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[54] **CANE DISINTEGRATOR**
5 Claims, 2 Drawing Figs.

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[50] **Field of Search** 146/117–123,
116.1; 241/194, 195

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ABSTRACT: A machine for performing cutting and shredding or similar operations comprises a rotor provided on its periphery with a plurality of pivoting Y-shaped blades, the top of the upper two diagonal limbs of each of which are employed as hammers. The arrangement is such that on one side of the rotor, the whole cane sticks are subjected to the action of the cutting edges of the blades, whereas on the other side of the rotor the cut-off cane ends come under the action mainly of the hammers which shred the cane ends into small pieces.

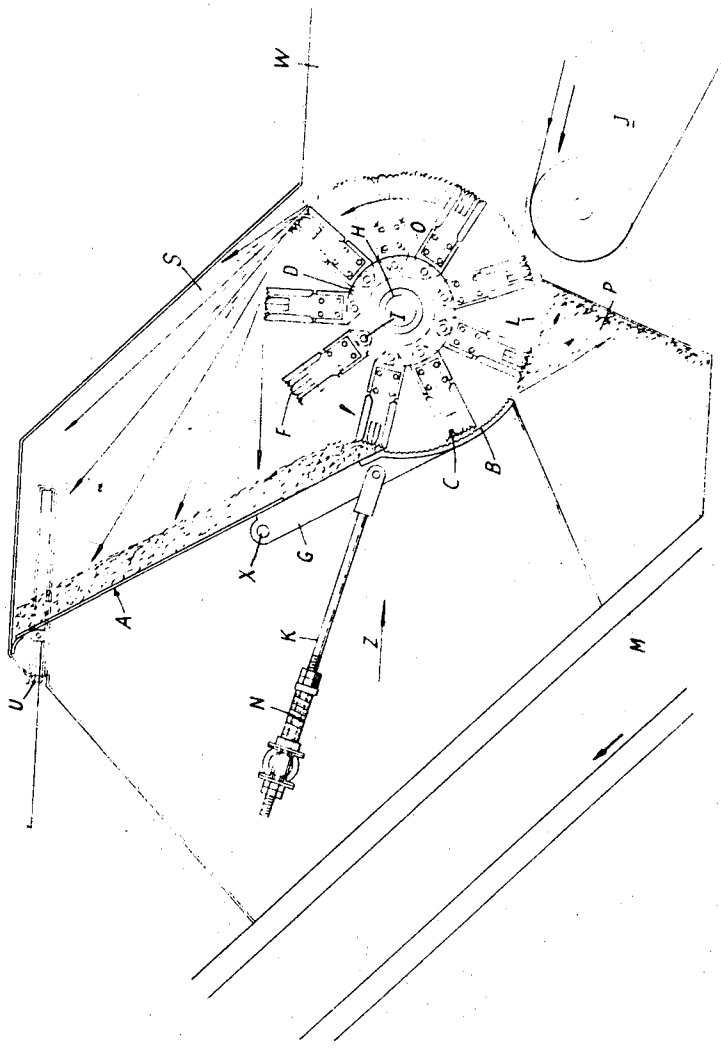
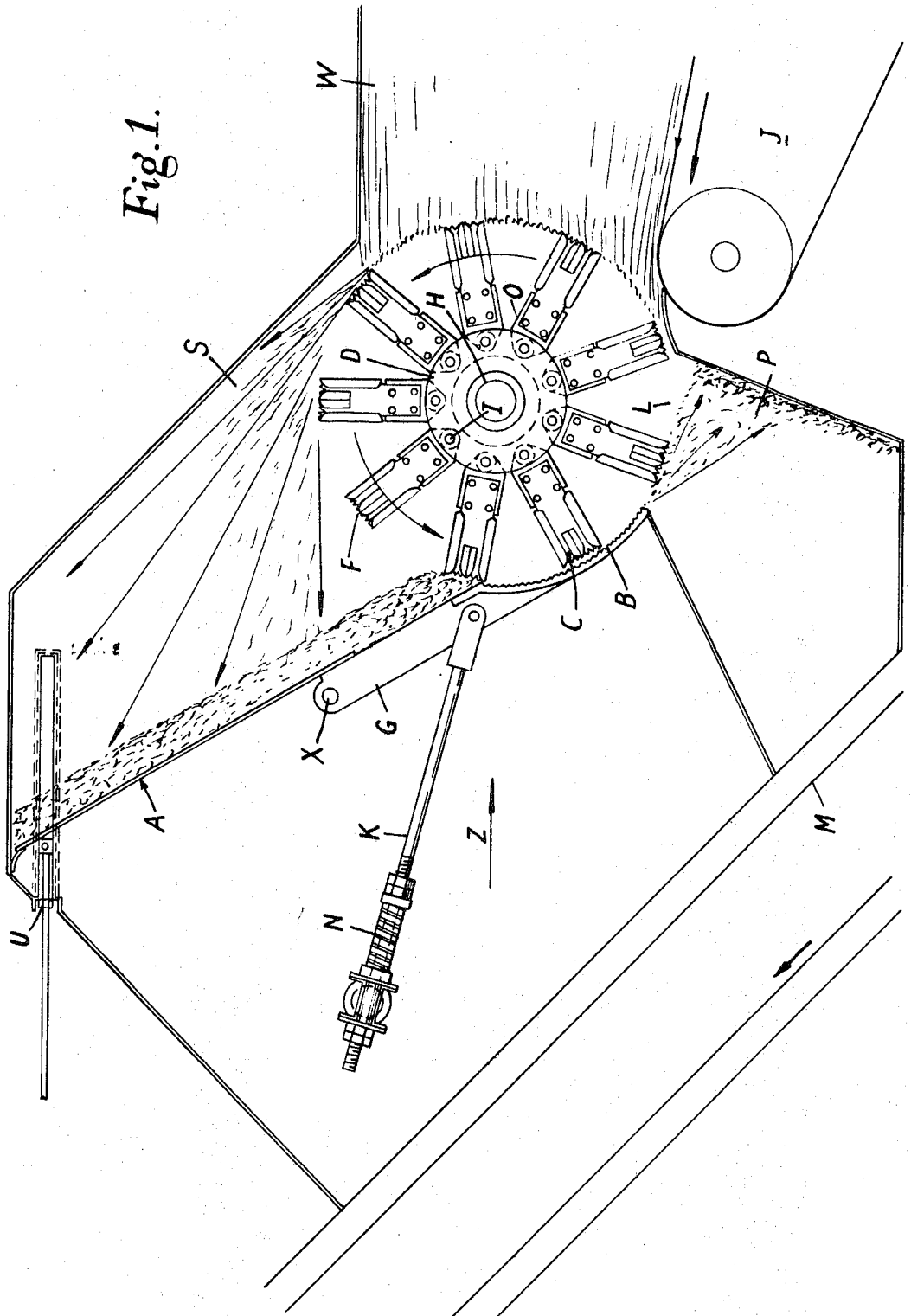
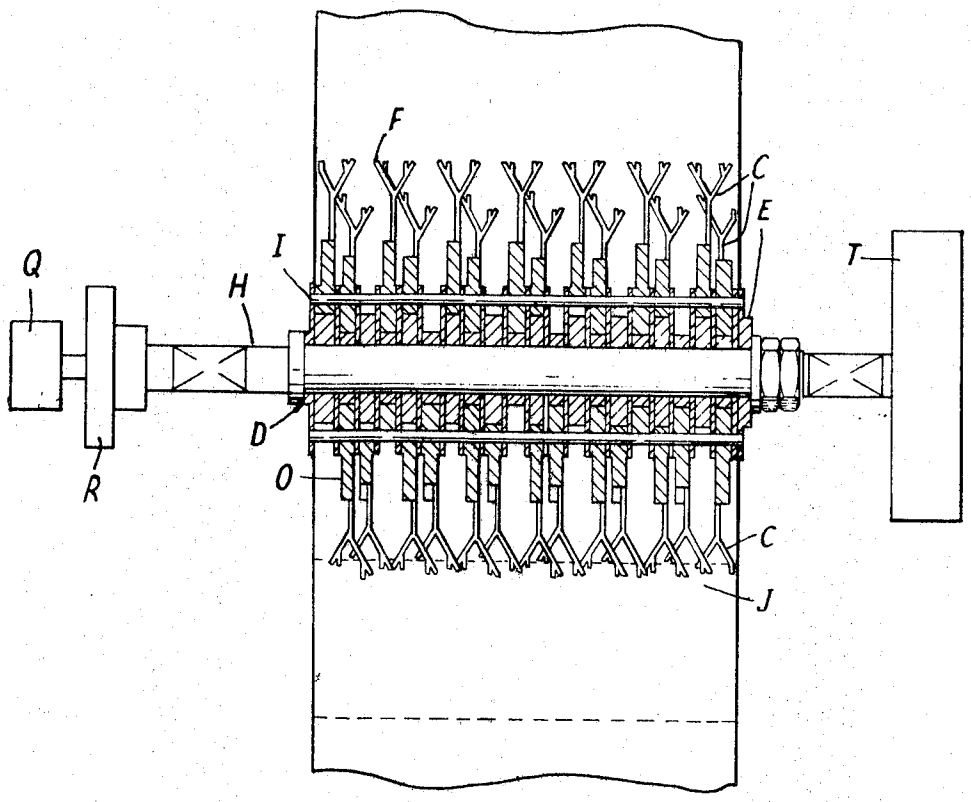


Fig. 1.



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Fig.2.



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CANE DISINTEGRATOR

This invention relates to a machine for performing cutting and shredding or similar operations on sugar canes and other plant products.

The object of the invention is to provide an improved machine adapted for the performance of such operations in an efficient manner, two operations, such as cutting and shredding sugar canes being performed simultaneously, if desired.

In accordance with this invention a machine for performing cutting and shredding or similar operations comprises a rotor provided on its periphery with a plurality of pivoting Y-shaped blades, the top of the upper two diagonal limbs of each of which are conveniently employed as hammers.

The arrangement is such that on one side of the rotor, the whole cane sticks are subjected to the action of the cutting edges of the blades, whereas on the other side of the rotor the cutoff cane ends come under the action mainly of the hammers which shred the cane ends into small pieces.

An embodiment of the invention is illustrated, by way of example, in the accompanying drawings, wherein:

FIG. 1 is a section through the machine taken at right angles to the axis of the rotor, and

FIG. 2 is a side view of the rotor, looking in the direction of arrow Z in FIG. 1.

In the embodiment illustrated, the machine comprises a casing W within which is supported a rotor D consisting of a series of plate steel discs (conveniently spaced about 2½" apart) mounted on a shaft H arranged across the head end of a feeding carrier J.

On the periphery of the rotor D, and conveniently arranged between the rotor discs, are pivotally attached, by means of rods I, sets of holders O to which are fixed Y-shaped blades C (one blade per holder).

The blades C have cutting edges (on both sides) formed by the stem and the two diagonal limbs of the Y, the top of these limbs being serrated to act as hammers F and conveniently spaced (about 5" to 6" apart).

Owing to the intended high speed of the rotor D (about 700 to 1000 r.p.m.) centrifugal force causes the swinging blades C to assume a radial position in operation. During the cutting process these blades C on encountering the ends of the massed canes W being fed by carrier J, make a series of diagonal and longitudinal cuts in the cane ends across the width of carrier J.

Because of the direction of rotation of the rotor D all the knifed cane S is caused to be scattered over a steep chute A, the inclination of which is adjustable by means U, arranged on the opposite side of the rotor from the carrier J, and these sliced cut cane ends S form a layer on the chute A, which rapidly slides down onto an adjustable curved gate G which is hinged at X and is yieldably biased toward the rotor D by counterweight means, or, as shown, by spring means N encircling an adjustable rod K. The gate G carries on its inside face an indented lining B, the serrations of which, when gate G is in its innermost position, are located at a small clearance distance from the serrated tips of the revolving hammers F. The cane chips on this lining B are subjected to an intense shredding action and the resulting properly disintegrated cane P leaves through an outlet L provided at the bottom of the machine and is deposited on a suitable discharge conveyor M. If convenient room is available the cane cutting and shredding machine described may be located direct over the feeding chute of the first cane mill.

The rotor D is conveniently driven by a motor Q direct-coupled by coupling R to its shaft H and is made of a relatively large diameter (for example, 5'—6" over the hammer tips), so that no cane stick is likely to escape through the knives without being cut. A fly-wheel T is preferably mounted on the shaft H.

Any "tramp-iron" entering the machine would, under the action of the hammers F, force back the hinged gate G, thereby preventing serious damage to the machine.

Modifications may be made to this invention within the scope of the subjoined claims. For example, gate G may be replaced by a plurality of relatively spaced anvil bars which extend parallel to the axis of the rotor, such as are used in a Searby type shredder.

I claim:

1. A machine for simultaneously cutting and shredding plant products such as sugar cane sticks, comprising a casing, a rotor within said casing, a plurality of Y-shaped cutting blades pivotally mounted on the periphery of said rotor, cutting edges on both sides of each blade formed by the stem and two diagonal limbs of the "Y", said blades having tips formed to act as hammers, means for rotating said rotor whereby under rotation said cutting blades assume substantially radial positions for cutting and shredding sugar cane sticks fed against said rotor, means for feeding sugar cane sticks to said rotor in a direction substantially perpendicular to the axis thereof whereby said cutting edges cut longitudinally and diagonally into said cane ends, a chute arranged on the opposite side of said rotor from said feeding means to collect thereon the cut cane ends which are scattered by the rotating rotor, and curved anvil means mounted at the lower end of said chute so that the cut cane ends slide from said chute onto said anvil means, said anvil means being spaced from said rotor such that the cut cane ends are shredded thereon by the action of said rotating hammers.

2. A machine according to claim 1, wherein said anvil means is a curved gate comprising an indented lining the serrations of which face said hammers.

3. A machine according to claim 1, wherein the tips of said diagonal limbs are serrated to provide portions forming said hammers.

4. A machine according to claim 2, further comprising means hingeably supporting said gate and means yieldably biasing said gate toward said rotor.

5. A machine according to claim 4, comprising an electric driving motor directly coupled to said rotor.