(No Model.)

W. J. MEWER.

ROTARY SUPPORT FOR DRILLS.

No. 566,923. Patented Sept. 1, 1896.

Fig. 2.

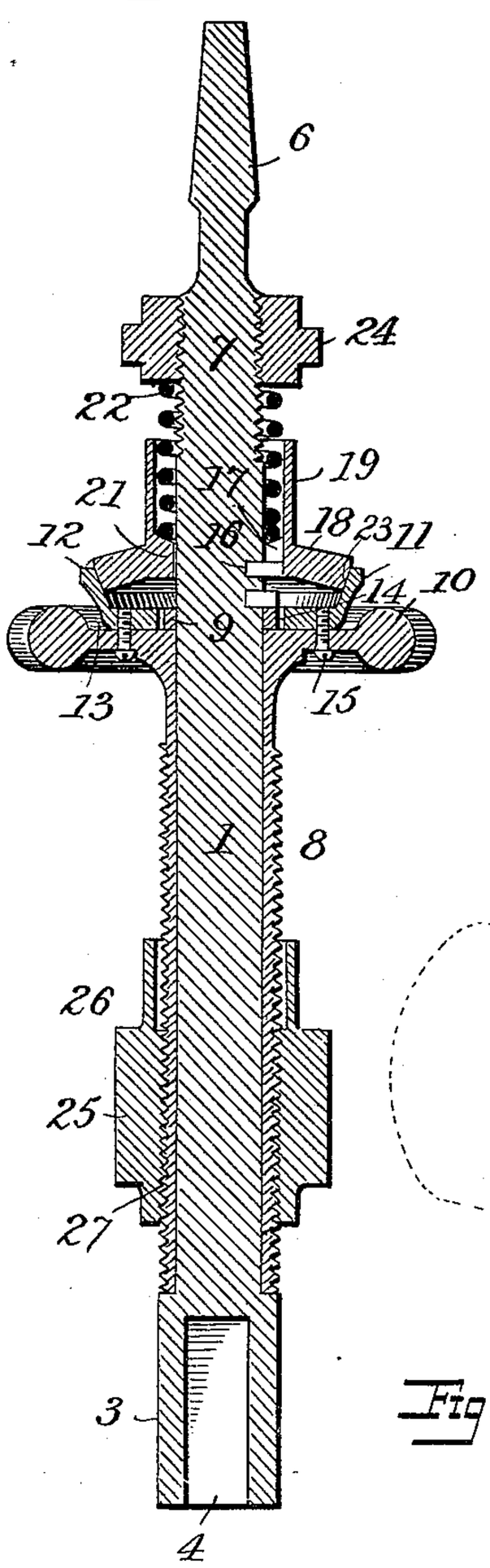


Fig. 1.

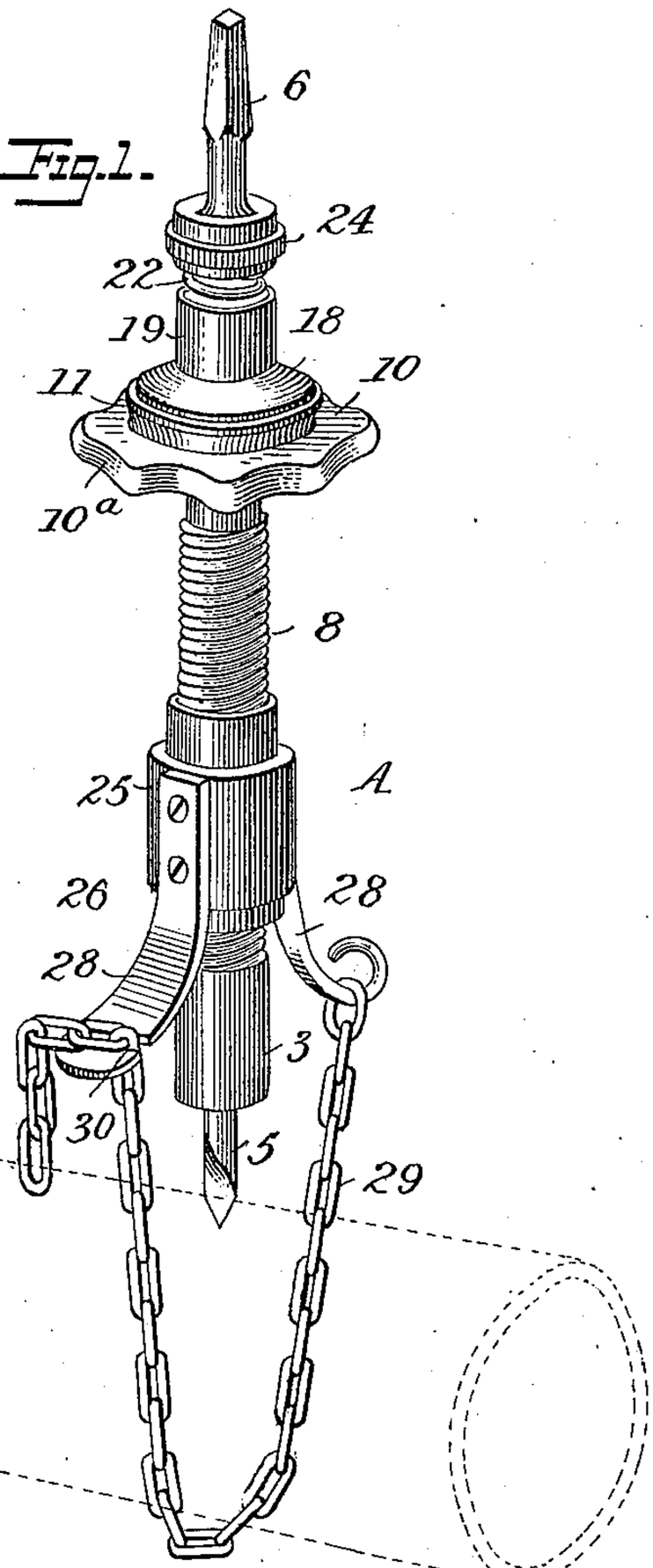


Fig. 3.

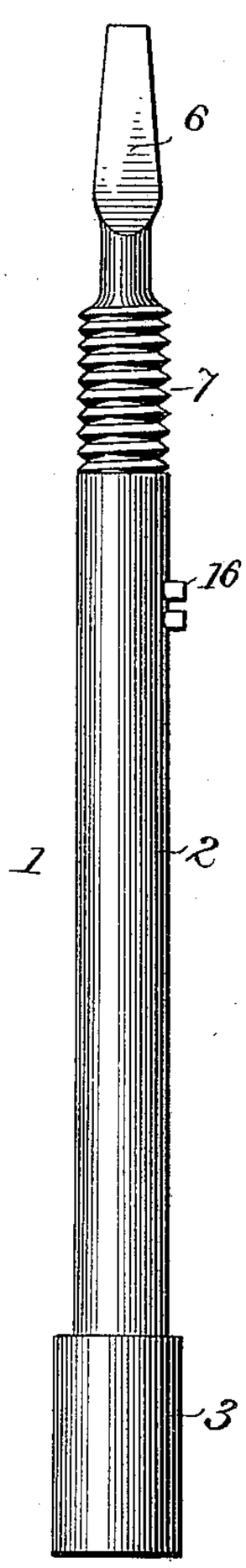


Fig. 4.

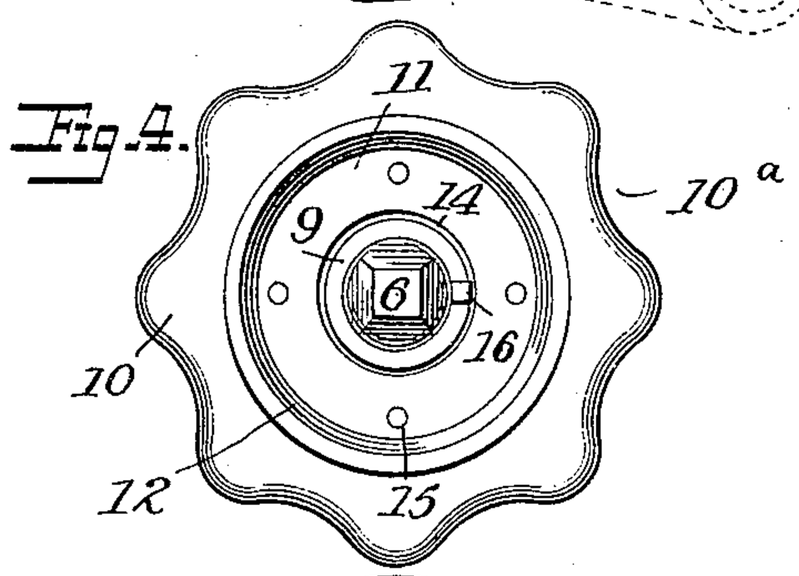
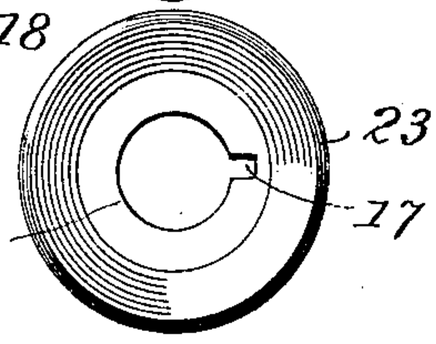


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ROTARY SUPPORT FOR DRILLS.

SPECIFICATION forming part of Letters Patent No. 566,923, dated September 1, 1896.

Application filed February 5, 1895. Serial No. 537,385. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. MEWER, a citizen of the United States, residing at Old Orchard, in the county of York and State of Maine, have invented certain new and useful Improvements in Rotary Supports for Drills, of which the following is a specification.

This invention relates to certain new and useful improvements in rotary supports for drills; and it consists, substantially, in such features thereof as will hereinafter be more particularly described.

The particular character or kind of drill-support to which the present invention more especially relates is such, for instance, as is shown and described in my former application for Letters Patent, filed December 11, 1893, and having Serial No. 493,412, and wherein I resort to a stationary part adapted for attachment to the object to be drilled, a rotary part working in said stationary part, and an adjustable follower or feed take-up. In said former invention as the drill is rotated the rotary part of the support turns with it, and as said drill is gradually fed forward the feed is taken up from time to time by adjusting the follower by hand, in which way a constant resistance or working bearing for the drill is obtained. The said former invention is found especially advantageous with certain classes of work, but in some instances the drill will slip unless the feed take-up is constantly adjusted, and this naturally requires very careful watching and extreme care on the part of the operator or workman.

The object of the present invention is to render the operation of the feed take-up self-acting or automatic, so as to obviate repeated adjustments, while at the same time maintaining a constant and invariable resistance.

A further object of the present invention is to provide a yielding or elastic resistance to the drill, so as to prevent slipping or breaking of the same during the operation of boring hard substances, as iron or other metal.

The invention also has certain other objects in view, such as lightness, ease of operation, and more ready manipulation, substantially as will more fully hereinafter appear when taken in connection with the accompanying drawings, in which—

Figure 1 is a view in perspective of the preferred embodiment of my present invention, the same indicating the device or support all ready for use, and showing the general construction and arrangement of parts. Fig. 2 is a longitudinal sectional view taken centrally through the rotary support, and showing the construction and relative arrangement of each part by which the conjoint operation of the whole is effected. Fig. 3 is an elevation of the stock or drill-holder in detail. Fig. 4 is a top or plan view of the support, with the friction cone disk or plate and the cushion or spring detached or removed. Fig. 5 is a bottom plan view of the friction cone disk or plate.

Before proceeding with a more detailed description I desire to say that my present invention is capable of several different embodiments, and therefore I do not limit myself to the precise details or specific devices hereinafter referred to. For instance, the main purpose is to secure both an automatic or self-acting feed or take-up, as well as an elastic or cushioning resistance to the take-up and drill, whenever any back thrust occurs; but in some instances where soft bodies, as wood, are to be drilled there would be no absolute necessity for the cushion or spring, and in such cases the same could be dispensed with. At the same time, however, the automatic feed or take-up must be invariable in its action, and this result I secure as will more fully hereinafter appear. In the present invention the drill-holder passes through the automatic follower or take-up, and when the parts are properly adjusted the said follower or take-up turns or rotates with the drill and its holder, while the boring or feed of the drill is steadily and automatically compensated for and a constant working bearing or resistance for the drill maintained.

Referring to the accompanying drawings, A represents my improved device or drill-support as a whole, which when of full size is easy to handle and very readily manipulated. The said device or drill-support, as shown in Figs. 1 to 5, inclusive, is constituted of a central drill stock or holder 1, which for a greater

part of its length is of plain surface and straight, as shown at 2, while at its lower end it is formed or provided with an enlarged head 3, having a squared or other suitable-shaped recess or opening 4 for receiving the end of the drill or bit 5, or to hold any drill by a set-screw, (not shown,) or which may be adapted to receive any suitable form of drill-chuck adapted to hold all sizes of drills ordinarily employed. The said drill stock or holder 1 is formed at its upper end with a tapering and squared portion 6 for fitting within the brace of an ordinary hand-drill or bit-brace, so as to be rotated or driven in the usual way of operating such drills, while immediately below this squared portion the said stock or holder is formed for a suitable distance with a right-hand screw-threaded section 7, designed to receive an adjusting-nut in the manner and for the purpose hereinafter explained. The said bit or drill stock or holder 1 passes loosely through a hollow sleeve 8, and is prevented from slipping out of the same by means of a small collar 9, fastened around the stock at a point below the screw-threaded section 7, the lower edge of said collar resting upon the upper edge of the hollow sleeve, and thus between the head 3 and the collar 9 the drill-stock is prevented from withdrawal in either direction. The position of the said collar, however, is such as to allow a limited movement of the stock within the sleeve, so that any back thrust given the feed device and drill on striking an obstruction or very hard substance will be permitted to a limited extent.

The sleeve 8 is formed or provided at its upper end with a hand piece or wheel 10, which permits of the sleeve being turned by hand to take up the feed whenever a self-acting or automatic action is not desired or needed, the said wheel being of sufficient size and scalloped around its edge at 10^a to facilitate the grasping thereof. Preferably a self-acting or automatic action of the follower or feed take-up 8 is desired, and to secure which I employ any suitable friction-clutch between the drill stock or holder and the said take-up. While I am not limited to any particular form of friction-clutch, I have herein shown a cup or ring 11, provided with a continuous upright flange 12, slightly flaring, and which ring or cup is seated within a hollow recess 13 in the upper surface of the hand-wheel 10, and is formed with a central opening 14, large enough to pass down over the collar 9, leaving a clear space between the two. The cup or ring is secured in place within the upper surface of the wheel by small screws 15, passing through the two from the under side of the wheel, and it works in connection with the friction-disk to be described. This cup or ring need not be separate from the wheel, but the two could be integral or in one piece, in which case there would of course be no necessity for the screws or any other fastening.

The stock or holder 1 is formed at a point between the collar 9 and the screw-threaded section 7 with a small projecting key 16, which enters a slot 17, formed in the wall of a friction cone-disk 18, which is also formed or provided with a sleeve portion 19, of larger bore or internal diameter than the central opening 20 of the disk, and within said sleeve portion 19, at the lower end thereof, is an annular flange 21, which forms a base or seat for the lower end of a spring 22 or other elastic cushion, which surrounds the screw-threaded section 7 within the sleeve portion.

The cone-disk 18 is beveled or slightly conical on its edge at 23, so as to fit tightly within the flaring flange of the cup or ring 11, and when held down therein the friction produced is sufficient to cause the sleeve or feed take-up to rotate with the drill-stock and drill.

Screwing upon the threaded section 7 of the drill holder or stock is an adjusting-nut 24, through the medium of which the cushion or spring 22 is compressed to any desired degree or tension between its seat and the nut, and thus is an elastic resistance always furnished to the feed device or take-up during the operation of boring or drilling. By means of said nut the resistance afforded by the spring or cushion can be easily regulated, and it will be observed that the nut is formed with a milled flange for enabling the same to be readily grasped by the hand and turned.

The automatic feed or sleeve 8 works through the main body 25 of a saddle 26, which is designed to rest upon or against the object to be drilled, the said main body 25 being formed with a central screw-threaded bore or opening 27 for the passage of said sleeve, and the construction of the parts is such that the said saddle is prevented from coming off by means of the enlarged head of the drill stock or holder. Formed with or secured to the body 25 of the saddle, to opposite sides thereof, are the legs or feet 28, in one of which is fastened permanently the end of a chain 29 or other securing means, while the other foot or leg is cut or notched at 30 to receive the chain and hold it after the latter has been drawn sufficiently tight around the structure or object to be drilled. From the foregoing it will be seen that the support or device can be readily secured or attached to the object to be drilled, the feet or legs 28 resting upon the object in an obvious manner and the chain passing around the same. By tightening the nut 24 and then turning the brace in the usual manner the drill and feed devices will be rotated together, while the saddle remains stationary, and in this way the object or structure is drilled without having to stop from time to time to adjust the follower or take-up common to my former invention as well as to some others. The feed take-up is gradual, yet invariable, and it will be seen with what effectiveness my invention may be employed.

I claim—

1. A rotary drill stock or holder having

enlarged lower end and provided a suitable distance from it upper end with a projection or collar, a rotary feed take-up loosly fitting the holder between said projection and enlarged end, and a friction device and a spring, between the holder and take-up, substantially as described.

2. A rotary drill stock or holder, a rotary feed take-up screw-threaded externally and fitting loosely upon said holder, a saddle screw-threaded to receive the take-up, a friction device between the holder and take-up, and a spring and adjusting-nut, for regulating the friction device, substantially as described.

3. A rotary drill support or holder having a head for receiving the drill and formed at its upper part with a threaded section and a key, a rotary feed take-up surrounding said stock or holder, a clutch constituted of the movable friction-disk and sleeve engaging the key, and the cup joined to the take-up, and the spring and adjusting-nut for regulating the clutch, substantially as described.

4. A rotary drill holder or stock formed with the screw-threaded section and key and provided with a collar and an enlarged head, the rotary screw-feed take-up formed at its upper end with the recessed hand-wheel, the flaring cup secured in said wheel, a friction cone-disk fitting said cup and formed with the slot and inner flange or base, and the spring and adjusting-nut for regulating the friction between the disk and wheel, substantially as described.

5. A rotary drill holder or stock formed with the screw-threaded section and key and provided with a collar and an enlarged head, the rotary screw-feed take-up formed at its upper end with the recessed hand-wheel, a friction cone-disk fitting said wheel and formed with the slot and inner flange or base, and the spring and adjusting-nut regulating the friction between the disk and wheel, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM J. MEWER.

Witnesses:
GEO. F. GOULD,
ELINOR S. MOODY.