No. 837,208. PATENTED NOV. 27, 1906.

F. A. ENGLISH.

MINING DRILL.

APPLICATION FILED MAY 26, 1905.

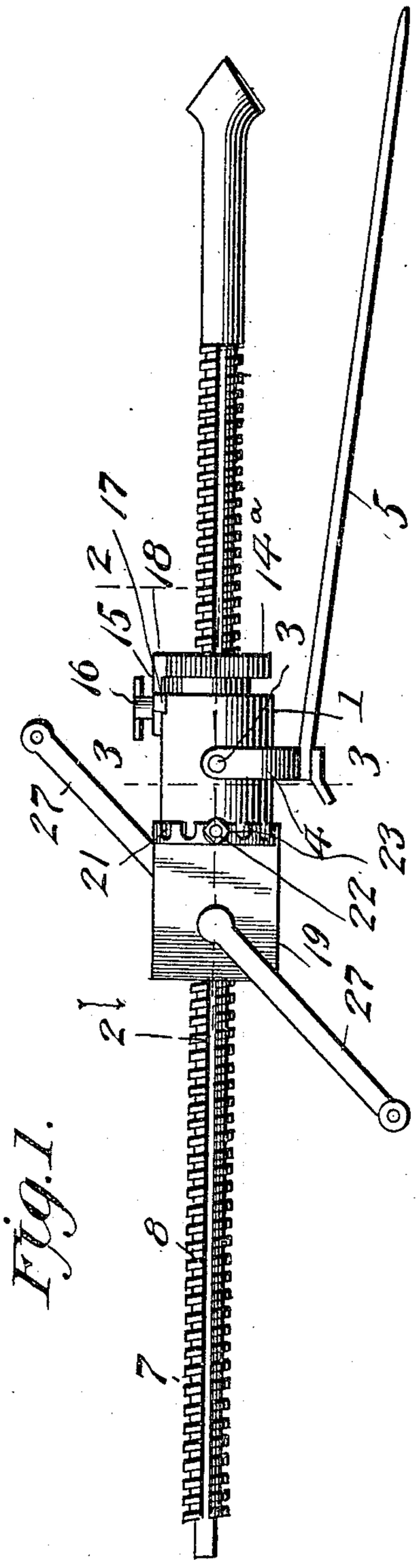

Fig. 1.

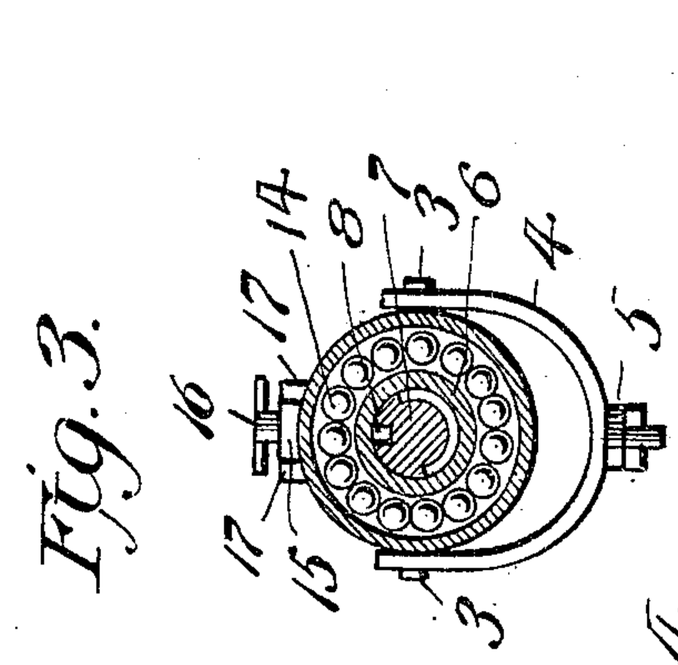

Fig. 3.

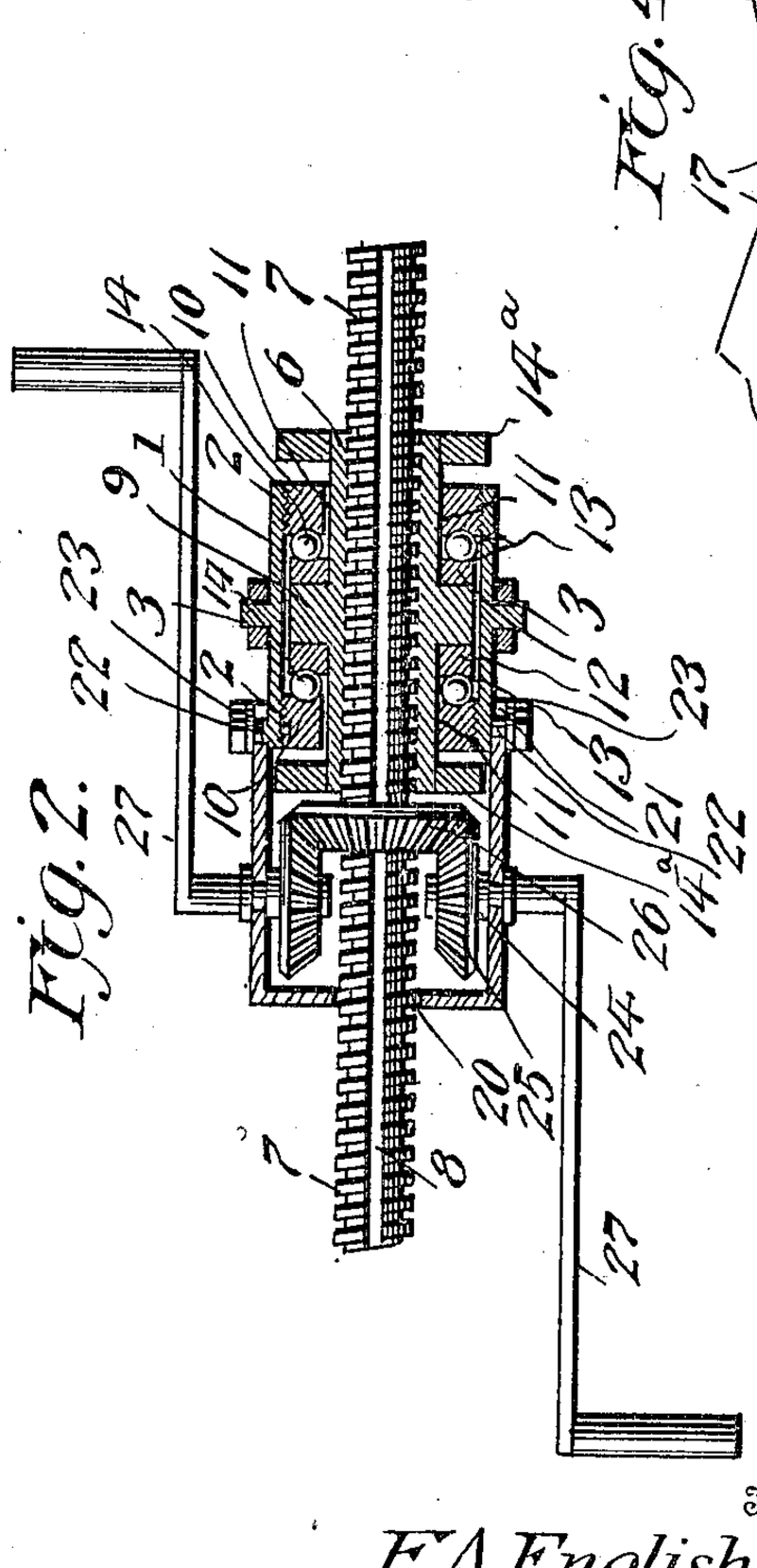

Fig. 2.

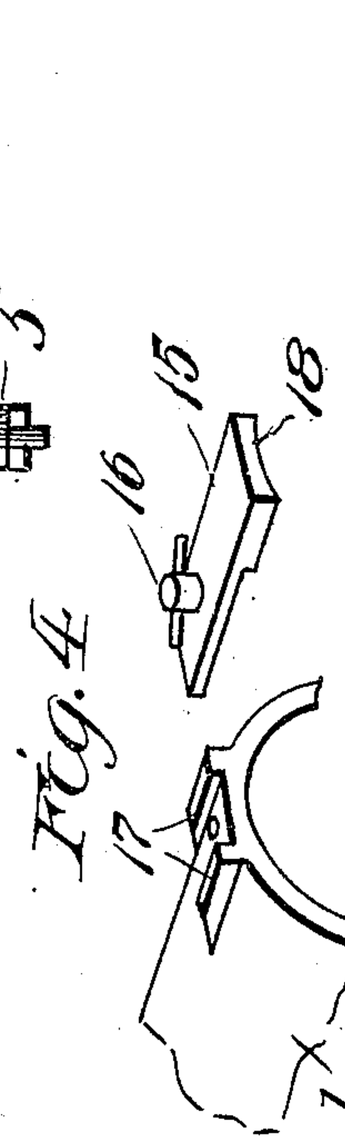

Fig. 4.

Witnesses

Geo. Ackmann Jr.

John F. Byrne.

Inventor

F. A. English

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

FREDERICK ALLEN ENGLISH, OF SHAMOKIN, PENNSYLVANIA.

MINING-DRILL.

No. 837,208. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed May 26, 1905. Serial No. 262,389.

To all whom it may concern:

Be it known that I, FREDERICK ALLEN ENGLISH, a citizen of the United States, residing at Shamokin, in the county of Northumberland and State of Pennsylvania, have invented new and useful Improvements in Mining-Drills, of which the following is a specification.

My invention relates to mining-drills; and its primary object is to provide a device of this character wherein the feed of the drill tube or bar may be varied and regulated at the will of the operator, whereby to compensate for the different densities of the material being drilled and to obviate any liability of the drill or bar being broken or distorted.

A further object of the invention is to provide a device of the character stated wherein the cranks of the power means may be elevated to different heights to avoid the same from coming into contact with the ground when drilling a hole at a point adjacent thereto, thereby adapting the drill for boring holes at points in close proximity to the base of the vertical wall.

The invention consists in the construction, combination, and arrangement of parts hereinafter fully described, claimed, and illustrated in the accompanying drawings, which disclose the preferred form of my invention, and in which—

Figure 1 is a side elevation of a drill constructed in accordance with my invention. Fig. 2 is a central longitudinal section on the line 2 2, Fig. 1, looking in the direction of the arrow; and Fig. 3 is a transverse sectional view on the line 3 3, Fig. 1. Fig. 4 is a perspective view of a fragmentary portion of one end of the boxing and a detail perspective view of the brake-lever.

Referring to the drawings by reference-numerals, 1 indicates the boxing of the drill, the same being circular in cross-section, fully open at its ends, and provided with screw-threads 2. The boxing has two diametrically-opposed and laterally-projecting bearing-lugs 3, which are received by bearings in a yoke 4. This yoke is secured to a rod 5 in the usual manner, whereby the drill may be supported in applied position.

A feed-block 6 is rotatably mounted within the boxing 1 and is provided with a centrally-threaded bore for the reception of the usual tube or bar 7, having an external longitudinal groove 8. The feed-block is provided with a centrally-arragned annular flange 9 and is rotatably secured within the casing 1 by means of disks 10. These disks are threaded to engage the threads 2, whereby they are removably secured in applied position, and are provded with central bores 11, through which project the ends of the feed-block 6. These bores are of a diameter greater than that of the feed-block 6, whereby no resistance will be offered to the rotation thereof. The inner faces of the disks 10 are provided with raceways, and washers 12, mounted upon the feed-block on either side of the flange, are also provided with raceways, (designated 13.) Ball-bearings 14 are mounted between the disks 10 and washers 12 in said raceways, whereby the feed-block may be rotated within the boxing with a minimum amount of friction.

The drill tube or bar 7 is rotated by the means hereinafter set forth, and the feed of said tube or bar may be regulated and controlled at the will of the operator. It is apparent in view of the threaded connection of the bar or tube 7 with the feed-block 6 that if the block is held against rotation said tube or bar will be fed forward, that if said block is free to rotate the tube or bar will not be fed forward, and that the degree of the feed thereof can be varied by causing the block to revolve under a greater or lesser friction. To accomplish this, I secure to the projected ends of the feed-block friction-disks 14^a. A brake-lever 15 is secured to one end of the casing 1 by means of a thumb-screw 16 and between two upstanding lugs 17 to prevent it from having lateral movement. This lever projects beyond one end of the casing 1, and said projecting portion is composed of spring metal. To the extremity of the lever 1 is secured a brake-shoe 18, which is adapted to be brought into engagement with the periphery of one of the disks 14^a when pressure is brought to bear upon the projecting end of the lever 15.

It is apparent that the brake-shoe can be brought into such frictional engagement with one of the disks that the speed of rotation of the feed-block can be regulated to control the feed of the drill to accommodate for the different densities of the material being drilled.

Adjustably mounted upon lugs 22, projecting laterally from one end of the casing 1 and held in adjusted position thereon by means of nuts 23, mounted upon the projecting threaded ends of the lugs 22, is a gear-casing 19,

adapted to carry the means for rotating the bar or tube 7. This casing has one of its ends closed except for the opening 20, adapted for the reception of the bar or tube 7, as fully illustrated in Fig. 2 of the drawings. One end of the casing is provided with a plurality of recesses or indentations 21, two of which receive the lugs 22, and it is held in applied position by means of the nuts 23. Stud-shafts 24 are journaled at diametrically opposite points in the casing and have keyed or otherwise secured to their inner ends gears 25. These gears are adapted to mesh with a gear 26, splined on the bar or tube 7 through the medium of a feather (not shown) fitting in the groove 8 of the tube of the bar 7. The outer ends of said shafts 24 are provided with crank-handles 27, whereby the drill may be manually operated.

If it is desired to drill a hole in a vertical wall at a point adjacent to its base and the distance between the base and the point where the hole is desired to be drilled is less than the length of the crank-handles 27, it is apparent that it will be impossible to operate the machine, as the handles would be brought into engagement with the base. In order to overcome this, the gear-casing may be revolved in a manner that is apparent so as to present one of the crank-handles at a point where it may be freely operated without danger of coming in contact with the ground.

It is apparent that by securing the friction-disks 14^a and the brake-lever 15 exteriorly of the casing the brake-lever can be readily replaced without removing the feed-block from the boxing should the same become unfit for use.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be understood without a further extended description.

Changes in the form, proportions, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

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

1. In a mining-drill, a boxing, a feed-block rotatively mounted within said boxing and having one of its ends projecting beyond the end of the boxing, a friction member mounted exteriorly of the boxing upon the projected end of the feed-block, and a brake adapted to be brought into frictional engagement with said friction member.

2. In a mining-drill, a boxing, a feed-block rotatively mounted within said boxing, a drill carried by said block, lugs projecting laterally from one end of the casing, a gear-casing having one end provided with a plurality of recesses to receive the lugs to adjustably mount the gear-casing upon the first-mentioned casing, and means carried by said casing for operating the drill.

3. In a mining-drill, a boxing, a feed-block rotatably mounted within said boxing, a drill carried by said block, lugs projecting laterally from one end of the casing, a gear-casing provided with a plurality of indentations to receive said lugs, means carried by the gear-casing for operating the drill, a friction-disk carried by one end of the feed-block, and a brake-lever carried by the casing and adapted to be brought into frictional engagement with said disk.

4. In a mining-drill, a boxing, a feed-block rotatably mounted within said boxing and having its ends projecting beyond the ends of the boxing, friction-disks mounted upon the projecting ends of the block, and a brake adapted to be brought into frictional engagement with one of said disks.

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

FREDERICK ALLEN ENGLISH.

Witnesses:
M. B. KRAMLICH,
JOHN C. YORDY.