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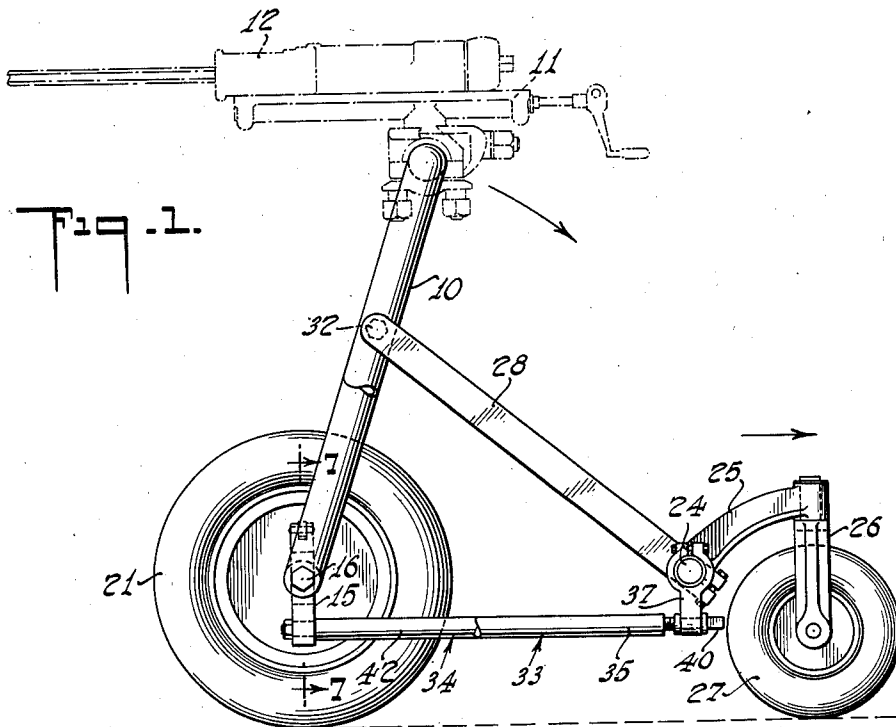
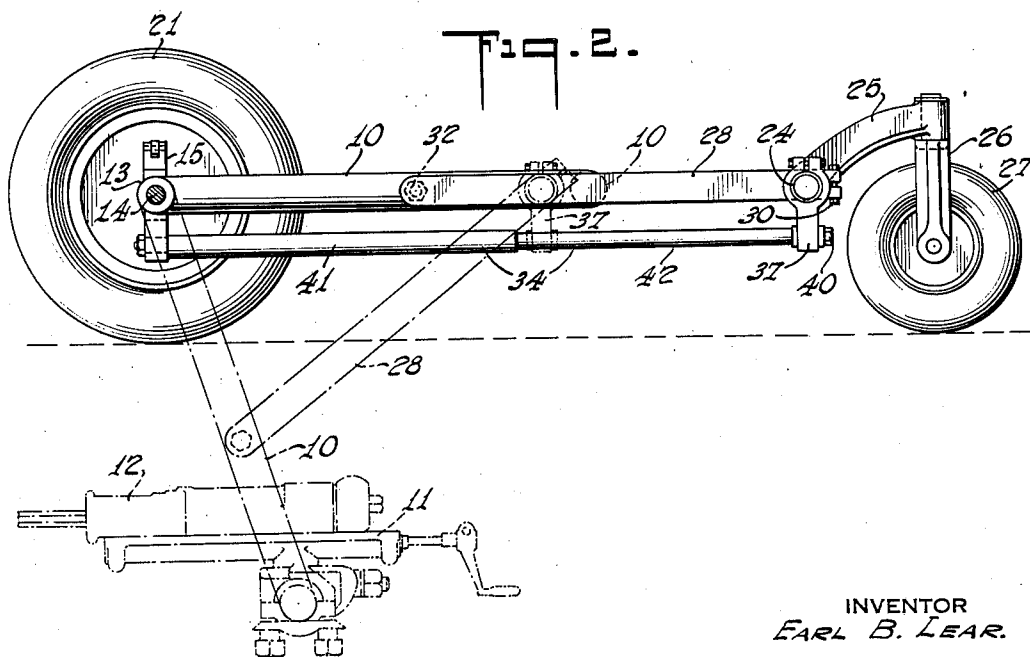
E. B. LEAR

2,168,905

WAGON DRILL

Filed July 31, 1937

3 Sheets-Sheet 1



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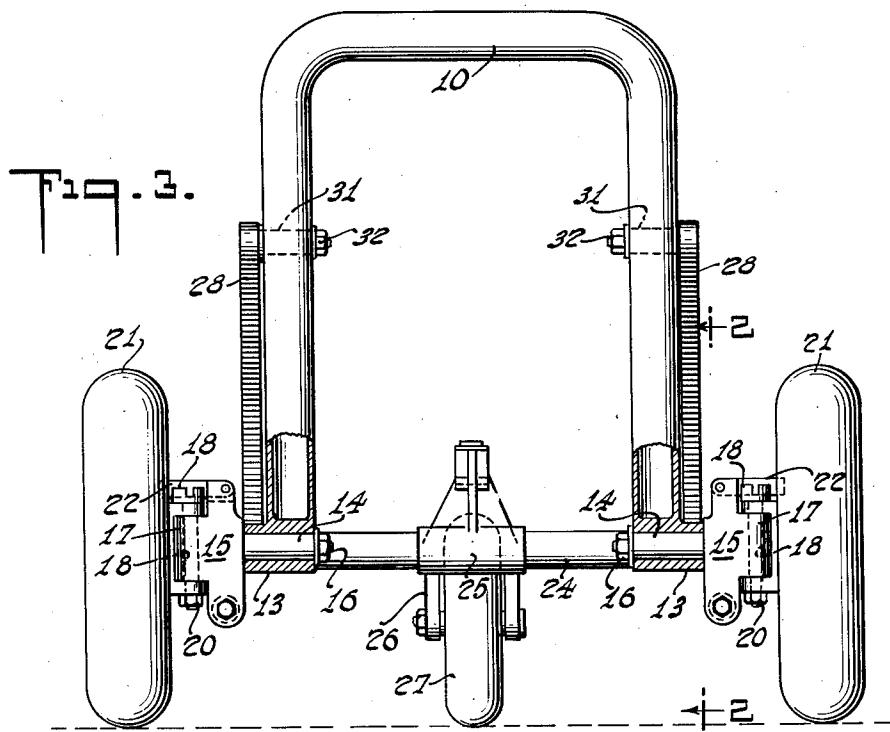
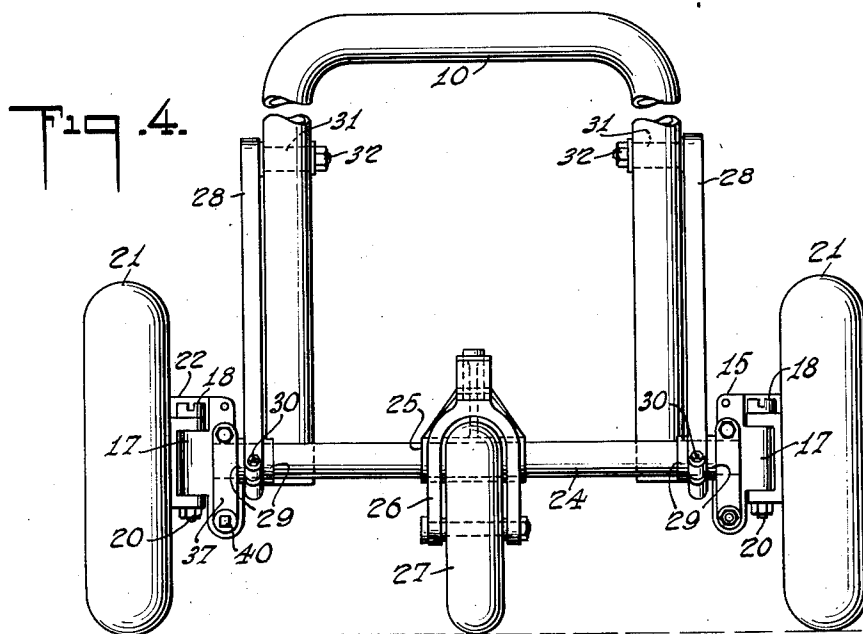
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3 Sheets-Sheet 2



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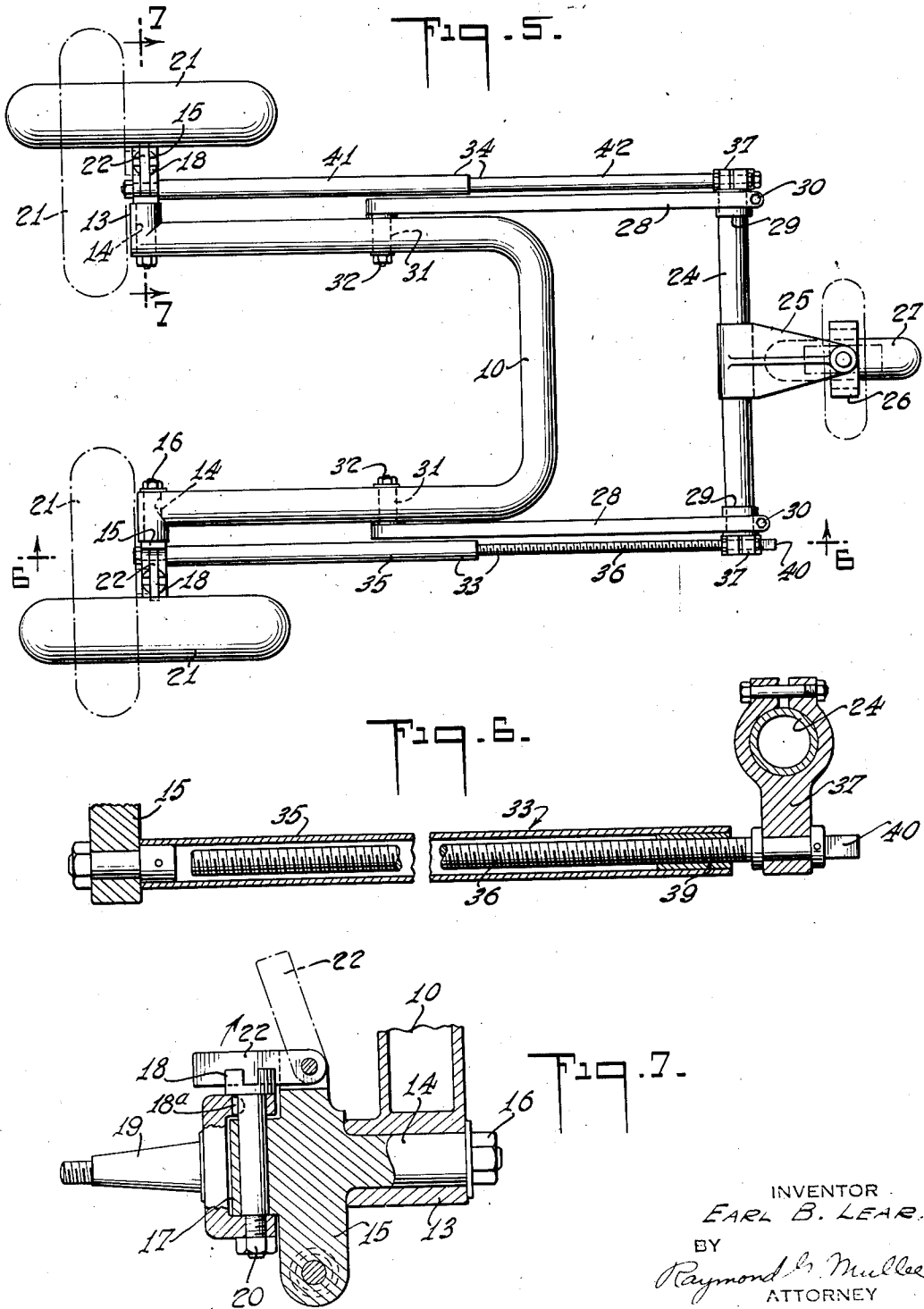
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3 Sheets-Sheet 3



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2,168,905

WAGON DRILL

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Application July 31, 1937, Serial No. 156,695

7 Claims. (Cl. 255—51)

This invention relates to rock drilling apparatus and more particularly to a portable mounting upon which a rock drill of the drifter type may be adjustably supported.

5 An object of the invention is to increase the range of adjustment of the position of the drilling tool.

Another object is the provision of a rock drill mounting having conveniently operable mechanism for permitting the operator to swing the drill to various positions and angles quickly and with minimum effort.

10 A further object is the provision of a light weight wagon drill which is simple in construction and inexpensive to manufacture.

Conventional wagon mountings for drills comprise a base frame or chassis, mounted on wheels, and arranged to carry an adjustable tool supporting frame. In accordance with a feature of this invention, the wheels are pivoted direct to the adjustable tool support and the rigid base frame is eliminated.

Another feature of the invention resides in an improved arrangement for adapting the front wheels to be swung to a position either parallel to the axis of the drilling tool or at right angles thereto.

Other features and objects of the invention will appear more clearly from the following description taken in connection with the accompanying drawings and appended claims.

In the accompanying drawings, which illustrate a preferred embodiment of the invention:

Fig. 1 is a side elevation of a drill mounting according to the present invention, showing a rock drill supported in operative position thereon, a portion of the mounting being broken away;

Fig. 2 is a section, as indicated by the arrows 2 in Fig. 3, showing the parts in different positions of adjustment;

Fig. 3 is a front view, partly in elevation and partly in section;

Fig. 4 is a rear view;

Fig. 5 is a plan view;

Fig. 6 is a fragmentary longitudinal section, as indicated by the arrows 6 in Fig. 5, illustrating the crank operated adjusting mechanism; and

Fig. 7 is a section through one of the wheel swivel members, as indicated by the arrows 7 in Fig. 5.

Figs. 6 and 7 are drawn on a larger scale than Figs. 1 to 5 inclusive.

The illustrated embodiment of the invention comprises a tool supporting frame or U-bar 10, preferably made of tubular elements. A guide

shell 11 for a rock drill 12 may be mounted on the central or cross portion of the U-bar in the usual manner, whereby the shell is adapted to be pivoted, swivelled and adjusted laterally with respect to the tool support 10. The U-bar 10 is supported for pivotal movement about a horizontal axis. As shown best in Figs. 3 and 7, the free ends of the U-bar are provided with bearings 13 supported on horizontal trunnions 14 carried by wheel swivel members 15. Nuts 16 secure the U-bar to its carriers 15 but permit relative pivotal movement. Each carrier or swivel member 15 has an extension 17 which is apertured to provide a bearing for a king pin 18. The king pin is carried by the forked end of a wheel spindle 19, to which it is secured by a nut 20. A key 18a locks the king pin against rotation relative to spindle 19. Wheels 21, hereinafter referred to as the front wheels, are mounted on the spindles 19. As seen in Fig. 5, the front wheels may be positioned either parallel to or at right angles to the axis of the drill. For the purpose of locking the wheels in adjusted position, a latch 22 is pivoted to each of the wheel swivel members 15 and is adapted to extend into one of two slots in the head of the king pin 18.

At the rear end of the mounting a cross-bar 24, preferably of tubular construction, is carried by a bracket 25 to which it is rigidly connected. A yoke 26, carrying the axle for the rear wheel 27, is swivelled to the bracket 25 and supports the bracket and cross-bar 24.

Side arms 28 provide a brace for the tool supporting frame or U-bar 10. The rear end of each arm is perforated to embrace the cross-bar 24 between two flanges 29 and is securely clamped to the cross-bar by a bolt 30. The front ends of the side arms 28 are provided with trunnions 31 pivoted in sockets (not shown) in the U-bar and adapted to be clamped in adjusted position by nuts 32.

Connecting arms 33 and 34 hold the cross-bar 24 in adjustable spaced relation to the U-bar carriers or front wheel swivel members 15. As shown in Fig. 6, arm 33 comprises a sleeve 35 rigidly connected at its front end to a depending portion of carrier 15 and a threaded rod 36 operatively connected to the rear cross-bar 24. A split collar 37, clamped around the cross-bar 24, has a depending portion providing a bearing in which rod 36 is supported for rotation but held against relative axial movement. The screw threaded portion of rod 36 projects into sleeve 35 and cooperates with a nut 39 fixed in the sleeve, as by a press fit. At its rear end, the rod 36 has a square section 40 adapted for attachment to a crank handle (not

shown) by means of which the rod may be rotated. Connecting arm 34 comprises a sleeve 41 fixed to wheel swivel member 15 and a rod 42 which telescopes in the sleeve 41 and which is clamped at its rear end to the cross-bar 24.

In operation, the front wheels 21 and carriers 15 support the free end of the U-shaped tool supporting frame 10 which carries the drill at its cross portion. The sides of the U-bar are braced by the side arms 28 which are carried at their rear ends by the wheel supported cross-bar 24. Pivotal movement of the U-bar is prevented by the clamping nuts 32 and clamping bolts 30 which hold the U-bar 10, side arms 28 and cross-bar 24 in fixed relation to each other and to the front wheel swivel members 15. The connecting arm 33 assists in fixing the cross-bar with respect to the wheel swivel members 15 while the telescopic connecting arm 34 adds to the stability of the structure. The angle of elevation of the U-bar depends on the distance between the carriers 15 and 24 for the U-bar and brace arms 28 respectively.

Assuming that it is desired to lower the drill 12 from the position illustrated in Fig. 1, the operator loosens clamping bolts 30 and clamping nuts 32, applies a crank handle to the threaded rod 38 and rotates the latter in a counterclockwise direction. The cross-bar 24 and rear wheel 27 are moved rearward, and the U-bar clockwise, as indicated by the arrows in Fig. 1. The clamping bolts and nuts are then tightened to condition the drill for operation in the selected position.

For drilling holes in the wall of a trench, the mounting may be supported on the surface of the ground with the front wheels astraddle the trench. By means of the present invention, it is convenient to move the drill below the level of the wheels without detaching the drill or its guide shell with respect to the U-bar. As explained hereinbefore, counterclockwise rotation of the threaded rod 36 swings the U-bar 10 and moves the rear wheel 27 in the directions indicated by the arrows in Fig. 1. This operation may be continued until the U-bar is horizontal, as shown in full lines in Fig. 2, after which the direction of rotation of threaded rod 38 is reversed to move the drill below the level of the wheels, as indicated by the broken lines in the same figure. It should be noted that as the U-bar 10 approaches a horizontal position, the rear wheel 27 recedes from the front end of the mounting and the cross-bar 24 is moved out of the path of the drill 12 and guide shell 11.

Fig. 5 shows the wheels 21 and 27 in two different positions of adjustment. When they are in the position shown in full lines, the mounting may be moved freely in a longitudinal direction. In their broken line position, they permit lateral movement of the mounting which is a desirable feature in connection with the drilling of a series of horizontal holes. The arrangement of the front wheels 21 transverse to the axis of the drill permits the mounting to be moved close to a wall and moreover is effective in resisting the tendency of the mounting to roll in response to the recoil of the drill. The front wheels 21 swing about the axes of the king pins 18 and are locked in adjustable position by the releasable latches 22.

The words "front" and "rear", wherever employed in the specification and claims, are relative terms for describing the position of certain parts of the mounting with respect to other parts and do not necessarily limit the invention to any

particular relationship between the mounting and the supported drill.

While the invention has been herein disclosed in what is now considered to be a preferred form, it will be understood that the invention is not limited to the specific details thereof but covers all changes, modifications and adaptations within the scope of the appended claims.

What is claimed is:

1. A rock drill mounting comprising a tool supporting frame having means at its rear end for supporting a rock drill, carrier means supporting the front end of the frame, said frame being connected to the carrier means for pivotal movement relative thereto about a horizontal axis, a brace arm pivoted at its front end to a portion of the frame intermediate the ends of the latter, a cross-bar pivotally supporting the rear end of the brace arm, a connecting arm extending between and connected to the cross-bar and said carrier means, releasable means for locking the frame against pivotal movement relative to the brace arm, said connecting arm being of adjustable length whereby the distance between the cross-bar and the carrier means may be varied.

2. A rock drill mounting having a cross-bar at its rear end, a pair of carriers at its front end, a tool supporting frame supported at its front end by said carriers and connected thereto for relative pivotal movement about a horizontal axis, a pair of connecting arms extending between and connected to the carriers and the cross-bar, means for adjusting the distance between the cross-bar and carriers, and a brace pivoted at its rear end to said cross-bar and at its front end to said frame whereby to impart tilting movement to the frame while said distance is being adjusted, said connecting arms being inflexibly connected to the carriers to prevent relative pivotal movement therebetween.

3. A rock drill mounting according to claim 2 in which one of the connecting arms comprises telescoping elements and the other arm comprises threaded elements, one of said threaded elements having means for attachment to a crank handle for extending and contracting said last-mentioned arm.

4. A rock drill mounting comprising a tool supporting frame having means at its rear end for supporting a rock drill, carrier means supporting the front end of the frame for pivotal movement about a horizontal axis, a brace arm pivoted at its front end to a portion of the frame intermediate the ends of the latter, a cross-bar pivotally supporting the rear end of the brace arm, a connecting arm extending between the cross-bar and said carrier means, said connecting arm comprising complementary threaded elements one of which connected to the cross-bar and the other of which is rigidly connected to the carrier means, and means for causing relative rotation of said elements to impart pivotal movement to the brace arms and frame.

5. A rock drill mounting comprising a U-bar adapted to support a rock drill, carriers pivotally supporting the front ends of the U-bar, a cross-bar at the rear end of the mounting, a pair of arms connecting the carriers to the cross-bar, said U-bar being adapted to be swung above and below a horizontal position between said connecting arms, said cross-bar being arranged to be moved away from said carriers as the U-bar approaches a horizontal position to prevent obstruction of the U-bar or the drill mounted thereon, and means for fixing said connecting

arms rigidly to the carriers and cross bar to maintain said cross bar in adjusted spaced relation to the carriers.

5 6. A rock drill mounting comprising a tool supporting frame, a pair of carriers, the front end of said frame being connected to the carriers for pivotal movement relative thereto about a horizontal axis, a cross-bar at the rear end of the mounting, a pair of connecting arms between said carriers and cross-bar, a brace extending between and pivotally connected to the frame and the cross-bar, said connecting arms being adjustable in length to effect tilting move-

ment of the frame, a pair of wheel spindles each associated with a carrier and connected thereto for relative pivotal movement about a vertical axis, and means for preventing pivotal movement between the carriers and connecting arms whereby to maintain said axis in a vertical position 5 irrespective of the tilting movement of the frame.

7. A rock drill mounting according a claim 6 in which positive means is provided for moving the carrier and wheel spindles as a unit toward 10 and from the cross-bar.

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