Feb. 8, 1944. J. E. R. M. TÖRNBORG 2,341,489

JAWED TOOL

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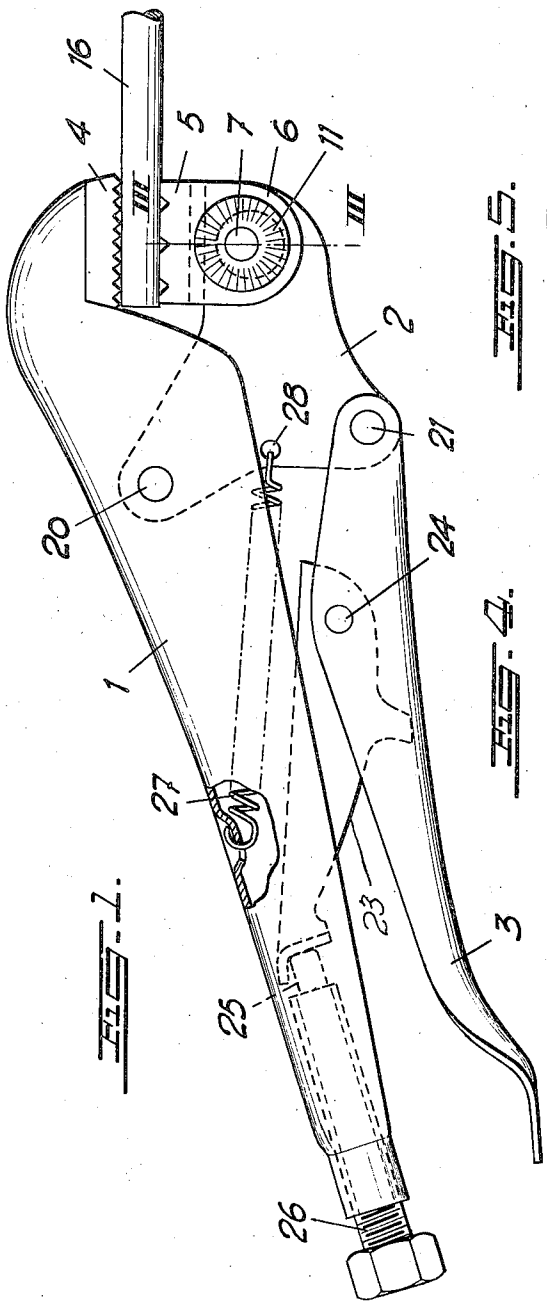


Fig. 1.

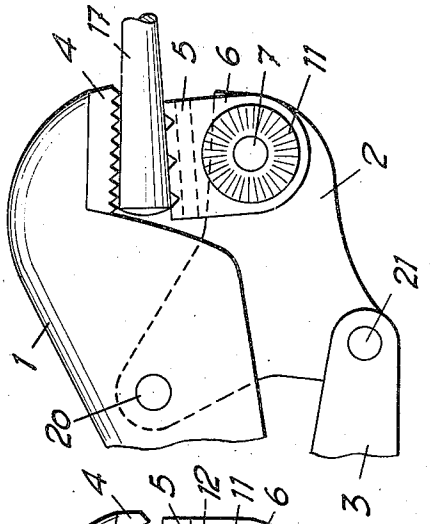


Fig. 5.

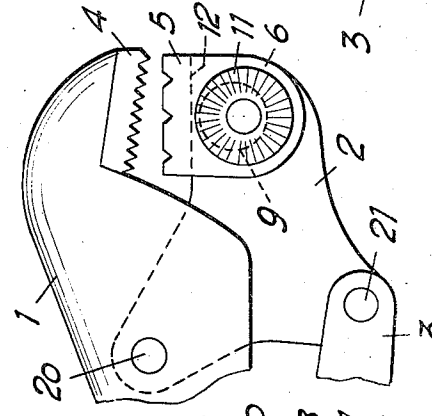


Fig. 4.

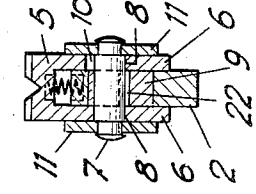


Fig. 3.

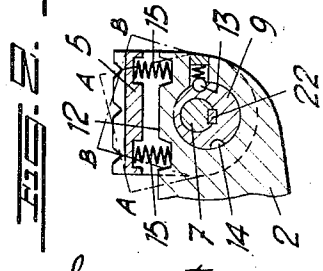


Fig. 2.

Inventor
Josef E. R. M. Törnborg
By Sommers & Young
Attorneys

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UNITED STATES PATENT OFFICE

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JAWED TOOL

Josef Emanuel Robert Melker Törnborg,
Nassjo, Sweden

Application February 16, 1942, Serial No. 431,170
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1 Claim. (Cl. 81—52)

This invention relates to jawed tools, such as tongs or pliers, adapted for holding work pieces in blacksmith's shops, workshops and the like. More particularly, the invention relates to tongs or pliers having extended clamping surfaces, only one of which is arranged on a fixed jaw, the other clamping surface being arranged on a movable jaw which is pivoted to the respective jaw carrying member of the tool so as to be capable of firmly gripping the work piece independently of the particular angle between the jaw carrying members.

The invention has for its object to provide an improved tool of this class, especially with a view to locking the movable jaw to its respective carrying member when it is desired to let it act as a fixed or substantially fixed jaw.

With this and other objects in view, the invention consists in the novel construction and combination of parts, hereinafter described and particularly specified in the appended claim, reference being had to the accompanying drawing.

In the drawing,

Fig. 1 is a side elevation of a tool representing one embodiment of the invention, with a cylindrical work piece clamped between the jaws of the tool.

Fig. 2 is a section of the movable jaw and part of the respective carrying member of the tool taken on a plane at right angles to the pivot of said jaw.

Fig. 3 is a section of the movable jaw taken on a plane parallel to the pivot thereof, as indicated by the dotted line III—III of Fig. 1.

Fig. 4 is a side elevation of the jaw carrying members with the movable jaw locked against rocking on its pivot.

Fig. 5 is a side elevation of the jaw carrying members with a conical work piece clamped between the jaws.

In the drawing, the invention is shown applied to tongs or pliers comprising two jaw carrying members 1 and 2 connected by means of a pivot 20. The member 1 is provided with an integral handle portion, the member 2 being operated by a separate handle member or lever 3 pivoted to the member 2 at 21. In the present instance, the member 1 and the separate handle 3 are both of channel formation to embrace the member 2 and for a purpose to be hereinafter described. The handle 3 forms one section of an articulated joint the other section of which 23 is pivoted to the handle 3 at 24 and bears at its other end against the end piece 25 of a shank 26 threaded through an end portion of the channel shaped handle of member 1. Said articulated lever acts to adjust the movable jaw with relation to the fixed jaw. A tension spring 27 connecting an inner point 28 of the member 2 to the handle portion of member 1 provides means for automatically moving the movable jaw into open position. It is to be noted that the articulated lever and said tension spring form no parts of applicant's invention. On the other hand, the invention is not restricted to tools having operating means of the described nature but may be applied to any kind of jawed tools.

The member 1 of the tool is provided with a fixed jaw 4 formed integrally therewith or riveted thereto. Said jaw is formed with a grooved or otherwise roughened clamping surface, preferably of rectangular form. The member 2 of the tool is provided with a movable jaw in the form of a rider straddling the member 2 at the upper or front edge thereof. Said rider comprises a top member 5 formed with a clamping surface similar to that of the fixed jaw 4 and two side members 6 bearing against opposite sides of the member 2. The top member 5 of the straddling jaw is formed with a plane lower surface corresponding to a plane surface 12 formed on the upper or front edge of the member 2.

Extending transversely through the side members 6 of the movable jaw and through the member 2 is a pivot pin 7. The members 6 are rotatably mounted on said pin as shown at 8. The portion of the pivot pin situated between the members 6 of the movable jaw carries an eccentric 9 keyed to the pin, as indicated at 22, which is rotatably mounted in the member 2 of the tool. To permit insertion of the pin 7 together with the key 22 one of the members 6 is formed with a slot in conjunction with the boring for the pin, as shown at 10, Fig. 3. The pin 7 projects with both of its ends beyond the side members 6 and to each projecting end of the pin is secured a preferably serrated operating disc 11 to permit rotation of the pin by the fingers. By a rotation of the pin the movable jaw 5, 6 may be moved from the position shown in Figs. 2 and 3 to the position shown in Fig. 4. In said firstmentioned position the lower surface of the top member 5 of the movable jaw is lifted from the surface 12 of the member 2 sufficiently to allow a rocking or tilting movement of the movable jaw about the pin 7 between the positions A—A and B—B indicated by dotted lines in Fig. 2. In the position shown in Fig. 4 the lower surface of the top member 5 of the movable jaw is in contact or nearly in contact with the sur-

face 12 of the member 2, thereby locking the movable jaw against rocking or tilting about the pin 7. In this case the movable jaw acts as a fixed jaw. In either of the said positions the pin 7 is yieldingly held against rotation by reason of a spring loaded ball 13 engaging a corresponding one of two depressions 14 made in the periphery of the eccentric 9.

Inserted between the upper or front surface 12 of the member 2 and the top member 5 of the movable jaw are two compression springs 15 engaging conical recesses formed in the surface 12 and shallow recesses formed in the lower surface of the top member 5. Said springs provide means to maintain the movable jaw in a position in which the top member 5 thereof is parallel to the front 12 when the jaw is lifted therefrom.

In the operation of the tongs or pliers the movable jaw adjusts itself so as to effectively grip the work piece independently of the shape thereof. In Fig. 1 this action is illustrated in case of a cylindrical work piece 16, and in Fig. 5 in case of a conical work piece. In the said lastmentioned case the position of the movable jaw corresponds approximately to the position A—A of Fig. 2. In case of a work piece of an inversed conical shape to that shown in Fig. 5, an effective gripping action may be obtained until the position B—B, Fig. 2, of the movable jaw is reached.

When it is desired to have the movable jaw act as a fixed jaw the pivot pin 7 is rotated half a revolution with respect to the position shown in Fig. 2, thereby depressing the movable jaw 5, 6 so that the lower surface of the top piece 5 of this jaw comes into or nearly into contact with the surface 12, as indicated in Fig. 4. In this instance, the tools act as usual tongs having two fixed jaws.

The channel formation of the member 1 and the separate handle 3 of the tongs described as an example permits an easy grasp, while at the same time concealing and protecting the elements 23, 26 and 27 of the tongs.

What I claim is:

A jawed tool, comprising a pair of pivotally connected jaw carrying members, handles to operate said members, a jaw fixedly connected to one member, another jaw straddling the other member, said other jaw comprising a top portion and side portions having transverse borings on a line with each other, a pivot pin rotatably mounted in said borings, an eccentric on the portion of said pin situated between the side portions of the straddling jaw, said eccentric engaging a boring of the said other jaw carrying member, means on the ends of said pin outside the side portions of the straddling jaw to facilitate operation of the pivot pin and its eccentric with a view to shifting the straddling jaw between a position in which the top portion of said jaw is at distance from its respective carrying member and another position in which said top portion is in contact with the respective carrying member, locking means to yieldingly hold the straddling jaw in either of said positions, and compression springs inserted between said lastmentioned member and the top portion of the straddling jaw.

JOSEF EMANUEL ROBERT
MELKER TÖRNBORG.