Nov. 6, 1951 J. L. SMITH 2,574,354

SNAP CUT PRUNER

Filed Sept. 12, 1947 2 SHEETS—SHEET 1

Fig. 1

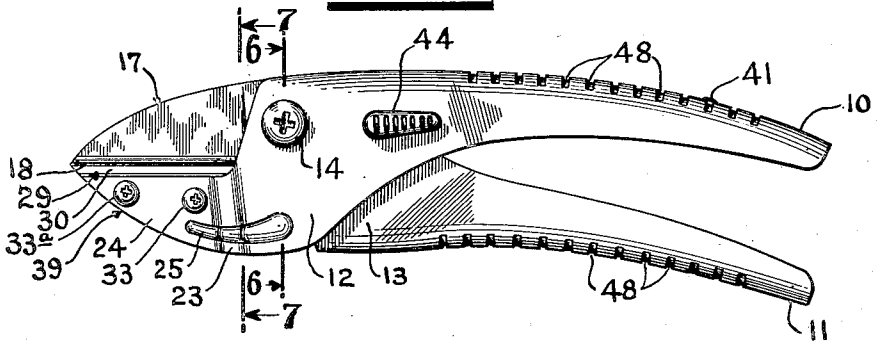


Fig. 2

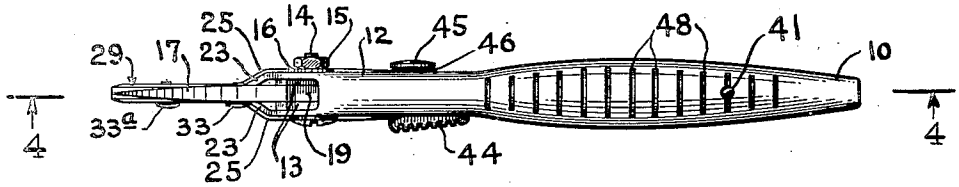


Fig. 3

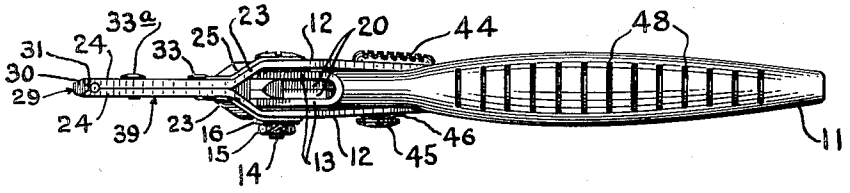
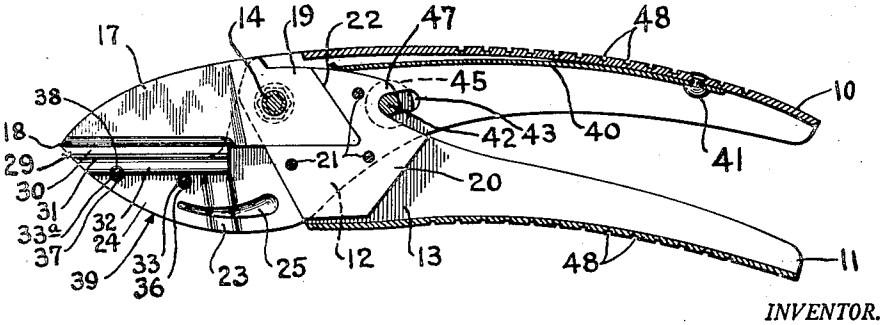


Fig. 4



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Fig. 5

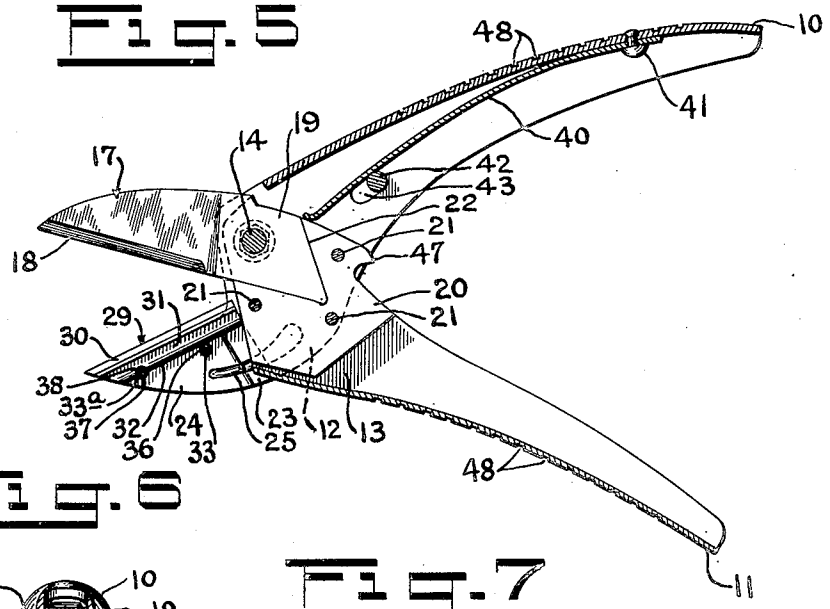


Fig. 6

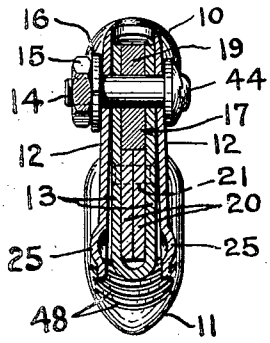


Fig. 7

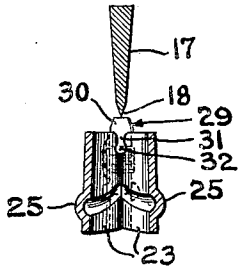


Fig. 9

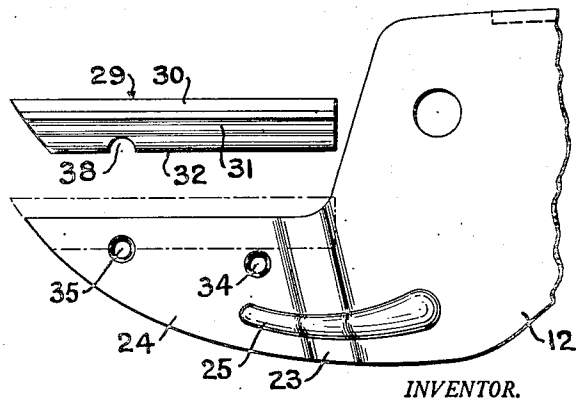
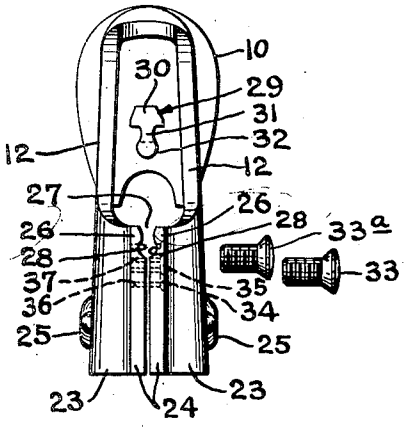


Fig. 8



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SNAP CUT PRUNER

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Application September 12, 1947, Serial No. 773,677

8 Claims. (Cl. 30—186)

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This invention relates to pruning cutters, and more particularly to a snap cut pruner which has a swingable blade adapted to be brought against a flat-faced anvil to perform the cutting action.

One object of this invention is to provide a device of the above nature in which the anvil is easily removable for replacement.

Another object is to provide a device of the above nature in which the anvil may be securely locked in the fixed jaw structure.

Another object is to provide a device of the above nature which will produce a clean cut with a minimum of bruising to the object being cut.

A further object is to provide a snap cut pruner of the above nature having improved means for releasably locking the jaws in closed position when not in use.

A further object is to provide a device of the above nature which will be simple in construction, inexpensive to manufacture, easy to manipulate, compact, strong and rigid, ornamental in appearance, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawing one form in which the invention may conveniently be embodied in practice.

In the drawings,

Fig. 1 is a side elevation of the improved snap cut pruners, shown in closed position.

Fig. 2 is a top view thereof.

Fig. 3 is a bottom view thereof.

Fig. 4 is a longitudinal section, taken along the line 4—4 of Fig. 2, looking in the direction of the arrows.

Fig. 5 is a longitudinal section similar to Fig. 4, but with the pruner in open position.

Fig. 6 is a cross-sectional view taken on the line 6—6 of Fig. 1.

Fig. 7 is a cross section taken on the line 7—7 of Fig. 1.

Fig. 8 is a front view of the fixed lower jaw assembly, showing the anvil and the screws in exploded relation.

Fig. 9 is a side view of Fig. 8, the screws being omitted.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numerals 10 and 11 indicate elongated upper and lower handles, said handles being U-shaped in cross section, and having two pairs of spaced flat parallel sections 12, 13, respectively, integral therewith and pivotally connected by a headed center bolt 14, passing therethrough and secured in operating position by a nut 15 and a lock washer 16.

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A cutting blade 17 is rigidly secured to the lower handle 11, said blade having a convex upper edge and a straight lower cutting edge 18. The blade 17 is wedge-shaped in cross section through its main portion and has a V-shaped rear end 19 of uniform thickness fitted between the spaced sections 13 of the handle 11, said rear end 19 being apertured to receive the center bolt 14.

A laminated anchor block 20 of the same thickness as the V-shaped rear end 19 is secured between the parallel sections 13 of the handle 11 by means of three triangularly-arranged rivet pins 21.

The anchor block 20 has a V-shaped notch 22 in its upper forward portion facing the center bolt 14, said notch embracing the V-shaped end 19 of the blade 17, whereby the cutting blade 17 is rigidly fixed to the movable lower handle 11. The lower portions of the spaced sections 12 of the handle 10 are continued forwardly and brought together to form a pair of inwardly-offset shoulders 23 and contiguous jaw members 24—the material in the region of the shoulders 23 being extended outwardly to provide a pair of reinforcing ribs 25.

The jaw members 24 have straight upper edge portions 26 which are of reduced thickness and convex upon their inner surfaces. The edge portions 26 thus provide a throat 27 which opens into a longitudinal recess formed by a pair of opposed grooves 28 in the inner faces of the respective jaw members 24 parallel to their upper edges.

Provision is also made of a flat-faced anvil 29 which will serve as a backing for the cutting action of the blade 17. The anvil 29 comprises a longitudinally-extending upper head 30 and a central downwardly-extending rib 31 having an enlarged bottom head 32, and said anvil conforms in size and shape to the upper edge portions 26 of the jaw members 24 and the throat 27 and grooves 28 therein.

The enlarged bottom head 32 of the anvil 29, however, is slightly wider than the combined widths of the grooves 28 so as to enable the anvil to be clamped tightly in place by the action of a pair of screws 33 and 33a entered respectively in a rear aperture 34 formed in one of the jaw members 24 below the groove 28, and a forward aperture 35 intersecting the groove 28, and driven into a pair of corresponding tapped bores 36, 37 in the other jaw member 24.

A notch 38 is formed in the enlarged bottom head 32 of the anvil rib 31 and is engaged by the forward screw 33a in the assembled relation

of the parts, whereby the anvil 29 is positively locked against endwise movement, and forms with the jaw members 24 a unitary composite rigid lower jaw 39.

In order to urge the pruner to its open position, an elongated leaf spring 40 is secured within the handle 10 adjacent its rear end by a rivet 41 and said spring extends forwardly into slidable bearing engagement with the anchor block 20 rearwardly of the center bolt 14.

The pruner may be locked in its closed position by a catch 42 in the form of a transverse stud slidably mounted in a pair of aligned slots 43 formed in the sides of the handle 10, said catch being provided on one end with an exterior ribbed thumb piece 44 and on the other end with an exterior round head 45 retaining a curved spring washer 46 which will frictionally resist accidental sliding of the catch 42 in the slots 43.

The upper rear edges of the parallel handle sections 13 and the anchor block 20 are formed with a rearwardly facing hook 47 adapted to be engaged by the catch 42 to retain the pruner in closed position.

The handle 10 will normally be held uppermost in the user's hand, and preferably is longitudinally convex while the lower handle 11 is longitudinally concave. Moreover, the handles 10 and 11 preferably are formed with cross grooves 48 so that the pruner may be more firmly gripped in the user's hand without slipping.

Operation

In operation, the improved snap cut pruner will be found advantageous in pruning the branches of small trees and shrubs. The blade 17 will have a sliding cutting action with respect to the anvil 29 which will be very efficient in cutting the branches.

The thumb piece 44 is conveniently located for release by the user's thumb, whereupon the spring 40 will automatically urge the pruner to open position. The pruner may then be readily manipulated to close the blade 17 against the anvil 29, which is preferably made of a relatively soft metal, such as brass, and upon release of pressure from the handles the spring 30 will again raise the blade 17 from the anvil 29.

One advantage of the present invention is that the rigid locking of the anvil 29 in the jaw insures that the accurate alignment of the edge of the cutting blade 17 with the face of the anvil 29 will be maintained.

A further advantage is that the anvil 29 may be quickly detached and replaced merely by removing the screw 33*a* and then loosening the screw 33. A new anvil 29 may then be inserted into the groove 28 and the screws 33 and 33*a* tightened to clamp the anvil firmly between the jaw members 24.

It will be observed that the screws will exert a strong clamping action upon the anvil, and the screw 33*a* engages in the notch 38 of the anvil to positively prevent longitudinal sliding thereof. Moreover, since the lower surface of the head of the anvil bears directly against the upper edges of the jaw members 24, none of the direct stresses resulting from the cutting action will be transmitted to the screws 33 and 33*a*. Thus, the screws 33 and 33*a* will not be deformed and will not work out of place.

The cutting blade 17 may be quickly removed by disengaging the center bolt 14 and lifting the blade 17 out from engagement with the anchor block 20. The blade 17 may again be assembled

and firmly held in the pruner by inserting the center bolt 14, without the use of any additional pins or bolts.

Another advantage is that the grooved formation of the jaw members makes it possible to secure the anvil firmly therebetween without requiring flanges or other outwardly-extending formations on the jaw members, which would increase the thickness of the lower jaw. This advantage will be appreciated by a gardener who wishes to trim as closely as possible to an intersecting branch or trunk.

Another advantage of the present invention is that most of the pruner parts, with the exception of the cutting blade and the anvil, are adapted to be made from sheet steel or other sufficiently stiff inexpensive sheet material.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosures, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In a pruner, a cutting knife, a jaw, and means mounting said knife and jaw for relative swinging movement into cutting engagement, said jaw comprising an elongated anvil having a lengthwise head adapted for direct abutting engagement by the cutting edge of said knife, an integral rib depending from said head, opposed enlarged portions along each side of said rib, and a pair of jaw members having elongated opposed grooves in their edge portions embracing and gripping said enlarged portions of said rib, said jaw members being self-supporting and each attached to said mounting means at one end only.

2. The invention as defined in claim 1, including a screw engaged in said jaw members, for maintaining said members in clamping engagement with said rib.

3. The invention as defined in claim 1, in which the edge of said rib is provided with a notch and including a screw engaged in said jaw members and in said notch for maintaining said members in clamping engagement with said rib, and locking said rib against longitudinal movement.

4. In a pruner, a cutting knife, a jaw, and means mounting said knife and jaw for relative swinging movement into cutting engagement, said jaw comprising an elongated anvil having a head adapted for direct abutting engagement by the cutting edge of said knife, an integral rib depending from said head, said rib having an enlarged edge, and a pair of jaw members having elongated opposed grooves on their edge portions embracing and gripping said rib, said grooves conforming to the shape of said rib and enlarged edge, whereby said anvil will be securely clamped within and supported from underneath by said jaw members.

5. The invention as defined in claim 4, including a screw engaged in said jaw members for maintaining said members in clamping engagement with said rib, said rib being provided with a notch embracing said screw.

6. In a pruner, a cutting knife, a jaw, and means mounting said knife and jaw for relative swinging movement into cutting engagement,

said jaw comprising an elongated anvil having a head adapted for direct engagement by said knife, an integral rib depending centrally from said head, said rib having opposed lengthwise enlarged portions along each side thereof, a pair of jaw members having opposed grooves in their edge portions embracing said enlarged portions of said rib, a screw engaged in said jaw members for maintaining said members in clamping engagement with said rib, the edges of said jaw members being disposed in bearing engagement against the under face of said head adjacent opposite sides of said rib, whereby said screw will be relieved of working stresses.

7. In a tool, a jaw comprising contiguous flat jaw members, means for clamping said members together, opposed grooves in said members adjacent their upper edges, the upper edge portions of said members being reduced in thickness to form a throat entering into said grooves, and a work-engaging member including a head and a depending rib having an enlarged edge, said rib conforming to the shape of said throat and grooves and being of slightly greater width than said throat and grooves, whereby said jaw members are adapted to grip said rib securely in said grooves and throat.

8. In a tool, a jaw comprising contiguous flat jaw members, opposed grooves in said members adjacent their upper edges, a work-engaging member including a head and a depending rib having a notch in its edge, said rib conforming to the shape of said grooves, and being of slightly greater width, a screw engaged in said jaw members, and clamping said rib between said jaw members, said screw being received in said notch, whereby said work-engaging member is locked against endwise movement.

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