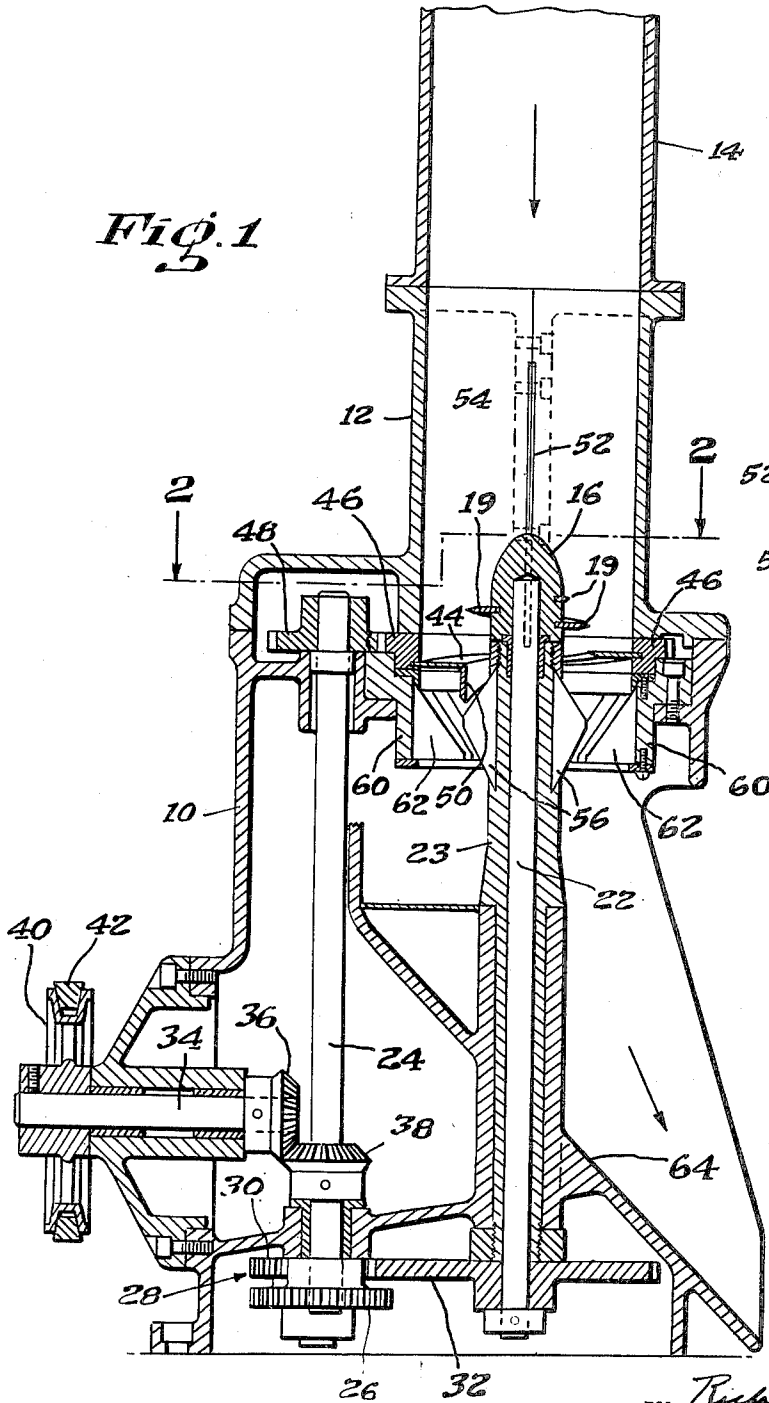
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APPARATUS FOR DICING DECORED CYLINDERS OF PINEAPPLE

Filed Aug. 29, 1950

2 Sheets-Sheet 1

Fig. 1



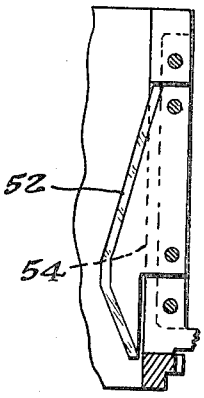


Fig. 3

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Fig. 2

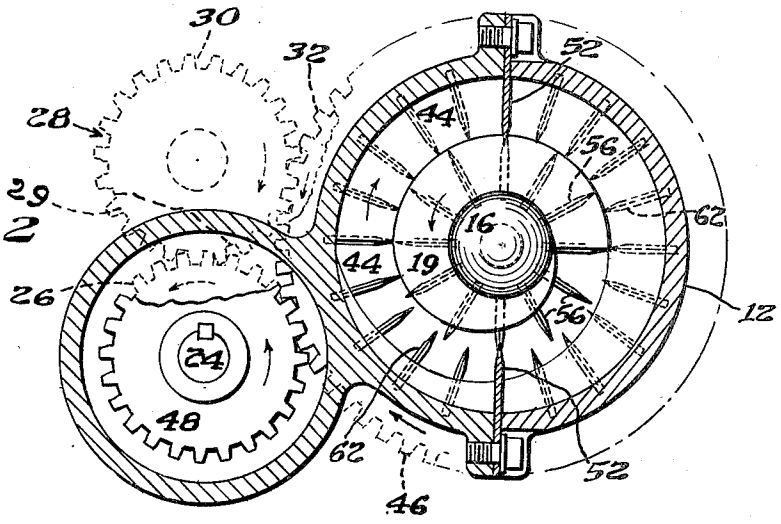


Fig. 4

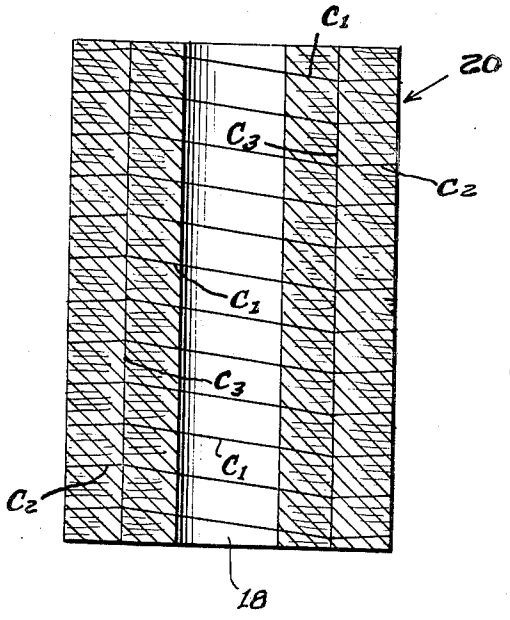
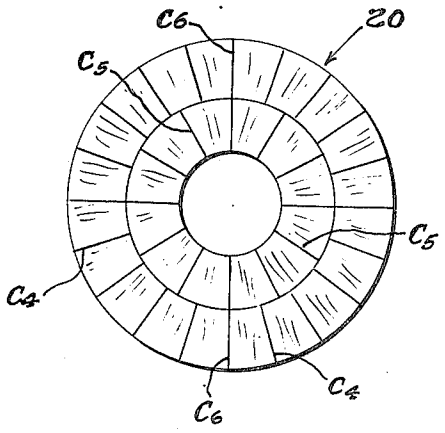


Fig. 5



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APPARATUS FOR DICING DECORED CYLINDERS OF PINEAPPLE

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10 Claims. (Cl. 146—6)

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Our invention relates to a slicing and segmentizing machine and in its most particular aspect concerns a machine for dicing de-cored cylinders of pineapple preparatory to canning.

Heretofore pineapple has been diced by first slicing it in one machine and then segmentizing it in another, the pineapple in each case being forced, as by a weighted plunger, through stationary knife members appropriately spaced and arranged to produce segments of the desired size.

According to the present invention, we accomplish the dicing in a single unitary machine which is particularly distinguished in that it utilizes a plurality of rotary screw blades in the production of the slicing cuts. In the machine as preferably constructed, the screw blades are positioned ahead of the stationary blades so as to engage the pineapple first. This arrangement obviates the need for a plunger or ram, enabling a gravity feed which has obvious advantages. We have found that by means of our machine the dicing operation may be markedly speeded up and substantial savings realized without in any way affecting the quality or saleability of the canned fruit.

We shall particularly describe our invention with the aid of the accompanying drawings illustrating a preferred embodiment thereof and in which:

Fig. 1 is a vertical section;

Fig. 2 is a horizontal section on the lines indicated in Fig. 1;

Fig. 3 is an elevation of a part shown in Figs. 1 and 2, the figure being drawn to the same scale as the latter figures; and

Figs. 4 and 5 show the cuts made by the machine, Fig. 4 being a longitudinal section through a cored cylinder of pineapple, Fig. 5 being a plan.

The machine, as illustrated, includes a casing 10, the cylindrical throat portion 12 of which mounts a cylindrical feed magazine 14. The diameter of the throat and magazine is set by that of the cored fruit cylinders 20 (Fig. 4). Their combined length should be such that a sufficient number of the fruit cylinders may be contained in end-to-end superposed relation to provide adequate weight for a gravity feed. In practice it has been found that five or six cylinders are usually required.

A cone member 16 centrally disposed within the throat 12 has a diameter substantially conforming to the diameter of the cored area 18 of the fruit cylinder. This cone carries a tapered screw blade 19 and is fixed to a shaft 22 which in operation of the dicer rotates counterclockwise in the sleeve 23. Shaft 22 is driven through a

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vertical shaft 24 which carries a gear 26 at its lower end, meshing with the lower component gear 29 of a double idler gear 28. The upper component gear 30 of the double idler gear engages with a gear 32 fixed to the shaft 22. Shaft 24 is itself driven through a horizontal shaft 34 which mounts a bevel gear 36, meshing with a bevel gear 38 on shaft 24, and a sheave 40, grooved to receive a V-belt 42.

The tapered screw blade 19 fixed to the rotating nose or cone 16 produces the inner slicing cuts, indicated at C_1 in Fig. 4. The outer slicing cuts C_2 are produced by a second tapered screw blade 44 fixed to a ring gear 46 which meshes with a gear 48 carried at the upper end of the shaft 24. With the drive arranged as described, screw blade 44 rotates clockwise, i. e., in a direction opposite the direction of rotation of screw blade 19. Blade 44 is so spaced with relation to screw blade 19 as to insure junction of the cuts C_1 and C_2. It has fixed thereto or integral therewith an auxiliary cutter 50 which produces the annular vertical cuts C_3 interconnecting the horizontal cuts C_1+C_2. During the production of the inner slicing cuts C_1, the fruit cylinder is held against rotation by the two oppositely disposed vertical knives 52 (see Fig. 3 as well as Figs. 1 and 2) which extend inwardly of the inner wall 54 of the throat 12.

Fixed at the head of the stationary sleeve 23 within which the shaft 22 rotates is a set of radially extending knives 56 which are shaped as an equilateral triangle squared off at the apex. A stationary annular support piece 60 carries a second set of knives 62 extending radially inwardly towards the knives 56. Knives 62 are shaped as right triangles squared off at the point of the lower acute angle and serve to produce the vertical cuts C_4 seen in Fig. 5 which, taken with Fig. 4, illustrates the shape of the segments falling into the chute 64. Vertical cuts C_5, inwardly of the cuts C_4, are produced by the knives 56. Two of the outer vertical cuts, indicated at C_6, result from the knives 52, which hold the fruit cylinder against rotation in the throat 12.

It should not be taken from the foregoing that our invention is limited to the particular use indicated, since it may be otherwise applied to advantage. The machine as shown may obviously be changed and modified without departing from the spirit and scope of the invention.

We claim:

1. Apparatus for cutting a hollow fruit cylinder comprising a rotatable shaft adapted to enter the hollow center of said cylinder, a heli-

cal cutting blade secured to said shaft extending radially outwardly therefrom, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable about said axis, a second helical cutting blade secured to said casing extending radially inwardly therefrom, said blades being adapted to cut said cylinder transversely and to advance said cylinder through said apparatus, means for rotating said shaft and said casing, and means for retarding rotation of said cylinder as it is advanced, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance between the cutting edge of the second blade and said common axis.

2. Apparatus for cutting a hollow fruit cylinder comprising a rotatable shaft adapted to enter the hollow center of said cylinder, a helical cutting blade secured to said shaft extending radially outwardly therefrom, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable independently thereof about said axis, a second helical cutting blade of opposite hand secured to said casing extending radially inwardly therefrom, means for rotating said shaft and said casing in opposite directions, said blades being adapted to cut said cylinder transversely and to advance said cylinder through said apparatus, and means for retarding rotation of said cylinder as it is advanced, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance between the cutting edge of the second blade and said common axis.

3. Apparatus for cutting a hollow fruit cylinder comprising a rotatable shaft adapted to enter the hollow center of said cylinder, a helical cutting blade secured to said shaft extending radially outwardly therefrom, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable about said axis, a second helical cutting blade secured to said casing extending radially inwardly therefrom, said blades being adapted to cut said cylinder transversely and to advance said cylinder through said apparatus, guide means for guiding said cylinders onto said shaft, means for rotating said shaft and said casing, and means for holding said cylinder against rotation as it is advanced, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance between the cutting edge of the second blade and said common axis.

4. Apparatus for cutting a hollow fruit cylinder comprising a rotatable shaft adapted to enter the hollow center of said cylinder, a helical cutting blade secured to said shaft extending radially outwardly therefrom, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable about said axis, a second helical cutting blade secured to said casing extending radially inwardly therefrom, said blades being adapted to cut said cylinder transversely and to advance said cylinder through said apparatus, means for rotating said shaft and said casing, and means for retarding rotation of said cylinder as it is advanced, the second said blade being disposed rearwardly of the first said blade in the path of said advancing cylinder, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance between the cutting edge of the second blade and said common axis.

5. The apparatus of claim 4 including in addition means for cutting said cylinder in a cylindrical path about said common axis, the radial limits of said cylindrical path being defined by the outermost cutting edge of the first helical cutting blade and the innermost cutting edge of the second helical cutting blade, said additional cutting means being disposed rearwardly of said first helical blade in the path of said advancing fruit cylinder.

6. Apparatus for cutting a hollow fruit cylinder comprising a rotatable shaft adapted to enter the hollow center of said cylinder, a helical cutting blade secured to said shaft extending radially outwardly therefrom, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable independently thereof about said axis, a second helical cutting blade of opposite hand secured to said casing extending radially inwardly therefrom, guide means for guiding said cylinders onto said shaft, means for rotating said shaft and said casing in opposite directions, said blades being adapted to cut said cylinder transversely and to advance said cylinder through said apparatus, and fixed cutting blades mounted in the path of said cylinder as it is advanced for cutting said cylinder longitudinally and for holding it against rotation, the second helical blade being disposed rearwardly of the first helical blade in the path of the advancing cylinder, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance between the cutting edge of the second blade and said common axis.

7. Apparatus for cutting a hollow fruit cylinder comprising a rotatable shaft adapted to enter the hollow center of said cylinder, a helical cutting blade secured to said shaft extending radially outwardly therefrom, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable about said axis, a second helical cutting blade secured to said casing extending radially inwardly therefrom, said blades being adapted to cut said cylinder transversely and to advance said cylinder through said apparatus, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance between the cutting edge of the second blade and said common axis, means for rotating said shaft and said casing, and at least one fixed knife extending radially inwardly toward said axis in the path of said cylinder adapted to cut said cylinder longitudinally and to retard rotation of said cylinder as it is advanced through said apparatus.

8. Apparatus for cutting a hollow fruit cylinder comprising guide means for guiding said cylinder along its axis into said apparatus, a rotatable shaft adapted to enter the hollow center of said cylinder, a helical cutting blade secured to said shaft extending radially outwardly therefrom adapted to cut said cylinder transversely and to advance it through said apparatus, a hollow casing adapted to receive said cylinder mounted in axial alignment with said shaft and rotatable independently thereof about said axis, a second helical cutting blade of opposite hand secured to said casing extending radially inward-

ly therefrom rearwardly of the first said blade in the path of advance of said cylinder adapted to cut and advance said cylinder, the maximum radial distance of the cutting edge of the first blade from said common axis being at least as great as the minimum radial distance of the cutting edge of the second blade from said axis, means for rotating said shaft and said casing in opposite directions, at least one fixed cutting blade extending inwardly in the path of said cylinder in advance of the first said helical blade to cut said cylinder longitudinally and to prevent rotation thereof as it is advanced by said helical blade, and a plurality of fixed cutting blades mounted rearwardly of said second helical blade in the path of said cylinder extending radially inwardly toward said common axis at least as far as the outermost cutting edge of the first helical blade to cut said cylinder segmentally as it is advanced.

9. The apparatus of claim 8 including in addition means for cutting said cylinder in a cylindrical path about said common axis, the radial limits of said cylindrical path being defined by the outermost cutting edge of the first helical cutting blade and the innermost cutting edge of the second helical cutting blade, said additional cutting means being disposed rearwardly of said first helical blade in the path of said advancing fruit cylinder.

10. The apparatus of claim 8 including in addition means for cutting said cylinder in a cylindrical path about said common axis, said additional cutting means being disposed rearwardly of the first helical blade in the path of the advancing fruit cylinder, the radial limits of said cylindrical path being defined by the outermost cutting edge of the first helical cutting blade and the innermost cutting edge of the second helical blade, and including additional fixed cutting blades mounted rearwardly of the second helical blade extending radially outwardly from said common axis at least as far as said cylindrical path.

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