May 1, 1962 R. K. DAUGHERTY 3,032,086

SAFETY KNIFE STRUCTURE FOR VEGETABLE TRIMMING APPARATUS

Filed April 14, 1960

FIG_2

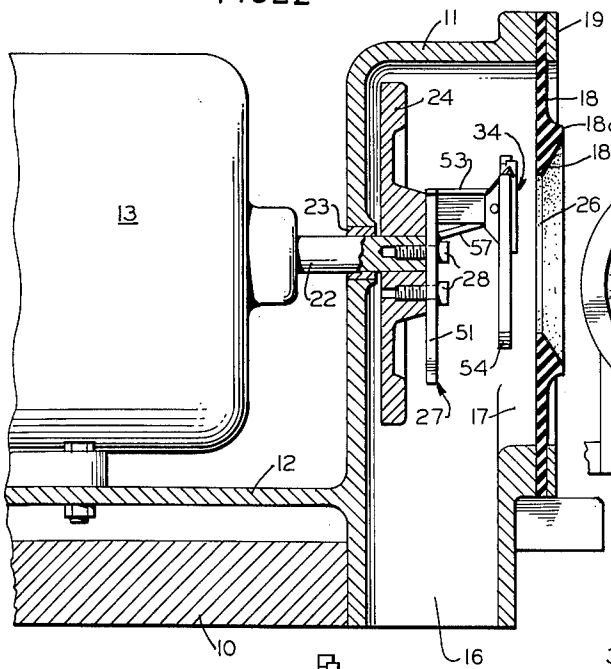


FIG_1

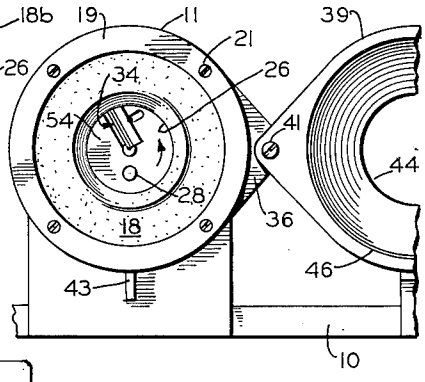


FIG_4

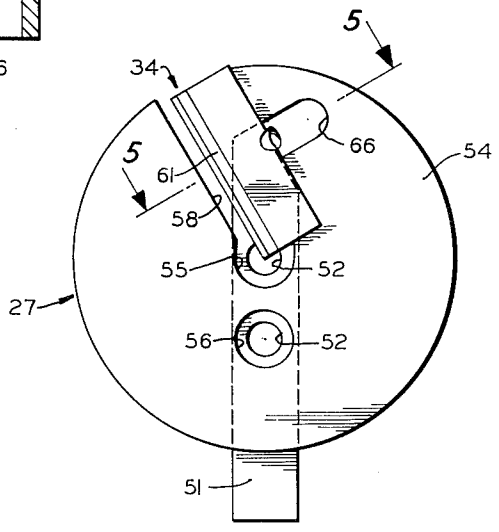


FIG_3

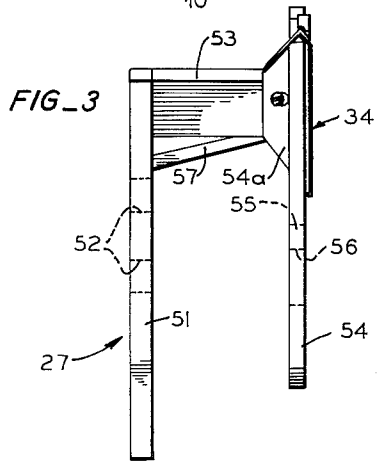
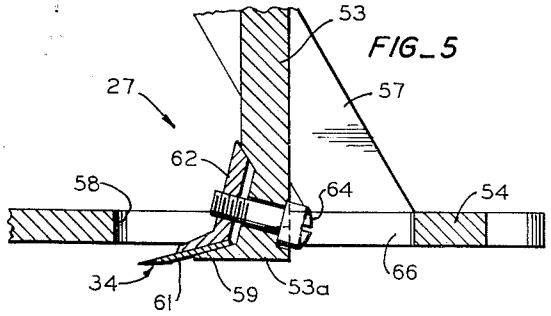


FIG_5



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SAFETY KNIFE STRUCTURE FOR VEGETABLE TRIMMING APPARATUS

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2 Claims. (Cl. 146—106)

The present invention relates to apparatus for trimming vegetables of the type employing a safety knife structure which materially decreases the hazard in the use of vegetable trimming apparatus in supermarkets particularly in clean-up operations where the knife is not in operation and when the hand of the worker must be placed inside the apparatus in and about the knife.

It is the general object of the invention to provide an improved safety knife structure for vegetable trimming apparatus.

Another object of the invention is to provide an improved safety knife apparatus in which a guard substantially entirely closes the opening into the apparatus and limits the extent of penetration of an object past the knife edge.

The above and other objects of the invention are attained as described in the accompanying specification, made with reference to the attached drawings in which:

FIG. 1 is a front elevational view of the vegetable trimming apparatus with certain parts broken away.

FIG. 2 is a vertical sectional view of enlarged character, partially in elevation.

FIG. 3 is an enlarged view of the knife structure shown in elevation from the side.

FIG. 4 is a front elevational view of the knife structure shown in enlarged fashion.

FIG. 5 is an enlarged fragmentary sectional view taken in a plane indicated by the line 5—5 in FIG. 4.

Referring to FIGURES 1 and 2 there is illustrated a supporting frame or table **10** on which a housing **11** is mounted, the housing **11** having a bracket extension **12** on which a motor **13** is suitably secured. The housing **11** is provided with a bottom discharge opening **16**, and a side or front feed opening **17** which is partially closed by an annular diaphragm or guard **18** of rubber or other suitable resilient material held in place by a clamping ring **19** and suitable fastening screws **21**. The motor **13** has a drive shaft **22** which is journaled in a sleeve bearing **23** in the housing **11** and projects therein carrying a fly wheel **24**. The shaft **22** is axially aligned with the central opening **26** in the flexible guard **18** which is defined by thickened annular portion **18***a* having a tapered or frustoconical inner guide wall **18***b*. The shaft **22** also carries a knife mounting structure **27** which is secured tot he shaft by a cap screw **28**, and to the fly wheel **24** by another cap screw **28**.

Selectively operable vegetable guide means are mounted for movement to and from active position with respect to the knife. The casting or housing **11** (FIGURE 1), has an apertured ear **36** in which a guard and guide member **39** is pivotally mounted by means of pin or stud **41**. The guard member **39** has a central aperture **44** surrounded by a conical extension **46**, which, in the operative position in front of the resilient guard **18** is co-extensive with the larger central opening in guard **18** being concentric with the aperture **26** of the guard member. In operative position in front of guard **18**, the guard member **39** rests on a stop **43** formed integrally with the housing **11**. The guard member **39** with its aperture **34** concentric with aperture **26** of the resilient guard member is provided to give a continuous cutting operation for use with larger vegetable bunches such as celery, etc. It

has been found that with leafy vegetables and tender stalks a continuous cutting operation is desirable. The above described structure is disclosed and claimed in the co-pending Sintetos application Serial No. 768,964, filed October 22, 1958.

The knife mounting structure **27** comprises an elongated arm or element **51** having a pair of mounting apertures **52** previously described, and serving to counterbalance the knife structure as will be apparent later. At one end the elongated element **51** has a projecting arm **53** which extends parallel (when mounted) to the shaft **22** in offset relation from the axis thereof and at the outer end of this arm there is integrally secured a guard plate or disc **54** which has a pair of apertures **55** and **56** therein in alignment with the apertures **52** for access to the fastening screws. Also, an inclined brace member **57** extends from the plate **54** to the elongated member **51** is also secured alongside one edge of the arm **53** being brazed or spot welded to the other parts to be integral therewith. To provide a knife mount, the disc **54** is provided with a substantially radial slot **58** extending in from one edge thereof and intersecting this aperture **55**, the edge of this slot is defined by a projecting rectangular plate portion **54***a* to which the end **53***a* of the arm **53** is secured. The slot defining edge of the plate portion **54***a* is bevelled to form an inclined seat for the blade **61**, which is held against the seat by a wedge-shaped mounting plate **62** which is threaded to receive a fastening screw **64** which passes through a hole in the arm **53**. The head of the fastening screw is accessible through an opening **66** in the plate **54**.

It is seen therefore that the limit of cut of the knife **61** is determined by the extent of the spacing of the cutting edge from the front face of the plate **54**, and the opening **58** in this plate provides for passage of material into the interior to fall through the bottom of the discharge opening **16**. By virtue of this construction, the amount of cutting that can be performed by the knife on the vegetable is limited, correspondingly the safety of the apparatus with respect to accidental cutting of a person is materially enhanced particularly where the person is required to clean around the knife and its mount during clean up time.

While I have shown and described a preferred form of the invention, it will be apparent that the invention is capable of variation and modification from the form shown so that its scope should be limited only by the scope of the claims appended hereto.

I claim:

1. In a vegetable trimming apparatus having a housing provided with a discharge opening and a feed opening, a shaft journaled in said housing at a location opposite to said feed opening and having an axis of rotation, drive means for said shaft, a fly wheel on said shaft within said housing, and a resilient apertured diaphragm secured to said housing to partially close said feed opening; the combination of a knife mount in said housing carried by said shaft, said knife mount including a mounting element perpendicular to the shaft and secured thereto, a knife arm projecting outwardly from said element in offset relation with respect to said shaft, a circular plate carried by said arm in parallel spaced relation to said element and adjacent to said opening and coextensive therewith, means providing a radial slot in said plate, a knife having a cutting edge, and means for securing said knife in overlapping relation with said slot and in angled relation to said plate and with the cutting edge projecting toward said opening in spaced relation to said plate whereby the maximum depth of cut is defined between said cutting edge and said plate.

2. In a vegetable trimming apparatus having a housing provided with a discharge opening and a feed opening,

a shaft journaled in said housing at a location opposite to said feed opening and having an axis of rotation, drive means for said shaft, a fly wheel on said shaft within said housing, and a resilient apertured diaphragm secured to said housing to partially close said feed opening; the combination of a knife mount in said housing carried by said shaft, said knife mount including a mounting element extending perpendicular to the shaft, a screw securing said element to said shaft, a knife arm projecting outwardly from said element in offset relation with respect to said shaft, a circular plate carried by said arm in parallel spaced relation to said element and adjacent to said opening and coextensive therewith, means providing a radial slot in said plate adjacent said opening, means

for securing said knife in overlapping relation with said slot and in angled relation to said plate and with the cutting edge projecting toward said opening in spaced relation to said plate whereby the maximum depth of cut is defined between said cutting edge and said plate, and said plate having aperture means therein providing access to said screw and to said securing means.

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