(No Model.)

G. M. GITHENS.

ELASTIC KEY FOR HOLDING ROCK DRILLS.

No. 426,640. Patented Apr. 29, 1890.

Fig. 2.

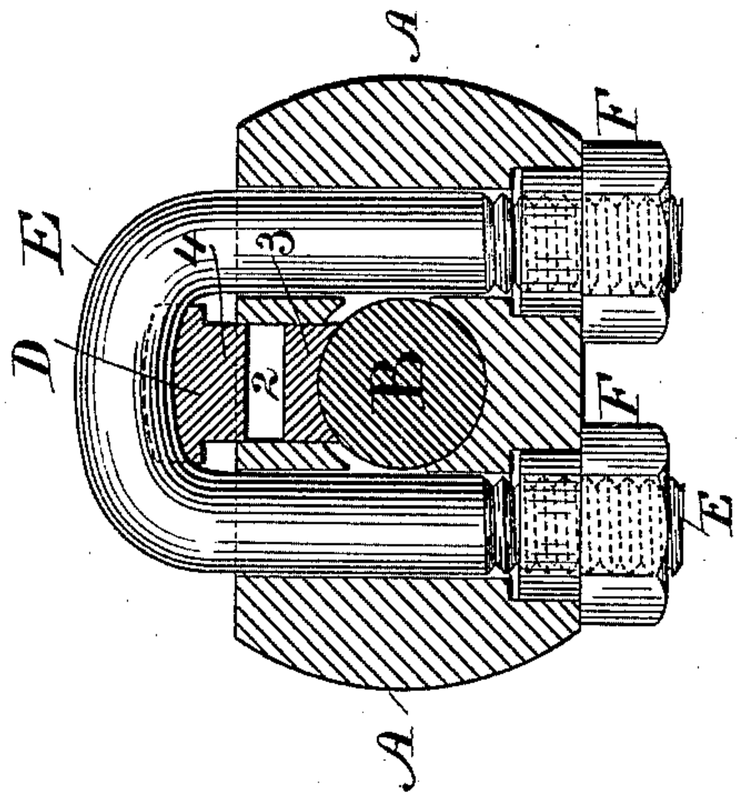
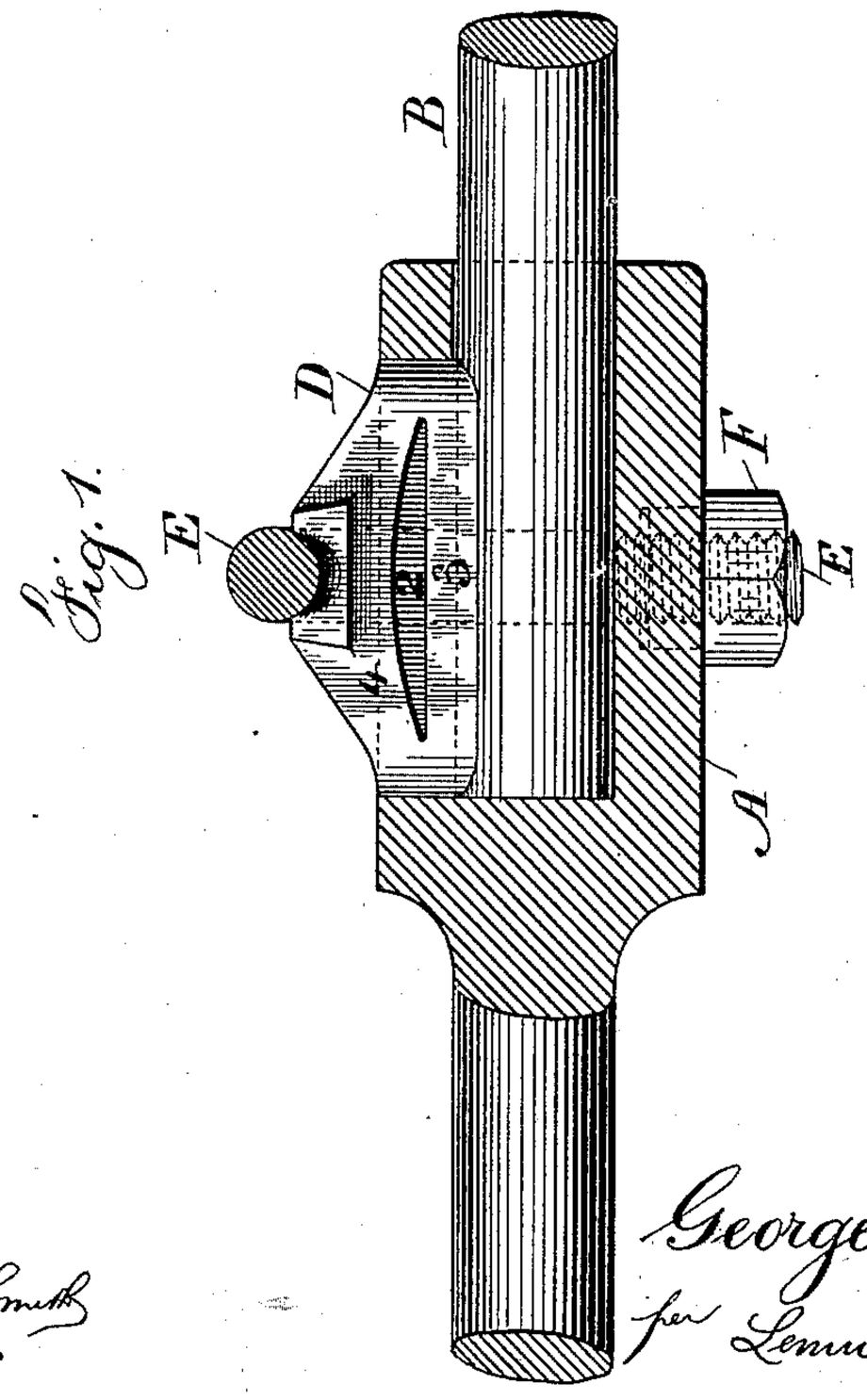


Fig. 1.



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UNITED STATES PATENT OFFICE.

GEORGE M. GITHENS, OF BROOKLYN, NEW YORK.

ELASTIC KEY FOR HOLDING ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 426,640, dated April 29, 1890.

Application filed January 24, 1890. Serial No. 337,954. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. GITHENS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Elastic Keys for Holding Rock-Drills and other Articles, of which the following is a specification.

Rock-drills have been received into a stock and held therein by a key, against which a yoke having nuts at its ends has been pressed by screwing up the nuts; but it is found in use that the key is liable to become bent and convex upon the surface that comes into contact with the rock-drill, and a similar difficulty is experienced in holding other tools, especially where the tool is subjected to sudden concussion or strain.

My present improved key is adapted to use with stocks or holders in rock-drills already in use or to the holders for other tools, the size and shape of my improved key being varied to suit the circumstances of its use.

In the drawings, Figure 1 is a section of a drill-stock with my improved key in elevation. Fig. 2 is a transverse section of the key and drill-stock and an elevation of the yoke or loop made use of in clamping the key to the drill.

The stock or holder A is of any desired size or shape, and in the case of a rock-drill this stock is usually at the end of the piston-rod, and the stock or holder is adapted to the reception of the shank or end of the drill or tool B, and at one side of the drill or tool B and in the stock A is a mortise for the reception of the key D, and any suitable clamp may be applied to this key. I have, however, shown the yoke E having two parallel shanks that pass through the stock A, and are screw-threaded for the reception of the nuts F, such nuts F having cylindrical bases that pass into cylindrical recesses in the stock A, in order that the length of screw upon the nut may be sufficient to render it durable under the constant wear to which the parts are subjected, and the arched or central portion of the yoke crosses the middle of the key and bears upon it by the action of the nuts F.

The keys heretofore made use of have either been solid, or in some instances the surface that is in contact with the drill B has been slightly concave to cause the key to bear at the end portions thereof on the drill; but a key of this character is liable to become bent, because the principal part of the clamping strain is at the middle thereof, and it is difficult to straighten the key after it has become bent. To obviate these difficulties I make a transverse opening through the key, as at 2, the same extending nearly from end to end of the key, and the portion 3 of the key becomes a chord and the portion 4 of the key an arch, the chord uniting the ends of the arch; hence the pressure of the yoke or clamp E upon the center of the arch produces tension upon the chord 3, and the chord 3 prevents the ends of the arch spreading or elongating, and the chord 3 becomes an elastic bearing-piece against the side of the drill or other tool, and the key is not liable to become bent under the strain or concussion to which it is subjected, because the opening 2 is between the clamping device and the drill, and there is a constant yielding action approximately that of an elliptical spring in the key itself, so that the slight movement inseparable from the drill under the rapid concussion to which it is subjected does not tend to bend the key, but only to spring the same, and it is restored by its resiliency to its normal condition instantly, thus rendering the key much more durable and its clamping action more efficient, and it is not liable to become loose when in use because of the slight spring that is allowed to the parts of the key.

I claim as my invention—

1. A key for holding drills and other tools formed of one piece of metal and having a transverse opening in the metal and between the surface of the key that bears against the tool, and the screw-yoke or other device that clamps the key toward the tool, whereby the key is rendered elastic, substantially as set forth.

2. The combination, with the drill or tool and the clamping device for holding the same, of an intervening key of one piece of metal with one side arching and the other straight, there being a transverse opening to render the key elastic, substantially as specified.

Signed by me this 20th day of January, 1890.

GEO. M. GITHENS.

Witnesses:

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WILLIAM G. MOTT.