No. 688,182. Patented Dec. 3, 1901.

L. K. KOONTZ.

COAL OR ROCK DRILL.

(Application filed Mar. 16, 1901.)

(No Model.)

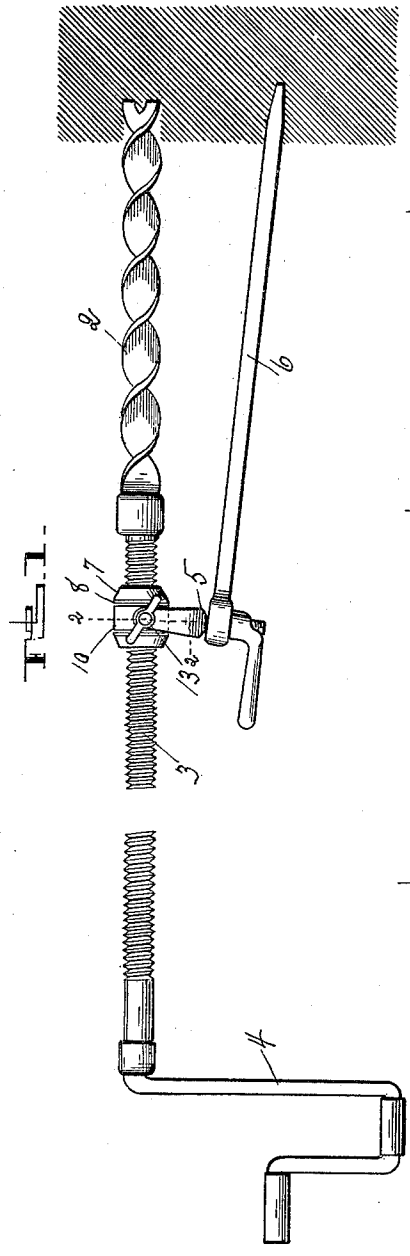


FIG. 1.

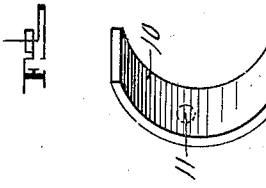


FIG. 4.

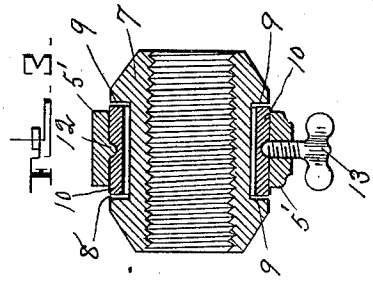


FIG. 3.

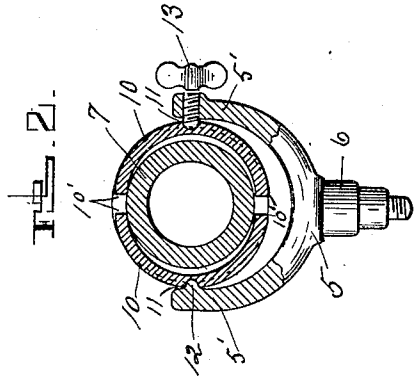


FIG. 2.

WITNESSES.

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LOUIS K. KOONTZ, OF ALLEGHENY, PENNSYLVANIA.

COAL OR ROCK DRILL.

SPECIFICATION forming part of Letters Patent No. 688,182, dated December 3, 1901.

Application filed March 16, 1901. Serial No. 51,504. (No model.)

To all whom it may concern:

Be it known that I, LOUIS K. KOONTZ, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Coal or Rock Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to coal and rock drills, and has particular reference to automatically-variable feed mechanism of simple and improved construction for controlling the advance of the auger or drill.

The invention consists in the novel structural features and combination of parts hereinafter fully described and claimed, and illustrated by the accompanying drawings, wherein—

Figure 1 is a side elevation of a drilling-machine equipped with my improvement. Fig. 2 is a vertical cross-sectional view on line 2 2 of Fig. 1. Fig. 3 is a sectional plan view. Fig. 4 is a detail view of one of the curved friction-plates.

Referring to the drawings, 2 represents the twist-drill, 3 the feed-bar, 4 the crank, 5 the forked chair, and 6 the chair-supporting grip-bar, all of usual and well-known construction. 7 is an internally-threaded head or nut through which feed-bar 3 extends, and formed in the exterior face of this head is the continuous groove or depression 8, the formation of said groove creating annular shoulders 9. Fitting loosely within this groove or depression of the head are the two curved bearing-plates 10. The plates are a little short of being semicircular and are formed, preferably, of spring metal and normally are of such form as to stand slightly away from the bottom of groove 8, as clearly shown in Fig. 2. The plates are formed on their outer faces with the central depressions 11 to receive on one side the inwardly-projecting trunnion-nib 12 on one arm 5′ of chair 5 and on the opposite side the trunnion-screw 13, working in a threaded aperture in the other chair-arm. The chair is of such size as to permit the feed-head to operate freely therein and to oscillate vertically on the horizontal axis formed by the trunnions, thus providing for the different operative positions necessary in this class of machinery.

In operation screw 13 is so adjusted as to cause the plate extremities 10′ to frictionally engage the head with more or less force and resist rotation of the head with the feed-bar. If the resistance of the auger is sufficient to overcome the resistance of plates 10, the head will rotate with the feed-bar and the auger will simply rotate without advancing. On the other hand, if the tension of the plates 10 is sufficient to hold head 7 stationary notwithstanding the resistance of the drill the feed-bar will advance therethrough and create a positive feed for the auger. Under ordinary working conditions the adjustment by means of screw 13 is such that the opposing resistances are about evenly balanced, with the result that nut 9 rotates between plates 10, but at a slower speed than the feed-bar and auger. However, this may be arranged as circumstances may require—as, for instance, if working in comparatively soft material and a rapid feed is desirable the tension of plates 10 may be so increased as to hold the head fixed.

The plates 10 not only regulate the feed, but also support head 7 within chair 5 and hold the head against longitudinal movement in either direction. As above stated, the plates 10 are preferably of spring metal and normally have slightly-sharper curvatures than the face of the head 7, which they impinge. Said plates may, however, be curved concentrically with the head-surface against which they bear and normally impinge the same their entire length and the tension be regulated by screw 13 alone and unaided by the spring function of the plates. The construction just described would be exactly the same in appearance as the mechanism here shown would present under an extreme adjustment which would force the entire length of the plates against the head.

Plates 10 may be used interchangeably, and the support which they constitute may be used reversely or with either face toward the coal. Instead of the rib-support 6 a vertical post may be employed, and crank 4 may be displaced by a ratchet-lever, all of which are well-known equivalents in the art.

While my improved automatically-variable

feed-head is here shown and described in connection with a threaded feed-bar, I do not restrict myself to its use in connection with such bar, as it may be so constructed as to operate directly on the spiral or twist auger without departing from the spirit or scope of the invention.

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

1. The combination of oppositely-arranged trunnion-supports, an auger-feeding head, and oppositely-curved plates embracing the head and supporting the same against vertical and longitudinal displacement, the curved plate having pivotal connection with the trunnion-supports, and means for varying the frictional engagement of the curved plates with the head, substantially as shown and described.

2. The combination of oppositely-arranged trunnion-supports adjustable with relation to each other, an auger-feeding head having a continuous groove in its exterior, and oppositely-facing curved plates within the head-groove, the plates being engaged and sustained by the oppositely-arranged trunnion-supports, thereby holding the said head in operative position, substantially as shown and described.

3. The combination of a rotatable auger-feeding head having a continuous groove in its exterior, non-rotatable curved spring-plates lying in opposite sides of the said groove and frictionally engaging the bottom thereof, said plates having slightly-sharper curvature than the groove-bottom, and means for contracting said plates and increasing their frictional engagement with the head, substantially as shown and described.

4. The combination of a forked chair, an inwardly-projecting trunnion-nib on one of the chair-arms, a trunnion-screw adjustable through the opposite chair-arm, a rotatable auger-feeding head having a continuous peripheral groove, and curved plates lying in said groove and formed with depressions on their outer faces to receive the said trunnion-nib and trunnion-screw, substantially as shown and described.

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

LOUIS K. KOONTZ.

Witnesses:
J. M. NESBIT,
ALEX. S. MABON.