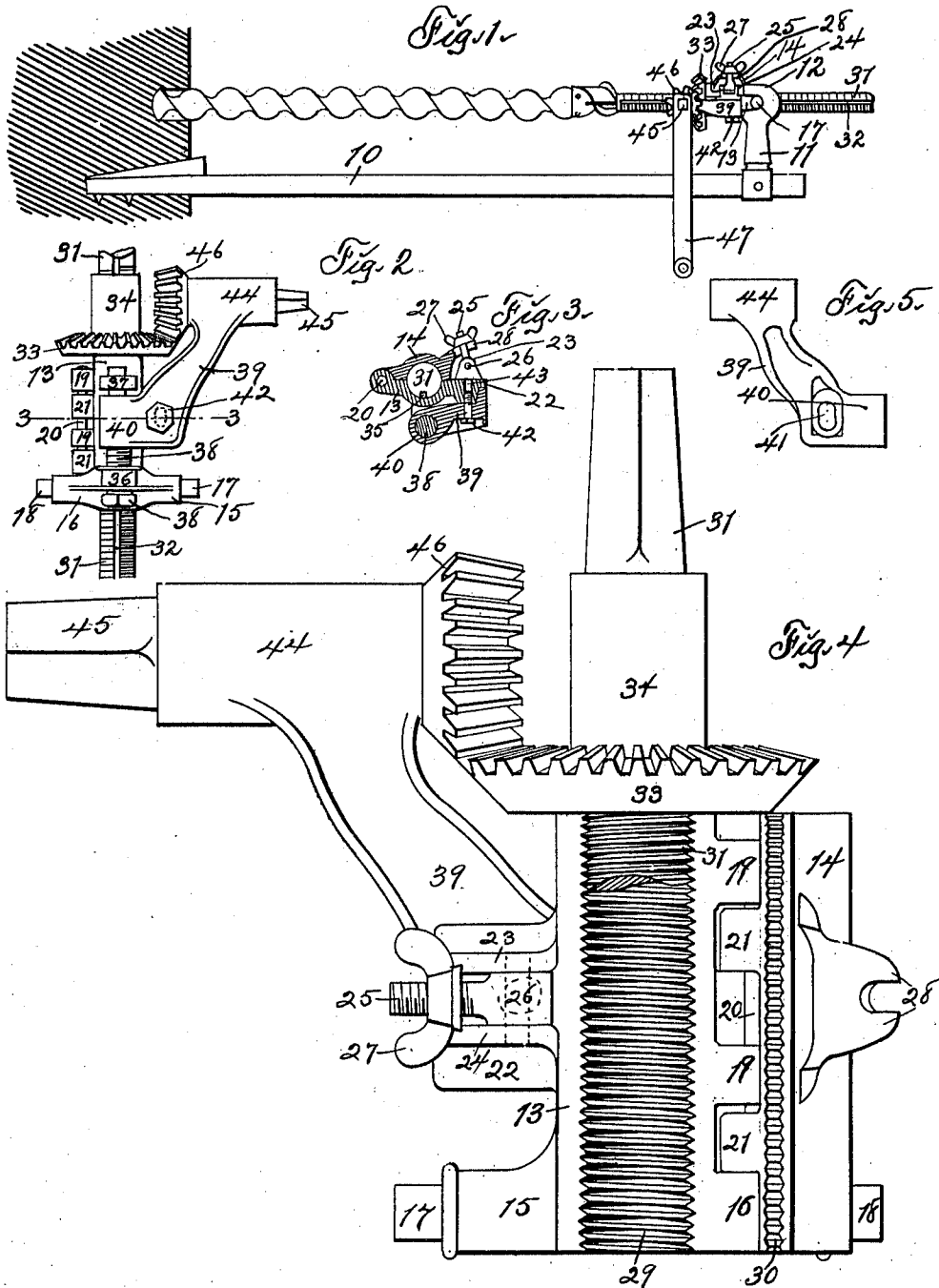


J. S. SURBAUGH.
 DRILLING MACHINE.
 APPLICATION FILED FEB. 8, 1908.

989,204.

Patented Apr. 11, 1911.



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UNITED STATES PATENT OFFICE.

JOHN S. SURBAUGH, OF VINCENNES, INDIANA.

DRILLING-MACHINE.

989,204.

Specification of Letters Patent.

Patented Apr. 11, 1911.

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To all whom it may concern:

Be it known that I, JOHN S. SURBAUGH, a citizen of the United States of America, and a resident of Vincennes, Knox county, Indiana, have invented a new and useful Drilling-Machine, of which the following is a specification.

The object of this invention is to provide an improved construction for drilling machines.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a side elevation of the complete machine mounted as required for practical use. Fig. 2 is a plan of the operative parts of the machine. Fig. 3 is a cross-section on the indicated line 3—3 of Fig. 2. Fig. 4 is an inverted plan showing the machine open as required to remove the feed-bar and gear thereon from the frame of the machine. Fig. 5 is a detail view of a bearing arm detached from the machine.

In the construction and mounting of the machine as shown, the numeral 10 designates a grip bar adapted to be inserted at one end into a bore formed in the face of a body of coal or ore to be mined. A support 11, of forked construction, is adjustably mounted on the grip bar 10 and extends at right angles thereto in either direction as desired. Hooks 12 are formed on the outer end portions of the arms of the support 11. A feeding-box is provided and is formed of a base member 13 and a cap member 14. The base member 13 is formed with ears 15, 16 extending laterally from one end portion and trunnions 17, 18 are formed on and extend farther laterally from said ears. The trunnions 17, 18 are pivotally mounted in the hooks 12 of the support 11. The base member 13 of the feeding-box also is formed with ears 19 in line with the ear 16 and said ears are apertured in alinement for the reception of a pin or pintle 20. The cap member 14 is formed with ears 21 interposed between the ears 16 and 19 and pivoted on the pin or pintle 20. A lug 22 is formed on and extends laterally from the base member 13 of the feeding-box in front of the ear 15 and ears 23, 24 are formed on and rise from said lug parallel with each other and slightly spaced apart. A bolt 25 is pivoted at one end on a pin 26 mounted in the ears 23, 24

and a wing nut 27 is screwed on the outer end portion of said bolt. A pair of ears 28 extend laterally and outwardly from the cap member 14 of the feeding-box above the lug 22 and the bolt 25 extends between said ears normally while the wing nut engages outside said ears and holds them toward the ears 23, 24, thus latching and securing the cap member 14 in closed position on the base member 13 of the feeding-box. The base member 13 and cap member 14 of the feeding-box are concaved in their meeting faces at 29, 30, thus producing mating halves of a bore circular in cross-section. The concaves 29, 30 of the members of the feeding-box are threaded. When the cap member 14 is unlatched and swung open into the position shown in Fig. 4, a feed-bar 31, exteriorly threaded to fit the threads of the box members, may be inserted in the cavity 29 of the member 13. Then the cap member 14 may be closed upon the feed-bar 31 and latched to the member 13 by the bolt 25 and nut 27. The feed-bar 31 is formed with one or more longitudinal grooves 32 and a bevel gear 33 having a smooth bore is mounted loosely on said feed-bar and abuts one end portion of the feeding-box. The bevel gear 33 preferably is formed with a hub 34 and the hub and gear are formed with a spline, lug or feather 35 extending into the groove 32. Ears 36, 37 are formed on and extend outwardly from the bottom of the base member 13 and a bolt 38 extends loosely through apertures in said ears. A bearing arm 39 is provided and is formed with a threaded boxing or nut 40 on one end portion. The bolt 38 is screwed through the threaded boxing 40 of the arm 39. The arm 39 is formed with a slot 41 having its length parallel with the axis of the threaded boxing 40. A cap screw 42 is mounted through the slot 41 in the arm 39 and is seated in a screw seat 43 in the lug 22 between the ears 23, 24. The central portion of the arm 39 stands obliquely to the trend of the feed-bar 31 and threaded boxing 40 and a bearing box 44 is formed on the opposite end portion of said arm at right angles to the threaded boxing 40. A drive shaft 45 is journaled in the bearing box 44 and projects at both ends therefrom. A bevel gear 46 is fixed to one end portion of the drive shaft 45 and meshes with the bevel gear 33. A crank 47 is detachably connected to the opposite end portion of the drive shaft 45.

In assembling the elements of the machine as shown, the bevel gear 33 is mounted on the feed-bar 31 before said feed-bar is mounted in the feeding-box. The bevel gear 46 is mounted on the drive shaft 45 and then the drive shaft is mounted in the box 44. Then the arm 39 is mounted on the member 13 by seating of the screw 38 and said screw is tightened to such an extent that it adjusts the mesh of the bevel gears and the bearing of the gear 33 on the end of the feeding-box as desired. Then the cap screw 42 is seated in the lug 22 firmly and binds the arm 39 rigidly to the member 13. Then the parts assembled as described may be mounted on the support 11 carried by the grip bar 10 and the crank 47 may be applied to the drive shaft to operate the machine manually.

To take up the wear in the feeding-box, the inner face of the cap member 14 where it contacts with the member 13 near the lug 22 can be filed or ground off slightly to permit the threads of the cap piece to approach more closely the threads of the base member when said piece is locked or latched in closed position; and to permit this the hinging ears 19—21, 19—21, are spaced apart at the beginning of use, so that the cap piece may move rearward slightly on the pintle 20 properly to engage the threads of the bar 31.

To take up the wear between the bevel gears, the cap screw 42 may be loosened, the adjusting screw 38 be tightened to move the arm 39 slightly and then the cap screw be tightened. This operation also will take up the wear between the bevel gear 33 and adjacent end of the feeding-box.

I claim as my invention—

40 1. In a drilling machine, a feeding box, means for supporting said box, ears on said

box formed with smooth bores, a screw mounted loosely through said ears, an arm having a threaded box parallel with the threaded bore of the feeding box, the threaded box of the arm engaging said screw between said ears, said arm formed with a slot registering with a screw seat in the feeding box, a cap-screw extending through said slot in the arm into said screw seat, said arm formed with a journal bearing at right angles to the threaded bore of the feeding box, a feed-bar mounted in the threaded bore of the feeding box, a bevel gear on said feed-bar, a driving shaft in the journal bearing of the arm, and a bevel gear on the driving shaft meshing with the first bevel gear.

2. In a drilling machine, having a feeding box formed of two members hinged together, and means for feeding a bar through said box, one of the members of the feeding box formed with a lateral lug opposite its hinge and ears extending from said lug, said lug formed with a screw seat between said ears, a latch pivoted on the ears and adapted to engage the other member of the feeding box, an arm mounted on and adjustable longitudinally of the first member of the feeding box, said arm formed with a slot parallel with the bore of the feeding box and also formed with a journal bearing at right angles to the bore of the feeding box, and a cap-screw mounted through the slot of said arm and engaging in the screw seat of said lug.

Signed by me at Vincennes, Indiana, this 26th day of October, 1907.

JOHN S. SURBAUGH.

Witnesses:

J. E. BAILEY,

H. D. RIELMANN.