

S. S. STEVENSON.
 POWER ROCK DRILL.
 APPLICATION FILED JUNE 3, 1909.

972,726.

Patented Oct. 11, 1910.

2 SHEETS-SHEET 1.

Fig. 1.

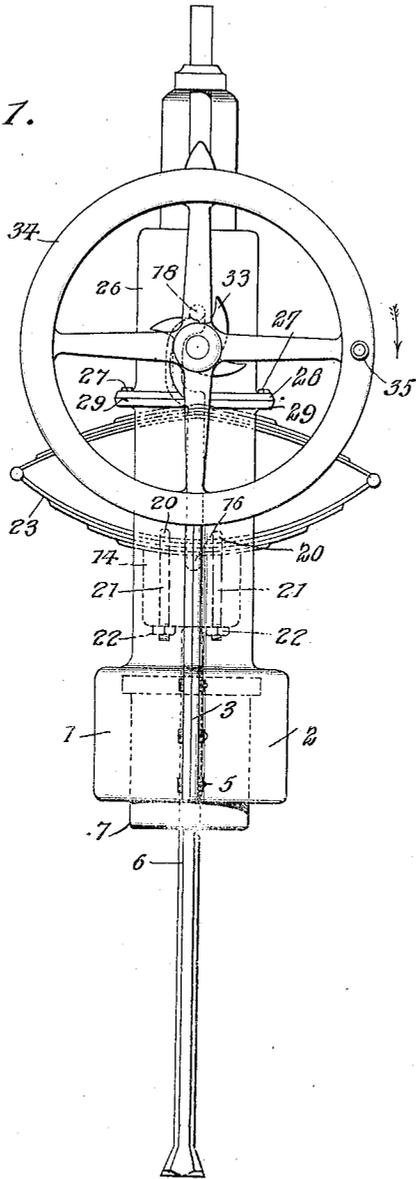
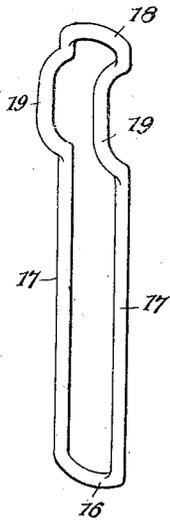


Fig. 3.



WITNESSES

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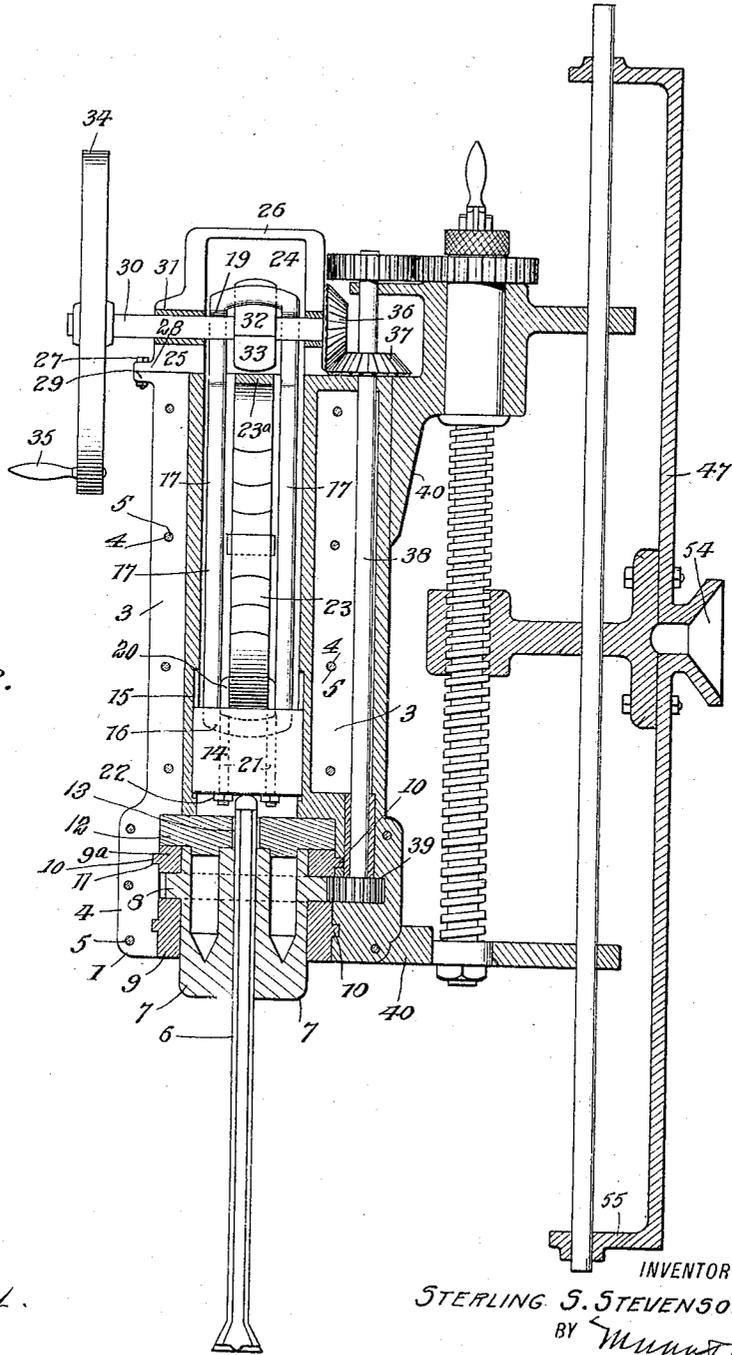


Fig. 2.

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UNITED STATES PATENT OFFICE.

STERLING STANLEY STEVENSON, OF SALTILLO, MEXICO.

POWER ROCK-DRILL.

972,726.

Specification of Letters Patent.

Patented Oct. 11, 1910.

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To all whom it may concern:

Be it known that I, STERLING STANLEY STEVENSON, a citizen of the United States, residing at Saltillo, in the State of Coahuila, Mexico, have made certain new and useful Improvements in Power Rock-Drills, of which the following is a specification.

My invention is an improvement in power rock drills, and consists in certain novel constructions and combinations of parts herein-after described and claimed.

Referring to the drawings forming a part hereof: Figure 1 is a front view of the improvement, Fig. 2 is a longitudinal section of the drill and support, and Fig. 3 is a perspective view of the lifting link.

The drill mechanism comprises a frame composed of sections 1 and 2, each of which is marginally flanged as at 3, and provided with openings 4, through which may be passed bolts or rivets 5 for securing the sections together.

The drill 6 which may be of any suitable construction, and as shown is of octagon shape, is supported by a holder 7, which is provided with a gear ring 8, and is journaled in a two-part bushing 9, 9^a. Each section of the bushing is provided with an annular rib 10, which seat in annular grooves 11 in the frame, and the sections of the bushing are spaced apart to receive the ring 8 therebetween. The holder is protected by a cap 12, preferably of steel, and the cap is centrally perforated as at 13, to permit the passage of the upper end of the drill. A striking weight or hammer 14 is slidable in guideways 15 in the frame, above the cap, and the weight is connected to the lower cross bar 16 of a lifting link or loop 17, and the side members of the link adjacent to the upper cross bar 18 are curved laterally in the same direction as at 19, for a purpose to be presently described.

The upper face of the hammer is recessed to receive the lower cross bar, and a pair of U-shaped hangers 20, are arranged upon each side of the link, the threaded arms 21 of the hangers passing through the hammer 14, and being engaged by nuts 22, to retain the hangers in place. An elliptical spring is arranged between the hammer, and the upper end of the frame, and the lower member 23 thereof, is received beneath the body portion of the hangers, and the said spring member rests upon the cross bar 16, and connects the link with the hammer.

The frame sections are longitudinally slotted as at 24 to permit the spring members to extend beyond the sides thereof, and the upper face of the upper spring member 23^a engages the cap plate 25 of the frame, which is provided with a cross bar 26, and is connected to the frame sections by means of bolts 27, traversing flanges 28 and 29 on the cap plate and the sections respectively.

A power shaft 30 is journaled transversely of the frame in bearings 31, and the upper end of the lifting link extends alongside the said shaft, which is received in the laterally curved portions 19 before-mentioned. A wiper cam 32 is secured to the shaft between the side members of the link, and the wipers 33 of the cam are adapted to engage and lift the link, whereby to lift the hammer.

A flywheel 34 provided with a handle 35 is secured to the outer end of the shaft 30, and the inner end is provided with a bevel gear 36, which meshes with a bevel gear 37, on a vertical shaft 38 journaled in the frame, and having at its lower end a pinion 39, which meshes with the gear ring 8 on the tool holder.

It will be evident from the description that when the shaft 30 is rotated, the hammer will be lifted against the pressure of the spring 23—23^a and permitted to drop by each wiper of the cam wheel, the spring accentuating the drop, while at the same time the drill is continuously rotated through the vertical shaft 38. At each end the frame is provided with a lateral arm 40 and the said arms support a feeding mechanism 41, of ordinary construction. The arms 40 engage a guide shaft 57 which is supported in the angular ends of a frame 47, for use with a column attachment and having a ball mouth bearing 54, for the said attachment.

In operation, the hand wheel 34 is rotated to cause the wipers of the cam wheel to engage the upper cross bar of the link in succession, thus lifting and dropping the hammer at the rate of four times per revolution, there being four wipers on the wheel. The drop of the hammer is emphasized by the spring, and its recoil also assists the succeeding wiper to raise the hammer. The hammer engages the extended end of the drill, and through the connection of the holder with the vertical shaft, the drill is continuously rotated. When it is desired to raise the frame, for any purpose, as for in-

stance, for the insertion of a longer drill, the pawl is engaged with the ratchet wheel, and the shaft 30 is rotated. The pawl and ratchet connection causes the feed screw to turn, thus lifting the frame.

I claim:

1. A power rock drill, comprising a sectional frame provided at its lower end with annular grooves, and with vertical guideways above the grooves, a two-part bushing consisting of upper and lower members spaced apart from each other, each having an annular rib for engaging a groove, a tool holder rotatable in the bushing, and having an annular gear ring received between the members of the bushing, a protecting cap above the holder and having a central opening for the passage of the drill end, a hammer slidable in the guideways, a power shaft journaled transversely of the frame above the hammer, a wiper cam wheel on the shaft provided with a plurality of wipers, a lifting link comprising spaced parallel side bars connected at each end by an integral cross bar, the hammer having a recess on its upper face for receiving the lower cross bar of the lifting link, the upper cross bar being arranged above the cam wheel for engagement by the wipers, the side bars of the link having laterally curved portions for receiving the shaft, an elliptical spring arranged between the shaft and the hammer, the lower member thereof resting upon the lower cross bar of the link, hangers engaging the spring

on each side of the link for securing the spring and the link to the hammer, a cap plate secured to the casing and against which the upper member of the spring rests, means engaging the gear ring for rotating the tool holder.

2. A power rock drill, comprising a frame, provided at its lower end with annular grooves and vertical guideways above the grooves, a two-part bushing each part having a rib for engaging a groove, a tool holder rotatable in the bushing, a protecting cap above the holder and having a central opening for the passage of the drill end, a hammer slidable in the guideways, a power shaft journaled in the frame above the hammer, a wiper cam wheel on the shaft, a lifting link, the hammer having a recess on its upper face for receiving the lower end of the link, the upper end being arranged above the cam wheel for engagement by the wiper, said link being laterally curved adjacent to the shaft, a spring arranged between the shaft and the hammer and normally pressing the said hammer downwardly, a cap plate secured to the casing against which the upper end of the spring rests, and a driving connection between the shaft and the tool holder for rotating the said holder.

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Witnesses:

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