No. 658,008. Patented Sept. 18, 1900.

H. J. HALEY.

MINING MACHINE.

(Application filed Apr. 16, 1900.)

(No Model.)

Fig. 1.

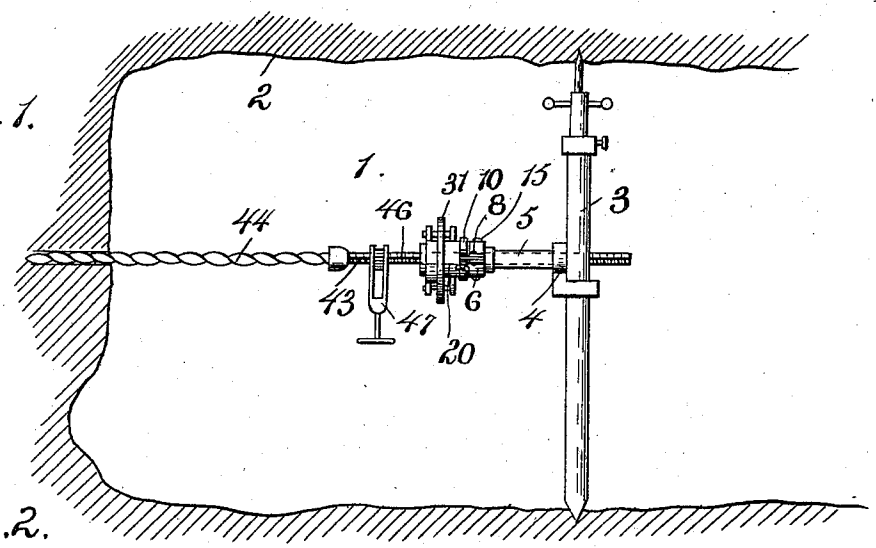


Fig. 2.

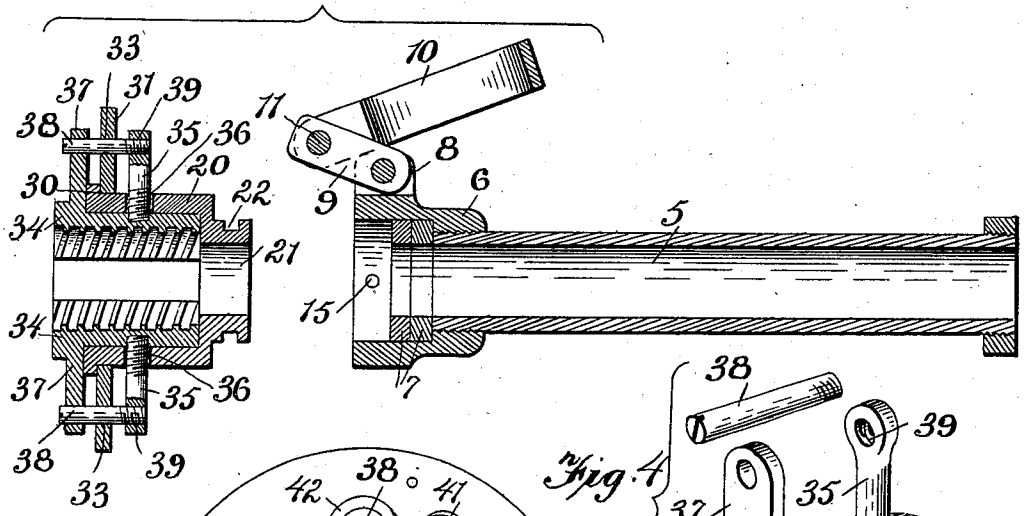


Fig. 3.

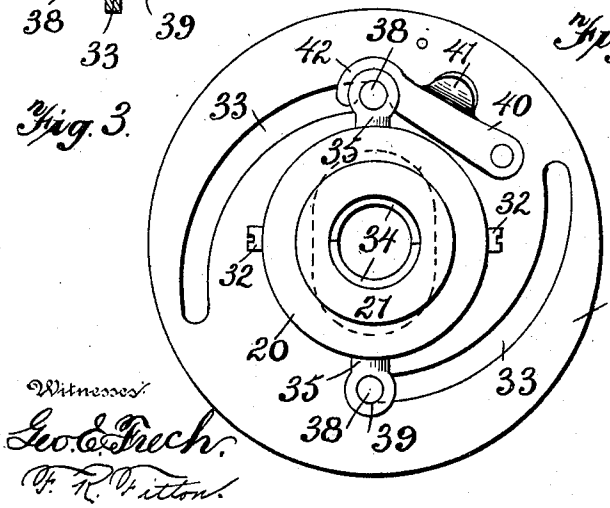
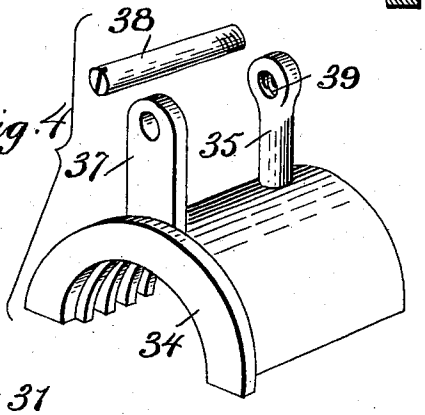


Fig. 4.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY J. HALEY, OF CARDIFF, TENNESSEE.

MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 658,008, dated September 18, 1900.

Application filed April 16, 1900. Serial No. 13,062. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. HALEY, a citizen of the United States, and a resident of Cardiff, Roane county, State of Tennessee, have invented certain new and useful Improvements in Mining-Machines; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to stone-working, and more especially to the drills used therein; and the object of the same is to produce an improved mining-machine.

To this end the invention consists in a specific form of frictional connection between the head containing the nut for the feed-screw and the cylinder forming the support, all as hereinafter more fully described and as shown in the drawings, wherein—

Figure 1 is a general side elevation of this drill in use. Fig. 2 is an enlarged central section through the cylinder and head slightly separated from each other, the friction-band being thrown back and the halves of the nut being retracted. Fig. 3 is a front end elevation of the head with the halves of the nut pressed together and latched. Fig. 4 is a perspective detail of one-half of the nut.

In the drawings, 2 is a shaft in the rock, 3 is an upright post or other rest, such as a ledge in the rock, and 4 is a dog bearing against this rest and projecting laterally from the rear end of a cylinder 5, which latter preferably has an enlarged cup 6 at its front end, here shown as screwed thereon, and containing washers 7, resting against the end of the cylinder. Projecting radially from the cup are ears 8, between which is pivoted a link 9, and 10 is a friction-band having outturned ends standing astride the projecting end of the link, while 11 is a bolt passing through these ends and intermediately through the link. When the bolt is tightened, the ends are approximated and the diameter of the band is decreased. The ends are loose on the bolt, so that the band can be thrown back, as seen in Fig. 2.

20 is a hollow head whose bore is oval, such head having a boss 21 projecting from its rear end and of a size to fit within the cup 6 against the washers 7. The boss is provided with an annular groove 22, removably engaged by the inner ends of two screws 15, which pass inward through the cup, whereby the boss is swiveled within the cup, but is rendered removable therefrom when desired. The band 10 encircles the cylindrical body of the head. When tightened, it clamps the same. When loosened, it permits rotation of the head with respect to the cup, the degree depending upon the looseness of the band.

At the front end of the head is a shoulder 30, behind which is mounted a disk 31, held removably against the shoulder by pins or screws 32 in the head, and in this disk are formed eccentric slots 33, two being here shown.

34 indicates members or halves of a nut movable radially within the oval bore of the head and each preferably constructed as seen in Fig. 4—that is to say, from the outer side of each member or half at about the center of its length projects a pin 35, preferably screwed into the member and with its body passing loosely through a hole 36 in the head 20. From the front end of the nut member projects an ear 37, having an eye through its outer end. Through this eye is passed a screw 38, whose body extends through one of the slots 33 in the disk and whose rear end is screwed transversely into the outer end of the pin 35, as seen at 39. After this screw is removed the pin itself can be unscrewed, and then the nut member can be withdrawn. When the parts are in place, the rotation of the disk causes its groove to act upon the screw 38 and move the nut member inward or outward, as desired.

40 is a latch pivoted to the disk and having a thumb-piece 41 and a hooked end 42, adapted to engage one of said screws when the nut members are thrown inward.

43 is the usual feed-screw, extending completely through the cylinder, cup, head, and nut and normally engaged by the latter, and 44 is the drill, carried by the feed-screw. The latter preferably has a longitudinal groove 46 and is rotated by the usual ratchet drill-stock 47.

The parts of this machine being assembled and the whole set up, as seen in Fig. 1, proper manipulation of the drill-stock rotates the feed-screw intermittently and causes it to

progress through the nut, the drill being meanwhile turned into the rock. When a streak in the latter is struck which is harder than usual, the resistance to the forward movement of the drill is increased and it becomes desirable to feed less rapidly without stopping the rotation of the drill. The workman immediately feels the resistance on the drill-stock, and by unscrewing the bolt 11 and expanding the band 10 to the proper degree he permits the head with its nut members to rotate more or less with respect to the cylinder, which without interrupting the rotation of the drill decreases its feed as the band is loosened more and more until the forward movement of the drill ceases entirely. After the obstruction is passed through the band can be again tightened. When the feed-screw has been projected for its entire length and it is desired to retract it, as for the purpose of withdrawing the drill and starting another hole, the latch 40 is thrown outward and the disk turned in such direction that its slots cause the screws 38 to move radially outward, thus drawing the nut members out of engagement with the threads of the feed-screw by a straight outward pull imparted to each of them at about the middle of its length. I have found that this construction of chuck is more satisfactory than one wherein the nut members are pivoted to each other at one side, and at the same time it renders possible the use of nut members of greater length, and hence increased strength, while yet permitting their removal when desired, as described above. The head can be detached from the cylinder by loosening the screws 15 and disconnecting the boss from the cup. The band 10 can then be thrown back, as seen in Fig. 2, and the parts might be replaced and the said screws 15 tightened to lock the head to the cylinder, if desired, without the use of a frictional connection. From time to time the washers 7 are replaced to take up wear. The parts are of the desired sizes, proportions, and materials.

What is claimed as new is—

1. In a mining-machine, the combination with a non-rotary cylinder having a cup, a head rotarily connected therewith and carrying a chuck, a feed-screw through the chuck, and a drill carried thereby; of radial ears on said cup, a link pivoted at its inner end between said ears, a band-brake encircling the head, and a bolt passing pivotally through the ends of the band, and through the outer end of the link, as and for the purpose set forth.

2. In a mining-machine, the combination with a non-rotary cylinder having a cup, screws passing radially inward through the latter, a band-brake attached to the cup, and means for tightening the band; of a head resting against the front of the cup and having a boss entering the latter and provided with a circumferential groove engaged by the inner ends of said screws, the band encircling said head, a chuck in the latter, a feed-screw through the chuck, and a drill carried thereby, substantially as described.

3. In a mining-machine, the combination with a non-rotary cylinder, a head rotarily connected therewith, a band-brake pivotally connected with the cylinder and encircling said head, and means for tightening this brake; of radially-movable nut members within the head, a disk swiveled thereon and having eccentric slots, radial pins in said members passing outward through holes in the head, screws in the outer ends of said pins parallel with the axis of the head and extending through the slots in the disk, a feed-screw, and a drill, substantially as described.

4. In a mining-machine, the combination with the feed-screw and drill, the supporting-cylinder, the head having an oval bore and provided with an exterior shoulder at its front end, a disk journaled on the head against said shoulder, and retaining devices on the head in rear of the disk, the latter having eccentric slots; of nut members movable radially in said bore and each having a radial pin, in rear of the disk and a radial ear in front of it, and a screw connecting said ear and pin and passing through one of said slots, as and for the purpose set forth.

5. In a mining-machine, the combination with the feed-screw and drill, a head having an oval bore with two radial holes, a support for this head, and a disk journaled thereon and having two eccentric slots; of nut members within said bore each having a pin about midway of its length screwed into its body and projecting through one of said holes in the head and an ear at its front end having an eye, and a screw passing through said eye and through one of said slots and screwed into the outer end of said pin, as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my signature this the 13th day of April, A. D. 1900.

HENRY J. HALEY.

Witnesses:
LISH INGRAM,
GEO. MCNEAL.