July 4, 1950 S. L. COLES 2,513,401

LOCKABLE PLIERS

Filed Aug. 15, 1947

Fig. 1.

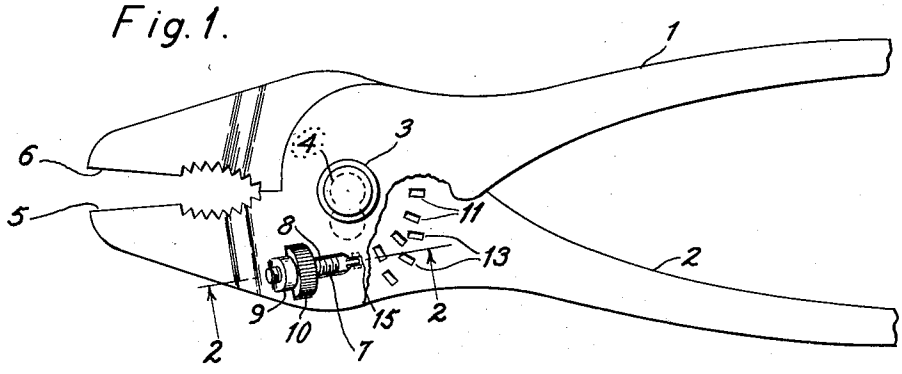


Fig. 2.

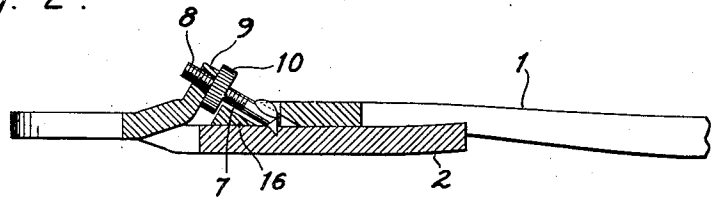
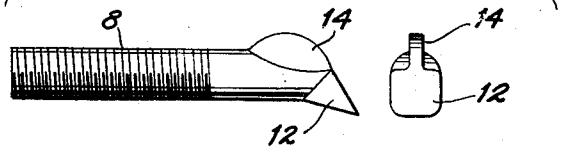


Fig. 3.



INVENTOR,
SAMUEL L. COLES,
By Edw. P. Evers
ATTORNEY.

Patented July 4, 1950 2,513,401

UNITED STATES PATENT OFFICE

2,513,401

LOCKABLE PLIERS

Samuel L. Coles, Robertson, Mo.

Application August 15, 1947, Serial No. 768,799

7 Claims. (Cl. 81—49)

1

This invention pertains to pliers and similar tools for providing a firm holding grip on a small article.

One of the objects of this invention is to provide such a tool with improved means for locking it in holding position.

Another object is to provide such locking means which may be quickly adjustable to locking position and quickly released from locking adjustment.

Further objects will appear from the following description in which will be set forth an illustrative embodiment of the invention; it is to be understood, however, that this invention is susceptible of various embodiments, within the scope of the appended claims, without departing from the principles or spirit of the invention.

In the accompanying drawing:

Fig. 1 is a plan view of a pair of pliers embodying this invention.

Fig. 2 is a section on line 2—2 of Fig. 1, and

Fig. 3 is an enlarged detail (side and end views) of the clamping screw.

Referring now to the drawing, the pliers comprise, generally, a pair of levers having grip portions 1 and 2, and pivoted on a pin 3. This pivot, in the embodiment illustrated, is of the type that is shiftable to either of a pair of sockets 4, in order to increase or decrease the gap between the jaws 5 and 6.

One of the levers, in this case lever 1, is formed with an opening 7 therethrough to accommodate a clamping screw 8 passing slantwise through the opening. Adjacent the opening 7 an upward-bent lug 9 is formed on the lever. This lug is provided with a clearance hole through which the screw 8 passes freely. A thumbnut 10 on the screw 8 is arranged to bear against the underside of the lug 9.

The lever 2 is provided with one or more notches 11 positioned to receive the end of the screw 8. In the embodiment illustrated, a series of such notches is arranged in a circle centered on the pivot pin 3. The notches 11 may be wedge-shaped, with one face vertical so as to provide an abutment for the correspondingly wedge-shaped end 12 of the screw 8. In the type of pliers in which the pivot 3 is shiftable, a second series of notches 13 may be provided, arranged in a circle centered on the shifted position of the pivot.

The screw 8 may be formed, at its lower end, with the wedge-shaped portion 12 adapted to provide a pawl engageable in the ratchet notches 11 or 13. This end of the screw 8 may also have formed thereon an upstanding wing or fin 14 arranged to engage a slot 15, formed at the end of the opening 7, so as to prevent turning of the screw when the nut 10 is turned. A web 16 may be formed to span the lower part of the opening 7 to keep the screw 8 from falling out. This web my have a sloping upper face acting as a cam to lift the screw, when loosened, during rotation of the lever 1 to open the jaws 5 and 6.

2

In the operation of the tool, the same is held in the hand by the grip portions in the usual manner. In the embodiment illustrated, when so held in the right hand the thumb of that hand will be in a convenient position to manipulate the nut 10. The grip portion may now be pressed together to close the jaws 5 and 6 upon the article to be held. During this movement the pawl 12 rides over the notches 11 (or 13) until the one best positioned for the required jaw opening is arrived at. The nut 10 is then rotated by the thumb, while maintaining pressure on the grips, so as to force the pawl 12 into the appropriate notch and tighten the nut against the lug 9. The tool is then securely clamped upon the work. When the work is to be released the reverse operation is carried out.

It will be noted that, while the nut 10 is manipulated merely by the thumb, firm clamping pressure on the work can be obtained by pressure on the grips. This relieves the pressure on the nut which may then be easily screwed up against the lug 9 to hold the pressure applied by the grips. Similarly, in releasing the work, this pressure on the nut may be relieved by pressing the grips so as to free the nut for easy manipulation.

As the jaws are opening after loosening the screw, the web 16 moves to the right, Fig. 2, and "picks up" the screw 8 thereby lifting the pawl 12 out of the notch. When the lever 1 is shifted to the other center for the pivot 3, the screw 8 moves with it so as to be engageable with the other series of notches 13.

The loose fit of the screw 8 in the lug 9 provides freedom for the screw to swing up and down or sidewise as it rides over the notches 11 or 13. During such swing the nut 10 may rock upon the face of the lug 9. The underface of the lug may be rounded slightly to accommodate such rocking and to allow slight misalignment of the screw when in clamping engagement.

Having thus described the invention, what is claimed is:

1. A tool of the character described, comprising, a pair of pivoted levers having jaw portions and grip portions, a screw mounted on one of said

levers and having a tail portion providing a pawl, said other lever being formed with one or more notches arranged for engagement by said pawl to provide a purchase for said screw, and manipulating means associated with said screw, operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

2. A tool of the character described, comprising, a pair of pivoted levers having jaw portions and grip portions, a screw mounted on one of said levers and having a tail portion providing a pawl, said other lever being formed with a series of notches arranged at a uniform distance from the pivot-point of said levers providing a ratchet arranged to receive said pawl, and manipulating means associated with said screw, operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

3. A tool of the character described, comprising, a pair of pivoted levers having jaw portions and grip portions, a screw mounted on one of said levers and having a tail portion providing a pawl, said other lever being formed with one or more notches arranged for engagement by said pawl to provide a purchase for said screw, and manipulating means associated with said screw, located adjacent the thumb position of a hand holding said grip portions and operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

4. A tool of the character described, comprising, a pair of pivoted levers having jaw portions and grip portions, a screw mounted on one of said levers and having a tail portion providing a pawl, said other lever being formed with a series of notches arranged at a uniform distance from the pivot-point of said lever providing a ratchet arranged to receive said pawl, an abutment on said first lever, and a nut on said screw having rockable engagement with said abutment and operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

5. A tool of the character described, comprising, a pair of pivoted levers having jaw portions and grip portions, a screw mounted on one of said levers and having a tail portion providing a pawl, means to prevent turning said screw,

said other lever being formed with a series of notches arranged in an arc with its center substantially at the pivot-point of said lever providing a ratchet arranged to receive said pawl, an abutment on said first lever, and a nut on said screw having rockable engagement with said abutment and operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

6. A tool of the character described, comprising, a pair of levers having jaw portions and grip portions, a pivot joining said levers, said pivot being fixed to one of said levers and shiftable relatively to the other, a screw mounted on said first lever and having a tail portion formed to provide a pawl, said other lever being provided with a plurality of series of notches each series arranged in an arc centered on a different position of said pivot providing ratchets arranged to receive said pawl, and manipulating means associated with said screw operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

7. A tool of the character described, comprising, a pair of levers having jaw portions and grip portions, a pivot joining said levers, said pivot being fixed on one of said levers and shiftable relatively to the other, a screw mounted on said first lever and having a tail portion formed to provide a pawl, said other lever being provided with a plurality of series of notches each series arranged in an arc centered on a different position of said pivot providing ratchets arranged to receive said pawl, an abutment on said first lever, and a nut on said screw having rockable engagement with said abutment and operable to advance said pawl into engagement with one of said notches to lock said levers relatively to the work held in said jaw portions.

SAMUEL L. COLES.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
841,602	Taylor	Jan. 15, 1907
988,656	Peck	Apr. 14, 1911
1,271,911	Kearney	July 9, 1918