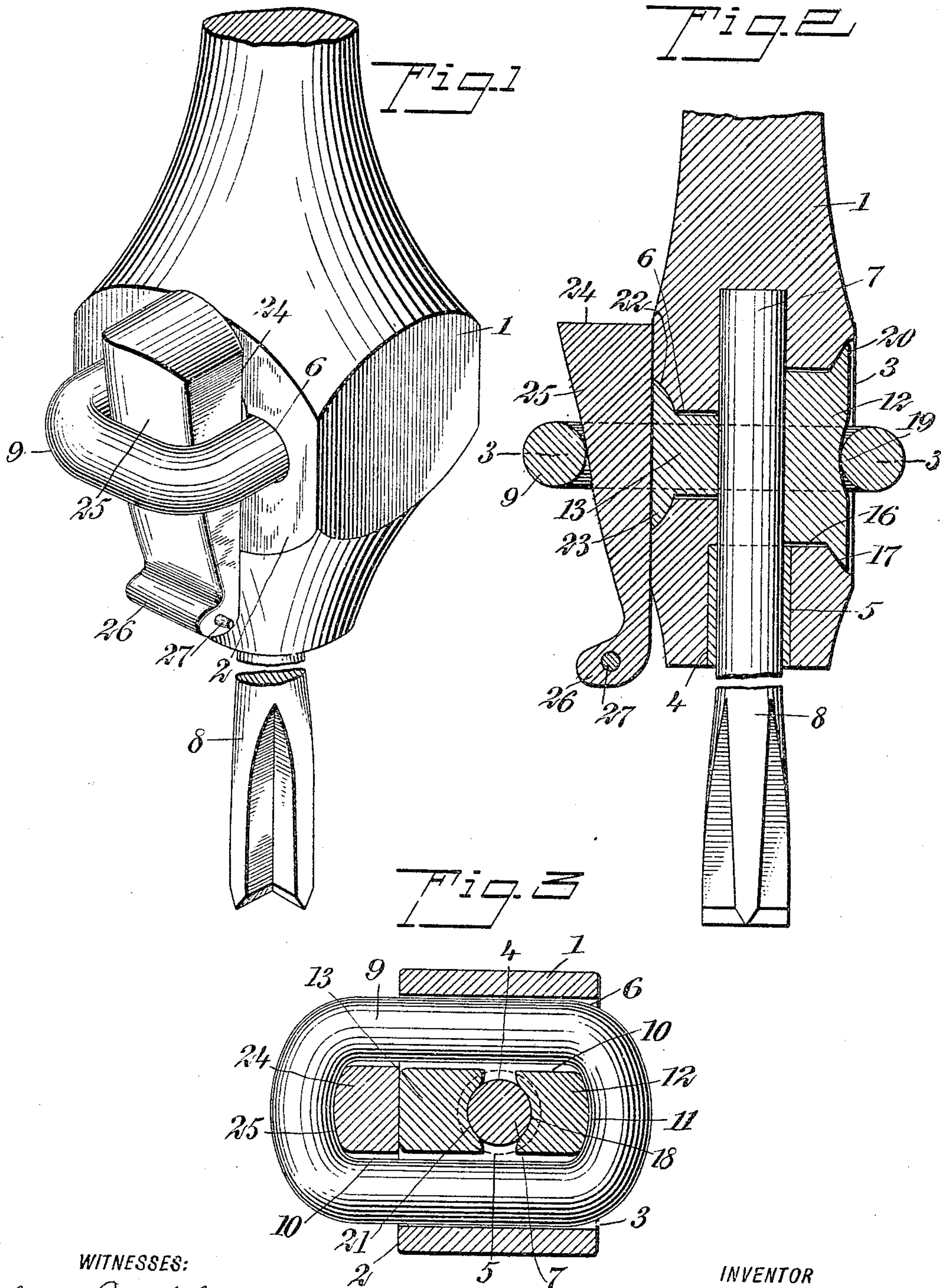


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G. A. ORR.
DRILL CHUCK.

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WITNESSES:

J. A. Proply
J. R. Amman

INVENTOR
Gaylord A. Orr
BY *Wm. W. Wm.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

GAYLORD A. ORR, OF CRIPPLECREEK, COLORADO.

DRILL-CHUCK.

No. 801,042.

Specification of Letters Patent.

Patented Oct. 3, 1905.

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To all whom it may concern:

Be it known that I, GAYLORD A. ORR, a citizen of the United States, and a resident of Cripplecreek, in the county of Teller and State of Colorado, have invented a new and Improved Drill-Chuck, of which the following is a full, clear, and exact description.

This invention relates to drill-chucks such as are used in connection with mining or rock drills.

More particularly the invention relates to that type of these drills which is operated by compressed air or steam.

The object of the invention is to provide an improved arrangement for securing the drill in the chuck, the special object being to do away with nuts and bolts and similar fastening devices which are likely to work loose from the constant shock and vibration.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective of a drill-head and chuck constructed according to my invention, showing a drill held therein, the said drill being broken away at its body, as will appear. Fig. 2 is a vertical central section taken longitudinally of a link which constitutes a feature of the chuck. In this view the body of the drill is also represented as broken away. Fig. 3 is a horizontal section on the line 3-3 in Fig. 2, taken substantially in the central plane of said link and passing through the chuck.

Referring more particularly to the parts, 1 represents the drill-head, which is of massive form, as shown, preferably presenting a substantially flat forward face 2, with a similar rear face 3. This head is provided with a vertical central bore 4, the lower part of which is counterbored to receive a bushing 5.

At a suitable point, such as that shown, the drill-head is provided with a transverse slot or opening 6, which passes in a plane at right angles to the vertical axis of the head, cutting through the faces 2 and 3, referred to above.

As indicated in Fig. 2, the shank 7 of the drill 8 is received nicely in the bushing 5 and extends up in the bore 4 a considerable distance above the opening 6. In the opening 6 a link 9 is mounted, the form of which is most clearly shown in Fig. 3. The eye 10 of this link is sufficiently large to allow the shank 7 to be passed through readily and be seated

in position. The form of the link is substantially the same as that of the links of a chain of common form, presenting, as it does, slightly-rounded bights 11, connecting the bars of the link, as shown.

The drill-shank 7 is clamped between blocks 12 and 13, the first of which I shall refer to hereinafter as the "main" block. The main block 12 is elongated vertically in form, as shown in Fig. 2, and for this reason the central portion of the opening 6 aforesaid is provided with a corresponding enlargement or recess 16, and the edges of this recess are preferably beveled, as at 17.

As shown most clearly in Fig. 3, the rear face of the block 12 conforms substantially in outline to the form of the bight of the link and presses against the bight, as will be readily understood. The inner face 18 of the block is rounded to conform to the periphery of the shank 7 and constitutes a jaw for grasping the same.

As shown in Fig. 2, at the point where the link presses against the block 12 the outer face is preferably provided with a shallow dip or recess 19. Furthermore, at the inclined or beveled faces 17 aforesaid the edges of the block preferably project outwardly, so as to form lips 20, adapted to facilitate the withdrawal of the block by the fingers applied from the outside.

The block 13 has its inner face 21 rounded, as shown in Fig. 3, so as to constitute a clamping-jaw coöperating with the block 12. However, the vertical thickness of the block 13 is substantially the same as the width of the slot or opening 6 aforesaid. At the face 2 aforesaid, which is the side from which the block 13 is applied, the opening is provided with slightly-concaved beveled recesses 22. The block 13 is provided with projecting lips 23, which are received in the recesses 22, as shown in Fig. 2. The outer face of the block 13 is preferably substantially flat, as shown, and when the block is in position this outer face substantially coincides with the plane of the forward face 2 aforesaid of the head.

The link 9 is of such length that when one of its bights is in engagement with the block 12 the forward extremity of the link will project well beyond the forward face 2 of the head. In the space formed thus in front of the head a wedge 24 is applied. The form and manner of applying this wedge are illustrated most clearly in Figs. 1 and 2. Its outer face 25 is inclined so that the wedge has its

greatest thickness above, and this outer face 25 is also preferably rounded, as shown in Fig. 3, so as to conform substantially to the shape of the link at the bight. The inner
5 face of the wedge is preferably substantially flat and rests against the outer face 2 of the head and the outer face of the block 13. The lower extremity of the wedge 24 is preferably enlarged and turned outwardly to form a toe
10 26, which toe is provided with a transversely-disposed removable pin 27. As indicated most clearly in Fig. 1, the extremity of this pin projects so as to operate as a keeper to assist in retaining the wedge 24 when the same
15 has been loosened for any reason. It should be understood, however, that when the pin 27 is removed the wedge may be readily removed, it being understood that in removing the same the upper portion or body of the
20 wedge would be rotated outwardly as the toe 26 passes through the link.

It should be observed that since the wedge 24 has its reduced end located below during the operation of the drill there is a tendency
25 to tighten the wedge instead of to loosen it. This follows for the reason that the principal shock occurs at the end of the downstroke of the piston when the end of the drill strikes the rock.

30 Attention is called to the fact also that in the construction of the chuck no bolts or nuts are used, and this is considered a very desirable feature, for the reason that such fasten-

ings require considerable time for their removal for repairs and also for the reason that 35 they are likely to work loose from the constant jarring to which the drill-head is subjected. It should be understood that by driving upon the upper end of the wedge 24 the blocks 12 and 13 are jammed together within 40 the link and operate to grip the shank 7 of the drill very securely.

Evidently the construction is such as to facilitate the change of parts if broken, the drill-shank being readily disconnected or fas- 45 tened in the head.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a drill-chuck, in combination, a head having a bore extending upwardly therein 50 adapted to receive a drill-shank and having a transverse opening, a link presenting an elongated eye and adapted to be passed completely through said opening, a block mounted in said opening and adapted to clamp the drill- 55 shank, and a wedge resting against the outer face of said head and against the inner side of one extremity of said link.

In testimony whereof I have signed my name to this specification in the presence of two sub- 60 scribing witnesses.

GAYLORD A. ORR.

Witnesses:

C. W. LAMBERT,

B. F. TIPTON.