

May 9, 1939.

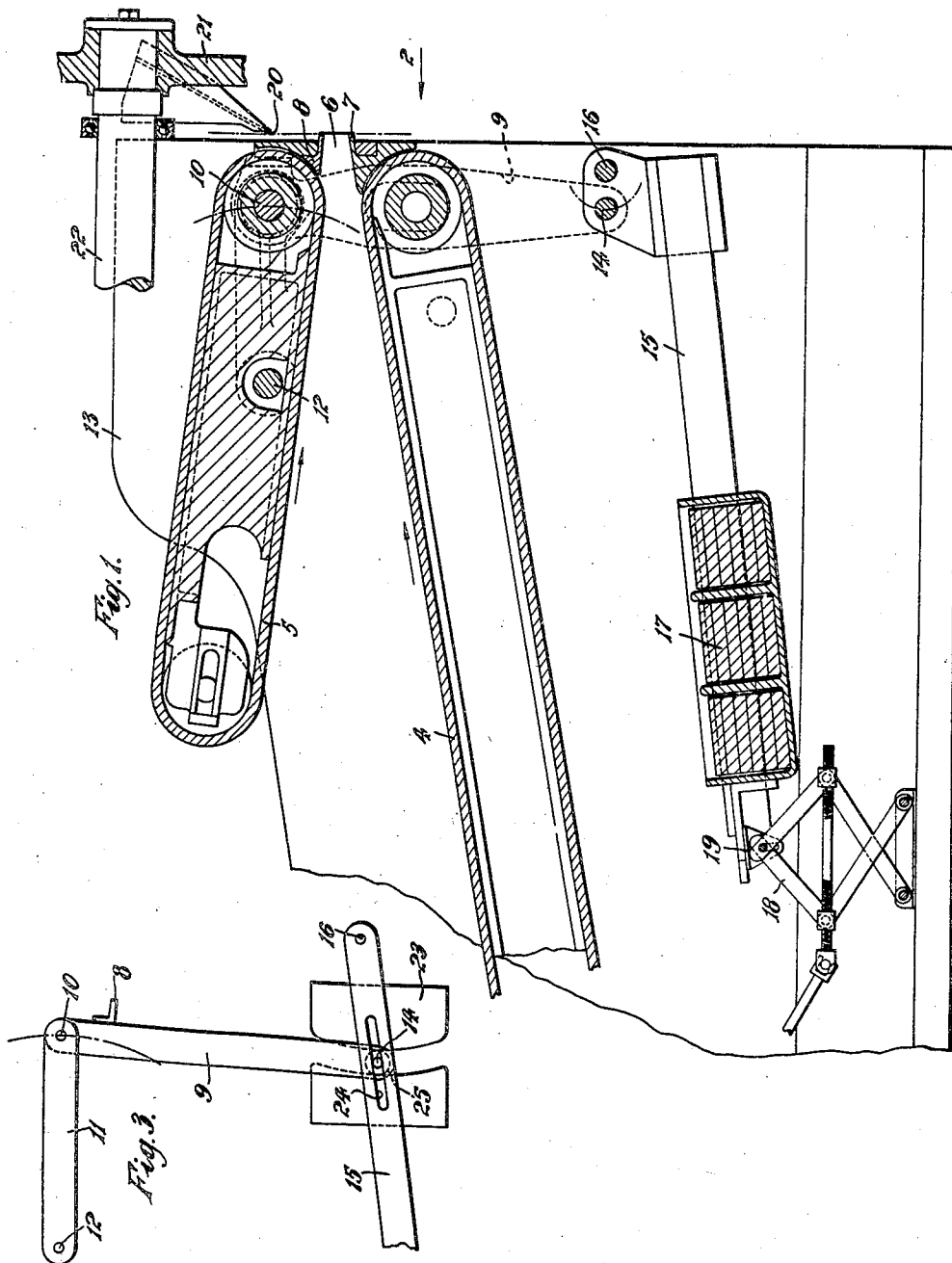
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2,157,457

TOBACCO LEAF CUTTING MACHINE

Filed Dec. 20, 1937

2 Sheets-Sheet 1



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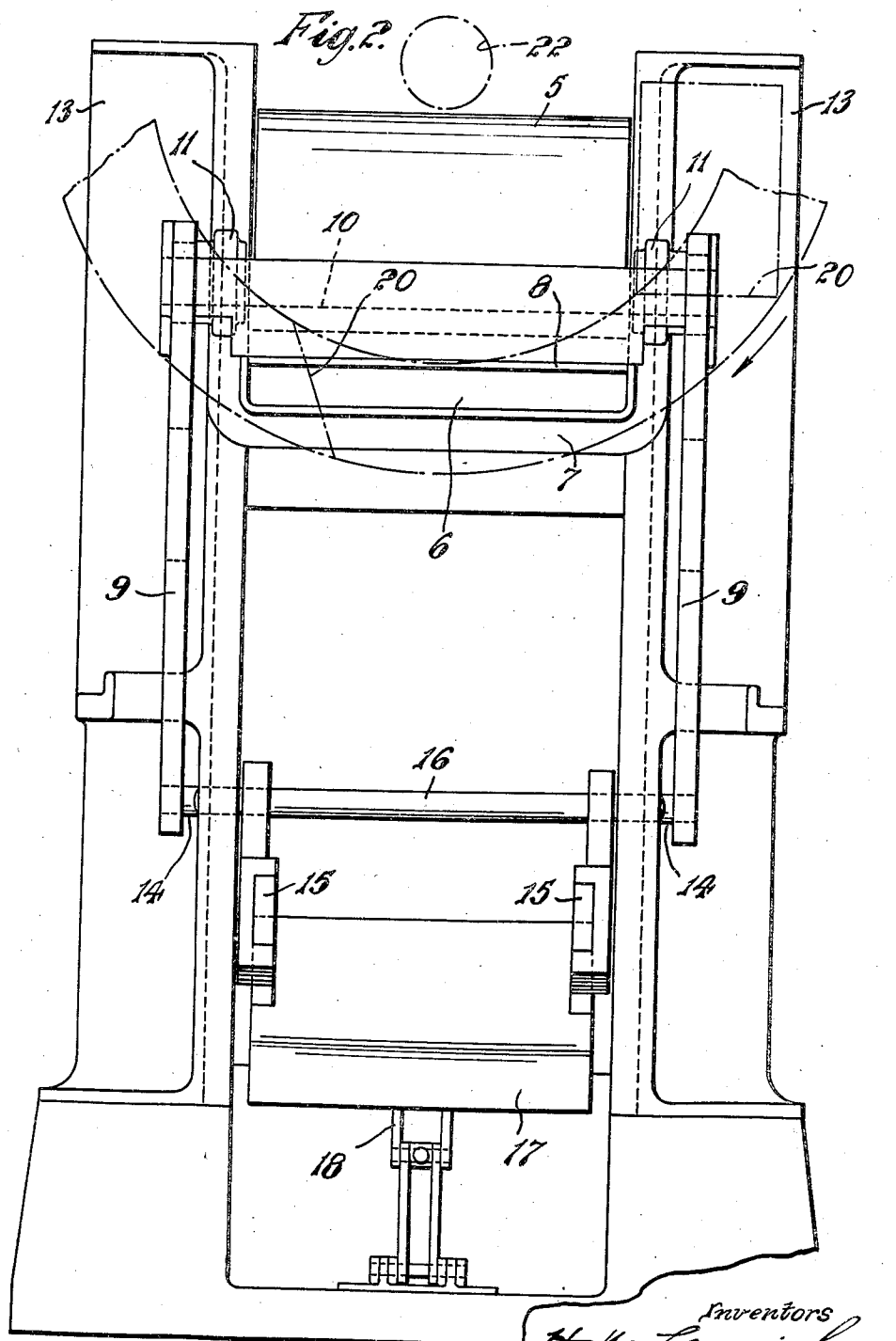
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TOBACCO LEAF CUTTING MACHINE

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UNITED STATES PATENT OFFICE

2,157,457

TOBACCO LEAF CUTTING MACHINE

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Application December 20, 1937, Serial No. 180,861
In Great Britain January 4, 1937

5 Claims. (Cl. 146—110)

This invention is for improvements in or relating to tobacco leaf cutting machines, and refers to tobacco leaf cutting machines of the type in which a mass of compressed tobacco leaves (hereinafter referred to as a "cheese") is moved through a mouthpiece, a part of said mouthpiece being movable relatively to the remainder of the mouthpiece and urged towards said remainder so as automatically to accommodate variations in the thickness of the cheese, and in which a cutting element is movable across the mouthpiece to co-operate therewith and sever the cheese, said cutting element during the cutting operation being movable in an arcuate path across the mouthpiece.

One form of machine of the type described is shown in prior United States Letters Patent No. 1,933,181, and it is found that in cases where the knife moves through an arcuate path during a cutting operation, during a part of each cutting operation the cutting element co-operates with both the fixed part and the movable part of the mouthpiece to effect the cutting of the cheese.

With machines of this type it is found that when the movable part of the mouthpiece, usually the upper part, is moved it is moved in an arcuate path so that the movable part of the mouthpiece is moved out of alignment with the fixed part of the mouthpiece, with the result that the mouthpiece considered as a whole is no longer located in the cutting plane of the knife and the cheese is, therefore, not severed in the desired manner, but is cut in an uneven manner.

It is an object of the invention to provide a more uniform cutting of the cheese by a cutting element which moves in an arcuate path whilst co-operating with a mouthpiece, a part of which is movable relatively to the remainder thereof to accommodate variations in the thickness of the cheese being severed.

According to the invention there is provided a tobacco leaf cutting machine of the type described, wherein a movable carrier is provided for and is movable with the movable part of the mouthpiece, said carrier being connected at two fixed points thereon with guide elements which on movement of the carrier cause the two said points to move with components of movement substantially parallel to the plane of the mouthpiece, one of said points having as one of its components of movement a component towards the plane of the mouthpiece at the time when the other point has as one of its components of move-

ment a component away from the plane of the mouthpiece.

Further, according to the invention there is provided a tobacco leaf cutting machine of the type described wherein the movable part of the mouthpiece is supported on a carrier, two points on which are movable in arcuate paths, the said paths subtending angles in opposite directions and being so arranged that any movement along each of said paths has a component in the desired direction of movement of the movable part of the mouthpiece.

A line joining the two said points on the carrier movable in the said arcuate paths may extend in the general direction of the movable part of the mouthpiece, the carrier being pivotally connected at each of said points to a support, and the two said supports being arranged to extend away from the carrier in opposite directions towards fixed points on which they are mounted and about which the supports are angularly movable.

The carrier may be pivoted at one of its two fixed points to a support mounted on and angularly movable about a fixed pivot, and the other of the two said fixed points of the carrier may co-operate with a curved (e. g., arcuate) guide.

Two embodiments of the invention will be described with reference to the accompanying drawings in which:—

Figure 1 is a side sectional elevation of a part of a tobacco leaf cutting machine.

Figure 2 is an end elevation of Figure 1 looking in the direction of the arrow 2.

Figure 3 is a diagrammatic illustration of an alternative embodiment of the invention.

Like reference numerals refer to like parts throughout the specification and drawings.

Referring to Figures 1 and 2, tobacco leaves are placed on an endless conveyor band 4 and are passed by the conveyor band beneath a further endless conveyor band 5 which is disposed above the conveyor band 4, the two bands being arranged to converge towards each other to effect compression of the tobacco leaves and thereby to form a cheese. As will be seen from Figure 1, the opposed surfaces of the bands 4 and 5 are movable in the same direction so that the cheese formed therebetween is fed thereby to a mouthpiece 6. The bands 4 and 5 are positively driven by any suitable means.

The mouthpiece 6 comprises a fixed portion 7 and a movable portion 8. The portion 8 of the mouthpiece is arranged to be movable so as to accommodate varying thicknesses of cheese and

for this purpose is supported by a carrier 9, which carrier is pivoted at 10 to a supporting arm 11 which is in turn movable about a fixed pivot 12 mounted in the frame 13 of the machine. The carrier 9 is also pivoted at 14 to a weight support 15, the support 15 being movable about a fixed pivot 16 mounted in the frame 13 of the machine. The support 15 is provided with a weight 17 the object of which is to urge the movable part 8 of the mouthpiece towards the fixed part 7. Toggle mechanism 18 supporting a table 19 is provided to support the weight 17 during the initial setting of the machine. When the machine is in operation the table 19 is lowered by the toggle mechanism 18 so that the weight 17 and its support are freely movable about the pivot 16.

The cutting of the cheese as it passes through the mouthpiece 6 is effected by a series of knives 20 which are spaced about and supported by a carrier 21 which is rotated about a spindle 22. Rotation of the spindle 22 is effected by any suitable means, such as from the main drive of the machine or by a separate motor. As will be seen from Figure 2, the path swept out by the knives 20 is indicated in chain lines, two of the knives 20 also being indicated by chain lines. In Figure 1 only one knife is shown and corresponds in position to that shown in chain lines at the right hand side of Figure 2.

By the arrangement of the carrier 9 and the supports 11 and 15, any movement of the movable part 8 of the mouthpiece is effected substantially in the cutting plane of the knives 20. As will be seen from Figure 1, the pivots 10 and 14 respectively move in arcuate paths which subtend angles in opposite directions. The movement of the movable part 8 of the mouthpiece, therefore, towards or away from the fixed part 7 will cause the axes of the pivots 10 and 14 which can be considered as two spaced points on the carrier 9 to move with components of movement substantially parallel to the plane of the mouthpiece. During such movement one of said points will have as one of its components of movement a component towards the plane of the mouthpiece at the time when the other point has as one of its components of movement a component away from the plane of the mouthpiece. From the drawing it will be seen that a line joining the two points extends in the general direction of movement of the movable part 8 of the mouthpiece. By so arranging the movement of the carrier the movable part 8 of the mouthpiece is maintained substantially in the cutting plane of the knives 20.

The construction shown diagrammatically in Figure 3 comprises the carrier 9 which is pivoted at 10 to the support 11 as previously described. The carrier 9 is also pivoted at 14 to the support 15, and the support 15 is pivoted at 16 to the frame of the machine. In this construction the point represented by the pivot 14 is guided by a cam 23 and whilst being so guided is permitted, due to a slot 24 formed in the support 15, to move relatively to the support 15. The cam comprises a curved track and a cam follower 25 supported by the carrier 9 is arranged to be rotatable about the axis of the pivot 14 and to move in the curved track. As in the construction previously described with reference to Figures 1 and 2, the pivot points 10 and 14 comprise two spaced points on the carrier 9, but in the modified construction shown in Figure 3 the point 10 is connected with a support 11 which is mounted on and angularly movable about a fixed pivot 12,

whereas the pivot 14 which comprises the other point through the medium of the cam follower 25 co-operates with the curved guide formed by the cam 23.

The expression "plane of the mouthpiece", as employed in the appended claims, refers to the plane defined by the free edges of the mouthpiece.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a tobacco leaf cutting machine, the combination with a knife rotatable about a fixed axis of a mouthpiece with which said knife cooperates to effect cutting, said mouthpiece comprising a fixed part and a part adapted to move toward and away from said fixed part in accordance with the thickness of the tobacco mass passing therebetween, a carrier on which said movable mouthpiece part is mounted, guide elements engaging said carrier at points spaced in the direction of the plane of said mouthpiece, and means normally urging said movable mouthpiece part toward said fixed mouthpiece part, said parts being so constructed and arranged that on movement of said carrier said spaced points move with components of movement parallel to the plane of the mouthpiece, one of said points having a component of movement toward the plane of said mouthpiece at a time when the other of said points has a component of movement away from said plane, whereby said movable mouthpiece part moves substantially in the plane of said mouthpiece.

2. In a tobacco leaf cutting machine, the combination with a knife rotatable about a fixed axis of a mouthpiece with which said knife cooperates to effect cutting, said mouthpiece comprising a fixed part and a part adapted to move toward and away from said fixed part in accordance with the thickness of the tobacco mass passing therebetween, a carrier on which said movable mouthpiece part is mounted, supports engaging said carrier at points spaced in the direction of the plane of said mouthpiece, and means normally urging said movable mouthpiece part toward said fixed mouthpiece part, said parts being so constructed and arranged that said spaced points are movable in arcuate paths which subtend angles in opposite directions whereby any movement along each of said paths has a component in the desired direction of movement of said movable mouthpiece part.

3. In a tobacco leaf cutting machine, the combination with a knife rotatable about a fixed axis of a mouthpiece with which said knife cooperates to effect cutting, said mouthpiece comprising a fixed part and a part adapted to move toward and away from said fixed part in accordance with the thickness of the tobacco mass passing therebetween, a carrier on which said movable mouthpiece part is mounted, supports pivoted to said carrier at points spaced in the direction of the plane of said mouthpiece, and means normally urging said movable mouthpiece part toward said fixed mouthpiece part, said supports being angularly movable about fixed pivots arranged respectively on opposite sides of a line connecting said spaced points, whereby said spaced points are movable in arcuate paths each of which has a component in the desired direction of movement of said movable mouthpiece part.

4. In a tobacco leaf cutting machine, the combination with a knife rotatable about a fixed axis of a mouthpiece with which said knife co-

operates to effect cutting, said mouthpiece comprising a fixed part and a part adapted to move toward and away from said fixed part in accordance with the thickness of the tobacco mass passing therebetween, a carrier on which said movable mouthpiece part is mounted, guide elements engaging said carrier at points spaced in the direction of the plane of said mouthpiece, curved guide means engaging said carrier, and means normally urging said movable mouthpiece part toward said fixed mouthpiece part, said parts being so constructed and arranged that on movement of said carrier said spaced points move with components of movement parallel to the plane of the mouthpiece, one of said points having a component of movement toward the plane of said mouthpiece at a time when the other of said points has a component of movement away from said plane, whereby said movable mouthpiece part moves substantially in the plane of said mouthpiece.

5. In a tobacco leaf cutting machine the com-

bination with a knife rotatable about a fixed axis of a mouthpiece with which the knife cooperates to effect cutting, said mouthpiece comprising a fixed part and a movable part, a carrier for the movable part, a support mounted on and angularly movable about a fixed pivot, said support being pivotally connected with the carrier at one point, a second support mounted on and angularly movable about a fixed pivot, said second support being pivotally connected with the carrier at a second point, a curved guide cooperating with the second point to change the relative position of the point with respect to the support during movement of the carrier, said fixed pivot and curved guide being so disposed relative to the carrier that on movement of the movable mouthpiece part one of said points has a component of movement towards the plane of the mouthpiece at the time when the other point has a component of movement away from the plane of the mouthpiece.

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