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PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) A MANUAL AID TO SELECTIVE PLUCKING OF TEA

(71) We, TEA RESEARCH ASSOCIATION, of Royal Exchange, 6 Netaji Subhas Road, Calcutta 1, West Bengal, India, a registered body under the West Bengal Societies Registration Act, 1961, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a device for selective plucking of tea shoots, manually, for the manufacture of tea. By selective plucking it is meant that only those shoots of a tea bush which are fit for plucking will be plucked, and not the mature leaves nor the too young shoots.

In Indian Patent Specification No. 44153 a machine for the selective plucking of tea has been described in which a wheeled carriage adapted to run along the clearances between the rows of tea bushes has a platform which carries a central member from which branch off plucking arms spanning over the bushes on either side of the carriage and carrying cutters to cut off the shoots from the tops of the bushes. Each plucking arm carries a reciprocating cutter comprising a pair of cutting blades furnished with teeth which cut by shearing action by reciprocation of one or both of the blades, and the plucking arm also carries a row of members called "selectors", fitted to the arm as exchangeable attachments, which project forward beyond the cutting line of the cutter and have raised edges terminating in apexes above the cutting level of the cutter. These selectors enclose the space between adjacent pairs of cutting teeth, except for a narrow aperture or gap between the adjacent pairs of selectors in front of the teeth, this aperture or gap being of the minimum width required to allow the stems of shoots mature for plucking to pass through to the cutter. A divider is provided at the apex of each selector for distributing the shoots to be plucked among the selector apertures or gaps without unnecessary bending. The selectors are adapted to allow only the stems of shoots mature for plucking to pass on to the cutter, the selectors being adapted to bend and deflect encountered mature leaves and shoots too young for plucking underneath the selectors and beneath the cutter, whereas the shoots which are suitable for plucking, being longer that the others, will on meeting the raised edges of the selectors be guided along them to the cutter. The selectors are made as exchangeable attachments in order to allow sets of selectors of different heights to be interchanged when occasion arises that the height of the selectors may have to be adjusted.

Owing to the irregularity of the terrain and the disadvantages of moving the abovementioned machine between the rows of bushes under an existing system of planting, the machine may not be capable of efficient operation in the existing conditions of the plantation. We have therefore devised a manually operated device for plucking tea shoots, which is not mounted on a wheeled carriage but will be carried on the person of the operator or plucker. In this device we incorporate selectors and dividers similar to those envisaged in the aforesaid Specification, but avoid employment of a reciprocating cutter.

According to the present invention there is provided a portable hand-operated device for selective plucking of tea shoots manually, comprising a nipping blade having a row of sharp-edged notches or slots in a longitudinal edge thereof which is to be the leading edge of the blade in use, the blade being adapted to nip the stems of tea shoots when urged and bent against the sharp edges of said notches or slots, the blade carrying a row of selectors flanking said notches or slots and projecting beyond said edge of the blade, with apexes of the selectors raised above the blade level and the selectors defining a row of narrow gaps between them which lead, respectively, into said notches or slots, the selectors being adapted to allow only the stems of shoots mature for plucking to pass along their said gaps into the blade notches or slots, dividers mounted on the apexes of the selectors for

[*Price 5s. 0d. (25p)*]

distributing the shoots to be plucked amongst the gaps between the selectors, an open-fronted container mounted at the back of the blade for reception of plucked shoots, and a carrying handle by which to hold the device in use in an operator's hand.

The action of bending the shoots against the sharp edges of the blade notches or slots may be accomplished by moving the blade against a stationary shoot, or by moving the shoot against the blade held stationary.

Accordingly, in one form the device has the carrying handle extending in the longitudinal direction of the blade, for example in line with the blade, and arranged to enable the device when held by the handle to be rotated bodily about the handle as axis by a twist of the operator's wrist for urging the stems of pluckable shoots into and bending them against the sharp edges of the notches or slots in the blade. This simple form of the invention requires merely a twist of the operator's wrist for the device thus rotated to take in and bend the selected shoots against the rotated blade.

In contrast to this, the invention may take another form in which the device is equipped with a manually operated rotary shoot bender mounted at the front opening of the container, the shoot bender having a rotatable frame provided with an operating handle and carrying a plurality of bars arranged for urging the stems of pluckable shoots into and bending them against the sharp edges of the notches or slots in the blade and for sweeping the nipped shoots into the container, the said carrying handle of the device and the said operating handle of the rotary shoot bender being positioned in a manner permitting the device to be held by one hand while the rotary shoot bender is rotated by the other hand of an operator.

A device according to this invention is made of light materials, e.g. aluminium, plastics or fibre glass for the main structure, stainless steel, nylon or other suitable plastics materials for the blade, and polythene or other suitable plastics material for the leaf container, in order to minimise the operator's effort needed to carry and to use the device.

With the aid of this device it will be possible for an operative to pluck as many as 15 to 18 shoots at a time with the same effort that is necessary to pluck one shoot by hand alone.

To assist understanding of the invention, embodiments thereof will now be described with reference to the drawings accompanying the provisional and complete specifications. Serial numbering of Figures in the drawings accompanying the complete specification is in continuation of the Figure numbering I to IV in the drawings accompanying the provisional specification.

In the drawings:

Fig. I is a diagrammatic front view of one embodiment of the invention;

Fig. II is a diagrammatic side view of the same;

Fig. III is a diagrammatic plan of the same device showing the nipping blade in relation the selectors;

Fig. IV is a cross-section of the same device at line AA in Fig. III;

Figs. V to VIII are views, corresponding to Figures I to IV respectively, of another embodiment.

Referring to the drawings, common to both embodiments are a nipping blade 3 having sharp-edged notches 3A in its leading edge. On either side of each notch 3A is mounted a selector 1 on the apex of which a divider 2 is located. A container 6 open at the front is formed by enclosing upper and lower walls 5 and 5A respectively. The lower wall 5A comprises an extension plate from the back of the blade 3 and which is at a level lower than that of the blade.

In the embodiment of Figs. I to IV the device is provided with a carrying handle 4 attached near the lower wall 5A of the container 6 and substantially in line with the blade 3 to enable the device to be turned bodily about the handle 4 as axis by a twist of the wrist of an operator holding the device by the handle 4, for urging and bending shoots to be nipped against the sharp edges of the blade notches 3A.

In the embodiment of Figs. V to VIII the device has a pistol grip type of carrying handle 4A positioned behind the container 6 and attached to it by means of arms 4B and 4C of a fork member. The handle 4A has a rearward extension piece 9 carrying an arm rest 10 for the operator's arm. At the front opening of the container 6 and rotatably supported by its side walls there is mounted a rotary shoot bender 7 comprising a framework carrying parallel bars 7A, 7B and equipped with an operating handle 8.

In use, the device is held by its handlegrip 4A in one hand of the operator while the operator's other hand rotates the shoot bender 7 by means of its operating handle 8. The rotating bars 7A, 7B urge the shoots 11 admitted by the selectors into the notches 3A and bend the shoots against their sharp edges whereby the shoots are nipped. The bars 7A, 7B in their onward travel sweep the nipped shoots 11 into the container 6. Thus the bender 7 acts both as bender and gatherer of tea shoots. Instead of twin parallel bars 7A and 7B as shown, helical bars may be provided with the same effect.

WHAT WE CLAIM IS:—

1. A portable hand-operated device for selective plucking of tea shoots manually,

distributing the shoots to be plucked amongst the gaps between the selectors, an open-fronted container mounted at the back of the blade for reception of plucked shoots, and a carrying handle by which to hold the device in use in an operator's hand.

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In contrast to this, the invention may take another form in which the device is equipped with a manually operated rotary shoot bender mounted at the front opening of the container, the shoot bender having a rotatable frame provided with an operating handle and carrying a plurality of bars arranged for urging the stems of pluckable shoots into and bending them against the sharp edges of the notches or slots in the blade and for sweeping the nipped shoots into the container, the said carrying handle of the device and the said operating handle of the rotary shoot bender being positioned in a manner permitting the device to be held by one hand while the rotary shoot bender is rotated by the other hand of an operator.

A device according to this invention is made of light materials, e.g. aluminium, plastics or fibre glass for the main structure, stainless steel, nylon or other suitable plastics materials for the blade, and polythene or other suitable plastics material for the leaf container, in order to minimise the operator's effort needed to carry and to use the device.

With the aid of this device it will be possible for an operative to pluck as many as 15 to 18 shoots at a time with the same effort that is necessary to pluck one shoot by hand alone.

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Fig. II is a diagrammatic side view of the same;

Fig. III is a diagrammatic plan of the same device showing the nipping blade in relation the selectors;

Fig. IV is a cross-section of the same device at line AA in Fig. III;

Figs. V to VIII are views, corresponding to Figures I to IV respectively, of another embodiment.

Referring to the drawings, common to both embodiments are a nipping blade 3 having sharp-edged notches 3A in its leading edge. On either side of each notch 3A is mounted a selector 1 on the apex of which a divider 2 is located. A container 6 open at the front is formed by enclosing upper and lower walls 5 and 5A respectively. The lower wall 5A comprises an extension plate from the back of the blade 3 and which is at a level lower than that of the blade.

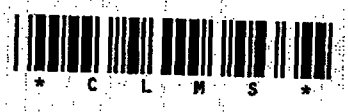
In the embodiment of Figs. I to IV the device is provided with a carrying handle 4 attached near the lower wall 5A of the container 6 and substantially in line with the blade 3 to enable the device to be turned bodily about the handle 4 as axis by a twist of the wrist of an operator holding the device by the handle 4, for urging and bending shoots to be nipped against the sharp edges of the blade notches 3A.

In the embodiment of Figs. V to VIII the device has a pistol grip type of carrying handle 4A positioned behind the container 6 and attached to it by means of arms 4B and 4C of a fork member. The handle 4A has a rearward extension piece 9 carrying an arm rest 10 for the operator's arm. At the front opening of the container 6 and rotatably supported by its side walls there is mounted a rotary shoot bender 7 comprising a framework carrying parallel bars 7A, 7B and equipped with an operating handle 8.

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WHAT WE CLAIM IS:—

1. A portable hand-operated device for selective plucking of tea shoots manually,



comprising a nipping blade having a row of sharp-edged notches or slots in a longitudinal edge thereof which is to be the leading edge of the blade in use, the blade being adapted to nip the stems of tea shoots when urged and bent against the sharp edges of said notches or slots, the blade carrying a row of selectors flanking said notches or slots and projecting beyond said edge of the blade, with apexes of the selectors raised above the blade level and the selectors defining a row of narrow gaps between them which lead, respectively, into said notches or slots, the selectors being adapted to allow only the stems of shoots mature for plucking to pass along their said gaps into the blade notches or slots, dividers mounted on the apexes of the selectors for distributing the shoots to be plucked amongst the gaps between the selectors, an open-fronted container mounted at the back of the blade for reception of plucked shoots, and a carrying handle by which to hold the device in use in an operator's hand.

2. A device as claimed in claim 1 wherein said carrying handle extends in the longitudinal direction of the blade and is arranged to enable the device when held by the handle to be rotated bodily about the handle as axis by a twist of the operator's wrist for urging the stems of pluckable shoots into and bending them against the sharp edges of the notches or slots in the blade.

3. A device as claimed in claim 1 and further comprising a manually operated rotary shoot bender mounted at the front opening of the container, the shoot bender having a rotatable frame provided with an operating handle and carrying a plurality of bars arranged for urging the stems of pluckable shoots into and bending them against the sharp edges of the notches or slots in the blade and for sweeping the nipped shoots into the container, the said carrying handle of the device and the said operating handle of the rotary shoot bender being positioned in a manner permitting the device to be held by one hand while the rotary shoot bender is rotated by the other hand of an operator.

4. A device as claimed in claim 3 wherein the carrying handle comprises a grip of a pistol grip type attached to the container by arms of a fork member.

5. A device as claimed in claim 3 or 4 wherein the carrying handle is fitted with an arm rest for the operator's arm.

6. A device as claimed in any one of the preceding claims wherein the blade is provided at its back with an extension plate which forms the lower wall of the container.

7. A device as claimed in claim 6 wherein the extension plate forming the lower wall of the container is at a level lower than that of the blade.

8. A portable hand-operated device for selective plucking of tea shoots, substantially as hereinbefore described with reference to and as illustrated in Figs. I to IV or Figs. V to VIII of the drawings.

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