

No. 717,028.

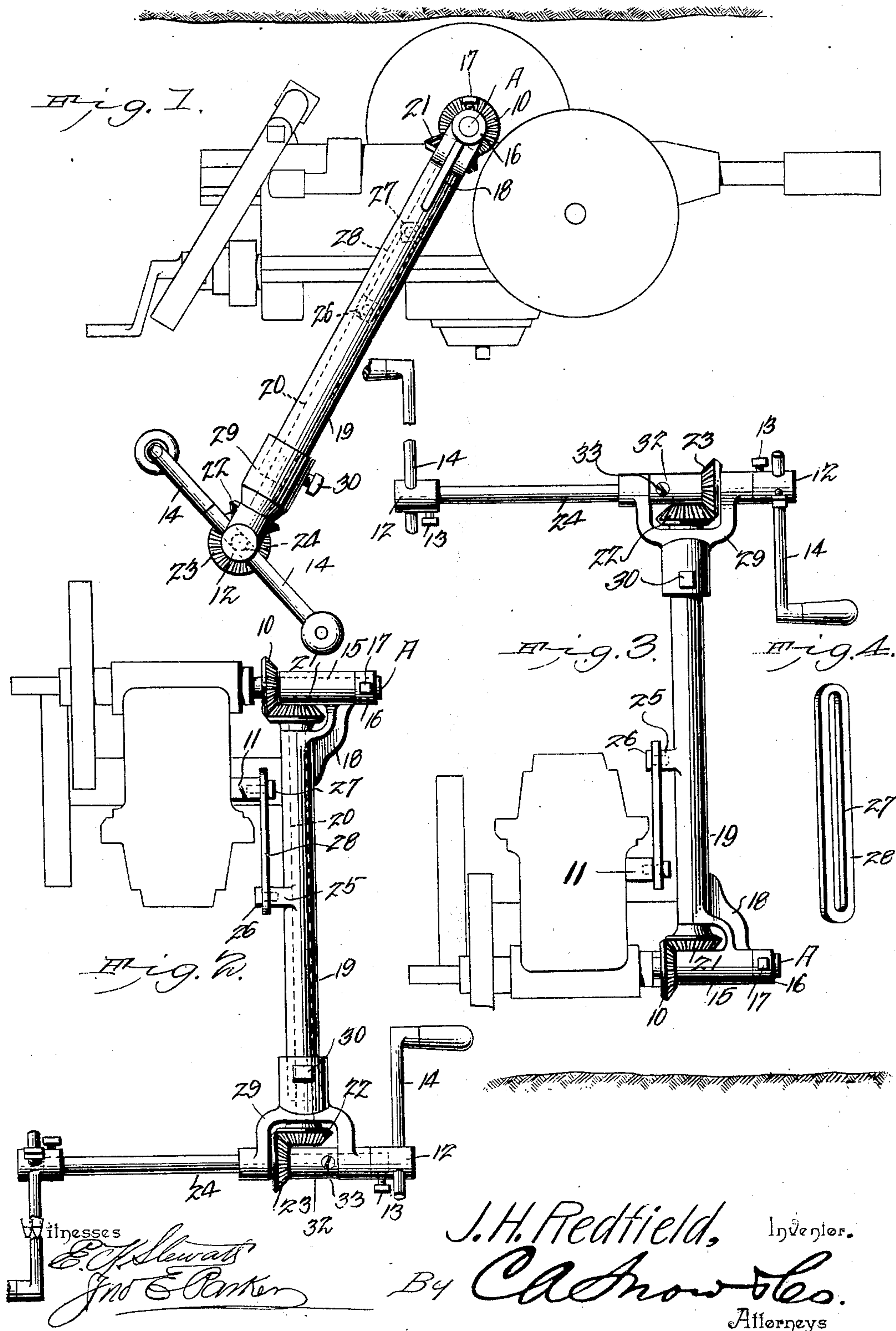
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J. H. REDFIELD.

ATTACHMENT FOR ROCK DRILLS.

(Application filed Apr. 30, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 717,028, dated December 30, 1902.

Application filed April 30, 1902. Serial No. 105,384. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. REDFIELD, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented a new and useful Attachment for Rock-Drills, of which the following is a specification.

This invention relates to certain improvements in drilling-machines of that general class shown in application for United States Patent filed by me on November 9, 1901, under Serial No. 81,724, and has for its principal object to provide a device in the nature of an attachment which may be readily applied to the machine and used for the purpose of operating the same from a distance or in places where the drill is placed in a position which renders it impossible to rotate the cranks in the ordinary manner, as in places near the roof or floor of a tunnel.

The device consists, essentially, in a peculiar form of power-transmitting mechanism, which may be applied to the power-shaft of a rock-drill, such as disclosed in the above-named application, as well as to various other forms of drills in ordinary use.

In the accompanying drawings, Figure 1 is side elevation illustrating in general outline a rock-drill and the application thereto of a power-transmitting device in accordance with my invention. Fig. 2 is an end elevation of the same, showing the general position of the parts when the drill is employed for drilling a hole near the ceiling or top of a tunnel. Fig. 3 is a similar view showing the position of the parts when the drill is reversed to drill a hole near the floor-line. Fig. 4 is a detail view of a supporting-bar by which the attachment is held in any position to which it may be adjusted.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The drill, of which only the general outline is shown, has a crank-shaft A, of any desired construction, to which power is applied in the usual manner by handled cranks at each end to revolve the crank-shaft and cam-shaft in order to reciprocate the drill-shaft in the usual manner.

When the drill is used for boring a hole adjacent to the roof or floor line of a tunnel, it becomes impossible to operate the drill effectively, the comparatively long cranks employed coming into contact with the roof or floor and rendering it impossible to bore an opening parallel with and adjacent to the roof or floor line. It is the object of the present invention to overcome this difficulty by providing an attachment which may be readily applied to the crank-shaft after the removal of the cranks and the drill placed close to the roof or floor line and driven from an auxiliary crank-shaft located at a short distance from the drill and in convenient position for the operator.

On the crank-shaft of a drill to be provided with this attachment is secured a bevel-pinion 10, and on the side of the frame of the drill is placed a lug 11, which may be in the form of a block bolted to the side of the frame, or in the manufacture of new drills this lug may be cast with the frame.

When the attachment forming the subject of the present invention is not in use and the drill is being operated in the ordinary manner, the ends of the crank-shaft A receive removable sockets 12, held in place by set-screws 13 and carrying adjustable cranks 14, which are operated in the ordinary manner for turning the crank and cam shafts. When the drill is to be employed in any place where the cranks will come into contact with an obstruction, such as a floor or roof of a tunnel, the sockets 12, together with the cranks, are removed from the crank-shaft and on the latter is placed an adjustable socket 15, which may turn freely on the shaft, but is held from longitudinal movement by a removable collar 16 and set-screw 17.

Secured to or formed integral with the socket 15 is a bracket 18, carrying a shaft-guiding tube 19, in which is mounted a short length of shafting 20, carrying at one end a bevel-pinion 21 for engagement with the pinion 10, and at the opposite end being provided with a bevel-pinion 22, adapted to engage a pinion 23 on the auxiliary crank-shaft 24. On that side of the tube 19 adjacent to the frame of the drill is a lug or boss 25, having a threaded opening

for the reception of a bolt 26, which extends through an elongated slot 27, formed in a supporting-bar 28, and is bolted to the lug. The opposite end of the bar 28 is secured by a bolt 27' to the frame, lug, or boss 11, the construction and arrangement being such that the elongated slot in the bar 28 will permit of a considerable range of adjustment of the angular position of the tube 19 with respect to the line of the drill-shaft, so that the auxiliary crank-shaft may be placed in a position most convenient for the operator.

To the outer end of the tube 19 is adjustably secured a reversible bracket 29, the latter being held in any position to which it may be adjusted by a set-screw 30. This bracket carries the auxiliary crank-shaft 24, on the opposite ends of which are secured the crank-carrying sockets 12, which are removed from the main crank-shaft prior to the application thereto of the socket 15. The auxiliary crank-shaft is of such length that its end portions may be adjusted to bring the cranks outside all portions of the lines of the frame, and thus enable the tube 19 to be adjusted to any position most convenient without permitting the cranks to come into contact with any portion of the drill.

When the drill is employed with the crank-shaft A uppermost to drill a hole near the roof of a tunnel, the parts are adjusted in the position illustrated in Figs. 1 and 2, the drill proper being supported in any desired manner. When the position of the drill is reversed, with the crank-shaft lowermost, to drill a hole near the floor-line the parts are adjusted to the position shown in Fig. 3, it being noted that the bevel-pinion 23 is now on the opposite side of the bevel-pinion 22 in order to impart suitable rotative movement to the main crank-shaft by a natural movement of the cranks on the auxiliary crank-shaft. This is accomplished by loosening the set-screw 30 and reversing the position of the bracket 29, together with the reversing of the positions of the bevel-gear 23 and the filling-sleeve 32. The set-screw 33 in the sleeve 32 is also loosened and the shaft moved longitudinally until the cranks are outside the lines of the rock-drill.

The attachment may be readily connected to and disconnected from the machine when required, and in many cases it will be found convenient for the operator, even where it is not necessary to employ the attachment by reason of the approach of the drill to an obstruction, the auxiliary crank-shaft being adjustable to any desired position where it may be most convenient to the operator.

While the construction herein described and illustrated in the accompanying drawings is the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described my invention, what I claim is—

1. An attachment for rock-drills, comprising an auxiliary crank-shaft, a bracket carrying the same, a tube to which said bracket is secured, a socket member carried by the tube and adapted for application to and pivotal movement on the main crank-shaft of the drill, and gearing connecting the shafts, substantially as specified.

2. An operating attachment for rock-drills having a main crank-shaft and provided with removable operating-cranks, said attachment comprising a bevel-gear and socket member adapted for application to the main crank-shaft of the drill, a bracket forming part of the socket member, a tube carried by the bracket and having at its outer end a reversible bracket, an auxiliary crank-shaft adjustable longitudinally in said reversible bracket, an auxiliary shaft extending between the two crank-shafts, and gearing connecting said shafts, substantially as specified.

3. An operating attachment for rock-drills having a main crank-shaft and provided with removable operating-cranks, said attachment comprising a bevel-gear and socket member adapted for application to the main crank-shaft of the drill, a shaft-carrying tube, brackets disposed at each end of the tube and adapted for the reception of the main crank-shaft and the auxiliary crank-shaft, a shaft carried by the tube, gearing connecting the several shafts, and means for adjustably supporting the attachment in position, substantially as specified.

4. An operating attachment for rock-drills having a main crank-shaft and provided with removable operating-cranks, said attachment comprising a bevel-gear adapted for application to the main crank-shaft of the drill, a tube having brackets at each end for the reception of the main and an auxiliary crank-shaft, the bracket carrying the latter shaft being reversible, a connecting-shaft carried by the tube, gearing connecting the several shafts, the auxiliary crank-shaft being adjustable longitudinally to place the operating-crank outside of the frame of the rock-drill, substantially as specified.

5. An operating attachment for rock-drills provided with a main crank-shaft having removable crank-sockets and cranks, said attachment comprising a bevel-gear adapted for application to said main crank-shaft, a tube having brackets at each end for the reception of the main and an auxiliary crank-shaft, the bracket carrying the latter shaft being reversible, a connecting-shaft carried by the tube, gearing connecting the several shafts, a collar carried by the auxiliary crank-shaft and serving to confine the latter longitudinally in place, and means for adjustably supporting the attachment in position, substantially as specified.

6. The combination of the main and auxiliary crank-shafts, a tube, brackets carried

by the tube and adapted for the reception of
the two shafts, a connecting-shaft carried by
the tube, gearing connecting the several
shafts, a lug or boss formed on said tube, a
5 second lug carried by the frame of the drill,
and a slotted connecting-bar extending be-
tween the two lugs and secured to each to
confine the attachment in adjusted position.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

JOHN H. REDFIELD.

Witnesses:

FRANK S. APPLEMAN,
JNO. E. PARKER.