

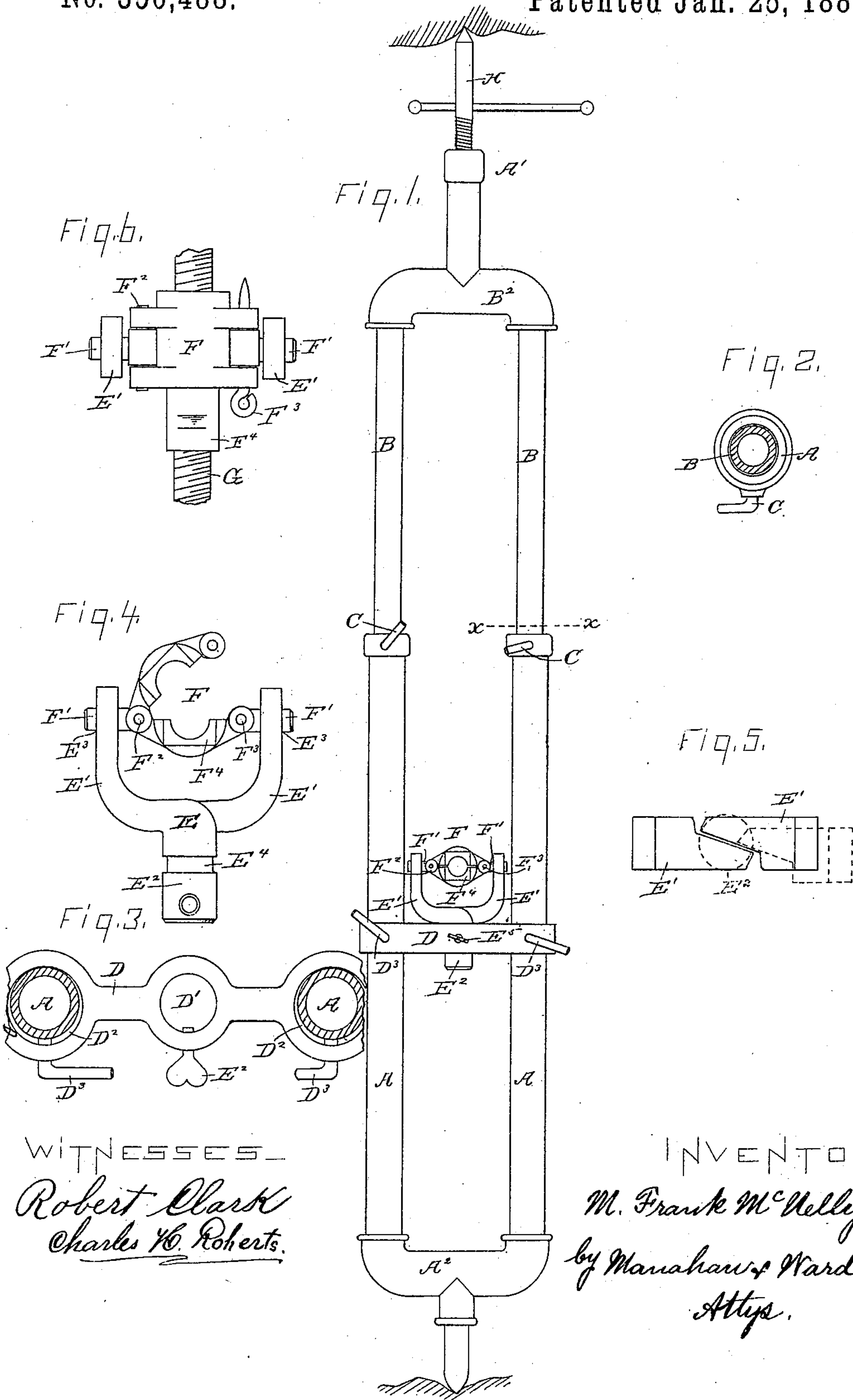
(No Model.)

3 Sheets—Sheet 1.

M. F. McNELLY.
MINING MACHINE.

No. 356,488.

Patented Jan. 25, 1887.



WITNESSES.

Robert Clark
Charles H. Roberts.

INVENTOR—

M. Frank McNelly
by Manahan & Ward
Attys.

(No Model.)

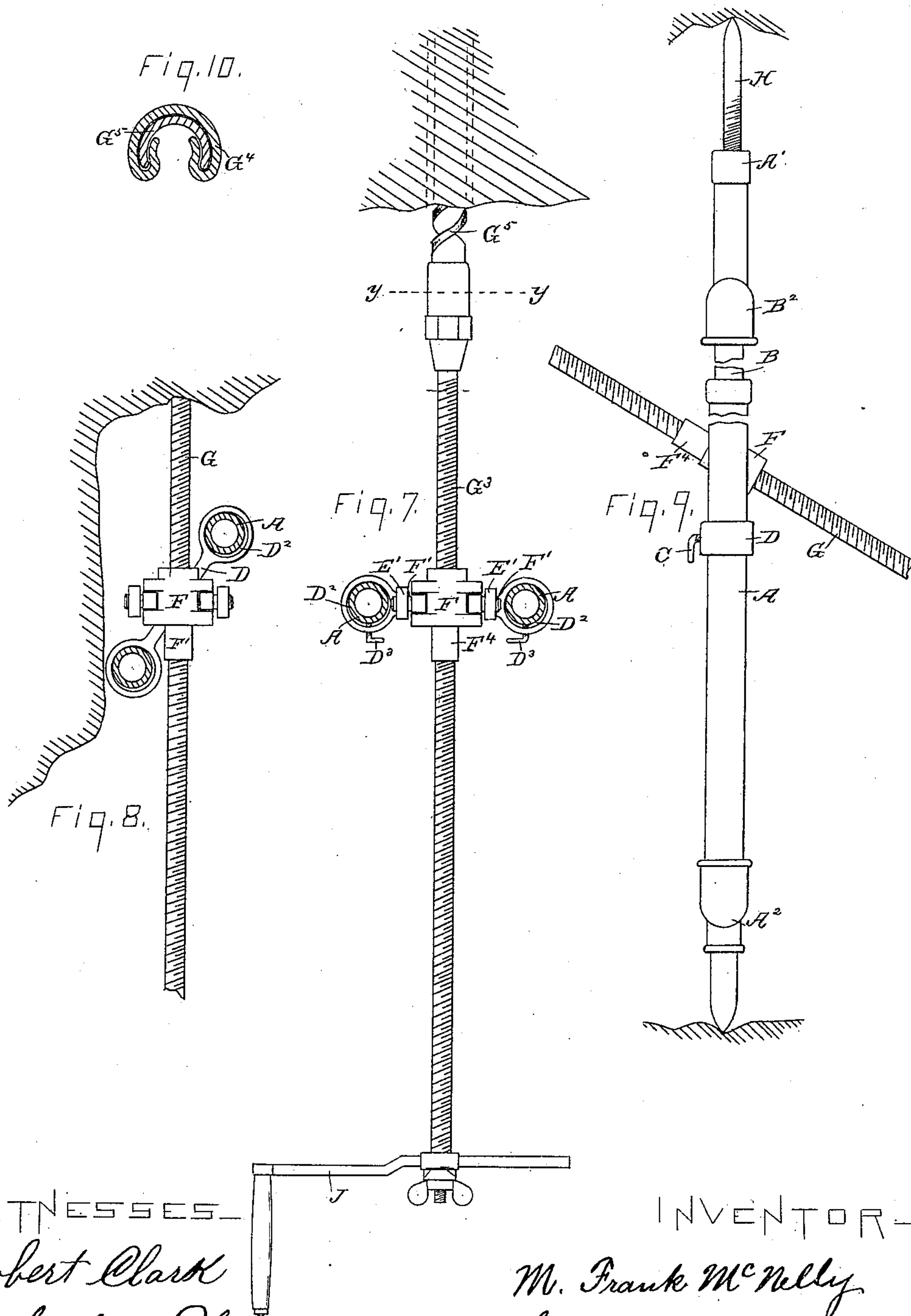
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3 Sheets—Sheet 3.

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Fig. 12.

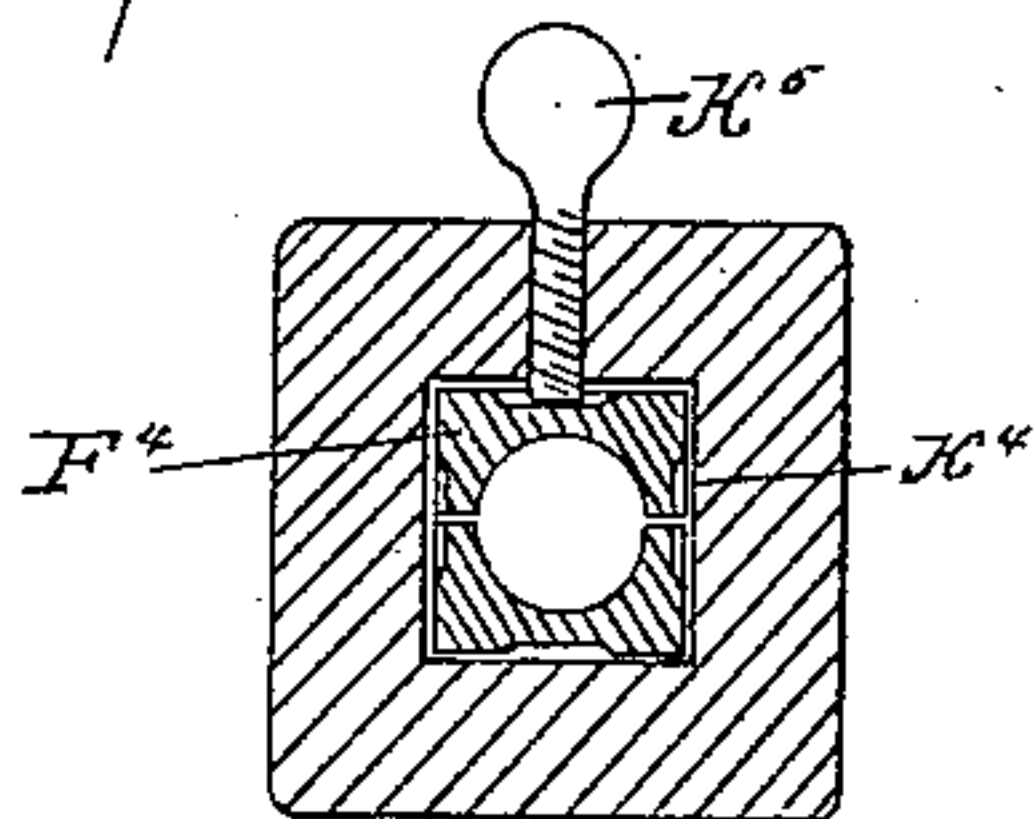


Fig. 11.

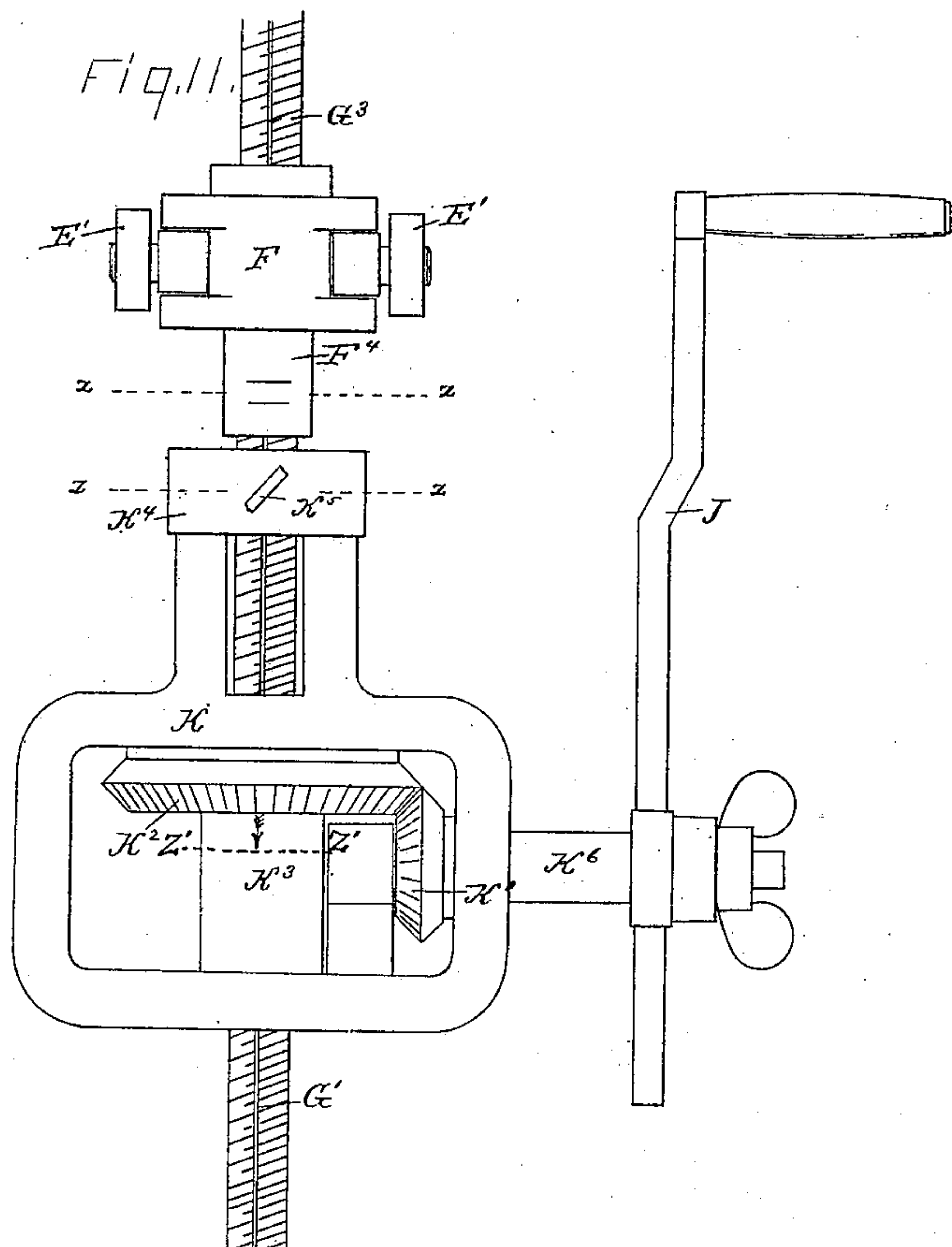
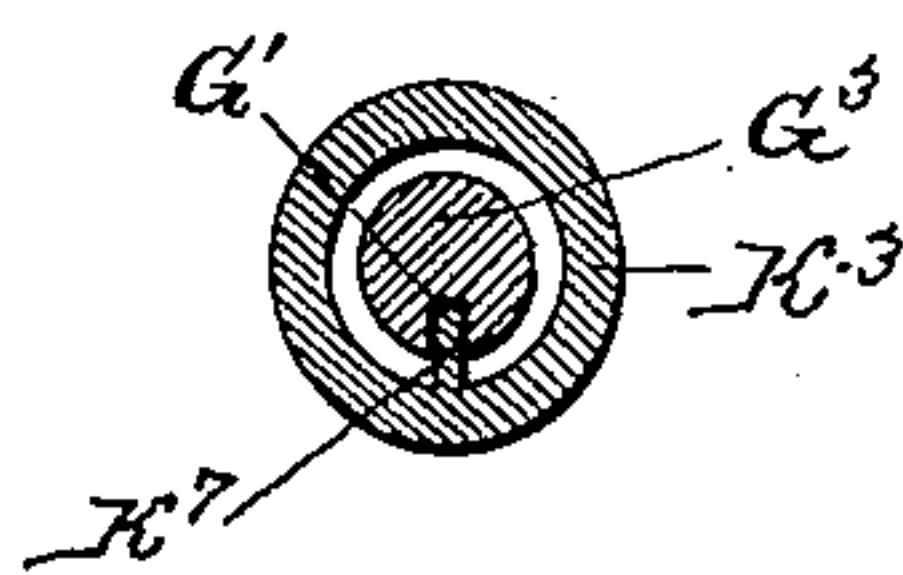


Fig. 13.



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UNITED STATES PATENT OFFICE.

M. FRANK MCNELLY, OF STERLING, ILLINOIS.

MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 356,488, dated January 25, 1887.

Application filed April 12, 1886. Serial No. 198,538. (No model.)

To all whom it may concern:

Be it known that I, M. FRANK MCNELLY, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Rock and Coal Drills; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention has reference to rock or coal drills, and pertains more especially to certain mechanism, hereinafter described, more particularly adapted to drilling for blasts in coal-mines and like situations where the room for working machinery is limited, and where the drilling is required to be done at various altitudes and in various directions.

In the drawings, Figure 1 is a side elevation. Fig. 2 is a section in line *xx* of Fig. 1. Figs. 3, 4, and 5 are detail views. Fig. 6 is a top view of the nut which holds the auger. Figs. 7 and 8 are partial plan views of the auger and its connections. Fig. 9 is an elevation. Fig. 10 is a section in line *yy* of Fig. 7. Fig. 11 is a plan of my attachment for driving the auger. Fig. 12 is a cross-section in the line *zz* of Fig. 11. Fig. 13 is a detail cross-section on the line *z'z'* in Fig. 11, showing the feather *K'* in position.

A A are parallel vertical tubes suitably united at their lower ends to a common central pivotal base, *A²*, and open at their upper ends.

B B are parallel round rods or bars united at their upper ends into a pivotal central point, *B²*, and adapted to have their lower ends enter and be adjustable within the tubes *A A*. Set-screws *C C*, seated in the respective walls of the tubes *A A*, and having their compressing end in contact with the exterior of the bars *B*, serve as means of such adjustment.

D is a cross-bar having the round central vertical hole *D'*, and vertical end sockets, *D²*, through which latter are placed the tubes *A*, respectively. The cross-bar *D* constitutes the seat for the auger, and is adjustable to different altitudes by shifting vertically on the

tubes *A*, being held at any desired height by set-screws *D³*, seated in the walls of the sockets *D²*, and adapted to be screwed against the outer walls of such tubes.

E is a shear swivel consisting of two upwardly-extending jaws, *E'*, mutually hinged at their lower ends and rounded into the stem *E²*, which latter is seated pivotally in and conforms to the central hole, *D'*, in the cross-bar *D*. The stem *E²* has an annular recess, *E⁴*, engaged by a horizontal set-screw, *E⁵*, which holds such stem from withdrawal but permits its lateral rotation in the hole or socket *D'*.

F is the seat of the auger *G*, and consists of an open nut having lateral trunnions *F'*, which enter and are pivotally supported in the transverse holes *E³* in the upper ends of the jaws *E'* of the swivel *E*. The upper and lower halves of the seat *F* are hinged together at *F²*, and at their opposite ends overlap and are held by the removable pin *F³*. The auger *G* has its shank threaded to correspond with the threads in the nut *F*, and in its rotation is thereby advanced.

At the upper ends of the rods *A* is centrally seated the vertical stationary nut *A'*, in which is seated a threaded bar, *H*, having lateral handles, and adapted to be screwed up against the roof, so as to hold the machine in position. A crank, *J*, is attached to the outer end of the shank of the auger *G* as a means of rotating the latter; but as it often happens that a blast is required at a point or in such direction that it is impracticable to operate the auger at the end for lack of crank-room, I obviate this difficulty by the provision of the following-described side attachment.

K is a frame in which are journaled at right angles to each other the engaging small bevel-pinion *K'* and large bevel-pinion *K²*. The axle *K³* of the latter is hollow, and is adapted to slip loosely on the auger *G*.

At one end of the frame *K* is formed the equal-sided socket *K⁴*, which is passed over an equal-sided projection, *F⁴*, on the outer end of the nut or auger-seat *F*, and fastened therein by the set-screw *K⁵*. The outer end of the axle *K⁶* of the small drive-pinions *K'* is fitted to receive the crank *J*. A feather, *K'*, on the inner wall of the axle *K³* of the larger pinion, engages a longitudinal groove, *G'*, in the shank

G³ of the auger G, and thereby the rotation of the axle K⁶ is communicated to the auger G, the feather K⁷ traversing the groove G' and permitting the progress of the auger G. The
 5 auger-bit G⁵ is attached to its shank G³ by means of a U-shaped socket, G⁴, in the latter, the inner end of the bit being shaped to enter and conform to such socket, whereby oscillation in any direction is prevented.

10 The advantages of my invention are as follows: The side driving mechanism described is not only applicable in diagonal drilling, where the outer end of the auger-shank is too
 15 to be used in the end of the auger-shank and the power increased by such side mechanism, but the socket K⁴ and projection F⁴ being square and equal-sided, the auxiliary driving mechanism can be attached above, below, or
 20 on either side of the auger G, as may be necessary or preferable. The threads within the nut F extend also throughout the projection F⁴, and thus increase the strength of the nut and prevent the breaking of the threads on
 25 the nut or the auger. The projection F⁴ is in two parts, each of which is integral with the halves of the nut F, and the socket K⁴ also holds the said nut together in case of the casual withdrawal of the pin F³. A further advantage
 30 is in having three pivotal bearings, to wit, the extremities of the machine, the central vertical socket, D', of the bar D, and the trunnions F' of the nut F, whereby the tubes A A may be set nearly in line with the hole to be
 35 drilled and the auger projected obliquely between them in such line, and the boring therefore be done close to the side of the drift. The machine may be set at any angle. By adjusting the bars B within the tubes A a compact
 40 and simple mode is provided for lengthening or shortening the machine without the inconvenience of extra pieces.

What I claim as my invention, and desire to secure by Letters Patent of the United States,
 45 is—

1. The combination of the tubes A A, provided with common central base, A², the bars B B, inserted, respectively, in said tubes, the set-screws C C, seated, respectively, in the
 50 walls of the tubes A and adapted to press against the bars B, so as to hold the latter adjustably within said tubes, the stationary nut A', the threaded bar H, seated in nut A', the cross-bar D, provided with central hole, D',
 55 and end sockets or holes, D², through which latter are respectively passed the tubes A, set-screws D³, seated in the walls of the sockets D², and adapted to be screwed against the exterior of said tubes, the swivel E, provided
 60 with jaws E' and stem E², and adapted to be seated pivotally in the hole D², the inwardly-threaded open nut F, provided with lateral trunnions F', pivotally seated, respectively, in
 65 the holes E³ of the jaws E', and the auger G, seated pivotally in the nut F, whereby said auger can be shifted laterally, vertically, or obliquely, substantially as shown, and for the purpose described.

2. The combination, of the auger-seat F, provided with the angular projections F⁴, the
 70 auxiliary frame K, provided with socket K⁴, adapted to be seated on projections F⁴, the bevel-pinion K', the axle K⁶ of pinion K', journaled in frame K, crank J, attached to axle K⁶, pinion K², engaged and driven by pin-
 75 ion K', axle K³ of pinion K², adapted to slip on shank G³ of auger G, and provided with internal feather, K⁷, to engage the groove G' of shank G³, and the auger G, provided
 80 with shank G³ and groove J' therein, substantially as shown, and for the purpose described.

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

M. FRANK McNELLY.

Witnesses:

FRANK S. BRESSLER,
 H. C. WARD.