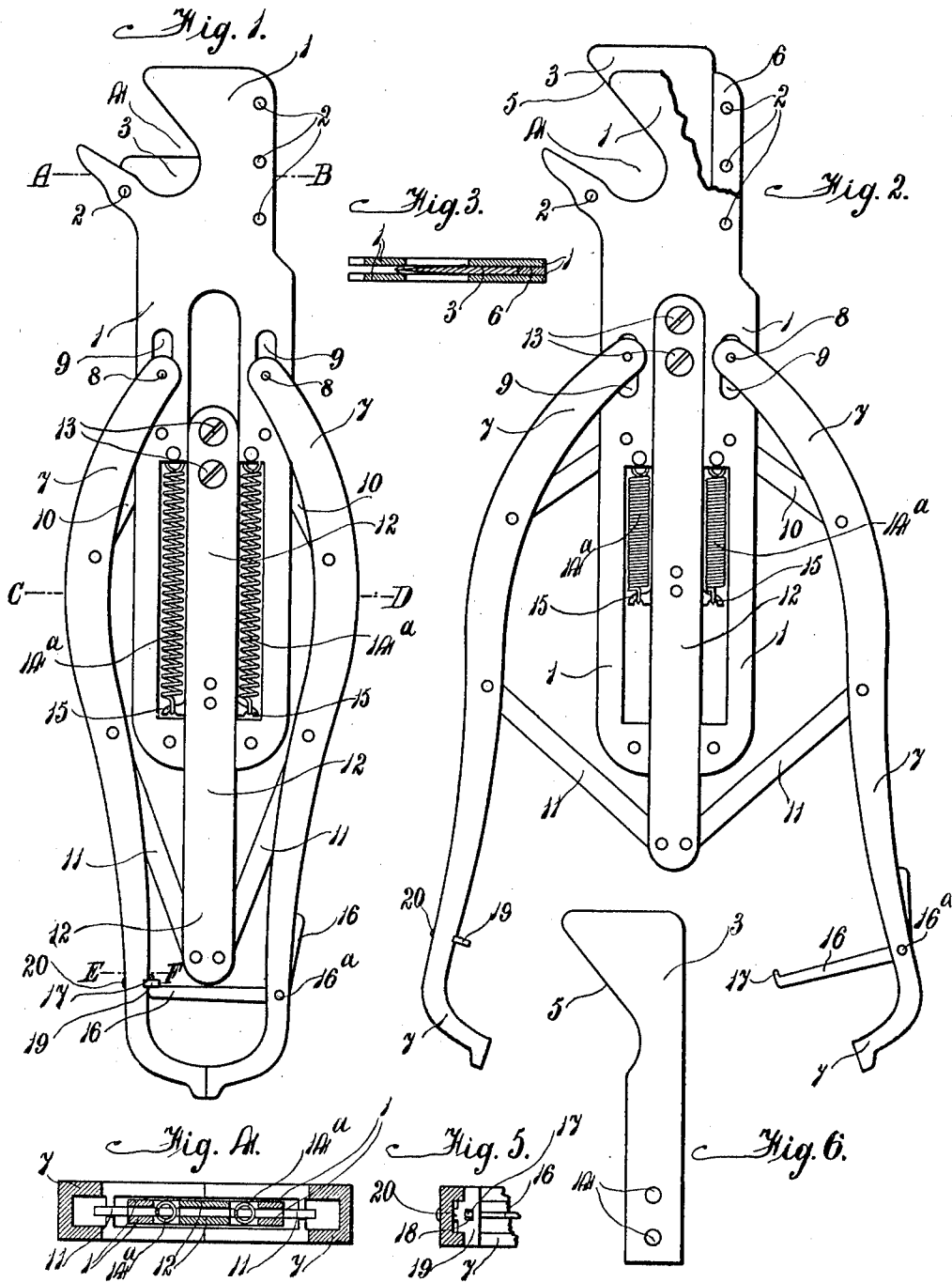


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PRUNING TOOL AND LIKE SHEARING IMPLEMENT.  
APPLICATION FILED JULY 2, 1912.

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Patented July 1, 1913.



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# UNITED STATES PATENT OFFICE.

JOSEPH ERNEST BARROWS, OF YARDLEY, BIRMINGHAM, ENGLAND.

PRUNING-TOOL AND LIKE SHEARING IMPLEMENT.

1,066,456.

Specification of Letters Patent.

Patented July 1, 1913.

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*To all whom it may concern:*

Be it known that I, JOSEPH ERNEST BARROWS, subject of the King of Great Britain, residing at Sunny Meade, Station Road, Yardley, Birmingham, in the county of Warwick, England, have invented a new and useful Pruning-Tool and Like Shearing Implement; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention comprises improvements in pruning tools and like shearing implements and refers more especially to that class of such in which the movement of the knife is controlled by a toggle device, the knife moving in a straight line; the object of the present invention being to provide an improved and more powerful tool of the specified type.

In tools controlled by toggle devices as heretofore employed it has been the custom to directly pivot the handles upon the framework and to effect a longitudinal movement of the knife by means of a single link or pair of links, but in such cases in order to obtain a substantial movement of the knife it was necessary to have a large movement of the handles. In a pruning tool designed to be gripped by one hand only the movement allowed to the handles is obviously limited by the size of the hand so that in designing such a tool the amount of movement allowed to the handle is practically constant, and therefore only a small movement of the knife has heretofore been obtainable. In consequence it has been impossible to employ any considerable amount of "shear" upon the tool and consequently the tools as heretofore made have performed their work chiefly by a squeezing action which in practice was liable to damage and bruise the branches of the tree.

It is one of the chief objects of the present invention to provide an arrangement wherein there is a greater length of cutting stroke with consequent increased amount of "shear" upon the cutting edge with a minimum amount of movement of the handle.

According to my invention in a pruning tool or like shearing implement of the kind wherein the knife moves in a straight line, the knife is actuated by a toggle controlling device one link of which is connected to the knife and the other link connected to the frame, so arranged that when the handle is operated the one link imparts a thrust to

the frame while the other link applies a pull to the knife whereby a greater cutting power is imparted to the tool.

Referring to the drawings:—Figure 1. illustrates the pruning tool as in its closed condition. Fig. 2. is a similar view of the tool open. Fig. 3. is a section at A—B in Fig. 1 showing the knife and its rear support. Fig. 4. is a section at C—D in Fig. 1. Fig. 5. is a section at E—F in Fig. 1 showing the retaining catch. Fig. 6. illustrates the knife removed.

In carrying my invention into practice as illustrated upon the accompanying drawings the framework of the tool comprises two plates 1 of sheet metal which are secured together, but at a suitable distance apart, by shouldered rivets 2, while between these two plates the knife 3 slides. The plates are provided with a recess 4 into which enters the branch or part to be cut, the knife being provided with an inclined cutting edge 5 adjacent to the said recess, and it will be obvious that when the knife moves as it does in a straight line its cutting edge being inclined to the work will have a powerful shear cut, while to prevent displacement of the knife laterally it is supported at the rear by the part 6 riveted to the plates. The control is by a pair of handles 7, one extremity of each of which is provided with a pin 8 which engages a slot 9 in the framework. These handles are connected by free jointed links 10 to the framework 1 and by other links 11 to the knife carrier 12. The knife carrier comprises two flat bars of metal disposed in similar manner to the plates, one extremity being secured to the knife by a pair of screws 13 passing through holes 14 in the knife, the plates obviously acting as guides for the knife carrier.

It will be obvious that when the two handles 7 are held in the hand and moved toward each other the links 10 and 11 will be straightened, the former imparting a thrust to the plates or framework, while the latter applies a pull to the knife by which means a considerable relative movement between the plates and knife is obtained, the cutting stroke obviously depending upon the amount of this relative movement. This substantial length of cutting stroke is obtained with the links in their most powerful position, namely, their nearest approach to a straight condition as distinguished

from a position approximating to right angles to the line of movement of the knife. Two springs 14<sup>a</sup> are connected to the plates and to the lugs 15 carried by the knife carrier, and it will be obvious that when the tool is operated for cutting the springs will be extended, the extended springs serving to retract the knife and to separate the handles.

To retain the tool in its closed condition when not required for use a suitable catch is provided. As illustrated the catch comprises a bell crank lever 16 pivoted to one handle at 16<sup>a</sup> and having an upturned extremity 17 which engages a recess or opening 18 in the T-shaped lug 19, said lug having a shank 20 whereby it is riveted to the one handle. This catch is so arranged that the upstanding part 17 will engage the recess 18 when the tool is held in a suitable position, and then when the tool is gripped in the hand of the user the one limb projecting as it does beyond the handle will be pressed inwardly until it is flush with the handle, the upstanding part 17 being thus released from the lug. It will thus be seen that when the tool is held in the hand the catch is automatically released and it is impossible for the catch to re-engage when the tool is so held.

It will be obvious that the return springs may be disposed in any suitable manner, and that to remove the knife for sharpening or replacement it is only necessary to remove the screws 13 when the knife is released from its carrier. This ready detachment and replacement of the knife is a great convenience in practice for it permits a relatively thin knife to be used with consequent ease of cutting for a number of knife blades may be supplied with the tool for replacement in the event of breakage of the knife.

Although two handles are illustrated upon the drawings they are not absolutely essential for there may be one handle only, the grip then being between a part fixed to the framework and the movable handle with a single pair of toggle links, but the double hand and double set of toggle links is obviously the best it being more convenient in use, stronger and better balanced. Again the handles may be of any suitable length and continued so that each handle may be separately gripped by a hand of the user to provide a more powerful two handed tool.

Having thus fully described the invention what I claim as new and desire to secure by Letters Patent in the United States of America is:—

1. In a pruning tool or like shearing im-

plement, the combination of a framework; a knife slidable therein; an actuating handle; a link connecting said handle to the framework; a second link inclined in the opposite direction to the first link and connecting the handle to the knife; means for opening the tool after actuation; and means for locking the tool in its closed condition; all for the purpose specified and substantially as described and shown upon the accompanying drawings.

2. In a pruning tool or like shearing implement, the combination of a framework comprising two plates secured together at a distance apart; a knife slidably mounted in the framework; an actuating handle; a knife carrier also slidably mounted in the framework and carrying the knife; a pair of actuating handles; a link connecting each of said handles to the framework; a second pair of links inclined in the opposite direction to the first pair and connecting the handles to the knife carrier; and a pair of springs connecting the knife carrier to the framework and serving to retract the knife and actuating handle; all for the purpose specified and substantially as described and shown upon the accompanying drawings.

3. In a pruning tool or like shearing implement, the combination of a framework; a knife slidable therein; an actuating handle; a link connecting said handle to the framework; a second link inclined in the opposite direction to the first link and connecting the handle to the knife; and means for opening the tool after actuation; all for the purpose specified and substantially as described and shown upon the accompanying drawings.

4. In a pruning tool or like shearing implement, the combination of a framework comprising two plates secured together at a distance apart; a knife slidably mounted in the framework; a knife carrier also slidably mounted in the framework and carrying the knife; a pair of actuating handles; a link connecting each of said handles to the framework; a second pair of links inclined in the opposite direction to the first pair and connecting the handles to the knife carrier; and means for opening the tool after actuation; all for the purpose specified and substantially as described and shown upon the accompanying drawings.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH ERNEST BARROWS.

Witnesses:

HAROLD J. C. FORRESTER,  
NORMAN S. BARLOW.