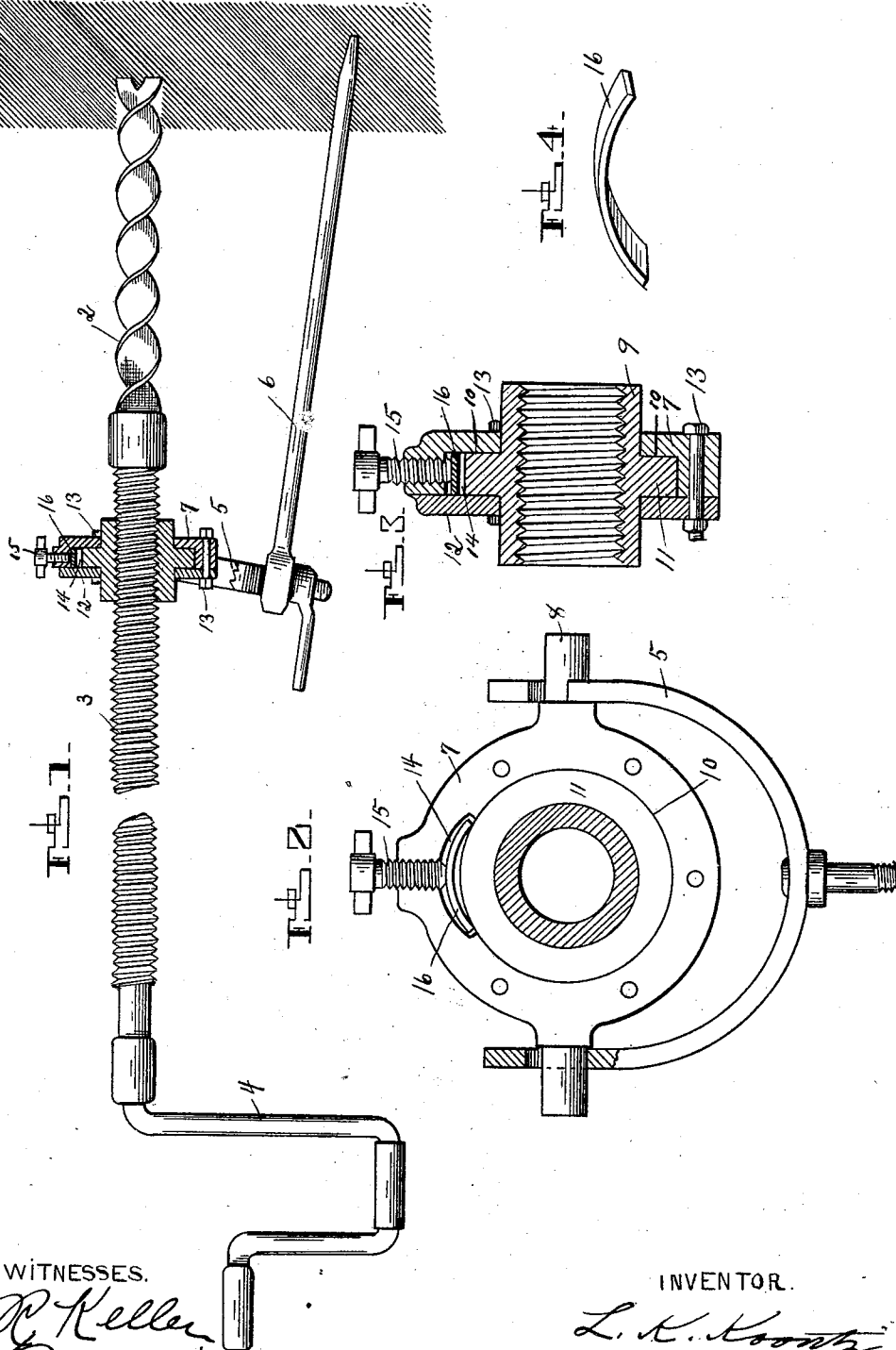


No. 721,896.

PATENTED MAR. 3, 1903.

L. K. KOONTZ.
COAL OR ROCK DRILL.
APPLICATION FILED MAR. 7, 1901.

NO MODEL.



WITNESSES.

J. R. Keller
H. Dickinson

INVENTOR.

L. K. Koontz
By J. W. Nesbit
Att'y.

UNITED STATES PATENT OFFICE.

LOUIS K. KOONTZ, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR TO MARTIN HARDSOEG MANUFACTURING COMPANY, LIMITED, OF ALLEGHENY, PENNSYLVANIA.

COAL OR ROCK DRILL.

SPECIFICATION forming part of Letters Patent No. 721,896, dated March 3, 1903.

Application filed March 7, 1901. Serial No. 50,187. (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 new and useful Improvements in Coal or Rock Drills, of which the following is a specification.

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

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

Figure 1 is a vertical longitudinal sectional view of my improved mechanism shown in position on a drill. Fig. 2 is a rear elevation of the same with the face-plate or collar removed and the feed-bar shown in section. Fig. 3 is an enlarged longitudinal sectional view of the improved mechanism. Fig. 4 is a detail view of the spring.

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 a bearing-head provided with side trunnions 8, which rest in the arms of chair 5. Head 8 is formed with a central circular opening to receive the internally-threaded nut or sleeve 9, and one side face of the head is countersunk at 10 to receive annular shoulder 11 of said nut. The depression and shoulder are of the same depth, and the latter is confined in the former by the annular plate or collar 12, secured to head 7 by bolts 13. Thus the nut or sleeve is rotatably confined in the head 7, while the threaded feed-bar works through the nut, as will be understood. Head 7 is reversible in that either face thereof may be disposed toward the coal.

For retarding the rotation of nut 9 in head 7 the upper portion of countersunk depression 10 is enlarged at 14, and intersecting the center of this enlargement is a threaded aperture through which works the set-screw 15, and within the enlargement and arranged cen-

trally beneath this screw is the bowed spring 16, the extremities of which bear on the periphery of nut-shoulder 11. Thus the spring has a broad bearing-surface on the nut and, if necessary, may be forced down to bear there-against its whole length.

In operation if the resistance of the auger is sufficient to overcome the resistance of spring 16 nut 9 will rotate with the feed-bar. Hence the drill and nut will simply rotate within head 7. On the other hand, if the tension of the spring is sufficient to hold nut 9 stationary, notwithstanding the resistance of the drill, the feed-bar will advance there-through. Under ordinary working conditions the adjustment by means of screw 15 is such that the opposing resistances are about evenly balanced, with the result that nut 9 rotates, but at a slower speed than the feed-bar and drill. 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 the spring 15 may be so increased as to hold the nut fixed, thus creating a positive feed for the bar working therethrough.

It will of course be understood that instead of the chair and bar support a vertical post may be substituted and that a ratchet-lever may be substituted for crank 4.

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

1. The combination of a fixed head, a feed-nut rotatable therein, a bowed spring—normally of sharper curvature than the nut—confined by the head and disposed transversely of the nut-axis and adapted at its ends to bear on the nut periphery, and means operating on the spring for compressing the same against the nut, thereby increasing the pressure of the spring on the nut and increasing its frictional engagement therewith.

2. The combination of non-rotating head 7 formed with a circular opening countersunk at 10, internally-threaded nut 9 formed with annular external shoulder 11 corresponding to and fitting within the countersunk portion of the head-opening, plate 12 formed with an annular opening to embrace the nut

and secured to the open side of the said head
for confining therein the nut-shoulder, head
depression 10 being formed with the circum-
ferentially-elongated offset depression 14, the
5 elongated bowed spring 16 within said offset
depression and bearing on the periphery of
the nut-shoulder, and means for adjusting
said spring, substantially as described.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit- 10
nesses.

LOUIS K. KOONTZ.

Witnesses:

J. M. NESBIT,

ALEX. S. MABON.