

No. 762,169.

PATENTED JUNE 7, 1904.

W. HOLSTINE.
DRILLING MACHINE.
APPLICATION FILED FEB. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.

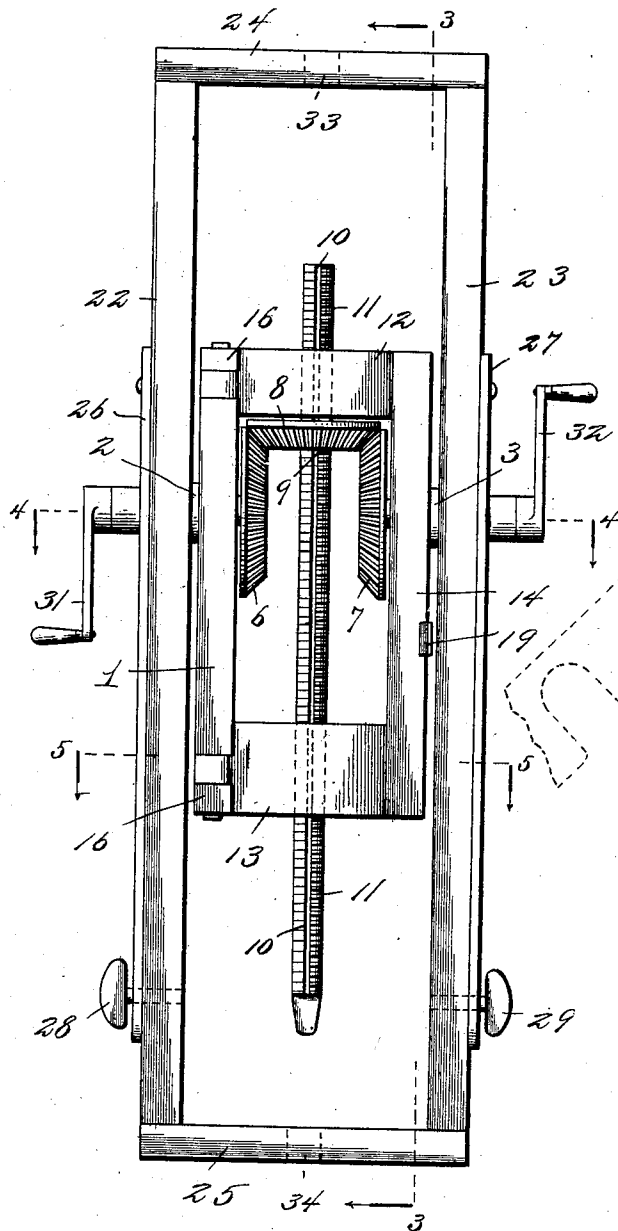
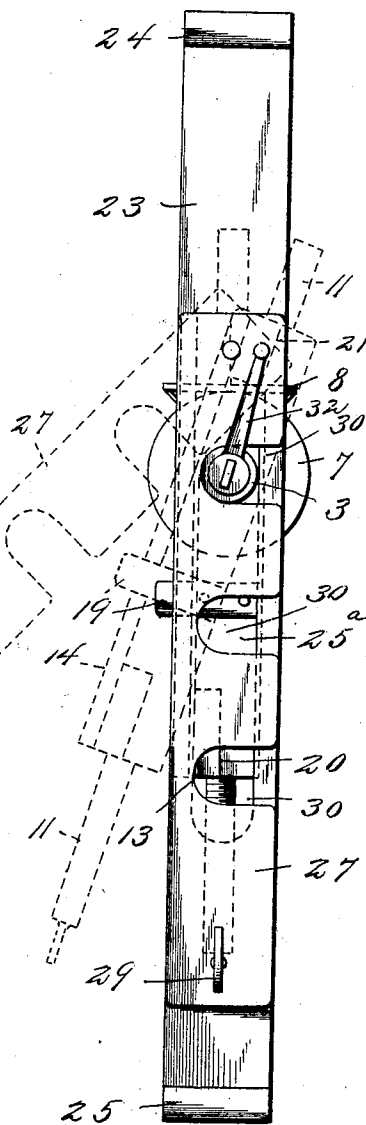


FIG. 2.



WITNESSES:

Harry L. Amer.
B. L. Dunk

INVENTOR

William Holstine.
BY Victor J. Evans
Attorney

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2 SHEETS—SHEET 2.

FIG. 3.

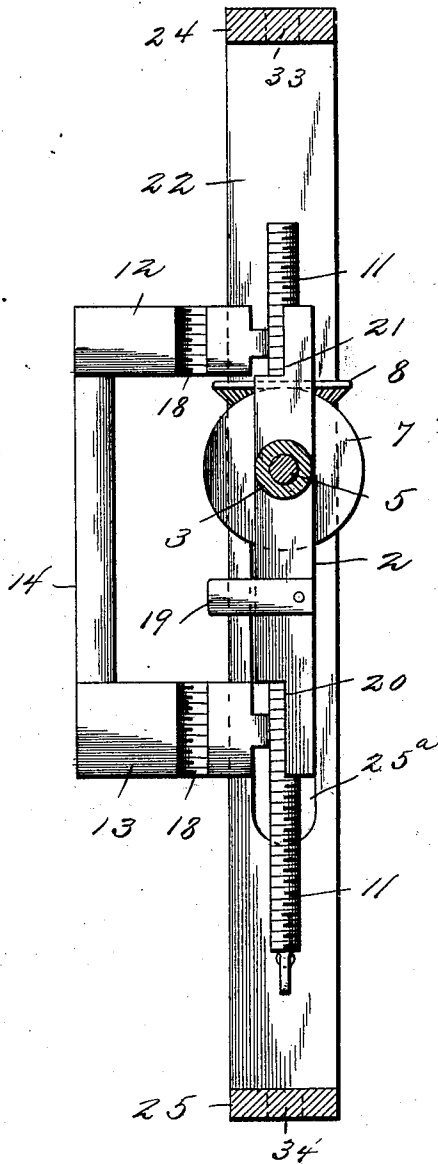


FIG. 4.

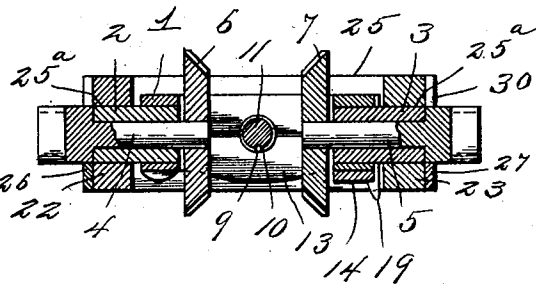
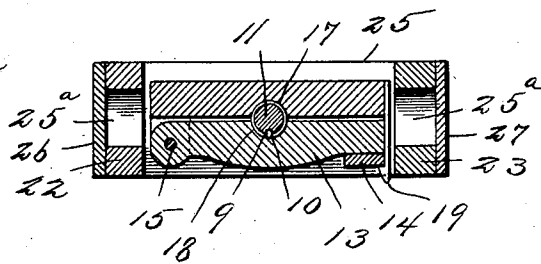


FIG. 5.



WITNESSES:

Harry L. Amer.
B. F. Lunk

INVENTOR

William Holstine.

BY

Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM HOLSTINE, OF STONE, WEST VIRGINIA.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 762,169, dated June 7, 1904.

Application filed February 21, 1903. Serial No. 144,364. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOLSTINE, a citizen of the United States, residing at Stone, in the county of Fayette and State of West Virginia, have invented new and useful Improvements in Drilling-Machines, of which the following is a specification.

This invention relates to drilling-machines, but more particularly to a machine which can be efficiently operated for mining minerals, such as coal, slate, stone, &c.

One of the principal objects of the invention is to produce a machine of this character possessing the advantageous features of accuracy and ease of manipulation.

Another object is to provide a portable drill which will possess all of the advantages usually found in the best type of machines of this character.

With these objects in view the invention consists in providing a supporting or supplemental frame for the drill-frame having certain novel adjustments which permit the drill-frame to accommodate itself to varying thicknesses of material to be drilled.

The invention further consists in providing a drill-frame of two sections which act as clamps for holding the operating mechanism in proper relative position.

The invention further consists in arranging the drill-frame and swinging supports on the supporting or secondary frame so that the drill can be operated at any angle.

The manner of operating the drill, as well as the various positions of adjustment of which the drill-frame is susceptible, will be specifically set forth hereinafter and the novel features will be defined in the appended claims.

In the drawings, Figure 1 is a front elevation of the machine constructed in accordance with my invention. Fig. 2 is a side elevation of the machine, the abnormal position of one of the pivoted supporting-arms and the drill being shown in dotted lines. Fig. 3 is a vertical transverse sectional view through the machine, one of the hinged drill-frame sections being shown as swung out of engagement with the other. Fig. 4 is a horizontal sectional view through the machine on the line 4 4

of Fig. 1, and Fig. 5 is a horizontal sectional view on the line 5 5 of Fig. 1.

The frame for carrying the mechanism whereby the bit of the drill is operated is designated as the "drill-frame," in contradistinction to the secondary or supporting frame, to which it is adjustably secured. The drill-frame consists of two sections, one of which is approximately rectangular, being formed with horizontal end bars connected by vertical side bars. This section is designated by the reference-numeral 1, and formed with the opposite side bars are oppositely-disposed tubular bearings 2 and 3, which carry shafts 4 and 5, extending therethrough. On the inner ends of the respective shafts 4 and 5 are beveled gears 6 and 7, which mesh with a horizontally-arranged beveled gear 8, formed with a central opening, on the edge of which is a feather or spline 9, which works in the vertical groove 10 of the threaded auger-rod 11. The second member of the frame comprises two hinged bars 12 and 13, which are connected by a vertical bar 14, alining or coinciding with one of the side bars of the frame 1. These bars 12 and 13 are hinged to the opposite bar by a vertically-extending rod or pintle 15, which projects through the lugs 16 on the frame 1 and through the ends of the bars 12 and 13. The end bars of the two frame-sections are formed with alining semicircular concave portions or grooves 17 and 18, which are threaded internally, so that when the two frame-sections are brought together and fastened by the catch 19 alining internally-threaded guide-openings are formed for the vertically-adjustable bit-rod 11. It will be noticed that the vertical or side bars of the frame 1 are cut away near their extremities to form seats or rabbets 20 and 21 to receive the transverse bars 12 and 13 of the second frame-section. By providing such a structure the two sections can be rigidly fastened to each other, so as to form firm bearings for the gearing-shafts when all the parts are properly assembled.

Inasmuch as a drill of the character invented by me is required to perform its work under varying conditions, generally to the unequal depths or thicknesses of the stone, it is

necessary to provide an adjustable supporting means for the mechanism, whereby the drill-frame and its appurtenances can be adjustably supported to accommodate the drill to the particular condition existing at the time of its operation. The device for effecting this result is termed a "supporting-frame." This frame is formed by securing two parallel vertically-arranged bars or side rails 22 and 23 together by end battens or rails 24 and 25. The side rails 22 and 23 are provided with vertical elongated slots 25, which aline with each other and through which project the journal-bearings 2 and 3, carried by the frame-section 1. In order that the drill-frame will be adjustably supported with relation to the secondary frame, I provide parallel swinging and pivoted supporting-arms 26 and 27, which are pivoted near their upper extremities to the side rails 22 and 23. The arms 26 and 27 can be rigidly fastened to the side rails, however, by means of thumb-screws or pins 28 and 29, which pass through the arms near their lower extremities and the shanks of which extend into the side rails 22 and 23. These arms are formed intermediate their ends with cut-out portions or notches 30, which form bearings or seats for the reception of the tubular journal-bearings 2 and 3, carried by the drill-frame section 1. As these seats 30 are successively arranged along the length of the arms 26 and 27, the drill-frame can readily be adjusted vertically and the adjustment changed by removing the pins or screws 28 and 29 and swinging the arms 26 and 27 in a position similar to that shown in dotted lines in Fig. 2. When the proper point of adjustment has been reached, the arms will be swung back to snugly rest against the side rails 22 and 23, in which position they can be secured by the pins or screws 28 and 29. As the seats 30 form supplemental bearings for the reception of the tubular bearings 2 and 3, and owing to the fact that these tubular bearings are a part of the drill-frame section 1, the entire drill-frame can be swung at any angle on a vertical radius to meet various requirements. Sufficient power will be exerted upon the drill-rod 11 by the gears 6, 7, and 8, which are operated through the medium of the cranks 31 and 32 on the shafts 4 and 5. Alining openings 33 and 34 are formed in the respective end battens 24 and 25 of the secondary frame, the lower one, 34, of said openings permitting the proper working of the bit and drill-rod in the truly vertical operations thereof, while the upper opening, 33, is for receiving suitable means, as a jack-screw, for maintaining the supporting-frame of the machine in rigid position. If it is desired to drill a hole on a horizontal plane, it is only necessary to swing the drill-frame to the desired position and operate the cranks 31 and 32.

It will be obvious from the foregoing that the drill can be operated in practically any position. I have described and illustrated what to me at this time appears to be the very best means of accomplishing the desired result; but I reserve the right to make such changes and alterations as may suggest themselves from time to time and fairly fall in the scope of the appended claims.

Having thus described the invention, what is claimed as new is—

1. In a drilling-machine, the combination with an outwardly and upwardly swinging drill-frame having oppositely-disposed journals, of a supporting-frame provided with vertical side rails having slots therein through which the journals project, and pivoted supporting-arms carried by the side rails and formed with seats for the reception of the journals of the drill-frame, the latter being constructed of two sections, one of which is pivoted to swing laterally independently of the other section.

2. In a drilling-machine, the combination with an outwardly and upwardly swinging drill-frame having oppositely-disposed journals, a supporting-frame provided with slots through which the journals project, and pivoted devices on the drill-frame formed with seats for the reception of the journals, said drill-frame being constructed of two sections, one of which is pivoted to swing laterally independently of the other section.

3. In a drilling-machine, the combination of a supporting-frame having oppositely-disposed slots therein, an outwardly and upwardly swinging drill-frame having hollow journals projecting through the slots in the supporting-frame, gear-carrying shafts in the said journals, a drill-rod actuated thereby, and means for securing said journals at determinate points of adjustment with relation to the sides of the slot in the supporting-frame, said drill-frame being constructed of two sections, one of which is pivoted to swing laterally independently of the other section.

4. In a drilling-machine, the combination with a drill-frame having oppositely-disposed journals; of a supporting-frame provided with vertical side rails having slots therein through which the journals project, and pivoted supporting-arms carried by the side rails of the supporting-frame and formed with seats for the reception of the journals of the drill-frame.

5. In a drilling-machine, the combination with a drill-frame having oppositely-disposed journals; of a supporting-frame provided with slots through which the journals project, and pivoted devices carried by the drill-frame and formed with seats for the reception of the journals which form pivots to permit the drill-frame to swing in a vertical arc.

6. In a drilling-machine, the combination with a supporting-frame having oppositely-

disposed slots therein; of a drill-frame, hollow
journals projecting through the slots in the
supporting-frame, gear-carrying shafts in the
hollow journals, a drill-rod actuated thereby,
5 and means for securing the hollow journals at
determined points of adjustment with relation
to the slots in the supporting-frame.

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

WILLIAM HOLSTINE.

Witnesses:

FRED HILL,
J. A. NUTTER.