No. 688,860. Patented Dec. 17, 1901.

J. KAY & C. T. WEARNE.

CHUCK FOR ROCK DRILLS.

(Application filed Oct. 16, 1900.)

(No Model.)

Fig. 1

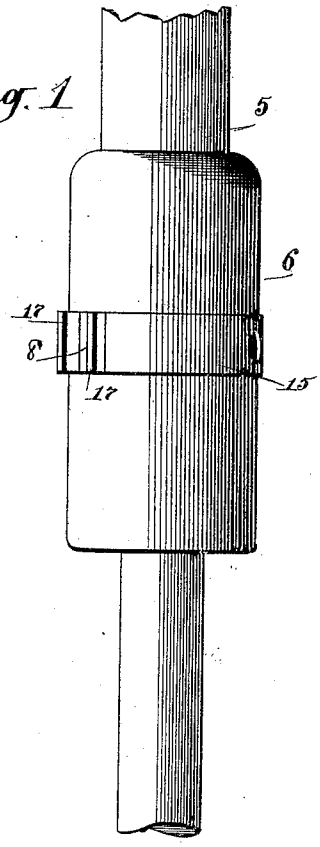


Fig. 2.

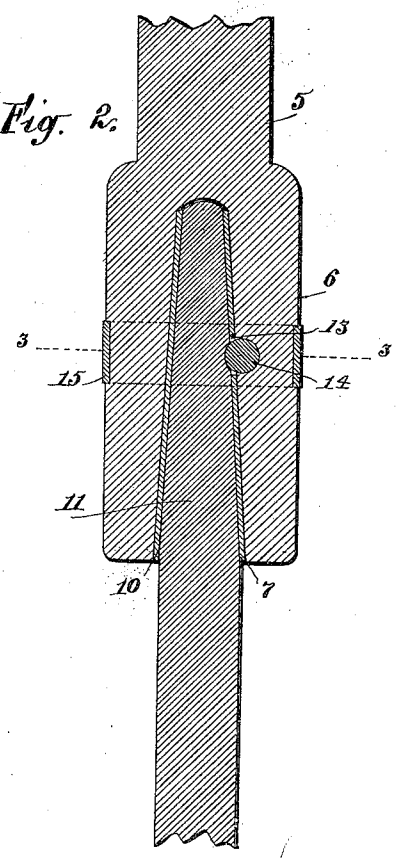


Fig 4

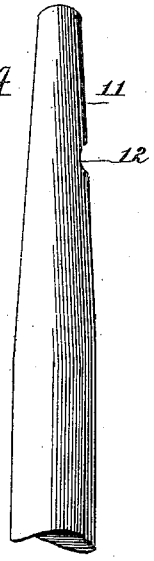
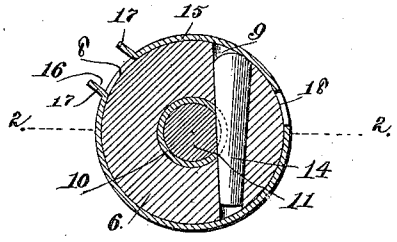


Fig. 3



Witnesses:
J. P. Groat.
Horace G. Deitz

James Kay.
Charles T. Wearne. Inventors.
By Marion & Marion
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES KAY AND CHARLES T. WEARNE, OF MINTON, CANADA.

CHUCK FOR ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 688,860, dated December 17, 1901.

Application filed October 16, 1900. Serial No. 33,303. (No model.)

To all whom it may concern:

Be it known that we, JAMES KAY and CHARLES T. WEARNE, subjects of Her Majesty the Queen of Great Britain, residing at Minton, in the county of Stanstead, Province of Quebec, Canada, have invented certain new and useful Improvements in Chucks for Rock-Drills; and we do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to a chuck for rock-drills; and one object of the invention is to simplify the construction by omitting bolts or threads, which are liable to break or wear out, thereby prolonging the life and service of the device and minimizing the cost of repairs.

A further object is to improve the construction of the chuck with a view to effecting economy in the manufacture thereof, to saving time in the operation of interchanging the drills, and to positively retain the locking-key against accidental displacement in the chuck-body.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty in the construction and combination of parts will be defined by the claim.

In the drawings hereto annexed and forming part of this specification, Figure 1 is a side elevation of a drill-chuck embodying our improvements. Fig. 2 is a longitudinal sectional view through the chuck in the plane of the dotted line 2 2 on Fig. 3. Fig. 3 is a transverse section in the plane of the dotted line 3 3 on Fig. 2. Fig. 4 is a detail view of the drill-shank removed from the chuck.

The same numerals of reference denote like parts in each figure of the drawings.

5 designates a portion of a piston-rod, and 6 is the body of the chuck, said body being shown as integral with a portion of the piston-rod and of greater cross-sectional area than the same, although the chuck-body may be made separate from the piston-rod and be united suitably thereto, if desired. This chuck-body has a longitudinal taper bore or chamber 7 produced centrally therein, and said chuck-body is furthermore provided with an annular groove or channel 8 and with a transverse passage or opening 9, the latter intersecting with the longitudinal taper bore 7 and opening at its ends through the groove 8 and the chuck-body.

10 designates a taper bushing which is fitted in the taper bore 7 of the chuck-body, and this bushing conforms to the dimensions and contour of the tapered shank 11 of the drill, which is to be coupled tightly to the piston-rod of a stone or rock drilling apparatus. This tapered drill-shank is free from threads or other projections, so that its surface presents a smooth and regularly-tapered appearance, which adapts said shank to fit snugly in the bushing of the chuck-body; but for the purpose of locking the drill-shank against endwise movement we have provided the tapered portion of said shank 11 with a depression or notch 12. The bushing 10 is formed in one side with an opening 13, which coincides with the transverse passage 9 in the chuck-body, and to position the drill-shank in the chuck-body for the purpose of locking said shank in place it is necessary that the shank 11 shall be so adjusted as to bring its groove 12 into registration with the openings 9 13 of the chuck-body and the tapered bushing, respectively.

14 designates the locking-key, which is cylindrical in cross-section and which tapers from one end thereof to the other, said key being inserted or driven into the transverse passage 9, which, it should be remarked, is likewise tapered to conform to the taper of the key. After the drill-shank shall have been properly adjusted in place within the bushing the key is inserted into the large end of the transverse opening 9 and then forced into position for the purpose of engaging with the grooved face 12 of the tapered drill-shank and the end portions of said key lying within or substantially flush with the chuck-body 6. (See Fig. 2.)

Under some circumstances the tapered key 14 may bind frictionally against the walls of the passage 9 and the grooved face 12 of the drill-shank, thus serving to retain the taper key in position; but to positively confine the key against displacement in the event of the parts working loose during the service of the apparatus we have devised a locking band or

sleeve 15, which may be adjusted so as to retain the key against any possibility of displacement and which, furthermore, may be turned in order to provide access to the key, so as to displace the latter previous to removing the drill-shank. This locking sleeve or band is made of spring metal and is divided at one side to form the opening 16, bounded by the outturned flanges 17 at the divided portion of the band. The opening 16 somewhat exceeds the size of the large end of the key 14, and another opening 18 is provided in the sleeve 15, said openings 16 18 being positioned in the band or sleeve so that said openings may lie opposite to the large and small end portions of the tapered key when the band is adjusted to one position, thus enabling access to be obtained to the small end of the key for the purpose of driving it out of the chuck-body. The outturned ends or flanges 17 of the band provide finger-grips, by which it may be turned partly on the chuck-body, so as to bring the openings out of line with the ends of the key, thereby presenting imperforate portions of the band to the ends of the key and retaining the latter securely in the chuck-body and in engagement with the drill-shank. The band or sleeve snugly occupies the annular groove 8, provided in the chuck-body, and the elasticity of this band, in conjunction with the ledges formed by the grooves 8, operates to prevent slidable displacement of the band on the chuck-body.

From the foregoing description, taken in connection with the drawings, it will be noted that we have produced an improved chuck which is simple, substantial, and strong in construction, thereby adapting it for use in hard quartz-rock drilling. There are no threads to wear out or bolts to break. Hence the service of the chuck is longer and the cost of repairs is reduced. By its simplicity of construction the cost of manufacture is somewhat less than chucks now in use and the drill-shank is held firmly in place under the most trying circumstances, while at the same time the shank can be readily disconnected and interchanged with another shank.

Changes within the scope of the appended claim may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit of the invention is embodied. Hence we do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described our invention, what we claim as new is—

A rock-drill chuck comprising a body provided with a taper key-passage which communicates with a tapered bushing and with an external groove, a tapered and grooved drill-shank adapted to said bushing, a tapered key fitted in the taper-passage of the body for engagement with the grooved face of the drill-shank, and a spring-band having the openings and fitted in the external groove of the chuck-body, substantially as described.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

JAMES KAY.
CHARLES T. WEARNE.

Witnesses:
JOHN R. WEARNE,
MARVEL KAY.