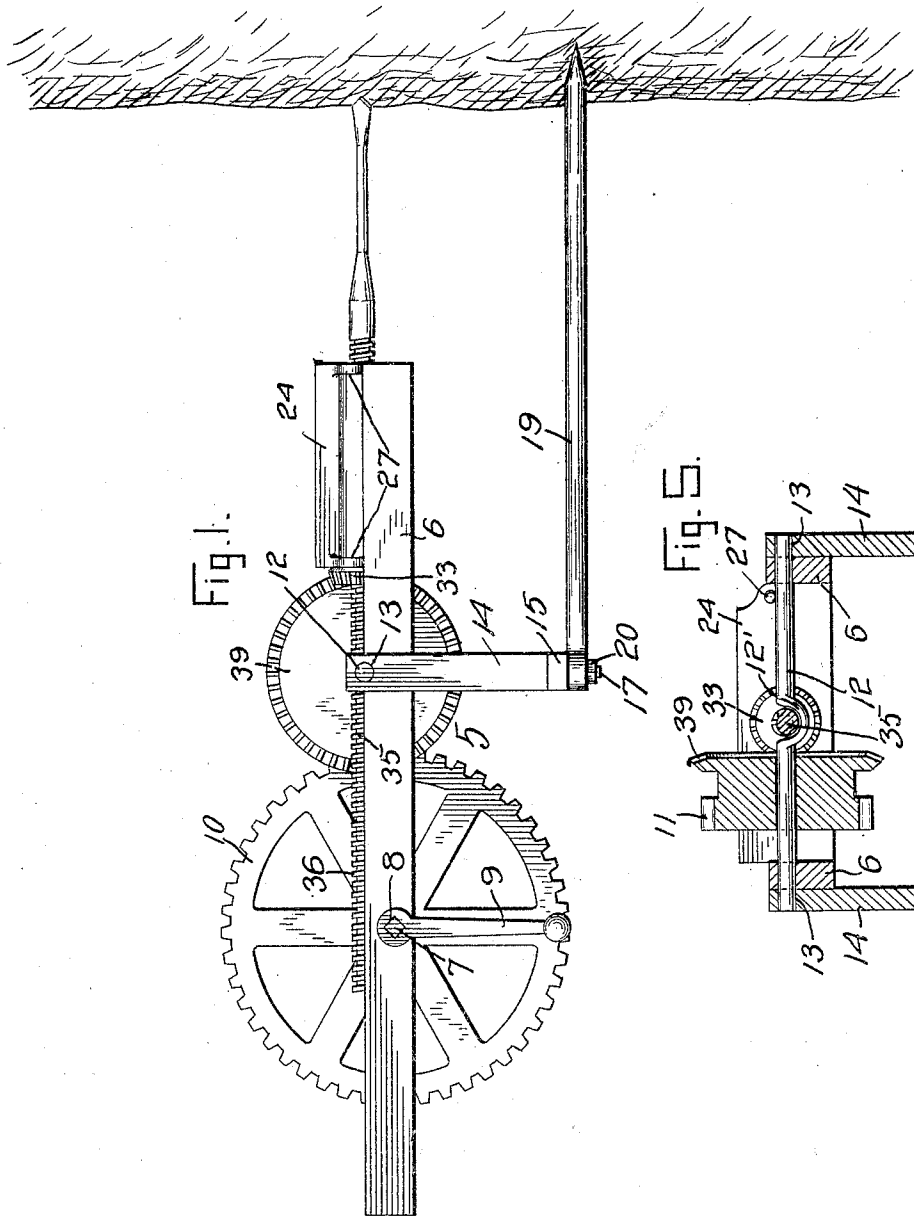


C. SEALS.
COAL AND ROCK DRILLING MACHINE.
APPLICATION FILED OCT. 16, 1907.

959,079.

Patented May 24, 1910.

3 SHEETS—SHEET 1.



Witnesses

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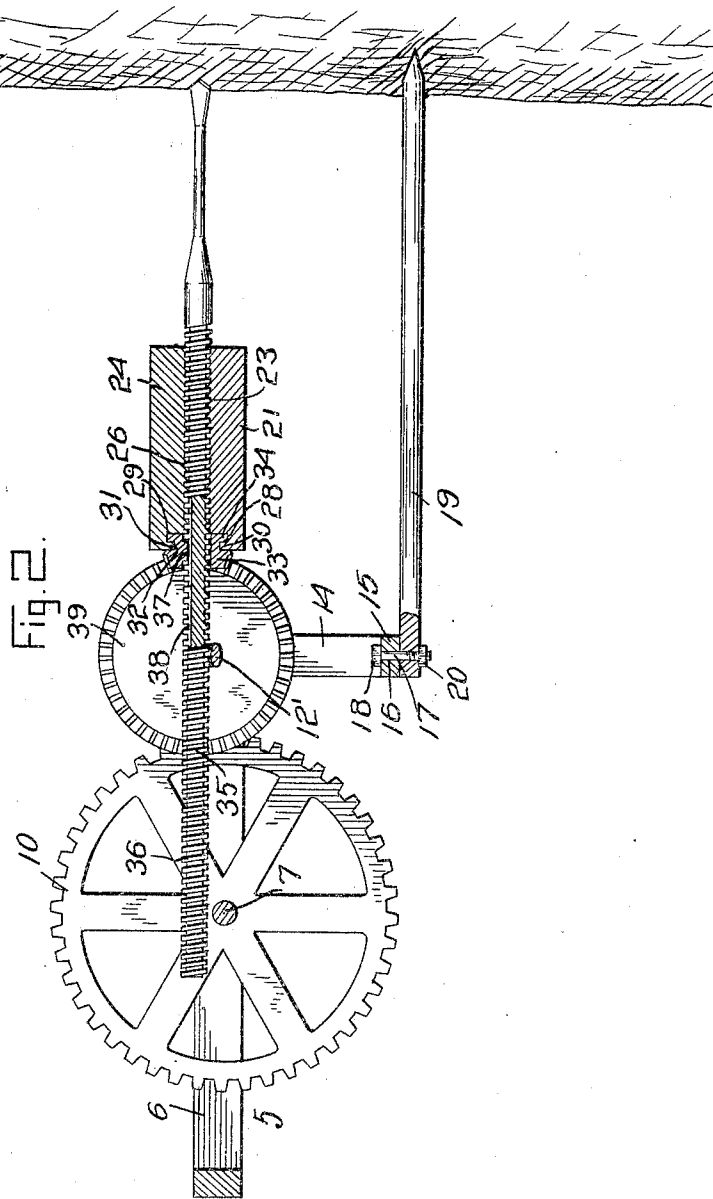
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3 SHEETS—SHEET 2.



Witnesses
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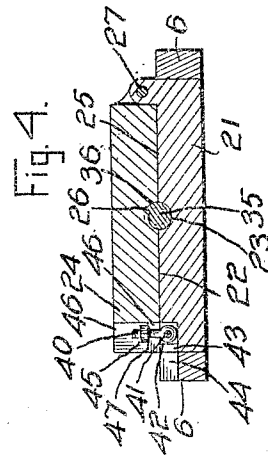
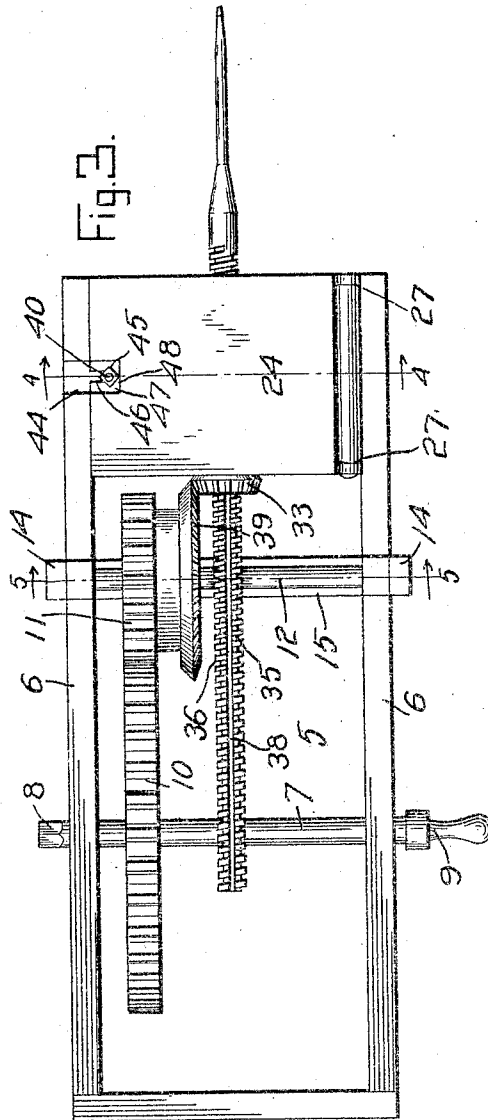
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES SEALS, OF LOVILIA, IOWA.

COAL AND ROCK DRILLING MACHINE.

959,079.

Specification of Letters Patent. Patented May 24, 1910.

Application filed October 16, 1907. Serial No. 397,724.

To all whom it may concern:

Be it known that I, CHARLES SEALS, a citizen of the United States, residing at Lovilia, in the county of Monroe, State of Iowa, have invented certain new and useful Improvements in Coal and Rock Drilling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in coal and rock drilling machines and it has more particular reference to a portable machine of that type which includes a pivotally supported frame, a threaded drill shaft working in a threaded boxing and speed multiplying gearing for operating the drill shaft.

In connection with a machine of the above general type, the invention has for its object to provide a threaded boxing made in hinged sections, constructed and assembled in a novel manner.

The invention aims as a further object to provide novel means for holding one of the elements of the gear train in non-slidable relation to the boxing.

The invention aims as a further object to provide a novel construction, combination and arrangement of parts, the details of which will appear in the course of the following description, in which reference is had to the accompanying drawings, forming a part of this specification, like characters of reference designating similar parts, throughout the several views, wherein:—

Figure 1 is a side elevation showing a drilling machine constructed in accordance with the present invention. Fig. 2 is a central longitudinal sectional view thereof. Fig. 3 is a top plan view thereof. Fig. 4 is a cross sectional view on the line 4—4 of Fig. 3 looking in the direction of the arrow and illustrating more particularly the boxing and the assemblage of its parts. Fig. 5 is a similar view on the line 5—5 of Fig. 3 illustrating more particularly a supporting transverse bar included in the invention.

In the accompanying drawings, the numeral 5 designates a rectangular supporting frame including parallel side bars 6 which are constructed at their rear ends as bearings for a transverse shaft 7 having its projecting ends squared as at 8 so that a crank handle 9 may be engaged with said pro-

jecting ends on either side of the frame. The shaft 7 carries between the side bars 6 and in intimate relation to one of said side bars, an enlarged pinion 10 which meshes 60 with and drives a similar pinion 11, the latter being free to rotate on a bar 12 having its ends passing through the side bars 6. The projecting ends of the bar 12 are engaged in recesses or openings 13 in the upper ends of supporting legs 14, the latter being connected at their lower ends by a cross piece 15 having a central opening 16 through which is engaged a pivot bolt 17 having an enlarged head 18 bearing upon 70 the upper face of the bar 15, the bolt 17 passing through an aperture in the end of a grip bar 19 and being held in such engagement by a nut 20. The grip bar 19 has its front end formed for engagement in an opening in the bed of rock to be drilled into and affords a means for supporting the machine.

The bars 6 at their front ends conjointly support a block 21, having its upper face 80 formed at one side thereof with a straight faced portion 22 and adjacent the straight faced portion with a longitudinal threaded groove 23. The block 21 coöperates with a member 24 to afford a boxing for the 85 threaded drill shaft. The member 24 has its under face constructed with a straight faced portion 25, which is adapted to lie upon the portion 22, and with a longitudinal threaded groove 26. Hinge connections 27 90 are provided at the outer sides of the portions 22 and 25, whereby the member 24 may be moved to different positions in opening or closing the boxing.

The members 21 and 24 at their rear ends 95 and in their respective under and upper faces are provided with transverse semi-annular registering grooves 28 and 29, the outer walls of which are defined by flanges 30 and 31. The flanges 30 and 31 engage 100 in a groove 32 formed in the hub of a pinion 33. The said hub is constructed with an annular flange 34 which engages in the grooves 28 and 29 in their registering relation. The pinion 33 is of annular formation 105 and surrounds a drill shaft 35 having on its surface threads 36 corresponding in pitch to the threads of the grooves 23 and 26, the bar 12 being centrally depressed at 12' so as to pass the shaft 35. This bar 12, 110 is disposed in a plane with the said drill shaft 35, and to permit this the said bar is

provided with the said central depression or bight 12' which latter also serves as a bearing for the drill shaft to support it so as to prevent sagging thereof which might result in the jamming of the thread between the sections and members 21 and 24, of the device. For the purpose of preventing relative rotation between the pinion 33 and the drill shaft 35, said pinion is provided with an inwardly pointing tang 37 which engages in a longitudinal axial groove 38 cut into the surface of said drill shaft. The pinion 33 is in mesh with and driven from a bevel pinion 39, which may be made integral with or otherwise fixed to the pinion 11. For the purpose of holding the member 24 upon the member 21 in the use of the machine a disengageable locking device is employed which comprises a bolt 40 pivoted at its lower end by a pin 41, secured in lugs 42 provided at one side of the block 21, the said side being recessed as at 43 to permit of the pivotal movement of the lower end of the bolt 40 in effecting an assemblage or disassemblage of the parts. The adjacent side bar 6 likewise has a recess 44 formed in its upper face, whereby the bolt 40 may be moved pivotally and outwardly from the member 24. The bolt 40 has its upper portion reduced and threaded and provided with a lock nut 45. The upper portion of the bolt 40 is designed, when the parts are assembled, to fit into a recess 46 formed in the side of the member 24 and the said bolt is held in such position by tightening the nut 45 upon the flat lower face 47 of a recess 48 which is cut into one side of the member 24 above the recess 46.

The operation will be readily apparent from the foregoing description. The bar 19 is engaged in the bed of rocky material to be drilled, and the frame is set at selected angles thereto, such action being had by adjusting the frame as an entirety in a horizontal plane about the pivot bolt 17. The frame is then adjusted pivotally and in a vertical plane with relation to the legs 14 and the member 24 is clamped upon the member 21 in the manner described so that the threads of the grooves 23 and 26 mesh with the threads 36 of the drill shaft. The drilling operation is then performed by ro-

tating the pinion 10, which, through the medium of the gear wheels 11 and 39, drive the pinion 33. The latter, by reason of its connection with the drill shaft 35 rotates such drill shaft, and in such rotation said drill shaft is fed forwardly by reason of the intermeshing engagement of its threads with the threads of the grooves 23 and 26. It will be apparent that by rotating the pinion 10 in a reverse direction, the drill shaft 35 will be retracted from the rock bed after the drilling operation is completed. The provision of the flange 34 on the pinion 33 and of the flanges 30 and 31 on the members 21 and 24, affords a means for preventing displacement axially of the pinion 33 with relation to the boxing.

A drilling machine constructed in accordance with the present invention is simple in its structural details, inexpensive to manufacture, and practical and efficient in use. It may be readily assembled or disassembled by opening the boxing and removing the drill shaft and likewise by removing the grip bar 19 from the cross bar 15.

What is claimed is:

A drill comprising a frame, hinged upper and lower sections mounted at one end of the frame, the said sections being provided with registering threaded grooves in their inner adjacent faces, a drill shaft having a threaded portion engaging the threads in the grooves, means locking the sections in superimposed position, a shaft disposed transversely of the frame in the plane of the drill shaft and having a bight in which slides the said drill shaft, a cog gear loose upon said transverse shaft and having a crown pinion, a beveled pinion slidably receiving the drill shaft and held connected to the section and also meshing with the crown pinion, and a driving shaft mounted in the frame and having a driving gear meshing with the cog gear.

In testimony whereof, I affix my signature, in presence of two witnesses.

CHARLES SEALS.

Witnesses:

JERRY WILLCOX,
ZEPHANIAH WHITE.