

Feb. 15, 1938.

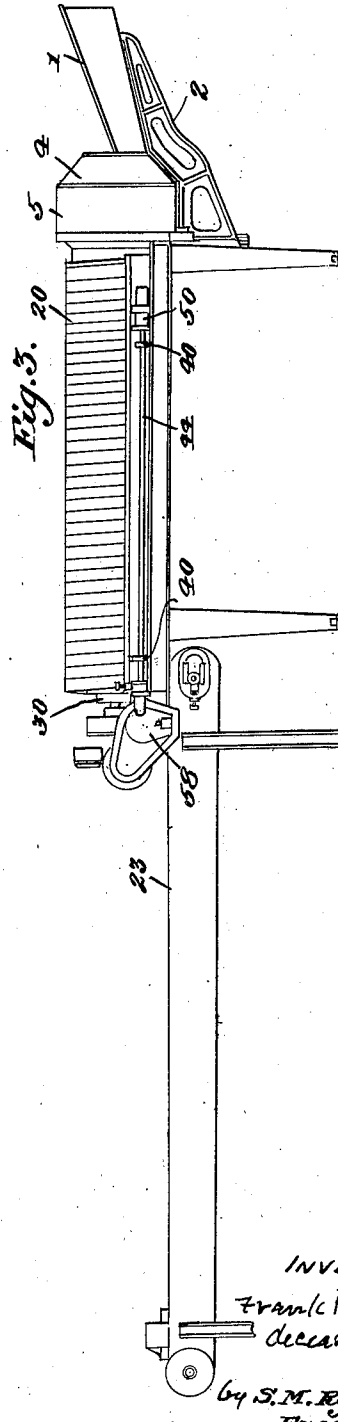
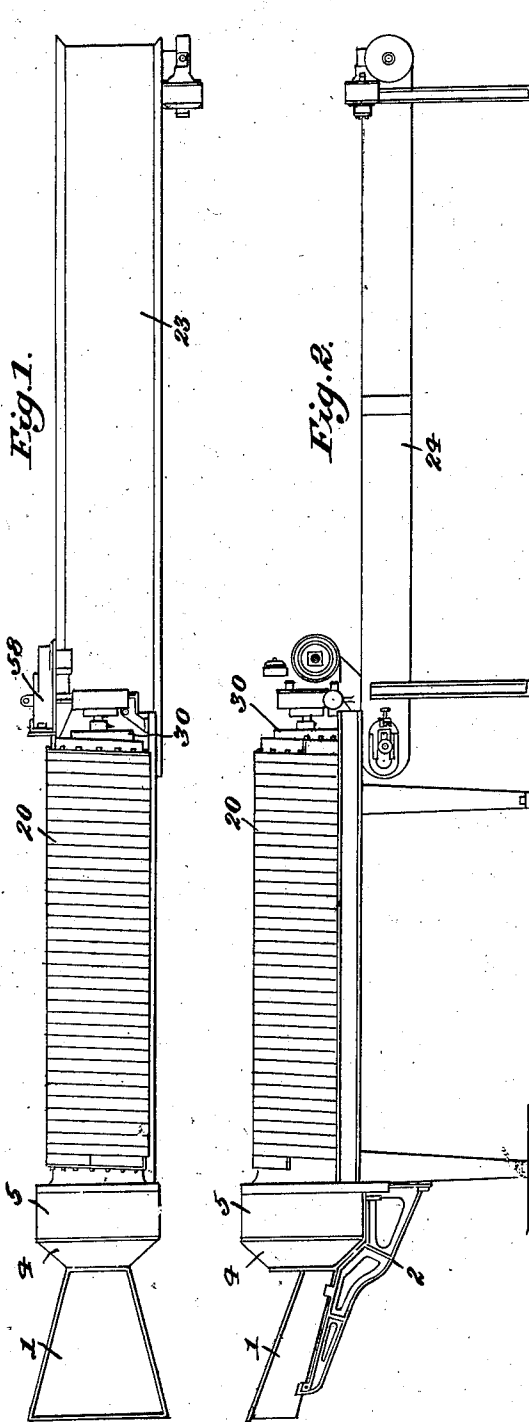
F. P. RYDER

2,108,179

BEAN SNIPPING MACHINE

Original Filed Jan. 10, 1933

3 Sheets-Sheet 1



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Fig. 4.

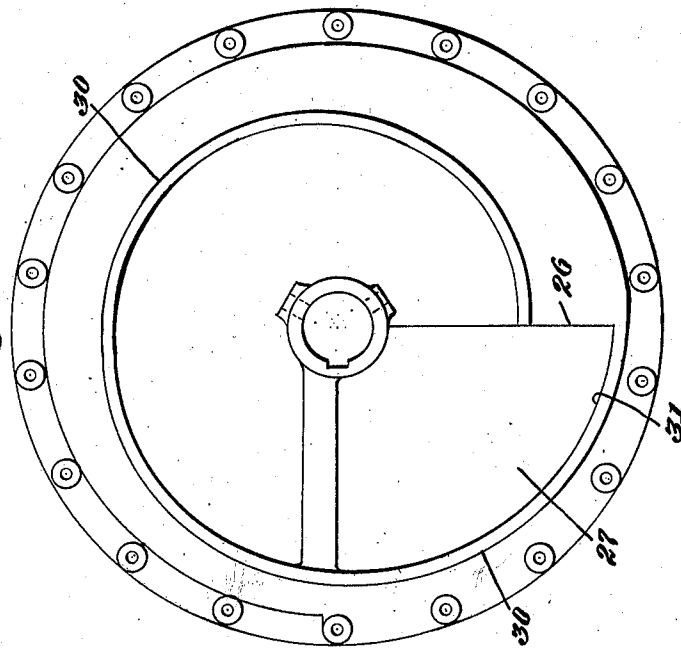
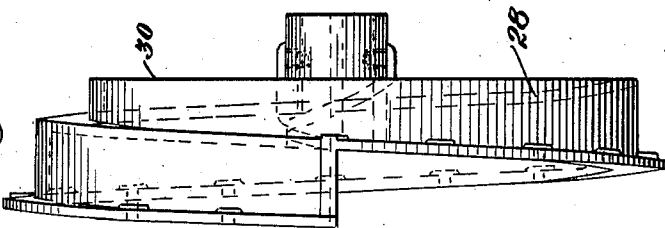


Fig. 5.



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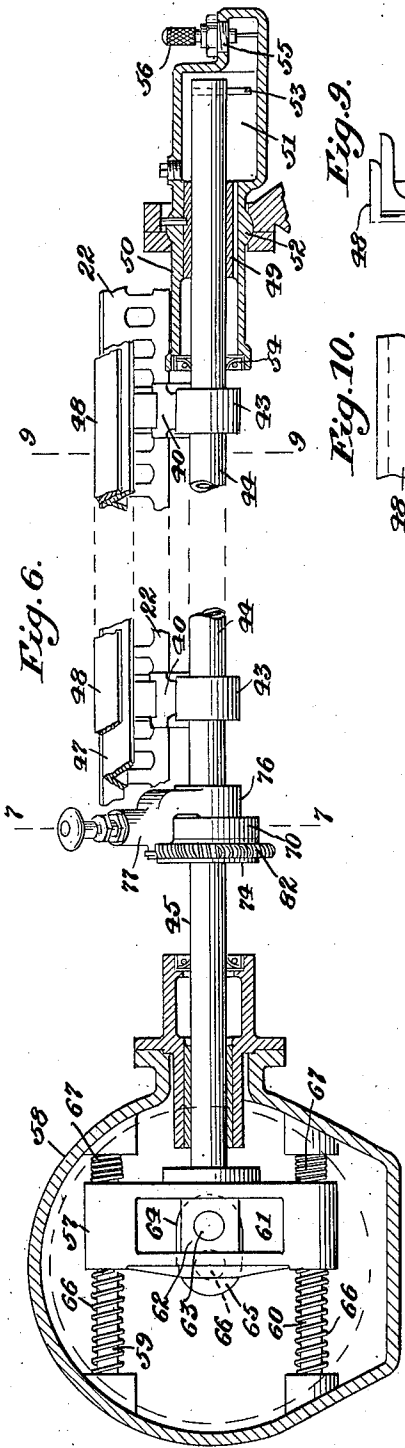


Fig. 6.

Fig. 9.

Fig. 10.

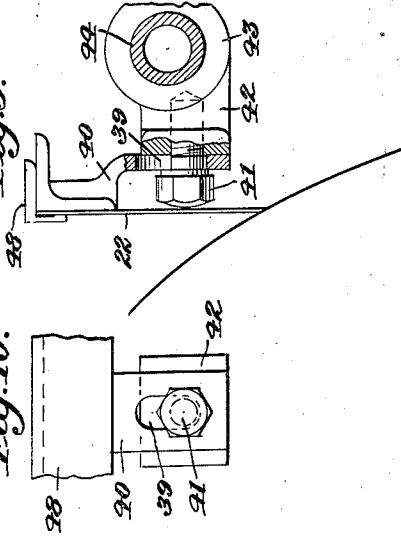
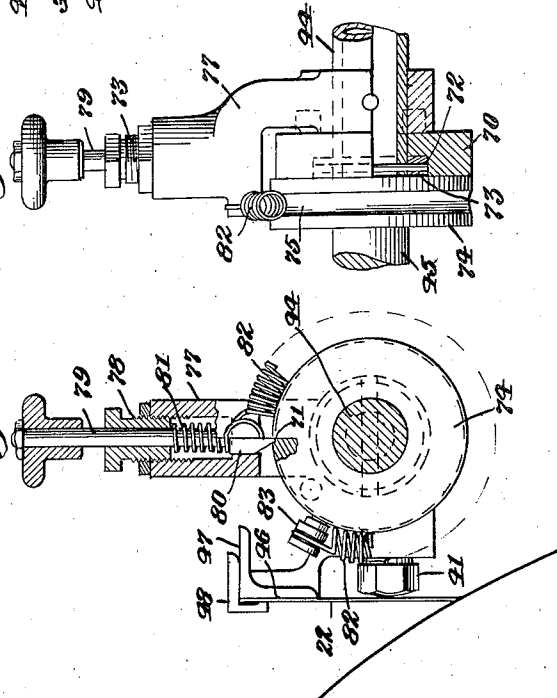


Fig. 8.

Fig. 7.



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UNITED STATES PATENT OFFICE

2,108,179

BEAN SNIPPING MACHINE

Frank P. Ryder, deceased, late of Niagara Falls, N. Y., by Stephen M. Ryder, executor, Niagara Falls, N. Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N. Y., a corporation of New York

Original application January 10, 1933, Serial No. 651,032. Divided and this application May 4, 1936, Serial No. 77,885

4 Claims. (Cl. 146—86)

The invention relates to machines for snipping string beans, that is, for cutting off the blossom and stem ends preliminary to canning them, this application being a division of the application filed by Frank P. Ryder, January 10, 1933, Serial No. 651,032. Machines for this purpose, known as Urschel bean snippers are extensively used by canners. Such machines embody the construction disclosed in U. S. patents, Nos. 1,256,491 and 1,256,492, issued February 12, 1918, on applications of Wm. E. Urschel, and comprise a cylindrical shell or drum having numerous perforations and arranged to rotate on a horizontal axis having within the shell or drum a feed screw for moving bean pods through from the intake to the delivery end and also having within the shell or drum means for causing bean pods to be directed endwise toward the perforations so that their tips will protrude in position to be cut off by a knife outside the drum.

This invention relates to improvements in the means for effecting the snipping of string beans in bean snipping machines of the type just described and to improvements in means for regulating the delivery of the snipped beans, the object of the invention being to provide means for effecting a uniform rate of feed to distribute and avoid the piling of the snipped beans as they leave the drum and to improve the construction and operation of the snipping mechanism and particularly to provide against injury of the snipping knife.

With the objects above stated and other objects hereinafter explained, this invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings:

Figure 1 is a plan view of complete apparatus for snipping string beans including the improvements of the present invention.

Figure 2 is a side view of the same.

Figure 3 is a view of the side opposite to that shown in Figure 2.

Figure 4 is a face view of the rear end of the bean snipping machine.

Figure 5 is a side view of a portion of the delivery end of the bean snipping machine.

Figure 6 is a side view partly in section of the snipping knife and its operating mechanism.

Figure 7 is a cross sectional view on line 7—7 of Figure 6.

Figure 8 is a side view partly in section of the construction shown in Figure 7.

Figure 9 is a cross sectional view on line 9—9 of Figure 6, and

Figure 10 is a detail view of the bracket carrying the knife.

In the drawings 1 indicates a trough shaped hopper adapted to receive a quantity of string beans to be snipped and is preferably of sufficient capacity to receive the contents of a bag containing a bushel. This hopper is supported on a frame 2 and is inclined downward and rearward at such slight inclination that beans dumped into it will tend to remain in the hopper until pushed rearward. At its rear end the sides and bottom of hopper converge and extend into an opening in the head 4 of a rotary hopper 5, the construction and operation of which is fully described in the application for patent, Serial No. 651,032, of which this application is a division, this hopper being arranged at the intake end of the cylindrical shell 20 of a bean snipper, the construction and operation of which is fully set forth in the Urschel Patent No. 1,256,492 above referred to and in which the beans are carried forward by a feed screw within it from the intake end to the other, or discharge end. The end of the feed screw is in line with an opening 27 in the rear cylinder head 28.

During one half of the rotation of the rear cylinder head and feed screw the end of the screw will be directed upward and no bean pods will be discharged from it; during the other half of the rotation the end will be directed downward and will discharge bean pods to a greater or less extent depending on the angle at which the end of the screw is directed downward. The result ordinarily is that successive batches of beans are discharged each in a pile on one side of the picking table to be carried forward in piles on the traveling belt 23, making inspection more or less difficult.

To obviate this depositing of the bean pods in piles, the cylinder head 28 at the rear or discharge end of the machine is provided on its outer or rear face with a spiral ledge 30 which starts with the forward radial edge 31 of opening 27, extending along the peripheral edge of this opening gradually curving inward towards the axial centre of the cylindrical shell 20 until its end reaches the radial edge 31 of opening 27 at a point about one third of the distance from the periphery of the cylindrical shell to its axial centre. As the batches of beans are deposited on this ledge from opening 27 more or less of the beans drop off the rear edge of the ledge and more or less are carried around on the ledge and at the same time are carried inward towards the axial centre, the result being that the beans of

each batch are spread out and are not permitted to drop in piles.

Extending along the side of the cylindrical shell 20 is knife 22, the cutting edge of which contacts with the outer periphery of the cylindrical shell. As the tip ends of the bean pods which protrude through the slots 21 are brought by the rotation of the shell into contact with the edge of this knife they are cut off. Knife 22 is carried on brackets 40 which are adjustably secured to set screws 41 which extend through slots 39 in the brackets to arms 42 extending from collars 43 carried by and fixed to rod 44, preferably tubular which extends from the forward end of the shell of the bean snipping machine nearly to the rear end. By means of slots 39 and set screws 41 the edge of the knife may be adjusted to and from the surface of the cylinder. The rear end of rod 44 is in line with rod 45, the rear end of which is connected to reciprocating mechanism. Brackets 40 carry angle irons 47. The back edge portion of knife 22 lies on flat face 46 of angle iron 47 and is clamped to it by angle iron 48.

The front end of rod 44 is arranged to be slidable and rotatable in bearing 46 in a holder 50 having oil reservoir 51 and mounted in a swivel bearing 52. To rod 44 near its end within holder 50 is secured a plate 53 which extends downward into the oil reservoir to splash the oil as the rod reciprocates. The rear end of holder 50 is provided with sealing gland 54 to prevent escape of oil. A filling opening 55 in oil reservoir 51 with plug 56 permits oil to be supplied to the oil reservoir.

The rear end of rod 45 is secured to cross head 57 within a crank case 58, arranged to slide on horizontal guide rods 59, 60, and having slot 61 to receive block 62 carried by crank pin 63 on crank 64 carried by shaft 65 which is rotated by any convenient means. Guide rods 59 and 60 are each provided on opposite faces of the cross head with springs 66, 67.

The end of rod 45 abuts the end of rod 44 and the abutting ends of these rods are so connected that reciprocation of rod 45 by the crank 64 will effect reciprocation of rod 44 and knife 22 carried by it and the connecting means is so constructed and arranged that if a nail or wire should protrude through an opening 21 of the cylindrical shell 20, and be carried against the edge of knife 22 its contact with the edge of the knife will cause the knife to rotate about the axis of rod 44 and be swung away from cylindrical shell 20 and out of the path of movement of the protruding end of the nail or wire, thus saving the edge of the knife from damage.

The construction for this purpose consists of a collar 70 carried on the front end of rod 45 and rigid thereto, having in its periphery a V-shaped notch 71 and having in its rear face a circular recess 72 to receive a disc 73 which is fast on the end of rod 44. Disc 73 is held in recess 72 by disc 74 which is fast on the forward end of rod 45 and is provided on its periphery with an annular groove 75. The front face of disc 74 is secured to the rear face of collar 70 so that disc 73 is enclosed between them and held from movement forward and rearward but is free to rotate.

On shaft 44 forward of the front face of collar 70 is latch arm 77 which is pinned to it. This latch arm has a radially extending bore screw-threaded in its outer portion to receive a thimble 78 centrally bored to receive latch rod 79 having at its inner end a wedge shaped head 80 adapted to fit V-shaped notch 71 in the periphery of col-

lar 70. A spring 81 coiled about latch 79 bears at one end against the inner end of thimble 78 and at its other end bears against the outer end of head 80. Secured at one end to latch arm 77 and extending about the periphery of disc 74 in annular groove 75 is a coiled spring 82. The other end of this spring is secured to pin 83 carried by disc 74.

Latch head 80 is normally held in notch 71 and serves to lock rod 44 and rod 45 together and to cause knife 22 carried by rod 44 to remain with its edge in contact with the periphery of cylindrical shell 20. In case anything which cannot be cut by knife 22 is brought against the edge of the knife its forward movement will push the knife away with sufficient force to cause the wedge end of latch head 80 to lift sufficiently to move out of notch 71 and as soon as this takes place spring 82 acts to so swing latch arm 77 and carry the knife away from cylindrical shell 20 far enough to prevent the nail or other obstacle making further contact with it. When the knife is thus thrown out of action it will be necessary to stop the machine and remove the nail or other obstruction before restoring the knife to cutting position.

While the mechanism above described is adapted and intended for use in connection with a bean snipping machine of the Urschel type it is not to be restricted to use with that type of bean snipping machine, or even to be restricted to use in connection with any bean snipping machine as the means for distributing the snipped beans as they are discharged from the end of a cylinder may be used for distributing articles or things other than beans.

Having thus described the invention, what is claimed is:—

1. In a bean snipping machine having a cylindrical shell mounted to rotate on an axis approximately horizontal having its sides provided with perforations adapted to permit the tips of bean pods to protrude, a knife extending lengthwise of the cylindrical shell having its cutting edge in contact with its exterior surface in position to cut off tips protruding from said perforations and means for supporting and reciprocating the knife comprising a longitudinally extending rod having means at one end for reciprocating it longitudinally and having at its other end a bearing sleeve adapted to permit the rod to rotate and to reciprocate longitudinally and a holder for the bearing supported in a swivel bearing.

2. In a bean snipping machine having a cylindrical shell mounted to rotate on an axis approximately horizontal having its sides provided with perforations adapted to permit the tips of the bean pods to protrude, a knife extending lengthwise of the cylindrical shell having its cutting edge in contact with its exterior surface in position to cut off tips protruding from said perforations and means for supporting and reciprocating the knife comprising a longitudinally extending rod having means at one end for reciprocating it longitudinally and having at its other end a bearing sleeve adapted to permit the rod to rotate and to reciprocate longitudinally and a holder for the bearing supported in a swivel bearing.

3. In a bean snipping machine having a cylindrical shell mounted to rotate on an axis approximately horizontal having its sides provided with perforations adapted to permit the tips of the bean pods to protrude, a knife extending lengthwise of the cylindrical shell having its cutting

edge in contact with its exterior surface in position to cut off tips protruding from said perforations and means for supporting and reciprocating the knife comprising a longitudinally extending rod having means at one end for reciprocating it longitudinally and having at its other end a bearing sleeve adapted to permit the rod to rotate and to reciprocate longitudinally, the means for reciprocating the rod comprising a cross head mounted to slide on rods, a fixed support for the rods, springs forward of and in rear of the cross head between it and the fixed support, and means for reciprocating the cross head.

4. In a bean snipping machine having a cylindrical shell mounted to rotate on an axis approximately horizontal, having its sides provided with perforations adapted to permit the tips of the bean pods to protrude, a knife extending length-

wise of the cylindrical shell having its cutting edge in contact with its exterior surface in position to cut off tips protruding from said perforations and means for supporting and reciprocating the knife comprising a longitudinally extending rod having means at one end for reciprocating it longitudinally and having at its other end a bearing sleeve adapted to permit the rod to rotate and to reciprocate longitudinally, the knife supporting means comprising a rod extending from the forward end of the cylindrical shell to near its rear end, arms carried by and extending radially from the rod brackets adjustable on said arms and means for clamping the knife to said brackets.

STEPHEN M. RYDER,

Executor of Estate of Frank P. Ryder, Deceased.