No. 749,134. PATENTED JAN. 5, 1904.

N. C. HYMAN.

WRENCH.

APPLICATION FILED NOV. 12, 1902.

NO MODEL.

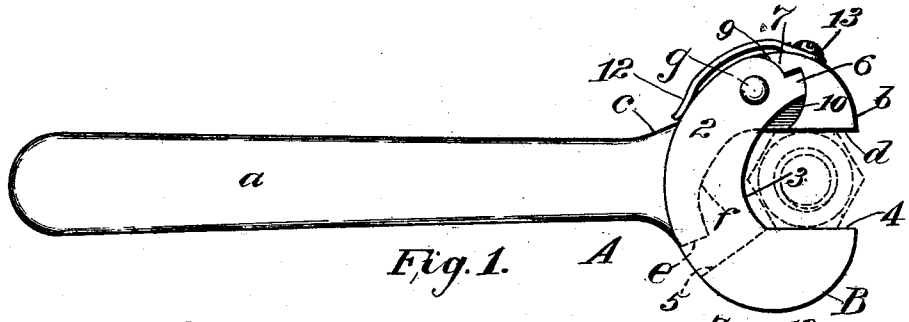


Fig. 1.

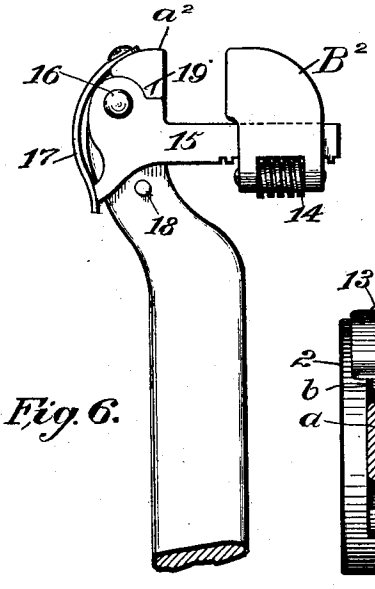


Fig. 6.

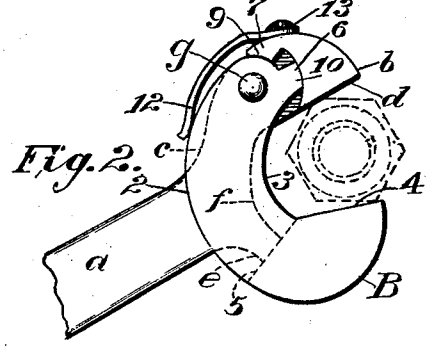


Fig. 2.

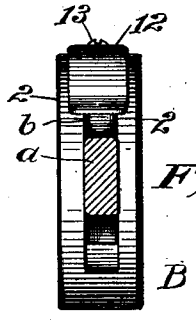


Fig. 5.

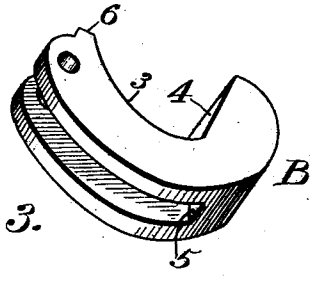


Fig. 3.

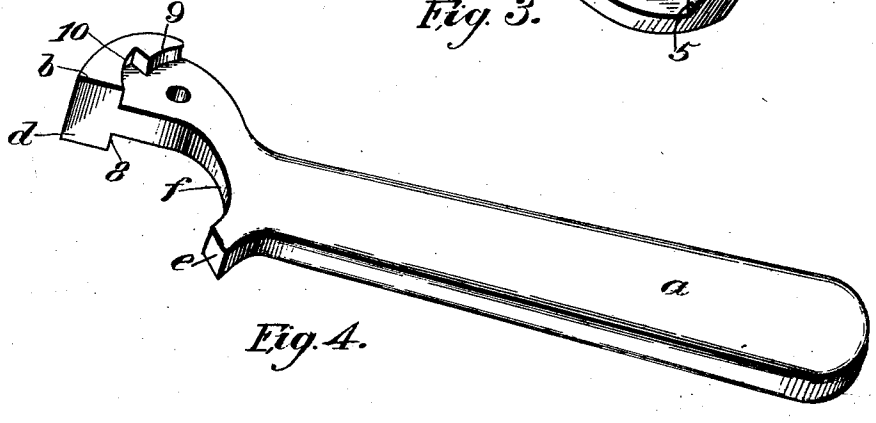


Fig. 4.

Witnesses
Ralph Lancaster.
E. Everett Ellis

Inventor:
Noah Charles Hyman
By his Attorney,
F. A. Richards.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 749,134. Patented January 5, 1904.

UNITED STATES PATENT OFFICE.

NOAH CHARLES HYMAN, OF NEW YORK, N. Y.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 749,134, dated January 5, 1904.

Application filed November 12, 1902. Serial No. 130,985. (No model.)

To all whom it may concern:

Be it known that I, NOAH CHARLES HYMAN, a subject of the Emperor of Germany, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to wrenches; and it consists, substantially, in the improvements hereinafter particularly described.

Though applicable to other purposes in the arts, my improvements have reference more especially to "nut-wrenches," one of the principal objects of my invention being to provide a wrench of this type which is thoroughly reliable and effective in use, and one which is simple in construction besides being cheap to manufacture and capable of easy manipulation or handling.

A further object is to provide a wrench of the character named which is composed of few parts, capable of withstanding great strain, and one also which is practically automatic or self-acting in its applications.

The above and additional objects I attain by means substantially such as are illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a wrench embodying my improvements and showing the relative positions of the parts in the application of the wrench to a nut for the purpose of turning the same. Fig. 2 is a similar view with a part of the handle of the wrench broken off and indicating the operation or change of position which the movable or swinging jaw is caused to take on moving the tool reversely for the purpose of effecting a new hold upon a nut or other device to be turned. Fig. 3 is a view in perspective of the movable jaw to more clearly indicate the construction thereof. Fig. 4 is a view in perspective of the handle and stationary jaw and clearly indicating the construction of said parts. Fig. 5 is a part sectional view showing the stationary and movable jaws from the rear of the pivotal point of the latter; and Fig. 6 is a side view of a modification of my invention, the handle of the tool or wrench being broken off and in section.

Before proceeding with a more detailed description it may be stated that in carrying my invention into effect I provide a tool or wrench having a suitable handle which is formed at one end with a rigid or stationary jaw of special construction, and pivoted upon said rigid or stationary jaw is a movable or swinging jaw, also of special construction, suitable means being employed for limiting the movement of said latter jaw in either direction. According to the particular purpose for which the tool or wrench is to be used the operative or working faces of the jaws thereof may be either smooth or roughened, and the only manipulation required of the said tool or wrench in effecting the turning of a nut or other device therewith is such as would ordinarily be resorted to for that purpose. The movable or swinging jaw is normally maintained in operative position relatively to the rigid or stationary jaw by means of a yieldable device which is placed under increased pressure on each reverse movement imparted to the tool or wrench in use, since at this time the two jaws are causd to more widely separate, due to the riding of the operative or working faces thereof upon the corners or angular portions of the nut or other device operated upon, all as will more fully hereinafter appear. On completion of each of such reverse movements of the tool or wrench the action of said yieldable pressure device is such as to restore the operative or working faces of the jaws to substantial parallelism and in contact with opposite flat faces of the nut or other device operated upon, thus enabling said nut or other device to be turned by manipulation in the ordinary way. I employ suitable constructions whereby the action or play of the movable or swinging jaw is limited in either direction, and it may be added that my improved wrench is both light and strong, besides being thoroughly effective for its purposes.

Specific reference being had to the accompany drawings by the designating characters marked thereon, A represents my improved tool or wrench as a whole, the same comprising, preferably, a straight handle *a*, which is formed at one end with a rigid or stationary jaw *b*, slightly offset at *c* to bring the operative or working face *d* of said jaw substantially coincident or in line with one of the longitudinal edges of said handle, this same

end of the handle being formed at the opposite edge thereof with a projection or shoulder *e*, the outer face of which is inclined at a suitable angle, as shown. This end of the handle is also curved or recessed at *f* on a line intersecting the said operative or working face of the rigid or stationary jaw and the said outer face of the said projection or shoulder, the purpose of which construction will be more fully explained hereinafter. Pivoted on opposite sides of the rigid or stationary jaw at *g* are the parallel members 2 2 of a movable or swinging jaw B, which is preferably curved at the inner edge 3, the said jaw having an operative or working face 4 and being constructed with an inner flat face 5, which constitutes an abutment for the said projection or shoulder *e* to operate against whenever the handle is turned reversely for the purpose of causing the two jaws to take a new hold upon the nut or other device operated upon. By this construction also the outward play or action of the movable or swinging jaw is limited, as is apparent. I also provide suitable means for limiting the inward play or action of said movable or swinging jaw, such means consisting in the present instance of a projection or shoulder 6, formed on this jaw at near the pivotal point of each of the members 2 2 thereof and engaging with a similar projection or shoulder 7, formed or provided on each side of the rigid or stationary jaw *b*. The latter jaw is of increased thickness near the end at 8, and to derive the construction just above described the side faces thereof are cut away at 9 and 10 on arcs of concentric circles the center of which is an imaginary line passing through the axis of motion of the movable or swinging jaw, it being shown that the ends of the members 2 2 of this jaw are each curved in conformity with the construction 9 and that the end face of each of the said projections or shoulders 6 is permitted to ride the edge of the corresponding construction 10 in the movements imparted to the wrench in the use of the same. In this way great strength of structure is derived, and the movable or swinging jaw is permitted to describe the necessary sweeps in effecting the results desired, attention being called to the fact also that the outer faces of the said members 2 2 of the movable or swinging jaw are substantially flush with the outer faces of the said wider portion of the rigid or stationary jaw. In virtue of the curved or recessed formation of the handle at *f* it will be seen that even in the most widely-separated position of the two jaws there will be no protrusion of any part of said handle into the space between the jaws, thus enabling the nut or other device operated upon to be grasped or taken into the full extent thereof by the operative or working faces of the jaws.

In connection with the two jaws of my improved wrench I employ a yieldable pressure device of any preferred construction, consisting in the present instance of a curved spring 12, secured at 13, by means of a screw or otherwise, to the outer edge of the rigid or stationary jaw, said spring being of proper length and width to bear for a suitable distance from its free end upon the inner edges of the members 2 2 of the movable or swinging jaw at points intermediate the pivotal support of the latter and the adjacent longitudinal edge of the handle of the wrench. This yieldable pressure device operates to normally maintain the movable or swinging jaw in a position to bring the operative or working faces of the two jaws substantially parallel with each other, thus enabling the ready application of said jaws to be made to a nut or other device without previous manipulation of either one or the other of them, as is apparent.

In Fig. 1 the parts of the wrench are shown in the position they occupy when a nut or other device is properly grasped by the jaws to be turned by a right hand or forward movement imparted to the handle, while in Fig. 2 the parts are shown in the positions they are caused to assume on moving the handle reversely, so as to effect a new grasp of the nut or other device by the jaws, it being seen that in this instance opposite corners or angular portions of the said nut or other device constitute fulcra upon which the operative or working faces of the jaws slide as the latter are moved more widely apart. By imparting repeated back and forth movements to the said handle it is apparent that the desired operations may be quickly performed.

It will be seen that I have shown an open-end nut-wrench which may be placed upon a nut merely by an endwise movement of the wrench as distinguished from monkey-wrenches and the like in which the nut must first be found by the wrench and the latter then given a sidewise movement to bring it into position upon the nut.

In the modification at Fig. 6 the principle of operation of the parts is substantially the same, the movable jaw B^2 however, being adjustable by means of a nut 14 on a swinging arm 15, which is pivoted to the stationary jaw a^2 at 16, said arm having a projecting member on each side of said jaw a^2, which is acted upon by the spring 17 in like manner as already described with reference to the spring 12. In this construction also the movement of the swinging arm 15 is limited in one direction by a stop 18 on either side of the jaw a^2 and in the other direction by a shoulder 19, also on either side of said jaw a^2. The construction first described, however, is the one preferred in practice.

It will be understood by reference to Fig. 1 that the curved portion of my wrench (marked 3 at said figure) serves as a socket, enabling the user to keep the wrench constantly in position upon the nut simply by pressing the handle endwise so as to hold the

socket against the nut. My wrench therefore comprises a handle and a socket at the end thereof, said socket lying between two jaws, one of which is fixed and the other of which is movable, and is so mounted as to cooperate with said fixed jaw for driving the nut when said wrench is swung in one direction and so as to slip freely around the nut when the wrench is swung back, whereby by vibrating the handle the user may turn a nut home and by pressing endwise upon the handle may keep the socket against the nut, so that the wrench remains in position upon the nut as said jaws slip around the same upon each back stroke.

Having thus described my invention, I claim—

1. A wrench comprising a handle having at one end thereof a stationary jaw, a swinging jaw pivoted to opposite sides of the stationary jaw, and means secured to said stationary jaw and operating upon said swinging jaw to normally maintain the working faces of the two jaws substantially parallel with each other, said handle having means limiting the outward movement of the swinging jaw, and said stationary jaw being recessed on either side thereof to form stops for limiting the inward movement of the swinging jaw.

2. A wrench comprising a handle having at one end thereof a stationary jaw, a swinging jaw pivoted to opposite sides of the stationary jaw, and a yieldable pressure device secured to said stationary jaw and operating upon said swinging jaw to normally maintain the working faces of the two jaws substantially parallel with each other, said handle having means for limiting the outward movement of the swinging jaw, and said stationary jaw being recessed on either side thereof to form stops for limiting the inward movement of said swinging jaw.

3. A wrench comprising a handle having at one end a stationary jaw the opposite sides of which are cut away on arcs of concentric circles, thereby forming stops, a curved swinging jaw having duplicate members pivoted to said opposite sides of the stationary jaw, and having shoulders for engaging said stops, and a yieldable pressure device for normally maintaining the working faces of the jaws substantially parallel with each other.

4. A wrench comprising a handle having at one end a stationary jaw the opposite sides of which are cut away on arcs of concentric circles, thereby forming stops, a curved swinging jaw having duplicate members pivoted to said opposite sides of the stationary jaw and curved on their inner edges and having shoulders for engaging said stops, and a yieldable pressure device secured to the outer edge of the stationary jaw and bearing against the said inner curved edges of said duplicate members for normally maintaining the working faces of the jaws substantially parallel with each other.

5. As a new article of manufacture, an open-ended nut-wrench comprising a shank portion having at one end an offset portion bearing a jaw thicker than and integral with the shank and provided with a straight nut-engaging face on a plane parallel with the general line of the shank portion, a hook-shaped jaw whose body portion is concaved away from its jaw and lies across the end of the shank and is also divided and bestrides said shank and is pivoted thereto at the offset portion at a point close to the first-mentioned jaw; and a spring tending to close said jaws; said shank extending substantially in the general direction of the nut-opening.

6. A nut-wrench comprising a shank portion having formed thereon a jaw provided with a straight nut-engaging face, and a jaw also having a straight nut-engaging face and having the form of a hook and pivoted to said shank portion at a point near the inner end of the nut-engaging face upon said shank-jaw, said hook having a forked portion at its pivot end, within which portion said shank portion is confined, and a stop, as *e*, upon the shank portion, for limiting the opening movement of said pivoted jaw.

7. As a new article of manufacture, an open-end nut-wrench comprising a shank portion having a fixed jaw provided with a straight nut-engaging face, a jaw also having a straight nut-engaging face and having the form of a hook and pivoted to said shank portion at a point near the inner end of said nut-engaging face upon said fixed jaw, a spring to close said jaws, a stop for preventing the closing of said jaws by said spring beyond a point where said jaws are approximately in parallelism, a stop, as *e*, upon the shank portion, for limiting the opening movement of said pivoted jaw, and a cut-away, as *f*, between the fixed jaw and said stop *e*.

8. As a new article of manufacture, an open-end nut-wrench comprising a shank having a jaw which is provided with a straight nut-engaging face which extends longitudinally of said shank, and a hook-shaped jaw which is pivoted to the shank portion of the wrench; the shank of the hook being concaved to form a socket for the nut, and lying across the shank of the wrench, the shank being also cut away, as at *f*, to clear the nut, and one of said shanks being divided and confining the other thereof, the wrench-shank extending substantially in the direction of the nut-opening so that endwise pressure upon the wrench-shank will hold the wrench upon the nut.

9. A nut-wrench comprising a shank having at one end an offset jaw thicker than and integral with the shank and provided with a straight nut-engaging face, and a hook-shaped jaw whose shank is divided and confines the shank of the wrench and is pivoted thereto at a point close to the first-mentioned jaw; a spring tending to close said jaws; a stop for limiting the closing movement of said pivoted jaw at a point when the nut-engaging faces are in substantial parallelism, and an

abutment, as *e*, upon said shank for limiting the opening movement of the pivoted jaw.

10. A wrench comprising a handle, a socket at the end thereof, and two jaws between which said socket is included, one of said jaws being fixed and the other being movable and so mounted as to coöperate with said fixed jaw when said wrench is swung in one direction, to turn the nut, and also to slip freely around the nut when the wrench is swung back, whereby by merely vibrating the handle the user may turn a nut home, and by pressing endwise upon the handle may keep the socket against the nut, so that the wrench remains in position upon the nut as said jaws slip around the same upon each back stroke.

11. A wrench comprising a handle, a socket at the end thereof, and two jaws between which said socket is included, one of said jaws being fixed and the other being movable and so mounted as to coöperate with said fixed jaw when said wrench is swung in one direction, to turn the nut, and also to slip freely around the nut when the wrench is swung back, and a spring tending to close the movable jaw, whereby by merely vibrating the handle the user may turn a nut home, and by pressing endwise upon the handle may keep the socket against the nut, so that the wrench remains in position upon the nut as said jaws slip around the same upon each back stroke.

12. A wrench comprising a handle, a fixed jaw, and a movable jaw, a socket being formed upon the movable jaw and being directly at the end of the handle, said socket being included between the working faces of the jaws, and the movable jaw being so mounted as to coöperate with said fixed jaw when said wrench is turned in one direction, and to slip freely around the nut when the wrench is turned in the other direction, whereby by vibrating the handle the user may turn a nut home, and by pressing endwise upon the handle may keep the socket against the nut so that the wrench remains in position upon the nut as said jaws slip around the same upon each return stroke.

Signed at Nos. 9 to 15 Murray street, New York, N. Y., this 11th day of November, 1902.

NOAH CHARLES HYMAN

Witnesses:

E. EVERETT ELLIS,

RALPH JULIAN SACHERS.