(No Model.)

P. P. GADWAY.

ROCK DRILL.

No. 304,093. Patented Aug. 26, 1884.

Fig. 1

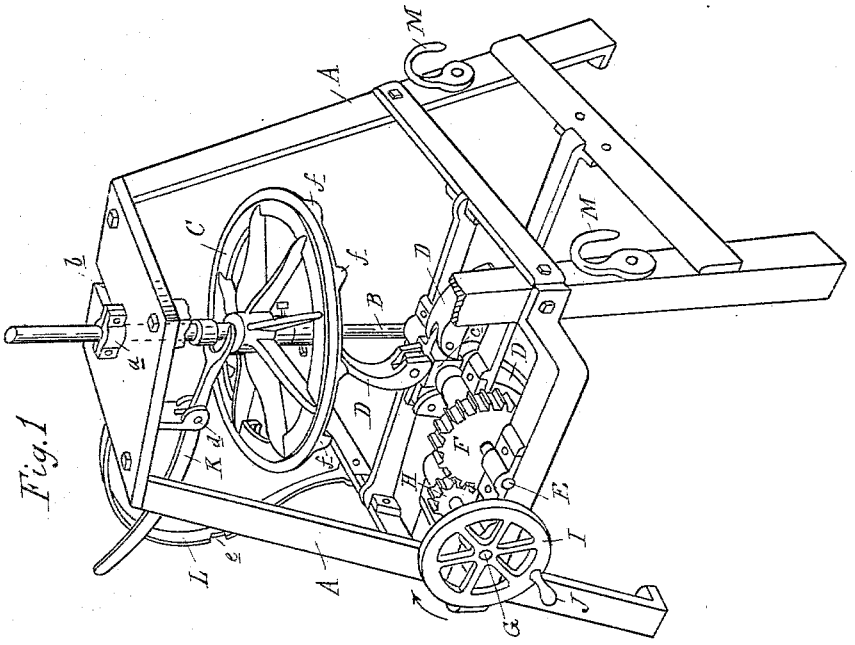
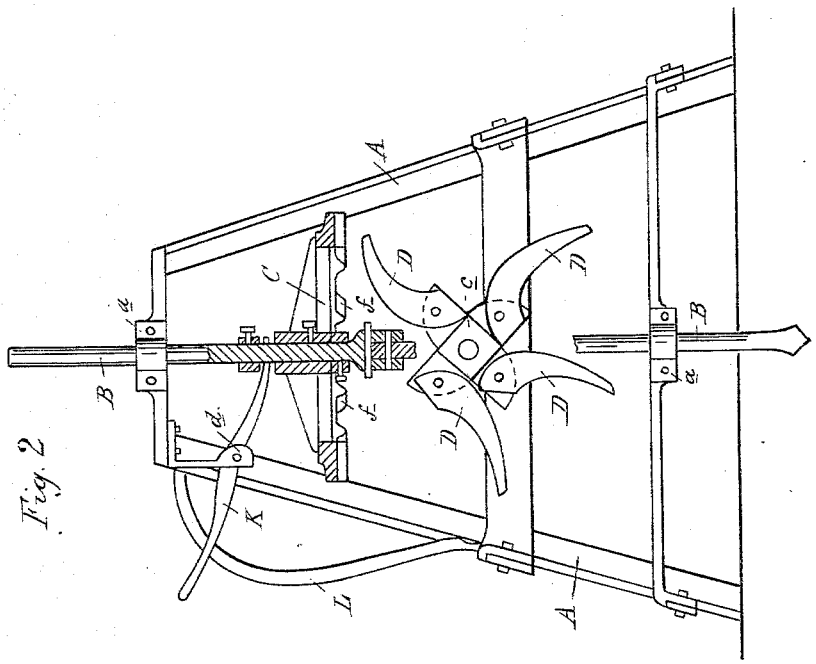


Fig. 2



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UNITED STATES PATENT OFFICE.

PETER PERRY GADWAY, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO FRED B. SIBLEY, OF SAME PLACE.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 304,093, dated August 26, 1884.

Application filed June 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, PETER PERRY GADWAY, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Rock-Drills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to an improvement in rock-drills of that kind intended to be worked by hand; and the invention consists in the construction and arrangement of its mechanical devices for operating the drill-bar, all as more fully hereinafter described.

In the drawings which accompany this specification, Figure 1 is a perspective view of my improved rock-drill, and Fig. 2 is a vertical section thereof.

A is a quadrangular frame of suitable strength and construction to support the operating parts and give proper stability to the device.

B is the drill-bar, secured centrally within the frame in a vertical position by means of the boxes *a a*—one on top and one near the bottom—and which admit of the drill-bar being readily removed from its position when desired, a slot, *b*, being provided for that purpose in the top plate of the frame.

C is a crown-wheel adjustably secured upon the drill-bar by a collar and set-screw, or in any other suitable manner.

D are a series of rotary lifters loosely hinged to the hub *c* in such manner that they may, when extended radially, be firmly held by their hinges against a force trying to move them backward, but are rendered perfectly free to fall forward from such position.

E is the shaft upon which the hub *c* of the lifters is secured, and F is a gear-wheel secured upon the same shaft.

G is a counter-shaft, upon which is secured the pinion H and fly-wheel I, the latter of which is provided with a crank-handle, J.

K is a lever fulcrumed at *d*, and embracing the drill-bar with its forked end above the crown-wheel.

L is a strap provided with a notch or catch, into which the handle of the lever K may be engaged when depressed.

M are hooks secured in pairs upon opposite sides of the frame, by means of which the device is made easily portable by two men using poles engaged into said hooks.

The operation of the machine is as follows: Upon turning the crank-handle a rotary motion is communicated to the lifters, which, in quick succession, act upon the under side of the crown-wheel, which has to be placed in such position upon the drill-bar that the lifters will strike against its under side. As the lifters cannot move backward after they are radially extended, a lifting motion will be given to the crown-wheel, which will carry the drill-bar with it; but as soon as a lifter has performed its duty of lifting it will drop forward by the action of its gravity and the superincumbent weight of the crown-wheel and drill-bar. Thus the rotation of the lifters will raise the drill-bar, and then allow it to drop by its gravity. At the same time the crown-wheel C is raised by one of the lifters it will also be rotated a little distance, owing to the engagement of one of the cogs or flanges *f* on its under side with the outer end of a lifter. By means of the lever K the drill-bar can be lifted high enough to withdraw it from the drill-hole and keep the drill-bar in position while a new drill is put in or the device moved into a new position. The drill-bar is only held in position by the two boxes *a*, which, when suitably constructed, admit of a ready exchange of drill-bars of different lengths for different work.

Should it be found necessary to increase the blow of the drill, an additional weight may be secured to the drill-bar; or a coil-spring may be employed instead. To serve for ordinary use, however, the crown-wheel C is made sufficiently heavy to answer the purpose.

In practice the machine will be found very efficient for ordinary quarry use, and with the use of four lifters, as shown in the drawings, a fall of the drill-bar can be obtained nearly equal to the length of the lifters.

What I claim as my invention is—

1. In a rock-drill, the mechanism for lifting

the drill-bar, consisting in the combination of the crown-wheel C, secured upon the drill-bar, with a series of rotary lifters hinged at their inner ends, so as to drop out of the way after lifting the crown-wheel, substantially in the manner described.

2. In a rock-drill machine, and as a means of lifting the drill, a lifter pivoted to a moving part of the driving mechanism, and constructed and arranged to rest firmly against a stop when lifting the drill, and to swing on its pivot and fall out of the way after the drill has been lifted, substantially as described.

3. In a rock-drill, the combination of the drill-bar secured in vertical position, and provided with an operating mechanism which is disconnected therefrom, such as described, whereby the drill-bar is free to be raised independently from such mechanism, the lever K engaging with its inner end upon the drill-bar, in combination with a catch, such as the notch *e* in the strap L, for retaining such lever in a depressed position, substantially as and for the purpose described.

4. In a rock-drill, the combination of the drill-bar, a crown-wheel secured upon said bar, and a series of lifters hinged to a shaft common to all, but each lifter independent of the others, substantially as and for the purpose specified.

PETER PERRY his × mark. GADWAY.

Witnesses:
CHARLES J. HUNT,
H. S. SPRAGUE.