

[54] ROLLER CLEANING MECHANISM

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[52] U.S. Cl. 198/229, 15/93

[51] Int. Cl. B65g 45/00

[58] Field of Search 198/229; 15/93 R, 93 C

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[57] ABSTRACT

The present apparatus relates to cleaning means for a roller conveyor employed in a fruit and vegetable peeling operation, for example, in the peeling of white potatoes employing a lye treatment followed by the application of infrared radiant heat. The rollers which carry and turn the potatoes under the infrared rays become coated with a paste-like substance as the infrared rays take effect in conditioning the activating lye and conditioning the skin for removal, and these rolls are subjected to a cleaning operation by blade means.

5 Claims, 5 Drawing Figures

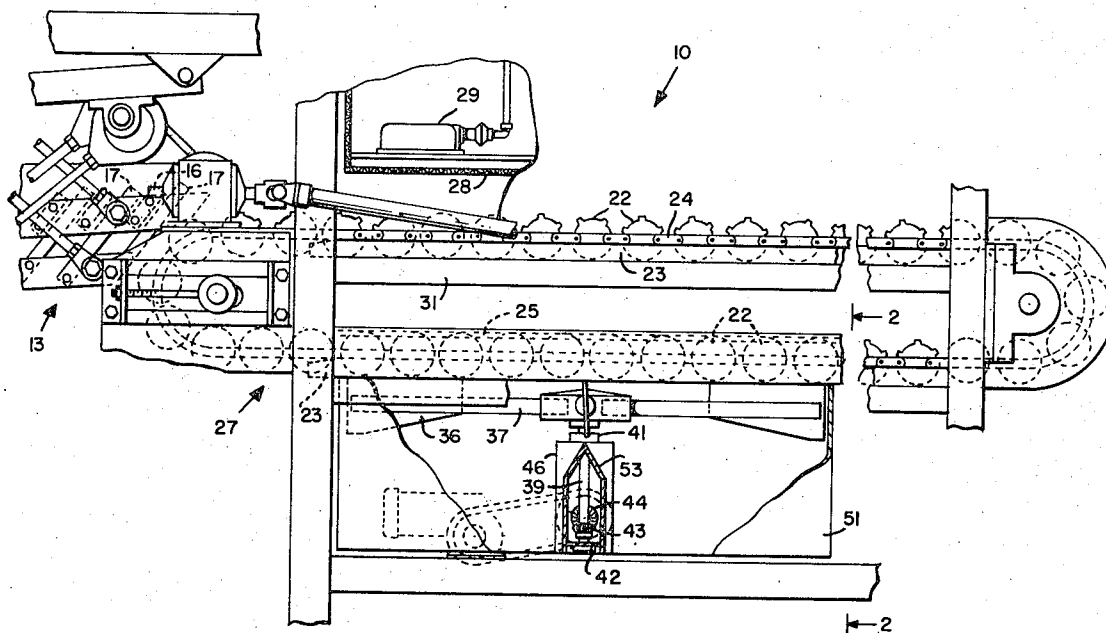
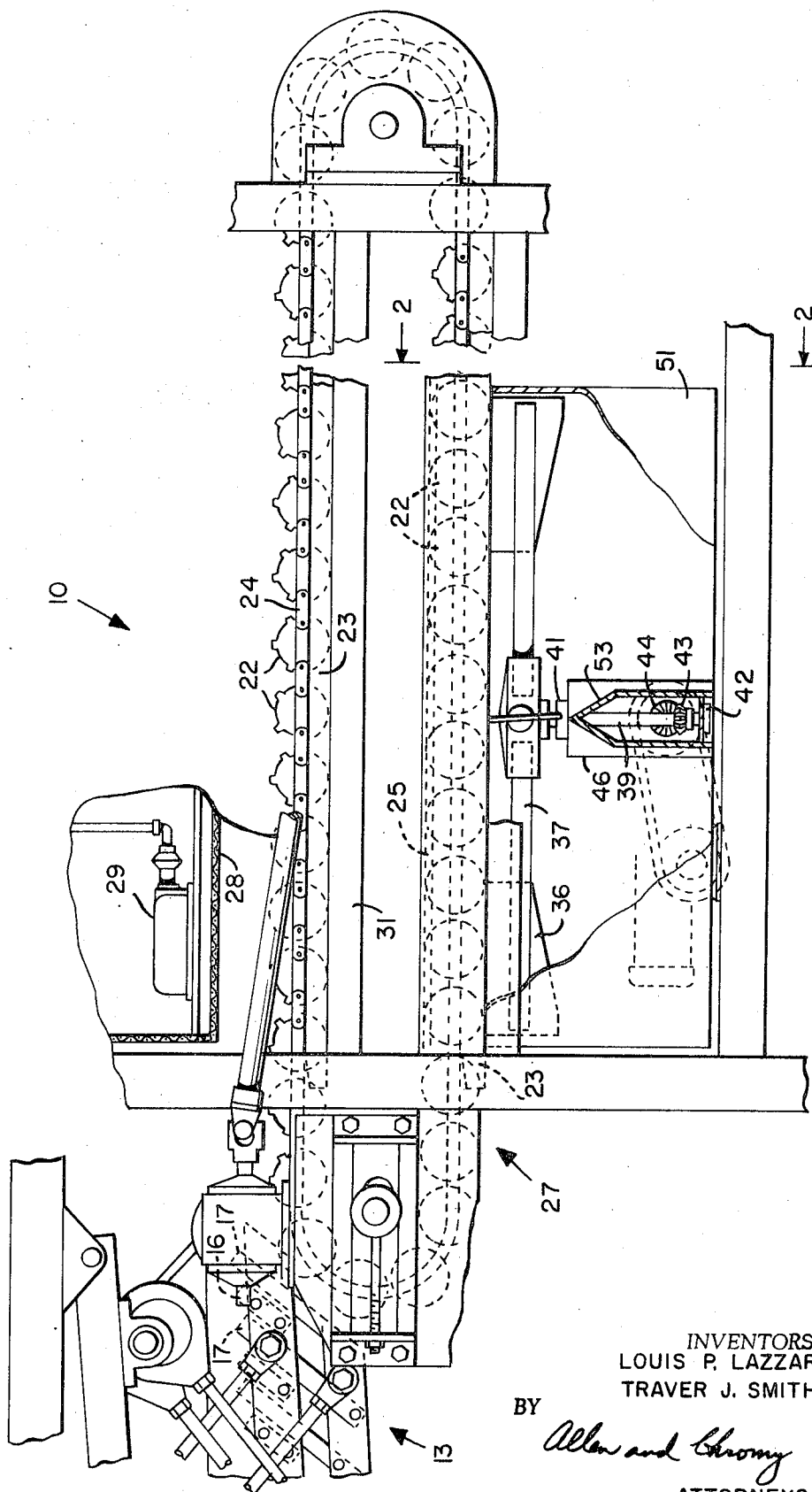


FIG. 1



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FIG. 2

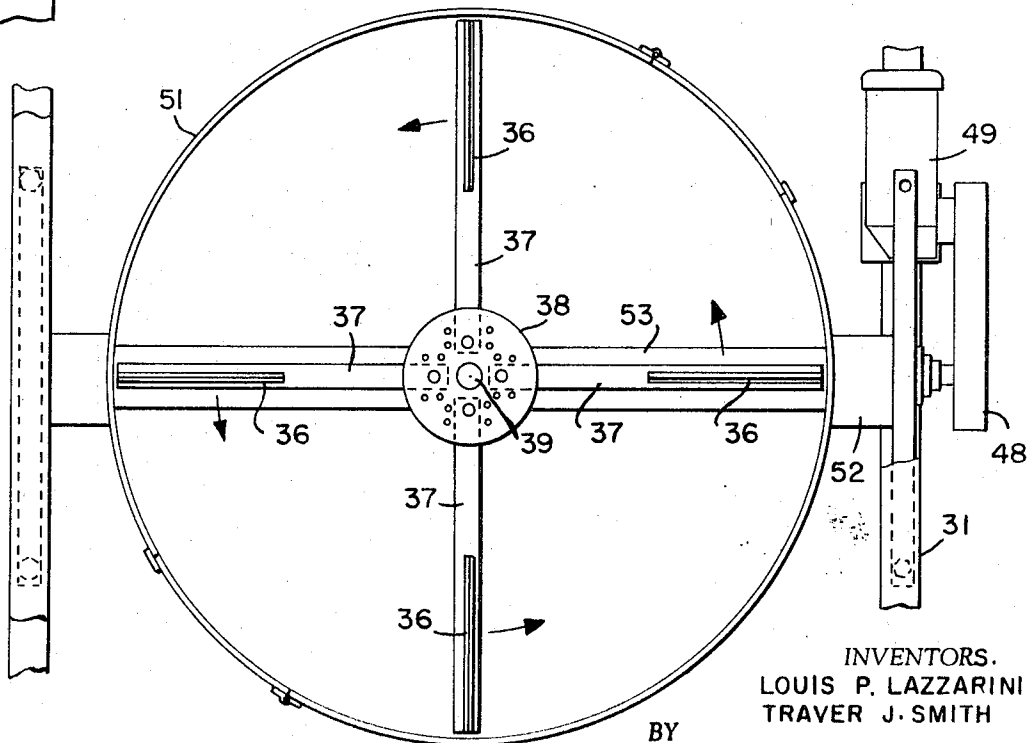
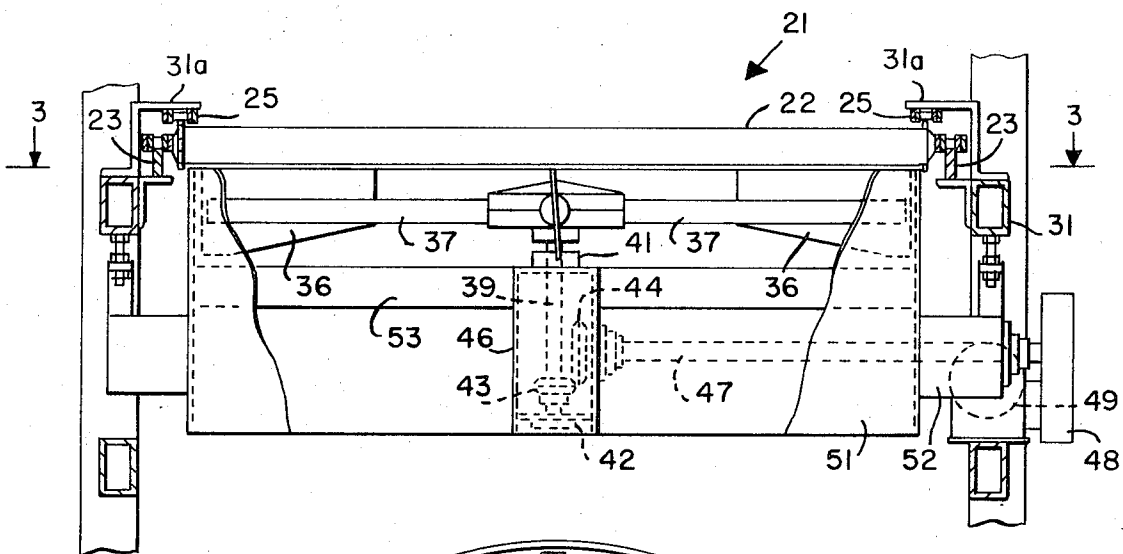


FIG. 3

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FIG. 4

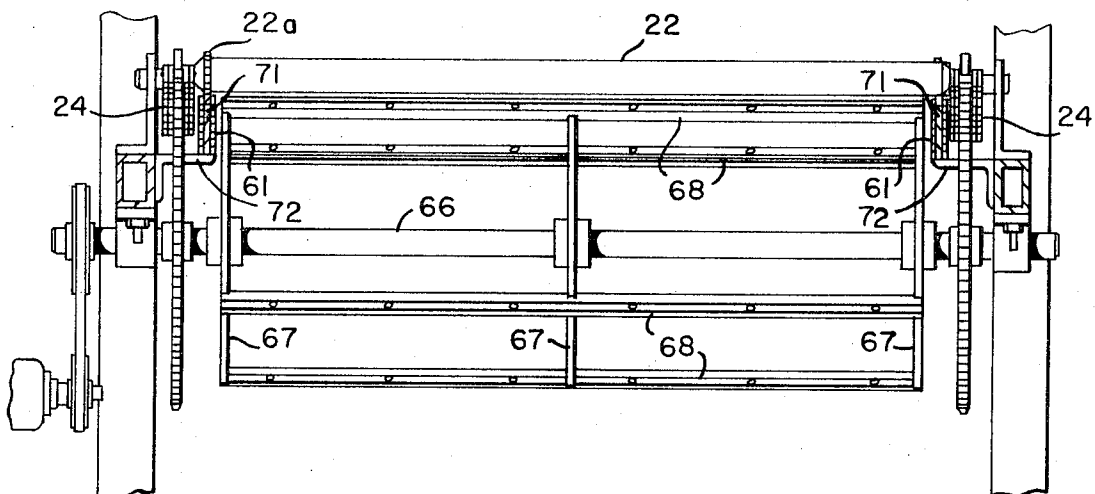
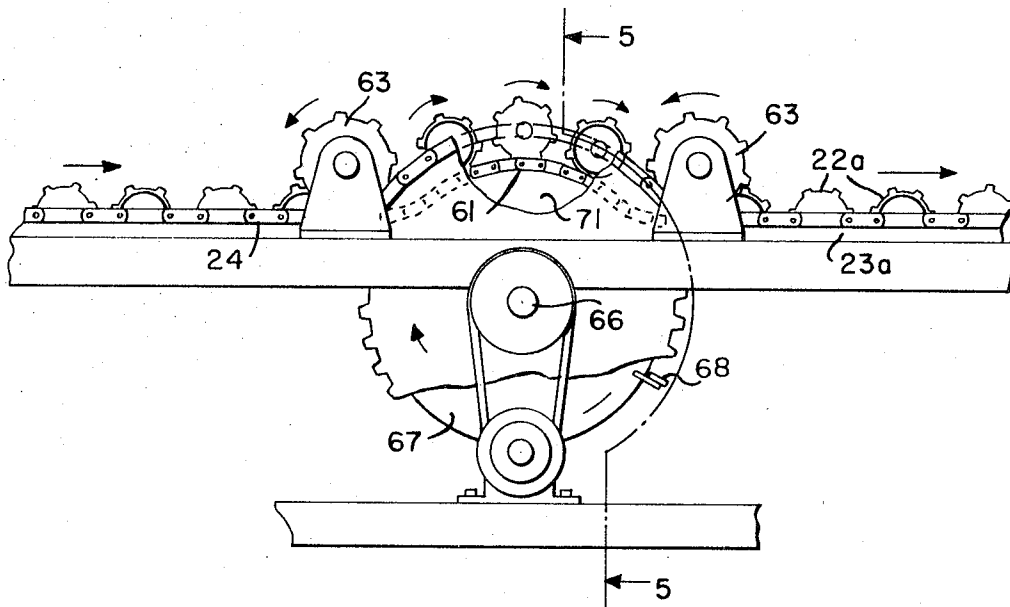


FIG. 5

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ROLLER CLEANING MECHANISM

RELATED APPLICATION

This is a continuation of application Ser. No. 46,228, filed June 15, 1970.

DESCRIPTION OF THE INVENTION

The present invention relates to the peeling of fruit and vegetable articles and relates particularly to the peeling of white potatoes and the cleaning of the rolls of the potato carrying conveyor for carrying it through an infrared treatment zone.

It is a general object of the invention, therefore, to provide an improved means for cleaning the rolls employed for conveying fruits or vegetables through a treating zone.

Another object of the invention is to provide cleaning apparatus of the above character when the return stretch of the rolls is subjected to a rotary cleaning blade spaced closely with respect thereto and so related to it that the entire roll surface is scraped or cleaned during its passage over the blade path.

Still another object of the invention is to provide cleaning apparatus of the above character wherein the blade is a rotary member with four blades rotating in a horizontal plane.

Another object of the invention is to provide a roller cleaning apparatus wherein the rolls are carried through an arcuate path for cleaning and are subjected to a plurality of blades mounted to move through a cylindrical surface.

Other objects and advantages of this invention will be apparent from the following description of certain preferred embodiments thereof as illustrated in the accompanying drawings, in which:

FIG. 1 is a fragmentary side elevational view partially broken away and partially shown in section illustrating the relation of the rotary horizontally disposed blades to the lower stretch of the potato conveying rollers;

FIG. 2 is a transverse sectional view partially in elevation and taken in a plane indicated by the line 2-2 in FIG. 1;

FIG. 3 is a horizontal sectional view taken in the plane indicated by the line 3-3 in FIG. 2;

FIGS. 4 and 5 illustrate a modified form of the invention;

FIG. 4 being a longitudinal sectional view taken generally in the same plane as FIG. 1 of the first modification, and FIG. 5 being a transverse sectional view taken in the plane indicated by the line 5-5 in FIG. 4.

The instant invention is an improvement on the process and apparatus shown in the copending application of Louis P. Lazzarini, Ser. No. 826,377, filed May 21, 1969, entitled "Dry Peeling Apparatus and Method," and reference is hereby made to said application for details of construction not specifically described herein.

Referring first to FIGS. 1 through 3, an infrared treating unit 10 is disclosed comprising a shuffle feed mechanism 11 for feeding rows of potatoes to the infrared treating zone, including respective shuffle member 16 and 17 of conventional construction and suitably supported and driven to reciprocate and progress rows of fruit or vegetables such as white potatoes thereover to a roller conveyor 21. The roller conveyor 21 comprises a series of rollers 22 which travel on tracks 23, the rollers

serving to convey the rows of potatoes underneath an infrared unit 28 including conventional infrared heating units 29.

Each roller 22 has a support shaft 24 at each end pivotally mounted at each end by a pivotal connection between the links of a chain 20 at each side of the conveyor so that the rollers are positively guided through a predetermined path. The chains 20 rest on the tracks 23 which are suitably supported on a rectangular longitudinal box frame piece 31. Each roller 22 is provided on one end with a sprocket 26 which meshes with a cooperating fixed length of an overhead chain 25 supported by a bracket 25a. In this way the rollers 22 are rotated during a portion of their return stretch for cleaning purposes.

Means is provided for cleaning the rollers during their return along the lower stretch of their travel and in the present instance this means comprises four radial blades 36, each carried by a radial mounting shaft 37, which project outwardly from a hub 38 carried by a vertical drive shaft 39 (FIGS. 2 and 3). The shaft 39 is suitably journaled in bearings 41 and 42 and adjacent its lower end carries a bevel pinion 43 which meshes with a bevel gear 44 within the shaft housing 46. A shaft 47 carries the gear 44 and extends to suitable drive means housed by the housing 48 and driven by motor 49. As seen in FIG. 2, the blades 36 have their upper edges spaced closely beneath the rollers 22 of the lower or return stretch thereof so as to scrape and remove any material building up on these rollers beyond the desired clearance dimension. The rate of rotation of the blades 36 with respect to the rate of travel and rotation of the 2¼ inches diameter roller 22 is such that the entire length of the roller and the entire diameter of the roller will be scraped during its passage past the cleaning means in the form of the four blades 36. For example, with 5 foot diameter blades rotating at about 120 revolutions per minute, and with a conveyor speed of 31 feet per minute, and with a pitch diameter of the roller sprocket of 3.204 inches, one revolution of the rollers will travel approximately 10.6 inches, during the complete travel of the rolls through the 5 feet of the cleaning zone there will be 12.96 passes of the cleaning blades over the rollers. The resultant shape of the residue peel material on the rollers will be cylindrical in the center and then gradually change to a 13-sided figure at the ends of the rollers.

Blades 36 (FIGS. 1, 2 and 3) are housed within a suitable cylindrical housing 51 suitably supported by brackets 52 on the frame. A bracking member 53 extends from either side of the gear and shaft housing 46 to the cylindrical wall 51 to maintain the housing securely in its desired central position.

In the modification of the invention shown in FIGS. 4 and 5, the return stretch of the rollers 22a is provided on a track 23a there being one at either side of the machine, and each roller is provided with a sprocket at the end. Intermediate the length of the track 23a a fixed chain 61 is provided at each side, each chain 61 being supported by a plate 71 carried on a frame angle 72. Each chain 61 is of generally arcuate shape in the center and is engaged by the sprockets 62 on alternate rollers 22a to cause them to rotate. The rollers 22a are engaged on either side of their arcuate cleaning path by respective pairs of snubbing sprockets 63. A cleaning apparatus is provided at this place including a central shaft 66, an internal reel 67 with straight blades 68 dis-

posed to pass closely beneath the rollers 22a during their travel through their arcuate path.

The reel 67 (FIGS. 4 and 5) turns at a speed so that the blades contact the peel waste about 12 or more times during the pass of a roller through the cleaning zone making a 12 plus sided figure as a result of the cleaning operation. The rollers preferably engage a fixed chain 61 for a sufficient time to effect at least one roller revolution during its travel along the arcuate path.

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

We claim:

1. In a peeling machine, a roller conveyor for traveling through a treating zone to carry products to be treated therein, said roller conveyor comprising a plurality of rollers and having a return stretch; a track for controlling the travel of the roller conveyor and predetermining the path of the rollers comprising said return stretch during their travel through a cleaning zone; rotary blades mounted for rotation in a path parallel to and closely adjacent one stretch of said roller conveyor, said blades moving in closely spaced relation with respect to said rollers during travel through said cleaning zone for effecting removal of excess material adhering thereto; a sprocket provided at one end of each roller, the sprockets on adjacent rollers alternating from end to end; and, a pair of fixed chains mounted on said machine so as to be engaged by said sprockets during their travel through the cleaning zone.

2. In a peeling machine, a roller conveyor for traveling through a treating zone to carry products to be treated therein, said roller conveyor comprising a plurality of rollers and having a return stretch; means defining an arcuate path for the rollers of said roller con-

veyor comprising said return stretch during their travel through a cleaning zone, horizontal blades mounted for rotation about an axis and through a cylindrical path corresponding to a portion of the arcuate path of said rollers, said blades moving in closely spaced relation with respect to said rollers during travel through said cleaning zone for effecting removal of excess material adhering thereto.

3. In a peeling machine as recited in claim 2, in which said rollers of said conveyor are each provided with a sprocket at one end thereof, the sprockets on adjacent rollers alternating in their end position, and in which two fixed chains are mounted for engagement, respectively, by the sprockets at the ends of said rollers, and in which the mounting means for said chains predetermines an arcuate shape thereof.

4. In a roller conveyor for traveling through a treating zone to carry products to be treated therein, said roller conveyor having a return stretch, the improvement comprising: means for predetermining the path of the rollers comprising said return stretch during their travel through a cleaning zone, means for rotating the rollers about their axes as the rollers travel through the cleaning zone, blades mounted beneath said return stretch for rotation about an axis extending generally normal to the rollers of the conveyor in the cleaning zone, said blades moving about said axis in a planar path beneath and adjacent to the bottom of said rollers during travel through said cleaning zone for effecting removal of material adhering thereto, and an open ended housing mounted in the cleaning zone to extend from closely adjacent the rollers downwardly in circumscribing relationship to the blades so that material removed from the rollers is contained and guided downwardly.

5. In a roller conveyor, as recited in claim 4, the improvement wherein the blades extend radially from the axis at angularly spaced intervals from one another.

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