

Aug. 30, 1966

J. J. DIXON
GRAFTING MACHINE

3,269,239

Filed Oct. 13, 1964

3 Sheets-Sheet 1

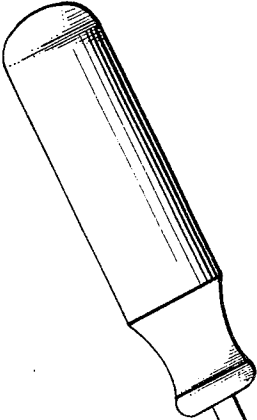
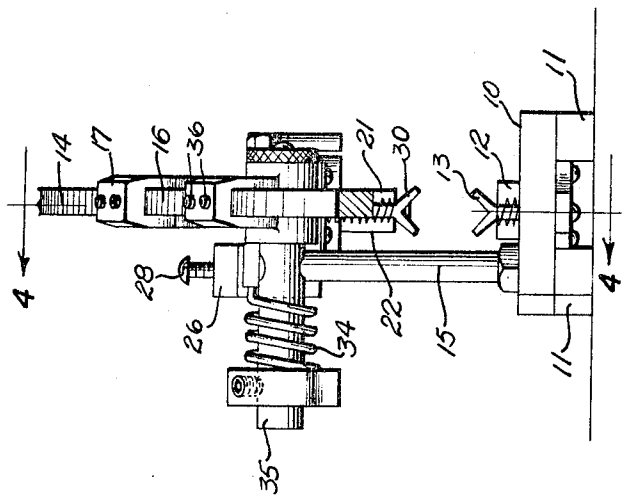
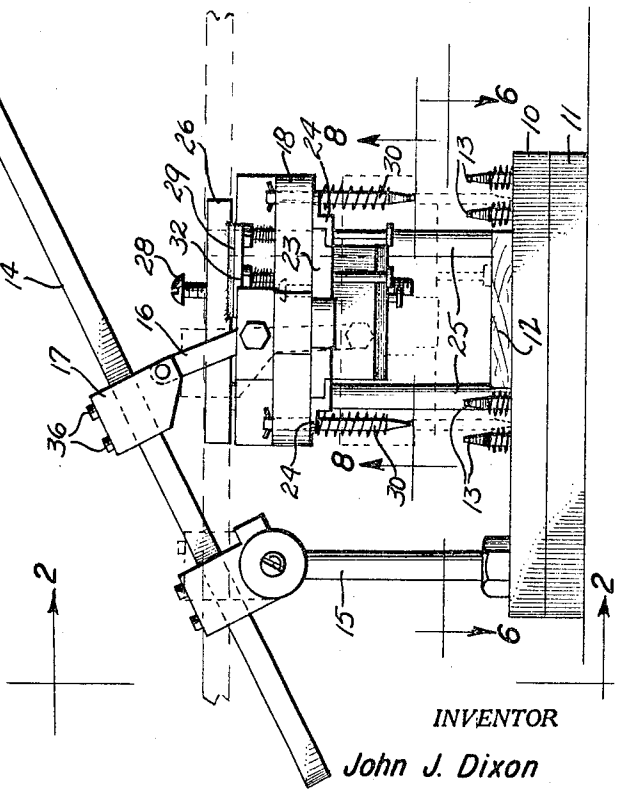


Fig. 1

Fig. 2



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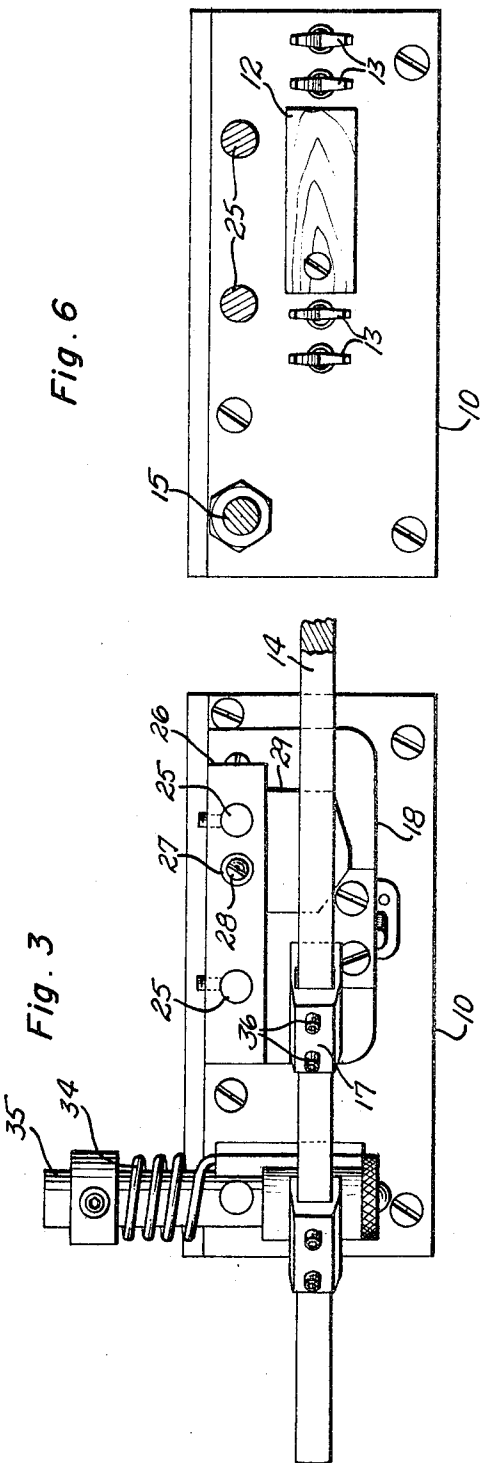
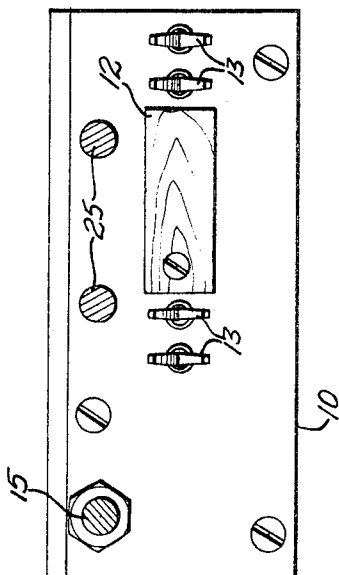
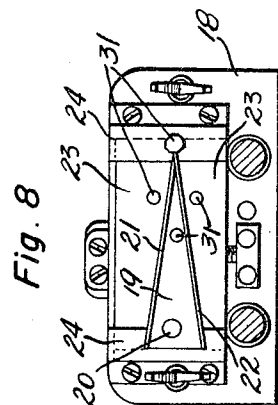
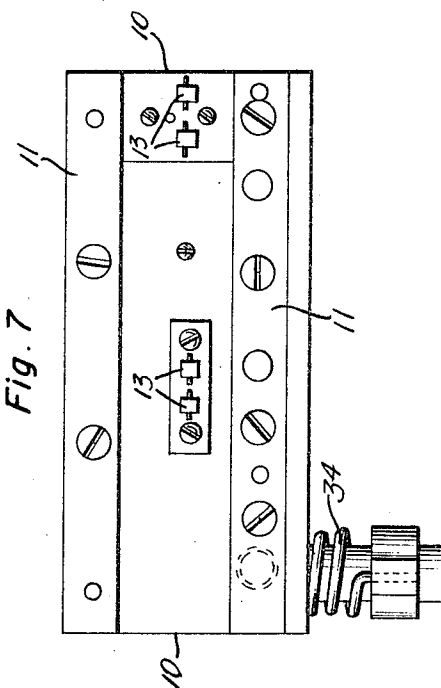


Fig. 6



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Fig. 5

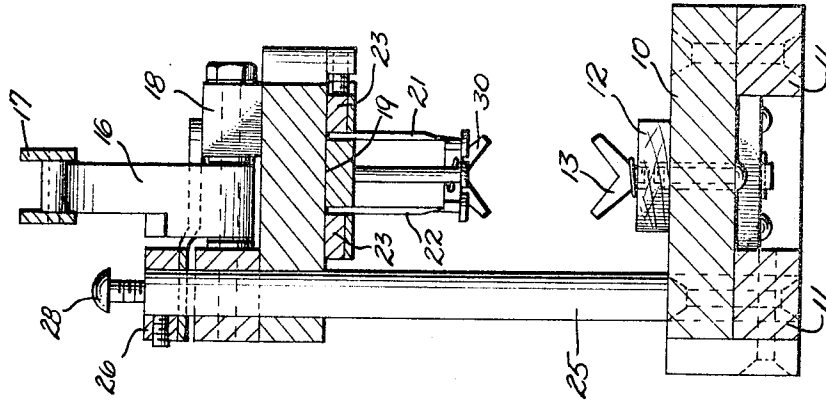
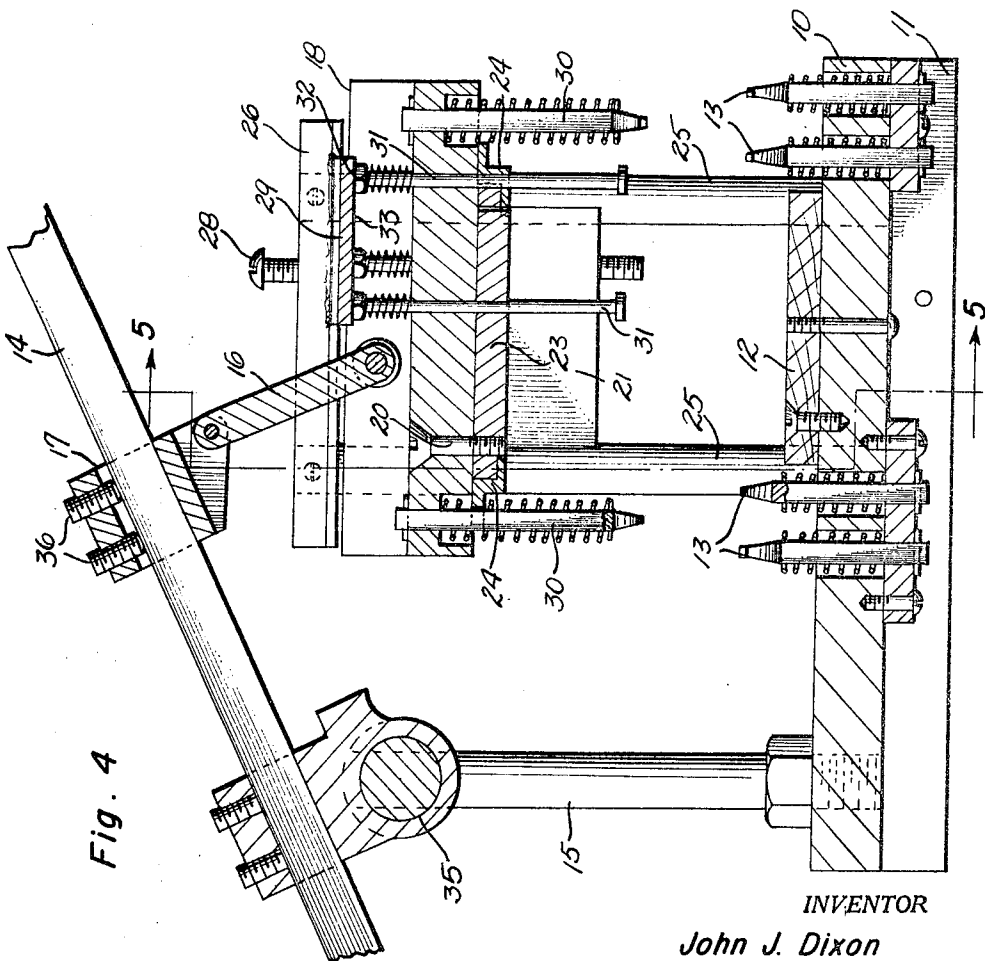


Fig. 4

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GRAFTING MACHINE

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8 Claims. (Cl. 83-140)

This invention relates to trees and shrubs, and more particularly to a machine to be used by experienced persons in the art of grafting trees and shrubs; work that is usually done by tree surgeons and the like.

At the present time all grafting is done by hand at the rate of five or six hundred grafts per day if the person is adept at this type of work. At the present time approximately sixty to eighty-five percent of the grafts are successful.

It is, therefore, the principal object of this invention to provide a grafting machine that will permit the operator to make approximately five hundred grafts per hour, grafts that are nearly one hundred percent successful.

Another object of this invention is to provide a grafting machine that is a light-weight device that can easily be set up on any bench or flat surface.

Another object of this invention is to provide a grafting machine that can be successfully operated by a person of limited experience in the art of grafting.

Another object of this invention is to provide a grafting machine which, because of its simplicity of construction, is as fool-proof as man can cause a device of this nature to be.

Another object of this machine is to provide a grafting machine that while manually operated, can be easily converted into an air or hydraulic operated device.

Another object of this invention is to provide a grafting machine that is so constructed that it cannot bind or otherwise become inoperative.

Still another object of this invention is to provide a grafting machine that can be manufactured to handle any size of grafts without affecting its basic design.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a grafting-machine, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

FIGURE 1 is a side view of this invention.

FIGURE 2 is an end view of this invention taken substantially along line 2-2 of FIGURE 1 as viewed in the direction indicated by the arrows.

FIGURE 3 is a top view of this invention.

FIGURE 4 is a sectional view of this invention taken substantially along line 4-4 of FIGURE 2 as viewed in the direction indicated by the arrows.

FIGURE 5 is a sectional view of this invention taken substantially along line 5-5 of FIGURE 4 as viewed in the direction indicated by the arrows.

FIGURE 6 is a sectional view of this invention taken substantially along line 6-6 of FIGURE 1 as viewed in the direction indicated by the arrows.

FIGURE 7 is a bottom view of this invention.

FIGURE 8 is a sectional view of this invention taken substantially along line 8-8 of FIGURE 1 as viewed in the direction indicated by the arrows.

In the drawings, where for purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a rectangular base that is secured

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to the top of, and resting on, a pair of rectangular bars 11 that serve as feet for this invention. A rectangular cutting block 12 is secured to the top of the aforesaid base 10. The cutting block which is centrally located when viewed from the end, is positioned between two pairs of spring loaded Y-shaped guides 13 as clearly shown in FIGURES 1, 4 and 6 of the appended drawings. A spring loaded, hand activated operating lever 14 is pivotally secured to the top of the vertically disposed post 15. The connecting bar 16 has its upper end pivotally secured to the connecting bar holder 17 that adjustably encompasses the aforesaid operating lever 14, while the lower end of the aforesaid connecting bar 16 is suitably secured to the upper surface of the rectangular blade holding block 18 to the underside of which is suitably secured the equilateral triangular block 19 by means of the flat head screw 20. The rectangular cutting blades 21 and 22 are located at right angle to and up against the aforesaid block 19 to which they are firmly held against by means of the two blade blocks, each one of which is indicated in FIGURE 8 of the appended drawings by the same reference number 23 since the blocks are identical to one another. The blocks are held, in part, by means of the two end members 24 that are Z-shaped when viewed from the ends, and which are secured to the underside of the aforesaid blade holding block 18.

The entire rectangular blade holding block 18 and the above described parts secured thereto is slidably mounted on two vertically disposed and spaced guide posts 25 that have their upper ends secured to the horizontally disposed tie bar 26 that is not only provided with the vertical tubular opening 27 through which freely passes the upper end of the stop screw 28 that is adjustably screwed into and through the aforesaid rectangular blade holding block 18. The aforesaid tie bar 26 also provides a place of attachment for the ejection plate 29.

A spring-loaded, inverted Y-shaped guide 30 is so vertically mounted on the under side of each end of the aforesaid blade holding block 18 as to move vertically downward between each pair of the first mentioned Y-shaped guides 13, as is clearly shown in FIGURES 1 and 4 of the appended drawings, when the hand lever 14 is pressed downward as will hereinafter be described.

The only part of this invention of a grafting machine that has not been described is the plurality of spring loaded, vertically disposed ejection pins 31 that are located in the aforesaid blade holding block 18 in the position noted in FIGURE 8 of the appended drawings.

The actual operation of this grafting machine I have invented is quite simple. The stock (branch) is placed longitudinally in the machine, with one end resting on the cutting block 12 and in the Y-shaped guides as is the scion is cut by moving the operating lever 14 in a downward direction, this action causes both of the two aforesaid spring inverted loaded Y-shaped guides 30 to come vertically downward and hold the scion in place and thus prevent its turning as the cutting blades 21 and 22 move downward and cut the stock and scion, one at a time, the both of which are ejected by the downward action of the plurality of the spring loaded ejection pins 31 as their heads 32 come into contact with the underside 33 of the ejection plate 29 as the hand lever is automatically raised upward by the action of its activating return coil spring 34 that is located on the horizontally disposed hand lever support rod 35 which is clearly shown in FIGURE 2 of the appended drawings. Vertical adjustment of the aforesaid blade holding block 18 and its associated and above described parts is obtained by means of the aforesaid stop screw 28 and its lock nut, the latter not being visible in any of the sight views of the appended drawings. Adjustment can also be obtained in part by repositioning the aforesaid connecting bar holder 17 longitudinally on the

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hand operating lever 14 by means of the two set-screws 36 which are visible in FIGURES 1 and 4 of the appended drawings, as well as by the two set screws that longitudinally position the hand lever 14 in relation to the vertically disposed post 15 by which it is supported.

It will be seen from the foregoing description that although the machine of this invention is simple of construction it combines in a ready and practical manner all of the essentials requisite in the production of a thoroughly effective machine, and owing to the manner in which the parts are combined danger of breakage in use is reduced to a minimum.

Having thus described the invention, what is claimed is:

1. A grafting machine of the character described, comprising a base; a blade holding block mounted above the said base; and a hand activated operating lever having one end indirectly secured to the said base as well as connected to the said blade holding block; and two cutting blades secured to the underside of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and mechanism adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism adapted to eject the said stock of the plant after the said cut has been made.

2. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block mounted above the said base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base, the said hand lever also being connected to the said blade holding block; and two cutting blades secured to the underside of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and mechanism adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism adapted to eject the said stock of the plant after the said cut has been made.

3. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block mounted above the said base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base, the said hand lever also being adjustably connected to the said blade holding block by means of a connecting bar; and two cutting blades removably secured to the underside of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and mechanism adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism adapted to eject the said stock of the plant after the said cut has been made.

4. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block mounted above the said base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base, the said hand lever also being adjustably connected to the said blade holding block by means of a connecting bar, and two cutting blades removably secured to the under side of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and a plurality of spring-loaded Y-shaped guides rising vertically from the said rectangular base, and a rectangular cutting block mounted on the said rec-

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tangular base and directly under the said cutting blades and between two of the said Y-shaped guides which are in line with one another and in spaced relation to one another, and a spring-loaded inverted Y-shaped guide secured to the underside of each end of the said rectangular blade holding block, the last mentioned Y-shaped guides being positioned horizontally between the first mentioned Y-shaped guides, and all of the said Y-shaped guides being adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism adapted to eject the said stock of the plant after the said cut has been made.

5. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block mounted above the said base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base, the said hand lever also being adjustably connected to the said blade holding block by means of a connecting bar, and two cutting blades removably secured to the underside of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and a plurality of spring-loaded Y-shaped guides rising vertically from the said rectangular base, and a rectangular cutting block mounted on the said rectangular base and directly under the said cutting blades and between two of the said Y-shaped guides which are in line with one another and in spaced relation to one another, and a spring-loaded inverted Y-shaped guide secured to the underside of each end of the said rectangular blade holding block, the last mentioned Y-shaped guides being positioned horizontally between the first mentioned Y-shaped guides, and all of the said Y-shaped guides being adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism in the form of a plurality of spring-loaded ejection pins, and an ejection plate horizontally mounted by one long edge on the upper portion of the said rectangular blade holding block, the said ejection pins being pressed downward by the said ejection plate as the said rectangular blade holding block is moved vertically upward by the said hand lever, the said ejection pins thereby ejecting the said stock of the plant after the said cut has been made.

6. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block mounted above the said base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base, the said hand lever also being adjustably connected to the said blade holding block by means of a connecting bar, and two cutting blades removably secured to the underside of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and a plurality of spring-loaded Y-shaped guides rising vertically from the said rectangular base, and a rectangular cutting block mounted on the said rectangular base and directly under the said cutting blades and between two of the said Y-shaped guides which are in line with one another and in spaced relation to one another, and a spring-loaded inverted Y-shaped guide secured to the underside of each end of the said rectangular blade holding block, the last mentioned Y-shaped guides being positioned horizontally between the first mentioned Y-shaped guides, and all of the said Y-shaped guides being adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism in the form of a plurality of spring-

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loaded ejection pins, and an ejection plate horizontally mounted by one long edge on the upper portion of the said rectangular blade holding block, the said ejection pins being pressed downward by the said ejection plate as the said rectangular blade holding block is moved 5 vertically upward by the said hand lever, the said ejection pins thereby ejecting the said stock of the plant after the said cut has been made; and a stop screw passing vertically through and secured to the said rectangular blade holding block, the said stop screw providing an adjustable means of controlling the depth of cut being made by the said blades.

7. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block mounted above the said base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base by means of a horizontally disposed hand lever support rod having a coil spring thereon, the said hand lever being longitudinally adjustably secured to the said support rod, and the said hand lever also being adjustably connected to the said blade holding block by means of a connecting bar, and two cutting blades removably secured to the underside of the said blade holding block, the said blades 25 being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and a plurality of spring-loaded Y-shaped guides rising vertically from the said rectangular base, and a rectangular cutting block mounted on the said rectangular base and directly under the said cutting blades and between two of the said Y-shaped guides which are in line with one another and in spaced relation to one another, and a spring-loaded inverted Y-shaped guide secured to the underside of each end of the said rectangular blade holding block, the last mentioned Y-shaped guides being positioned horizontally between the first mentioned Y-shaped guides, and all of the said Y-shaped guides being adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism in the form of a plurality of spring-loaded ejection pins, and an ejection plate horizontally mounted by one long edge on the upper portion of the said rectangular blade holding block, the said ejection pins being pressed downwardly by the said ejection plate as the said rectangular blade holding block is moved vertically upward by the said hand lever, the said ejection pins thereby ejecting the said stock of the plant after the said cut has been made; and a stop screw passing vertically through and secured to the said rectangular blade holding block, the said stop screw providing an adjustable means of controlling the depth of cut being made by the said blades.

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8. A grafting machine of the character described, comprising a rectangular base; a rectangular blade holding block and two guide posts vertically mounted on one side of the said rectangular base in spaced relation to one another, and the two said guide posts projecting upward through openings in one side of the said rectangular blade-holding block, thereby positioning and slidably holding the said rectangular blade-holding block vertically above the said rectangular base; and a spring-loaded hand activated operating lever having one end swingably secured to the upper end of a post vertically mounted on one corner of the said rectangular base by means of a horizontally disposed hand lever support rod having a coil spring thereon, the said hand lever being longitudinally adjustably secured to the said support rod, and the said hand lever also being adjustably connected to the said blade holding block by means of a connecting bar, and two cutting blades removably secured to the underside of the said blade holding block, the said blades being positioned in the form of a letter V, when viewed from the underside of the said blade holding block; and a plurality of spring-loaded Y-shaped guides rising vertically from the said rectangular base, and a rectangular cutting block mounted on the said rectangular base and directly under the said cutting blades and between two of the said Y-shaped guides which are in line with one another and in spaced relation to one another, and a spring-loaded inverted Y-shaped guide secured to the underside of each end of the said rectangular blade holding block, the last mentioned Y-shaped guides being positioned horizontally between the first mentioned Y-shaped guides, and all of the said Y-shaped guides being adapted to hold the stock of a plant and the scion of a plant that is cut one at a time by the manual activation of the said operating lever; and mechanism in the form of a plurality of spring-loaded ejection pins, and an ejection plate horizontally mounted by one long edge on the upper portion of the said rectangular blade holding block, the said ejection pins being pressed downward by the said ejection plate as the said rectangular blade holding block is moved vertically upward by the said hand lever, the said ejection pins thereby ejecting the said stock of the plant after the said cut has been made; and a stop screw passing vertically through and secured to the said rectangular blade holding block, the said stop screw providing an adjustable means of controlling the depth of cut being made by the said blades.

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