

No. 707,895.

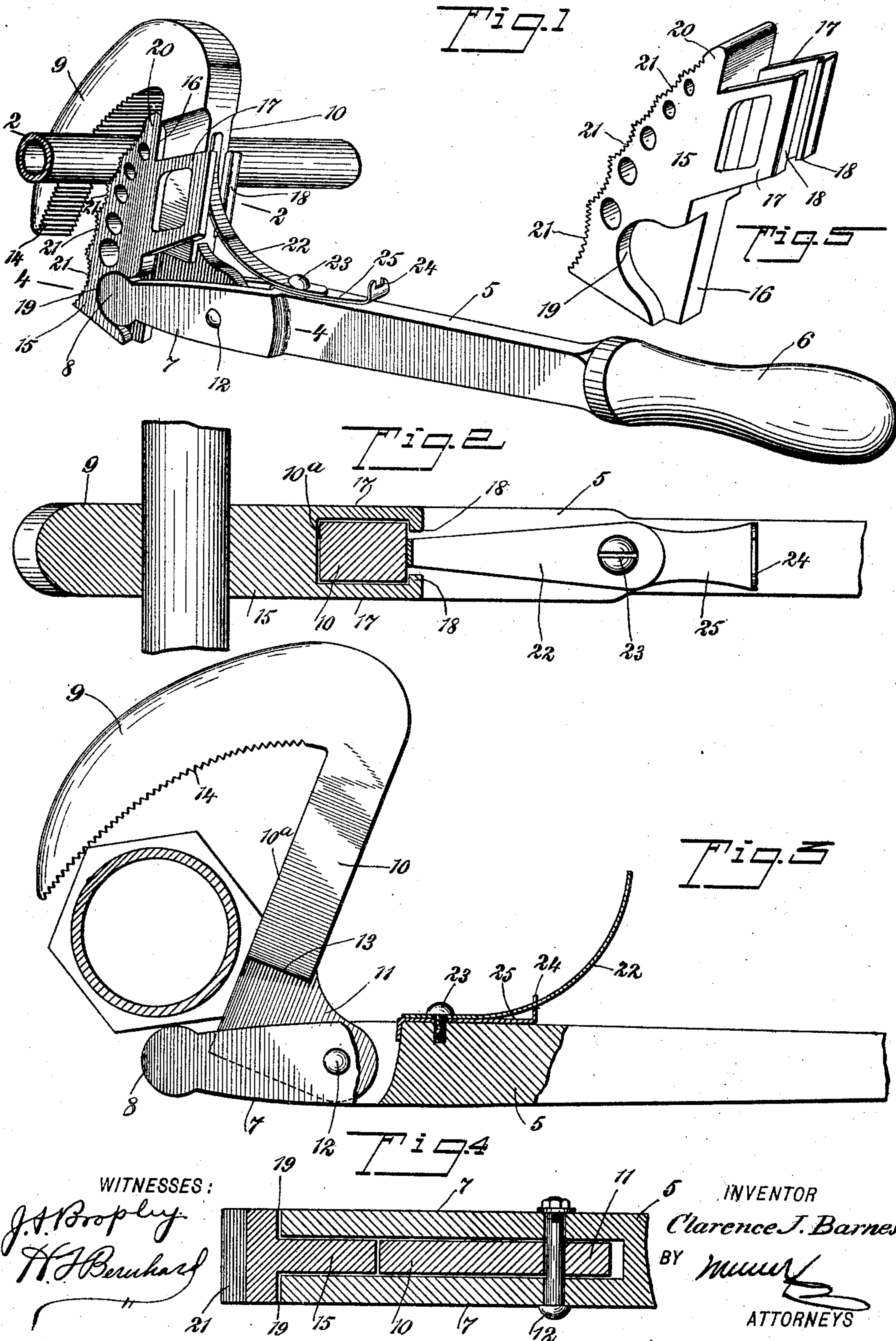
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C. J. BARNES.

WRENCH.

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(No Model.)



WITNESSES:

J. A. Propoy
H. J. Bernhard

INVENTOR

Clarence J. Barnes

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

CLARENCE J. BARNES, OF LIVERPOOL, NEW YORK.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 707,895, dated August 26, 1902.

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To all whom it may concern:

Be it known that I, CLARENCE J. BARNES, a citizen of the United States, and a resident of Liverpool, in the county of Onondaga and State of New York, have invented new and useful Improvements in Wrenches, of which the following is a full, clear, and exact description.

My invention relates to improvements in wrenches which are especially adapted for use on round work—such as pipes, rods, wires, and the like—although capable of use on other objects of various sizes and shapes—as, for example, on pipe unions or couplings on pipes of large diameter and other articles.

The object of my invention is the provision of a simple compact implement adapted to afford a double grip on the work, which will hold itself firmly in engagement with the work and against any tendency to slip thereon, to allow the parts to be easily and quickly released preliminary to taking a fresh hold on the object, to enable the article to firmly engage with round work of different sizes, and to allow of the easy removal and replacement of the slidable jaw, to the end that the wrench may be used alone as a single-jaw device on large work or as a double-jaw wrench.

With these ends in view the invention consists in the novel combination, construction, and arrangement of parts, which will be hereinafter fully described and claimed.

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

Figure 1 is a perspective view of a wrench constructed in accordance with my invention. Fig. 2 is a section on the line 2 2 of Fig. 1. Fig. 3 is an elevation, partly in section, of the wrench on an enlarged scale, showing the slidable jaw detached from the hinged jaw and representing the latter in operative relation to a piece of large angular work, such as a pipe-union. Fig. 4 is a section on the line 4 4 of Fig. 1, and Fig. 5 is a detail perspective view of the slidable jaw detached from the article.

5 designates the shank or bar of the implement, which terminates at one end in the handle 6 and is forked or bifurcated at the other end to provide the parallel arms 7, the same

terminating in the rounded or approximately circular heads 8.

A hinged jaw 9 is made in a single piece with a solid shank 10, and this shank is formed at one end with an offstanding lug 11, adapted to fit in the slot or bifurcation in the handle-bar, as shown in Figs. 1 and 3. A pivotal rivet or a pin or bolt 12 passes through the parallel arms of the handle-bar and the offstanding lug 11 of the jaw 9, thereby hingedly connecting the jaw to the handle-bar, so that said jaw may be adjusted to different positions with relation to said handle-bar. The lug 11 is of less thickness than the shank 10 in order to produce shoulders 13, and these shoulders are adapted to impinge on the arms 7 of the handle-bar when the jaw is swung to a position where it will overhang the terminal heads 8 of said handle-bar, thereby limiting the swinging adjustment of the hinged jaw when moving toward the handle-bar. The inner edge of the jaw 9 is curved in the form of a segment and is provided with a gripping-surface 14, which is toothed or corrugated throughout its active area. The curved or segmental gripping-face of the jaw lies eccentric to the axis afforded by the fulcrum rivet, pin, or bolt 12, and said segmental gripping-surface is curved away from the straight opposing surface 10^a of the shank 10, thus leaving a tapering throat or space between the jaw and the shank.

15 designates a slidable jaw, which is preferably cast in a single piece of metal and is removably fitted to the shank of the hinged jaw 9. On its under side this slidable jaw is formed with a straight front face 16, by which it is adapted to fit snugly upon the straight edge 10^a of the shank 10, forming a part of the hinged jaw, and said slidable jaw is furthermore provided with the depending guide-plates 17, the same being arranged parallel with each other and provided at their lower inner edges with the inwardly-extending flanges 18. (See Fig. 2.) The guide-plates 17 loosely embrace the sides of the shank 10, while the flanges 18 fit against the under face of the shank 10, so as to prevent displacement of the slidable jaw in an edgewise direction on the shank of the hinged jaw. These guide-plates and their flanges serve to loosely connect the jaw 15 to the shank 10 of the jaw 9,

thus permitting the jaw 15 a limited slidable movement on the shank 10. The jaw 15 is furthermore provided with the curved recesses 19 in its opposite side faces, and these recesses are rounded, so as to snugly receive the heads 8 on the arms 7 of the handle-bar, whereby the jaw 15 has a loose or pivotal connection with the terminal portion of the handle-bar at points beyond the hinged connection of the swinging jaw to said handle-bar.

The slidable jaw 15 is tapered from one end toward the other, and thus said jaw has a narrow or contracted inner end portion 20, the same being arranged to extend well into the space or crotch which is formed by the juncture of the straight edge 10^a of the shank and the concaved gripping-space 14 of the jaw 9. This extremity 20 of the slidable jaw has a convex active surface of limited area adapted to oppose the active surface 14 of the jaw 9. The slidable jaw 15 is furthermore provided with a series of transverse grooves 21, the same being formed successively on the surface of the jaw 15, which diverges relative to the surface 14 of the jaw 9. These series of grooves 21 are segments of different radii in order to form seats of varying area for the accommodation of pipes or other cylindrical objects of different sizes. Each groove or seat 21 has an active surface formed by a plurality of teeth or corrugations, and all these toothed seats are disposed in opposing relation to the active face 14 of the jaw 9.

22 designates a spring, which is secured by a screw 23 to the shank or bar 5, and the free end of this spring is arranged to bear against the under edge of the shank 10, said end of the spring lying between the flanges 18 on the guide-plates of the slidable jaw.

From the foregoing description it will be understood that the slidable jaw 15 has a loose or pivotal connection with the handle-bar by reason of the terminal heads 8 fitting loosely in the recesses 19 of said slidable jaw, and this jaw is slidably confined on the shank of the hinged jaw, so that its reduced end 20 will extend into the space between the shank and the jaw 9. The energy of the spring 22 is applied to the shank in a direction to force the hinged jaw upwardly until the reduced end 20 of the slidable jaw fits into the angle or crotch between the shank and the jaw 9, thereby bringing the active surface of the end 20 into contact with the similar surface 14 at one end of the jaw 9. If the wrench is to be used on articles of small diameter, the operator should depress the jaw 9 against the energy of the spring 22, and thus open the space between the jaws 9 and 15, thus allowing the object to occupy the smallest seat 21 of the slidable jaw, after which the pressure on the hinged jaw should be removed and the spring pressed against the jaw 9, so as to close the two jaws upon the work. The wrench is thus capable of exerting a double grip upon the work, because the active face of the jaw 9 and one of the active faces of

the jaw 15 are both engaged with the work practically on opposite sides thereof. This is advantageous, because the wrench has an increased frictional engagement with the work, which prevents it from slipping or moving accidentally thereon; but when the jaws are to be released with a view to taking a fresh hold on the work it is only necessary for the operator to press down upon the jaw 9 in a direction to relax the tension of the spring 22. Of course the jaw 9 may be adjusted so that objects of increased size may be engaged with either of the larger seats 21 in the slidable jaw; but under each adjustment of the wrench it will be found that the two jaws coöperate to secure the desired tight engagement with the work.

In order to remove the slidable jaw 15 from the wrench, the spring 22 is adjusted from engagement with the shank 10 and is turned on the screw 23 to the position shown by full lines in Fig. 3, said spring entering into the notched flange 24 of a keeper-plate 25, that is attached to the handle-bar by the screw 23. The hinged jaw 9 is turned downwardly toward the handle-bar, and this movement causes the recessed part 19 of the slidable jaw to be withdrawn from engagement with the heads 8 on the arms 7 of said handle-bar. The slidable jaw may now be slipped off the shank 10 by moving it in an upward direction, so that the plates 17 and the flanges 18 will be drawn across the narrow lug 11 of the shank. The removal of the slidable jaw makes the hinged jaw assume the position shown by Fig. 3, wherein the edge 10^a of the shank is adapted to form one surface for the engagement with the work, while the active face 14 is also adapted to engage with the works, as clearly shown in said Fig. 3. The pivoted jaw may be used on articles of large size and of different cross-sectional shape, such as the pipe-coupling shown herein, or it may be employed on pipes of large diameter. It is evident, however, that the slidable jaw may easily be slipped on the shank 10 and the recessed portions 19 of said slidable jaw may be loosely engaged with the heads 8, thus restoring the hinged jaw to the operative position shown by Fig. 1.

Although I have described the movable jaw 15 as cast in one piece and as having the plates or guides 17, it is evident that the plates or guides may be made in separate pieces from the jaw and that they may be attached by screws or rivets.

One of the peculiarities of my wrench is that the parts coöperate to secure a firm grip on the work when the article is in use. In fact, the more pressure applied to the wrench the greater will be its engagement with the work.

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

1. A wrench, comprising a handle-bar, a jaw pivoted thereto, and a slidable jaw operatively related to said handle-bar and to the

pivoted jaw, said jaws having their opposing active surfaces disposed in converging relation, and the two jaws adapted to be drawn toward each other by the operation of the handle-bar.

2. A wrench, comprising a handle-bar, a swinging jaw pivoted thereto, and a second jaw fitted slidably to a part of the first jaw and having operative connection with the handle-bar, the two jaws having a closing movement relative one to the other on the operation of the handle-bar to turn the work.

3. A wrench, comprising a handle-bar, a swinging jaw provided with a shank which is pivoted to said handle-bar, and a second jaw slidably fitted on the shank of the first-named jaw, and having loose connection with said handle-bar for actuation thereby.

4. A wrench, comprising a handle-bar, a hinged jaw provided with a shank which is pivoted to said handle-bar, and a movable jaw slidably fitted to the shank of the hinged jaw and having pivotal connection with said handle-bar, said jaws having converging active faces.

5. A wrench comprising a handle-bar, a hinged jaw provided with a straight shank which has pivotal attachment to the handle-bar, and a movable jaw slidably fitted to the shank of the hinged jaw, and having a pivotal connection with the handle-bar at a point to one side of the hinged connection of the first jaw with said handle-bar said jaws having converging active faces.

6. A wrench comprising a handle-bar, a hinged jaw, and another jaw disposed in opposing relation to the hinged jaw and fitted removably and slidably thereto said jaws having converging active faces.

7. A wrench comprising a handle-bar, a

hinged jaw, a movable jaw connected with said handle-bar and disposed in coöperative relation to the first-named jaw, and a spring acting against one of said jaws to normally close them together.

8. A wrench comprising a handle-bar, a jaw provided with a shank which is pivoted to the handle-bar, said jaw having a curved active face which lies eccentrically to the pivot, a movable jaw connected with said handle-bar and having an active face in opposing relation to said eccentric active face of the hinged jaw, and a spring acting against one of said jaws.

9. A wrench comprising a handle-bar, a hinged jaw having an active face, and a movable jaw connected with said handle-bar and having a convex face disposed in continuous opposing relation to the active face of the hinged jaw, said convex face of the movable jaw being provided with a plurality of seats of different sizes.

10. A wrench comprising a handle-bar having rounded heads, a hinged jaw, and a movable jaw provided with recesses arranged to receive said rounded heads of the handle-bar.

11. A wrench comprising a handle-bar, a hinged jaw having its shank formed with an offstanding lug which is pivoted to the handle-bar, and a slidable jaw provided with flanged guide-plates having slidable and detachable engagement with the shank of the hinged jaw.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLARENCE J. BARNES.

Witnesses:

PETER J. B. SMITH,
HENRY WYKLE.