

WRENCH.

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Patented May 9, 1911.

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# UNITED STATES PATENT OFFICE.

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## WRENCH.

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Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, FREDERICK HACHMANN, citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Wrenches, Particularly as Applied to the Type of Wrench Known as the Stillson Pipe-Wrench, of which the following is a full and comprehensive specification.

This invention relates to wrenches especially adapted for use in connection with pipes, and the principal object of the same is to provide novel manually operable means for adjusting the movable jaw with which novel automatically acting means coöperates for gripping said jaw to the article to be turned.

In carrying out the objects of the invention generally stated above it will be understood, of course, that the essential features thereof are necessarily susceptible of changes in details and structural arrangements, one preferred and practical embodiment of which is shown in the accompanying drawings, wherein:—

Figure 1 is a view in side elevation of the improved wrench. Fig. 2 is a view in front elevation thereof. Fig. 3 is a transverse sectional view taken on the line 3—3, Fig. 1. Fig. 4 is a top plan view of the means by which the movable jaw is manually adjusted. Fig. 5 is a vertical sectional view taken on the line 5—5, Fig. 4.

Referring to the accompanying drawings by numerals, 1 designates the handle of the improved wrench which is provided with a fixed jaw 2 at one end. A housing 3 is pivotally connected to jaw 2 and is provided with a reduced angularly arranged forward extension 4 which loosely embraces the handle 1. A spring 5 fastened to the forward portion of jaw 2 engages the free end of said extension 4 and exerts a pressure tending to prevent the housing 3 being rocked in one direction. Another spring 6 carried by handle 1 engages housing 3 and opposes rocking movement of said housing in an opposite direction. Housing 3 projects laterally from the rear of jaw 2 and has the shank 7 of an outer jaw 8 slidable there-through. Said shank is provided with threads 9 on the front and rear longitudinal edges. Shank 7 is adjusted outwardly relatively to the fixed jaw 2 by means of the nuts 10 and 11 which are provided with the

oppositely disposed threads that engage the threads of the said shank. Nut 10 is provided with a roughened outer surface, and has a reduced upper extension 12 which extends into the recessed lower portion 13 of nut 11. The wall of said recess 13 is provided with slots 14 which extends approximately one-quarter of the circumference of said nut, and the extension 12 of nut 10 that extends into said recess is provided with lugs 14<sup>a</sup> which enter said slots to limit the rotation of nut 10 relative to nut 11 to approximately one-quarter of a revolution. Nut 11 is provided with two external notches 15. The nuts 10 and 11 project through the usual side openings 16 of the housing 3 and are prevented from having longitudinal movement in said housing by contact with the upper and lower edges of said openings, in a manner well understood. A locking pawl 17 is carried by housing 3 adjacent one of the side openings 16 and engages with the notches 15 of nut 11 to prevent reverse rotation of said nut.

The shank 7 projects beyond the base of housing 3 and enters a sleeve 18 that is provided with angularly projecting embracing plates 19 that extend on opposite sides of handle 1. Said plates are provided with slots 20 which are engaged by the headed lugs 21 that project from handle 1 to permit sleeve 18 to have a limited lateral movement relative to said handle. A screw cap 22 is seated in the base of sleeve 18, and a spring 23 connects said cap with a lug 24 projecting from the lower end of shank 7. The spring 23 is contractible, and is constantly exerting a pressure tending to draw shank 7 within sleeve 18.

The nuts 10 and 11 as aforesaid, are threaded complementary to the threads of shank 7, and when adjusting the said shank, nut 10 is rotated and while its threads are engaged with the threads of the shank, the shank will be adjusted. As the threads of the nut 10 leaves the threads of the shank, the lugs 14<sup>a</sup> reach the ends of the slots 14 of the nut 11, and cause said nut 11 to rotate with nut 10 and engage the threads of shank 7 thereby holding shank 7 against the inward pull of spring 23. During this adjusting and holding operation of the nuts 10 and 11, the pawl 17 engages the notches 15 of nut 11 and prevents reverse rotation thereof. This adjusting and holding operation is



continued until the jaws are in proper position about the article to be turned, whereupon the nuts are rotated to positions where they are disengaged from the threads of the shank, and the spring 23 automatically draws shank 7 into sleeve 18 and thereby tightly clamps the outer jaw to the article to be turned. When said jaw has been drawn to a clamping position, a part rotation of nuts 10 and 11, will engage the threads of shank 7 and thereby hold said shank immovable.

Housing 3 being pivotally connected to fixed jaw 2, and sleeve 18 being connected to handle 1 so that it can be moved laterally relative to said handle, it will be seen that the outer jaw 8 can be rocked relative to jaw 2 so that the operation of turning a pipe or other tubular article is facilitated.

In the foregoing description particular stress has been laid on the applicability of the wrench for use in connection with pipes and other tubular articles, but it is to be understood that the wrench can also be used in connection with nuts and other flat sided articles.

What I claim as my invention is:—

1. A wrench comprising a handle provided with a jaw, a housing pivotally connected to said jaw, a sleeve carried by said handle and capable of limited lateral movement relative thereto, an outer jaw having a shank in said housing and sleeve, means for manually adjusting said shank in one direction, and means for automatically adjusting said shank in an opposite direction.

2. A wrench comprising a handle provided with a jaw, a housing pivotally connected to said jaw, a sleeve carried by said handle and capable of a lateral movement relative to said handle, a shank slidable in said sleeve and housing, and provided with a jaw, means in said housing for manually adjusting said shank in one direction, and resilient means in said sleeve for automati-

cally adjusting said shank in an opposite direction.

3. A wrench comprising a handle provided with a jaw, a housing pivotally connected to said jaw, a sleeve carried by said handle and capable of limited lateral movement relative to said handle, and an outer jaw having a shank adjustable in said sleeve and housing.

4. A wrench comprising a handle provided with a jaw, a housing carried by said jaw, a laterally movable sleeve carried by said handle, an outer jaw having a shank slidable in said housing and sleeve, a nut for adjusting said shank in one direction, a second nut cooperating with said first-mentioned nut to adjust said shank, and means within said sleeve for automatically adjusting said shank in an opposite direction.

5. A wrench comprising a handle provided with a jaw, a housing carried by said jaw, a sleeve carried by said handle, a shank slidable in said sleeve and housing, and provided with a jaw, said shank provided with oppositely disposed threads, an adjusting nut in said housing and provided with oppositely disposed threads for engaging the threads of said shank, a holding nut also in said housing and provided with oppositely disposed threads for engaging the threads of said shank, means connecting said nuts and permitting a limited relative rotation thereof, means carried by said housing for preventing reverse rotation of the holding nut, and means connecting said shank to said sleeve for automatically adjusting said shank in a direction opposite to the direction of adjustment of the adjusting nut.

In witness whereof, I have hereunto set my hand this 20th day of September 1909.

FREDERICK HACHMANN.

Witnesses:

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