A. E. DEMPSEY.

CANDY CUTTER.

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1,402,923. Patented Jan. 10, 1922.

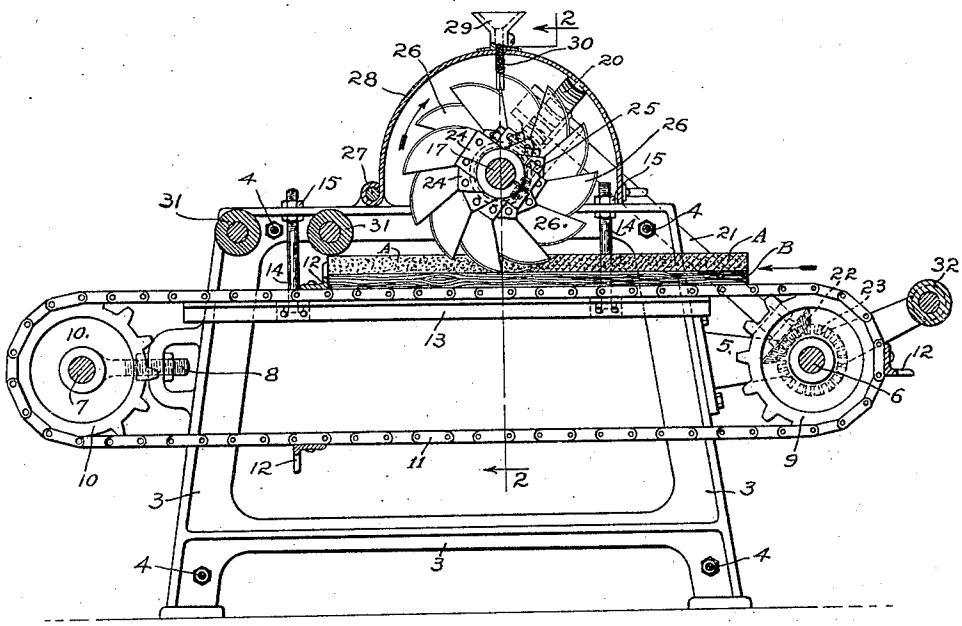


Fig. 1.

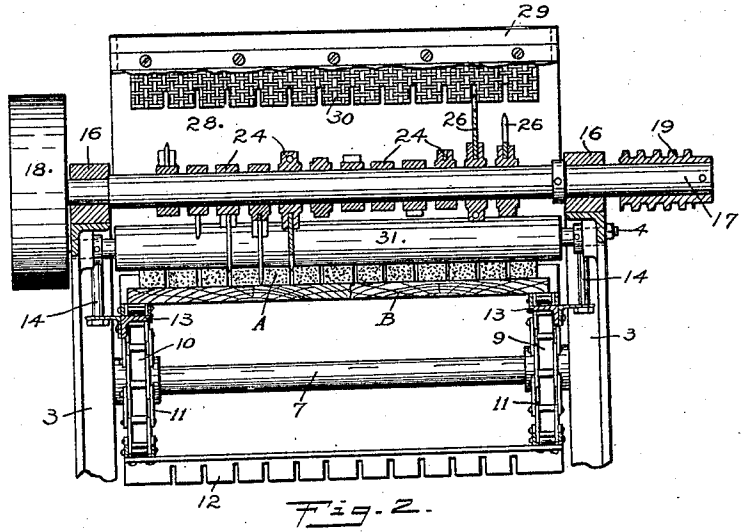


Fig. 2.

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CANDY CUTTER.

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To all whom it may concern:

Be it known that I, ARTHUR E. DEMPSEY, a citizen of the United States, and a resident of Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Candy Cutters, of which the following is a specification.

My invention relates to candy cutting machines, and particularly to machines for cutting uniform bars, squares or cubes from flat sheets or slabs of material such as caramel, fudge, and like candies which are of a slightly plastic and adhesive consistency. It is the object of my invention to provide a simple and inexpensively constructed machine for the above named purposes, capable of rapid and economical operation on commercial quantities of the material. A further object of my invention is to provide in a machine of this character a plurality of rotary knives which engage the material with a slicing or drawing movement similar to that preferably employed when cutting by hand the semi-plastic materials mentioned.

In the accompanying drawings Fig. 1 is a longitudinal vertical section of a machine embodying my invention, and Fig. 2 is a transverse vertical section of the same on the plane of the line 2—2 of Fig. 1.

In the illustrated structure I provide a suitable frame comprising a pair of side-members 3 which are held in transversely spaced relation by cross-roads 4. At the front end of said frame there are forwardly extending bearings 5 for a transverse shaft 6, and at the rear end of the frame a similar shaft 7 is carried in bearings 8 which are so connected with the frame as to be adjustable longitudinally thereof, within determined limits. Pairs of sprocket-wheels 9 and 10 are secured respectively upon the shafts 6 and 7 adjacent to the side frame-members 3, and a pair of endless chains 11 are extended around the sprocket-wheels, as shown. The chains are connected to each other at intervals by transversely extending angle-bars 12. The upper horizontal portions of the chains are supported intermediate the sprocket-wheels upon track-members formed by angle-bars 13 which are connected with the frame-members 3 by bolts 14 having nuts 15 screwed thereon above and below the engaged flanges of the frame-members, whereby the track-bars may be adjusted vertically relatively to the frame. On the upper intermediate portions of the side-frames 3 are bearings 16 for a transverse shaft 17. Said shaft is driven by means of a pulley 18 mounted on one end thereof, and upon the opposite end-portion of the shaft there is secured a worm 19. The latter meshes with a worm-wheel 20 carried upon the upper end of a diagonally extending shaft 21. At the lower end of said shaft is carried a bevel gear 22 which meshes with and drives a bevel gear 23 on the shaft 6, and said shaft is thus driven at a low speed relative to that of the shaft 17. On the intermediate portion of the shaft 17, between the bearings 16, there are disposed a plurality of clamp-collars 24, each of which has at one side a kerf, and a screw 25, whereby the portions divided by the kerf may be drawn together to clamp the collar upon the shaft. To each of the clamp-collars there is secured a knife or blade 26, which extends in a plane perpendicular to the axis of the shaft 17, and which has a spiral sharpened edge, said edge being the front edge of the blade with respect to its direction of movement when the shaft 17 is driven in the direction indicated by the arrow in Fig. 1. The clamp-collars are uniformly spaced longitudinally of the shaft, and are so arranged circumferentially that the several blades 26 are not in alignment with each other longitudinally of the shaft, the outermost points of the blades preferably being in a helical or screw-like line, as shown.

At the rearward side of the knife-cylinder, which is formed as above described, there is a transversely extending rod 27 to which is pivotally connected the rear edge of a semi-cylindrical cover or shield 28, the same normally extending over the upper portion of the knife-cylinder, as shown, but being swingable upwardly and rearwardly about the rod 27, to expose the cylinder to view when desired. On the upper portion of the shield there is formed a V-shaped trough 29, and from the bottom of said trough a wick or strip 30 of porous fabric extends down through a slot in the shield and hangs in the path of the outer portions of the blades 26, the lower portion of the strip being notched or slotted to enable the knife-blades to pass through it, while the intermediate portions engage the sides of the blades.

Rearwardly of the knife-cylinder there are provided one or more transversely extending rollers 31 which are suitably journaled in bearings therefor on the frame. At the

front of the machine there is a transverse roller 32 which is journaled in extensions of the bearings 5 for the shaft 6, said roller 32 being so positioned that the upper edge thereof is alined horizontally with the upper sides of the chains 11.

The material to be cut by the machine is prepared in rectangular sheets or slabs A which rest upon square pallets B. The thickness of the pallets is substantially the same as, or slightly less than, the vertical distance from the upper sides of the chains 11 to the lowermost sweep of the knife-blades 26, and slight variations of this distance may be effected as desired, by raising or lowering the track-members 13, and thereby similarly affecting the position of the portions of the chains 11 intermediate the front and rear sprocket-wheels.

In the operation of the machine, power is applied to the pulley 18 to drive the knife-cylinder at high speed, while the chains 11 are moved slowly through the driving connections made by the worm 19, worm-wheel 20, shaft 21, bevel gears 22 and 23, shaft 6, and sprocket-wheels 9. The pallets supporting the slabs of material A are successively placed by hand upon the rearwardly moving chains 11 above the sprocket-wheels 9, the front portion of the pallet resting upon the roller 32, and the rear edge of the pallet being pushed against one of the transverse bars 12. Said bars 12, it will be noted, are vertically notched or slotted at positions corresponding transversely with the knife-blades 26, whereby the latter may revolve without striking the bars when the same pass beneath the knife-cylinder. As the rearward edge of the pallet passes underneath the knife-cylinder, the blades engage the material A and at each revolution of the cylinder cut into the same for a distance corresponding to the rearward travel of the chains and pallet per revolution of the cylinder. Water, oil, or other suitable fluid is placed in the trough 29, and passes down through the wick 30 to constantly moisten or lubricate the sides of the knives and prevent the material adhering thereto. The rearward movement of the knives, while engaging the material, tends to propel the material and the pallet rearwardly, but such movement thereof is restrained and controlled by the bars 12, so that the material can only come into contact with the knives at the rate of movement of the chains 11. It will be noted that, owing to the spiral form of the cutting edges of the knives, the same pass through the material with a sweeping or slicing movement, commencing the cut at the upper surface of the material, and completing each cut at the lower surface adjoining the pallet. There is thus little, if any, tendency for the knives to adhere to or lift the material up off the pallets. The rollers 31 are provided for holding the material down upon the pallets, behind the knife-cylinder, should there be any tendency to lift, but such action will occur, however, only when the material is too soft and adhesive for proper cutting thereof, and then only if the sides of the knives are not properly lubricated by keeping the wick 30 supplied with the moistening or lubricating material. A single passage of a pallet through the machine causes the material thereon to be cut into elongated bars. If the material is desired in squares or cubes, the pallet is passed through the machine a second time, but is turned at right angles to its position during the first passage. In some instances it may be desirable to leave the pieces of material connected to each other by a continuous thin layer adjoining the surface of the pallet. This result may be readily effected by slightly lowering the track-members 13, whereby the pallets will be slightly spaced from the knives when passing thereunder. The material when cut in this way can be readily broken along the lines of the cuts into pieces of any desired size, each containing any number of the smaller pieces defined by the lines of cutting.

Now, having described my invention, what I claim and desire to secure by Letters Patent is:

1. A machine for cutting plastic candy slabs into bars and squares, comprising a pallet-carrier, a knife-cylinder extending transversely above said carrier and having a plurality of spaced blades with spiral sharpened outer edges, and means for rapidly revolving said cylinder and slowly traversing the pallet-carrier thereunder.

2. In a machine of the class described, a knife-cylinder having a plurality of blades spaced both longitudinally and circumferentially of the cylinder, the forwardly moving sharpened outer edge of each blade being inclined spirally to the axis of rotation.

3. In a machine of the class described, a knife-cylinder having a plurality of outwardly and forwardly facing spiral-edged blades spaced longitudinally and circumferentially of the cylinder, a horizontally movable pallet-carrier disposed beneath the cylinder, and means for adjusting the vertical relation of the carrier to the cylinder.

4. In a machine of the class described, a knife-cylinder having a plurality of outwardly and forwardly facing spiral-edged blades spaced longitudinally and circumferentially of the cylinder, a horizontally movable and vertically adjustable pallet-carrier disposed beneath the knife-cylinder, and lubricant applying means engageable with the sides of the blades at the upper part of the cylinder.

A. E. DEMPSEY.