

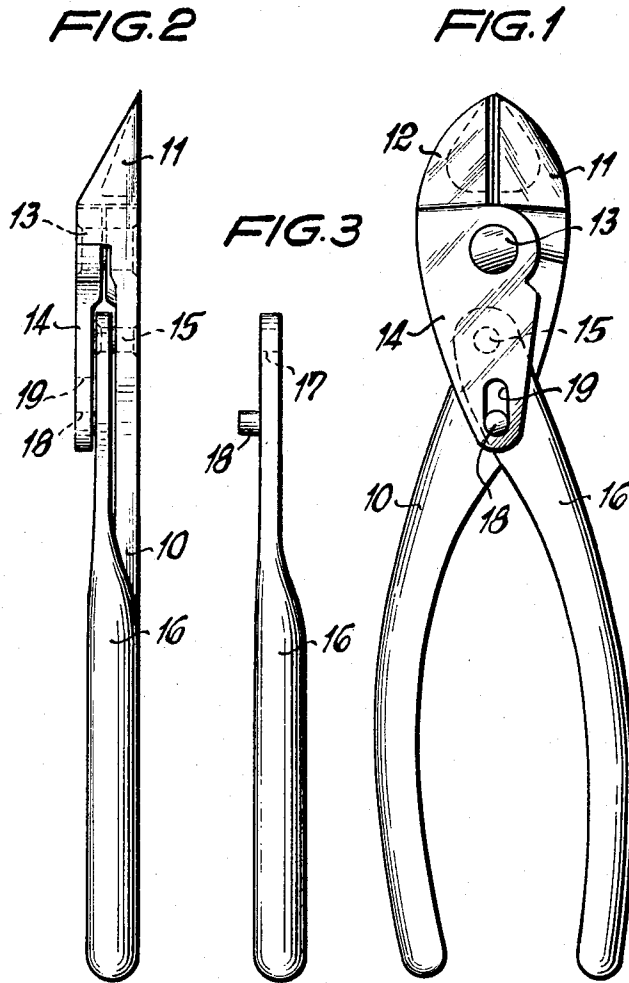
Sept. 20, 1966

C. KUHBIER
PLIERS HAVING A CAMMING LEVER MEMBER TRAPPED
BETWEEN JAW MEMBERS

3,273,238

Filed Dec. 10, 1964

2 Sheets-Sheet 1



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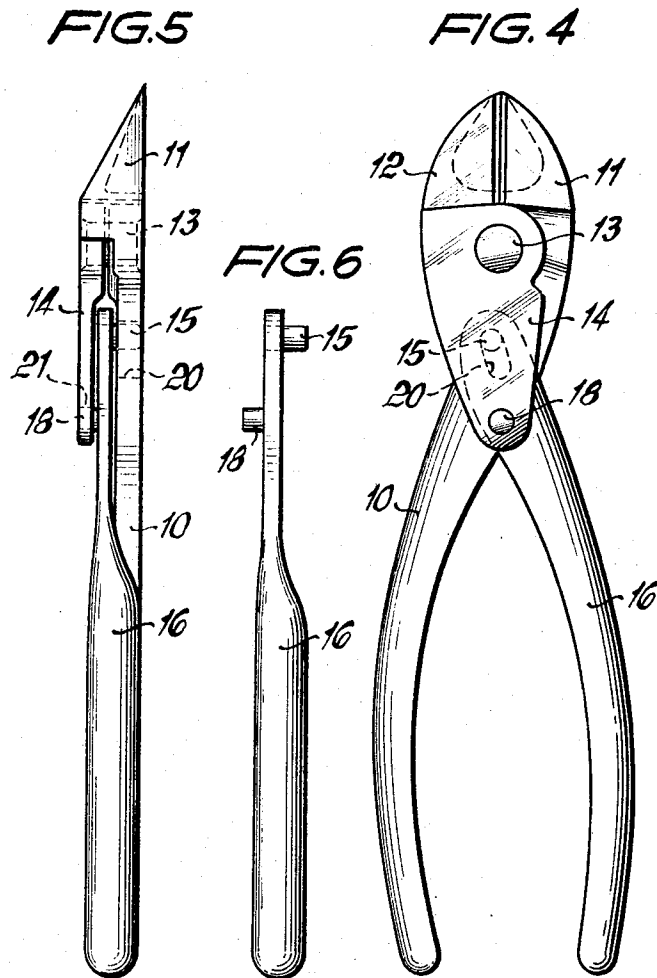
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PLIERS HAVING A CAMMING LEVER MEMBER TRAPPED BETWEEN JAW MEMBERS

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5 Claims. (Cl. 30-189)

The invention relates to pliers and particularly to cutting nippers.

According to the invention there is provided a pair of pliers a first jaw of which is articulated by a first pivot to a second jaw, the second jaw having an integral handle, and is operatively connected by a second pivot to the second handle of the pliers which in turn engages the handle provided with the jaw by means of a third pivot, a slot being associated with one of the pivots. This is a simple, cheap way of providing pliers in which the jaws can be pressed together with considerable force, since, although one handle forms a single lever with its integral jaw, the other handle and the other jaw each forms a lever with a given leverage and the total leverage results from the product of these two lever transmissions.

It is an advantage for one handle to be inserted between part of one of the jaws and the handle of the other jaw and for it to be equipped with pivots offset from one another on opposite sides and engaging both in a hole in the jaw and in a slot in the handle. In this way the handle can be placed between the other handle and the part of the jaw and can be held by joining the two jaws with a pivot pin.

The slot required for the pivoting of the two handles may advantageously be assigned to the second pivot. This means that the two handles can be interconnected by the first pivot merely for rotation, while the second pivot can make an equalising movement within the slot.

The slot may advantageously be provided in the jaw which is not provided with an integral handle and the pivot pin engaging therein on the handle which is not provided with an integral jaw, while the third pivot may be provided between the handle having the jaw and the other handle.

It is an advantage for the third pivot to be non-rotatably riveted in the handle having the jaw and rotatably riveted in the other handle. Thus, when the pliers are being made the two handles can first be riveted together and then the second jaw fixed to the pivot pin.

Examples of the invention in the form of side nippers, are illustrated in the accompanying drawings, in which:

FIG. 1 is a front elevation of one example of side nippers according to the invention;

FIG. 2 is a side elevation of the nippers illustrated in FIG. 1;

FIG. 3 is a side elevation of one handle of the side nippers illustrated in FIGS. 1 and 2;

FIG. 4 is a front elevation of a second example of side nippers according to the invention;

FIG. 5 is a side elevation of the nippers illustrated in FIG. 4; and

FIG. 6 is a side elevation of one handle of the side nippers illustrated in FIGS. 4 and 5.

The side nippers shown in FIGS. 1 to 3 have a handle 10 with an integral jaw 11. The second jaw 12 is in known manner held onto the other jaw 11 by a pivot pin 13. The second jaw 12 has a short lever arm 14 to which the second handle 16 is pivotally mounted by means of a pin 15 spaced from the pivot pin 13 of the side nippers. The pin 15 passes through an aperture 17 provided in the handle 16 at its articulated end.

The articulated end of the handle 16 is located between

the other handle 10 and the lever arm 14 of the second jaw.

The handle 16, which is in the form of a one-armed lever, has a pivot pin 18 formed thereon, the pin 18 engaging with the lever arm 14 of the second jaw 12. The pivot pin 18 is riveted into the handle 16. A slot 19 for receiving the pivot pin 18 is formed in the jaw 12. The provision of this slot 19 permits the equalising movement required for the pivoting of the handles 10, 16.

When the side nippers are actuated the two handles 10, 16 pivot about the pin 15; the pin 18 provided on the handle 16 is also pivoted and pivots the jaw 12 about the pivot pin 13. The two jaws can thus be pressed together with considerable force, since the handle 16 and the jaw 12 each by itself forms a lever with a given lever transmission and the total leverage results from the product of these two lever transmissions.

The side nippers illustrated in FIGS. 4 to 6 comprise as in the first example, a handle 10 with an integral jaw 11, a second jaw 12 joined to the first jaw 11 by the pivot pin 13, and a second handle 16. In this second example, however, the handle 16 has the two offset pivots 15, 18 on opposite sides and may advantageously be integral therewith. The pivot 15 engages in a slot 20 in the handle 10 having the jaw 11, and the pin 18 engages in a hole 21 provided in the short lever arm 14 of the jaw 12. As a result the handle 16 can be placed between the other handle 10 and the short lever arm 14 of the jaw 12 and is held therein due to the joining of the two jaws 11, 12 by the pivot pin 13.

As already mentioned, the embodiments of the side nippers illustrated are only examples of the invention. The invention is not restricted to these and many other constructions and applications are possible. Thus the pliers according to the invention could also be in the form of combined nippers, flat pliers, pincers, round nose pliers, hole punchers or the like.

I claim:

1. A pair of pliers comprising, in combination, two elongated jaw members each having a jaw portion at one end and a power arm at the other end, one of said jaw members having a handle portion forming a continuous of said power arm of said one jaw member and extending in a direction opposite to the jaw portion from said power arm of said one jaw member, said power arms overlapping each other at least in part and defining a free space between facing surfaces thereof; pivot pin means connecting said jaw members intermediate the ends thereof to each other; said jaw members being rotatable about the axis of said pivot pin means; a one-arm lever member having an end portion located in said space between said facing surfaces of said power arms; a first pivot pin projecting from the region of the free end of said lever member which is located between said power arms to one side of said lever member through an opening in said handle portion; a second pivot pin projecting to the other side of said lever member from a portion thereof located between said first pivot pin and the other end of said lever member through an opening in the power arm of the other jaw member, one of said openings being cylindrical and the other being in the form of an elongated slot, at least one of said pivot pins being in the form of a projection integral with said lever member, said pivot pin means forming the only means for securing said jaw members and therewith also holding said lever member captive in the space between said power arms of said jaw members.

2. A pair of pliers as set forth in claim 1, wherein said elongated slot is formed in said power arm of said other jaw member.

3

3. A pair of pliers as set forth in claim 1, wherein said elongated slot is formed in said handle portion of said one jaw member.

4. A pair of pliers as set forth in claim 1, wherein said first and second pivot pin are both in the form of projections respectively projecting to opposite sides of said lever member integral therewith. 5

5. A pair of pliers as set forth in claim 4, wherein said projections are cylindrical and extend freely through said openings in said power arm of said other jaw member and said handle portion, respectively, and terminate flush with the outer surfaces of said power arm and said handle portion, respectively. 10

4

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