Jan. 24, 1933. A. G. ROSE 1,895,048

APPARATUS FOR CUTTING STRIPS OR BARS OF MATERIAL INTO SEPARATE PORTIONS

Filed March 3, 1931 2 Sheets-Sheet 1

Fig. 1.

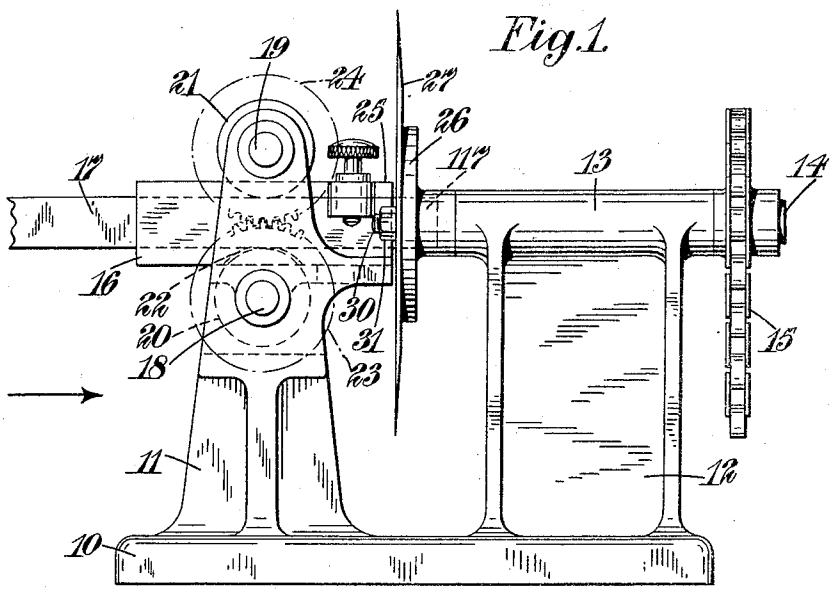
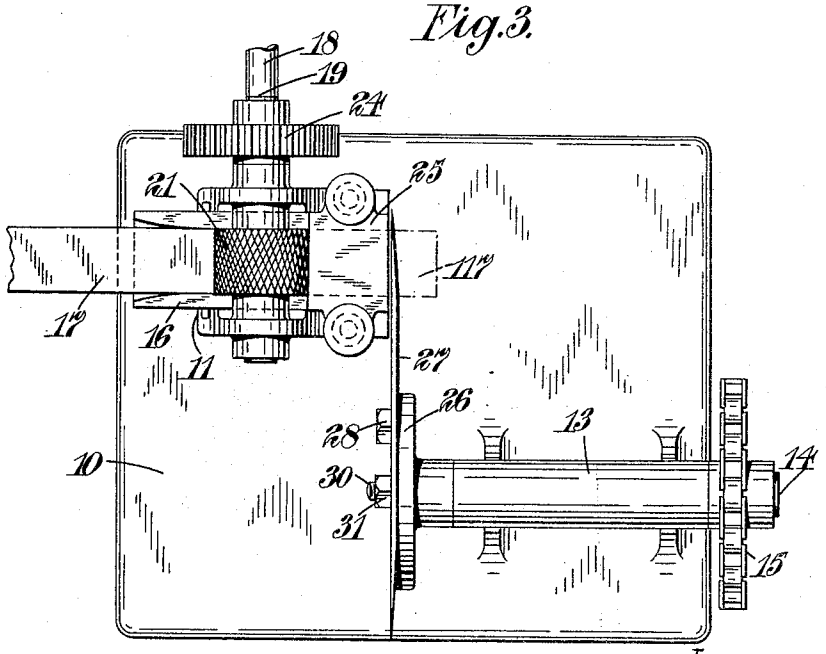


Fig. 3.



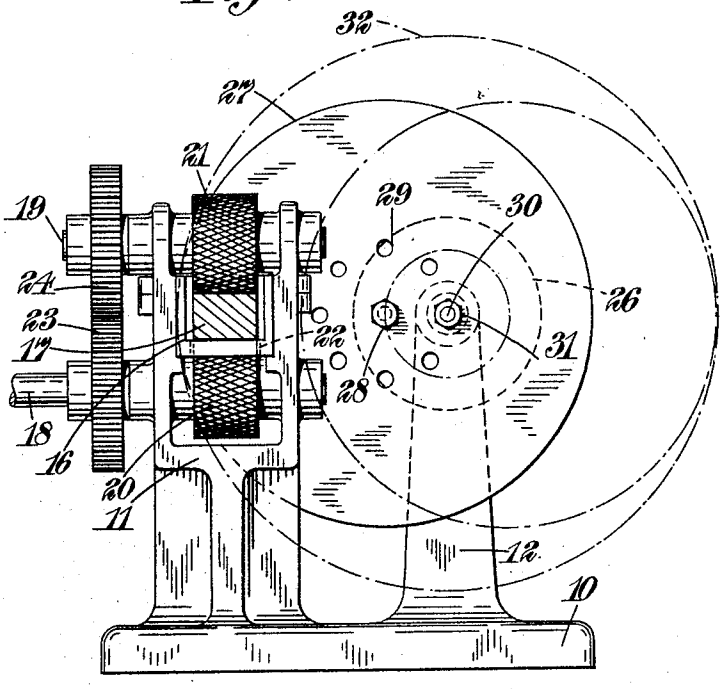
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Fig. 2.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR CUTTING STRIPS OR BARS OF MATERIAL INTO SEPARATE PORTIONS

Application filed March 3, 1931, Serial No. 519,861, and in Great Britain March 29, 1930.

This invention is for improvements in or relating to apparatus for cutting strips or bars of material into separate portions and is particularly concerned with apparatus for cutting bars of plastic material, such as caramel, into separate portions. This invention is, however, applicable to apparatus for cutting, for example, strips of paper or the like into separate portions, and throughout this description the material to be severed will be referred to as "the bar of stock".

The present invention provides cutting apparatus for severing a bar of stock into separate portions, comprising in combination a rotatable knife carrier, and a knife mounted thereon for rotation with it and formed with a cutting edge around its periphery or a portion thereof, characterized in that said knife is so mounted on the carrier as to be adjustable angularly about a point offset from the center of rotation of the carrier in order that when one portion of the cutting edge is dulled, a further and sharp portion of the cutting edge may be brought into operation. This invention also includes cutting apparatus for severing a bar of stock into separate portions, comprising in combination a rotatable knife carrier, a knife adjustably mounted thereon for rotation with it, a feeding device for feeding the material to the knife and means for adjusting the position of the knife on the carrier in such manner as to bring a different part of its periphery into cutting position without altering the maximum knife radius.

Preferably, the knife is supported on the carrier at a point offset from the axis of rotation of the latter for adjustment about that point, and the knife or the carrier is provided with a number of adjustment holes spaced apart on an arcuate pitch line struck from said point, and the carrier or the knife (as the case may be) is provided with a locating pin for engagement with any one of the said holes selectively. Conveniently, the adjustment holes are formed in the knife, and the radius of their pitch line equals the degree of offset of the aforesaid support point, and the locating pin is co-axial with the carrier. If desired, the locating pin may be constituted by an extension of a shaft on which the carrier is mounted.

One construction according to the present invention will be now described in detail by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a side elevation of cutting apparatus according to the present invention,

Figure 2 is an end elevation of the apparatus shown in Figure 1, looking in the direction of the arrow, and

Figure 3 is a plan of the apparatus shown in Figures 1 and 2.

Throughout this description like reference numerals indicate like parts.

The apparatus consists of a base-plate 10 provided with two upstanding brackets 11 and 12. The bracket 12 is formed at the top with a bearing 13 for a rotatable shaft 14 which is driven through a chain 15. The bracket 11 serves as a support for a guide channel 16 down which a bar of stock 17 such as caramel is fed. Attached to shafts 18 and 19 which are also supported in the bracket 11 are two feed rollers 20 and 21. The roller 20 projects through an opening 22 in the base of the channel 16 while the roller 21 is located above the channel, so that the bar of stock 17 is gripped between these two rollers and as they are rotated is fed along the channel. The shaft 18 is rotated intermittently, for example, through a Geneva stop mechanism, and this intermittent rotation is transmitted to the shaft 19 and the upper feed roller 21 by intermeshing gears 23 and 24. The bar of stock is fed towards the right as viewed in Figure 1, and behind the two stock feeding rollers the top of the channel 16 is covered by a plate 25.

On that end of the shaft 14 which is adjacent to the feed rollers 20 and 21, a knife carrier 26 is mounted. A knife 27, which is constituted by a disc having a cutting edge formed completely around its periphery, is bolted to the knife carrier 26 by a bolt 28. The support bolt 28 extends through the center of the disc and is screwed into a hole tapped into the knife carrier at a point offset from the axis of rotation of the carrier and the shaft 14. The knife 27 is also formed

with a series of locating holes 29 which are spaced apart at equal intervals around a pitch circle, the radius of which is equal to the distance between the center of the support bolt 28 and the axis of rotation of the knife carrier 26 and its shaft 14. An extension 30 of the shaft 14 projects through one of these holes 29, and on to it a nut 31 is screwed. Thus the knife 27 is held firmly on the knife carrier 26 by the support bolt 28 and the extension 30 of the shaft 14 and its nut 31.

The feed rollers 20 and 21 operate intermittently to feed the bar of stock 17 so that its end projects beyond the right-hand end of the feed channel 16 into the position shown in chain-dotted lines 117. Between each intermittent feed of the bar of stock, the knife 27 sweeps round and severs the projecting portion 117 from the bar of stock. Preferably the knife is continuously rotatable.

When one portion of the peripheral cutting edge of the knife 27 becomes dulled, then in order to bring a fresh portion of the cutting edge into operation, the support bolt 28 is slacked off (or completely withdrawn), and the nut 31 is removed from the extension 30. The knife 27 may then be turned about its center until another hole 29 is engaged by the extension 30. The bolt 28 and the nut 31 are then screwed up. It will be appreciated that this adjustment is effected without any alteration in the maximum knife radius, that is to say in the distance between the extreme portion of the knife periphery and the axis of rotation of the shaft 14. The track of this extreme portion of the knife periphery is indicated by a chain-dotted line 32. Naturally the cutting edge need not be formed completely round the periphery of the knife, nor need the latter be formed as a disc, although it is more convenient to do so.

It will be appreciated that the path of any point on the cutting edge of the knife through the material to be cut lies at an acute angle to the cutting edge itself and hence cutting is effected by a slicing action instead of a shearing action.

I claim:—

1. Cutting apparatus comprising the combination of a rotatable knife-carrier, a disc knife having a peripheral cutting edge which encircles the axis of rotation of the knife carrier and a plurality of apertures spaced on an arcuate pitch-line which is struck from the center of the disc, means engaging any one of said apertures selectively for clamping the disc to the carrier, and clamping means for clamping the disc at the center thereof to the carrier at a point offset from the center of rotation of the latter.

2. Cutting apparatus comprising a rotatable knife carrier, a disc knife having a peripheral cutting edge and a number of apertures spaced on an arcuate pitch-line struck from the center of the disc, means for adjustably clamping the disc by its center to the carrier at a point which is offset from the center of the latter to a distance which equals the radius of said pitch-line, in such manner that the disc may be adjusted about its own center in relation to the carrier, and means for engaging any one of said apertures selectively and clamping the knife at the center of rotation of the carrier.

3. Cutting apparatus comprising a rotatable knife carrier having a tapped hole offset from its center of rotation, a disc-knife having a peripheral cutting edge, a central aperture and a number of adjustment holes spaced on an arcuate pitch-line struck from the center of the disc and of a radius equal to the offset of said tapped hole, a stud at the center of the carrier for engagement with any one of said adjustment holes, and a bolt screwing into said tapped hole for clamping the knife at its center to the carrier.

4. Cutting apparatus comprising the combination with a rotatable knife carrier, a disc knife eccentrically mounted thereon whereof the peripheral cutting edge of the knife encircles the axis of rotation of the carrier, and a plurality of apertures in the disc knife spaced on an arcuate-pitch line which is struck from the center of the disc, of means engaging said apertures selectively for clamping the disc to the carrier.

In testimony whereof I affix my signature.

ALFRED GERMAN ROSE.