Aug. 5, 1930. J. J. PALOTCE 1,772,428

PLIERS, TONGS, OR THE LIKE

Filed Jan. 20, 1930

Fig. 1.

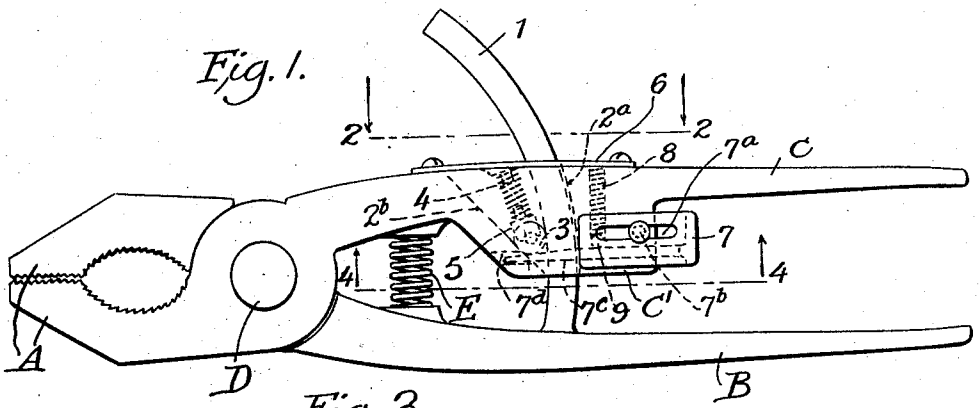


Fig. 3.

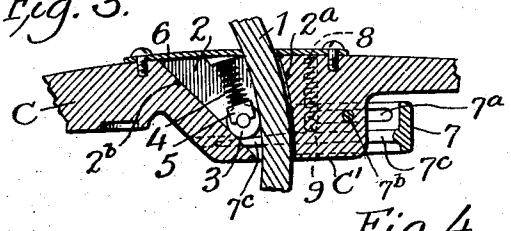


Fig. 2.

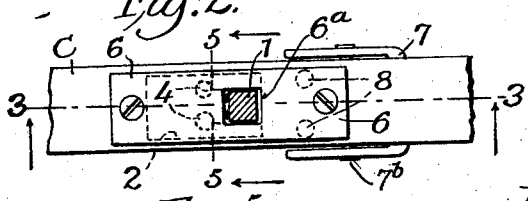


Fig. 4.

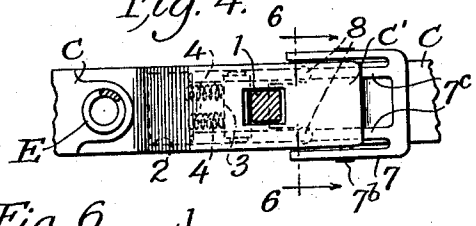


Fig. 5.

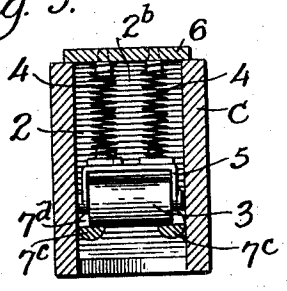
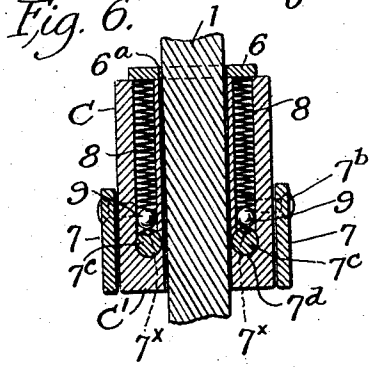


Fig. 6.



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UNITED STATES PATENT OFFICE

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PLIERS, TONGS, OR THE LIKE

Application filed January 20, 1930. Serial No. 422,130.

This invention is a novel improvement in pliers, tongs, tweezers, and the like, and the particular objects of the invention are to provide such tools or gripping instruments with means on the handles or cross-handles of the tools for automatically locking the jaws in engagement with the article which is gripped by the tools and in any adjusted position of the handles; also to provide manually operable means for releasing the locking means when desired to permit opening of the locked jaws, and for maintaining the locking means inoperative upon subsequent manipulation of the handles. Other minor objects of the invention will be hereinafter set forth.

I will explain the invention with reference to the accompanying drawing which illustrates one practical embodiment thereof to enable others to adopt and use the same; and will summarize in the claims the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawings:—

Fig. 1 is a side view of a pair of pliers embodying my invention.

Fig. 2 is a section on the line 2—2, Fig. 1.

Fig. 3 is a section on the line 3—3, Fig. 2.

Fig. 4 is a section on the line 4—4, Fig. 1.

Fig. 5 is an enlarged transverse section on the line 5—5 Fig. 2; and

Fig. 6 is an enlarged transverse section on the line 6—6, Fig. 4.

My invention is illustrated in connection with a pair of pliers of ordinary type having work engaging jaws A, A, operated by cross-handles B and C pivoted at D, the handles B, C, being normally yieldably separated to open the jaws A by means of a spring E interposed between the handles adjacent the pivot D. My invention however is not limited to use on pliers of the type shown, for obviously same may be readily adapted for use in connection with tongs, tweezers, and various other types of gripping tools or the like.

As shown one of the handles, B, is provided with an arcuate tongue 1 concentric with pivot D and extending through a slot 2 in the other handle C, which handle is preferably materially thickened in depth as at C′ adjacent the slot. Slot 2 is provided with an arcuate rear wall 2^a lying adjacent the outer periphery of tongue 1, and with a forwardly inclined front wall 2^b forming an upwardly flaring recess with the inner periphery of the arcuate tongue 1, the lower end of the inclined wall 2^b of slot 2 terminating adjacent the inner periphery of the arcuate tongue 1. A wedging roller 3 is normally yieldably urged downwardly into wedging position in the lower end of the recess against the inner periphery of arcuate tongue 1 by means of springs 4 interposed between a guide plate 5 carried by the roller 3 and a removable plate 6 on the upper face of the handle C covering the recess, the cover plate 6 being provided with a slot 6^a (Fig. 2) for the passage of the arcuate tongue 1 therethrough.

Manually operable means are also provided for raising and thereby releasing roller 3 from locking engagement, the particular means shown comprising a U-shaped member 7 slidably mounted upon the rear end of enlarged portion C′ of handle C, the side legs of member 7 having slots 7^a therein for receiving retaining pins 7^b which are to hold member 7 from coming off and whereby the member may be shifted toward or away from the roller 3. Extending from the base of U-shaped member 7 are two spaced wedge shaped prongs 7^c (Fig. 4) slidably mounted in bores 7^d in the portion C′ of the handle and disposed on opposite sides of the arcuate tongue 1 as shown more particularly in Figs. 4 and 6. The outer ends of the wedge shaped prongs 7^c are tapered downwardly and underlie the opposite ends of roller 3 as shown in Fig. 5, whereby when the U-shaped member 7 is pulled rearwardly (or to the right, Fig. 1) the wedge shaped prongs 7^c will recede to lower roller 4 and permit the roller to bind or wedge between the inclined wall 2^b of the recess and the inner periphery of the arcuate tongue 1, but when the member 7 is pushed forwardly (or to the left, Fig. 1) the wedge shaped prongs 7^c of U-shaped member 7 will raise roller 3 out of wedging position and maintain the roller so elevated that handles B and C may be operated freely

without bringing roller 3 into locking engagement.

Means are also provided for yieldably retaining the U-shaped member 7 in adjusted position, which means, as illustrated, consists of springs 8 housed in bores extending down through the enlarged portion C' of the handle C and communicating with the bores 7^d or the wedge-shaped prongs 7^e, and in the lower ends of the bores I place balls 9 seating upon the prongs 7^e (Fig. 6) which balls are urged by springs 8 into frictional engagement with the prongs 7^e and urged to seat in receses 7^x in the tops of the prongs 7^e; and balls 9 will yieldably hold the prongs 7^e of the U-shaped member 7 in any position to which the member is adjusted. The springs 8 are retained in the bores by the cover member 6.

In operation, if it is desired that the pliers shall retain their grip upon the member held in the jaws A—A, the U-shaped member 7 should be pulled rearwardly away from the arcuate member 1 so as to lower the roller 3 which will then slide along the face of the inner periphery of tongue 1 as the handles B, C, are being closed together, but if attempt is then made to open the handles the roller 3 will immediately wedge between the inclined wall 2^b of recess 2 and the arcuate tongue 1 and thus prevent such opening of the handles until the U-shaped member 7 has been pushed forwardly sufficiently to raise roller 3 out of wedging contact as hereinbefore explained.

I do not limit my invention to the exact form shown in the drawing, for obviously changes may be made therein within the scope of the claims.

I claim:

1. A tool having gripping jaws and operating handles, one of the handles having a slot with an inclined wall at one side; a tongue on the other handle extending through said slot; a roller in the slot adapted to wedge between the inclined wall and the tongue as the handles are separated; and means for disengaging the roller from the tongue.

2. In a tool as set forth in claim 1, a removable cover plate over said slot having an opening therein for the passage of the tongue; and a spring interposed between the roller and cover plate.

3. In a tool as set forth in claim 1, said disengaging means comprising a member slidably mounted on the handle; and prongs on said member slidably mounted in bores extending through the handle and underlying the roller; the prongs being wedge-shaped whereby as the member is shifted the roller will be raised by the prongs or allowed to lower.

4. A tool having gripping jaws and operating handles, one of the handles having a slot with an inclined wall at one side; a tongue on the other handle extending through said slot; a roller in the slot adapted to wedge between the inclined wall and the tongue as the handles are separated; means for disengaging the roller from the tongue; and means for locking the disengaging means.

5. In a tool as set forth in claim 4, a removable cover plate over said slot having an opening therein for the passage of the tongue; and springs interposed between the roller and cover plate.

6. In a tool as set forth in claim 4, said disengaging means comprising a member slidably mounted on the handle; prongs on said member slidably mounted in bores extending through the handle at opposite sides of the slot, said prongs underlying the ends of the roller; the prongs being wedge-shaped whereby as the member is shifted the roller will be raised by the prongs or allowed to lower.

7. A tool having gripping jaws and operating handles, one of the handles having a slot with a recess at one side of the slot having an inclined wall; a tongue on the other handle extending through said slot; a roller in the recess; means for yieldably urging the roller to wedge between the inclined wall of the recess and the tongue; and manually operable means for shifting the roller out of wedging relation with the tongue.

8. In a tool as set forth in claim 7, a removable cover plate over said slot and recess, said plate having an opening therein for the passage of the tongue; and said yieldable means comprising springs interposed between the roller and cover plate.

9. In a tool as set forth in claim 7, said manually operable means comprising a member slidably mounted on the handle; prongs on said member slidably mounted in bores extending through the handle at opposite sides of the slot, said prongs underlying the ends of the roller: the prongs being wedge-shaped whereby as the member is shifted the roller will be raised by the prongs or allowed to lower.

10. A tool having gripping jaws and pivoted operating handles, one of the handles having a slot and having a recess at one side of the slot, said recess having an inclined wall; an arcuate tongue on the other handle concentric with the pivot and extending through said slot; a roller in the lower end of the recess; means for yieldably urging the roller to wedge between the inclined wall of the recess and the tongue: manually operable means for raising the roller out of wedging relation with the tongue; and means for locking the manual means in adjusted position.

11. In a tool as set forth in claim 10, a removable cover plate over said slot and recess, said plate having an opening therein for the passage of the tongue; and said yieldable means comprising springs interposed between the roller and cover plate.

12. In a tool as set forth in claim 10—said manually operable means comprising a member slidably mounted on the handle adjacent the slot; parallel prongs on said member slidably mounted in bores extending through the handle on opposite sides of the slot, said prongs underlying the ends of the roller; the prongs being wedge-shaped, whereby as the member is shifted the roller will be raised by the prongs or allowed to lower.

13. In a tool having a pair of operating handles, a tongue on one handle extending through a slot in the other handle; a roller in the slot adapted to wedge against the tongue; a member slidably mounted on the handle adjacent the slot; prongs on said member slidably mounted in bores extending on opposite sides of the slot, said prongs underlying the ends of the roller; the prongs being wedge-shaped whereby as the member is shifted the roller will be raised by the prongs or allowed to lower.

14. In a tool as set forth in claim 13, means for locking the slidable member in adjusted position.

15. In a tool as set forth in claim 13, said handle having bores registering with and normal to the bores for the prongs; balls in said bores contacting with the prongs; and springs in the bores for urging the balls against the prongs for locking the same in adjusted position.

JOHN J. PALOTCE.