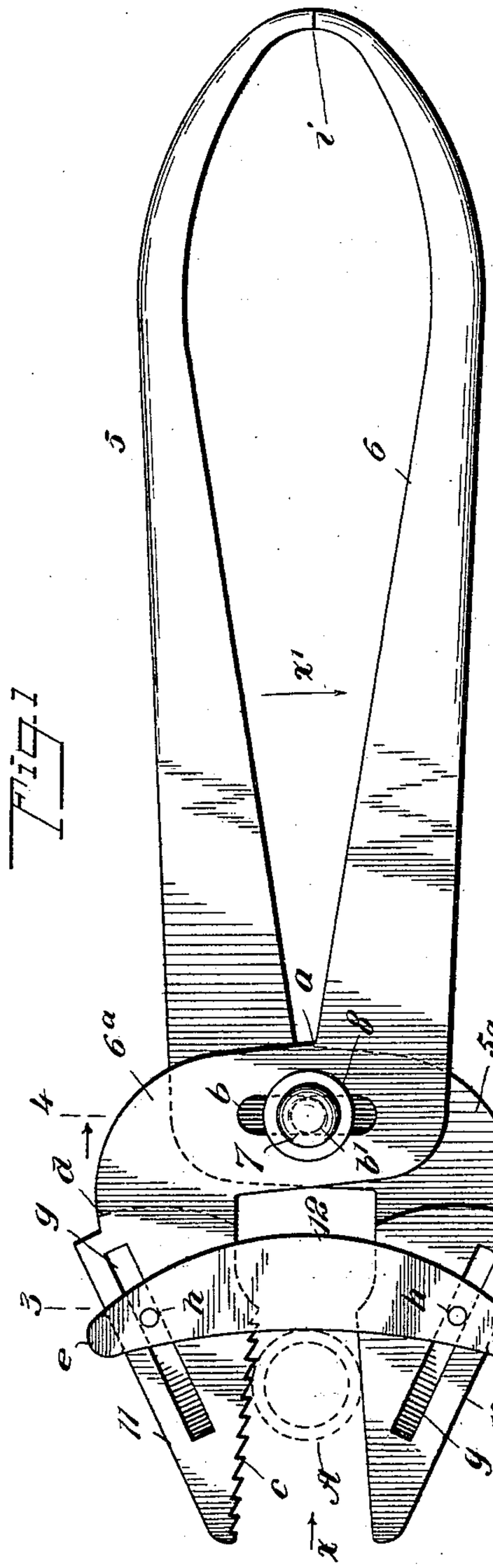
No. 680,540. Patented Aug. 13, 1901.

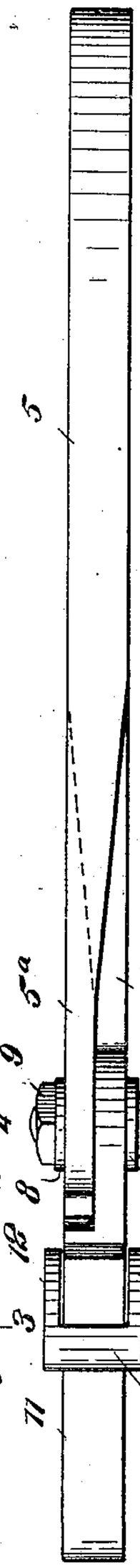
J. L. OGLE.

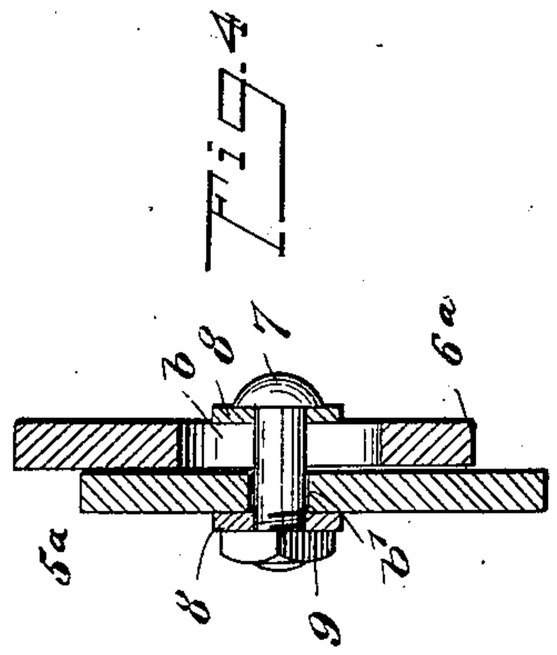
PLIERS.

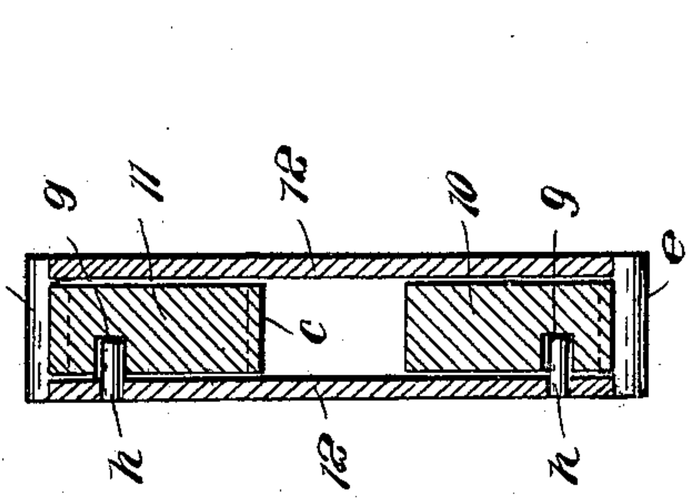
(Application filed Mar. 19, 1901.)

(No Model.)









WITNESSES:

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PLIERS.

SPECIFICATION forming part of Letters Patent No. 680,540, dated August 13, 1901.

Application filed March 19, 1901. Serial No. 51,868. (No model.)

To all whom it may concern:

Be it known that I, JOHN LOUIS OGLE, a citizen of the United States, and a resident of Maitland, in the county of Holt and State of Missouri, have invented new and useful Improvements in Pliers, of which the following is a full, clear, and exact description.

This invention relates to pliers used to grip and rotate bolts or pipes for screwing up or unscrewing the same, and has for its object to provide novel features of construction for a tool of the class indicated which are simple and practical, afford a considerable range of lateral adjustment for the gripping-jaws, and thus adapt the tool for very effective use upon bolts or pipes of various diameters, rendering it self-adjusting when applied on such bolts or pipes, so that it will automatically grip and hold the pipe or bolt when inserted between the gripping-jaws when the tool is manipulated for rotatable movement of the pipe or bolt.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

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 views.

Figure 1 is a side view of the improved pliers. Fig. 2 is an edge view of the same. Fig. 3 is a transverse sectional view substantially on the line 3 3 of Fig. 1, and Fig. 4 is a transverse sectional view on the line 4 4 in Fig. 1.

As shown, the two handle-limbs 5 6 of the improved pliers have, respectively, near one of their ends a flattened portion 5^a 6^a, which portions are bent edgewise and in opposite directions, as at *a*, affording similar offset portions, which have lapped engagement with each other when the handle-limbs are connected.

In the offset portion of the handle-limb 6 a transverse slot *b* is formed, preferably at the center of width of said offset portion, and in the corresponding offset portion of the handle-limb 5 a central perforation *b'* is produced. The slot and perforation *b b'* receive a headed pivot-bolt 7, whereon the washers 8 8 are mounted after the bolt is loosely introduced through the slot and perforation, a nut 9, which engages the threaded end of the bolt, serving to hold the handle-limbs connected, but free to rock on said pivot-bolt.

On the outer ends of the flattened offset portions 5^a 6^a of the handle-limbs 5 6 like jaw members 10 11 are respectively formed, which project forwardly therefrom, as shown in Fig. 1. The jaws 10 11 are wider at their heels than at their free front ends, this being caused by converging the edges of each jaw toward said ends, and upon the jaw 11, which is integral with the handle-limb 6, a series of rearwardly-hooking teeth *c* is formed on its slightly-sloping inner edge, the corresponding or opposite edge of the jaw 10 being shown without teeth, but may be provided with teeth, if found desirable. The jaws 10 11 are of like thickness, which is greater than that of the lapped portions 5^a 6^a, said increased thickness affording shoulders *d* at the rear ends of the jaws, where they merge into the offset portions of the handle-limbs 5 6.

Two similar yoke-plates 12 are provided, which are held spaced apart in parallel planes by cross-bars *e* at their ends, and said cross-bars may be formed integral with the yoke-plates or affixed thereto, as may be preferred. The space between the yoke-plates 12 is proportioned to the thickness of the jaws 10 11, so that these joined plates may be slid upon the jaws by an insertion of the latter between the plates 12 and the cross-bars *e*. The plates 12 and cross-bars *e* taken together are for convenience designated a "yoke-piece," and said part comprises one of the leading novel features of the improvement.

For efficient service sufficient space should be afforded between the cross-bars *e* to permit the yoke-piece to slide freely rearward over the jaws 10 11 and by an engagement of the cross-bars with the sloped outer edges of the jaws rock the latter toward each other until the space between the inner faces or edges of said jaws near their heels is just sufficient to receive and grip the body of the smallest pipe or bolt upon which the implement is designed to operate. The degree of sloping inclination given to the outer edges of the jaws 10 11 is preferably greater than that of their inner faces, and it will be evident that the forward adjustment of the yoke-

piece on the jaws will permit said jaws to receive spreading adjustment, which will correspondingly increase the distance between the inner faces of the jaws. It will also be evident that if the yoke-piece is adjusted toward the free ends of the jaws 10 11 the lapped portions 5^a 6^a may be slid upon each other a distance defined by the length of the slot *b*, which will correspondingly increase the space between the inner surfaces of the jaws.

In the sides of the jaws 10 11 that have contact with the same yoke-plate 12 a groove *g* is formed in each jaw, said groove being parallel with the outer sloped edge of the jaw in which it is formed, as shown in Fig. 1. A pusher-stud *h* is projected from the inner surface of an appropriate yoke-plate 12, near each cross-bar *e*, which studs have loose engagement within the grooves *g*.

The handle-limbs 5 6 may be curved toward each other at their free ends and have contact, and it will be seen that if said ends *i* are brought together and gripping pressure is applied upon the handle-limbs such pressure will effect a divergence of the jaws 10 11, so as to adapt them to receive a pipe or bolt that does not exceed in diameter the capacity of the tool. Furthermore, if the free ends of the handle-limbs are pressed against each other, as explained, the separation of the jaws 10 11 will slide the yoke-piece forward until the pusher-studs *h* have contact with the forward ends of the grooves *g* for engagement with a pipe or bolt of the largest diameter that the tool will receive and operate upon.

In applying the implement for a rotatable movement of a bolt or pipe and assuming that the jaws 10 11 are properly separated said jaws are slid over the body of the pipe until the latter presses upon the yoke-piece of the pliers. It will be seen that pressure applied endwise of the tool in direction of the arrow *x* in Fig. 1 will move the yoke-piece rearwardly and correspondingly draw together the jaws 10 11, so that they will be caused to bite at opposite points on the pipe A. (Shown by dotted lines in said figure.)

The handle-limbs 5 6 should be permitted to lap from end to end when pressure is applied upon them for gripping the pipe or bolt body, and as said limbs afford considerable leverage the lateral swinging movement of the handle-limbs in direction of the curved arrow *x'* will cause the teeth *c* to bite upon the pipe-body and hold thereon for rotatable movement of the pipe, which if threaded right-hand pitch will effect the screwing of the pipe into a mating threaded socket or other internally-threaded orifice.

For unscrewing a pipe or bolt the pliers are turned over, so as to dispose the jaw 11 having the teeth *c* oppositely from its position as represented in Fig. 1. Then the pliers are engaged with the pipe-body, and pressure is applied to swing the handle-limbs oppositely from that indicated by the arrow *x'*, which will unscrew the pipe if the thread thereon is right-hand pitch.

From the foregoing description of the improvement it will be evident that the device is simple, strong, durable, capable of use with but one hand, well adapted for use in close quarters where there is little room in which to grip and rotate a tool of the kind, and in service the implement is automatic both in the gripping adjustment of its jaws to take hold of pipes or bolts of different diameters and in release of the same for a renewed hold or removal from the pipe or bolt body.

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

1. In pliers, the combination with two handle-limbs, and a tapered jaw on each limb, of a pivot-bolt loosely connecting the handle-limbs near the jaws, and a yoke-piece slidable on the jaws and adapted to control their opening or closing adjustment.

2. In pliers, the combination with two handle-limbs each having an offset thereon, and a pivot-bolt loosely connecting the lapped limbs through said offsets, of a tapered jaw on each offset, and a yoke-piece held to slide on the jaws and adapted to control their opening-and-closing movement.

3. In pliers, the combination with two handle-limbs, each having an offset thereon and lapped at said offsets, one of said limbs being transversely slotted through its offset portion, and the other limb perforated opposite the slot, of a pivot-bolt loosely connecting the handle-limbs through the slot and perforation, a tapered jaw extended from each offset portion of a handle-limb, one of said jaws having a toothed inner edge, and a yoke-piece held to slide on the jaws and adapted to control their opening-and-closing movement.

4. In pliers, the combination with two handle-limbs having lapped and pivoted engagement through oppositely-projecting offsets thereon, and a tapered jaw extended from each offset portion of a handle-limb, one of said jaws having a toothed inner edge, of a yoke-piece comprising two plates connected at their ends by spacing cross-bars, and two pusher-studs projected from the plate into grooves formed in the side faces of the jaws.

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

JOHN LOUIS OGLE.

Witnesses:
E. F. WELLER,
CHAS. D. WELLER.