(No Model.)

C. A. McINTOSH.

WRENCH.

No. 455,238. Patented June 30, 1891.

Fig: 1.

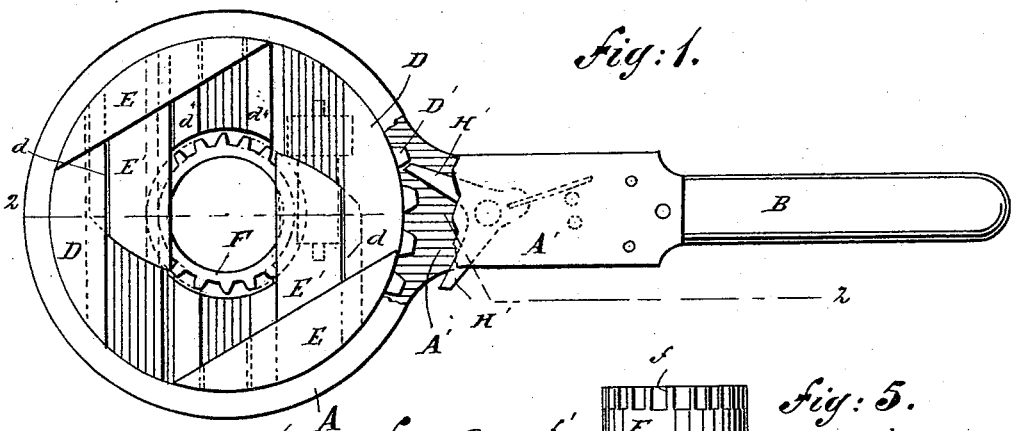


Fig: 5.

Fig: 2.

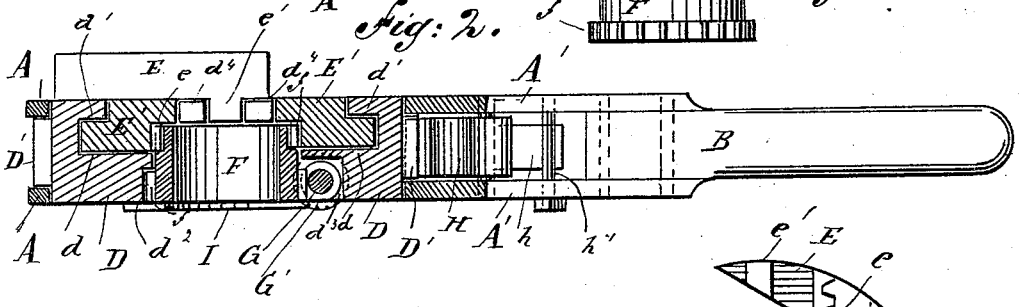


Fig: 6.

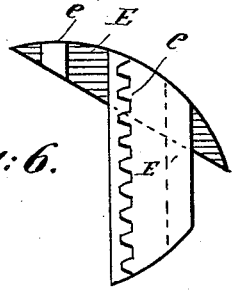
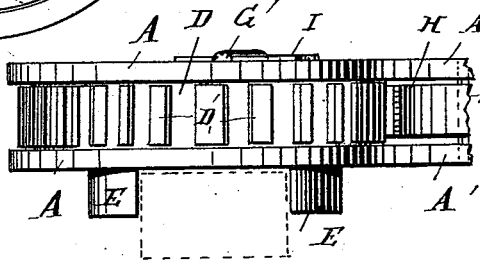


Fig: 3.

Fig: 7.

Fig: 4.



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WRENCH.

SPECIFICATION forming part of Letters Patent No. 455,238, dated June 30, 1891.

Application filed November 18, 1890. Serial No. 371,817. (No model.)

To all whom it may concern:

Be it known that I, CAMPBELL A. McINTOSH, of Vancouver, British Columbia, in the Dominion of Canada, have invented a new and Improved Wrench, of which the following is a full, clear, and exact description.

My invention relates to improvements in wrenches; and the object of my invention is to produce a wrench of simple construction in which the parts are strong, easily adjusted, and little likely to get out of repair, and which also has a large range, so that it may be easily adjusted to various sizes of nuts.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the wrench with a portion broken away to show the connection between the double pawl and the teeth of the body. Fig. 2 is a longitudinal section on the line 2 2 of Fig. 1. Fig. 3 is an inverted plan of the wrench. Fig. 4 is a broken side elevation showing the jaws closed upon a nut, the nut being indicated by dotted lines. Fig. 5 is a detail side elevation of the central gear for operating the parts. Fig. 6 is an inverted plan view of one of the jaws and the sliding block to which it is fixed, and Fig. 7 is a detail view of the plate for holding the center gear in place.

The wrench comprises a hollow head portion which is fixed to a suitable handle, and a body portion mounted in the head and provided with mechanism for operating the jaws. The head is formed of two similar circular bands A, which are placed opposite each other, so as to inclose the body, as described below, the bands being formed on one side into shanks A′, which are firmly fixed to opposite sides of a handle B, by means of which the wrench is turned.

The body D of the wrench is circular in its general contour and is mounted in the head, both faces of the body being flush with the faces of the bands A and the body being held in place in the bands by the teeth D′, which project from the circumference of the body between the two bands A, and which enable the body to be turned by engaging the pawl, as described below. Extending across one face of the body are the two parallel recesses d to receive the sliding blocks of the jaws, the recesses being cut under on the opposite sides, as shown at d', so that the jaw-blocks will be locked in position in the recesses, and on the opposite face of the body is a circular recess d^2, made in two diameters to receive the center gear and afford space for the teeth thereon and a recess d^3, in which the worm for operating the gear is mounted.

The jaws E protrude from one face of the wrench, the jaws having their back portions convex to correspond with the shape of the bands A, and having their inner faces straight, as shown, although they may be shaped to fit any variety of nut, and the jaws are made integral with the blocks E′, which are arranged at an angle thereto and which are shaped to slide in the recesses d of the body portion D, the blocks being cut away on their inner lower edges and provided with teeth e, which engage the teeth on the center gear, as described below. The jaws E are also provided with depending tongues e', which move between the parallel bars d^4 of the wrench-body, and which thus serve to guide the jaws and also to strengthen them. The bars d^4 are cut away in the center, as shown in Fig. 1, to permit the passage of a bolt through the wrench.

In the circular recess d^2 in the center portion of the body D of the wrench is held a gear F, which has teeth f on its inner end engaging with the teeth e on the jaw-blocks E′, and on its outer larger end are teeth f', which engage a worm G, which is mounted at right angles to the gear in the recess d^3 of the body D, the worm having at one end a thumb-wheel G′, which is milled in the ordinary way and which projects slightly from the lower face of the wrench, as shown best in Fig. 4, so that by turning the thumb-wheel and worm the gear F will be turned, and this will actuate the jaw-blocks E′ and force the jaws together or apart, as the case may be. The gear F is prevented from dropping out of the wrench-

head by a curved plate I, which is fixed to the body of the wrench so as to overlap the gear; but other convenient means may be employed.

Pivoted in the shank portions of the wrench-head between the two parts A′ is the pawl H, having two arms H′, which extend diagonally forward and diverge, as best shown in Fig. 1, so that either arm may be brought into engagement with the teeth D′ of the body D, according to the way that the wrench is to be turned, and projecting from the rear portion of the body is a spring-plate *h*, which engages one of the pins *h*′ in the rear portion of the wrench-shank, and by removing one of these pins and adjusting the plate in relation to the pins the pawl may be held with either arm in engagement with the wrench-body, as desired, or be disengaged therefrom.

When the wrench is to be used, the pawl H is adjusted according to the way that the wrench is to be turned, the jaws E are closed upon a nut by means of the worm G and the gear F, as described, and the wrench may then be used as an ordinary wrench, the body turning freely in one direction and being held in a rigid position by the pawl when it is turned in the opposite direction, and from the shape of the wrench it will be seen that it may be very conveniently used in places where it would be impossible to use any of the common forms of wrenches.

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

1. A wrench comprising a hollow head, a body portion mounted therein and provided on its circumference with projecting teeth, a pawl pivoted in the wrench-handle so as to engage the teeth, opposite jaws mounted in the wrench-body so as to slide therein, and means for adjusting the jaws, substantially as described.

2. A wrench comprising a hollow head having a suitable handle connected therewith, a circular body mounted in the head and provided upon its edge with projecting teeth, a pawl pivoted in the handle and adapted to engage the teeth of the body, opposite jaws mounted in the body of the wrench so as to slide therein, and a worm-and-gear mechanism for adjusting the jaws, substantially as described.

3. A wrench comprising a hollow head having a suitable handle, a circular body mounted in the head and provided upon its edge with projecting teeth, movable jaws mounted in the body, as shown, means for adjusting the jaws, and a double pawl pivoted in the handle and provided with diverging arms to engage the teeth of the body, substantially as described.

4. In a wrench, the combination, with a revoluble body having projecting teeth and carrying suitable jaws, of a pawl pivoted in the wrench-handle and provided with diverging arms each adapted to engage the teeth of the body, substantially as described.

5. In a wrench, the combination, with a hollow head having a suitable handle and the pins projecting through the hollow portion of the handle, of the revoluble body mounted in the head, said body carrying suitable jaws and having projecting teeth upon its edge, a pawl pivoted in the handle and provided with diverging arms to engage the teeth of the wrench-body, and a rearwardly-extending spring-plate to engage the pins in the handle, substantially as described.

6. In a wrench, the combination, with the revoluble body having parallel recesses therein, of jaws fixed upon blocks adapted to slide in the recesses, said blocks having projecting teeth upon their inner edges, as shown, and a worm-and-gear mechanism for moving the blocks and jaws, substantially as described.

7. In a wrench, the combination, with a revoluble body having parallel recesses therein, of the jaws having blocks connected therewith and arranged to slide in the recesses, said blocks having teeth upon their inner edges, a gear mounted in the center of the body and provided with teeth to engage the teeth of the jaw-blocks, and a worm mounted in a recess of the body and adapted to engage the teeth of the center gear, substantially as described.

8. In a wrench, the combination, with the revoluble body having parallel recesses therein, of jaws fixed to blocks adapted to slide in the recesses, said blocks having teeth upon their inner edges, as shown, a center gear mounted centrally in the wrench-body and provided upon its inner end with teeth to engage the teeth of the jaw-blocks and upon its outer end with teeth, a worm mounted in the recess and adapted to engage the outer teeth of the center gear, and a thumb-wheel fixed to the worm-shaft so as to project from the face of the body, substantially as described.

9. In a wrench, the combination, with the revoluble body having parallel recesses and parallel bars between the recesses, of jaws mounted in the body and provided with movable jaw-blocks to slide in the recesses and with depending tongues to fit between the parallel bars, a gear centrally mounted in the body and provided on its inner end with teeth to engage with teeth on the jaw-blocks and on its outer end with similar teeth, and a worm mounted in a recess of the body and adapted to engage the gear, substantially as described.

10. A wrench comprising a hollow head having a suitable handle attached thereto, a revoluble body mounted in the head and provided upon its edge with teeth, said body having a central opening therein and having parallel recesses in one face, a double pawl pivoted in the handle so as to engage the

teeth of the body, jaws fixed to suitable blocks adapted to slide in the recesses of the body, said blocks having teeth upon their inner edges, as shown, a center gear mounted in the body and provided with two sets of teeth, one of which engage the teeth of the jaw-blocks, and a worm mounted in a recess of the body and adapted to engage the other set of gear-teeth, said worm having at one end a suitable thumb-wheel, substantially as described.

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Witnesses:
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