

(No Model.)

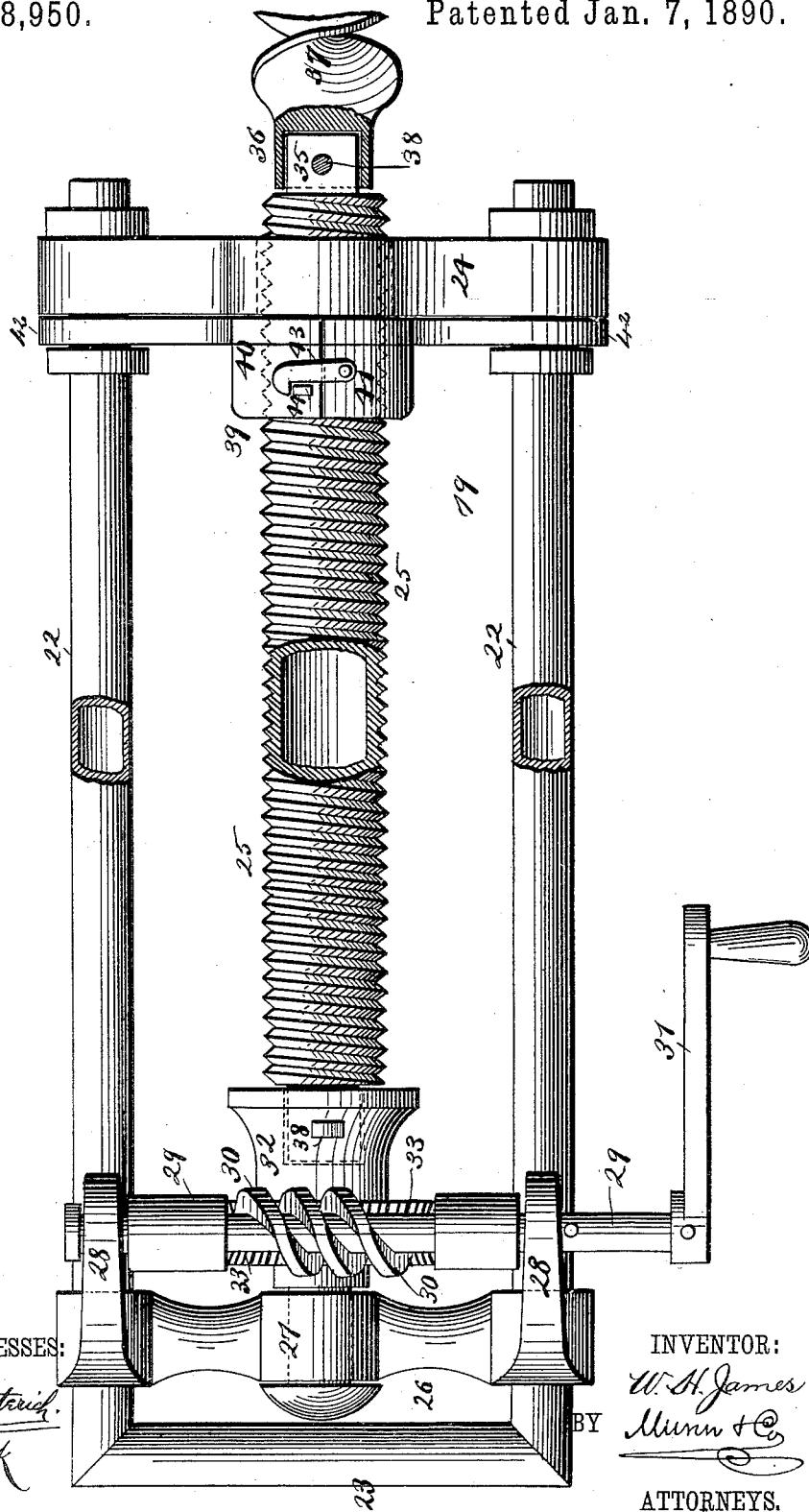
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W. H. JAMES.
DRILLING MACHINE.

No. 418,950.

Patented Jan. 7, 1890.

Fig. 1.



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INVENTOR:

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(No Model.)

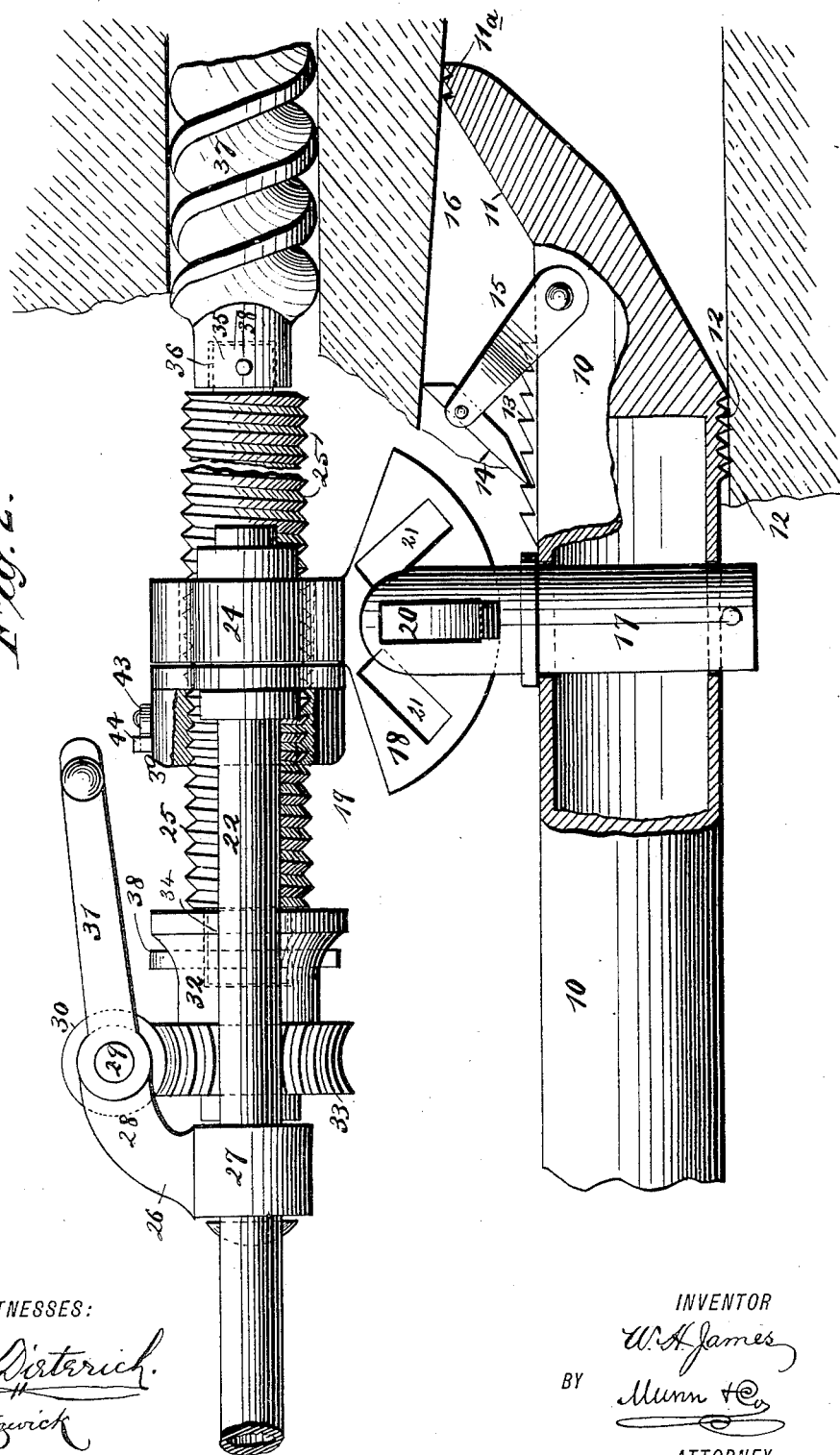
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Fig. 2.



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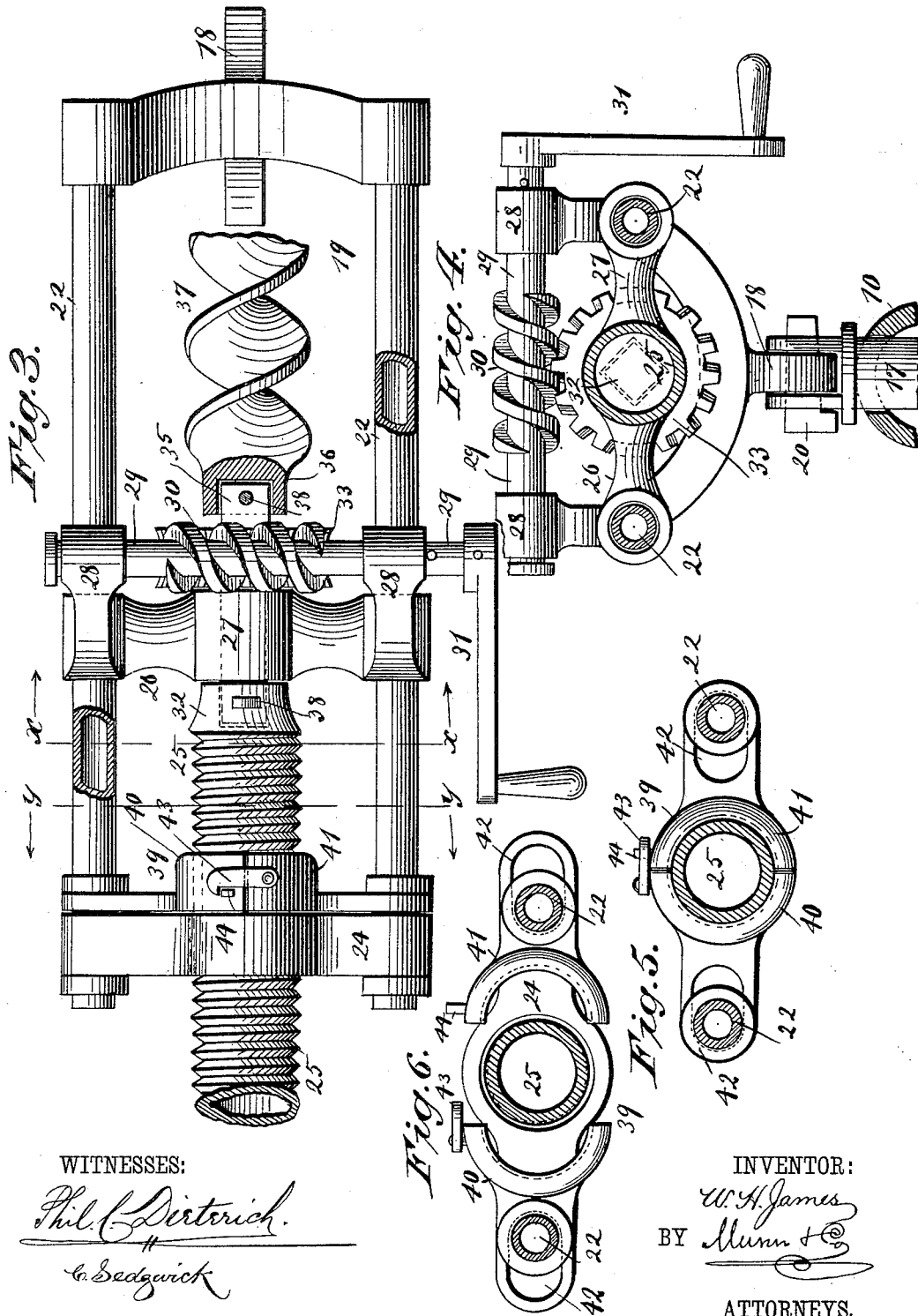
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UNITED STATES PATENT OFFICE.

WILLIAM H. JAMES, OF PITTSBURGH, PENNSYLVANIA.

DRILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,950, dated January 7, 1890.

Application filed November 24, 1888. Serial No. 291,786. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. JAMES, of Pittston, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Improvement in Drilling-Machines, of which the following is a full, clear, and exact description.

My invention relates to an improvement in drilling-machines, and has for its object to provide a durable, simple, and readily-manipulated machine especially adapted for boring out the charge-holes in coal, rock, and other material; and it has for its further object to provide a drilling-machine for miners' use which will not be heavy or burdensome, and wherein the work of preparing the surface for a charge will be greatly facilitated.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the machine, partly in section. Fig. 2 is a side elevation of the same, also partly sectional. Fig. 3 is a plan view of a modified form. Fig. 4 is a transverse section on line *x x* of Fig. 3. Fig. 5 is a similar section on line *y y*; and Fig. 6 is also a section on line *y y* of Fig. 3, illustrating the adjustable clamp as open.

In carrying out the invention the base 10 consists of a tube solid at one end, the extremity of which solid end is carried at an inclination upward to form the horn 11. The upper surface of the horn is toothed, serrated, or otherwise roughened, as illustrated at 11^a in Fig. 2, likewise the under surface of the solid end, as shown at 12 in the same figure. Upon the upper surface of the base, near the said solid end, a series of forwardly-inclined teeth 13 are secured, and a pawl 14, having sharp extremities, is pivotally held by a yoke 15 in engagement with the aforesaid teeth 13.

Preparatory to drilling, the solid end of the base is inserted in a convenient opening or crevice 16 in the material to be drilled in such manner as that the roughened surfaces 11^a and 12 will bear, respectively, against or upon the upper and lower walls, one end of the pawl

being adapted to bear against the teeth 13, whereby the opposite end is inclined and wedged in the upper wall of the opening, as best illustrated in Fig. 2. A vertical post 17 is held to turn in the outer end of the base, provided at the top with a vertical and a diametrical recess. The former recess is adapted to receive a segmental plate 18, integral with one end of the fixed drill-frame 19, and through the latter or diametrical recess a key 20 is passed, extending through one of a series of apertures 21 produced in the aforesaid segmental plate, as best shown in Figs. 2 and 4. By this means the frame 19 may be adjusted upon the base as desired. The frame 19 is preferably rectangular in general contour, consisting of parallel tubular sides 22, ordinarily united at one extremity by an end tube 23 and at the opposite end by a cross-head 24, the latter being centrally and transversely apertured to admit the passage of a feed-bar 25, hereinafter described. The cross-head 24 is held to place in any suitable or approved manner. A second cross-head 26 is held to slide upon the side bars of the frame, consisting of the body 27, extending transversely of the said frame, which body at or near the extremities is provided with forwardly and upwardly extending parallel arms 28, as best shown in Fig. 1. In the arms 28 a transverse shaft 29 is journaled, having produced thereon a worm 30 at or near the center, and attached thereto at one extremity a crank 31 or equivalent devices for rotating the shaft.

In the center of the body of the sliding cross-head 26 one end of a socket 32 is swiveled, the other end of the same being adapted for the reception of the feed-bar 25. Between the ends of the socket and upon the same a worm-wheel 33 is secured in any approved manner, which worm-wheel meshes with the worm carried by the drive-shaft 29, as best shown in Fig. 2.

The feed-bar 25 is preferably made tubular to obtain lightness, provided with a threaded exterior and solid polygonal apertured ends 34 and 35. The said ends 34 and 35 of the feed-bar are respectively detachably connected with the hollow shank 36 of the drill 37 or other tool employed, and the socket 32, preferably through the medium of a suitable key 38, passes through the extremities of the feed-

bar and the socket and drill-shank above referred to. The feed-bar is guided by a sectional ring 39, which ring is centrally divided, each section 40 and 41 being provided with outwardly-extending horizontal slotted wings 42, as best shown in Figs. 5 and 6. The several ring-sections are interiorly threaded and held upon the frame adjacent to the inner side of the cross-head 24 by the side tubes 22, passing through the slots in the wings, whereby the said sections have lateral play.

The feed-bar having been projected through the central opening in the end cross-bar 24 and secured to the traveling socket, the ring-sections are brought together around the feed-bar, as shown in Figs. 3 and 5, and held in contact with the same by a hook 43 upon one section engaging a lug 44 upon the other, or by any other approved or equivalent device.

In operation, the implement having been set for drilling, the crank 31 is turned, which, revolving the shaft 29, causes the worm 30 to rotate the worm-wheel 33, whereupon the feed-bar is caused to revolve, and the said bar, being threaded and passing through a threaded guide-ring, advances as it turns, carrying with it the sliding cross-head. Thus the feed-bar is constantly rotated and advanced until the socket 32 engages the guide-ring. The drill having now been carried as far as possible, the guide-ring is removed and the sliding cross-head is carried back to its first position, the ring replaced, and the operation repeated. In the event that the aperture in the fixed cross-head is threaded, when the feed-bar has traveled its greatest distance forward the guide-ring is detached, the feed-bar released from the drill and socket, the remaining portion in the fixed cross-head screwed out, and the said feed-bar again placed in position.

As illustrated in Fig. 3, it will be observed that the position of the operating mechanism may be changed, in that the fixed cross-head may be located at the rear of the frame, the operating mechanism in this instance being located between the feed-bar and the drill.

I desire it to be understood that, although specific constructions have been described, other equivalent construction may be employed without departing from the spirit of the invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a drilling-machine, the combination, with a rectangular frame having an opening in one of its end bars, of a sliding cross-head mounted on the said frame, a socket swiveled in the said cross-head, an internally-threaded guide-ring carried by the frame at one side of the apertured end bar thereof, a threaded feed-bar having one end secured in the said socket and passing through the guide-ring, and means for operating the feed-bar, substantially as described.

2. In a drilling-machine, the combination, with the rectangular frame having an opening in one of its end bars, of a cross-head sliding on the frame and provided with upwardly-projecting arms, a socket swiveled in the cross-head, a worm-wheel on the socket, a worm-shaft journaled in the arm of the cross-head and engaging the worm-wheel, an internally-threaded guide-ring at one end of the frame, and a threaded feed-bar secured in the socket and working in the guide-ring, substantially as herein shown and described.

3. In a drilling-machine, the combination, with the base 10, provided with the teeth 11^a and 13, of the yoke 15, pivoted to the base, and the pawl 14, pivoted in the yoke, substantially as herein shown and described.

4. In a drilling-machine, the combination, with a rectangular drilling-frame, the threaded feed-bar, and means for operating the same, of the internally-threaded guide-ring 39, formed of the sections 40 and 41, provided with the slotted wings 42, through which pass the longitudinal bars of the frame, and with the hook 43 and lug 44, substantially as described.

5. In a drilling-machine, an apertured and toothed base and a locking-pawl pivoted to the forward end of the same, in combination with a drill-frame provided with a post fitting in the aperture of the base, substantially as described.

WILLIAM H. JAMES.

Witnesses:

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F. H. KYTE.