

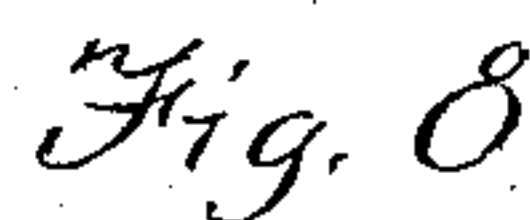
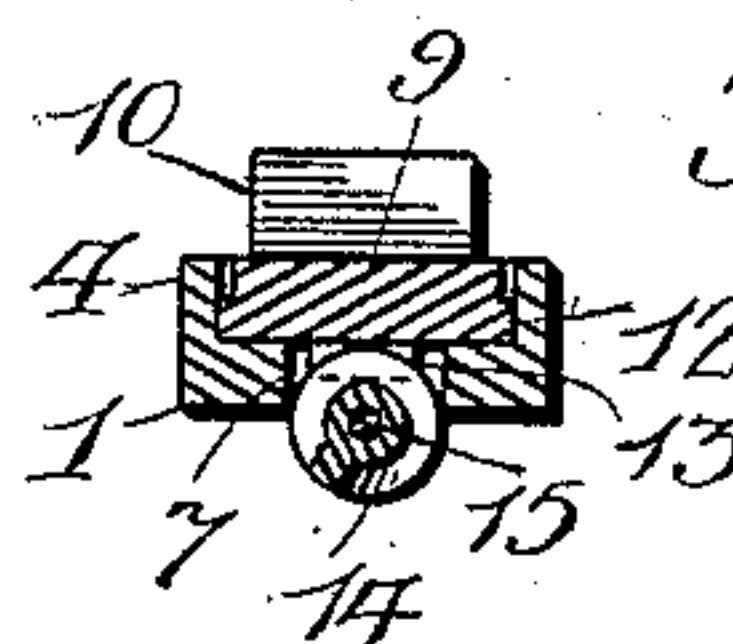
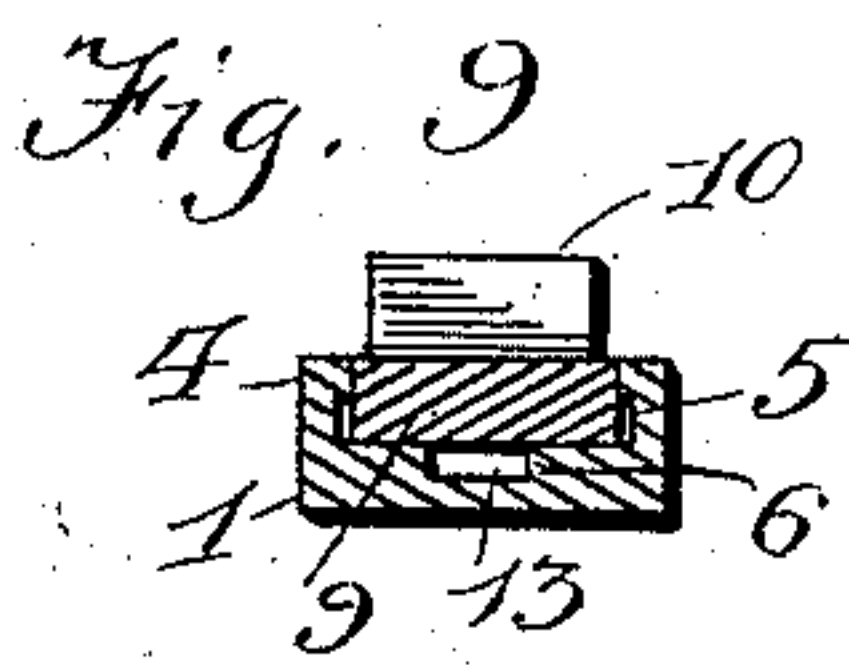
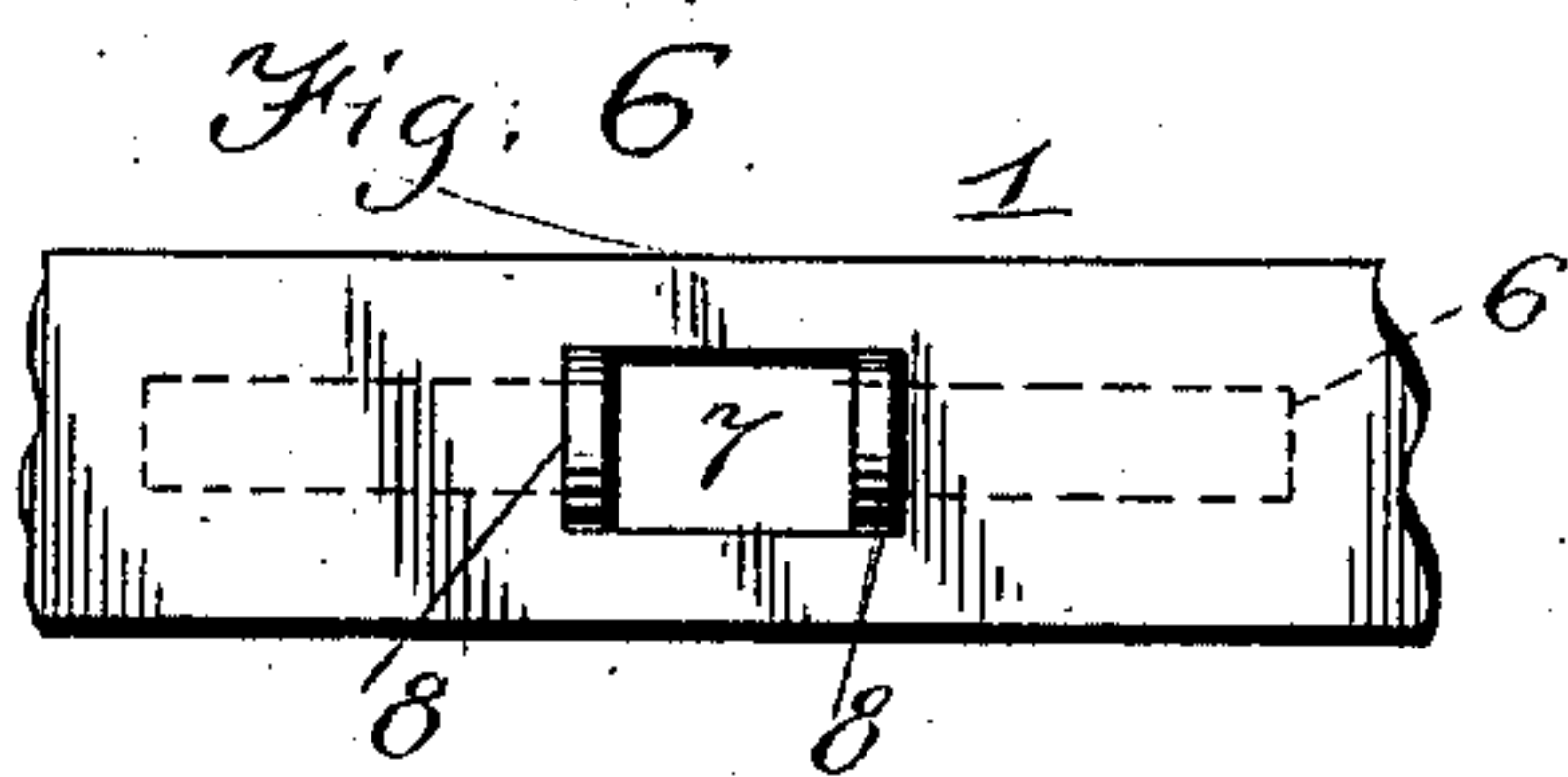
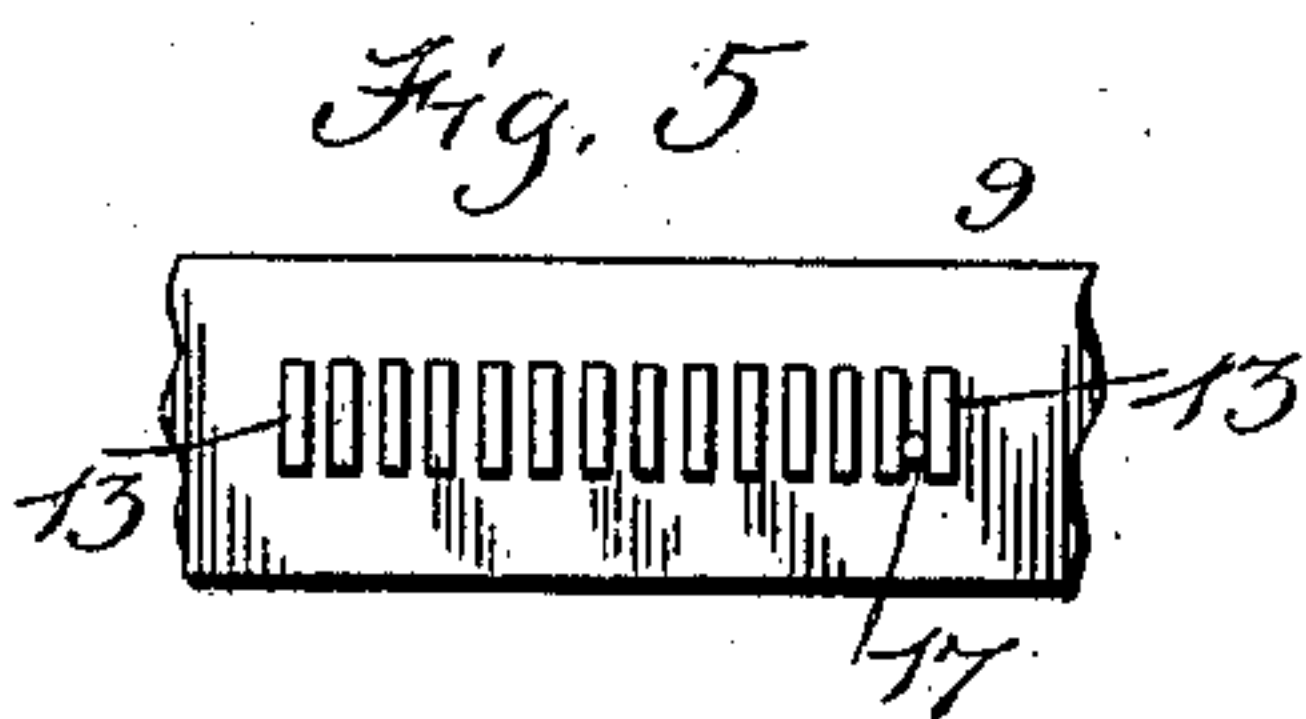
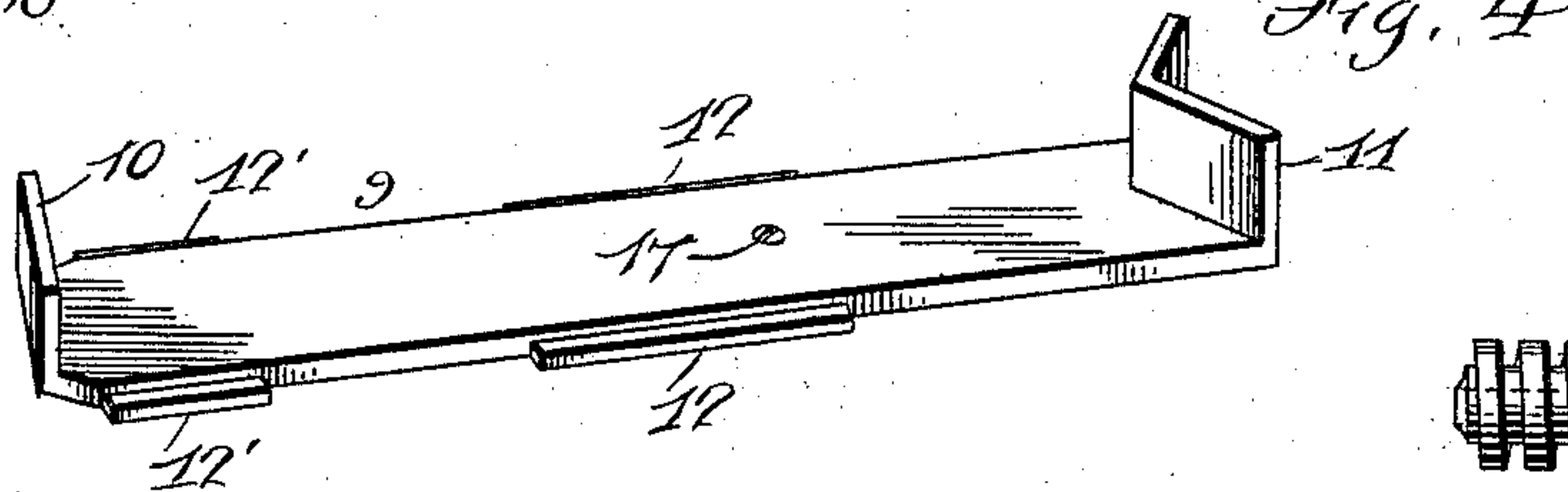
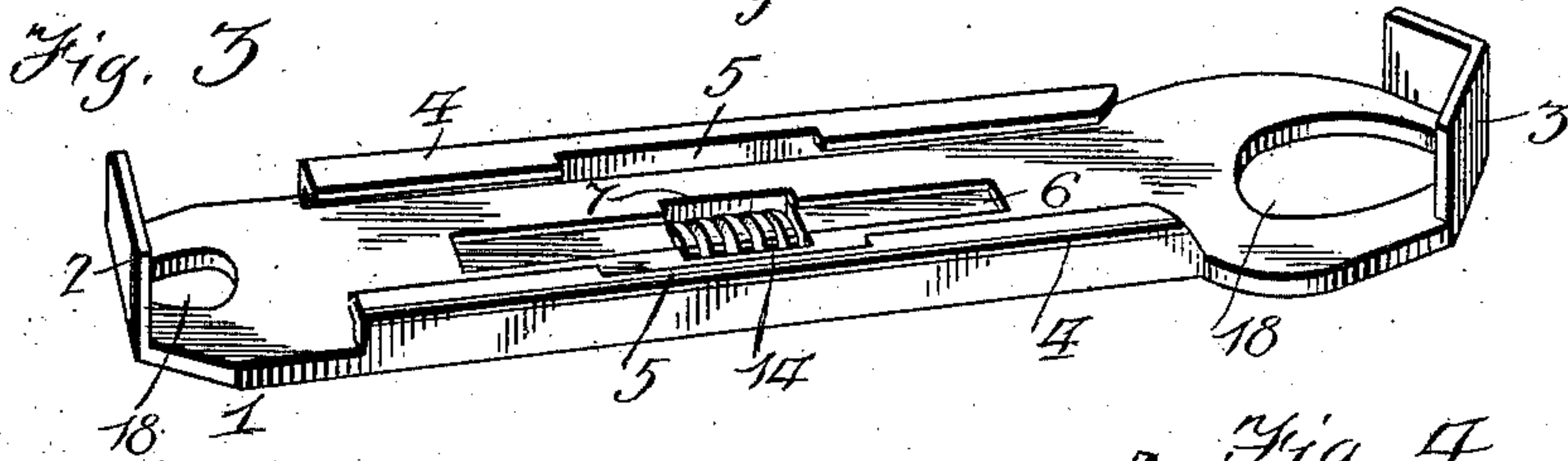
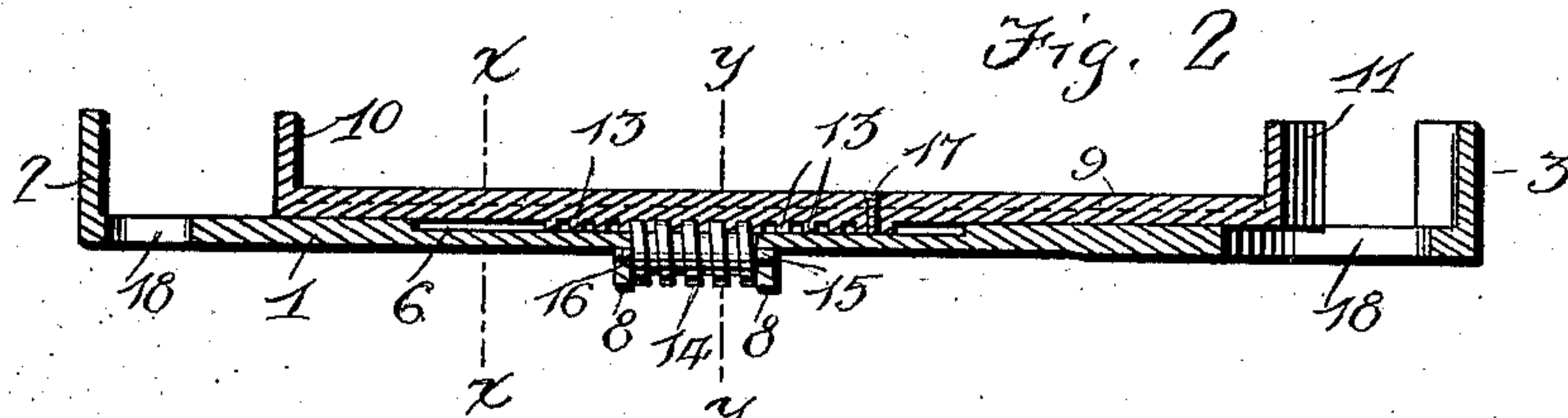
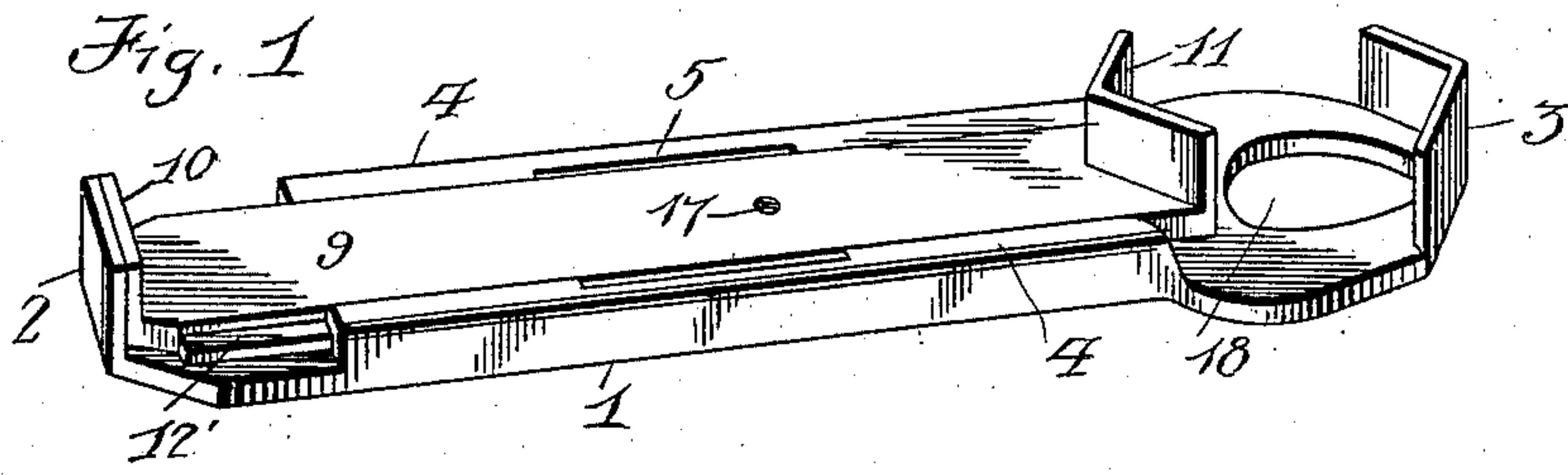
No. 717,390.

Patented Dec. 30, 1902.

A. S. GRAY.  
NUT WRENCH.

(Application filed May 19, 1902.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

ADELBERT S. GRAY, OF BRICE, OHIO.

## NUT-WRENCH.

SPECIFICATION forming part of Letters Patent No. 717,390, dated December 30, 1902.

Application filed May 19, 1902. Serial No. 108,032. (No model.)

*To all whom it may concern:*

Be it known that I, ADELBERT S. GRAY, a citizen of the United States, residing at Brice, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Nut-Wrenches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to nut-wrenches.

The object of the invention is to provide a device of this character which shall be simple of construction, durable in use, comparatively inexpensive of production, and one which may be easily and quickly set to nuts of different sizes and different shapes, one end of the wrench being adapted to different-sized square four-sided nuts and the other end to nuts of different sizes having more than four sides.

With the above and other objects in view, which will readily appear as the nature of the invention is better understood, said invention consists in certain novel features of construction and combination and arrangement of parts, which will be hereinafter fully described, defined in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved wrench. Fig. 2 is a longitudinal vertical sectional view. Fig. 3 is a perspective view of the main or body portion of the wrench after the sliding bar has been removed. Fig. 4 is a similar view of the bar. Fig. 5 is a bottom plan view of a fragment of the bar. Fig. 6 is a similar view of a fragment of the body portion. Fig. 7 is a side elevation of the worm-wheel. Fig. 8 is a similar view of its pivotal pin. Fig. 9 is a cross-sectional view on the line  $xx$  of Fig. 2. Fig. 10 is a similar view on the line  $yy$  of Fig. 2.

In the drawings, 1 denotes the body portion of the wrench, formed at one end with a fixed jaw 2, adapted for a square nut, and at the other end with a fixed jaw 3, adapted to hexagonal and other nuts having more than four sides. The body portion is provided along its edge with marginal guideways 4, the upper walls of which are recessed midway their length, as shown at 5, for a purpose

hereinafter to appear. The upper surface of the body portion is provided with a longitudinal groove 6, intersected or separated by an opening 7, from the inner walls of which project downwardly-bearing lugs 8.

9 denotes a sliding bar, one end of which is provided with a jaw 10 to coact with the jaw 2 and the other end with a jaw 11 to coact with the jaw 3. This bar has laterally-projecting side flanges 12 and 12' and is provided on its under side with a worm-rack 13, which is adapted to have a sliding movement in the groove 6 across the aperture 7, while the flanges 12 and 12' are adapted to engage the guideways and permit of the separation of the parts.

14 denotes a worm-wheel journaled between the ears or lugs 8 upon a pin 15, the smaller end 16 of which is screw-threaded to have a screw-threaded connection with one of the ears, and thus hold the pin in place. The worm 14 has a portion of its periphery or surface projecting through the aperture 7 and engaging the worm-rack 13.

In assembling the parts the bar 9 is placed upon the body portion with its jaw 10 in engagement with the jaw 2 of the body portion, in which position the flanges 12 will register with the recesses 5 of the guideways and the flanges 12' with the space or plane surface of the body portion between the guideways and the jaw 2. Now by working the worm 14 the guide-flanges 12 and 12' will engage the guideways and will be held in place thereby against separation, it being understood that the bar 9 cannot be removed from the body portion of the wrench until the flanges 12 are brought into register or line with the recesses 5. The wrench may now be adjusted back or forth at will, so long as the flanges 12 are kept from alining or registering with the recesses 5, and a very simple means for preventing the registering of said flanges with said recesses is to engage with the under side of the bar adjacent one of the teeth of the worm-rack a plug or set-screw 17, which will limit the movement of said bar, so that while the plug or set-screw is in place the flanges 12 may never be brought into register or alinement with the recesses 5. If desired, each end of the body portion of the wrench may be provided with an aperture 18, which will permit the



nut to be screwed down past the end of the bolt and the bolt to project through said aperture in the act of screwing the nut home.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation, and advantages of my improved nut-wrench will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a wrench of the character described, the combination with the body portion having a fixed jaw at one end and marginal guideways the top walls of which are recessed, said body portion also being provided with an aperture through its base; of a bar having a jaw at one end to coact with the first-named jaw and provided with laterally-projecting marginal flanges adapted to register with the recesses in the assemblage of the parts and having on its lower side a worm-rack, a worm journaled to the under side of the body portion of the wrench and projecting through the opening and engaging the worm-rack, substantially as specified.

2. In a wrench of the character described, the combination with the body portion having a fixed jaw at one end and marginal guideways the top walls of which are recessed, said body portion also being provided with an aperture through its base; of a bar having a jaw at one end to coact with the first-named

jaw and provided with laterally-projecting marginal flanges adapted to register with the recesses in the assemblage of the parts and having on its lower side a worm-rack, a worm journaled to the under side of the body portion of the wrench and projecting through the opening and engaging the worm-rack, and a stop carried by the bar to be engaged by the worm in the sliding movement of the bar, whereby the movement of said bar is limited to prevent its side flanges registering with the recesses and the separation of the parts, substantially as set forth.

3. In a wrench of the character described, the combination with a bar provided with fixed jaws at its opposite ends and formed with longitudinal guideways having opposite recesses, said bar being also provided in its base with a longitudinal groove and with an intervening aperture and having projecting from its lower side at the ends of said aperture parallel ears, a sliding bar having two sets of flanges adapted to engage the guideways and provided at opposite ends with jaws adapted to coact with the jaws aforesaid and provided on its lower side with a worm-rack which has a sliding movement in said groove across the aperture, and a worm-wheel journaled between said ears and having a portion of its periphery projecting through the aperture and meshing with the worm-rack, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ADELBERT S. GRAY.

Witnesses:

W. E. COOK,

J. E. HOFFHINER.