Dec. 9, 1930. J. H. JOWETT 1,784,012

FRONT HEAD FOR PNEUMATIC TOOLS

Filed Dec. 12, 1929

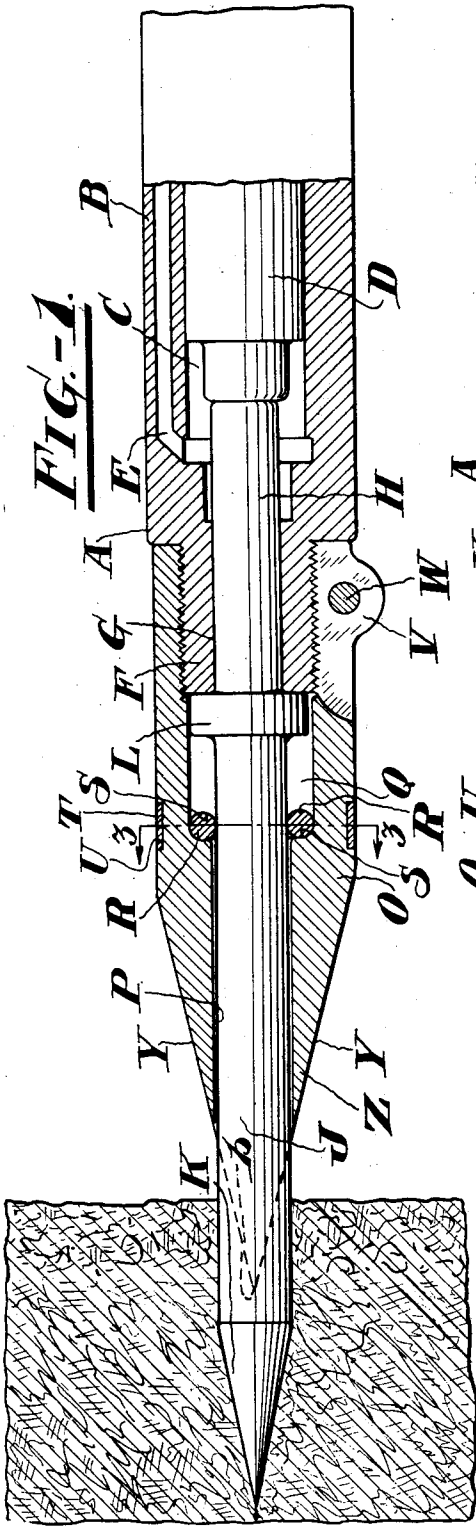


FIG.-1.

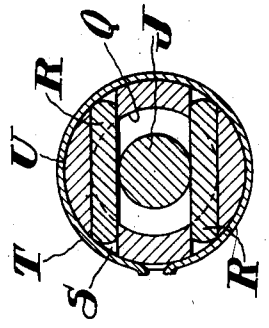


FIG.-3.

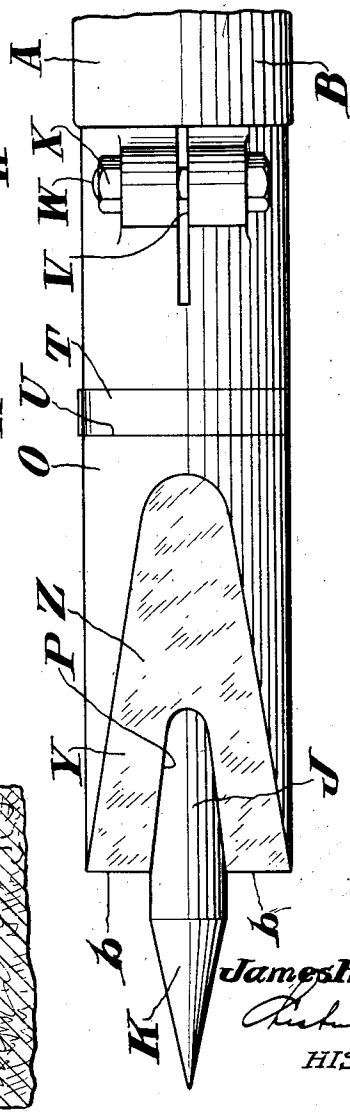


FIG.-2.

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UNITED STATES PATENT OFFICE

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FRONT HEAD FOR PNEUMATIC TOOLS

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This invention relates to pneumatic tools, but more particularly to a front head for pneumatic tools of the hammer type.

One object of the invention is to protect the working implement against the strains incident to prying portions of the work free from the mass.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawings illustrating the invention and in which similar reference characters refer to similar parts,

Figure 1 is a longitudinal view partly in section of a pneumatic tool constructed in accordance with the practice of the invention,

Figure 2 is a longitudinal side view of the front head, and

Figure 3 is a transverse view taken through Figure 1 on the line 3—3 looking in the direction indicated by the arrows.

Referring more particularly to the drawings, A designates generally a pneumatic tool comprising a cylinder B having a piston chamber C wherein is disposed a reciprocatory hammer piston D.

The pressure fluid utilized for actuating the piston D may be distributed to the extremities of the piston chamber by suitable valve mechanism (not shown) and such pressure fluid may be conveyed to the piston chamber through the usual channels, only the front inlet passage E of which is shown.

At the front end of the cylinder B is a reduced portion F having a bore G to slidably receive the shank H of a working implement J. The working implement J is illustrated as being of the coal pick type and accordingly has a coniform cutting bit K at its front or free end. At the juncture of the body portion of the working implement and the shank H is a collar L which is adapted to abut the front end of the portion F to limit the distance which the shank H of the working implement may extend into the piston chamber C.

Additional means are provided for properly guiding the working implement J as well as for preventing it from being forcibly ejected from the cylinder A. To this end a front head O is threaded to the portion F and said front head has a bore P therein to slidably receive the body portion of the working implement J. The rear end of the bore P is enlarged as at Q to accommodate the collar L of the working implement.

The enlarged portion Q of the bore is preferably of such length that the collar L is capable of considerable movement longitudinally of the front head without contacting with the elements which may serve as stops therefor, such as the front end of the portion F and, as illustrated, stop pins R which extend laterally through the front end of the enlarged portion Q of the bore P.

The apertures S wherein the pins R are disposed preferably extend entirely through the front head O, and the pins R are retained within the apertures S by a spring ring T which lies in an annular groove U in the periphery of the front head.

In order to insure against the unthreading of the front head O from the portion Q of the cylinder, the rear end of the front head is provided with a longitudinal slot V and a bolt W extends through the side of the front head adjacent the slot V and is provided with a nut X whereby the rear end of the front head may be securely clamped to the cylinder.

Pneumatic tools of the type to which the present invention pertains are more particularly adapted for use in mining coal and similar work in which portions of the material are broken from the bed or mass by both drilling and prying.

The usual procedure is to actuate the working implement into the work by means of the hammer piston D. After the working implement has penetrated the work to a certain extent, or when there is evidence of portions of the rock being fractured, the tool, together with the working implement, is used as a pry for displacing the partly broken material.

Obviously, when so used, and in tools as heretofore constructed, the entire strain of breaking the material or moving it away from the bed is imposed upon the working implement which frequently becomes bent or broken as a result of such usage.

The present invention contemplates the use of a portion of a casing element as a means for both severing the material and also as a prying element which may serve the additional function of protecting the relatively yieldable working implement against the strains incident to prying. In furtherance of this end the front head O is provided with tapering surfaces Y which are preferably flat and have their point of convergence at the front end of the front head to form a wedge or cleaver portion Z having cutting edges *b* at its front end. The cutting edges are preferably arranged on diametrically opposite sides of the working implement and are perpendicular to the longitudinal axis of said working implement.

The surfaces Y may be of any suitable degree of inclination and the cutting edges of the cleaver portion Z are preferably in such proximity to the cutting bit K of the working implement that the edges *b* may closely follow the cutting bit K into the work. Due to this arrangement the working implement will be actuated into the work by the direct blow of the hammer piston D and the cleaver portion Z of the front head will be caused to enter the line of cut by the jars resulting from the compression created by the piston as it approaches the front end of the piston chamber C.

After the working implement and the cleaver portion Z have penetrated the work to an extent to which they may be readily actuated by the hammer piston, manual pressure may be applied in a lateral direction to the rear end of the tool and in this way the portion of the work intended to be severed may be readily broken free from the mass. Any strains to the drilling apparatus occasioned by this prying action will be largely confined to the relatively rugged and inflexible front head O instead of to the working implement as heretofore.

I claim:

1. A pneumatic tool comprising a casing, a working implement guided thereby, a hammer piston to actuate the working implement, and converging surfaces on the casing forming a cleaver portion adapted to enter the work for breaking portions thereof free from the mass.

2. A pneumatic tool, comprising a casing, a working implement guided thereby, a hammer piston to actuate the working implement, and surfaces on the casing converging toward one end thereof to form a cleaver portion adapted to enter the work for breaking portions thereof free from the mass.

3. A pneumatic tool, comprising a casing, a working implement guided thereby, a hammer piston to actuate the working implement, and a wedge portion integral with the casing and adapted to enter the work for breaking portions thereof free from the mass.

4. A pneumatic tool comprising a percussive element, and a casing having a cleaver portion adapted to be actuated into the work by the percussive element to break portions of the work free from the mass.

5. A pneumatic tool comprising a casing, a working implement guided thereby, a hammer piston to actuate the working implement, and a wedge portion integral with the casing and having cutting edges on opposite sides of the working implement.

6. A pneumatic tool comprising a casing, a working implement guided thereby, a hammer piston to actuate the working implement, and a wedge portion integral with the casing and having cutting edges on diametrically opposite sides of the working implement.

7. A pneumatic tool comprising a casing, a working implement guided thereby, a hammer piston to actuate the working implement, and a wedge portion integral with the casing and having cutting edges on diametrically opposite sides of the working implement and arranged perpendicularly with respect thereto.

In testimony whereof I have signed this specification.

JAMES H. JOWETT.