C. F. DE ARMOND.

ROTATING AND SHOCK ABSORBING MEANS FOR RECIPROCATING SHAFTS.

APPLICATION FILED MAY 10, 1920.

1,412,928. Patented Apr. 18, 1922.

Fig. 1.

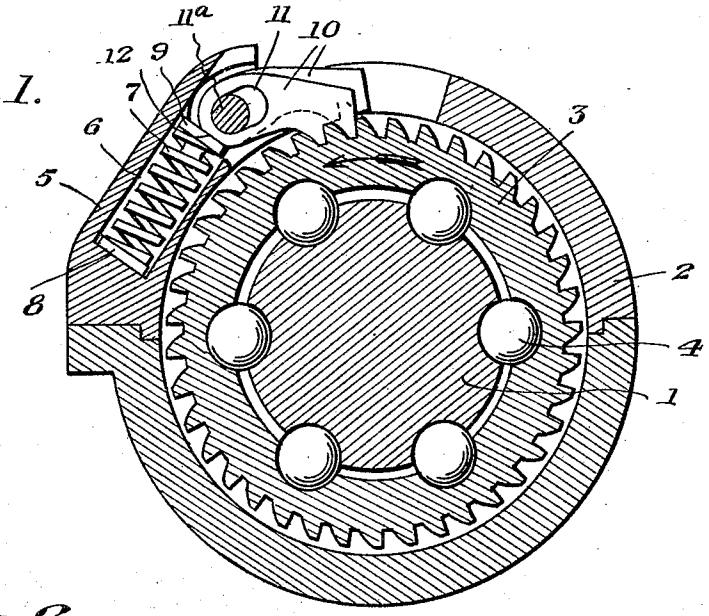
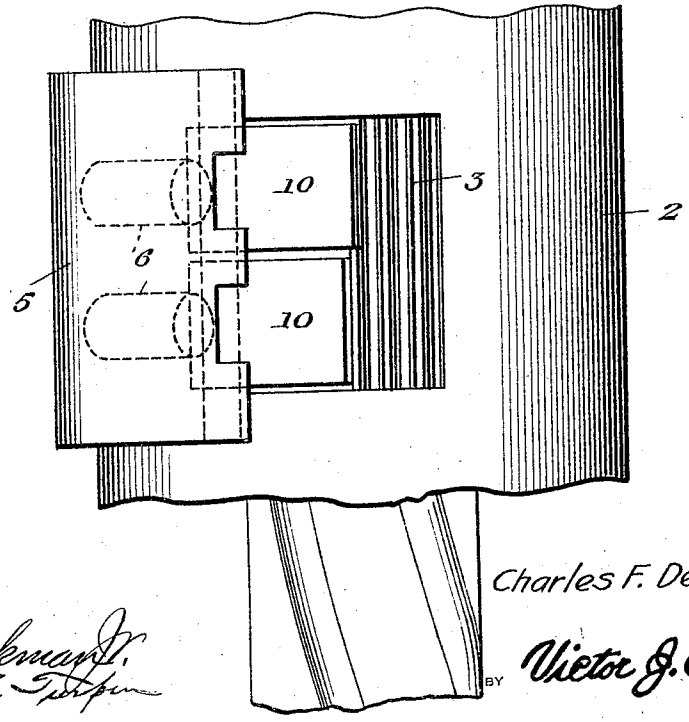


Fig. 2.



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WITNESSES

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CHARLES F. DE ARMOND, OF ELKO, NEVADA.

ROTATING AND SHOCK-ABSORBING MEANS FOR RECIPROCATING SHAFTS.

1,412,928. Specification of Letters Patent. Patented Apr. 18, 1922.

Application filed May 10, 1920. Serial No. 380,347.

To all whom it may concern:

Be it known that I, CHARLES F. DE ARMOND, a citizen of the United States, residing at Elko, in the county of Elko and State of Nevada, have invented new and useful Improvements in Rotating and Shock-Absorbing Means for Reciprocating Shafts, of which the following is a specification.

In rock drilling machines all of the elements of the rotating means and other organized mechanism are subject to heavy shocks and jars resulting in strains which are particularly severe at the moment of impact of the cutters against rock and immediately preceding and following such impact.

Again in rock drilling machines where rotation of the shaft begins at the commencement of retrograde movement thereof, the rotation is initiated when the resistance to such rotation is at its maximum.

Therefore, one object of the present invention is the provision of means calculated to effectively relieve the strains alluded to by adequately absorbing the shocks.

Another object is to provide for retrograde movement of the shaft in a straight line—i. e., rectilinearly, or in a line of little resistance in the direction of rotation, without, however, decreasing the angle of rotation for full stroke.

Another object is to provide for the positive engagement of the pawls with the teeth of the rotating nut.

To the attainment of the foregoing and other objects herein developed, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, hereby made a part hereof:—

Figure 1 is a transverse section of so much of a rock drill or analogous organized mechanism as is necessary to illustrate the best practical embodiment of my invention known to me.

Figure 2 is an elevation taken at right angles to Figure 1.

Similar numerals of reference designate corresponding parts in both views of the drawings.

In conjunction with the shaft 1 I show a casing 2 and an ordinary, well known exteriorly toothed nut 3, associated and connected with the shaft by the usual balls 4 or other appropriate means to bring about turning of the shaft about its axis incident to retrograde movement of the shaft and when the said ring is held against turning in the direction indicated by arrow in Figure 1.

In accordance with my invention the casing 2 has fixed thereon and with respect thereto a housing 5, and in bores 6 of the housing are arranged coiled springs 7. The rear ends of the said springs bear, by preference, against washers 8; the said washers being employed to regulate the tension of the springs as occasion demands. The forward ends of the springs 7 bear against buttons or followers 9, and the said followers, in turn, bear against the heels of pawls 10, the function of which is to engage the ring 3 and prevent rotation of the same in the direction indicated by arrow in Figure 1, and this without interfering with clockwise rotation of the ring. The pawls 10 are preferably arranged with the forward end of one about a half a tooth ahead of the other, and I would have it understood that it is within the purview of my invention to employ two of the pawls or more than two when deemed expedient. In each pawl 10 is formed a slot 11 to receive a pin 11ª by which the pawls are connected to the housing 5, the said slots being so relatively disposed as to enable the pawls to move in line with the circumference of the ring while retaining their positions relative to the ring. The pawls manifestly are adapted to operate each independent of the other so that as the spring complementary to one pawl is compressed the other pawl engages the teeth of the ring 3 and contributes to the holding strength of the means for preventing movement of the ring 3 in the direction indicated by arrow. It will also be noticed here that by reason of the slots 11 in the pawls 10, the pawls 10 will not be thrown out of engagement with the ring 3 in the event of the ring being moved under excess pressure in the direction indicated by arrow, and in that way stripping of the teeth of the ring or damage of the pawls will be precluded. It will further be apparent that the pawls have an eccentric bearing on the springs 6 and this has the effect of moving the forward ends of the pawls toward the shaft and assures meshing of said forward ends with the teeth or interdental spaces of the ring. In the latter connection it will be noted that the heel ends of the pawls 10 are flattened as indicated by 12 for the en-

gagement of the followers 9, and that such provision assures the forward ends of the pawls being strongly pressed toward the shaft 1. The relative arrangement of the housing 5 and the pawls 10 is such that the pawls in their outward movements will seat against the housing with but little shock to the parts of the rotating mechanism.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

Rotating and shock absorbing means for reciprocating shafts comprising a casing, a reciprocatory and rotary shaft extending therethrough, an exteriorly toothed ring surrounding the shaft, means between the shaft and the ring for turning the former in one direction when the shaft is reciprocated and the ring is held against turning, spring backed longitudinally slotted pawls in the casing and arranged with the forward end of one pawl in advance of the forward end of the other, said pawls capable of endwise movement and of swinging movement, and means extending through the slots of the pawls and connecting the same with the casing.

In testimony whereof I affix my signature.

CHARLES F. DE ARMOND.

Witnesses:
OTTO F. WILLIAMS,
SAMANTHA E. STEWART.