

B. H. PARKER.
WRENCH.
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1,358,241.

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Fig. 1.

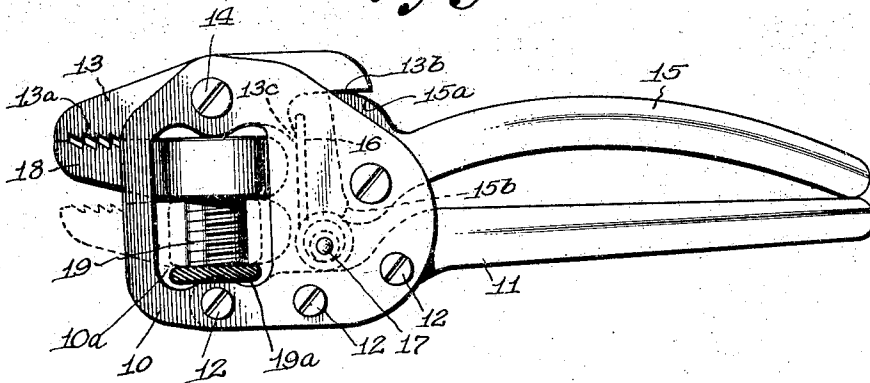


Fig. 2.

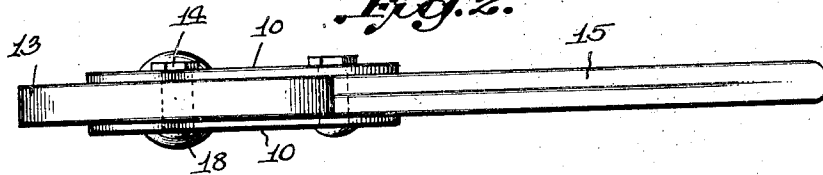
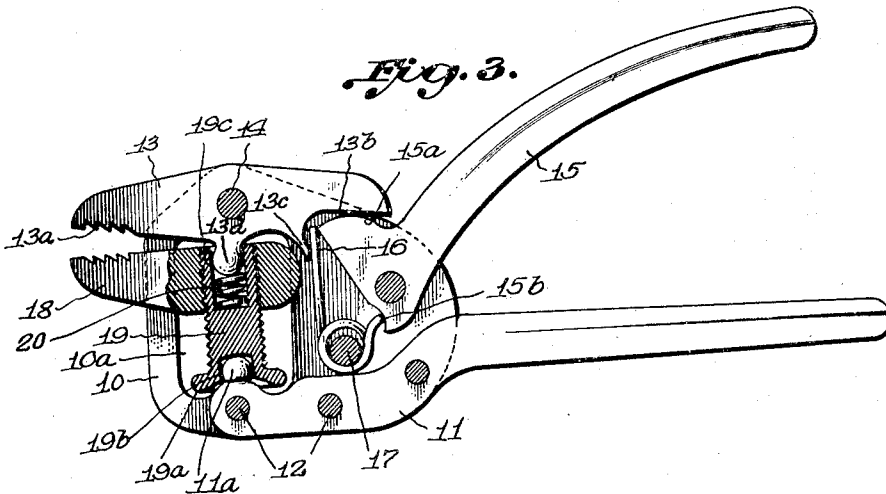


Fig. 3.



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WRENCH.

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To all whom it may concern:

Be it known that I, BURTON H. PARKER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Wrenches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in wrenches.

The present invention is designed more particularly for use under conditions where the work engaging faces of the jaws are approximately parallel to each other under service conditions the construction being such that these opposing faces are out of such approximate parallelism when the wrench is inactive, the movement of the handle in setting the jaws to the work bringing the jaws to this approximate parallel relation; as a result, the outer ends of the jaws are normally spaced apart a greater distance than the inner ends, this being varied by the movement of the handle member in applying the jaws to the work.

Another feature of the present invention is the fact that both of the jaw members are movable in applying the jaws to the work, the movement being preferably such as to cause the opposing faces to approach each other. In the particular embodiment shown this result is obtained by mounting one of the jaw members pivotally so as to provide a rocking action, the other jaw member being fulcrumed in such manner that the jaw member will swing on the arc of the circle bodily, the two jaw members being preferably operatively connected in such manner that movements of the jaw members are concurrent, one member moving pivotally and the other swinging in its arc. In addition, the arrangement is such that the swinging member is adjustable to and from the pivoted jaw, the adjustment being provided without affecting this operative connection between the jaws.

Further objects of the invention are to provide a construction which is simple and efficient in operation, durable in construction and which can be manufactured at a relatively low cost.

An additional object is the provision of a wrench of this type which operates with equal efficiency whether employed as a wrench or as a pair of pliers, the construc-

tion being such that by the simple adjustment of the swinging jaw, the two jaws can be brought into position to act as pliers.

To these and other ends, the nature of which will be readily understood, as the invention is hereinafter disclosed, said invention consists in the improved construction and combination of parts, hereinafter fully described and illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views,

Figure 1 is a side elevation of a wrench structure embodying features of the present invention;

Fig. 2 is a top plan view of the same;

Fig. 3 is a view, partly in section and partly in elevation, one of the side plates of the wrench omitted.

In the drawings, 10, 10, indicate a pair of side plates spaced apart by a handle member 11 mounted between the plates and which is secured in position by the use of suitable securing means, such as bolts or screws 12 which extend from one plate to the other and through the forward portion of the handle member 11. Each plate, adjacent its forward end, is provided with a slot or cut away portion 10^a. The handle member 11 has a portion projecting rearwardly from the end between the plate and this projecting portion provides the gripping portion of the handle, this handle member 11 being practically a fixed handle in that it has no movement relative to the side plates 10.

The forward portion of handle member 11 is located substantially at the bottom of the side plates, and the space between the plates above this portion of the handle member 11 receives the major portion of the remainder of the mechanism. For instance, at the top of this space is pivotally secured the pivoted jaw member 13, the pivot 14 of which extends through the side plates 10 and the jaw member 13. The forward portion of member 13 is provided with a gripping face 13^a, while the rear portion is provided with a face 13^b which is adapted to coact with a cam face 15^a carried by the pivoted or movable handle member 15, the pivot of which also extends between the side plates. This cam face 15^a, which is carried by what may be termed the toe of the handle, is located within the space between the two side plates

10. Faces 13^b and 15^a are normally held in contact by a spring 16 mounted on a stud 17 which extends between the plates 10, said spring having one end engaging a toe 13^c of member 13, and an opposite end of the spring engaging the toe 15^b of handle member 15, the spring serving to tend to rock member 13 on the pivot in a direction to retain it in contact with face 15^a, while the opposite end of the spring tends to retain the handle member 15 in its open or inactive position.

As will be understood, movement of handle member 15 toward member 11, will cause face 15^a to ride against face 13^b with the result that member 13 will be rocked on its pivot counterclockwise in Fig. 3. It is preferred that face 15^a be so arranged as to provide for a gradual decrease in lift as handle member 15 approaches its closed position, thus tending to decrease the effect of pressure at the work faces of the jaws on the handle in such manner as would tend to open the latter while the work is being engaged; the slow rise provided as the handle approaches the closed position permits of maximum power being exerted on the gripping faces with a comparatively small amount of pressure on the handle, thus enabling the wrench to be operated without tiring the hands of the operator attempting to hold the wrench in its gripping position.

The complementary jaw member, indicated at 18, is mounted on a support 19 which is in the form of a threaded element which lies in that portion of the wrench corresponding to the open spaces 10^a of the side plates. The lower end of member 19 is provided with an enlarged head 19^a, preferably milled on its periphery, this head projecting outwardly of the side plates, so as to provide for an exposed portion by means of which the member may be readily rotated by the operator.

The lower end of member 19 is provided with a recess 19^b extending axially inward from the lower face of the member, the recess 19^b being adapted to receive a stud 11^a carried by the handle member 11, said stud projecting upwardly and being preferably formed semi-spherical, although it may have other configurations suitable for the purpose presently described. The opposite end of member 19 is also provided with an axially extending recess 19^c, this recess being adapted to receive a stud 13^a carried by member 13, stud 13^a also being more or less rounded as is stud 11^a. The recess 19^c is of greater depth than the length of stud 13^a, a spring 20 being mounted within the recess 19^c, and adapted to abut the end of stud 13^a, this spring serving to retain member 19 practically seated on stud 11^a, member 19 being substantially free from support by the side plates 10, the two studs 11^a and 13^a,

serving to position the member and provide for the movements to be presently described. The jaw member 18 is provided with an enlarged intermediate portion, which portion is provided with a threaded opening adapted to thread upon the threaded member 19, the enlarged portions of member 18 projecting into the open spaces 10^a of the side plates, the rear of the member 18 projecting rearwardly between the side plates, so that member 18 will travel lengthwise of member 19 without deviating from the general plane of travel, this movement of member 18 being provided by rotating member 19.

As heretofore pointed out, the two jaw members are, in the present instance, designed to be both movable in setting the gripping faces on the work. This result is obtained through the use of recess 19^b and stud 13^a, it being readily understood that if member 13 is moved counterclockwise in Fig. 3 in setting its gripping face to the work, stud 13^a will be moved rearwardly in a similar direction; and since the stud contacts the walls of recess 19^c, the member 19 will be swung rearwardly with stud 11^a as a fulcrum on which this swinging movement occurs. As a result member 18 is swung bodily on this fulcrum, its gripping face thus being carried toward the gripping face of member 13. And this effect is made of greater advantage if stud 13^a is extended in a direction slightly inclined forwardly relative to a line which connects stud 11^a and the pivot 14. When the stud is thus arranged, with member 13 in its open or inactive position, closing movement of handle 15 will serve to swing stud 13^a across such line to an inclination rearwardly of the line, the result being that any tendency of jaw 18 to move in a direction to open when applied to the work tends to swing member 19 to a position having its axis corresponding to such line, in which position, the member 18 extends at substantially a right angle to such line.

Owing to the presence of spring 20, the member 19 is prevented from any binding action, and at the same time provides for a maximum strength condition of service in that the pressure application on member 19 is in the direction of stud 11^a which contacts with the bottom of recess 19^a.

Another advantage lies in the fact that since both of the jaw members are movable toward each other, a materially less length of movement of handle 15 is required in setting or releasing the jaws.

As will be understood, the arrangement is exceedingly simple, being of few parts, these being readily manufactured and assembled, no weakening structures being necessary in order to produce the result.

Member 18, in Fig. 1, as shown in dotted

lines, is in a position which it occupies when used as a wrench. In this figure the full line position illustrates the closed position of the jaws when member 18 is moved to the upper end of member 19, it being seen that in this position there is provided a plier formation really superior to that of ordinary pliers in which the two members are mounted on a common pivot. Fig. 3 illustrates the same position with the jaws open, the pivotal movement of jaw 13 and swinging movement of jaw 18 shown in Fig. 1 providing a resultant movement of the two gripping faces such as to provide for parallelism as in Fig. 1. It has been found in service, that in the position shown in Fig. 1, an absolute grip can be placed upon thin materials such as a sheet of paper.

While I have herein shown and described a preferred embodiment of the invention, it will be readily understood that variations and changes therein may be found desirable or essential in meeting the necessities of use, and I desire to be understood as reserving the right to make any and all such changes and modifications as may be found desirable or necessary in so far as the same may fall within the spirit and scope of the invention as expressed in the accompanying claims when broadly construed.

What I claim is:—

1. In a tool having opposing jaw members for engaging the work, a jaw pivoted on a fixed axis, a complementary jaw supported to swing relative to an axis extending parallel to the pivot of the other jaw, and means whereby said jaws will be moved on their pivots in applying the jaws to the work.

2. In a tool having opposing jaw members for engaging the work, a jaw pivoted on a fixed axis, a complementary jaw supported to swing relative to an axis extending parallel to the pivot of the other jaw, and means whereby said jaws will be moved on their pivots in applying the jaws to the work, said jaws being operatively connected to cause pivotal movement of one jaw by the similar movement of the other jaw.

3. In a tool having opposing jaw members for engaging the work, a jaw pivoted on a fixed axis, a complementary jaw supported to swing relative to an axis extending parallel to the pivot of the other jaw, and means whereby said jaws will be moved on their pivots in applying the jaws to the work, said jaws being operatively connected to cause pivotal movement of one jaw by the similar movement of the other jaw, said means including a handle member operative to provide the pivotal movement of the latter jaw.

4. In a tool having opposing jaw members for engaging the work, a pivoted jaw member, a pivoted handle having a face

operative to produce pivotal movement of such member by handle movement, a second jaw, and a support for the latter jaw, said support being fulcrumed to cause the support axis to extend in the direction of the pivot of the jaw member, said fulcruming of the support permitting swinging of the second jaw into and out of work-engaging position.

5. In a tool having opposing jaw members for engaging the work, a pivoted jaw member, a pivoted handle having a face operative to produce pivotal movement of such member by handle movement, a second jaw, and a support for the latter jaw, said support being fulcrumed to cause the support axis to extend in the direction of the pivot of the jaw member, said fulcruming of the support permitting swinging of the second jaw into and out of work-engaging position, the length of swinging movement being controlled by the movement of the pivoted jaw member.

6. In a tool having opposing jaw members engaging the work, a pivoted jaw member, a pivoted handle having a face operative to produce pivotal movement of such member by handle movement, a second jaw, and a support for the latter jaw, said support being fulcrumed to cause the support axis to extend in the direction of the pivot of the jaw member, said fulcruming of the support permitting swinging of the second jaw into and out of work-engaging position, the pivoted jaw member and said support being operatively connected to provide concurrent movement thereof to and from such work-engaging position.

7. In a tool having opposing jaw members for engaging the work, a pair of jaws having work-engaging faces, one of said jaws being mounted for pivotal movement on an axis located at an intermediate point in its direction of length, the other jaw member being mounted to swing bodily relative to the pivot of the first jaw, said jaws being operatively connected to produce the respective pivotal and swinging movements concurrently.

8. In a tool having opposing jaw members for engaging the work, a pair of jaws having work-engaging faces, one of said jaws being mounted for pivotal movement on an axis located at an intermediate point in its direction of length, the other jaw member being mounted to swing bodily relative to the pivot of the first jaw, said jaws being operatively connected to produce the respective pivotal and swinging movements concurrently, and a pivoted handle for moving the pivoted jaw.

9. In a tool having opposing jaw members for engaging the work, a pair of jaws having work-engaging faces, one of said jaws being mounted for pivotal movement on an axis

located at an intermediate point in its direction of length, the other jaw member being mounted to swing bodily relative to the pivot of the first jaw, said jaws being operatively connected to produce the respective pivotal and swinging movements concurrently, and a pivoted handle having a cam face adapted to cooperate with the pivoted jaw in applying the jaws to the work.

10 10. In a tool having opposite jaw members for engaging the work, a pair of jaws having work-engaging faces, one of said jaws being mounted for pivotal movement on an axis located at an intermediate point in its direction of length, the other jaw member being mounted to swing bodily relative to the pivot of the first jaw, said jaws being operatively connected to produce the respective pivotal and swinging movements concurrently, a pivoted handle having a cam face adapted to cooperate with the pivoted jaw in applying the jaws to the work, and a spring for maintaining jaw and cam-face contact.

25 11. In a tool having opposing jaw members for engaging the work, a pivoted jaw, a fulcrumed rotatable threaded member having its axis extending in a direction toward said jaw pivot, said jaw and member having cooperative means whereby movements of the jaw will provide swinging movement of the member, and a jaw member threaded on to said threaded member, and shiftable toward and from the pivoted jaw by the rotatable movement of the threaded member.

35 12. In a tool having opposing jaw members for engaging the work, a pivoted jaw, a rotatable threaded member having its axis extending in a direction toward said jaw

pivot, said threaded member having an axial recess and said pivoted jaw having a stud adapted to work in said recess to cause jaw movements to swing the threaded member on a fulcrum, said fulcrum, and a jaw member threaded on to the threaded member and adjustable toward and from the pivoted jaw by the rotatable movements of the threaded member.

13. In a tool having opposing jaw members for engaging the work, a pair of side plates having alined openings, a jaw pivotally mounted between said plates, means for providing such pivotal movements, a stud fixedly positioned between said plates, a rotatable threaded element fulcrumed on said stud and extending toward the pivoted jaw, said member having an axial recess, a stud carried by the pivoted jaw and extending into said recess, whereby jaw movements will swing said member on its fulcrum, and a jaw member threaded on to the threaded member and mounted between said plates, said jaw member being adjustable toward the pivoted jaw by rotation of the threaded member.

14. A tool as in claim 13, characterized in that the adjustable jaw extends into the openings of the side plates.

15. A tool as in claim 13, characterized by a spring between the pivoted jaw stud and the threaded member operative to retain the threaded member in position relative to its fulcrum stud.

In testimony whereof I affix my signature in the presence of two witnesses.

BURTON H. PARKER.

Witnesses:

ANNA M. DORR,
HORACE G. SETTZ.