

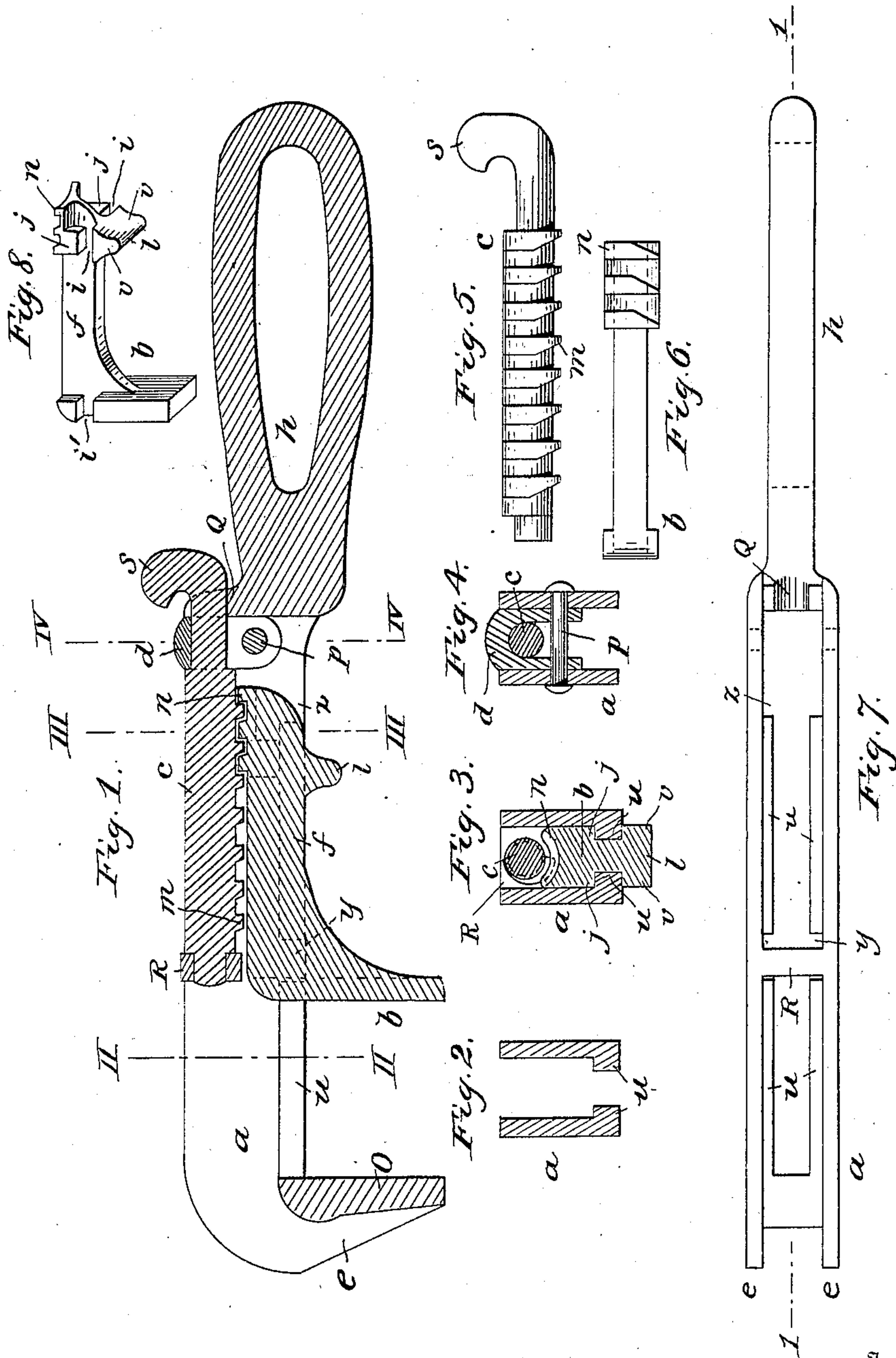
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F. G. CORNELL.

WRENCH.

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Witnesses

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WRENCH.

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To all whom it may concern:

Be it known that I, FRANK G. CORNELL, a citizen of the United States, residing in Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Wrenches, of which the following is a full and correct description.

My invention relates to an improvement in wrenches; and it has for its object to construct a wrench which will be very simple, durable, useful, convenient, and of comparatively low cost to construct, in which one of the jaws of the wrench is easily and instantly movable by the thumb or one finger without the slow or difficult operation of a screw and may be locked or released instantly in its travel in the jaw-bar by a slight movement of the thumb or finger of the same hand which holds the wrench.

Another object of the invention is to construct a wrench of comparatively few and simple parts which needs no machine-work except drilling one rivet-hole to assemble the parts in the wrench and in which all parts are interchangeable and which cannot be put together except in the right way.

Another object and purpose is to furnish a wrench of as great or greater strength as other wrenches of similar size used for similar purposes with very much less weight of metal.

The invention consists in the novel construction and novel combination of the several parts of the wrench, as will be hereinafter fully set forth, and pointed out in the claims.

I attain these objects by the mechanism illustrated in the accompanying drawings, to which I refer, which form a part of this specification, and in which similar marks indicate corresponding parts in all of the figures.

Figure 1 is a sectional view on line I I of Fig. 7 of a wrench embodying my invention. Fig. 2 is a cross-section of the shank on line II, Fig. 1. Fig. 3 is a cross-section of the same on line III, Fig. 1. Fig. 4 is a cross-section on line IV, Fig. 1. Fig. 5 is an elevation of that part detached which I term the "segment-bar." Fig. 6 is a plan view of the mov-

able jaw-bar detached. Fig. 7 is a plan view of the stationary jaw-bar and handle. Fig. 8 is a perspective view of the movable jaw-bar.

In carrying out the invention the jaw-bar *a* *h* consists of the webbed sides *e* of the shank or jaw-bar, carried down in an unbroken and continuous manner to the end of the jaw, making a fixed jaw, which is unusual in such constructions, thereby securing the greatest amount of strength in such jaw of a wrench with the least practicable weight of metal.

My invention consists, essentially, of a wrench-bar *a* *h* so constructed as to give the greatest strength for the weight of the metal entering into the construction of the wrench, being made of wide web-like sides reinforced internally on the lower edges by parallel flanges *u* *u*, as shown in Figs. 1, 2, and 3, these flanges *u* *u* being for three purposes: First, the flanges *u* *u* reinforce the web sides, resisting the tendency to give way or buckle the bar in any fair or proper use of it; second, the flanges act as guides to hold the movable jaw-bar *b* in place and guide it in moving it to and from its work; third, these flanges have openings through which the movable jaw-bar *b* is inserted into the jaw-bar *a* *h*, as shown at *y* and *z* in Fig. 1.

The fixed jaw-bar merges into or terminates in a convenient handle *h*, as shown in Figs. 1 and 7. It will be seen that this handle is brought down at the point where the webs combine, as shown in Fig. 7, to form the handle, and that the handle is purposely brought down to a point where the center line of the handle is on a line with the center of the strain when the wrench is at work, causing the wrench to balance well in the hand and at the same time lessening the tendency of the wrench to roll or turn off of the nut sidewise, and thus tending also to relieve one using the wrench from the necessity of putting his other hand on the wrench to hold it onto the nut and keep it from falling off, which is so often necessary with the usual form of nut-wrenches.

The movable jaw *b* is cast complete in one piece composed of a common form of jaw having a short horizontal bar *f* at right angles to

the jaw, the bar having on the end opposite from the jaw and on its top edge a series of segments or cogs *n*, as shown in Figs. 1, 6, and 8, and having on the lower edge of the movable jaw *b* below the segments a solid boss or trigger *l*, as in Figs. 1 and 3, and having two grooves *i i* in said jaw, one on each side, in which the flanges *u u* of the jaw-bar *a h* fit and work, as indicated in Fig. 3, said flanges operating as a guide of said movable jaw-bar *b* to hold it in place. The uses and advantages of this boss or trigger *l* are, first, while the wrench is held in the hand the movable jaw *b* can be without any inconvenience to the hand holding the wrench easily moved by the thumb or finger to or from the work or object which it is desired to turn with the wrench; second, the trigger *l* has, as shown in Fig. 3, right and left extensions *v v*, which rest under the flanges *u u*, as shown in Fig. 3, and these extensions *v v* form the lower sides of the grooves in which the flanges *u u* run and utilize all the upward thrust on the segment end of the movable jaw *b* caused by the strain on the movable jaw *b* transferred to the bar of said jaw *b*, and but for these right and left extensions *v v* the entire strain of the wrench would be thrown up against the lower side of the segment-bar *c*, while by the said function of these side extensions *v v* on the trigger *l* the strain is all thrown against the lower edges of the jaw-bar *a*, and at the same time the side bosses or extensions *j j* at the upper end of said trigger *l* form the upper sides of grooves at the segment end of the bar *b*, in which the flanges *u u* run and in which the flanges *u u* hold the movable jaw *b* in place vertically. On the jaw end of the movable jaw *b* there are two grooves *i' i'*, which fit over the guides *u u* and guide and hold in place the movable jaw *b*.

The segment-bar *c* is eccentric diametrically and has two functions: first, to lock the movable bar *b* when it has been set to its work, which can be done with the thumb or a finger of the hand holding the wrench by pressing against the segment-bar lever *s* (shown in Figs. 1 and 5) and turning the segment side of the bar *c* down, so that the segments *m* of said segment-bar *c* will engage the segments *n* of the movable jaw *b*, as in Fig. 1, thus locking the movable jaw to its work. To unlock the movable jaw *b*, turn the segment-bar *c* back by pressing against the segment-bar lever *s* with the thumb or finger, which movement throws the segments *m* on top of the bar and turns the smooth side of the segment-bar *c* to the segments *n* of jaw *b*, thus leaving the jaw *b* free to move to and from its work.

It will be seen by Fig. 1 that the bearings for the segment-bar *c* are cast in the stationary jaw-bar *a h* at R and Q, and, like the movable jaw, need no machine-work to fit them.

The segment-bar *c* is securely fastened in place by the clasp *d*, as shown in Figs. 1 and 4, passing down and over the segment-bar *c*

inside of and fitting the web sides of the stationary jaw-bar *a h*, as in Fig. 4, and held rigidly to its place by the rivet *p*. The functions of the clasp *d* are two: first, to fasten the segment-bar *c* in its place; second, to make a stop inside of the jaw-bar *a*, as shown in Fig. 1, to prevent the movable bar *b* from sliding too far back toward the handle and dropping out of the wrench.

The segmental bar *c* has the peculiar function of not only locking or releasing the movable jaw *b* to and from its work, but at the same time when it locks the movable jaw *b* in position to its work it takes up the lost motion in the wrench by engaging the segments, as shown in Figs. 5 and 6, which segments *n m* on the respective parts of the movable jaw *b* and the segmental bar *c* are beveled on opposite sides to facilitate their engagement. Such beveling causes a wedge or inclined-plane action of the part *c* on the movable jaw-bar to press the latter closely on the nut which is to be operated on. This result may be effected by beveling only the cogs *n* or only the cogs *m*, or by beveling both of the sets of such cogs, as shown.

Having fully described my invention, what I desire to claim and secure by Letters Patent is—

1. In a wrench the combination of the fixed jaw-bar having parallel side bars formed with retaining and guiding flanges *u*, having openings *y, z*, the fixed jaw uniting the side bars at the forward end, and the handle uniting the side bars at the rear end, all of said parts forming a rigid whole, the sliding jaw mounted on and operating along the said flanges *u* between the side bars and having engaging means adapted to pass through said openings, and means for holding the sliding jaw when adjusted, substantially as set forth.

2. In a wrench the combination of the fixed jaw-bar having parallel side bars formed with retaining and guiding flanges on their inner sides, the fixed jaw uniting the side bars at the forward end, and the handle uniting the side bars at the rear end, all of said parts forming a rigid whole, the sliding jaw mounted on said flanges between the side bars, and means for holding the sliding jaw when adjusted, said flanges being formed with spaces and the sliding jaw being formed with lateral projections adapted to pass through said spaces and thereafter to rest on the flanges, substantially as set forth.

3. In a wrench the combination of a fixed jaw-bar having parallel side bars formed with retaining and guiding flanges on their inner sides, a fixed jaw at the forward end of said bars, a handle at the rear end of said bars, all of said parts forming a rigid whole, a sliding jaw mounted on said flanges between the side bars, said flanges being formed with spaces and the sliding jaw being formed with lateral projections adapted to pass through said spaces and thereafter to rest on the

flanges, cogs connected with the sliding jaw and a rotary segment-bar mounted on the fixed jaw-bar and engaging said cogs to hold the movable jaw, substantially as set forth.

4. The combination of the fixed jaw having side bars provided with the flanges *u*, the sliding jaw mounted between said side bars and supported and guided by said flanges and having cogs *n*, the trigger *l* connected with the sliding jaw and depending between said flanges, and the segment-bar held in bearings opposite to the space between the side bars, adapted to be turned and having the cogs or segments *m*, substantially as set forth.

5. The combination with the fixed jaw and its side bars, of the sliding jaw mounted to slide between the side bars and having the cogs *n*, the segment-bar mounted opposite the space between the side bars, adapted to be turned and having the segments *m*, and the removable clasp *d* inclosing the rear end of the segment-bar extending between the side bars and acting as a stop for the sliding jaw, substantially as set forth.

6. In a wrench the combination of a fixed jaw-bar having two separated parallel side bars united at their front ends and united at their rear ends, a movable jaw-bar laterally insertible into the space between the side bars, jaws on said bars, and means for holding the movable jaw-bar from longitudinal movement, substantially as set forth.

7. In a wrench the combination of a fixed jaw and bar and a movable jaw and bar both shaped for mutual engagement and sliding, the movable jaw-bar being laterally insertible into a space within the fixed jaw-bar, jaws on said bars, the trigger *l* on the movable jaw-bar projecting down from such interior space transversely to the direction of sliding for adjusting the movable jaw, and a holding means, independent of the adjusting means, for securing the movable jaw-bar, substantially as set forth.

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Witnesses:

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