Feb. 6, 1940. F. T. LIND 2,189,211

HAND PRUNER OR LIKE TOOL

Filed June 11, 1938

Fig. 1.

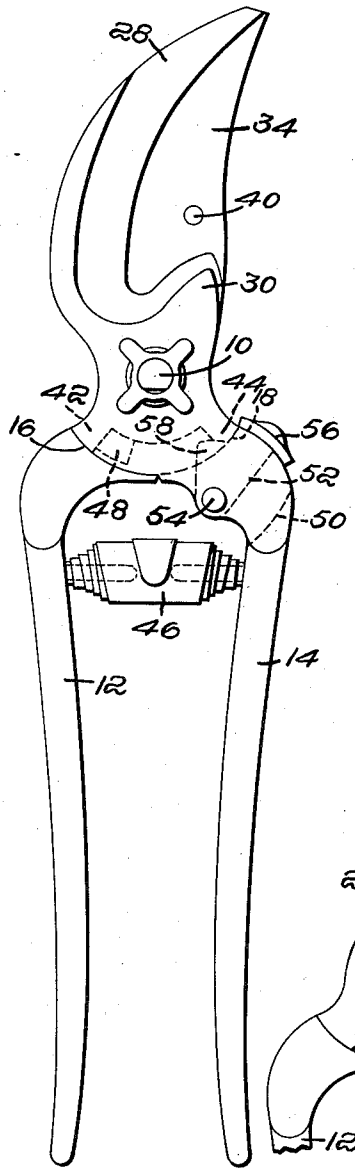


Fig. 2.

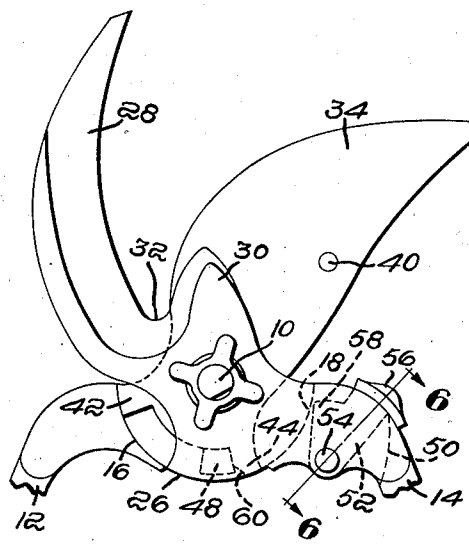


Fig. 4.

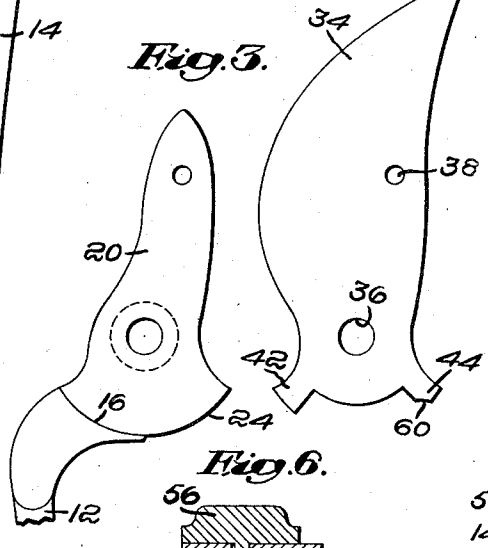


Fig. 5.

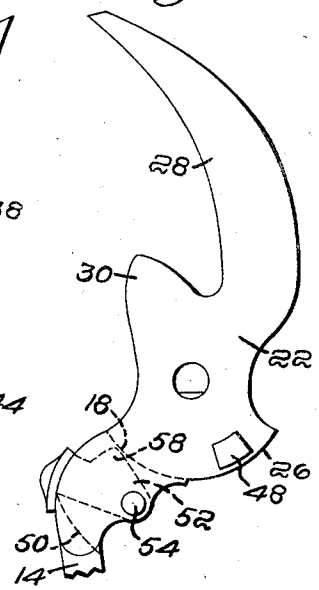
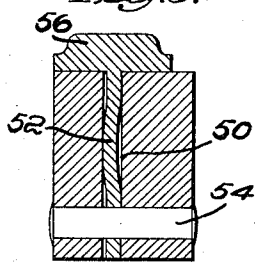


Fig. 3.

Fig. 6.



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UNITED STATES PATENT OFFICE

2,189,211

HAND PRUNER OR LIKE TOOL

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Application June 11, 1938, Serial No. 213,224

8 Claims. (Cl. 30—262)

This invention relates to hand tools of the crossed lever type and finds a particular application to hand pruning shears or secateurs, and the object is to provide an efficient tool of this character, simple and economical to construct, of neat appearance and having smooth exterior surfaces which do not present relatively moving parts which might pinch the hands in use or entangle stray twigs.

My invention will be well understood by reference to the following description of the illustrative embodiment thereof shown by way of example in the accompanying drawing, wherein:

Fig. 1 is an elevation of a hand pruner illustrative of the invention in closed position;

Fig. 2 shows the head of the same in open position;

Fig. 3 is a view of the inner face of the upper portion of one of the levers;

Fig. 4 is a view of a blade adapted to be mounted on the lever shown in Fig. 3;

Fig. 5 is an inner face view of a cooperating lever; and

Fig. 6 is a section on an enlarged scale on the line 6—6 of Fig. 2.

The tool here shown embodies two crossed levers pivoting on the pivot pin 10, and these levers are formed respectively with handle grip portions 12 and 14 terminating in shoulders 16 and 18 which herein are shown as circularly curved about the pivot 10 as a center. Beyond the shoulders 16 and 18 the levers are provided with reduced blade-carrying extensions 20 and 22 respectively, through which the pivot pin 10 passes and which have laterally projecting portions 24 and 26 curved to circular arcs and adapted to cooperate respectively with the shoulders 16 and 18, the two reduced portions overlapping and fitting on one another in the manner of a so-called halving joint.

The cutting blades herein shown are of the general type more fully described in the patent to Porter and Geddes No. 2,090,228 and may comprise a concave blade 28 having a relatively blunt edge which is here shown as formed integrally with the extension 22 with which is also formed the lug 30 at the further side of the circular throat 32 formed by the blades in the open position of the tool and which lug is adapted to overlie and support the companion blade. This companion blade, 34, which has a relatively acute convex edge, is herein shown as formed separately from the lever, the extension 20 of which is comparatively short and provides a mounting for the blade 34, which latter is formed from a suitable flat steel blank and is provided with an opening 36 to pass the pivot pin and an opening 38 for a rivet 40 by means of which it is secured to the lever extension shown in Fig. 3. The inner end of the blank 34 is formed with the spaced extensions 42 and 44 for a purpose which will be explained and which are curved circularly on their distal ends to abut against the arc-shaped shoulder 16.

The tool may be normally spring-pressed to open position and I have herein shown a double-cone spring 46 of the volute type as interposed between the handle levers 12 and 14 in well known manner. To limit the swinging movement of the levers I provide means located at the opposed inner surfaces of the pivot joint and for this purpose provide a lug 48 (see Fig. 5) on the inner face of the extension 22 of lever 14 which is received between the extensions 42 and 44 of blade 34 which cooperate therewith to form stops limiting respectively the closing movement of the tool (Fig. 1) and the opening movement (Fig. 2).

To hold the jaws closed when the tool is not in use I provide a suitable detent or catch which also is desirably housed within the joint. Herein the shoulder 18 is provided with a slot 50 just beyond the inner face of the extension 22 (see Figs. 6 and 5) in which is housed a detent 52 pivoted on a pin 54. The detent 52 has a cross-head 56 forming a finger piece permitting it to be swung about its pivot, which finger piece is exposed, herein at the outer surface of lever 14 which is preferably curved to a circular arc about the center of pin 54, the inner surface of the cross-head fitting on this part. The detent is provided with a nose portion 58 which alternatively may be retracted within the slot 50 or projected into the plane of the blade 34. In the latter instance, in the closed position of the parts shown in Fig. 1, it may cooperate with extension 44 to hold the levers locked. To provide a smoothly working mechanism free of any lost motion, the nose 58 of the detent is preferably curved to the arc of a circle about pivot 54 and a portion 60 of extension 44 is formed with a circular surface cooperating therewith in the closed position of the parts shown in Fig. 1 and serving to lock the levers against movement about the pivot 10 which is eccentric to these cooperating arcs.

It will be noted that if the detent is accidentally swung to the projected position when the blades are open as in Fig. 2, the left-hand edge of the extension 44 will strike the same as the

blades close, pressing it back into the inactive position shown in the figure.

Referring to Fig. 6, I have there shown the body of the detent 52 as somewhat deformed in order to bind frictionally within the slot 50 and prevent too free movement thereof.

It will be noted that the rear ends of the handles are unobstructed by any latching device such as is usual in hand pruners. Particularly when the joints at 16 and 18 are formed concentric with the pivot 10, as here shown, there are no openings or recesses in the open position of the parts likely to catch the fingers if they are extended up the head of the tool. This idea is also carried out in the arrangement of the limit stops and of the locking detent which, except for the operating finger piece 56, are housed interiorly of the tool between the side faces thereof. The result is a neat appearance, safety to the user and convenience in applying the tool to the work, perhaps among crowded branches and twigs.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. A tool of the class described comprising a pair of shouldered levers having reduced, overlapping, interpivoted, blade-carrying portions beyond the shoulders, one of the shoulders having a slot opening to the joint between the reduced portions and having a circularly curved outer boundary, a detent pivoted in the slot having a cross head overlying said boundary and forming a finger piece whereby the detent may be swung to protrude from the slot to overlie the adjacent reduced portion or retracted therein, the reduced portion of the other lever having a part cooperating with the detent.

2. A tool of the class described comprising a pair of shouldered levers having reduced, overlapping, interpivoted, blade-carrying portions beyond the shoulders, one of the shoulders having a slot opening to the joint between the reduced portions, a detent pivoted in the slot having a finger-engaging portion exposed at the outer side of a lever whereby the detent may be swung to protrude from the slot to overlie the adjacent reduced portion or retracted therein, the protruding portion of the detent having a surface formed on an arc about its center, the reduced portion of the other lever having a circularly formed shoulder fitting said arc in the closed position of the levers.

3. A tool of the class described comprising levers having circularly curved shoulders and outwardly thereof reduced, interpivoted, blade-carrying portions having circular boundaries cooperating with the shoulders of the companion lever, a pair of spaced shoulders on the inner surface of one reduced portion and a projecting member on the inner surface of the other working between them and providing means for delimiting the relative pivotal movement of the levers completely concealed in the joint thereof in all positions.

4. A tool of the class described comprising a pair of interpivoted levers, a finger piece pivoted to one of them eccentric to the lever pivot and having a nose concentric with the pivot of the finger piece, the other lever having a circularly formed shoulder cooperating with the nose in the closed position of the levers.

5. A tool of the class described comprising a pair of overlapping interpivoted levers, a separate blade mounted on the inner face of one lever and having spaced, rearwardly extending extensions at its rear end, the other lever overlying said rear end and the extensions and having on the inner face a projection entering between said extensions to provide means for delimiting the relative pivotal movement of the levers completely concealed in the joint thereof in all positions.

6. A tool of the class described comprising a pair of overlapping interpivoted levers, a separate blade mounted on the inner face of one lever and having spaced, rearwardly extending extensions at its rear end, the inner face of the other lever having a projection entering between said extensions, and a finger-operated detent carried by said other lever constructed to engage and retain one of said extensions in the closed position of the levers.

7. A tool of the class described comprising a pair of shouldered levers having reduced, overlapping, interpivoted, blade-carrying portions, the inner face of the reduced portion of one lever presenting a recess spaced from the outer face of the lever and defining a shoulder, the other lever having a recess opening at the inner face of the reduced portion thereof, a detent housed in the recess and adapted to be projected therefrom to engage the shoulder, and means for operating the detent extending to an outer surface of the lever.

8. A tool of the class described comprising a pair of shouldered levers having reduced, overlapping, interpivoted, blade-carrying portions, the inner face of the reduced portion of one lever presenting a recess spaced from the outer face of the lever and defining a shoulder, the other lever having a slot in its shouldered portion between the faces thereof opening adjacent the inner face of the reduced portion and to the side of the lever, a detent mounted in the slot for movement substantially in the plane in which the levers swing and adapted to be projected therefrom to engage the shoulder, and means for operating the detent projecting through the slot to the side of the lever.

FRANCIS T. LIND.