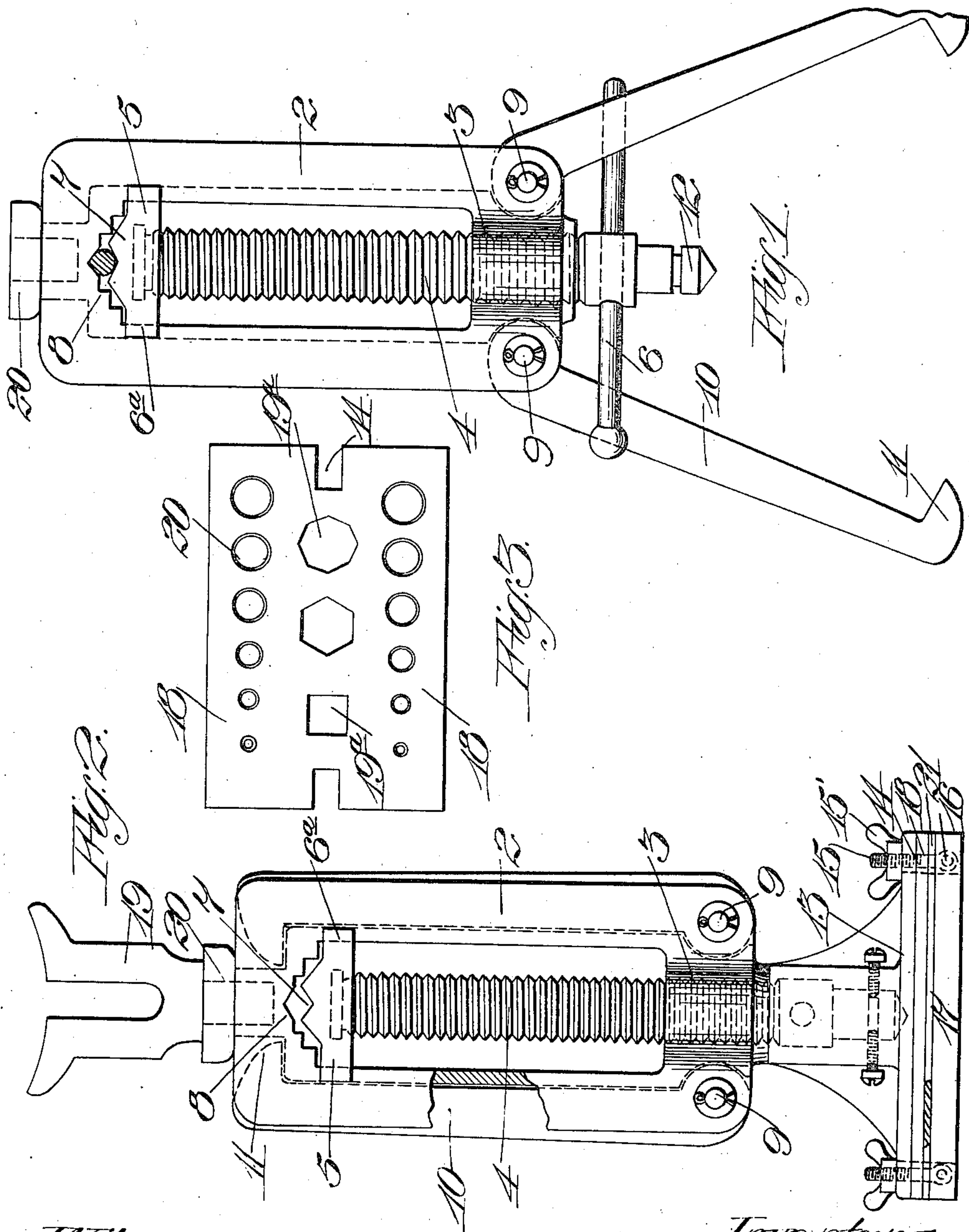


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 COMBINED JACK, WHEEL PULLER, AND VISE.
 APPLICATION FILED AUG. 24, 1910.

997,796.

Patented July 11, 1911.



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UNITED STATES PATENT OFFICE.

FRANK L. FITCH, OF SANTA CRUZ, AND OLIVER W. BRITT, OF SAN FRANCISCO,
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COMBINED JACK, WHEEL-PULLER, AND VISE.

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Specification of Letters Patent. Patented July 11, 1911.

Application filed August 24, 1910. Serial No. 578,735.

To all whom it may concern:

Be it known that we, FRANK L. FITCH, residing at Santa Cruz, county of Santa Cruz, State of California, and OLIVER W. BRITT, residing in the city and county of San Francisco, State of California, both citizens of the United States, have invented new and useful Improvements in Combined Jacks, Wheel-Pullers, and Vises, of which the following is a specification.

This invention relates to tools, and particularly to combination tools.

The object of this invention is to provide a simple, powerful and convenient tool readily adaptable by reason of its constructions as either a jack, a wheel-puller or as a vise; and to provide a mall, portable, quickly adjusted tool embodying means whereby the tool may be used also as a clamp.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the device adapted to be applied as a wheel-puller, and as being utilized as a vise. Fig. 2 is a side elevation of the device adjusted as a jack and clamp. Fig. 3 is a plan view of the spacing die.

The present embodiment of our invention consists of an association of correlated members of such design and construction that a tool is produced which may be variously used, with but slight adjustment, as a jack, a wheel-puller and a vise.

The tool comprises an oblong frame 2, internally threaded as at 3 or the reception and guiding of a screw 4 of suitable proportions, the upper end of which is turnably mounted in a cross-head or jaw 5. As the screw is revolved in its female threads by means of a suitable lever 6 it advances forwardly or rearwardly in the frame 2 and consequently reciprocates the jaw 5 between the longitudinal arms of the frame 2.

The jaw member 5 is suitably slotted at its ends so as to form small ears 6^a, which embrace the faces of the frame 2 whereby it is prevented from turning with the screw, and in order to take advantage of the axial movement of the nut 5 between the arms of the frame the outer free face 7 of the jaw 5 may be slightly concaved or indented and form a clamping face opposed to a suitable

face formed as at 8 upon the end wall of the space between the arms of the frame 2. By this special designing of the opposed faces 7 and 8 a vise-like structure is obtained between which may be inserted pipes or other bodies which it is desired to hold for any particular reason. After the jaws 7 and 8 have been properly placed over the article to be clamped the screw is turned so as to feed the cross-head 5 up against the body to be clamped.

When the tool is to be used as a wheel-puller we pivot at one end as at 9 suitable hook-arms 10 of such design and proportion as to enable their bills 11 to be passed behind the arms or spokes of a wheel to be removed, and the conical reduced point 12 of the screw 4 is placed against the axle and then by means of the lever 6 the screw may be turned so as to advance the same within the frame 2, which will result in applying sufficient power through the links or hooks 10 to the wheel to pull the same from its axle.

Manifestly, that portion of the screw which passes upwardly and in between the arms of the frame 2 must be rigidly supported and guided to prevent abnormal strains in the screw and this is therefore supported and controlled by the vise-jaw 5.

In Fig. 2 the hook-arms are shown as being folded upwardly against the frame 2 so as to allow the mounting of a suitable swivel plate or foot 13 on the reduced stem 12 of the screw. The plate 13 is slotted centrally of its ends as at 14 to receive screws 15, which are pivoted at 16 in a wearing or base plate 17, and in order to allow the jack to be adjusted to conditions in which the distance between the object to be moved and the opposed part may vary considerably, we interpose one or more shims 18 between the foot 13 and the wearing-plate 17. When the composite adjustable base has been assembled and adjusted upon the lower end of the screw 4 and the screw is returned by means of its lever 6, the frame 2 will be caused to advance along the screw and thus lift its superposed load. In order to further provide for a large range of adjustment, we have provided an extension member or yoke 19 adapted to be inserted in a socket 20 on the upper or vise end of the member 2.

Thus it will be seen that the tool is essentially a single self-contained structure

embodying a plurality of necessary and correlated elements having such variations and particular features of design as will permit of the tool to be used in a variety of adaptations; for instance, the movable jaw 5 forms one member of a vise, the opposite jaw of which is formed by the special designing of the closed end of the frame 2, and inasmuch as the movable jaw 5 also is necessary to support the screw 4 when it is subjected to heavy strains and stresses, it is not possible to dispense with the jaw 5, and we therefore utilize the member giving it two functions, first, to support the screw 15 and second, to make it the movable member of a vise.

The turning of the screw 4 within the member 2 causes it to advance axially therein, and this result is taken advantage of by attaching to the projecting portion of the screw 4 the composite foot 13 when the vise is then applicable to use as a jack.

The combination with the frame of the pivoted hooks 10 provide a ready and powerful means which in conjunction with the screw enable the tool to be utilized in the removal of wheels or other bodies from their shafts or axles, besides numerous other conditions to which it may be applied.

A further particular and peculiar feature of the tool is obtained by the use of the adjustable base 13 and its associated plate 17, in that the space formed between the removable shims 18 and the base or wearing plate 17 may be utilized as a light clamp which is particularly useful in automobile work when it is desired to repair automobile tubes or tires. In this adaptation of the invention, the thumb nuts 15' which draw up the screws 15 may be loosened sufficiently to allow a suitable space between the members 17 and 18 and the tire or tube may then be introduced between these members when the screws have been thrown outwardly about their several pivots 16, thus opening the space to allow the ready insertion of the tube between the plates. Returning the screws 15 to the slots 14 in the base plate 13 and turning the thumb nuts 15 draws the base plate 17 upwardly and firmly clamps the interposed material to be held where it may be left until the necessary work has been accomplished.

In Fig. 3 we have shown the spacing plate 18 as being perforated with a plurality of polygonal holes 19^a, one of which may be square and another hexagonal and another octagonal, thus adapting a plate to be used as a wrench to fit nuts or articles of their approximate size. The plate is also shown as being perforated by numerous holes 20 of

different sizes and diameters which are preferably threaded thus enabling the plate to be used as a templet or die for the re-cutting or repairing of threads about a machine or automobile or other place in which the tool may be used. When the plate 18 is thus perforated and tapped to be used as a die we then interpose between it and the wearing plate 17 a thin filler or face plate 21 which will effectively cover the perforations 19^a and 20 in the plate 18, so as to prevent the protrusion of any material to be clamped between the plate 17 and 18 up into the holes in the plate 18.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. In a wheel-puller, the combination of an oblong frame having a central space, a projecting screw turnable in one end of the frame, a cross guide swiveled on the inner end of the screw to support and guide the same, means connected to the screw for advancing the frame thereon, and grappling hooks pivoted on the frame.

2. A wheel-puller, comprising a hollow rectangular frame, a projecting power screw whereby the frame may be longitudinally moved, means on the projecting portion of the screw for actuating the same, a cross guide swiveled on the inner end of the screw and guided on the sides of the frame, and a pair of foldable reversible hooks pivoted on the frame adjacent to the projecting screw.

3. A wheel-puller comprising a hollow, rectangular frame, a power screw in a transverse end thereof, and projecting inwardly and outwardly, an abutment stem on said screw, a steady piece swiveled on the inner end of the screw and guided on the frame, and a pair of pulling hooks pivoted on the frame.

4. A wheel-puller comprising a power screw, a rectangular, traveling frame thereon recessed on its long edges, an actuating device for said screw, and a pair of grappling hooks pivoted on the frame and adapted to be folded into said recesses.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

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