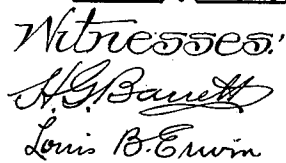


ROCK DRILL MOUNTING.

1,007,216.

3 SHEETS—SHEET 1.



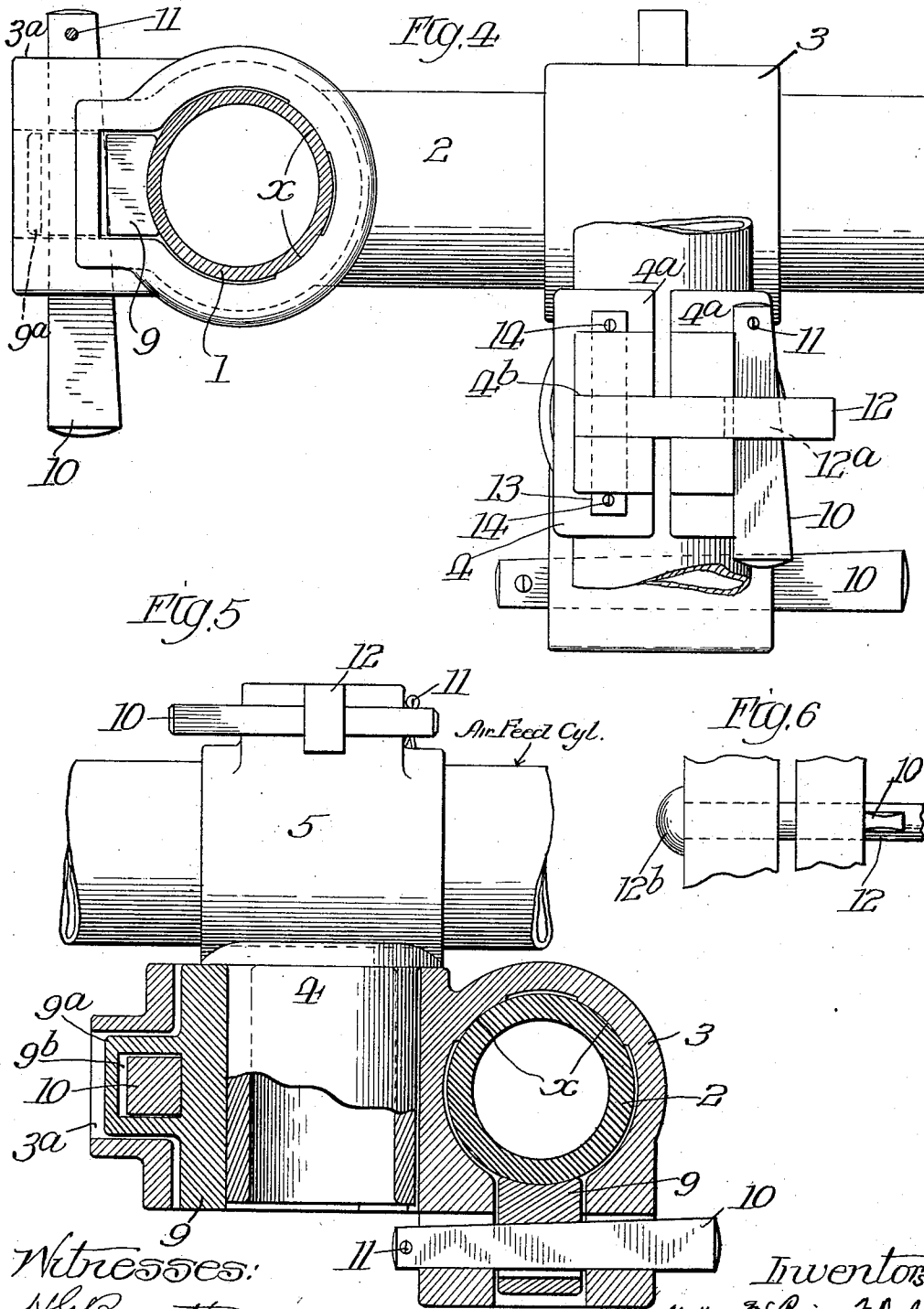
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E. M. MACKIE & P. F. DOYLE.
 ROCK DRILL MOUNTING.
 APPLICATION FILED AUG. 10, 1908.

1,007,216.

Patented Oct. 31, 1911.

3 SHEETS—SHEET 2.



Witnesses:
 H. G. Barrett
 Louis B. Erwin

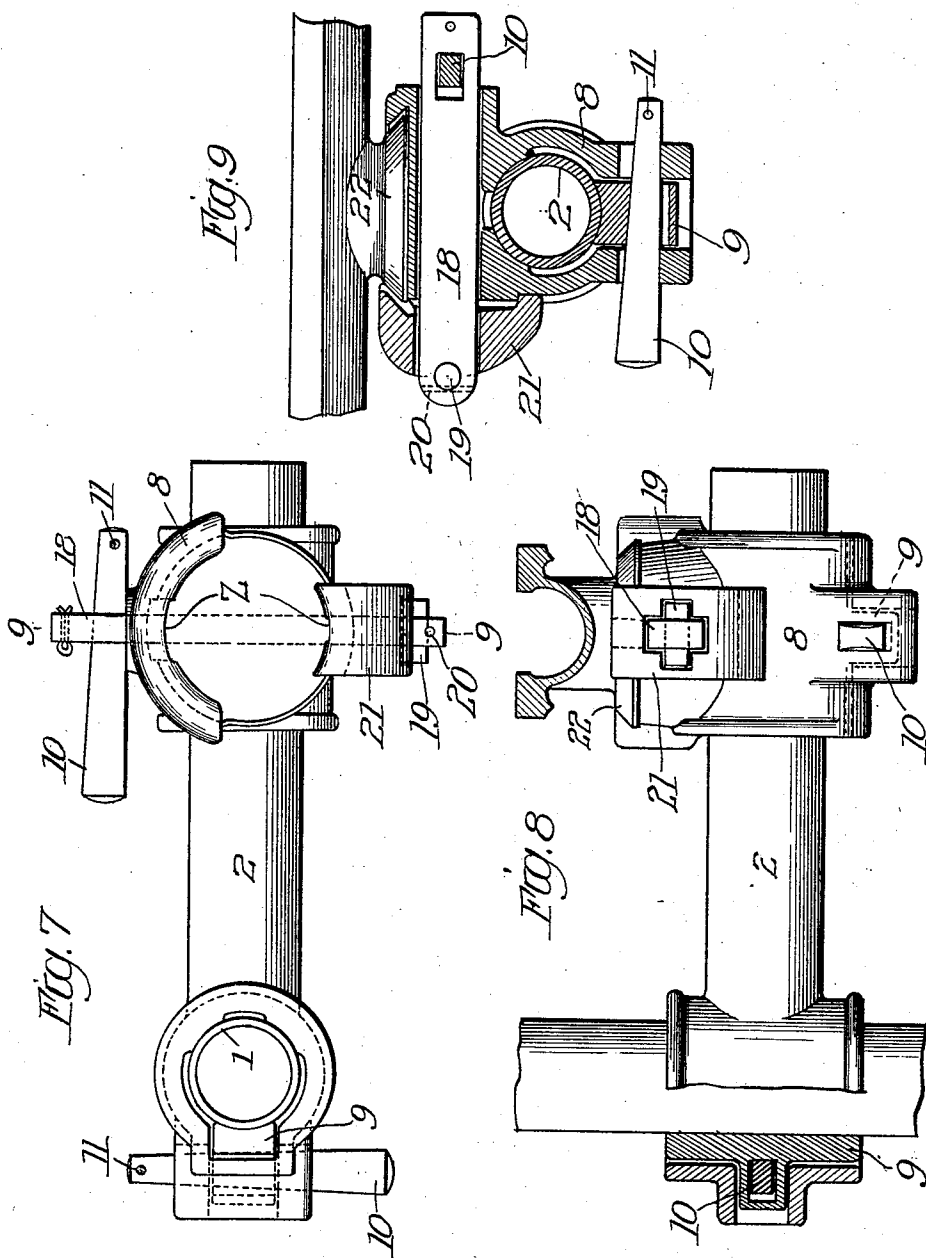
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UNITED STATES PATENT OFFICE.

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ROCK-DRILL MOUNTING.

1,007,216.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed August 10, 1908. Serial No. 447,734.

To all whom it may concern:

Be it known that we, EDWIN M. MACKIE, a citizen of the United States, and PERCIVAL F. DOYLE, a citizen of the Dominion of Canada, both residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Rock-Drill Mountings, of which the following is a specification.

Our invention has relation to the so-called mountings for rock drills and the general object thereof is to provide simple, durable, efficient and time-saving methods of mounting such drills and of securely holding the same under the severe jars and strains to which machines of this class are subjected. To this end, according to our invention, we eliminate, as fastening elements, all bolts and nuts, which, as is well known to those acquainted with the practical art, are troublesome and unsatisfactory in machines of this character, owing to the fact that under the severe conditions of the work the threads on the bolts and in the nuts become corroded, besides which the threads become bruised and mutilated, making the process of unscrewing and tightening the nuts a tedious and time-consuming job. For such fastenings, we provide a series of clamps of special construction and design, making the parts interchangeable as far as possible for the different places of use, thereby reducing the number of different parts required.

Our invention is applicable to any type or character of mounting used in the practical operation of rock drills, such as rock drill columns and tripods as well as the rock drill shell-carriage or other supporting member.

The various features of advantage and utility presented by our invention will be apparent from the description hereinafter given.

In the drawings, Figure 1 is an elevation, partly in section, showing our invention applied to several clamps of a rock drill column, and the column arm; Fig. 2 a sectional elevation on line 2—2 of Fig. 1 but with the step clamp and one of the other clamps in separate section; Fig. 3 a section on line 3—3 of Fig. 1; Fig. 4 a sectional plan taken on line 4—4 of Fig. 1 but on an enlarged scale; Fig. 5 an end view of the parts shown in Fig. 4 with a portion broken away; Fig. 6 an elevation of a modified form of

keying bar; Fig. 7 a plan view of the mounting for a rock-drill shell-carriage with our invention incorporated therewith; Fig. 8 a side elevation thereof with a portion broken away; and Fig. 9 a section on line 9—9 of Fig. 7.

Referring to the present embodiment of our invention as applied to the shaft column of a rock drill and the column arm, as well as to the safety clamp of such column, as shown in Figs. 1 to 5, the column or stoping bar 1 is provided with the column arm 2, and the clamp 3 for hammer rock drills. In the present instance, the mountings are still further provided with a swivel clamp 4 which together with the pipe or fixture 5 is adapted to clamp the feed barrel of an air feed rock drill. The safety clamp is indicated at 6, the foot or step clamp at 7 at the bottom or jackscrew end of the column or stoping bar, the column arm clamp for the shell or carriage foot of a reciprocating rock drill at 8.

Describing first the column and column arm clamps, and the safety clamp in which our invention is embodied, each of these clamps is provided with a keying block 9 having its inner face of a curvature adapted to fit the column or column arm (as the case may be) against which the same is designed to be forced or clamped. Each keying block is provided with an outward projecting or radial extension 9^a having a transverse opening or pocket 9^b. Such extension is received by a socket 3^a formed on each of said clamps, whereby the blocks are kept in their respective places when the clamping devices are unkeyed and separated from the member to which they belong. In order to force the keying blocks against their members to which they are clamped, each of them is provided with a key 10 which passes through said opening 9^b and corresponding openings in said extensions 3^a and which has one inclined edge presented against its block to force the latter against the column or column arm as the case may be. To retain these keys 11 or the like may be provided. By preference, each clamp proper is provided with two bearing pads indicated at *x* in Figs. 4 and 5, so that when the blocks are keyed in position, each clamp has three bearing surfaces, composed of said two pads and their block. We thus avoid the necessity of ma-

chining the interior surface of the clamp which is otherwise required. The clamps are very simple in construction and most efficient for machines, like rock drills, subjected to severe usage and great strains and jars. Moreover, the clamps may be easily and conveniently loosened or tightened by simply driving the key in the proper direction. This ease of manipulation is regardless of the period of time between operations or the action of the elements and is also regardless of the usage and bruising of the machine, to all of which conditions the bolts and nuts of the ordinary clamps are comparatively sensitive.

The foregoing description applies to three of the clamps shown, to-wit, the column clamp by which the column arm is clamped to the column, the column arm clamp by which a hammer rock drill is clamped to said arm, and a safety clamp clamped at any desired height on the column to sustain the weight of the swinging column arm when loose and allow it to be safely swung into any desired position. The corresponding parts are consequently provided with similar reference characters.

For the clamp for the air feed cylinder we provide a somewhat different construction, according to which the clamp proper consists essentially of a split ring 4 and a keying bar 12. The ring is provided with radially extending lugs 4^a located at the line of split and having an end transverse slot at 4^b to receive the keying bar 12. The bar is held in place by a pin 13 passing therethrough and longitudinally through one of the lugs 4^a, and to retain the pin in position in case it should become loose cotter pins 14 may be provided therein as shown. In the clamping operation, a key 10 is passed through a transverse slot 12^a in the keying bar and driven inwardly, one side of the pin bearing against the outer face of one of the lugs 4^a. In this form of clamp, it is the intention to "pinch" the feed cylinder with the interior surface of the clamping pipe or tube so as not to distort the feed barrel which would cause restriction to any part moving in the interior of the same, such as a piston. Consequently, this clamp has no pads like the other clamps. Modifications may be made in the construction, as, for instance the pins 13 may be dispensed with, in which case the bar 12 would be provided with a head 12^b as shown in the modification illustrated in Fig. 6.

The step clamp or jack screw foot piece 7 is of substantially the same construction of fastening as described in connection with the feed barrel clamp 4. In this step clamp, the clamp proper is of the split type and has lugs 7^a at the line of split. A keying bar 15 passes through said lugs and is kept in place

by a pin 16, supplemented, if desired, by a dowel 17 to keep pin 16 in proper location in the keying bar 15 in case it should get loose. If desired, this keying bar might also be made with a solid head like the modified form of bar shown in Fig. 6. The key 10 acts the same in respect to the step clamp as described in connection with the clamp for the air feed drill.

For clamping the shell-carriage of a reciprocating drill to the column arm, the clamp 8 is constructed as to its lower part in the same manner as the column clamp hereinbefore described and the same is intended to clamp a column or column arm in the same manner. The parts being the same, they are given similar reference characters. However, the upper part of the clamp is provided with a keying bar 18, a key 10 therein, a key bar pin 19, dowel 20 and a keying block or jaw 21 which engages the foot 22 of the shell of the drill cylinder. As shown at z in Fig. 7, we prefer to relieve the central portion of the clamp and clamping bar w to provide a more secure fastening and also to eliminate breakages of shell foot 22 caused, as frequently happens, by the foot being of a smaller radius than the clamp and thus localizing the gripping strain and bending and breaking such foot. Like the other bars, the bar 18 may be made with a solid head, thereby eliminating pin 19 and dowel 20.

The corresponding parts of the various clamps described are made of a standard size and interchangeable with all the attendant advantages.

We claim:

1. A clamp for rock drill mountings comprising a clamp proper encircling a part thereof and having a side opening, a keying block arranged therein and interlocked therewith to retain it when the device is unkeyed, and a key passing through the block and adapted to force the same against said part, substantially as described.

2. A clamp for rock drill mountings comprising a clamp proper encircling a part thereof and having a side opening, a keying block having a portion adapted to contact said part and an outwardly projecting portion adapted to fit in said opening and provided with a keyway, and a key adapted to fit into said keyway and to thereby cooperate with said block to force it against said part, substantially as described.

3. A clamp for rock drill mountings comprising a clamp proper encircling a part thereof and having a side opening, a keying block having a portion adapted to contact said part and an extension fitting in said opening and provided with a transverse slot, and a key passing through said slot and adapted to force the block against said part, substantially as described.

4. A clamp for rock drill mountings comprising a clamp proper encircling a part thereof and having a side extension provided with an opening, a keying block having a portion adapted to contact said part and also an extension fitting in said opening and provided with a transverse slot, said clamp extension being provided with corresponding slots, and a key passing through said slots and adapted to force the block into engagement with said part, substantially as described.

5. A clamp for rock drill mountings comprising a clamp proper encircling a part thereof and having a side extension provided with an opening, a keying block having a portion adapted to contact said part and also an extension fitting in said opening and provided with a transverse slot, said clamp extension being provided with corresponding slots, and a key passing through

said slots and adapted to force the block into engagement with said part, said key being inclined on one edge, substantially as described.

6. A clamp for rock drill mountings comprising a clamp proper encircling a part of such mountings and having engaging pads α , a keying block having a portion also adapted to engage said part and provided with a transverse opening, said clamp also having an extension provided with right angled openings, one for said keying block and the other for the key, and a key passing through said clamp and also the keying block, substantially as described.

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