

12 **EUROPEAN PATENT APPLICATION**

21 Application number: 83304544.6

22 Date of filing: 05.08.83

51 Int. Cl.³: **A 24 B 3/00**
A 24 B 3/02, A 24 B 3/06
A 24 B 3/12, A 24 B 7/12
A 24 B 7/14

30 Priority: 18.08.82 GB 8223780

43 Date of publication of application:
22.02.84 Bulletin 84/8

64 Designated Contracting States:
DE GB IT

71 Applicant: **AMF INCORPORATED**
World Headquarters 777 Westchester Avenue
White Plains New York 10604(US)

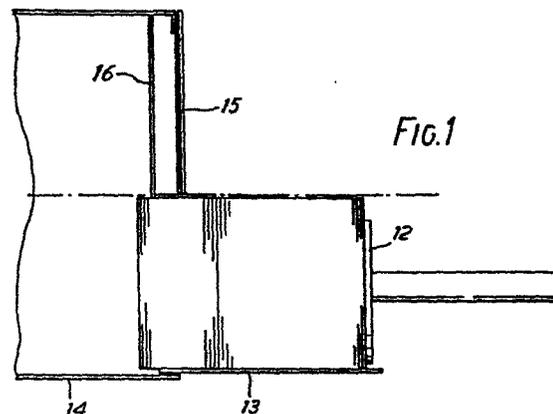
72 Inventor: **Ray, Eric Thomas**
29 Bishops Way
Andover Hampshire(GB)

74 Representative: **Matthews, Howard Nicholas et al,**
MATTHEWS HADDAN & CO Hadden House 33 Elmfield
Road
Bromley Kent BR1 1SU(GB)

54 **Tobacco opening and conditioning apparatus.**

57 To enable tobacco, in the form of blocks e.g., cases, bales or hogsheads of laminated tobacco to be handled e.g., cut, it is necessary to add moisture in a preconditioning apparatus.

The apparatus comprises a tobacco conditioning cylinder (14) which is rotatable about a substantially horizontal axis or on an axis slightly inclined to the horizontal. The cylinder contains slicing means (16) which rotate with the cylinder and effect slicing of the tobacco between the laminae as the tobacco is conveyed into the cylinder.



TITLE: TOBACCO OPENING AND CONDITIONING APPARATUS.

This invention relates to an apparatus for splitting and preconditioning tobacco.

It is a requirement of the tobacco industry that compressed blocks - i.e., cases, bales or hogsheads, of laminated tobacco have to undergo a preconditioning process before they can be handled. This process gives the laminae a temperature increase and a consequent condensation moisture gain. All known techniques for preconditioning embody temperature and moisture gain. The preconditioning process softens the tobacco, thus reducing degradation during subsequent handling in the processing of tobacco. The next stage of processing generally is a consolidation of the moisture gain to a point where the laminae may be cut.

This initial conditioning is generally a batch process followed by line conditioning process, often a rotating cylinder.

There are also several methods of continuous bale opening and preconditioning of compressed laminae, notably :-

1. The cases being driven onto rotating doffers as described for example in UK Patent Nos. 1,364,839, 1,136,439, 2,007,962A and 2,047,070A, and thereafter conditioning the tobacco.

2. Slices of laminae being removed with a jet knife as described in International Application No. WO.82/02324 in which the addition of moisture occurs simultaneously with the opening process.

5 3. Slices of tobacco being produced by dry slicing and fed directly into a conditioning cylinder.

An object of the invention is to provide a conditioning cylinder type, wherein the need for dry slicing the tobacco in a separate process is obviated.

10 According to the invention there is provided an apparatus for opening and conditioning a block of tobacco, comprising a cylinder rotatable about a substantially horizontal axis or on an axis slightly inclined to the horizontal, means for feeding the block
15 into the cylinder and slicing means within said cylinder and driven by the cylinder rotation for effecting slicing the tobacco as it is fed into the cylinder.

The invention will now be described by way of
20 examples with reference to the accompanying drawings in which :-

FIGURE 1 is a part section of the inlet end of a conditioning cylinder showing an opening blade secured to the cylinder;

FIGURE 2 is an end elevation with the cylinder end wall removed;

FIGURE 2A is a section taken on line A - A in Figure 2;

5 FIGURE 3 is an end view of the cylinder seen in the direction of arrow B in Figure 4 showing an alternative construction of opening blade;

FIGURE 4 is a longitudinal part section taken along the plane A - A in Figure 3, and

10 FIGURE 5 is a part section taken along the line C - C in Figure 3.

A typical system Figures 1 and 2 comprises the following :-

15 Loading station 10 which would accept unpacked compressed blocks of tobacco 11 (which could be rectangular or circular in cross section) and tip through 90 degrees such that the natural laminations within the block were substantially vertical.

20 A ram 12 driven by an indexed (intermittent) feed pusher mechanism which can withdraw for reloading to maintain continuity of slices fed into the cylinder. This requirement will require an auxiliary device with a small stroke to continue indexing the block being sliced during 'follow up' block loading.

25 A fixed block holder 13 forms an entry opening into a rotating cylinder 14 and has a vertical plate 15 that seals to the cylinder. The axis of the block holder

is parallel to the cylinder axis and offset from the latter a distance approximately one quarter of the cylinder diameter so that the holder (and tobacco block) lies in one half of the inner circular perimeter
5 of the cylinder.

The diameter of the rotating cylinder 14, is about twice the diameter of the holder (and tobacco block) e.g., 8'0" (244 cm) diameter in order that the whole block can be accommodated in one half of cylinder.
10 Within the cylinder and fixed to it is single blade 16 with (or without) saturated air jets into the parting plane. The blade is located in the other half of the inner circular perimeter of the cylinder and projects from the perimeter to or near to the axis of the
15 cylinder so that the blade cuts a slice through the tobacco as the cylinder (and knife) rotates. The cylinder rotation is typically 4 - 15 r.p.m. The rotating cylinder is of known construction (similar to that disclosed in simultaneously filed Application No.
20 8223780 but could be conical to reduce progressively the tobacco fall height as the tobacco pads become smaller.

The blade 16 is joined to the wall 14 and has mounted upon it a plenum chamber 16A into which
25 saturated air is fed via supply pipe 16B.

In the alternative construction (Figures 3 to 5) the rotating cylinder is of a reduced diameter and the

diameter of the holder 13 is only slightly smaller than the diameter of the cylinder. Two or more knives 20 are fixed in the cylinder and extend across it in opposite directions so as to extend across most (or
5 all) of the cylinder diameter e.g., more than three quarters of the diameter.

The diameter of the rotating cylinder 14 may be approximately 5'0" (152 cm) diameter. The blades peel slices (typically between 1/2" - 4" [1.3 - 10.2
10 cm]) from the block which is continuously fed into the cylinder by a ram as described in the first embodiment. A saturated air jet 17, fed via a supply 17A into a plenum chamber 17B may be directed into the parting plane. The central portion (pip) 18 of the tobacco
15 missed by the knives, will collapse into the cylinder.

Technical details of first embodiment:

Reloading may take place with half a hogshead remaining.

Slice thickness approximately 2" (5 c) having a
20 weight of $11 \times 2^2 \times \underline{1} \times 20 = 42$ lbs. (94 Kg)

6

Feed rate 10,000 lbs (24,000 Kg) per hour.

Slices per minute = 4 (i.e., 4 r.p.m. drum speed)

Hogshead indexed at a feed rate of 16 in (40 cm)
25 per minute average.

Auxiliary device with 4" (10 cm) stroke for driving reload mechanism.

The advantage of slicing within the cylinder are as follows :-

- a. Slicing takes place in a high humidity environment.
- 5 b. Lamina spillage is contained within the cylinder.
- c. The force required for slicing is provided from the cylinder rotation drive.

CLAIMS:

1. An apparatus for opening and conditioning a block of tobacco, comprising:

a). a cylinder (14) rotatable about substantially horizontal axis or on an axis slightly inclined to the horizontal;
5

b). means (12) for feeding the block into the cylinder; and

c). slicing means (20) within said cylinder and driven by the cylinder rotation for effecting slicing
10 the tobacco as it is fed into the cylinder.

2. An apparatus according to Claim 1, wherein the cylinder has a tobacco entry opening in one half of the cylinder perimeter and the slicing means is a blade located in the other half and projecting from the
15 perimeter to or near to the axis of the cylinder.

3. An apparatus according to Claim 1, wherein the cylinder has a tobacco entry opening the diameter of which is only slightly less than that of the cylinder and the slicing means consists of a plurality of knives

which together extend across most or all of the cylinder diameter.

4. An apparatus according to Claim 1, wherein the blade has openings (16A, 17B) to provide saturated air
5 jets.

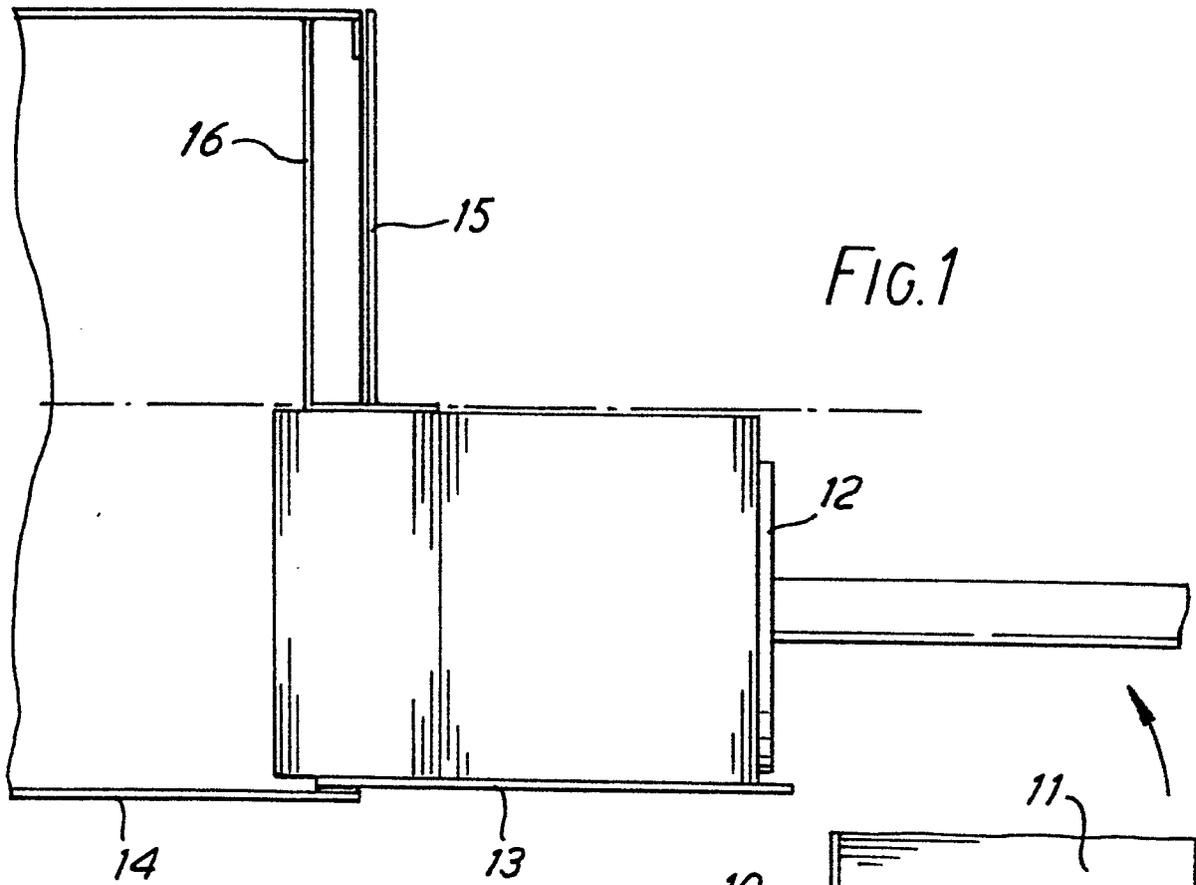


FIG. 1

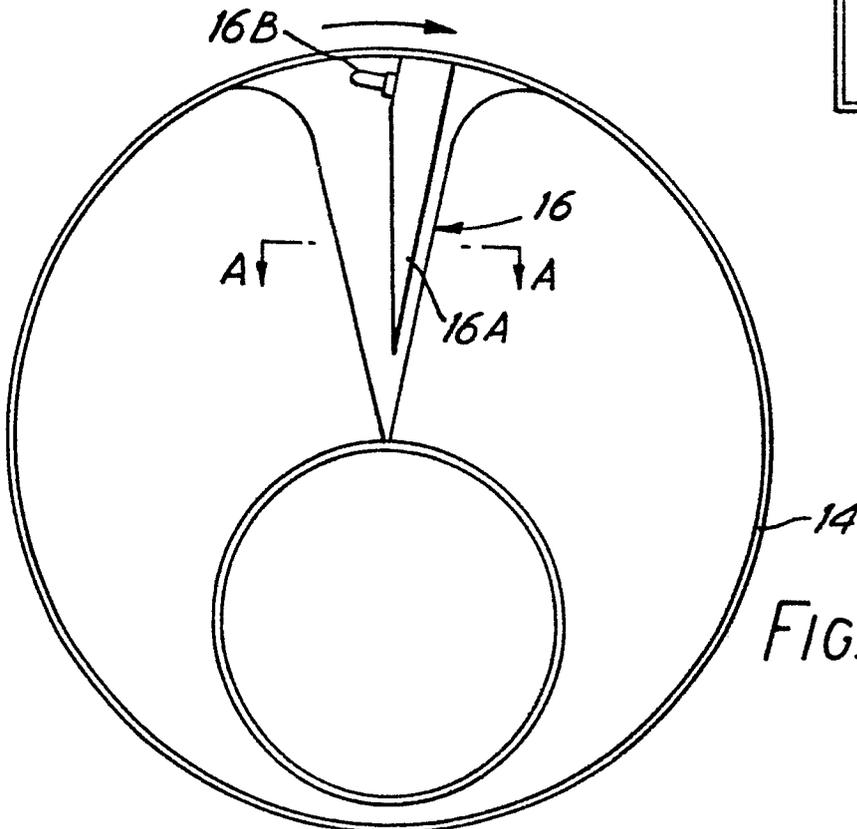


FIG. 2

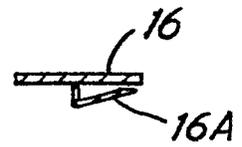


FIG. 2A

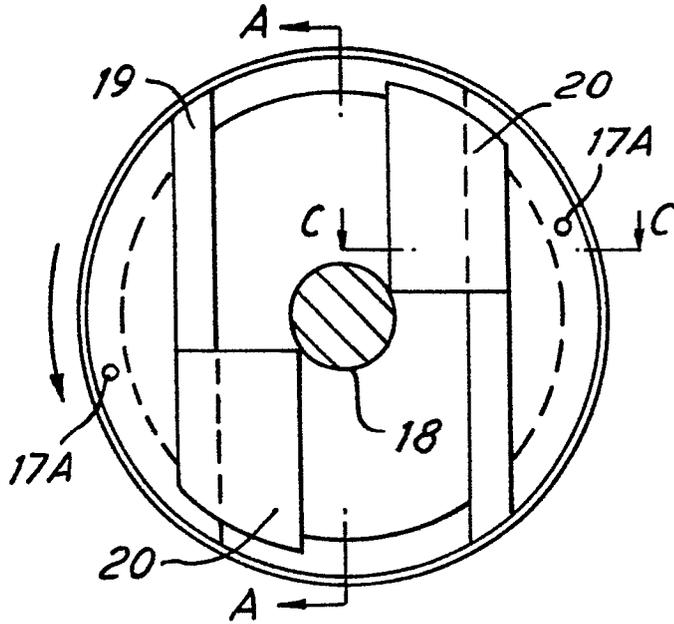


FIG. 3

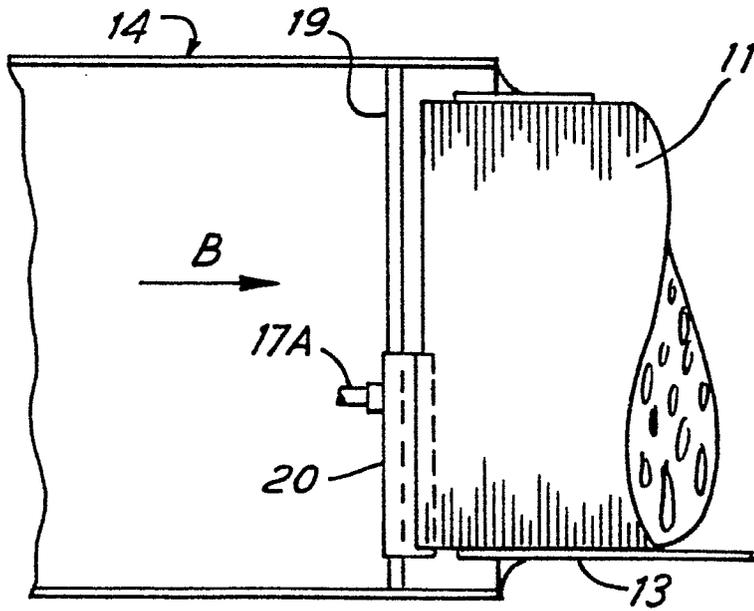


FIG. 4

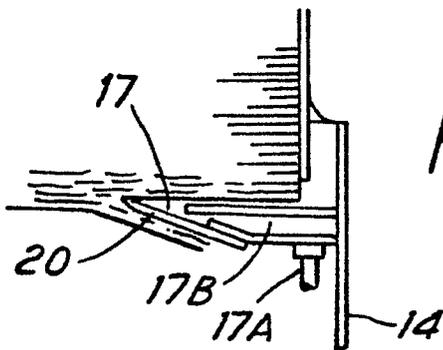


FIG. 5



DOCUMENTS CONSIDERED TO BE RELEVANT			EP 83304544.6																				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)																				
A, D	WO - A1 - 82/02 324 (AMF INCORPORATED) * Claims 11,13 * --	1	A 24 B 3/00 A 24 B 3/02 A 24 B 3/06 A 24 B 3/12																				
A, D	GB - A - 2 047 070 (ROTHMANS OF PALL MALL CANADA LIMITED) * Abstract * --	1	A 24 B 7/12 A 24 B 7/14																				
A, D	GB - A - 2 007 962 (ROTHMANS OF PALL MALL CANADA LIMITED) * Abstract * --	1																					
A, D	GB - A - 1 364 839 (W.H. DICKINSON ENGINEERING LIMITED) * Claim 1 * ----	1																					
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. 7) A 24 B																				
Place of search VIENNA		Date of completion of the search 11-11-1983	Examiner WOLF																				
<p>CATEGORY OF CITED DOCUMENTS</p> <table border="0"> <tr> <td>X</td> <td>particularly relevant if taken alone</td> <td>T</td> <td>theory or principle underlying the invention</td> </tr> <tr> <td>Y</td> <td>particularly relevant if combined with another document of the same category</td> <td>E</td> <td>earlier patent document, but published on, or after the filing date</td> </tr> <tr> <td>A</td> <td>technological background</td> <td>D</td> <td>document cited in the application</td> </tr> <tr> <td>O</td> <td>non-written disclosure</td> <td>L</td> <td>document cited for other reasons</td> </tr> <tr> <td>P</td> <td>intermediate document</td> <td>&</td> <td>member of the same patent family, corresponding document</td> </tr> </table>				X	particularly relevant if taken alone	T	theory or principle underlying the invention	Y	particularly relevant if combined with another document of the same category	E	earlier patent document, but published on, or after the filing date	A	technological background	D	document cited in the application	O	non-written disclosure	L	document cited for other reasons	P	intermediate document	&	member of the same patent family, corresponding document
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