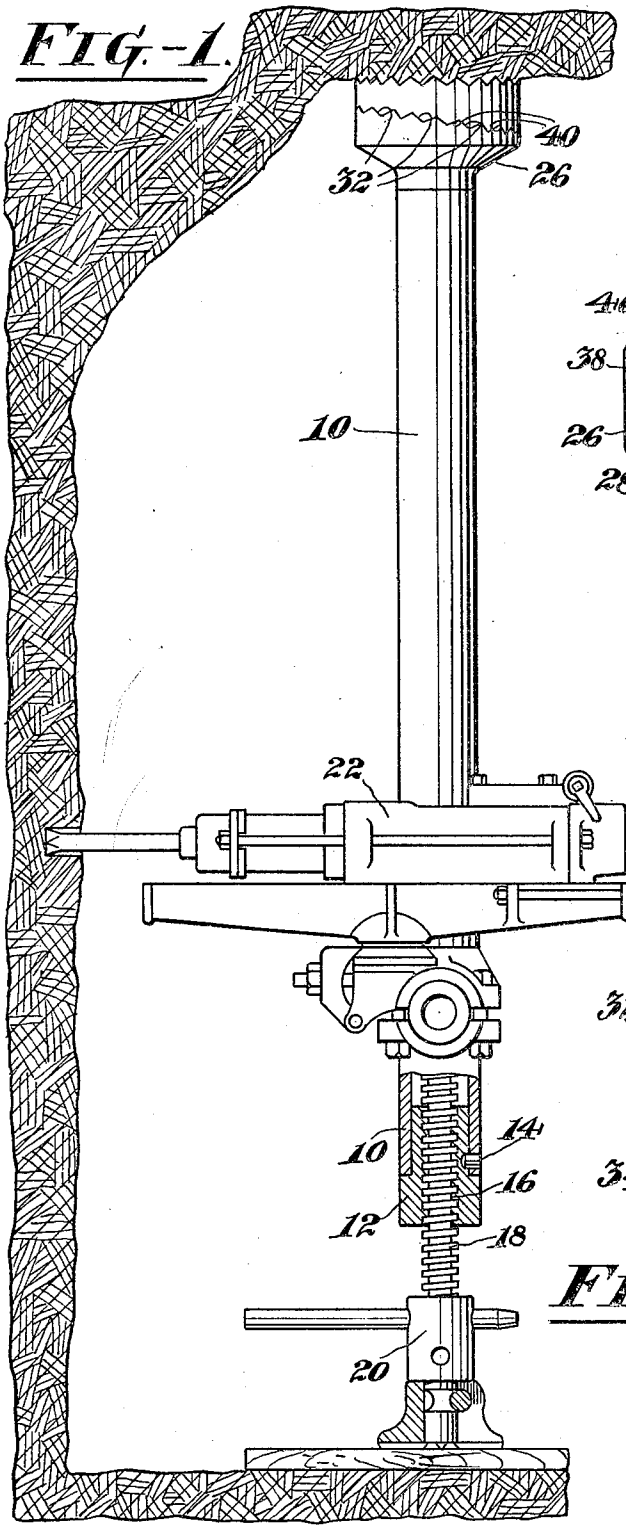
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DRILL COLUMN

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FIG.-1.



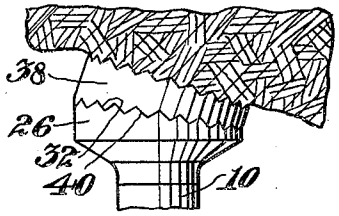


FIG.-2.

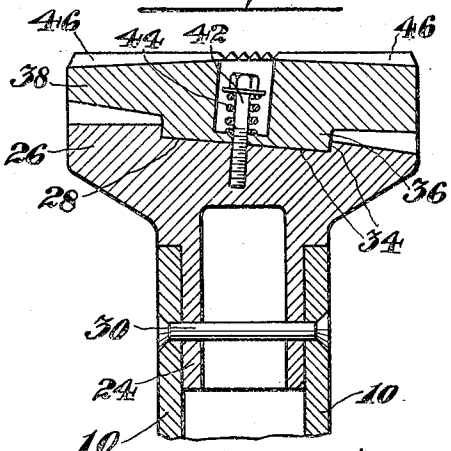


FIG.-3.

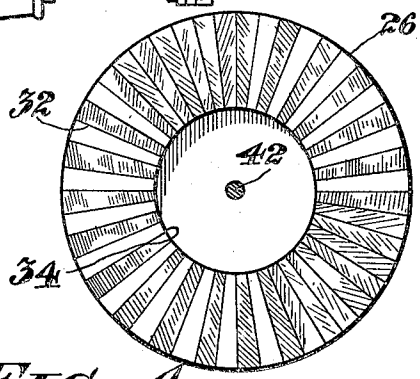


FIG.-4.

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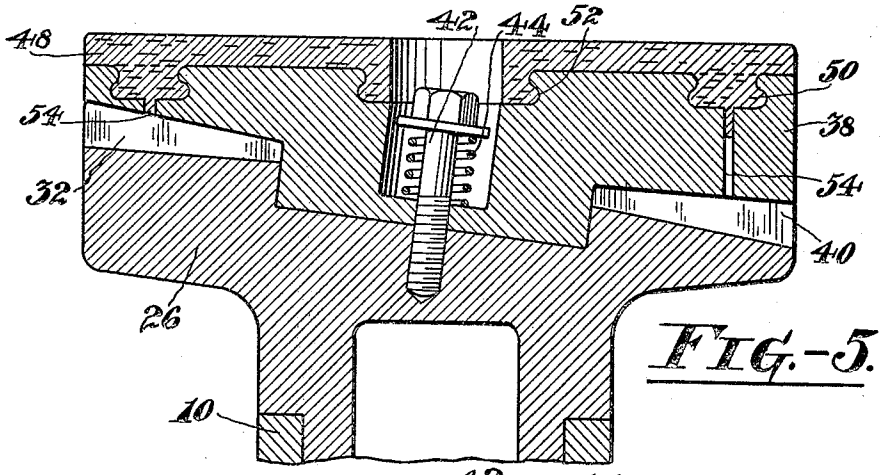


FIG.-5.

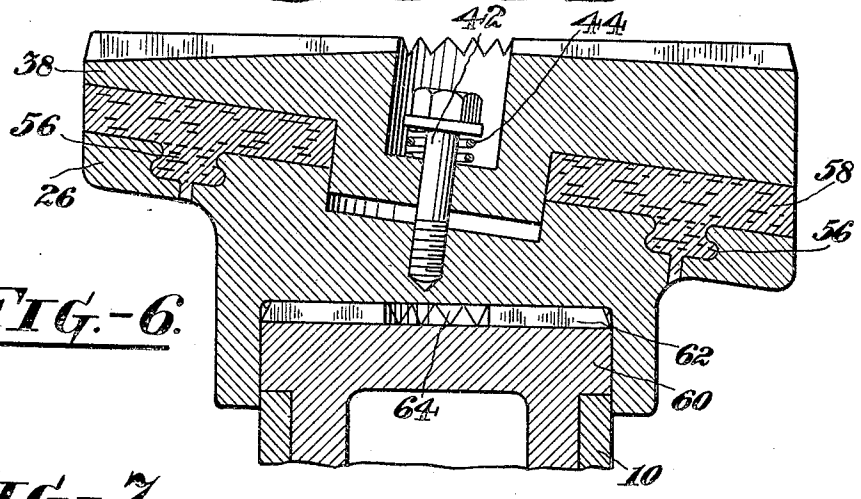
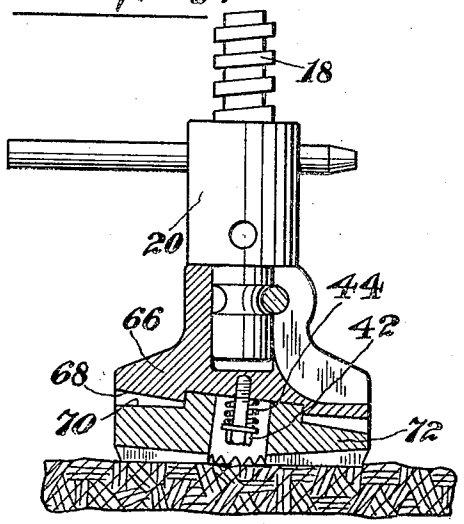


FIG.-6.

FIG.-7.



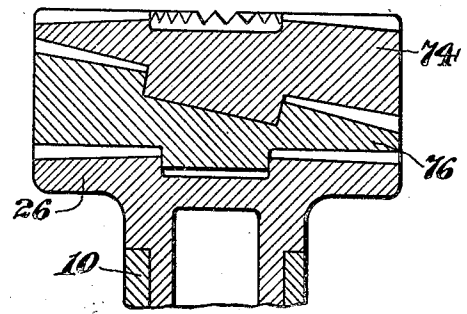


FIG.-8.

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Patented Sept. 27, 1932 1,879,030

UNITED STATES PATENT OFFICE

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DRILL COLUMN

Application filed November 14, 1928. Serial No. 319,324.

This invention relates to columns or supports adapted to support a rock drill in its operative position, but more particularly to the means for maintaining the column rigidly in position.

The objects of this invention are to produce a simple, efficient and safe column or support suitable for supporting rock drills or other kind of machines. Another object is to enable the setting up of a drill column where the rock walls, against which the drill column ends are to be secured, present an uneven surface.

To these ends the invention is shown in several of its preferred forms in the accompanying drawings, in which

Figure 1 is a view of the complete column with the rock drill mounted thereon, part of the column being shown in section,

Figure 2 is a view of the upper end of the column showing the disposal of the securing parts when the face of the rock is not perpendicular to the drill column.

Figure 3 is an enlarged view of a vertical cross section of Figure 2,

Figure 4 is a top view of the upper end of the column,

Figure 5 is a view similar to Figure 3 showing a modification of the device shown in Figure 3.

Figure 6 is another modification of the device shown in Figure 3,

Figure 7 discloses a means of using the securing device on the lower end of the drill column, and

Figure 8 is a still further modification of the device shown in Figure 3.

Referring to the drawings, the column comprises a tubular body portion 10 having a nut 12 secured in one end, in this instance in the lower end, in axial alignment with the body portion 10. The nut 12 is prevented from rotating by a pin 14 which passes through the body portion 10 and into the nut 12. An interiorly threaded portion 16 in the nut 12 is adapted to receive the screw 18 of a screw jack 20. A rock drill designated generally by 22 is shown mounted on the column but need not be described in detail since it forms no part of this invention.

It is usually found that in driving tunnels or drifts, the floor or ceiling, of the tunnel or drift, presents a very uneven surface against which the drill columns must be fastened. To some extent the difficulties of fastening a drill column under such conditions may be obviated by the use of a sharp point or points at either end of the drill column. There are however many disadvantages in the use of such sharp points, chief among these is a likelihood of having the points torn out of the rock during the operation of the drill, particularly when the rock is not of a tough texture. Another disadvantage in the use of a single point is that it permits the drill column to rotate which is apt to cause the breakage of the drill steel or the associated parts. To overcome these disadvantages and at the same time to provide a column which could be quickly and easily set up, the device disclosed in the drawings was produced.

The body portion of the column is adapted to receive the cylindrical extension 24 of an enlarged head or cap 26. The cap 26 has a face 28 which is not perpendicular to the axis of the column. The head is secured in place by means of a rivet 30 which passes through the cylindrical portion 24 and the body portion 10 of the drill column. Corrugations 32 are cut in the face 28 and a seat 34 is formed in the central part of the face. The seat 34 is adapted to receive a short cylindrical extension 36 which is formed on a plate 38. The plate 38 is provided with corrugations 40 adapted to mesh with the corrugations 32 on the head 26. The faces of the plate 38 are nonparallel or inclined to each other thus making the plate 38 thicker on one side than on the other and permitting it to be supported by the cap 26 in a tilted position. A bolt 42 passes through the plate 38 and into the head 26 to securely hold the plate in place. A spring 44 placed under the head of the bolt 42 holds the corrugations 32 and 40 of the head 26 and the plate 38 respectively normally in engagement with each other and allows of sufficient relative endwise movement of the plate to permit rotation of the plate. The method of using

the plate 38 is shown in Figures 1 and 2. When the rock surface against which the column is to be set presents a substantially horizontal face for the reception of a column, the thick edge of the plate is placed directly above the thinner edge of the head 26 whereby bringing the thin edge of the plate over the thick edge of the head and so causing the entire upper surface of the plate 38 to come in contact with the horizontal rock wall or ceiling. Teeth 46 on the upper face of the plate 38 are partly embedded in the rock when the screw jack 20 forces the column upward.

Assuming that the rock against which the column is to be set presents a sloping surface as shown in Figure 2, the plate 38 is then turned so that the thick edge of the plate is directly above the thick edge of the head 26. In this case the upper surface of the said head 26 and the lower surface of the plate 38 would still be rigidly in contact but the upper surface of the plate 38 will present a correspondingly inclined surface to the rock wall and the entire surface of the plate 38 will be brought into contact with the rock and thus a firm footing for the column will be obtained.

It will readily be seen that a slope of any inclination between the extreme of no slope as shown in Figure 1 and the slope shown in Figure 2 may be obtained by turning the plate and column to their proper relative positions.

The modification shown in Figure 5, shows a rubber buffer 48 on the upper surface of the plate 38 in place of the teeth shown in Figures 2 and 3. The method of securing the rubber buffer 48 to the plate 38 is clearly shown in Figure 5. A series of recesses, or, if preferred, a circular groove 50 formed in the face of the plate 38 in conjunction with an annular groove 52 formed in the central part of the plate 38, provide the means of securing the rubber buffer 48 to the plate 38. The rubber buffer is molded or vulcanized in the grooves 50 and 52 and holes 54 are air vents to provide for the escape of air during the vulcanizing process. The projections on the rock face will embed themselves in the rubber buffer 48 and thus prevent slipping between the column and the rock, the teeth 32 and 40 being in contact as in the foregoing case, will prevent slipping between the head 26 and the plate 38 as well as preventing relative rotation between the column and the plate.

In the modification shown in Figure 6, the rubber buffer, which is secured to the head 26 by vulcanizing the rubber in the grooves 56, is placed between the head 26 and the plate 38. In this modification, the teeth in the upper surface of the plate will engage the rock as shown in Figures 1 and 2 and the rubber buffer 58 will form a resilient pad between the plate 38 and the cap 26. The member 60 is rigidly secured to the body portion 10 and the corrugations 62 cooperate with corresponding corrugations 64 in the cap 26 to prevent rotation between the column and the cap. Friction between the rubber buffer 58 and the plate 38 is sufficient to prevent rotation between those members.

Figure 7 discloses a method of using plate and the tilted head on the lower end of the column to adapt the column for using when both the floor and ceiling are uneven. In this illustration, the foot 66 of the column is not at right angles to the axis of the column and corrugations 68 cooperate with similar corrugations 70 on the upper face of the plate 72 which is substantially a duplicate of the plate 38 shown in Figure 3. It will be seen from Figure 7 that the same results can be obtained by using a tilted footing and a plate having non-parallel faces at the lower end of the column as were obtained by using the cap and plate at the upper end of the column. Furthermore, a combination of wedge shaped plates at both upper and lower ends of the column will provide a means of mounting the column in a drift or tunnel regardless of the unevenness or inclination of ceiling and floor.

Figure 8 shows the use of a pair of plates 74 and 76 and it will be obvious to anyone skilled in the art that a wide range of inclination can be obtained through placing these plates in different positions. A further advantage of the use of two plates such as 74 and 76 is found in the fact that the cap 26 need not have its face tilted or inclined to the axis of the body portion.

I claim:

1. A rock drill column comprising a body portion and a cap on the body portion, a member having a gripping face engaging a surface of the cap preventing relative rotation therebetween and a second face not parallel to the first said face to present a tilted surface to the rock.

2. A rock drill column comprising a body portion, a cap on the body portion, a member having a gripping face engaging a surface of the cap preventing relative rotation therebetween and a second face not parallel to the first said face to present a tilted surface to the rock, means to prevent lateral displacement of the cap and member and a spring normally holding said gripping face and cap surface in engagement.

3. A rock drill column comprising a body portion, a cap on the body portion and means adapted to be supported rigidly by said cap in a tilted position to present an inclined face to a wall or ceiling, said cap having a face not at right angles to the axis of the body portion, said means comprising a member having non-parallel opposed faces one of

which engages the cap face, and means to prevent rotation between said cap and said member.

4. A rock drill column having a cap on the one end thereof, and means supported by said cap to present an inclined face to a wall or ceiling, said cap having a face in non-perpendicular relationship to the axis of the drill column, and said means comprising a member having two non-parallel opposite surfaces one of which coacts with the face of the cap to prevent relative rotation therebetween.

5. A rock drill column having a cap at one end thereof, said cap having a face in tilted relationship to the axis of the drill column, a member having two non-parallel opposite faces adapted to be interposed between said cap and a wall, floor, or ceiling, and means to prevent relative rotation between the cap and said member.

6. A rock drill column having an end face out of perpendicular relationship with its axis, a wedge-shaped member coaxial therewith and having one of the wedge faces in contact with said end face, and means rotatably mounting the wedge-shaped member to vary the angularity of the other wedge face with respect to the axis of the drill column.

In testimony whereof I have signed this specification.

LEWIS C. BAYLES.