R. KEIL.

WRENCH.

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912,687. Patented Feb. 16, 1909.

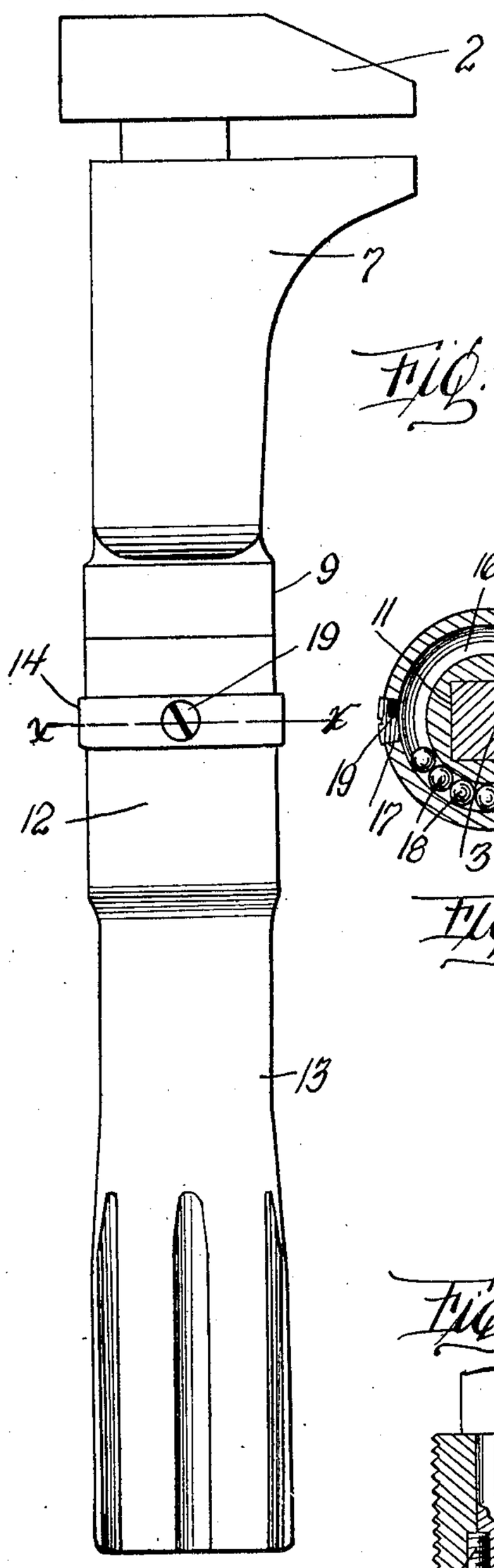

Fig. 1.

Fig. 3.

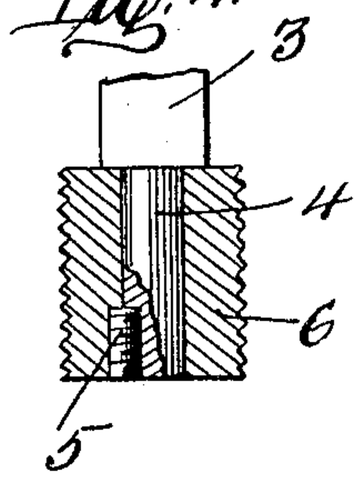

Fig. 4.

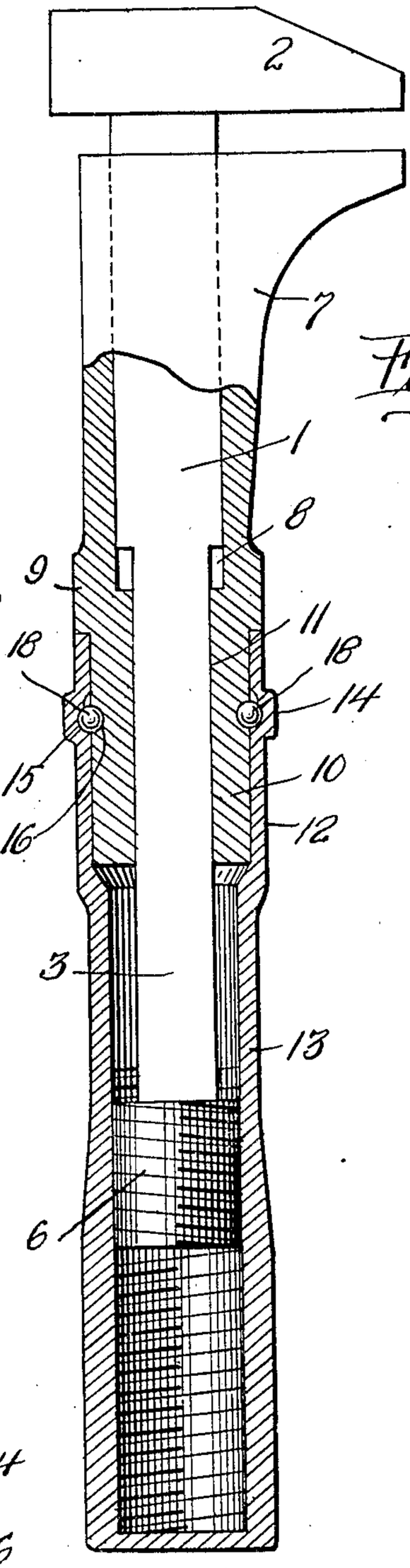

Fig. 2.

Witnesses

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UNITED STATES PATENT OFFICE.

RUDOLPH KEIL, OF BRADDOCK, PENNSYLVANIA.

WRENCH.

No. 912,687. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed August 14, 1908. Serial No. 448,494.

To all whom it may concern:

Be it known that I, RUDOLPH KEIL, a subject of the King of Hungary, residing at Braddock, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Wrenches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to wrenches, and the objects of my invention are, first, to provide a simple and inexpensive wrench that can be easily adjusted; second, to provide a strong and durable wrench that will be free from injury by ordinary use; and third, to provide a wrench wherein the leverage obtained by using the wrench will tend to tighten the adjusting mechanism of the wrench.

I attain the above objects by a wrench that will be presently described and then specifically pointed out in the appended claim.

Referring to the drawings:—Figure 1 is a side elevation of my wrench, Fig. 2 is a similar view partly broken away and partly in section, Fig. 3 is a horizontal sectional view taken on the line *x*—*x* of Fig. 1, and Fig. 4 is a sectional view of the nut which secures the shank to the handle.

In the accompanying drawings, 1 designates a shank having a fixed gripping jaw 2. The shank 1 is provided with a reduced portion 3 rectangular in cross section, this portion of the shank being again reduced to provide a pin 4. Mounted upon the pin 4 by a set screw 5 is a cylindrical exteriorly threaded nut 6.

Prior to placing the nut 6 upon the end of the shank 1 an adjustable jaw 7 is slidably mounted upon the shank, said jaw having an opening 8 for the shank 1. The lower end of the jaw 7 is enlarged, as at 9, and provided with a depending barrel 10 having an opening 11 for the contracted portion 3 of the shank 1.

Revolubly mounted upon the barrel 10 is a sleeve 12 having a depending interiorly threaded tubular handle 13 for the nut 6 of the wrench. The sleeve 12 is provided with an annular enlargement 14 having an interior annular race 15 confronting an exterior annular race 16 formed in the barrel 10. The enlargement 14 is provided with an opening 17 for placing anti-friction balls 18 in the races 15 and 16, said opening 17 being normally closed by a threaded plug 19.

It will thus be observed that the anti-friction balls 18 serve two functions, first, to provide means for retaining the tubular handle 13 upon the barrel 10, and second, to provide a smooth bearing for said handle upon the barrel. To adjust the wrench, it is only necessary to rotate the tubular handle 13 to move the jaw 7 upon the shank 1. After the jaws 2 and 7 have been placed in engagement with an object, as a nut, the handle 13 is used as a lever for rotating the nut and it is evident that when a grip is taken upon the handle and said handle used as a lever, the movement of the handle as gripped will tend to tighten the adjustable jaw 7 against the nut, preventing the wrench from slipping thereon.

My wrench is constructed of strong and durable metal and while in the drawings forming a part of this application there is illustrated the preferred embodiments of my invention, it is obvious that the same can be varied or changed without departing from the spirit of the invention.

Having now described my invention what I claim as new, is:—

A wrench comprising a shank having a contracted rectangular portion, a fixed jaw carried by said shank, a pin carried by the end of said contracted portion of said shank, a threaded nut mounted upon said pin, a screw for holding said nut upon said pin, an adjustable jaw slidably mounted upon said shank, a barrel carried thereby and surrounding the contracted portion of said shank, said barrel having an annular exterior ball race formed therein, a sleeve revolubly mounted upon said barrel and having an interior annular ball race confronting the race of said barrel, said sleeve having an opening formed therein, a plug detachably mounted in said opening, anti-friction balls arranged in the races of said barrel and said sleeve, and a tubular interiorly threaded handle carried by said sleeve and adapted to receive said nut, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

RUDOLPH KEIL.

Witnesses:

A. H. RABSING,

MAX H. SROLOVITZ.