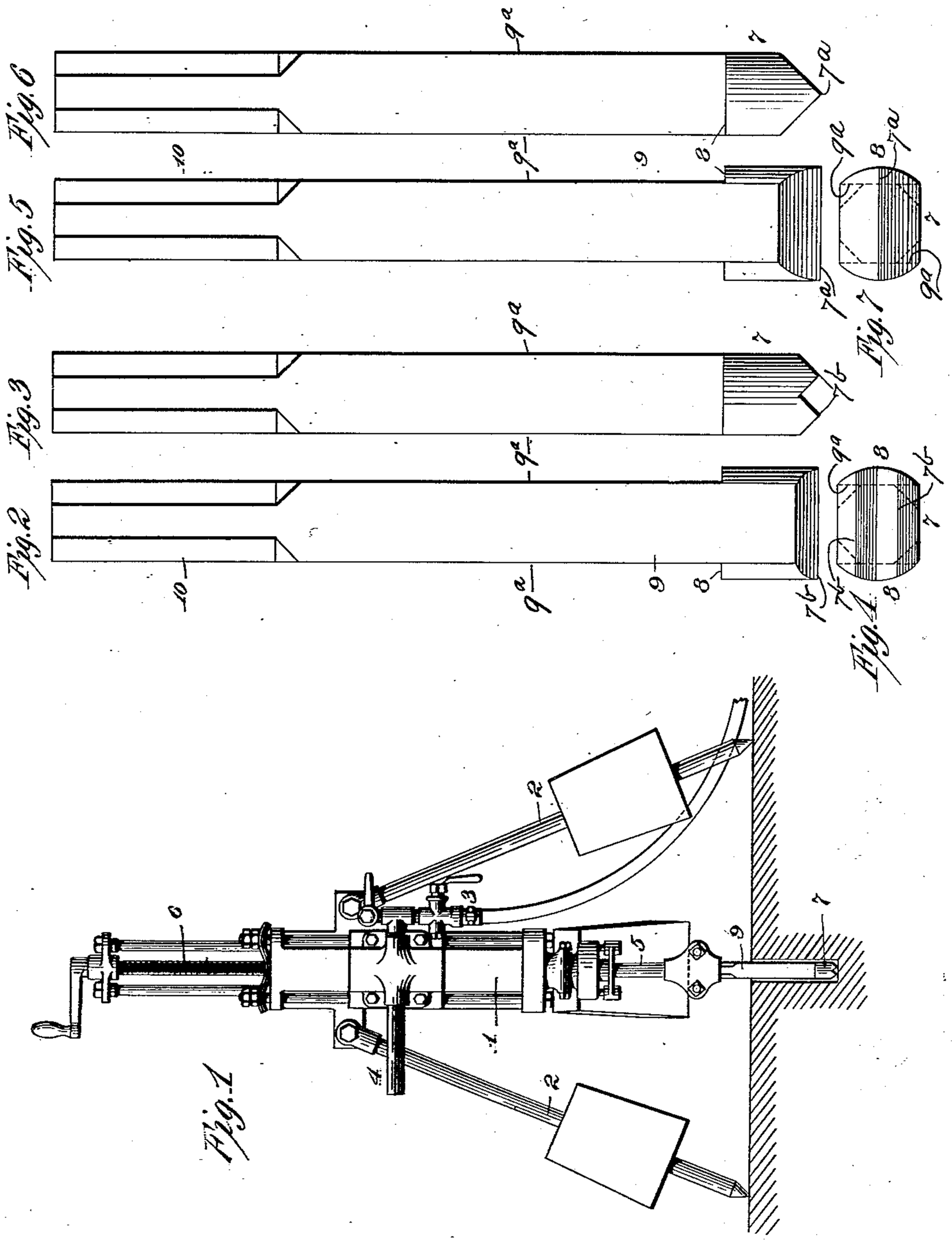
No. 836,824. PATENTED NOV. 27, 1906.

J. B. PACE.

ROCK DRILL BIT.

APPLICATION FILED NOV. 21, 1905.



Witnesses:

Guy W. Culgin

Lilian L. Cooley

John B Pace Inventor

By Stephen P. Sturges

Attorney

UNITED STATES PATENT OFFICE.

JOHN B. PACE, OF NEW YORK, N. Y.

ROCK-DRILL BIT.

No. 836,824. Specification of Letters Patent. Patented Nov. 27, 1906.

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To all whom it may concern:

Be it known that I, JOHN B. PACE, residing in the borough of the Bronx, city, county, and State of New York, have invented a certain new and useful Improvement in Rock-Drill Bits, of which the following is a specification.

The object of my invention is to provide a rock-drill bit which will be cheap to construct, economical and highly efficient in use, will be easily sharpened, will drill a straight hole of the same gage throughout, and will prevent choking of the bore.

With these objects in view I have constructed my improved rock-drill bit as shown in the accompanying drawings, wherein the same numerals of reference refer to corresponding parts in all of the different figures, and in which—

Figure 1 is a front elevation of a drilling-machine of an ordinary type with my improved bit attached. Fig. 2 is a front elevation of the form of bit used for drilling soft rock. Fig. 3 is a side elevation of the same. Fig. 4 is a bottom plan view of the same. Fig. 5 is a front elevation of the form of bit used for drilling hard rock. Fig. 6 is a side elevation of the same, and Fig. 7 is a bottom plan view of the same.

In the drawings, 1 represents the cylinder of an ordinary form of drilling-machine, which is supported on the usual weighted legs 2 and is provided with the usual inlet 3 and exhaust 4. The machine is provided with a drill-rod 5 and the feed mechanism 6, all of which are common and well known. Secured in the usual manner to the lower end of the drill-rod 5 is my improved bit, which I will now proceed to describe in detail.

My improved bit is composed of three integral parts—a prismatic shank 9, a drill-head 7, and a portion 10 of a size and shape suitable for engagement with a chuck.

The drill-head 7 is essentially cylindrical in form and is surmounted by the prismatic shank 9, whose diagonals equal the diameter of the cylinder. Two opposite sides of the cylinder are cut away to conform to the thickness of the shank, and the other sides of the cylinder project beyond the sides of the shank to form shoulders 8.

The diagonals of the shank 9 are of the same length as the diameter of the head 7, so that when the bit as a whole is revolved the corners of the prismatic shank will form a cylinder of exactly the same diameter at that formed by the head 7. The corners of the shank form cutting edges 9^a, so that in operation the said shank will ream out the hole drilled by the head to a true straight cylindrical bore.

In the present case the shank 9 is shown as being square; but it will be obvious that it may be of other shapes, as hexagonal or octagonal.

The under side of the portion 7 is properly shaped to perform the drilling, and in Figs. 5, 6, and 7 I have shown the bit with one drilling edge 7^a, such as is commonly used to drill hard rock, such as granite, and in Figs. 2, 3, and 4 I have shown a bit having two cutting-surfaces 7^b 7^b, which may be used for drilling softer material—such as coal, limestone, &c. If the bit shown in Figs. 5, 6, and 7 were used on soft rock, the blow given to the rock would be so severe that it would cause the bit to bury and stick in the hole, thereby delaying the work.

In operation the working surface of the bit, which I will call the "head," will be driven against the material to be drilled, with the usual striking and twisting movements, and will penetrate the rock or other material acted on, forming a hole of the same diameter as the head. When the head has passed into the hole, the guide bar or shank 9 will enter, and the diagonals of this part of the bit being of the same length as the longest diameter of the head will prevent that portion of the bit from entering any but a full-gage hole and will by the twisting movement of the bit and the cutting edges 9^a ream the hole to the proper gage and cause the bit to continue in a straight line and prevent its being deflected by slope, seam, or other inequality in the rock. The turning of the section 9, together with the vertical movement of the shoulder 8, will keep the drillings agitated and effectually prevent choking.

Having disclosed my invention, what I claim, and desire to secure by Letters Patent, is as follows:

1. As a new article of manufacture, a drill-bit having a drilling-head and an angular shank, the said shank having a diameter less than that of the head, the diagonals of the shank being equal to the diameter of the head.

2. In a rock-drill, the combination with a drilling-head, of a shank of less diameter than the head, the shank being so disposed that its longest dimension will be equal to a diameter of the head.

3. In a rock-drill, the combination with a drilling-head of greater length than width, of a prismatic shank, the diagonals of which are of the same length as the greatest length of the head, substantially as described.

4. In a rock-drill, the combination with a drilling-head of greater length than width, of a prismatic shank the diameters of which are the same as the least diameter of the head and the diagonals of which are of the same length as the greatest diameter of the head, substantially as described.

5. In a rock-drill, the combination with a drill-head having a greater length than width and a cutting-surface on its under side, of an upwardly-extending shank, said shank having a length and width equal to the width of the head and being arranged centrally on the head so as to allow the excess of length of the head to form shoulders.

6. In a rock-drill, the combination with a drill-head having a greater length than width and a cutting-surface on its under side, of an upwardly-extending shank having a length and width equal to the width of the head, and shoulders projecting beyond the length of the shank, said shoulders being rounded, the periphery of the shoulders being coincident with a circle touching the ends of the diagonals of the shank.

7. In a rock-drill, the combination with a drill-head having a greater length than width and a cutting-surface on its under side, of an upwardly-extending shank having a length and width equal to the width of the head, shoulders projecting beyond the length of the shank, said shoulders being rounded, the periphery of the shoulders being coincident with a circle touching the ends of the diagonals of the shank, and cutting edges carried by the shank.

8. In a rock-drill, the combination with a drill-head having a greater length than width and a cutting-surface on its under side, of an upwardly-extending shank having a length and width equal to the width of the head, and shoulders projecting beyond the length of the shank, said shoulders being rounded, the periphery of the shoulders being coincident with a circle touching the ends of the diagonals of the shank, the corners of the shank forming cutting edges.

This specification signed and witnessed this 14th day of November, 1905.

JOHN B. PACE.

Witnesses:
FREDERICK T. PACE,
G. DELMONT PACE.