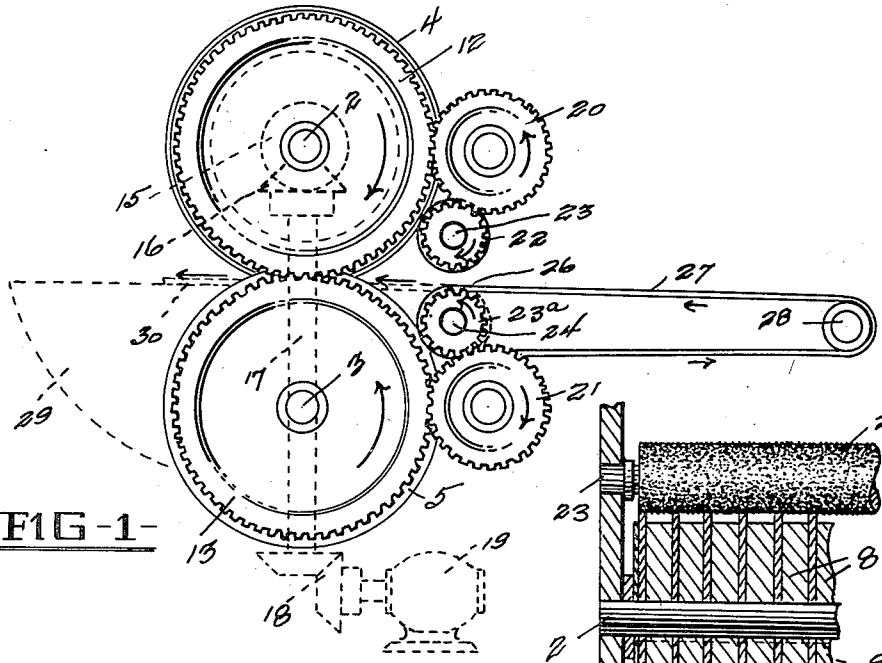
June 22, 1937. L. SKLIRIS 2,084,921

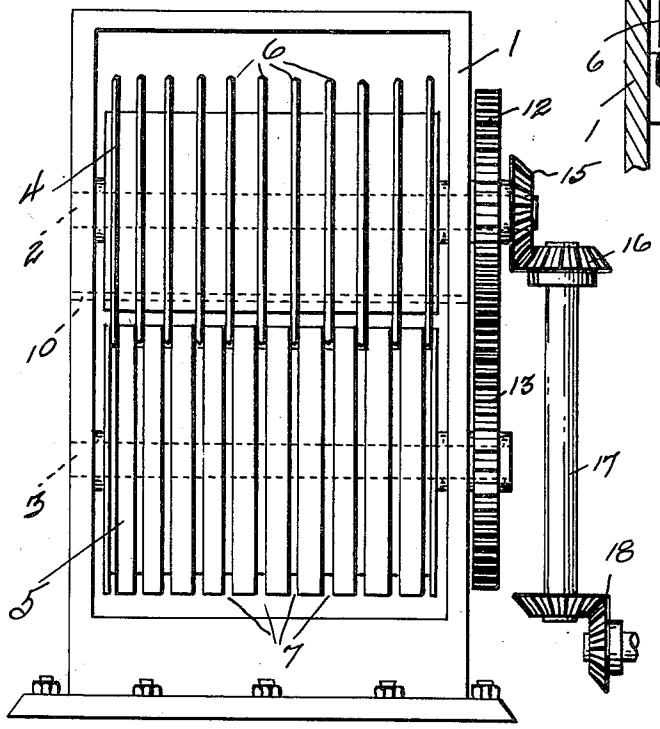
SLICING MACHINE

Filed Sept. 20, 1935 2 Sheets-Sheet 1

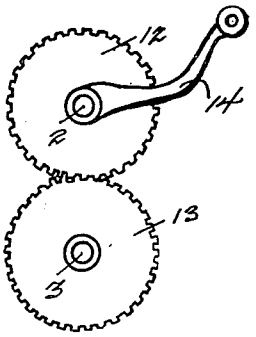


- FIG -1-

- FIG -3-



- FIG -2-



- FIG -4-

Inventor
LOUKAS SKLIRIS.,

By Wm. I. Cuthbert.
Attorney

June 22, 1937. L. SKLIRIS 2,084,921

SLICING MACHINE

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Fig. 5

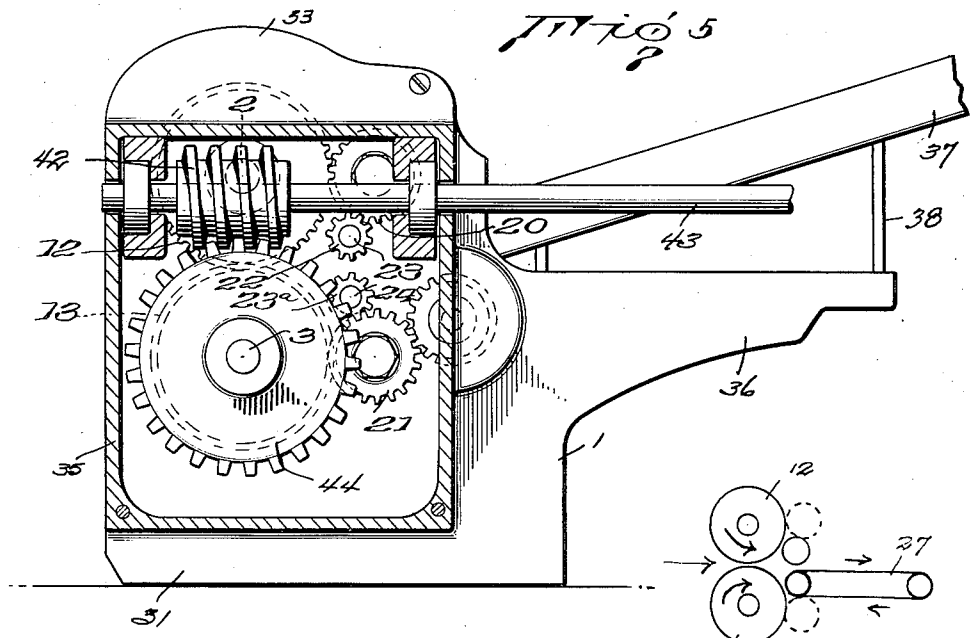
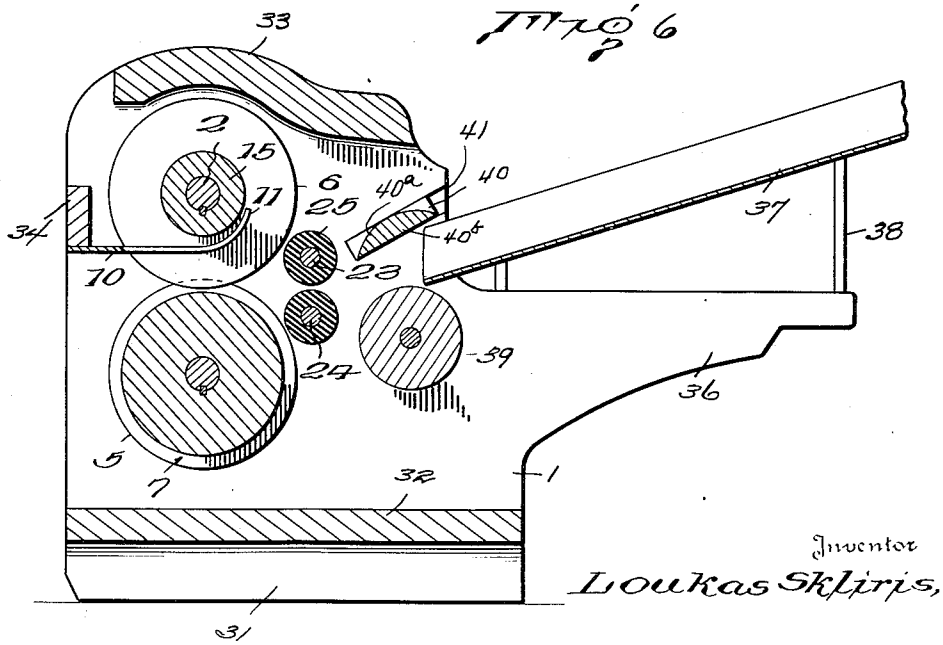


Fig. 7.

Fig. 6



Inventor
Loukas Skliris,

By Wm. L. Cox Nichols
Attorney

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UNITED STATES PATENT OFFICE

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SLICING MACHINE

Loukas Skliris, Belmar, N. J.

Application September 20, 1935, Serial No. 41,454

1 Claim. (Cl. 146—98)

My present invention, in its broad aspect, relates to improvements in rotary cutting machines, to wit slicing machines, and to that end is provided with means whereby the object to be cut or sliced is fed to rotating circular knives in a continuous operation. My invention is particularly designed for slicing vegetables, such as potatoes to make julienne potatoes, fruits, meats and the like; however, it may be used for cutting and slicing any objects or substances adaptable to those ends. More particularly it is my purpose to simplify the construction of the machine; render it more efficient, less liable to become out of order, more effective as to the means of driving it, more readily cleansed and kept in order, and otherwise more practical and desirable.

Among the many advantages and objects of my invention may be briefly defined the following:—

Exclusive of the prime mover, which may be an electric motor or the like, or hand power through an operating handle, and operative connections to my machine; the operating parts of my machine include but six gear elements, arranged in groups of three intermeshing gears, of which the intermediate gear in each group is an idler. The several groups are as follows: group one, includes the drum carrying the knives and a feed roll having a stippled or serrated surface; group two, includes the base drum having the grooves to receive the knives and the drive roll for an endless belt conveyor. In practice the knife and base drums are opposed to take the object to be cut, and the feed roll and drive roll of the conveyor are opposed so that the object to be cut or sliced is carried between the two so that the drive roll serves in the capacity of a feed roll as well as an element of the conveyor system.

My drum carrying the knives is simplified and the filler structure between the knives may be of rubber or any other material easily cleansed, or of suitable metal, while the knives may be of any number and are preferably of tempered steel; the structure of the knife drum may be "built up" if desired to accommodate any number of knives consistent with the transverse dimensions of the machine and the load capacity of the power element.

The gears and drums and rolls are of compact arrangement with the idlers above and to one side of the active gears so that the active feed rolls are closely adjacent the cutting rolls, thereby simplifying construction and reducing the cost of the machine.

A further advantage of my invention is that means are provided for slicing or cutting string beans and the like, and flattening out the bean pods before they enter the machine and projecting the same to the cutter blades in the most advantageous position. Also the structure of the housing is improved, and means are provided whereby my machine may be used for shelling peas; it merely being necessary to reverse the direction of rotation of the machine; feed the pea pods into the machine from the side opposite to the conveyor so that the conveyor will remove the pods as they come through the machine after the peas have been squeezed therefrom. In this latter case a roller is substituted made up of medium soft rubber in place of the roll carrying the blades. Also the conveyor may be removed in its entirety in smaller hand operated machines without in any way changing the organization of the machine since the drive roll for the conveyor then serves as a companion feed roll to the prime feed roll and objects to be cut are fed directly to the feed rolls. Also there may be provided a chute or hopper into which the objects to be cut may be fed, and in which case it is desirable to supply an additional feed roll, especially in the case of string bean cutters as illustrated herein.

In the drawings wherein I have shown a preferred form of my invention:—

Figure 1 is a side view showing especially the arrangement of gears; Figure 2 is a front view showing the cutting or slicing elements, the gears, the frame, and connections to a prime mover; Figure 3 is a section showing the prime feed roll, the guard to prevent the objects sliced from following the knives around, and a section is shown through the knife roll; Figure 4 is a diagrammatic view of a hand actuated gear operating mechanism for my slicing machine; Figure 5 is a side view of a principal form of my invention, with the cover of the gear housing removed, and showing a worm drive, and the drive gear for the knife roll drive gears; the unique housing and its construction and form; Figure 6 is a longitudinal section through the machine shown in Figure 5 and shows the member designed to flatten out string beans and the like; the chute, the extra feed roll, the form of cleaning member for the knives, and the casing or housing, and Figure 7 shows diagrammatically my machine used as a pea sheller.

In the drawings wherein like characters of reference are used to designate like or similar parts throughout the several views:—

The numeral (1) designates a frame in which

are journalled upper and lower transverse axles (2) and (3); the upper axle carrying the circular knife drum (4) and the lower axle carrying the grooved base drum or cylinder (5). The drums are opposed, and the knife drum may have any number of circular tempered steel knives (6) uniformly spaced apart and each working in a companion groove (7) in the grooved base drum or ylinder (5) so that objects fed between the drums (4) and (5) are continuously cut or sliced as the drums are rotated in the direction of the arrows in Figure 1. The built-up structure of the slicing drum may be of any suitable type; that is the knives (6) and fillers (8) may be alternately arranged on the axle (2) with a key or spline (9) shown in dotted lines in Figure 3 used to fix them against rotational movement independent of the axle; the fillers may be of fibre, rubber or metal. A plate (10) having fingers (11) of a width approximating the spaces between the knives (6) is arranged on the frame back of the knives (as shown in dotted lines in Figure 2) to prevent the objects sliced or cut from following the knives around.

Axles (2) and (3) are extended out from one side of the frame (1) to receive thereon gears (12) and (13) respectively, of which gear (12) is the drive gear. Gears (12) and (13) intermesh, and in case of manual operation the gear (12) may be supplied with an operating handle as shown at (14) in Figure 4, or when a power drive is desired a pinion (15) may be supplied which meshes with pinion (16) of drive shaft (17) which has operative pinion connections (18) with a motor (19) shown in dotted lines in Figure 1. Axles (2) and (3) are therefore driven in synchronism. Gear (12) meshes with an idler gear (20), and gear (13) meshes with an idler gear (21), both carried by the frame. These idler gears are axially in longitudinal alignment with axles (2) and (3) as shown in Figure 1. Each idler gear meshes with a driven gear disposed below and between gears (12) and (20) and gears (13) and (21) respectively, but not in mesh with gears (12) and (13). Idler gear (20) meshes with driven gear (22) carried on shaft (23), and idler gear (21) meshes with driven gear (23a) on shaft (24). Shaft (23) carries a prime feed roll (25) which has a stippled or serrated surface as shown in Figure 3, and shaft (24) carries a feed roll or cylinder (26) which serves in the dual capacity of a drive roll for the endless conveyor belt (27), the remaining end of which operates over the roll (28).

From the foregoing it will be seen that the gear arrangement is in companion groups; group one, operating the knife roll or drum and the prime feed roll or cylinder; and group two, operating the base or grooved drum and the companion feed roll and conveyor belt drive roll. The prime feed roll and the conveyor belt and companion feed roll are opposed and arranged as close as possible to the knife drum and grooved drum. The conveyor belt may be removed without changing the organization of the machine since the companion feed roll serves a dual capacity. I also provide a suitable hopper for receiving the cut or sliced products, shown in dotted lines at (29) in Figure 1, and table members in advance of and behind the slicing cylinders as shown at (30) in Figure 1; these are optional, and of any suitable form.

Referring now particularly to Figures 5, 6 and 7; a practical embodiment of my invention has the casing 1 formed with a base 31, a floor 32, a top 33, a bracing piece 34, a separate compartment 35 to house the gears, and spaced, parallel lateral extensions 36 for a feed chute 37. The casing is an integral casting, and the gear box or housing is supplied with a suitable cover (not shown); the casing 1 can be formed in a single casting operation at small cost. The feed chute 37 is supported on lateral members 36 by struts 38 as shown in Figures 5 and 6, and slopes down toward the feed rolls—in this form the conveyor is preferably not used (although it may be used if desired) and an additional feed roll 39 is provided in advance of the feed rolls 24—25. Since string beans (and other vegetables as well) are inclined to curl up at the ends (not lie straight), I provide a removable, transverse guide and flattening member 40 above the end of the chute 37 and feed roll 39, which is arranged at an angle to a horizontal plane through the machine, and near the same angle as the chute to straighten out string beans and the like before they are fed to the cutting rolls, and to arrange them so that they will be properly fed and presented to both the feed rolls and cutting rolls. The casing 1 is formed with slots in its sides or angular recesses 41 in which the ends of the member 40 are removably retained to mount the same on the machine. The upper surface of member 40 is curved as at 40a, and the under surface flat as at 40b. In this form the plate 10 is arranged horizontally as shown with the fingers 11 extending between the blades and then curved upwardly as shown in Figure 6; plate 10 is attached to bracing piece 34 of the casing or housing. I provide a worm drive 42 on the driving shaft 43. This gear meshes with a large driven gear 44 on shaft 3, so that the drive is through shaft 43, gear 42, gear 44 and gears 12 and 13 on the rollers. In Figure 7 I show diagrammatically how my machine may be used as a pea sheller. The direction of rotation of gears 12 and 13 and conveyor 27 is reversed, and in place of a knife roller a rubber roller is substituted. The pea pods are then fed into the machine at the side opposite the conveyor, the peas squeezed out, and the pods carried off by the conveyor.

In operation, when my machine is manually operated the conveyor belt (27) is dispensed with in which case roll 26 serves only in its capacity as a companion feed roll to the prime feed roll (25); objects to be sliced being fed directly to the feed rolls. When motive power is used the conveyor belt (27) is utilized in which case the machine is driven through drive gear (12) which directly drives the knife cylinder and the grooved cylinder or drum of the cutting unit, and which gear (12) is in mesh with idler (20) of group one and drives the prime feed roll (25), while gear (13) meshes with idler gear (21) and drives the companion feed roll and conveyor belt drive roll (26). Objects to be cut are placed on the conveyor and moved in the direction of the arrows in Figure 1 to the cutting and slicing drums or cylinders, and if desired the objects when cut or sliced are caught in the hopper (29); the cut objects, such as potatoes, string beans and the like, are prevented from following the knives around by fingered plate (10) shown in Figure 3. From the foregoing it is believed that the operation of my invention is apparent, and its purposes and objects have been described briefly with reference to the various parts which produce the results attributed to them; however it is again emphasized that interpretation of the scope

of the invention should only be conclusive when made in the light of the subjoined claim.

I claim:—

A rotary cutter for vegetables and the like of the type having complementary rotary cylinders one of which carries a plurality of circular knives fitting into cooperating grooves in the other cylinder; complementary feed rolls in advance of the cylinders, intermeshing gears one on each cylinder, a gear on each feed roll not meshing with the cylinder gears, and idler gears located in advance of the gears on the cylinders and respectively above and below the respective gears on the feed rolls but not having their axes of rotation located between said gears on the cylinders and those on the feed rolls, means for driving either of the gears on the cylinders for the purpose defined and the gear on each feed roll and idler gear meshing therewith and with each cylinder gear being substantially identical in size, operation and position with the feed roll, idler and cylinder gear in the companion group of gears identified with each of the respective cylinders.

LOUKAS SKLIRIS.