Sept. 18, 1956 P. Q. R. SCHREIBER 2,763,307

MACHINE FOR CUTTING TOBACCO AND THE LIKE

Original Filed April 4, 1950 3 Sheets-Sheet 1

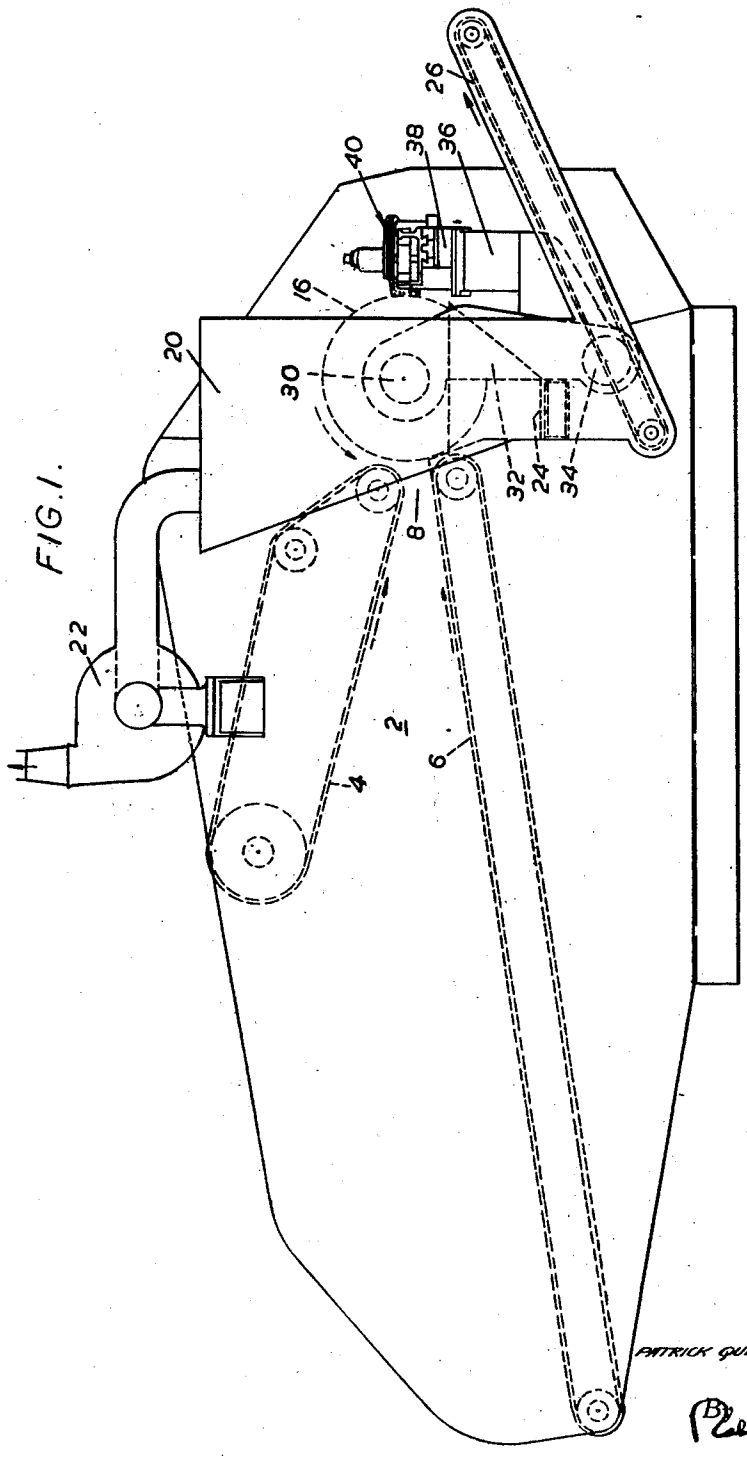


FIG. 1.

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Original Filed April 4, 1950 3 Sheets-Sheet 2

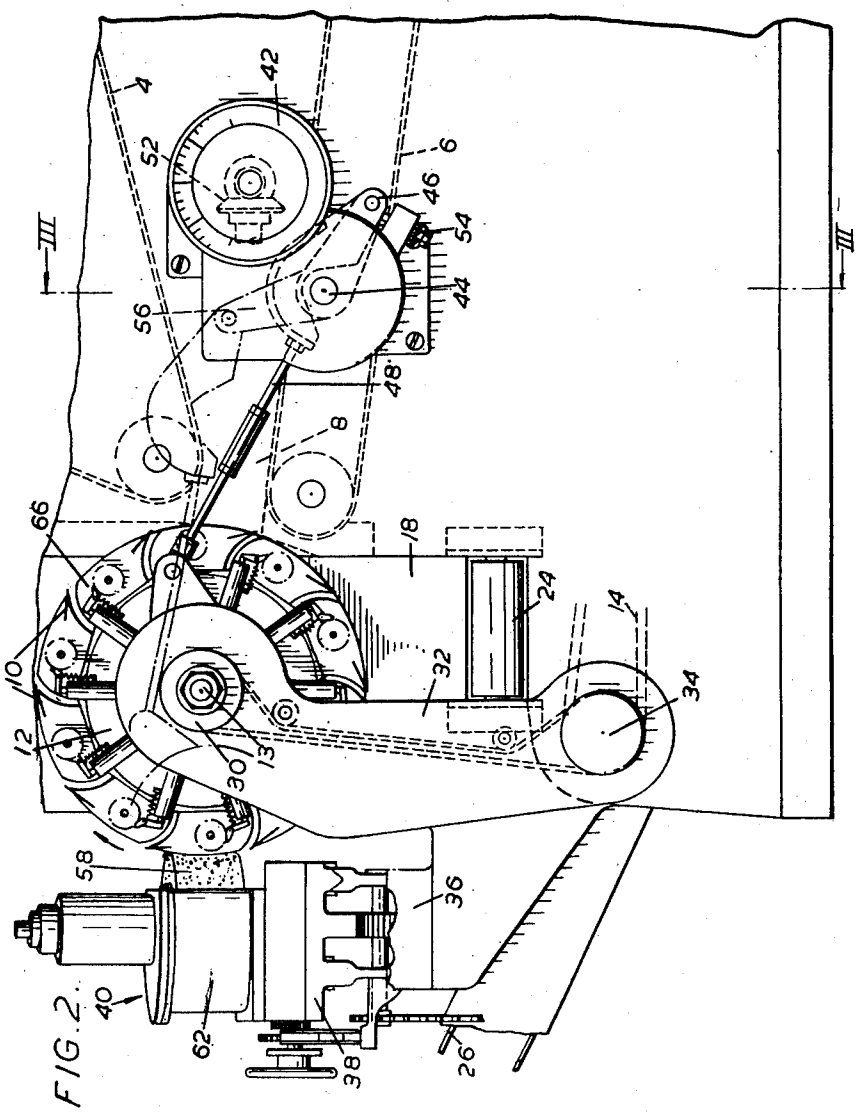


FIG. 2.

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MACHINE FOR CUTTING TOBACCO AND THE LIKE

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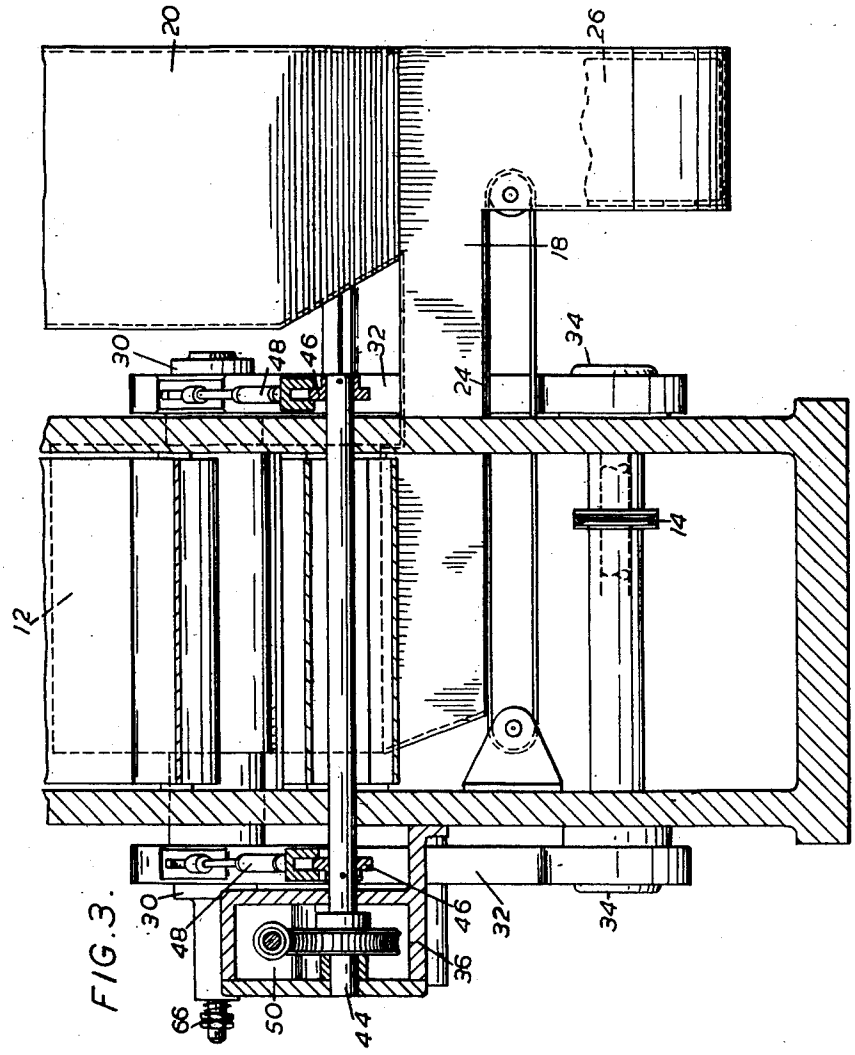


FIG. 3.

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2,763,307

MACHINE FOR CUTTING TOBACCO AND THE LIKE

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Original application April 4, 1950, Serial No. 153,809, now Patent No. 2,738,629, dated March 20, 1956. Divided and this application April 24, 1951, Serial No. 222,549

3 Claims. (Cl. 146—119)

This application is divided from my pending application No. 153,809 now Patent No. 2,738,629 issued March 20, 1956.

The present invention relates to the sharpening of rotary cutters, principally those having cutting edges which may be geometrically defined as lying in a cylindrical surface. One important application of the invention is to apparatus for cutting leaf tobacco. In such apparatus leaf tobacco is compressed and fed through a mouthpiece and as it emerges is cut into thin slides by a cutter which may be a single reciprocating knife or may be a rotary drum carrying one or more knives. Particular problems of sharpening arise with apparatus in which such a rotary cutter is used since it is most desirable to be able to sharpen the knives without the waste of time involved in removing them from the drum. In fact the wear on the knives caused by the toughness of leaf tobacco makes it desirable to sharpen the knives of rotary cutters continuously while cutting is in progress.

In apparatus for cutting leaf tobacco it is necessary to vary the clearance between the cutting edges and the mouthpiece through which the tobacco is fed according to the quality of the tobacco. It has therefore also been necessary to provide adjustments by which a grinding wheel is moved to allow for the movement of the cutter. This is inconvenient in use and may lead to uneven grinding.

It is an object of the present invention to provide apparatus for cutting leaf tobacco in which adjustment of the relative positions of a rotary cutter and the mouthpiece does not disturb the relative positions of the cutter and a grinding device.

It is a further object of the invention to provide apparatus for cutting leaf tobacco in which a rotary cutter is continuously ground to a constant effective diameter.

Further objects and advantages of the present invention will appear from the following description of one embodiment, reference being made to the accompanying drawings in which:

Figure 1 is an elevation of one side of a complete machine;

Figure 2 is an elevation on a larger scale of part of the other side of the machine; and

Figure 3 is an enlarged elevation of the machine in section on the line III—III in Figure 2.

Leaf tobacco is fed into the space **2** between two converging conveyor belts **4** and **6** which carry the tobacco to a mouthpiece **8** and at the same time compress it so that it is driven through the mouthpiece as a plug. As the plug emerges it is shredded by knives **10** on a drum **12** which is turned on a shaft **13** by a drive **14**. The cutting edges of the knives all lie in an imaginary cylindrical surface which is indicated at **16** and they are very slightly inclined to lines parallel to the axis of the drum so that they engage the tobacco progressively at each cut. The cut tobacco is carried clear of the drum by an air blast set up in ducts **18** and **20** by a fan **22** and is then removed by conveyors **24** and **26**.

The shaft **13** carrying the drum is carried in bearings **30** at the ends of arms **32**. These arms are each pivoted at **34** to the base of the machine and together form a support both for the drum and for a bed **36** on which slides a carrier **38** forming the bottom of a grinding device **40**. The support can rock to and from the mouthpiece under the control of a linkage operated by a handwheel **42**. This linkage includes a shaft **44** which carries on each end a crank **46**. The cranks are each connected to an arm **32** by a pivoted link **48**, and are arranged so that the small movement of the drum necessary to adjust the clearance between the cutting edges and the mouthpiece is brought about by movement of the cranks through an arc slightly to one side of a dead centre position. The shaft **44** is turned by the handwheel **42** through a worm drive **50** and bevel gears **52**. Movement of the cranks in the direction to reduce the clearance is limited by a stop **54**.

If it is desired to inspect the mouthpiece **8**, the shaft **44** can be turned to move the cranks **46** into a position **56** in which the arms **32** are rocked the full distance permitted by the throw of the cranks.

The grinding device **40** is described in detail and claimed in my copending application No. 153,809 from which the present application is divided. This grinding device incorporates a disc grinding wheel **58** mounted to turn on a shaft in a housing **62**. This wheel **58** is caused to sharpen the full length of the cutting edges of the knives **10** by reciprocation of the carriage **38** on the bed **36**.

As the cutting edges of the knives **10** are continuously sharpened, metal is worn away from them, and at the same time the rim of the wheel **58** is also worn away. Arrangements are made to compensate for this wear and so maintain a constant diameter of the cylinder **16**. The knives **10** are progressively fed outwards on the drum **12** by mechanism indicated generally at **66**. A particular mechanism for carrying out this feeding is described and claimed in my copending application No. 152,698 now Patent No. 2,614,596 issued October 21, 1952. This mechanism operates to move the knives outwards a small distance each time the carriage **38** reaches the end of a stroke and the wheel **58** is just clear of the cutter. The housing **62** and with it the wheel **58** is movable on the carriage **38** and is gradually fed towards the drum **12**. At the same time the contour of the rim of the wheel **58** is maintained by dressing with a diamond (not shown).

I claim:

1. Apparatus for cutting material such as leaf tobacco comprising, in combination, a frame, a rotary cutter having at least one cutting edge to describe a cylindrical path during rotation of the cutter, a mouthpiece in said frame through which material is fed, arms bearing said rotary cutter pivotly, mounting the cutter to the frame for movement relative to the mouthpiece, and an adjustment means adapted to move said arms both to adjust finely the position of said cutter when close to said mouthpiece and to move said cutter well clear of said mouthpiece for inspection, said means comprising a shaft rotatably mounted in said frame, means including a gear train for rotating said shaft, a crank fixedly mounted on said shaft, linkage means interconnecting the eccentric end of said crank and said arms bearing the rotary cutter, said crank and said linkage means being normally positioned in a close to dead center relationship whereby rotation of said shaft produces a rocking movement of said rotary cutter relative to said mouthpiece.

2. Apparatus as claimed in claim 1 and further comprising a grinding means for continuous sharpening of said rotary cutter and rigidly mounted to said arms bearing said rotary cutter, such that adjustment of the rotary cutter with respect to said mouthpiece is effected without disturbance of the relative positions of the cutter and said grinding means.

3. Apparatus for cutting material such as leaf tobacco comprising in combination a mouthpiece through which material is fed, a rotary cutter adapted to cut material emerging through said mouthpiece, arms bearing said cutter, at least one cutting edge mounted on said cutter to describe a cylindrical path during rotation of said cutter, means for grinding said cutting edge, a unitary movable support for said bearing means and said grinding means, said grinding means mounted on said support on the side of said cutter remote from said mouthpiece and movable on said support in a direction parallel to the axis of rotation of said cutter, and means operatively connected to said support for gradually moving said support whereby the clearance between said mouthpiece and said cutter may be finely adjusted without disturbance of the relative positions of said cutter and said grinding means.

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