March 22, 1927. 1,621,968

J. H. CARTER

BEAN STRINGER

Filed March 3, 1926

Fig. 1.

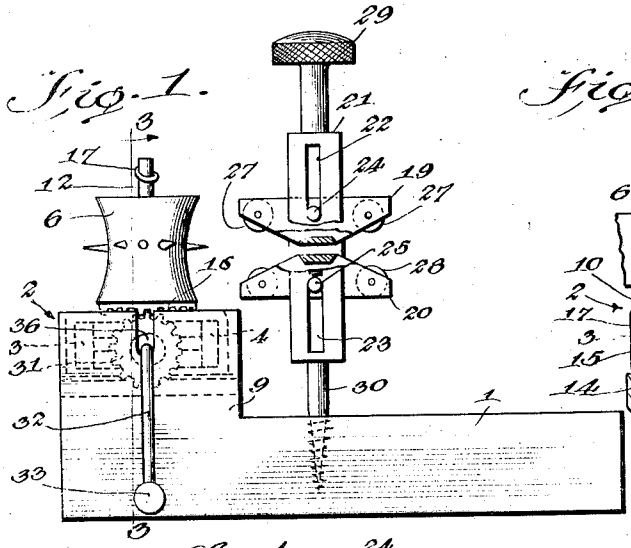
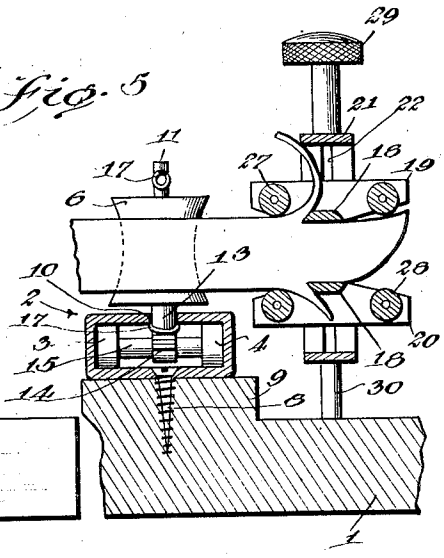


Fig. 5.



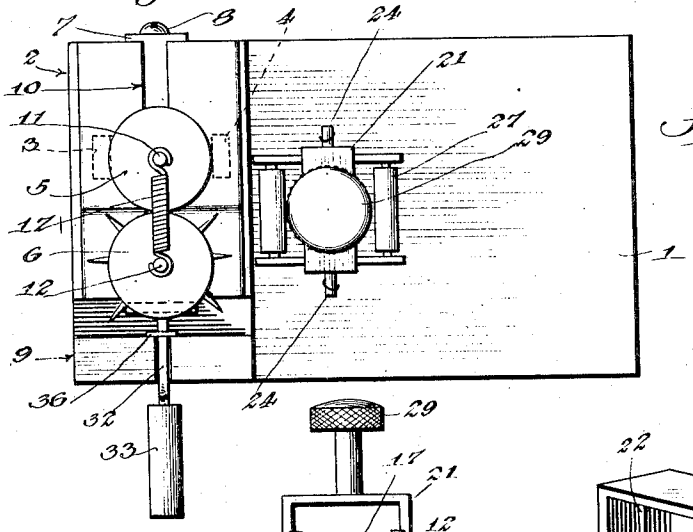


Fig. 2.

Fig. 4.

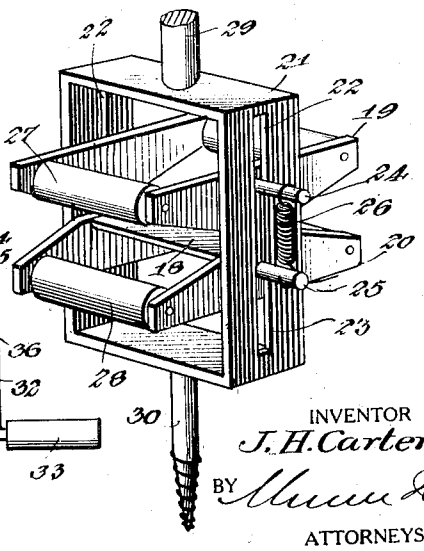
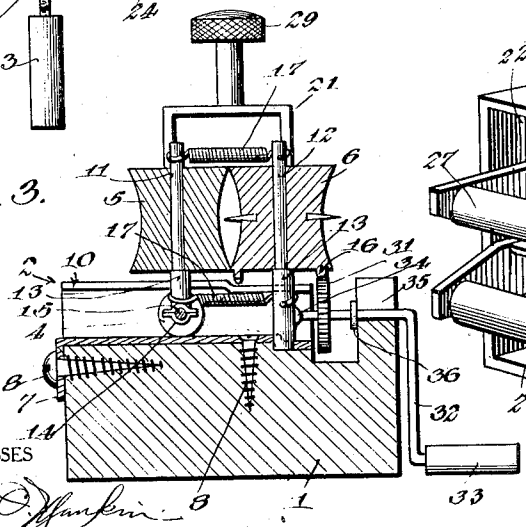


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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BEAN STRINGER.

Application filed March 3, 1926. Serial No. 92,042.

This invention relates to improvements in bean stringers and it consists of the constructions, combinations and arrangements herein described and claimed.

An object of the invention is to provide a small and simple device for removing the strings from string beans as one of the steps preparatory to subsequent cooking, the purpose being accomplished by inserting one end of the string bean in proper position between the guide rollers and knives and pulling the bean through by hand.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation of the bean stringing device, parts being shown in section.

Figure 2 is a plan view thereof.

Figure 3 is a detail cross section taken on the line 3—3 of Figure 1.

Figure 4 is a detail perspective view of the knife frame.

Figure 5 is a detail sectional view of enough of the device to illustrate the act of cutting the strings.

In carrying out the invention provision is made of a wood or other base 1 upon which the frame 2 is mounted in transverse position. The frame is composed of a piece of metal so bent as to form an enclosure for the pair of wheels 3 and 4 of the concave guide roller 5. A similar but spiked roller 6 coacts with the roller 5. The frame has a lug 7 through which and the base of the frame fastening means 8 are driven into the slightly raised head 9 of the base 1.

In bending the frame 2 into shape the confronting edges are left spaced apart to define a transverse slot 10 into which the shafts 11 and 12 of the guide rollers extend and in which the shank 11 is movable. The shaft 12 is stationarily held. The rollers revolve upon the shafts, and in order that the rollers may not drop down so far upon the shafts as to contact the upper surface of the frame 2, the shafts are enlarged at 13 to provide shoulders. The end of the shaft 11 adjacent to the respective shoulder 13 is suitably affixed at 14 to the axle 15 of the rollers 3, said axle being centrally reduced (Fig. 3) to insure centering the roller shaft 11 in respect to the slot 10. The shafts 11 and 12 are connected by springs 17 of equal tension, thereby keeping the rims of the concave rollers 5 and 6 in normal contact but permitting turning of the rollers when a string bean is inserted. The roller 5 moves to accommodate the bean and the rollers 3 constitute a carriage. The bent frame 2 constitutes the track for the carriage.

A gear 16 on the lower end of the roller 6 meshes with a pinion 31. The pinion is carried by a crank 32 which has a handle 33 for turning. The inner end of the crank seats in a socket 34. The crank is introduced in a slot 35 and a lug or collar 36 keeps the crank in place. The crank can be lifted out.

A pair of knives 18 stands in position to cut the strings from the beans as the bean is fed through upon turning the crank 32. The upper knife cuts the upper string and the lower knife cuts the lower string (Fig. 5). The upper and lower carriages 19 and 20 by which the knives are carried are supported by a frame 21 which has pairs of side slots 22 and 23 to receive the studs 24 and 25 of the knife carriages for the purpose of guidance.

The studs project a sufficient distance from the sides of the knife frame 21 to permit attachment of the springs 26 (Fig. 4) and thus draw the knife frames 19 and 20 together. The adjacent ends of the slots 22 and 23 limit the movement of the frames and knives toward each other so that the latter are normally spaced as shown in Figure 1. The frames 19 and 20 carry pairs of transverse rollers 27 and 28. These rollers engage the beans and limit the distance to which the knives may cut into the substance.

The knife frame 21 has a handle 29 by means of which the frame can be conveniently turned in order to screw the threaded stem 30 into the wood base. It is observed that the knives 18 are beveled on both transverse edges. The knife frame can be turned around to present sharp edges to the beans when the edges on one side are dulled.

The operation is readily understood. The pair of knives 18 stands in line with the pair of concave guide rollers 5 and 6. The concavity of the rollers produces an opening (Fig. 3) well adapted to receive a string bean.

The string bean is inserted between the rollers 5 and 6 and pushed toward the knives 18. The crank 32 is turned by hand and the spikes on the roller force the bean through. The engagement of the end of the bean with

the rollers 27 and 28 of the knife frame causes a separation of the carriages 19 and 20 (Figs. 5) and the knives 18 will strike the bean at such places as to cut out the strings as the push on the bean continues.

The knives 18 are disposed but slightly below the pairs of rollers 27 and 28. The rollers act as a gauge to limit the amount of substance cut from the bean. The springs 27 permit the necessary spreading of the knife carriages 19 and 20 as shown in Figure 5. The strings will curl away from the bean as it passes through, and are readily cleared away after the operation is completed. It may be stated that in lieu of using the simple crank arrangement for hand operation some slight well known modification may be made to permit power operation of the pinion 31.

While the construction and arrangement of the improved bean stringer is that of a generally preferred form, obviously modifications and changes may be made without departing from the spirit of the invention or the scope of the claims.

I claim:—

1. A device of the character described having a pair of knives and movable frames carrying the knives, means limiting the movement of the frames toward each other thereby sustaining the knives in normally spaced relationship, a pair of vertical guide rollers between which an article to be cut is inserted, in combination a carriage upon which one guide roller is mounted, resilient means so connected between the roller as to normally keep the guide rollers together, a transverse track on which the carriage runs upon movement of the respective roller to accommodate said article when moved between the rollers, and transverse rollers carried by said frame being located in advance of the knives thereby to be engaged by said article to separate the frames and knives and gauge the depth of the cut.

2. A device of the character described having a pair of knives and upper and lower carriages carrying the respective knives in spaced relationship, a slotted frame in which the carriages are situated, studs projecting from the carriages through the slots and being connected by springs to move the carriages toward each other but keep the studs in engagement with adjoining slot ends to limit said movement, pairs of rollers between which the knives are situated on the carriages, a pair of guide rollers between which an article is inserted, means to drive one of the guide rollers to move the article toward the knives, one set of the carriage rollers separating the carriage and knives when engaged by the article both sets running upon the article to gauge the depth of the cut, resilient means connecting the guide rollers permitting lateral separating movement of one of the guide rollers to accommodate said article, a carriage by which said one guide roller is supported, and means constituting a track upon which said carriage runs during said lateral separating movement.

3. A device of the character described comprising a pair of vertical guide rollers between which an article to be cut is inserted, a pair of double-edged knives so positioned in respect to said rollers as to meet the article, carriages supporting the knives, a frame upon which the carriages are removably mounted, rollers carried by the carriages being engageable by the article to move the carriages and separate the knives prior to the cutting operation, a base providing a common support for said frame and guide rollers, and means so mounting the carriage frame upon the base permitting turning of the frame in respect to the base to present either of the edges of the knives to said guide rollers.

4. A device of the character described comprising a base, a pair of guide rollers between which an article is insertible, a shaft stationarily held upon the base carrying one of the rollers, a carriage movable upon the base having a shaft carrying the other roller, resilient means connecting the shafts permitting displacement of the movable roller when the article is inserted, a gear carried by the relatively stationary roller, a crank having a pinion to mesh with the gear for driving the rollers, a socket into which one end of the crank is insertible when applying the pinion, and means holding the crank in position but permitting removal of the crank.

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