Aug. 21, 1928. 1,681,746

F. H. RAUH

CLIPPER

Filed Sept. 1, 1926

Fig. 1

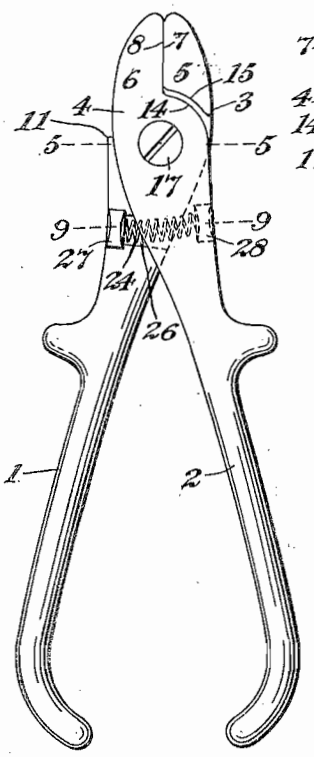


Fig. 4

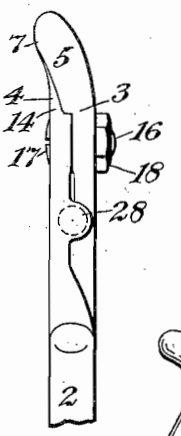


Fig. 2

Fig. 3

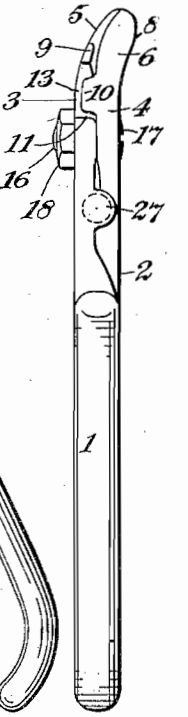


Fig. 5

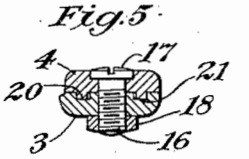


Fig. 6

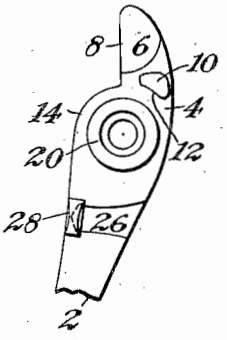


Fig. 7.

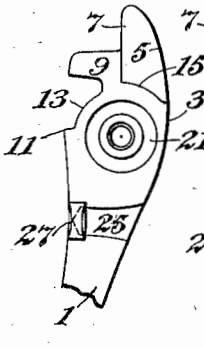


Fig. 8.

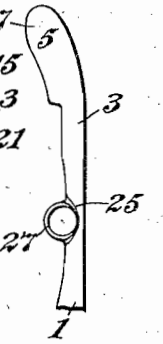
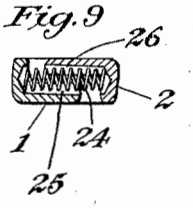


Fig. 9



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UNITED STATES PATENT OFFICE.

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CLIPPER.

Application filed September 1, 1926. Serial No. 132,924.

My invention relates to clippers, and particularly to those intended for cutting the stems of plants, flowers and fruits, for instance, oranges or other fruits when the fruit is being picked from the trees; and objects of my invention are to improve the accuracy and durability of the tool; protect its relatively moving parts from injury from sap, dust and grit; to protect its spring mechanism against fouling and displacement; and to so dispose the metal of the shanks as to give the requisite strength without making the tool cumbersome or interfering with the proper adjustment of its various parts.

The details of my improvements I will now proceed to explain, referring in so doing to the accompanying drawings, in which Fig. 1 is a plan view of a clipper embodying my invention, showing the jaws closed; Fig. 2 is a plan view of the reverse side of the same, showing the jaws opened; Fig. 3 is an edge view taken as looking to the left on Fig. 2; Fig. 4 is an edge view taken as looking to the left on Fig. 1, the handle portions of the shanks being omitted; Fig. 5 is a cross sectional view taken on the line 5—5 of Fig. 1, looking up; Fig. 6 is an inside view of the upper end of the jaw shown undermost in Fig. 2; Fig. 7 is an inside view of the upper end of the jaw shown undermost in Fig. 1; Fig. 8 is a view of the same looking to the left on Fig. 7; and Fig. 9 is a cross sectional view taken on the line 9—9 of Fig. 1, looking up.

Similar reference numerals designate similar parts in all the figures.

The clipper illustrated embodies a pair of shanks 1, 2 provided respectively with jaws 3, 4; provided respectively with curved blades 5, 6, having meeting, cutting edges 7, 8. The blades 5 is provided with a stem stop 9 overlapping the blade 6; and the blade 6 is provided with a lug or stop 10, lying in front of the shank of the stem stop 9, and positioned to intercept a shoulder 11 in the jaw 3 to arrest the opening of the jaws beyond a definite limit. The curved face 12 of this lug 10 is not, however, intended to engage with the curved shoulder 13 of the jaw 13; nor is the curved shoulder 14 of the jaw 4 intended to engage with the curved shoulder 15 of the jaw 3, these shoulders having clearance from each other, so that ordinary amounts of sap, dust or grit getting into the spaces between them will not interfere with the operation of the clippers, the jaws not depending on the shoulders to hold them to duty, but being carried by the particular pivoting means I will now describe.

The jaws 3 and 4 are connected by a bolt, 16, the head 17 of which is preferably countersunk in the jaw 4, the shank of the bolt being secured by a nut 18. The primary function of this bolt is to hold the jaws together, side by side, but not to carry the thrust of the jaws away from each other during use. That is done by the annular flange 20 on jaw 4 cooperating with the annular groove 21 in jaw 3, which gives a broad, continuous bearing surface for the flange, greatly increasing the strength of the connection, preventing wobbling of the jaws if the bolt 16 becomes loose in its seat through wear, and completely enclosing the bearing between the jaws, the broad, opposed surfaces of which are so close to each other as to quite effectually exclude sap, dust or grit from the bearing.

The stability given by such a broad pivot bearing is of considerable importance. For, where blades meet edge to edge as in these clippers, wobbling or lateral play of the blades greatly impairs their efficiency, tending to make their work so defective that the fruit stems will not be smoothly and evenly cut, but will have irregularities or splinters on their ends, which may injure other fruit with which the defectively cut one may be handled or packed.

Slight clearance may be provided between the inner shoulders of the flange 20 and groove 21, as shown in Fig. 5, affording a suitable space for a lubricant if that is found to be desirable.

By applying this ring and socket pivotal connection between the jaw shanks I get rid of the shearing strain which is present on the ordinary pivot bolt, and make one jaw shank directly take up the thrust of the other, over a comparatively wide space, due to the height of the annular flange. This gives an even movement of the jaw shanks relative to each other in opening and closing them, and this evenness of movement is facilitated by placing the expanding spring so that its thrust is distributed in the transverse plane of the pivot element, so that the jaw shanks are not given a tarving impulse by the spring. To accommodate the spring

in this way I recess the shanks on their overlapping sides as I will point out hereafter.

With clippers of this general character in which a coiled, opening, spring is interposed between the shanks of the tool, in a usual way, the spring, also, is so exposed to leaves, twigs and the like that it is apt to be caught, clogged or pulled out of place and lost.

To permit the spring 24 in my tool to be placed in the proper plane of thrust, and also to protect or guard the spring, laterally, I form tapering recesses or channels 25, 26, in the shanks 1, 2, adapted to accommodate the spring, so that each shank forms a guard or protection for one end of the spring on one side when the clipper jaws are opened; and this protection is materially increased by the overlapping of the shanks when the jaws are closed. The tapering character of the channels 25, 26 permits the spring to bend or bow, as shown in Fig. 2, when the jaws of the clipper are opened; and this is facilitated by making the channels deeper at their inner ends than at their outer ones. Recessed seats for the ends of the spring are formed in lugs 27, 28 on the shanks 1 and 2. These lugs not only afford seats for the ends of the spring, but they also perform the important function of strengthening and stiffening the shanks, in compensation for the material removed to form the channels 25, 26. The lugs form flange-like reinforcements at one edge of the shanks, which, cooperating with the wide, though thinned, body of the shanks give a good degree of rigidity and strength to the shanks at this point.

By means of my improvements I secure a clipper which has a high degree of strength, stability and durability in use; wherein the thrust of the blades is taken up by wide, protected bearings; wherein the danger of clogging by sap, dust or grit is largely avoided; and wherein the opening spring is well guarded against accidental entanglement or displacement.

It will be understood that details of construction may be modified, as by the use of mechanical equivalents, without departing from the spirit of my invention, or the scope of the claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. A clipper embodying a pair of relatively-crossed, jawed shanks provided with cooperating cutting edges, positioning means connecting the jawed shanks, the inner face of one shank being provided with an annular flange having a substantially vertical outer face, and the inner face of the other shank being provided with a complementary, annular groove having a substantially vertical outer face to receive the annular flange the outer face of the groove making a close seat for the outer face of the flange, the inner face of the flange being spaced from the inner face of the groove, forming a pivotal connection between the shanks.

2. A clipper embodying a pair of relatively-crossed, jawed shanks pivoted to each other and provided with spring accommodating grooves in their opposed sides and with supports for the ends of a coiled spring, the shanks being each sufficiently wide to cover one side of substantially one half of the spring when the shanks are opened normally, and to inclose the central portion of the spring on both sides when the shanks are closed together, and a coiled spring mounted between the shanks.

3. A clipper embodying a pair of relatively-crossed, jawed shanks provided with cooperating cutting edges, positioning means connecting the jawed shanks, the inner, crossed faces of the shanks being broad and provided with relatively-engaging pivotal elements, the shanks beyond the pivotal point being also broad and being provided in their opposed overlapping faces with spring accommodating grooves and upon their outer edges at the ends of the grooves with flanges forming spring seats, and a coiled spring mounted on said seats and housed between the overlapping faces of the shanks.

4. A clipper embodying a pair of relatively-crossed, jawed shanks, positioning means connecting the jawed shanks, being provided with transverse spring accommodating grooves in their inner faces and with edge flanges constituting spring end bearings, and a coiled spring disposed in said recesses between said bearings, the inner edges of the shanks overlapping each other at the longitudinal center of the spring when the clipper shanks are opened normally.

FREDERIC H. RAUH.