(Model.)

E. MILLER.

Wrench.

No. 226,582. Patented April 13, 1880.

FIG. 1.

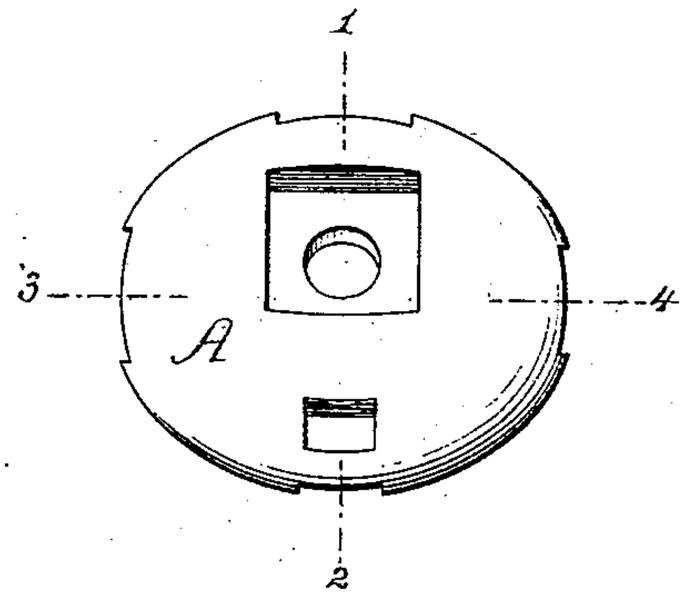


FIG. 2.

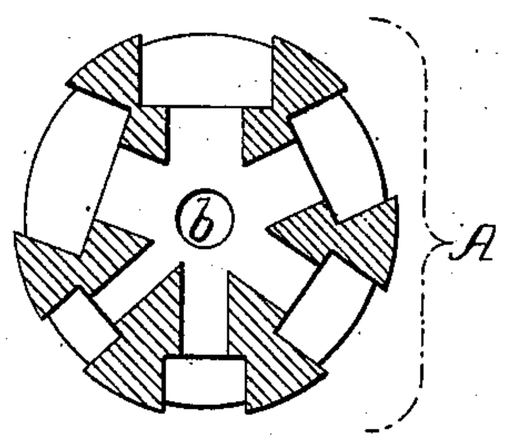


FIG. 4.

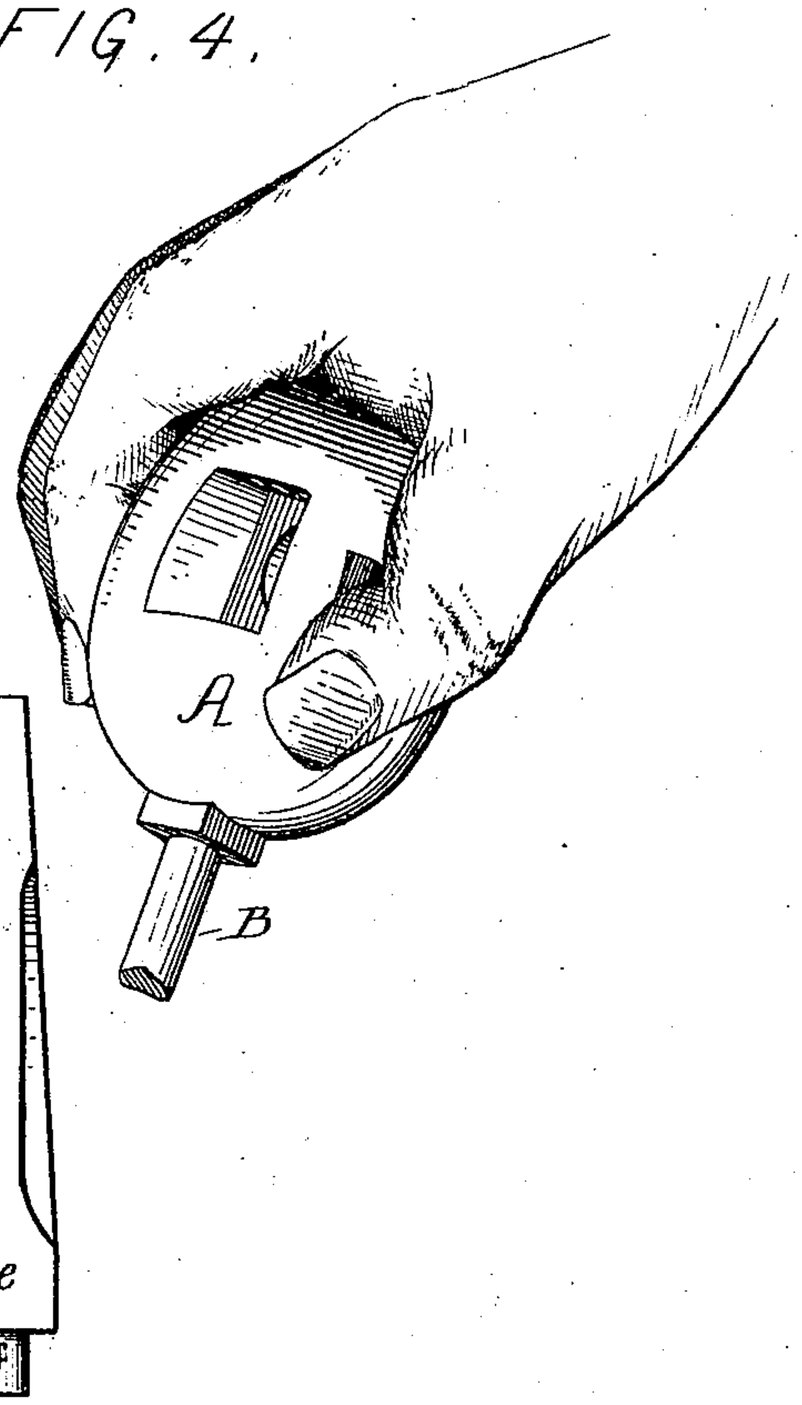


FIG. 3.

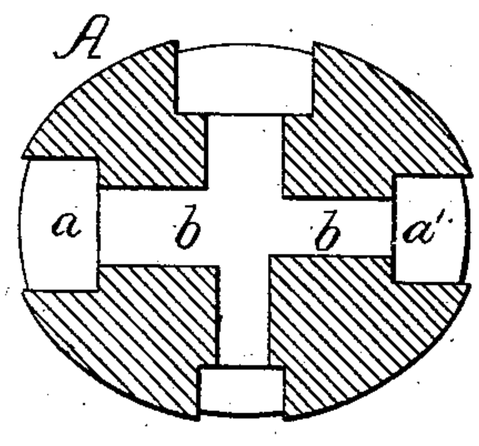
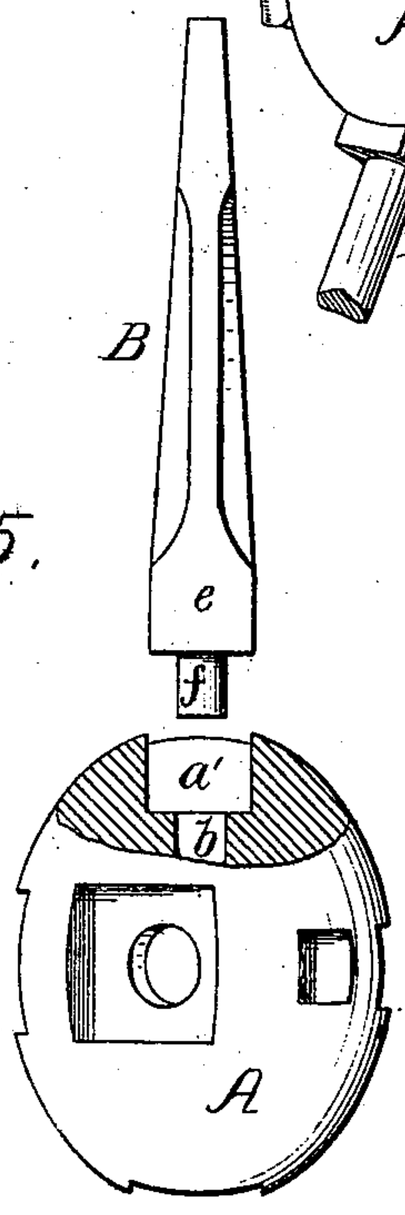


FIG. 5.



WITNESSES
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UNITED STATES PATENT OFFICE.

EPHRAIM MILLER, OF SPRING CITY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO CASPER S. FRANCIS, OF SAME PLACE.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 226,582, dated April 13, 1880.

Application filed February 26, 1880.

To all whom it may concern:

Be it known that I, EPHRAIM MILLER, a citizen of the United States, residing in Spring City, Chester county, Pennsylvania, have invented an Improved Wrench, of which the following is a specification.

The object of my invention is to make a wrench which can be effectually applied to nuts and to bolts and screw-heads in situations where any of the ordinary wrenches could not be conveniently used.

In the accompanying drawings, Figure 1 is an external view of my improved wrench; Fig. 2, a transverse section on the line 1 2; Fig. 3, a section on the line 3 4; Fig. 4, a view of the wrench grasped by the hand and applied to the head of a set-screw, and Fig. 5 a view of the instrument and bit for operating the same.

As shown in the drawings, the wrench consists of a block, A, preferably of cast-iron, made of ellipsoidal form, and having a number of recesses adapted to nuts and screw-heads of different sizes.

It is not essential, in carrying out my invention, that the block should be of the precise form represented. It may, for instance, be spherical or egg-shaped; but it should be rounded in all directions, and of such a size that when seized in any position by the hand the latter can have a firm frictional hold on the block, as shown in Fig. 4, in which the implement is applied to the head of a set-screw or bolt.

As shown in Fig. 2, six square recesses, all of different sizes, are arranged circumferentially and at suitable distances apart, and there is a recess at each end of the block. The recesses, moreover, may be differently arranged without departing from the main feature of my invention, and some of the recesses may, if desired, be hexagonal, so as to be adapted to hexagonal nuts or screw-heads.

I prefer to make through the block a hole, *b*, extending from the bottom of the recess *a*, Fig. 3, to the bottom of the recess *a'*, and similar holes may extend radially from each of the circumferentially-arranged recesses through to the longitudinal hole, these holes receiving the threaded stems of the bolts and permitting the application of a short lever to the instrument in places where a lever can be used; or a tool, B, (shown in Fig. 5,) may, in some cases, be used, the square or hexagonal portion *e* being adapted to one of the recesses and the round portion *f* being adapted to the round hole extending from the bottom of the recess.

The outer end of the tool B may be shaped like that of an ordinary bit for a brace, so that the latter may be used, in connection with the instrument for tightening nuts and bolts, in such situations as will permit the use of a brace.

In many machines, and especially in harvesters, nuts and bolt-heads are often so situated that they will not permit the application to them and the operation of ordinary wrenches—a difficulty which I overcome by my invention, for in whatever direction the block may be adjusted to a screw-head or nut there will always be an extended rounded surface to be seized by the hand, and the position of the hand and arm can be changed to suit the space in which they have to operate, so as to properly manipulate the instrument, and if sufficient force cannot, in some cases, be exerted to tighten or loosen a nut or screw, a short rod may be introduced into any of the holes which extend from the recesses to serve the purpose of a lever.

I claim as my invention—

The within-described wrench, consisting of a block, A, rounded in all directions and having a number of differently-sized recesses adapted to nuts and screw-heads, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EPHRAIM MILLER.

Witnesses:

JOHN BOYER,

DAVID FINKBINER.