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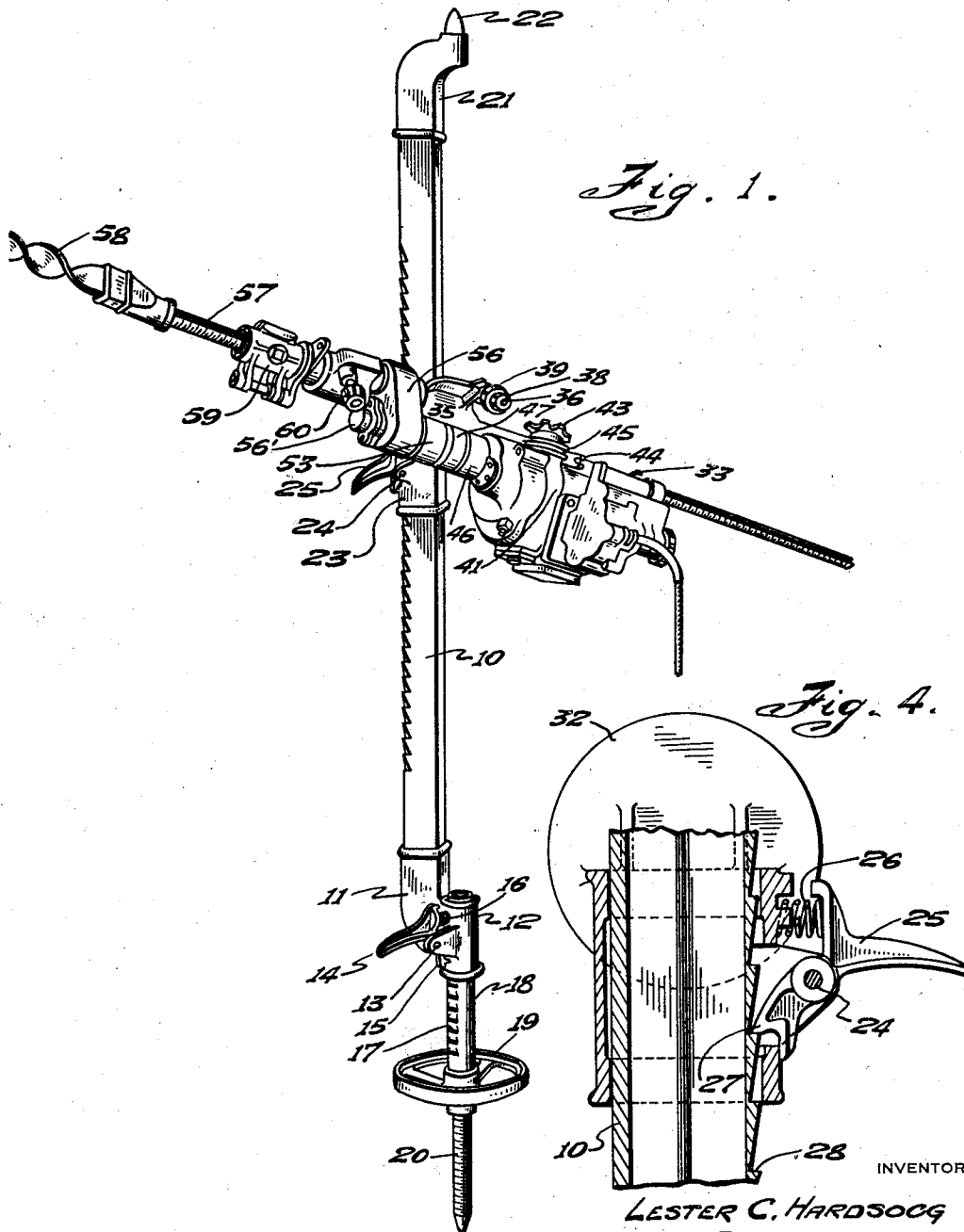
L. C. HARDSOOG

1,833,834

DRILLING MACHINE

Filed Feb. 25, 1929

3 Sheets-Sheet 1



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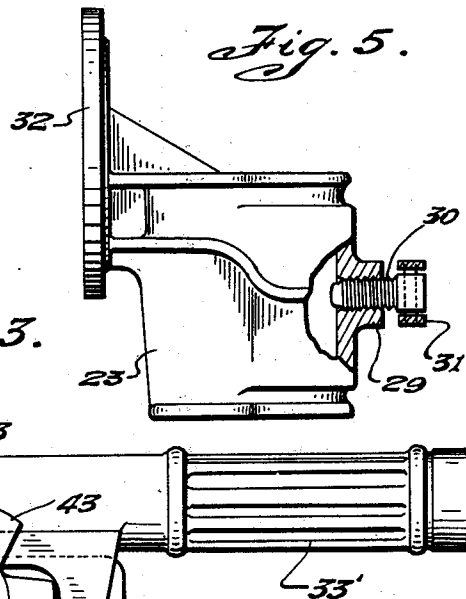
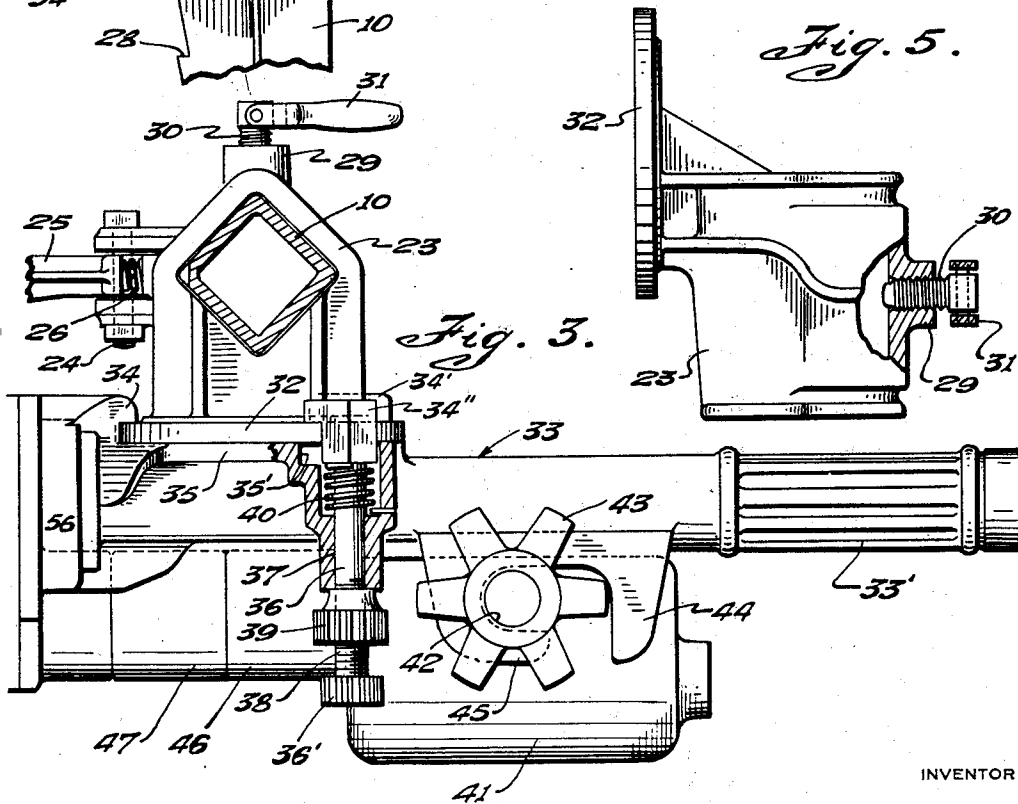
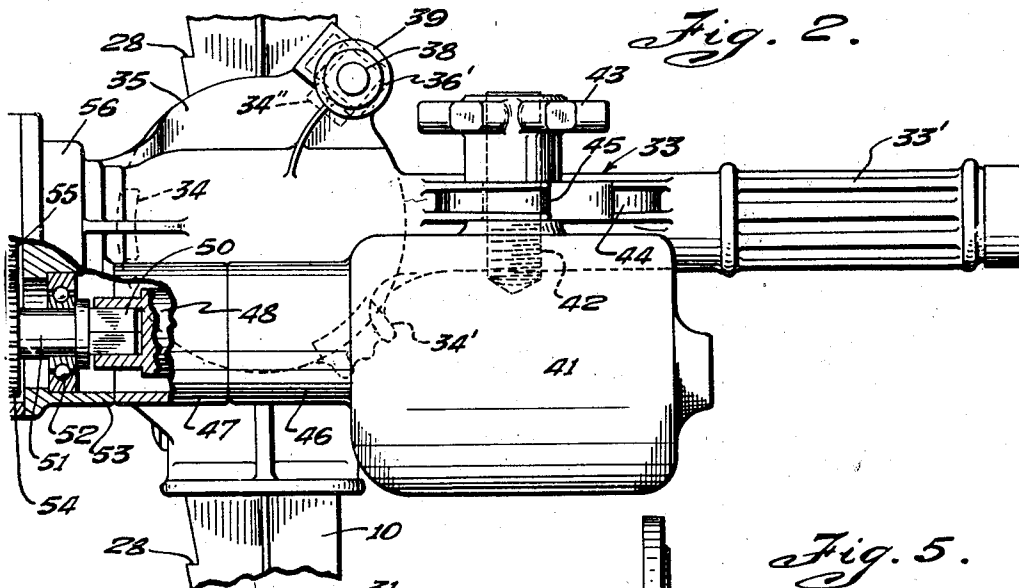
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3 Sheets-Sheet 2



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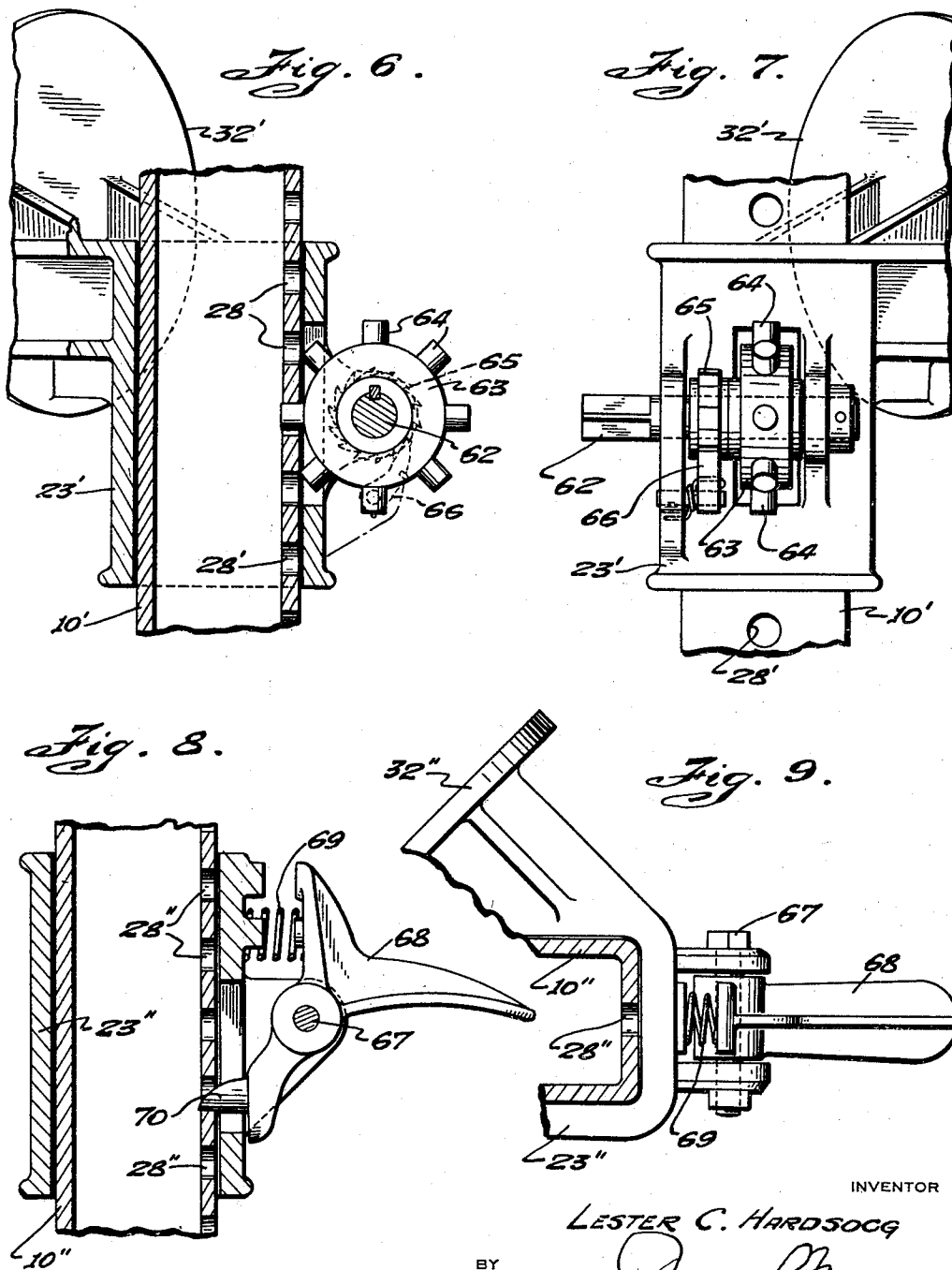
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DRILLING MACHINE

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3 Sheets-Sheet 3



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DRILLING MACHINE

Application filed February 25, 1929. Serial No. 342,445.

The present invention relates to improvements in drilling machines having particular reference to the type of machine used in coal mining, one object of the present invention being the provision of an apparatus of this type which can be readily handled, adjusted and manipulated by one man and wherein the prime mover, which is an electric motor, is readily attached to and detached from the drill-operating mechanism by a simple longitudinal sliding movement.

Another object of this invention is the provision of a novel arrangement of supporting casting which is adapted to be longitudinally moved upon a supporting member, said casting being provided with means for detachably connecting the drill mechanism so that said mechanism may be adjusted at various angular positions and properly supported thereat.

Still another object of this invention is the provision of a fixed drill mechanism carrying member in which the operating mechanism for the drill is so constructed that an electric motor is readily attached to or detached therefrom.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangements of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of the claims without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 is a perspective view of the complete apparatus;

Figure 2 is a side elevation of the main portion of the present mechanism showing the casing broken away to illustrate the detachable connection of the motor shaft with the drill operating mechanism;

Figure 3 is a cross-section through the main supporting member looking downwardly upon the central portion of the present mechanism, a portion of which is shown in section to illustrate the manually adjustable means for disconnecting the drill mechanism

carrying member or adjusting the same in an angular position;

Figure 4 is a longitudinal sectional view through the supporting member and the co-operating portion of the drill mechanism carrying member;

Figure 5 is a side elevation of the latter member with a portion shown in section;

Figure 6 is a longitudinal sectional view through a modified form of support and the means for adjusting the carrying member thereon;

Figure 7 is a view taken at right angles to the construction as shown in Figure 6;

Figure 8 is a view similar to Figure 6 of still another modified form; and

Figure 9 is a partial section and top elevation of the construction as shown in Figure 8.

Referring to the drawings, and more particularly to Figures 1 to 5, inclusive the numeral 10 designates the main support which is here shown as a hollow rectangular member having its lower end attached to the casting 11 which with the offset tubular portion 12 carries for longitudinal sliding movement the adjustable tubular member 13, the member 12 being provided with the fulcrum 13 for the manually operated lever 14 whose ratchet or pawl end 15 is normally held by the spring 16 for engagement with the rack 17. By this means the member 18 is vertically adjusted to the desired position and with a final adjusting means including the screw-actuating wheel 19 and the threaded floor-engaging member 20. At the opposite end of the support 10 is a casting 21 provided with the fixed wall-engaging pointed member 22.

Mounted upon the member 10 for longitudinal sliding movement is a casting 23, the same being adapted to embrace said member and provided with the fulcrum 24 for the lever 25. This lever 25 is provided with a spring 26 which normally holds the ratchet end 27 thereof in engagement with the teeth 28, said teeth 28 being, as shown, formed upon one of the angular corners of the hollow support 10. By this means the member 23 is manually controlled and adjusted upwardly upon the member 10 to be held against down-

ward displacement by means of the pawl 27. In order to lock this member in adjusted position, a set screw 30 which is mounted in the boss 29 and has the manipulating handle 31 pivoted thereto, the same being particularly shown in Figures 3 and 5.

The member 23 is provided with the circular disk or plate 32 which, as shown, is at right angles to the axial center of the member 23 and constitutes the support for the drill mechanism carrying member 33. This member, as here shown, is provided with the hand-grip portion 33' at one side and with the disk portion 35 which is adapted to abut the disk 32, the rim of which is adapted to be seated within the recesses of the fixed fingers or lugs 34 and 34' and to be finally held in adjusted position by means of the hooked terminal 34'' carried by the bolt or spindle 36, here shown as journaled in the tubular portion 37, and so disposed and arranged that when the same is manipulated, to be rotated by the knob 36', after being released is moved by the spring 40 exteriorly of the periphery of the disk 32 into the recess 35' of the member 33. Therefore, in order to move the member 36 so the hooked member 34'' will assume the position as shown in Figure 3, the same is pushed upwardly, as there illustrated, and turned to the left, so that the hook portion of said terminal will bear upon the outer face of the disk 32, and through the manipulation of the interiorly threaded nut 39 upon the threaded end 38 of the spindle 36, will clamp the spindle so that the member 33 is locked in the desired angular adjustment.

The electric motor 41 is provided with the threaded member 42 which is adapted to receive the clamping nut 43 mounted thereon, the threaded member being adapted to be introduced between the lugs 44 and 45 of the member 33, thus requiring a movement toward the member 33 and longitudinally thereof to present the portion 46 of the casing of the motor against the fixed sleeve 47 of the member 33 and thus cause the socketed end 48 of the motor shaft to engage the angular end 50 of the driven shaft 51 of the drill-actuating mechanism, said shaft being anti-frictionally supported by means of the anti-friction bearing 52 supported in the member 53. The gear 54 carried by the shaft 51 is in mesh with the gear 55 journaled in the portion 56 of the frame 33 and, in turn, drives the longitudinally slidable drill chuck-carrying thread bar or shaft 57 with the removable drill 58, the boxing 59 constituting a support for the shaft 57. A friction band 60 is provided to work on a drum (not shown) for regulating the forward feed of the bar 57 by retarding or stopping the rotation of the feed nut. The portion 56 of the member 53 is provided with a removable cap 56' for the outer end of the shaft 51.

It will thus be seen that in this construction the plate 32 permits the angular adjustment of the motor and drill-carrying member 33, while the frame 23 is longitudinally adjustable upon its support 10. It is also apparent that by releasing the nut 43 and sliding the motor 41 to the right, as viewed in Figures 2 and 3, the motor shaft will be disengaged from the shaft 51, and by moving it away from the member 33 the motor is entirely detached from the present mechanism. This is an important feature in a construction of this type inasmuch as the member 33 and the member 23 may be adjusted in the relative angular position for the manipulation of the drill without the extra weight of the motor, the motor being assembled after the adjustment is made.

In Figures 6 and 7 have been illustrated a mechanism whereby the frame or member 23, may be longitudinally adjusted upon its hollow support 10', said support, in this instance, being provided with the apertures 28' for the reception of the pins 64 carried by the rotary member 63, which, as here shown, is fast to the shaft 62, which shaft is adapted to be driven by a crank or other device not shown. Upon the shaft 62 is also disposed a toothed or ratchet wheel 65 normally engaged by the spring-actuated pawl 66. Thus, by rotating the shaft 62 anti-clockwise, as viewed in Figure 6, the frame 23' and its supporting disk 32' will be elevated. To lower the device, it is necessary to release the pawl 66.

In the arrangement shown in Figures 8 and 9, the supporting member 10'' is provided with the apertures 28'' while the longitudinally movable member 23'' is provided with the fulcrum 67 which supports the lever 68, the spring 69 exerting a pressure upon said lever so as to cause the tapered opening entering member 70 to be pressed toward the support 10'' to engage one of the openings 28'' and thus support the member 23'' with its disk 32'' in the desired adjustment.

From the foregoing description, taken in connection with the drawings, it will be evident that with a mining drill constructed according to the present invention, the standard 10 may be set up in its desired position within the mine, the member 23 being carried thereby at all times and then being adjusted at the proper elevation. The member 33 is now attached to the plate 32 of the member 23, and at its desired angular position, such member 33 being preferably minus the motor 41. After the member 23 is thus properly adjusted with its burden, the drill mechanism carrying member 33, the motor is attached as heretofore described and the drill apparatus is ready for use. Thus it will be seen that with this type of mechanism one man can operate the same, that is, set it up or take it down, and operate the drills in the boring operation.

I claim:—

1. In a drilling machine having a support and a member adjustably mounted thereon, a drill-carrying member supported intermediate of its ends by the adjustable member and capable of angular displacement relative to the said adjustable member, a drill shaft mounted in said carrying member, an electric motor, driving means for said drill shaft carried by said drill shaft carrying means and engageable by said motor when said motor is moved toward the forward end of said drill carrying member, and cooperable means between said motor and drill-carrying member for detachably connecting the motor to the drill-carrying member simultaneously with the connection of the motor with said driving means.

2. In a drilling machine having a support and a member adjustably mounted thereon, a drill-carrying member supported intermediate of its ends by the adjustable member and capable of angular displacement relative to the said adjustable member, a drill shaft mounted in said carrying member, an electric motor, drill shaft driving means carried by said drill shaft carrying member, cooperating means between said drill shaft driving means and the shaft of the electric motor for detachably connecting the two by longitudinal sliding action, and cooperable means between the motor and drill carrying member for detachably connecting the motor to the drill-carrying member simultaneously with the engagement of the motor shaft with the drill shaft.

3. In a drilling machine having a supporting casting and a disk thereon, a drill mechanism carrying member, means carried by said member for engaging the disk and attaching the drill-carrying member to said disk for angular adjustment relative to the casting, a drill shaft and means for driving same mounted in said member, an electric motor engageable with said driving means by movement of the motor toward the forward end of the drill carrying member, and cooperative means carried by the motor and the drill mechanism carrying member for detachably securing the motor to the drill carrying member, said last named means comprising a clamp screw carried by the motor and a lug carried by said carrying member and having an opening directed toward the rear end of said member to receive said screw when the motor is shifted toward the forward end of said member.

In testimony whereof I have hereunto set my hand.

LESTER C. HARDSOCK.