Feb. 5, 1963 K. E. GRANSTEDT 3,076,366

APPARATUS FOR SEVERING PORTIONS OF A TOBACCO WEB

Filed Sept. 24, 1959

Fig. 3

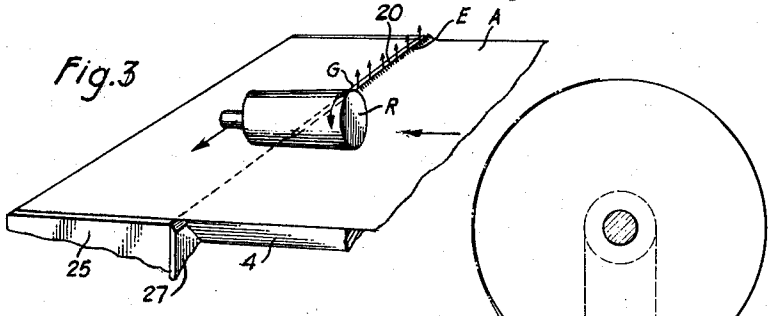

Fig. 1

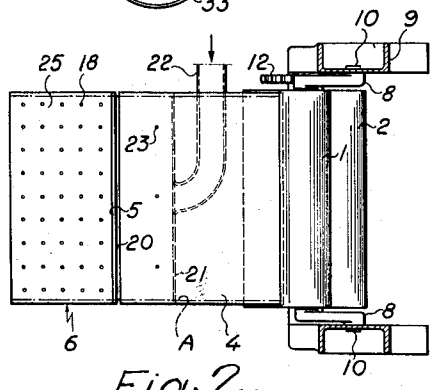

Fig. 2.

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United States Patent Office 3,076,366 Patented Feb. 5, 1963

3,076,366

APPARATUS FOR SEVERING PORTIONS OF A TOBACCO WEB

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Filed Sept. 24, 1959, Ser. No. 842,062
Claims priority, application Sweden Oct. 17, 1958
2 Claims. (Cl. 83—98)

This invention relates to an apparatus for severing and distributing portions of a web of tobacco and it is an object of the invention to provide means for eliminating, or reducing, the frictional resistance to the feeding of the tobacco web onto a cutting bed for severing sheets from the leading end portion of the web, i.e. cutting said sheets off or out of said web end portion.

Another object of the invention consists in the provision of means for utilizing air currents to support and also to assist in feeding the leading end portion of a tobacco web advancing towards and over a cutting bed for cutting sheets off or out of said web end portion.

In the accompanying drawing:

FIGURE 1 is an elevational view, partly in section, of one embodiment of the invention;

FIGURE 2 is a plan view, partly in section, taken on the line II—II of FIGURE 1; and

FIGURE 3 is a perspective view illustrating the operation of the apparatus in the embodiment shown in FIGS. 1 and 2.

Referring to the drawing, the web A, consisting of tobacco sheet material, is unwound stepwise by means of a pair of coacting rolls 1 and 2 from a reel 3 and the free end portion of the web is thereby pushed forwardly over a supporting plate 4 and further over a cutting bed 6 provided with a stationary knife 5 and a suction pad 25. The feed roll 1 is freely rotatably mounted on a shaft 7 secured at both its ends to arms 8 which are freely turnably mounted on studs 10 fixed in the machine frame 9. Under the influence of its own gravity and that of the arms 8 the roll 1 urges the tobacco web A against the roll 2 which is loosely mounted on a shaft 11 fixed in the machine frame 9. To the roll 2 is also secured a ratchet wheel 12. A pawl 14, coacting with the ratchet wheel 12, is turnably mounted on the one arm 15 of a bell crank lever 16 freely rotatably mounted on the shaft 11. The other arm 29 of the bell crank lever 16 is pivotally connected to the one arm of a rod 30 the other end of which is pivotally connected with the one end of a lever 31 which is freely turnably mounted on a shaft 32, fixed in the machine frame, and operated by a cam disc 33 which is secured to a drive shaft 34 journalled in the machine frame.

The suction pad 25 of the cutting bed 6, secured to the frame plate 17, has suction perforations 18 and the cutting bed is interiorly connected with a pipe 28 which contains a valve 19 and is connected to the suction side of a fan, not shown. The valve 19 is secured to a shaft 35 which is rotatably mounted in the pipe 28 and to which an arm 36 is secured the one end of which is pivotally connected with the one end of a rod 37 the other end of which is pivotally connected with a lever 38 which is freely turnably mounted on the shaft 32 and operated by a cam disc 39 secured to the shaft 34.

The plate 4 extends from the rolls 1 and 2 almost right on to the cutting edge of the knife 5 so that there is a slit 20 between the knife edge and the front edge of the plate 4. A compressed air chamber 21 extends beneath the front portion of the plate 4 along the slit 20. The air chamber 21 is secured to a pipe 22 which is connected with the outlet of an air pump, not shown. The air chamber is at its top, except at the slit 20, hermetically connected to the plate 4 having above said chamber three air expelling perforations 23. At its edge to the left in FIGURE 1 the air chamber 21 is open by an air expelling slit 24 close by the slit 20. From FIGURE 1 it is evident that the bottom 26 of the air chamber 21 is directed obliquely upwardly against the slit 24. For cutting leaves off the leading end portion of the tobacco web A a cutting roller, not shown, of a known type is used which coacts with the knife 5 and, in known manner, is reciprocated on being in engagement with the knife edge periodically longitudinally of the knife edge 27, e.g. by means of the mechanism shown by the USA Patent No. 2,359,034.

In the operation of the machine having the apparatus described herewith the roll 2 advances the free leading end of the tobacco web A stepwise by constant lengths corresponding to the size of the leaves to be severed from said web end portion. The feeding over the plate 4 of the tobacco web, having a free leading end, is facilitated thereby that the friction of the web against the plate 4 is decreased or even eliminated completely by the air currents continuously being projected through the perforations 23 in this plate and being able to form a layer of air supporting the tobacco web. The leading free web end portion advancing over the cutting bed 6 adheres by suction to the suction plate 25 of the cutting bed 6 by shifting the valve 19 immediately before the cuttig roller R (FIG. 3) commences coacting with the knife 5 to sever a leaf from the leading tobacco web end portion. The cutting roller R is advanced along the cutting edge 27 of knife 5. As the cutting proceeds along the cutting edge 27, the cut web edge E is bent upwardly by the air blast expelled through the slit 20. The severing along the cutting edge 27 will be facilitated thereby that the cut edge E will be bent upwardly by the air blast through the slit 20, i.e. the severing is performed by the cutting action of the roller R in conjunction with the splitting action of the air blast through slit 20 whereby the web edge E at one side of the cutting edge 27 is bent upwardly while the web edge G at the other side of the cutting edge is retained by the suction plate 25 as shown in FIG. 3 of the drawing.

The edge E of the inherently sticky web A might (especially if it has been moistened) be likely to stick to the cutting edge 27. This will be obviated by the use of the air blast through the slit 20 bending the edge E upwardly as shown in FIG. 3, whereby it will be removed from the cutting edge. As soon as the leaf has been severed from the web A it is in conventional manner fetched by a leaf carrier and the web end portion resting on the air layer above the plate 4 is advanced over the edge of the knife 5 and the suction pad 25 of the cutting bed 6 which are located somewhat lower than the upper face of the plate 4 so that the free leading end portion of the web, carried by air currents, slides easily forwardly over the knife 5 and further over the suction pad 25 thereby not exerting any suction action because the valve 19 has been closed.

I claim:

1. In an apparatus for severing sheets from the leading end portion of a web of tobacco sheet material, a first perforated plate having a web supporting surface, means for pushing the leading end portion of the web across said plate substantially at a level with said supporting surface, a second perforated plate spaced by a slit from said first perforated plate and having a web supporting surface, cutting means having a cutting edge positioned in said slit adjacent said second perforated plate, means for projecting currents of air upwardly through the perforations of said first perforated plate and through said slit, and suction means for retaining the leading web end portion on said second perforated plate at one side of

said cutting edge and simultaneously subjecting the trailing portion of the web to air blast from below through said slit adjacent the other side of said cutting edge.

2. In an apparatus for severing sheets from the leading end portion of a web of tobacco sheet material, a first perforated plate having a web supporting surface, means for pushing the leading end portion of the web across said plate substantially at a level with said supporting surface, a second perforated plate spaced by a slit from said first perforated plate and having a web supporting surface, cutting means having a cutting edge positioned in said slit adjacent said second perforated plate, means for projecting currents of air upwardly through the perforations

of said first perforated plate, suction means for retaining the leading web end portion on said second perforated plate, and means for projecting air currents through said slit upwardly obliquely in the web feeding direction.

References Cited in the file of this patent

UNITED STATES PATENTS

1,651,096	Molins	Nov. 29, 1927
2,117,797	Flynn	May 17, 1938
2,151,136	Moffitti	Mar. 21, 1939
2,538,972	Magnani	Jan. 23, 1951

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,076,366 February 5, 1963

Karl Erik Granstedt

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the grant, line 1, and in the heading to the printed specification, line 4, for "Karl Erik Grandstedt" read -- Karl Erik Granstedt --.

Signed and sealed this 8th day of October 1963.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWIN L. REYNOLDS
Acting Commissioner of Patents