No. 791,267. PATENTED MAY 30, 1905.

P. H. JAEGERS.

BREAST DRILL.

APPLICATION FILED JUNE 15, 1904.

Fig. 3.

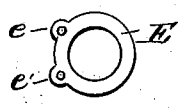
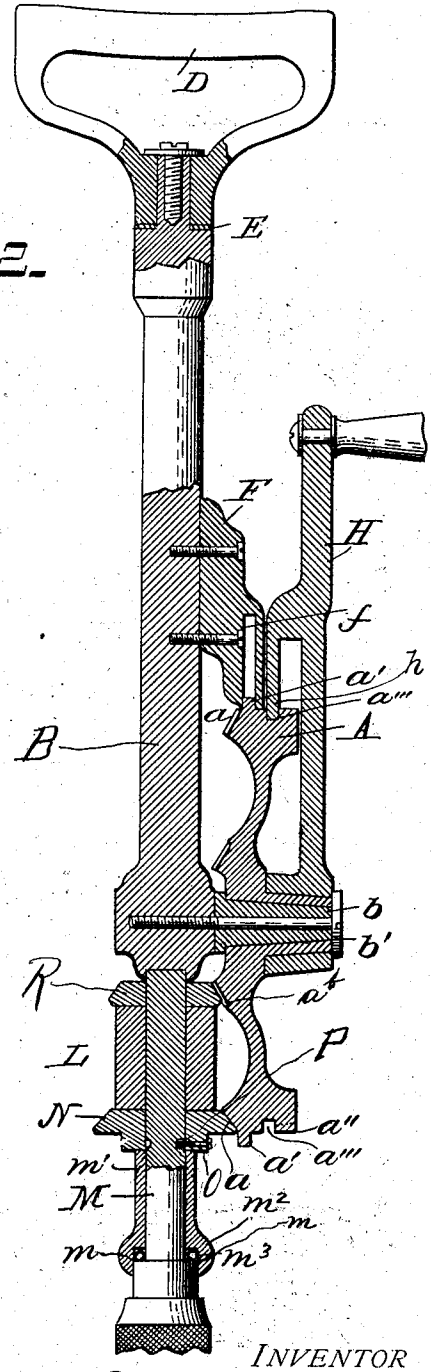


Fig. 1.

Fig. 2.



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No. 791,267. Patented May 30, 1905.

UNITED STATES PATENT OFFICE.

PHILLIP HENRY JAEGERS, OF SAN BERNARDINO, CALIFORNIA.

BREAST-DRILL.

SPECIFICATION forming part of Letters Patent No. 791,267, dated May 30, 1905.

Application filed June 15, 1904. Serial No. 212,649.

To all whom it may concern:

Be it known that I, PHILLIP HENRY JAEGERS, a citizen of the United States of America, residing at San Bernardino, in the county of San Bernardino and State of California, have invented certain new and useful Improvements in Breast-Drills, of which the following is a specification.

This invention relates to boring and drilling, and particularly to a class thereunder known as "breast-drills."

An object of this invention is to provide novel means for adjusting the breastplate with relation to the shank or frame whereby the operating-handle for driving the drill may be to the side or in front of the user.

Furthermore, an object of this invention is to provide novel means for effecting the rotation of the power-wheel in one direction and in the provision of novel means for preventing the retrograde movement of the said power-wheel. In other words, a device of this character is provided in which the power-wheel may be rotated at will in different directions, and this will be a great advantage where the same is to be operated in a contracted space where the free rotation of the power-wheel is obstructed.

Furthermore, an object of this invention is to provide novel means for preventing the wabbling of the power-wheel on its stud, thereby insuring the engagement of the teeth of the power-wheel with the member with which the said power-wheel coacts in rotating the drill. In many devices of this kind the stud, becoming worn, permits the power-wheel to wabble, and the degree of play often becomes such that a disengagement of the teeth of the wheels results.

Finally, an object of this invention is to produce a drill of the character described which will possess advantages in points of efficiency and durability, proving at the same time comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and specifically claimed.

In describing the invention in detail reference will be had to the accompanying drawings, forming part of this specification, wherein like characters denote corresponding parts throughout the several views, in which—

Figure 1 is a view in elevation, showing a drill of the character described embodying my invention; but as here shown the outer end of the crank-handle and the lower end of the drill-shaft are removed. Fig. 2 illustrates the device in a position at right angles to the position shown in Fig. 1 with parts of the mechanism in section. Fig. 3 is a plan view of the plate for holding the breastplate in its adjusted positions.

In the drawings, A indicates the power-wheel, which has beveled gear-teeth a and peripheral teeth a' and a'', the diameter through the teeth a' being greater than the diameter through the latter, and interposed between these series of teeth is an annular groove a'''.

The standard B has a stud b, which may be integral with it or detachably secured thereto (here shown as being detachable) through the medium of the screw b', which is threaded transversely of the standard. The upper end of the standard has a longitudinally-disposed socket C, containing a spring-pressed bolt c, the said bolt being normally pressed outward through the medium of the spring c'. The breastplate D is rotatable on the end of the standard and carries on its inner end the plate E, which has apertured ears e, the said apertured ears being in such relation that they may be successively brought into alinement with the spring-pressed bolt c in order that the said bolt may enter the apertures, and thus restrict the movement of the said breastplate during the engagement of the bolt with the ears. By this means the breastplate is adjusted to different positions with relation to the standard, and the advantages of this construction have been fully set forth.

The bracket F is secured to the standard B, and it has a seat f, on which the spring f^2 is mounted, the said spring having diverging branches extending toward either edges of the bracket. Dogs G are pivoted to the bracket and operate in conjunction with the teeth a' of the wheel A. Owing to the posi-

tion at which these dogs are set on their pivots g, it will be seen that the wheel A can be held stationary if both dogs were caused to engage the teeth of the wheel; but it is my purpose to have one or the other of these dogs engage the teeth of the wheel A in order to prevent movement of the said wheel under certain conditions, according to the requirements of the operator. It is observed that the dogs G have curved lugs g', which may be grasped by the hand of the operator for the purpose of swinging the said dogs on their pivots, and it is observed also that the edges of the dogs are in such relation to the springs f^2 that the said dogs will be held in either of the adjusted positions illustrated in Fig. 1. By this arrangement the wheel A is positively held against retrograde movement, as the friction of the parts in operation is liable to cause such movement.

A crank-handle H is mounted to rotate with relation to the stud b, and the said crank-handle has a lug h with its end extended into the annular groove a''' of the power-wheel, and by this means the said power-wheel is steadied at its periphery to such an extent as will prevent wabbling of the same. The crank-handle has a seat I and a stud i for the reception of the spring J, while dogs K, similar in all respects to the dogs G heretofore described, are pivoted in the seat I and are held in the position shown in Fig. 1 through the medium of the spring J, or by adjusting the said dogs they may be caused to engage at will the teeth a'' of the power-wheel to drive said wheel in alternate directions.

A bearing L is carried on the lower end of the standard, and a shaft M depends therefrom, carrying the pinion N, and the said pinion is designed to mesh with the beveled gear-teeth a of the power-wheel for the purpose of giving motion to the said shaft M. The pinion N is mounted loosely on the shaft M, but is locked to rotate with said shaft by means of the pin O, which registers with a recess P in the shaft M. Loosely mounted on the shaft M above the sleeve L is a second pinion R, which is adapted to be locked to the shaft M by means similarly employed by pinion N. The pinion R is of a different size or diameter than the pinion N. The pinion R meshes with the teeth a^b on the power-wheel. By this arrangement a variable speed may be given the shaft M, it being understood that one of the pinions is released from when the other is locked to the shaft M. The shaft M is provided with an annular shoulder m, and a sleeve m' has a flange m^2, which extends over the shoulder m, forming an intervening space which is utilized as a raceway for the antifriction-balls m^3, thus making at this point a ball-bearing for the purpose of reducing the friction.

The end of the shaft is provided with an ordinary clutch or head, which may be of any construction desired for the purpose of holding and carrying drills or other tools which may be utilized in connection with a device of this character.

The construction, operation, and advantages will, it is thought, be understood from the foregoing description, it being noted that various changes may be resorted to in the details of construction for successfully carrying the invention into practice without departing from the scope thereof.

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

1. In a drill of the character described, a standard, a breastplate rotatably adjusted with relation to the standard, a power-wheel suitably mounted, beveled teeth on the power-wheel, two series of teeth on the periphery of the power-wheel, the said power-wheel having an annular groove between the series of teeth, a crank-handle connected to the power-wheel and having a projection fitted into the annular groove on the power-wheel and suitable drill-operating mechanism rotated by the power-wheel.

2. In a drill of the character described, a standard and breastplate, a bracket on the standard, dogs pivoted to the bracket, a power-wheel having teeth engaged by the dogs, a crank-handle carrying dogs, teeth on the power-wheel engaged by the dogs, the said power-wheel having an annular groove between the two series of teeth, a projection on the crank-handle depending into the groove, beveled teeth on the power-wheel, a pinion driven thereby, a shaft on which the pinion is mounted, and a head carried by the shaft.

3. In a drill of the character described, a standard and breastplate, a bracket on the standard, dogs pivoted to the bracket, a power-wheel having teeth engaged by the dogs, a crank-handle carrying dogs, teeth on the power-wheel engaged by the dogs, the said power-wheel having an annular groove between the two series of teeth, a projection on the crank-handle depending into the groove, beveled teeth on the power-wheel, a pinion driven thereby, a shaft on which the pinion is mounted, a sleeve having a projecting flange, a shoulder on the shaft over which the flange extends and balls interposed between the shoulder and sleeve, substantially as described.

In testimony whereof I affix my signature, in the presence of two witnesses, this 1st day of June, 1904.

PHILLIP HENRY JAEGERS.

Witnesses:
PATRICK T. MELDON,
JOHN BRYDON.