

SPECIFICATION

Cutting tool for grafting

5 This invention relates to a cutting tool for grafting in viniculture, aboriculture and horticulture.

Grafting was traditionally carried out completely manually but for large-scale cultivation involving grafting, this became obsolete, uneconomical and
10 unproductive and in order to eliminate the laborious and labour-intensive nature of grafting several tools were developed for preparing plants in particular in vineyards. With one such tool a scion from one plant and a cleft area on the plant to be grafted can be cut
15 in the form of the Greek letter omega and accordingly grafting of the scion to the cleft area can be successfully and jointlessly carried out. By using said device, the traditional method of pairing according to the English "tongue-method", which requires
20 specialized knowledge is not necessary. However, this static tool must be operated with a pedal and graftings may be prepared only from preselected understocks. There has, for example, long been a demand for an efficient handtool for on the spot
25 work in the vineyards. A similar demand exists, even to a greater extent, for orchards and gardens in which ornamental shrubbery and plants are cultivated.

Other cutting tools for grafting for gardeners
30 employed a knife and operated like pliers or scissors but a traditional grafting knife was also needed and the overall time taken was not significantly reduced. The work cannot be performed successfully by means of the known handtools at all, since the
35 pieces to be fitted can be cut only in accordance with the tongue-method. Accurate grafting requires mating of the scion and cleft since the delivery of sap can be achieved only with precisely fitted grafts. The fitting and fixing of the scion and cleft are timeconsuming and can only be performed manually.

Accordingly, a cutting tool for grafting which improves the time-consuming and laborious nature of the work, prevents the preparation of faulty grafting and allows productive on the spot grafting is
45 required.

According to the invention, we propose a cutting tool for grafting comprising first and second members intersecting at a common pivot, each member including a handle portion on one side of the pivot,
50 the portion of the second member on the other side of the pivot to the handle being connected with firstly, the portion of the first member on the other side of the pivot to the handle via a movable understock locating member connected to the
55 second member and a cutting edge attached to the first member and secondly, the portion of the first member on the same side of the pivot as the handle via a spring.

The tool can be used for preparing all kinds of
60 graftings for example, those for vine, fruit or ornamental shrubbery and graftings may be prepared indoors in winter, in the spring on the spot and in addition to these greengrafting or propagation by cutting are possible.

65 An embodiment of this invention is described by

way of example and with reference to the drawings, in which:

Figure 1 shows a schematic side-view of a cutting tool according to this invention and

70 *Figure 2* shows a schematic front view of the cutting tool shown in *Figure 1*.

As shown in the drawings, a cutting tool according to this invention has first and second longitudinal members 1,6, having a common pivot 5. On one side
75 of the pivot the longitudinal members are curved to serve as handles (they may have any conventional shape); between the curved portion of the first member and the pivot is an off-set portion with a rounded projecting piece 2 housing the pivot, the offset portion extending in the form of a straight
80 guide portion 3, on the other side of the projecting piece 2. The end of the guide portion 3 remote from the pivot is perpendicularly bent over and forms a cutting edge holder 4.

85 A pin is located in a bore in the projecting piece 2 for serving as the pivot. The second member 6 can be rotated about the pivot 5 relative to the first member 1. The second member 6 extends from the pivot at an angle to the handle thereof and the end of this extension 7 remote from the pivot is round and clevis-shaped and houses a bore through which a pin passes for connecting an end of an arm 10 to the extension 7. A spring 9 has one end attached to the first member 1 where the curved handle portion
90 meets the off-set portion and the other end attached to pin 8. Movement of the second member 6 about pivot 5 thus induces to-and-fro movement of the arm 10 against the spring 9.

Along the whole length of the guide portion 3
100 there is a groove 11 for guiding a movable locating element fixed to the end of the arm 10 remote from the pin 8, by means of a further pin 12. The locating element has a trough-shaped cut-away piece surface in each side at the remote from arm 10 and an
105 interior recess, which is dove-tailed in cross-section as shown in *Figure 2*.

On each side of the locating element there is an L-shaped piece 16 for separating an understock and the pieces of plant cut out by a knife comprising two
110 parallel spaced apart blades 15 which are fixed to the holder 4 of the first member 1 by means of screws.

The movable second member 6 can be kept in a fixed, closed position by using a conventional protection plate 17 which abuts part of the projection 2
115 in the closed position. On releasing the protective plate 17, the spring 9 acts to pull the arm 10 downwards and the movable second member 6 moves away from the first member 1. As a consequence of the downward movement of the spring, the clevis-shaped element 14 holding the locating element 13 is guided together with the locating element 13 by the groove 11 downwards towards the handles.

The understock is then placed in the space between the depressed adjoining elements 13, 14 and the blades 15, and over the cut-away piece end of the locating element 13. At the same time, the second member 6 is manually pushed back towards the first member 1 against the force of the spring 9 and the
130 spring then moves the arm 10, the clevis-shaped

element 14 and locating element 13 towards the knife 15, and a U-shaped cutting edge of the blade cuts off a graft as desired. By repeatedly opening and closing members 1,6 the L-shaped pieces 16 help to take the understock off the blade. The graft is removed by means of the locating element 13.

Operation of the device requires a force of 39.23 Newtons, and so workers can operate it without difficulty.

- 10 Pieces cut using the tool according to this invention can be accurately grafted and the procedure is much more efficient than those involving the use of the conventional tools.

CLAIMS

- 15 1. A cutting tool for grafting comprising first and second members intersecting at a common pivot, each member including a handle portion on one side of the pivot, the portion of the second member on the other side of the pivot to the handle being connected with firstly, the portion of the first member on the other side of the pivot to the handle via a movable understock locating member connected to the second member and a cutting edge attached to the first member and secondly, the portion of the first member on the same side of the pivot as the handle via a spring.

- 20 2. A cutting tool for grafting according to claim 1, wherein a groove for guiding the movable understock locating member is located along the length of the portion of the first member on the other side of the pivot to the handle.

- 35 3. A cutting tool for grafting according to claim 2, wherein the cutting edge is in line with the locating element and the connection therefrom with the second member and the groove is parallel thereto.

- 40 4. A cutting tool for grafting according to any one of claims 1 to 3, wherein the understock locating member is connected to the second member via a longitudinal arm.

5. A cutting tool for grafting according to any one of claims 2 to 4, wherein the sides of the locating member are connected with an element slidable in the groove.

- 45 6. A cutting tool for grafting according to any preceding claim, wherein the cutting edge is defined by two parallel spaced apart blades housed in a holder at the end of the portion of the first member on the other side of the pivot to the handle.

- 50 7. A cutting tool for grafting according to claim 6, wherein the holder is inverted U-shaped and one arm is integral with the first member.

- 55 8. A cutting tool for grafting according to any preceding claim, wherein the understock locating member has a longitudinal extension on one arm each side of the cutting edge for separating pieces cut from the understock.

9. A cutting tool for grafting according to claim 8, wherein the extension or extensions are L-shaped.

- 60 10. A cutting tool for grafting according to any preceding claim, wherein the understock locating member has an interior recess.

- 65 11. A cutting tool for grafting according to any preceding claim, wherein the understock locating member has a piece cut-away on each side in the

end remote from the second member.

12. A cutting tool for grafting according to any preceding claim, wherein in the first member the pivot is located in a bore in a projection from the first member.

13. A cutting tool for grafting according to claim 12, wherein the projection is substantially perpendicular to the first member.

- 75 14. A cutting tool for grafting according to any preceding claim, wherein the end of the portion of the second member on the other side of the pivot to the handle and the slidable element are clevis-shaped.

- 80 15. A cutting tool for grafting according to any preceding claim, including a protective member for preventing relative movement of the first and second members.

- 85 16. A cutting tool for grafting according to claim 15, wherein the protection member comprises a plate connected to the second member for abutting a surface on the first member so as to prevent movement therebetween.

- 90 17. A cutting tool constructed and arranged as herein before described with reference to and as illustrated in the drawings.

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