Nov. 16, 1926. 1,607,470

E. McKENNEY

PRUNER

Filed Jan. 7, 1922

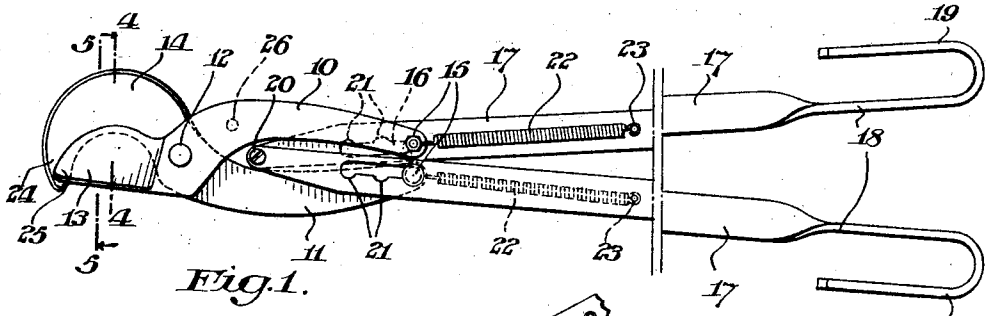


Fig. 1.

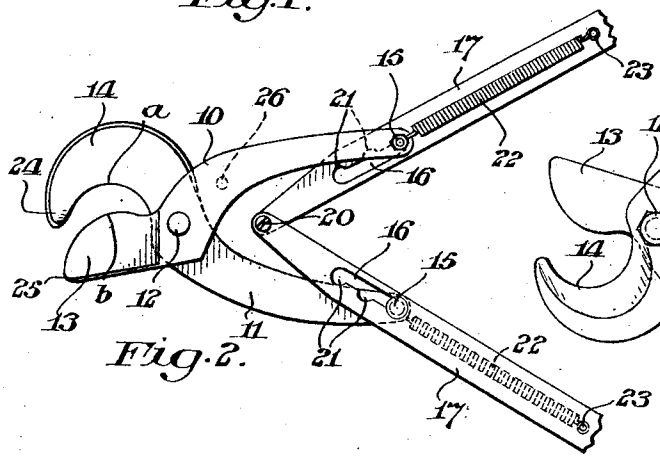


Fig. 2.

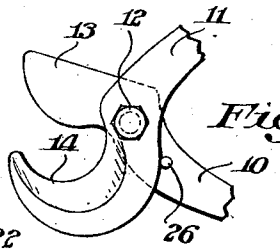


Fig. 3.

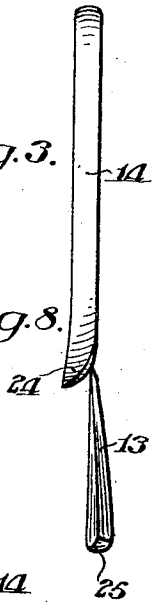


Fig. 8.



Fig. 4.



Fig. 5.

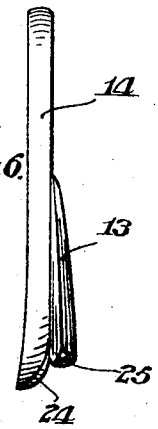


Fig. 6.



Fig. 7.

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UNITED STATES PATENT OFFICE.

EMERSON McKENNEY, OF ROXBURY, MASSACHUSETTS.

PRUNER.

Application filed January 7, 1922. Serial No. 527,569.

The invention relates to pruners. The object is to provide a device of the character described which shall be simple in construction, durable and efficient in operation and adjustable for meeting variations in strains.

The invention comprises an arrangement of cooperating cutting blades of such special formation as shall prevent improper interference or distortion of one blade with respect to the other, improved actuating means whereby the power may be increased relatively to the work to be done, and means for automatically returning the parts to initial position after the cutting operation.

The invention preferably includes a convex cutting blade with improved formation of the point thereof, and a concave blade having improved formation of the point or end thereof, so that said points or ends cannot be twisted or distorted into conflicting relationship when under stress, and means for limiting the opening movement of the blade jaws.

Referring to the drawings which illustrate, merely by way of example, suitable means for the embodiment of my invention;—

Fig. 1 is a side elevation with the cutting blades in the closed position.

Fig. 2 is a similar view with the cutting blades in partly open position.

Fig. 3 is a fragmentary view of the opposite side, showing the cutting blades open to their fullest extent.

Fig. 4 is a section on line 4—4 of Fig 1.

Fig. 5 is a section on line 5—5 of Fig. 1.

Fig. 6 is an end view with the blades in the closed position.

Fig. 7 is an under plan view of same.

Fig. 8 is an end view with the blades partly separated.

Figs. 4 to 8 inclusive, are on a larger scale than Figs. 1 to 3 inclusive.

Similar numerals refer to similar parts throughout the several views.

The elements or arms 10 and 11 are pivoted at 12, and are provided with the cooperating cutting blades 13 and 14. To the inner ends of elements 10 and 11 are rigidly secured the pivot posts or pins 15. These pins project through the slots 16 of the operating arms 17. These arms 17 consist of flat metal strips which are twisted as at 18, and provided with the returned or hook formation as at 19 as and for the purpose hereinafter specified. The arms 17 are pivoted together at 20. The slots 16 are provided with the separated recesses 21 for the purpose hereinafter described. To the studs or posts 15 are secured one end of each of the springs 22. The other end of each spring is secured to a pin 23 on the arm 17. The outer end 24 of cutting blade 14 is slightly rounded and also bent away from the plane of the cutting engagement with cutting blade 13. The cutting blade 13 also has its free end 25 bevelled or curved out of the plane of the cutting engagement of said two elements. The blade 13 is of convex formation, being bevelled symmetrically from its middle part to its arc-shaped cutting margin. The blade 14 is of concave formation and is bevelled symmetrically to its arc-shaped cutting margin. The opposite cutting margins of blades 13 and 14 are so formed and proportioned with respect to the common pivot 12 that the points *a* and *b*, which are opposite each other in Fig. 2, will have a substantially lateral relative movement in opposite directions as the blades move into the closed position, as in Fig. 1. This results in a shearing action of each blade upon the object operated upon which is especially effective in a pruner having a pair of opposite acting cutters.

In operation.

It will be noted that when the pruners are doing no work as in Fig. 1, the spring 17 will maintain the posts or pins 15 in the extreme ends of slot 16 remote from the cutting blades. This secures the extreme opening movement of the cutting blades, since this gives the maximum distance between pivot 20 and posts 15. After a certain preliminary cutting into the limb, the power required to complete the cutting increases as the blades approach the diameter of the limb, and if the resistance presented by the limb in the final cutting operation is abnormal, it is only necessary to pull upon the handles 18 to bring the second or third recess 21 into engagement with post 15. By bringing the recess 21, which is nearest the pivot 20, into engagement with post 15, the power which may be exerted, is increased nearly 50%. When the cutting of the limb is completed, the posts are automatically returned to the initial position, which position is maintained for easy cutting.

As is well known, when the blades are engaged with a limb and pressure is exerted in the attempt to close the same, it fre-

quently happens that a twist is given to the device which tends to cause the ends of the blades to pass each other across the plane of their cutting engagement. This locks the blades against further closing movement, and also frequently results in seriously injuring the cutting edge. I overcome this disadvantage by forming the ends 24 and 25 of the blades as shown in Figs. 5 to 8, inclusive. For example the end 24 of blade 14 is bent away from the plane of its cutting edge to a point beyond the plane of its outer side, and rounded or blunted as shown clearly in Fig. 6. The end 25 of blade 13 is also rounded or blunted so that in case the blades become distorted in approaching the closing position, these rounded or blunted ends will guide the blades into their proper relative position and prevent the interference above referred to.

In order to prevent the opening of the blades to a greater extent than is suitable for their proper operation, I provide the pin 26 on member 10 which engages the rear margin of blade 14, as shown in Fig. 3. This limits the opening movement to the maximum point for efficient operation.

What I claim is:—

1. In a pruner, the combination of cooperating cutting blades pivoted together, operating levers pivoted together and having pin and slot engagement with the cutting blades and means for automatically returning the pin to the end of the slot remote from the pivot connection of the operating levers.

2. In a pruner, the combination of cooperating cutting blades pivoted together, operating levers pivoted together and having pin and slot engagement with the cutting blades and spring means for automatically returning the pin to the end of the slot remote from the pivot connection of the operating levers.

3. In a pruner, the combination of cooperating cutting blades pivoted together, operating levers pivoted together and having pin and slot engagement with the cutting blades and means for automatically returning the pin to the initial end of the slot.

4. In a pruner, the combination of cooperating cutting elements, one element having a hook shaped cutting blade, each pivoted to the other at a point intermediate its two ends, a pair of operating levers each pivoted to the other at its extreme end, and means forming a pin and slot engagement between the free end of each cutter element and an operating lever at a point on the operating lever removed from its pivot connection, the said pins being movable along said slots as and for the purpose specified.

5. In a pruner, the combination of cooperating cutting elements, each pivoted to the other at a point intermediate its two ends, a pair of operating levers each pivoted to the other at its extreme end, and means forming a pin and slot engagement between the free end of each cutter element and an operating lever at a point on the operating lever removed from its pivot connection, the said pins being movable along said slots and the slots having marginal recesses, spaced apart, as and for the purpose specified.

6. In a pruner, the combination of cooperating cutting elements, each pivoted to the other at a point intermediate its two ends, a pair of operating levers each pivoted to the other at its extreme end, means for connecting the extreme free ends of the cutting elements directly to the operating levers at points removed from their ends, and means for shifting said connecting points as required.

7. In a pruner, the combination of cooperating cutting elements, one element having a hook shaped cutting blade, each pivoted to the other at a point intermediate its two ends, a pair of operating levers, each pivoted to the other at its extreme end, and means forming a pin and slot engagement between the free end of each cutter element and an operating lever at a point on the operating lever removed from its pivot connection, the said pins being movable along said slots during the cutting operation, as and for the purpose specified.

EMERSON McKENNEY.