

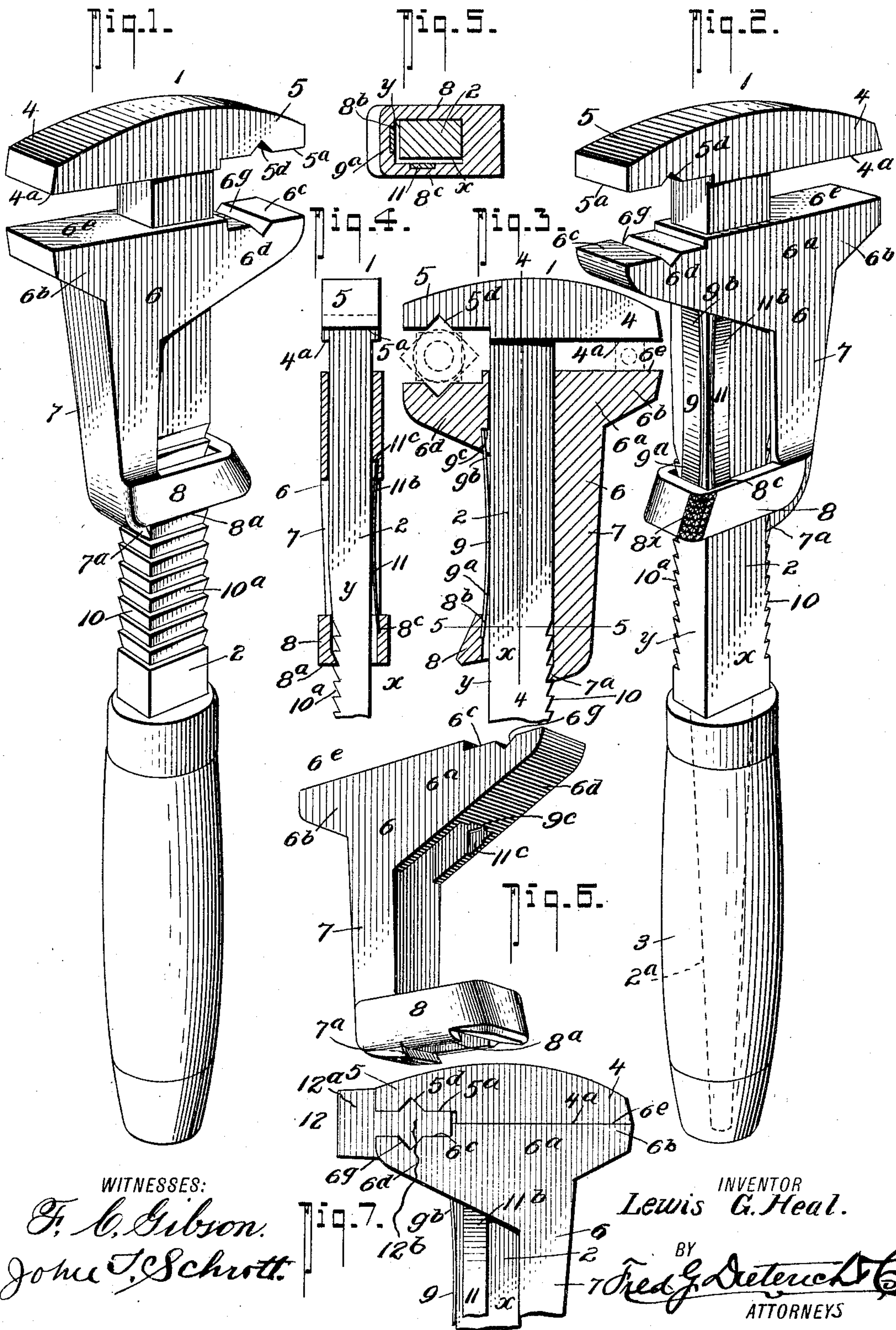
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L. G. HEAL.

WRENCH.

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WITNESSES:

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 793,522, dated June 27, 1905.

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To all whom it may concern:

Be it known that I, LEWIS G. HEAL, residing at John Day, in the county of Grant and State of Oregon, have invented a new and Improved Wrench, of which the following is a specification.

My invention, which is in the nature of a sliding-jaw wrench, primarily has for its object to provide a wrench of this character of a very simple and inexpensive nature which can be easily and quickly manipulated and adapted for adjustment for any-sized opening, either for round or square bodies, and which will have at all times a positively rigid grip with absolute safety from slipping.

Another and essential purpose of this invention is to provide a wrench having a sliding jaw having teeth to engage racks on the fixed-jaw shank so arranged in relation to the said fixed jaw that the wrench can be set to grip any nut from the smallest to the full extended capacity of the jaws and in such a manner that the purchase or pull strain on the sliding jaw will be such as to cause the teeth of the sliding jaw to positively grip the teeth of the shank.

Again, my invention seeks to provide a wrench capable of receiving nuts of different sizes with one adjustment, and also to provide a wrench in which the sliding-jaw teeth will always be normally held in engagement with the teeth of the shank and to provide a duplicate set of jaw and shank teeth to more perfectly and firmly secure the jaw in its adjusted positions.

With these objects in view and others which will hereinafter appear the invention consists in a wrench embodying the peculiar combination and novel arrangement of parts, such as will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved wrench in one position. Fig. 2 is a similar view of the wrench held in a position turned at one hundred and eighty degrees to that shown in Fig. 1. Fig. 3 is a vertical longitudinal section of my improvement. Fig. 4 is a vertical cross-section on the line 4 4 of

Fig. 3. Fig. 5 is a cross-section on the line 5 5 of Fig. 3. Fig. 6 is a detail perspective of the sliding jaw detached. Fig. 7 is a detail view hereinafter referred to.

In the drawings, in which like numerals and letters of reference indicate corresponding parts in all the figures, 1 designates a fixed jaw, which has an integrally-formed flat shank 2, the lower end of which terminates in a tang 2^a to receive the handle 3. The jaw 1 has a front nut-engaging portion 4, extending with its nut-engaging face 4^a at right angles to the shank 2, and it also has a rear nut-engaging portion 5, the nut-engaging face 5^a of which is in a plane above that of the face 4^a and is provided with a transverse V-shaped notch 5^d for a purpose presently to appear.

The sliding jaw 6 includes a head or jaw member 6^a, having a front nut-engaging portion 6^b to coöperate with the front nut-engaging portion 4 of the fixed jaw 1, with its nut-engaging face 6^c in a plane parallel to the face 4^a, and the said jaw 6 also includes a rear nut-engaging portion 6^d, whose nut-engaging face 6^e is in a plane below that of the face 6^c and parallel with the face 5^a, with which it coöperates. The face 6^e also has a transverse V-shaped notch 6^f, disposed opposite to and coöperating with the notch 5^d, so that when the wrench is in the position shown in Fig. 3 three different sizes of nuts may be operated upon with the same adjustment of the jaws—viz., one which will be received by the front nut-engaging portion, one receivable by the straight faces of the rear nut-engaging portion, and one receivable by the notches of the rear nut-receiving portion. (See dotted lines, Fig. 3.) The sliding jaw 6 also includes a downwardly-projecting brace portion 7, merging with an integrally-formed yoke 8 and terminating in a rack-engaging tooth 7^a, which engages with the rack 10 on the front face of the shank 2, which yoke 8 is rectangular in cross-section and provided with a rectangular aperture to permit its being slid onto the shank 2.

10^a designates a supplemental rack portion on one of the side faces of the shank 2, with which engages the rack-tooth 8^a of the yoke 8, and the said tooth 8^a is arranged in a plane

above that containing the tooth 7^a. The other side face x of the shank is smooth, as is also the rear face y , and the yoke-aperture is of greater cross-section than the shank 2 to permit of its being disengaged from the rack-teeth.

8^b designates a countersunk portion in the rear of the yoke member 8, in which the end 9^a of the flat spring member 9 is adapted to seat. The spring 9 engages the rear smooth face y of the shank 2 and has its other end 9^b arranged in a similarly-formed seat 9^c in the head of the jaw 6. 8^c designates a countersunk portion in the side of the yoke 8 to receive a second flat spring 11, which engages the side face x of the shank 2 and has its other end 11^b seated in a similarly-countersunk portion 11^c in the head of the jaw 6. The springs 9 and 11 serve to hold the teeth 7^a and 8^a in engagement with their respective rack portions 10 10^a.

At the corner where the smooth side and rear faces of the shank 2 meet the yoke 8 is formed with a milled finger-engaging edge 8^x, whereby when pressure is exerted thereupon in a diagonal direction with respect to the yoke the teeth 7^a 8^a will be disengaged from their respective racks to permit for freely moving the sliding jaw to or from the fixed jaw.

By constructing the jaws with the rear faces 5^a 6^c in different planes than those of the faces 4^a 6^c when the jaws 1 and 6 are brought together a space will be left between the faces 5^a 6^c to receive a hammer member 12, having a head 12^a, and the shank 12^b, provided with V-shaped ribs to enter the V-shaped notches 5^b 6^c and be held thereby, as shown in Fig. 7.

From the foregoing it will be seen that by providing a wrench, as shown and described, with a plurality of rack-faces and a plurality of nut engaging or receiving portions a more positive hold between the jaw and the shank is provided as well as permitting several sizes of nuts to be operated upon with a single adjustment of the jaws. Again, by constructing my improved wrench as above described the same can be easily and cheaply manufactured and may be used by attaching the hammer portion as a hammer or as a wrench with the utmost ease and security.

While the wrench may be used as a hammer when the jaws are closed without the hammer portion, yet to prevent upsetting or mashing the wrench portion of the jaws I prefer to use the hammer attachment.

By reason of providing a shaft having two rack-surfaces, arranged as shown, a more positive and firm grip or locking action between the sliding jaw and the shank is obtained, and the two springs 9 and 11 are so cooperatively connected with the jaw that the one 9 holds the toothed end 7^a of the slotted member 8 in engagement with the shank-rack 10, while the other spring 11 serves

to hold the tooth 8^a in engagement with the rack-teeth 10^a, such relation of parts serving to make the adjustment of the sliding jaw secure and to render the said sliding jaw of great strength, as well as serving to overcome danger of the said jaw slipping, as is frequently the case in wrenches of this kind having but a single rack-surface.

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

1. A wrench of the character described, comprising the following elements in combination; a shank having one side and one edge provided with alining rack-teeth, a fixed jaw integral with the shank, a sliding jaw mounted on the shank and having a limited rocking movement thereon endwise and sidewise, said jaw having a slotted brace or yoke provided at one end with a tooth for coacting with the rack on the edge of the shank and also provided with a tooth at one side and in a plane above the edge tooth for engaging the rack-teeth on the side of the shank, a pair of springs mounted on the sliding jaw for holding the said jaw in a locked engagement with the two rack-faces of the shank, all being arranged substantially as shown and described.

2. A wrench comprising a fixedly-held shank having a pair of smooth faces and a pair of rack-faces diametrically opposite to the said smooth faces and disposed at right angles to each other, a fixed jaw integrally formed with said shank and having a front and a rear nut-engaging face, said rear nut-engaging face having a V-shaped notch, a sliding jaw including a front and a rear nut-engaging face, said rear nut-engaging face of the sliding jaw having a V-shaped notch, said sliding jaw adapted to slide on and be held by said fixedly-held shank, a brace integrally formed with said sliding jaw and extending parallel and alongside of said fixed shank, said brace terminating in a rack-engaging tooth for cooperating with one of the rack portions of the said fixed shank, a yoke integrally formed with said brace and surrounding said fixed shank, said yoke having a rack-engaging tooth held in a plane above the brace-tooth for engaging the other rack portion of the fixed shank, said yoke having a pair of sockets at right angles to each other, and flat springs each having one of their ends arranged in one of said yoke-sockets, said sliding jaw having corresponding sockets to receive the other ends of the springs, and said springs being respectively adapted to engage the smooth faces of the fixed shank and said sliding jaw, said yoke, said brace portion and said springs being adapted to slide upon said fixed shank in unison for the purposes specified.

3. A wrench comprising a fixedly-held shank having a pair of smooth faces and a pair of rack-faces diametrically opposite to the said smooth faces and disposed at right angles to

each other, a fixed jaw integrally formed with said shank and having a front and a rear nut-engaging face, said rear nut-engaging face having a V-shaped notch, a sliding jaw including
 5 a front and a rear nut-engaging face, said rear nut-engaging face of the sliding jaw, having a V-shaped notch, said sliding jaw adapted to slide on and be held by said fixedly-held shank, a brace integrally formed with said sliding
 10 jaw and extending parallel with and alongside of said fixed shank, said brace terminating in a rack-engaging tooth for cooperating with one of the rack portions of the fixed shank, a yoke integrally formed with said brace and
 15 surrounding said fixed shank, said yoke having a rack-engaging tooth held in a plane above the first-mentioned rack-engaging tooth for engaging the other rack portion of the fixed shank, said yoke having a pair of sockets at
 20 right angles to each other, and flat springs each having one of their ends arranged in one of said yoke-sockets, said sliding jaw having correspondingly sockets to receive the other ends of the springs, said springs being respectively
 25 adapted to engage the smooth faces of the fixed shank, and said sliding jaw, said yoke, said brace portion and said springs being adapted to slide upon said fixed shank in unison, said rear nut-engaging portions of the fixed and
 30 sliding jaws being so arranged that their nut-engaging faces will be separated when the front nut-engaging faces of the jaws are adjacent each other for the purposes specified.

4. A wrench comprising a fixedly-held shank
 35 2 having a pair of smooth faces $x y$, and a pair of rack-faces 10^a and 10 diametrically opposite to the smooth faces $x y$ and disposed at right angles to each other, a fixed jaw 1 integrally formed with said shank and having a
 40 front nut-engaging face 4^a and a rear nut-engaging face 5^a arranged in a plane above the face 4^a , said rear nut-engaging face having a transverse V-shaped groove 5^d a sliding jaw 6 having a front nut-engaging face 6^c to coop-
 45 erate with the corresponding face 4^a of the

jaw 1, and a rear nut-engaging face 6^c arranged in a plane parallel to and below the plane of the face 6^c and provided with a transverse V-shaped groove 6^e cooperating with
 50 the corresponding groove 5^d of the jaw 1, said sliding jaw adapted to slide on and be held by said fixedly-held shank, a brace 7 integrally formed with said sliding jaw and extending parallel with and alongside the said fixed shank,
 55 said brace terminating in an integrally-formed rack-engaging tooth 7^a at its lower end for cooperating with the rack portion 10 of the fixed shank 2, a yoke 8 integrally formed with said brace above said tooth 7^a and surrounding said
 60 fixed shank, said yoke having a rack-engaging tooth 8^a arranged in a plane above the rack-engaging tooth 7^a and at right angles thereto for engaging and cooperating with the other rack portion 10^a of the shank 2, said yoke hav-
 65 ing a pair of sockets 8^b 8^c arranged at right angles to each other, flat springs 9 and 11 each having one of their ends arranged in one of said yoke-sockets 8^b 8^c respectively, said slid-
 70 ing jaw 6 having correspondingly-arranged sockets 9^c and 11^c to receive the other ends of the springs 9 and 11, said springs being respectively adapted to engage the smooth faces
 75 y and x of the shank 2, said sliding jaws, said yoke 8, said brace portion 7, said teeth 8^a 7^a all being integrally formed and adapted to slide in unison upon said fixed shank, said
 80 rear nut-engaging portions of the fixed and sliding jaws being so arranged that their nut-engaging faces will be separated when the front nut-receiving faces of the jaws come in contact with one another to permit the inser-
 tion of a hammer member between the said rear jaws while the front jaws abut one another substantially as shown and for the purposes described.

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Witnesses:

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 W. H. JOHNSON.