of various kinds of buildings.

Since from the foregoing the construction and advantages of this mine timber setting machine is readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiment shown and described, but all suitable modifications and equivalents may be readily resorted to which will fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A machine for setting timber overhead in a mine comprising a vehicle having a frame, a sleeve pivotally secured to said frame, a jacking mechanism pivotally secured to said sleeve, means attached to said jacking mechanism for rocking the jacking mechanism in a direction transverse of the longitudinal axis of said vehicle, means engaging said sleeve for rocking the jacking mechanism in a direction parallel to the longitudinal axis of said vehicle, and means for selectively disengaging said sleeve from said second recited means to permit said jacking mechanism to be rotated to a substantially horizontal position, a pair of drive wheels secured to said frame, and hydraulic means on said vehicle, said hydraulic means actuating said jacking mechanism and said drive wheels.

2. A machine for setting timber overhead in a mine comprising a vehicle having a frame, a sleeve pivotally secured to said frame, a jacking mechanism pivotally secured to said sleeve, means attached to said jacking mechanism for rocking the jacking mechanism in a direction transverse of the longitudinal axis of said vehicle, means engaging said sleeve for rocking the jacking mechanism in a direction parallel to the longitudinal axis of said vehicle, a platform pivotally secured at the top of said jack mechanism, and means secured to said platform continuously urging said platform into a position at right angles to said jacking mechanism.

3. A machine for setting timber overhead in a mine comprising a vehicle having a frame, a sleeve pivotally secured to said frame, a jacking mechanism pivotally secured to said sleeve, means attached to said jacking mechanism for rocking the jacking mechanism in a direction transverse of the longitudinal axis of said vehicle, means engaging said sleeve for rocking the jacking mechanism in a direction parallel to the longitudinal axis of said vehicle, a platform pivotally secured at the top of said jacking mechanism, and means secured to said platform continuously urging said platform into a position at right angles to said jacking mechanism, and means for selectively disengaging said sleeve from said second recited means to permit said jacking mechanism to be rotated to a substantially horizontal position.

5

4. A machine for setting timber overhead in a mine comprising a vehicle having a frame, a sleeve pivotally secured to said frame, a jacking mechanism pivotally secured to said sleeve, means attached to said jacking mechanism for rocking the jacking mechanism in a direction transverse of the longitudinal axis of said vehicle, means engaging said sleeve for rocking the jacking mechanism in a direction parallel to the longitudinal axis of said vehicle, a platform pivotally secured at the top of said jacking mechanism, and means secured to said platform continuously urging said platform into a position at right angles to said jacking mechanism, and means for selectively disengaging said sleeve from said second recited means to permit said jacking mechanism to be rotated to a substantially horizontal position, a pair of drive wheels secured to said frame, and hydraulic means on said vehicle, said hydraulic means actuating said jacking mechanism and said drive wheels.

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6

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