J. KUBÁT.

DRILL SUPPORT.

APPLICATION FILED NOV. 4, 1911.

1,085,344.

Patented Jan. 27, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

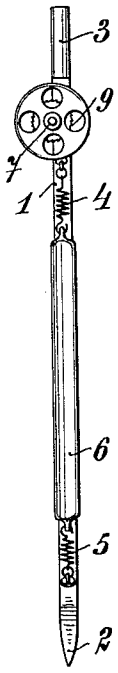


Fig. 2.

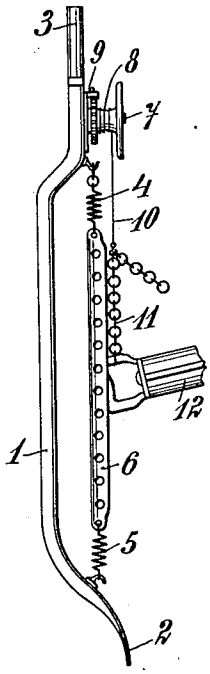


Fig. 3.

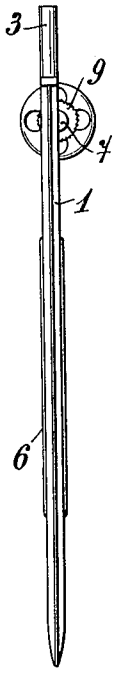
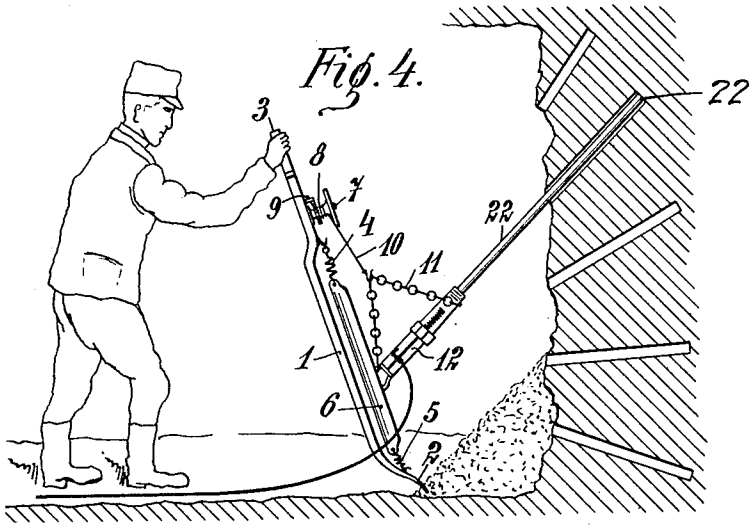


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

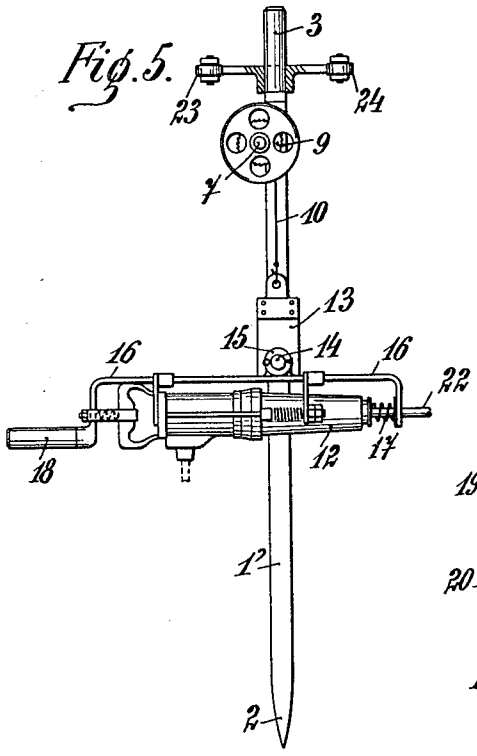


Fig. 6.

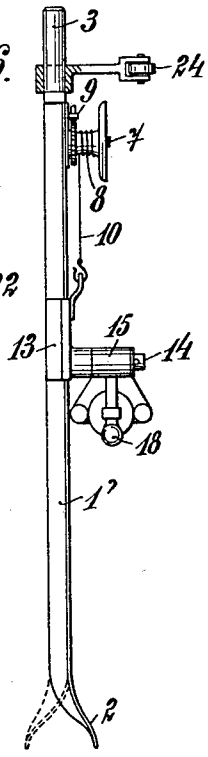


Fig. 7.

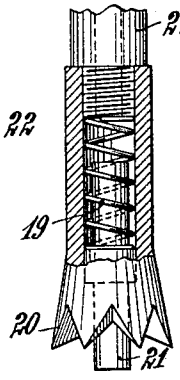
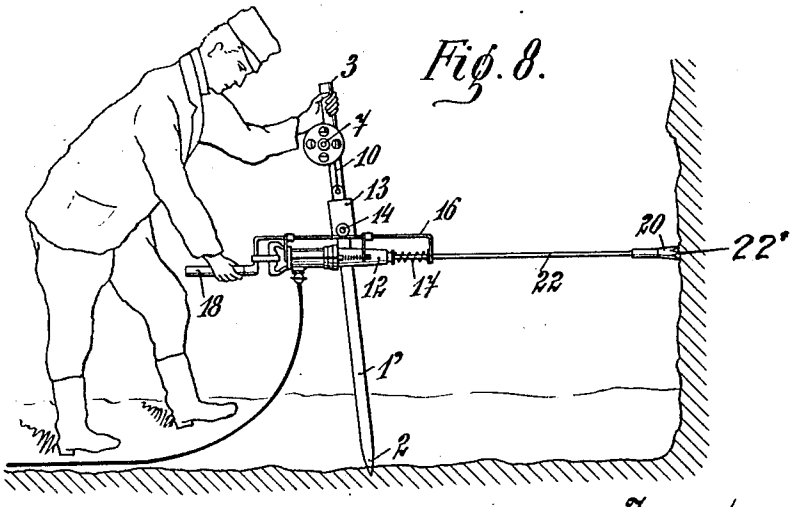


Fig. 8.



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JOSEF KUBÁT, OF KLADNO, AUSTRIA-HUNGARY.

DRILL-SUPPORT.

1,085,344. Specification of Letters Patent. Patented Jan. 27, 1914.

Application filed November 4, 1911. Serial No. 658,573.

To all whom it may concern:

Be it known that I, JOSEF KUBÁT, a subject of the Austro-Hungarian Emperor, residing at Kladno, in the Kingdom of Bohemia, Austro-Hungarian Empire, have invented a certain new and useful Improvement in Drill-Supports, of which the following is a specification.

My invention relates to devices or supports serving for facilitating rock drilling, marking, cutting, fluting, channeling and like operations, in which a percussion drill is used. Hitherto the percussion drill has been supported by a rigidly anchored or fixed carriage, pillar or the like, which results in a considerable waste of time in consequence of the work involved in fixing and the like.

Percussion drills have hitherto not been employed for cutting, slotting, undercutting, marking, or boring coal or rock, as the percussion drill does not effect a lateral feeding or advancing movement.

The object of my invention is to provide a support for percussion drills, which is always immediately ready for commencing drilling operations and insures maximum drilling efficiency.

Further object of my invention is to facilitate lateral adjustment or feed of the drill so as to render it effective for use in marking, cutting, fluting, channeling and like operations.

According to the present invention a non-rigidly mounted support is used, on which the drill is so mounted, that it is free to be moved by the operator in all directions. The support is preferably in the form of a lever the lower end of which forms a fulcrum about which the operator, by grasping the other end, can force the drill into, and maintain it in, the working position, and means are provided for raising and lowering the drill in relations to the support. Also resilient means are interposed between the percussion drill and its support, causing the drill to be thrown back from the face of the rock after each blow. I attain this object by the mechanism illustrated in the accompanying drawings, it being understood, that no limitation is necessarily made to the precise structural details therein exhibited, but the right is reserved to any changes, alterations and modifications, to which recourse may be had within the scope of the invention and without departing from the spirit of the same.

In said drawings Figures 1, 2 and 3 are, respectively, a front elevation, a side elevation and a rear elevation illustrating one form of percussion drilling apparatus according to the invention, whereas Fig. 4 shows the device in operation. Figs. 5 and 6 are, respectively, a side elevation and a rear elevation illustrating a modification of the device according to the invention. Fig. 7 shows the cutter head of the drill in side elevation and partly in section, while Fig. 8 shows a modified form of the apparatus in use.

In carrying the invention into effect according to one mode, I provide a supporting lever, which in employment for drilling purposes consists preferably of a bent support or carrier 1, the lower end of which terminates in a point 2, bent in a forward direction the upper end terminating in a stem 3, as shown in Figs. 1 to 4, of the accompanying drawings. Above the bent portion of the support a narrow grooved member 6 is secured to the support in a tensioned condition by means of live tension springs 4 and 5.

An elevating device consisting of a short pin 7, an operating wheel, a small rope bobbin and an arresting device of ratchet wheel mechanism 9, is revolubly mounted on the upper end of the carrier or support. A cord 10 carrying at its extremity a hook is wound around the rope bobbin or reel. The hammer or percussion drill is suspended from said cord by hooking thereto a short rope or chain 11 attached to both ends of the drill, the hammer drill being properly balanced and placed with its handle in the grooved member 6.

The supporting lever is tilted backward with its pointed end bearing on the ground, while its upper end is forced forward by the operator of the drill. The suspending chain 11 of the hammer drill 12, is thereupon hooked into the hook on the cord 10, while the handle of the drill is inserted in the grooved member 6. The drill is then placed against the face of the rock and pressed against the same by means of the supporting lever. During the drilling operation the cord, together with the hammer drill is slowly raised by means of the operating wheel and is kept in the proper di-

rection for drilling the hole by moving in the grooved member.

If the apparatus is to be employed for holing, marking, undercutting, and slotting, in addition to being used for drilling, the form shown in Figs. 5 to 8 is adopted. The support or carrier 1′, and the elevating mechanism are constructed in a similar manner to the mechanism adopted in connection with the first form described. The percussion drill 12, is mounted in a frame 16, which is pivoted in a balanced manner on a pin 14, carried by a slide 13, adapted to slide on the lever 1′ and to be raised and lowered by the winch 8, through a cable 10.

In order to protect the operator against the concussion of the hammer drill, an elastic cushion, such as a spring 17, is provided between the hammer drill and the frame 16. In order that the frame 16 may be moved laterally to permit of marking, holing and slotting, a controlling handle 18 is preferably attached to the rear end of the frame.

If the drill is to be used for marking, cutting, and slotting, it must be suitably constructed so as to permit of an easy lateral feed or advance of the cutter head of the drill in the hole or incision or slot. In order to attain this result the crown of the drill must rebound from the bottom of the hole or incision after each blow. This rebounding can be effected by means of a buffer or spring which is arranged in the drill head itself or in front of the drill stem. A spring 19, may be provided in the drill head or crown 20. In such a case the drill held is hollow. A spring 19, (Fig. 7) is arranged in the head and forces a centrally arranged spindle 21, in a forward direction until it is stopped by the stroke limiting ring, so that the front end of the spindle projects a certain distance beyond the crown or head of the drill. With each blow of the other drill the spindle is forced into the head of the drill, whereby the spring is compressed. After each blow the spring expands and throws back the drill, the spindle bearing on the bottom of the cut or incised marking serving as a firm support.

If the spring buffer or pneumatic piston is to be arranged on the stem or shaft of the drill as at 17, Fig. 5, the front depending portion is provided with a suitably shaped slot or the like, for the free passage of the drill.

The spring 17, which is slipped over the drill rod 22, bears at one end against the stem of the drill, and at the other end against the front portion of the frame 16. With each blow of the hammer of the drill the spring 17, is compressed by the stem of the drill, whereas on the return movement of the piston, the spring forces the drill rapidly back so that the head of the drill rebounds from the bottom of the cut.

The hammer rock drill which is thus fitted for holding, marking, undercutting and slotting can also be used by hand without support and also in conjunction with all kinds of supports, bracing columns, frames running on wheels and the like appliances. The drill may also be used for marking, holing, slotting and cutting coal and hard rock, provided the crown of the drill is adapted to the hardness of the rock.

In order to facilitate slotting the supporting lever can rest with the guide wheels or rollers 23, 24, provided on the upper end of the support, against the face of the working. This form of the apparatus is manipulated in the following manner:—The supporting lever together with the hammer drill mounted thereon is first tilted backward with its pointed end bearing on the grounds. The operator grips the controlling handle, and presses the drill against the face of the rock by means of the support. The support, together with the drill is then turned or swung around into the desired slotting, holing or marking position. The level of the hammer drill is regulated as required by means of the rope or cable running over the bobbin or reel.

It will be seen that the grooved bar 6 supports the working or drilling end of the drill 22′ in advance of or forwardly of the lever, with respect to the position of the work to be drilled, and that the tool can be raised or lowered by the wheel 7, along the bar 6, and longitudinally of the lever 1, even during operation of the tool. The hook on the connection 10 can be connected with the links of the chain 11 so as to dispose the tool in any desired angle with respect to the lever 1.

Having fully described my invention and in what manner the same is to be performed, I declare that what I claim and desire to secure by Letters Patent is:

1. A supporting device for power driven tools comprising in combination, a prime mover carrying the tool and having a handle end portion, a lever having a lower pointed end adapted to be fulcrumed on the ground and an upper end shaped to form a handle, a bar having a longitudinal groove therein for receiving the handle end of the prime mover, springs connected with the end of said bar and with said lever to resiliently support the former on the latter, a windlass device on said lever, and cord or chain like connections secured to the prime mover and connected with said windlass device whereby the prime mover may be raised or lowered, substantially as described.

2. A supporting device for power driven tools comprising in combination, a prime mover for the tool, a lever adapted to be fulcrumed on the ground and manually tilted by the operator, a member yieldingly

mounted on said lever and loosely engaging said prime mover, and means carried by said lever for raising and lowering said prime mover on said member, substantially as described.

3. In combination, a manually operable supporting lever adapted to fulcrum on the ground at its lower end and having a grip in the vicinity of its upper end whereby the lever may be tilted on its point of fulcrum, a percussive tool, means carried by the lever for supporting the tool at the desired angle with respect to the lever and raising or lowering the tool during operation thereof, and a resilient mechanism carried by the lever for maintaining the working end of the tool in advance of said lever with respect to the work to be drilled, substantially as described.

4. In combination, a manually operable lever adapted to fulcrum on the ground at its lower end and having a grip in the vicinity of its upper end whereby the lever may be tilted on its point of fulcrum, a percussive tool, means carried by the lever for supporting the tool at the desired angle with respect to the lever, and resilient mechanism carried by the lever and interposed between the lever and the tool.

5. In combination, a lever adapted to be fulcrumed on the ground and manually tilted by the operator, a percussive tool, resilient mechanism interposed between said tool and lever, and means for raising and lowering said tool relatively to said lever.

6. In combination, a supporting device for power driven tools comprising a lever adapted to be fulcrumed on the ground and manually tilted by the operator, a power driven tool, means carried by the lever for supporting the tool at the desired angle with respect to the lever, a member resiliently supported on said lever for holding said tool, and means for raising and lowering said power driven tool relatively to said lever.

7. In combination, a lever adapted to fulcrum on its lower end and to be tilted by the operator, a guide bar mounted on said lever substantially parallel thereto, springs interposed between said lever and said bar, a winding mechanism carried on said lever, a flexible member connected to said mechanism, and a percussive tool supported by said flexible member and engaging said bar.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEF KUBÁT.

Witnesses:
JOHN B. VOJACEK,
VOJHISH KEPILLA.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."