United States Patent

Quarenghi

[15] **3,690,328**

[45] **Sept. 12, 1972**

[54] **WET PROCESSING OF TOBACCO STEMS**

[72] Inventor: **Rodolfo Quarenghi**, Bologna, Italy

[73] Assignee: **American Machine & Foundry Company**

[22] Filed: **April 20, 1970**

[21] Appl. No.: **29,850**

[52] **U.S. Cl.** .....**131/140 R,** 131/147 R
[51] **Int. Cl.** ...**A24b 03/04,** A24b 05/10, A24b 09/00
[58] **Field of Search** .....131/140 R, 147 R, 140 P

[56] **References Cited**

UNITED STATES PATENTS

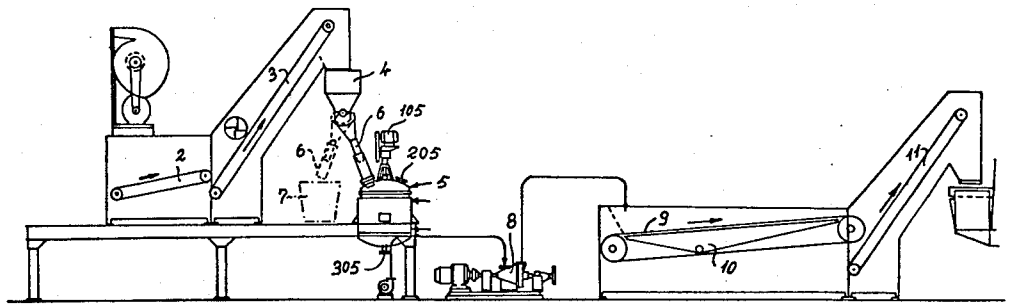
2,596,183	5/1952	Sowa	131/140 P
3,219,042	11/1965	Molins	131/140 R
3,204,641	9/1965	Jones	131/140 R
772,892	10/1904	Lauhoff	131/140 R X
3,513,857	5/1970	Silberman	131/147 UX

Primary Examiner—Samuel Koren
Assistant Examiner—John F. Pitrelli
Attorney—George W. Price and Eli Weiss

[57] **ABSTRACT**

In this invention tobacco stems and/or fragments of stems, and/or portions of tobacco leaves containing stems and veins are water soaked or wet softened by water and or steam to completely soak the stems and veins and dissolve part of their soluble organic and inorganic constituents. The wet softened stems and veins are then fed to a refiner where they are mechanically opened by crushing or rolling. Thereafter, the opened stems and/or veins are fed to a drier where the moisture content is reduced to the level of the cut tobacco with which they are to be mixed.

2 Claims, 2 Drawing Figures



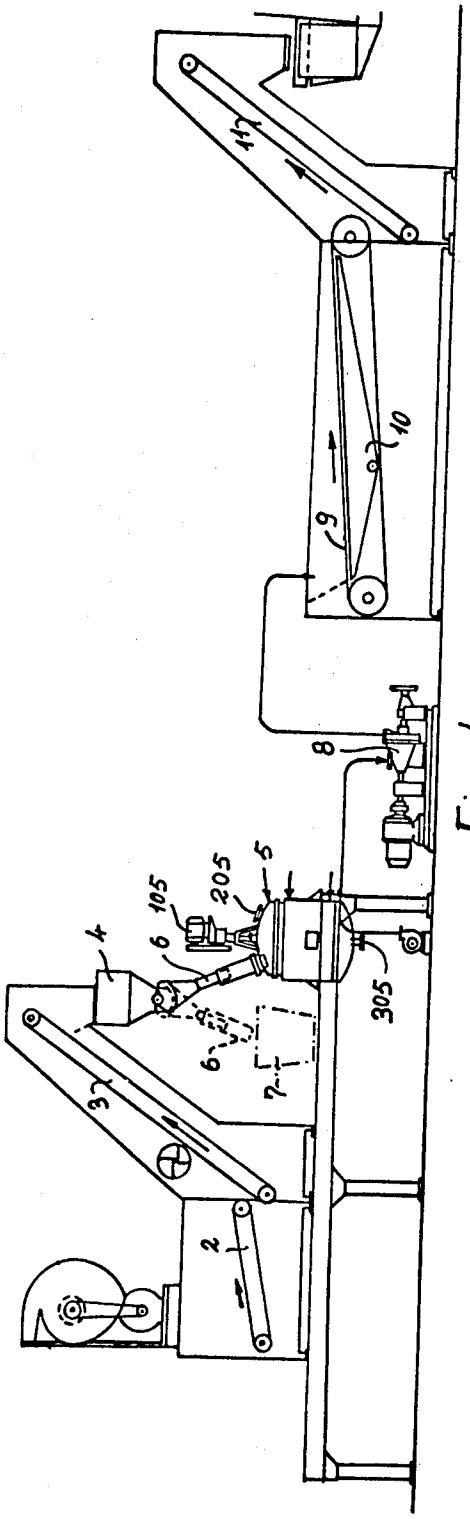


Fig. 1

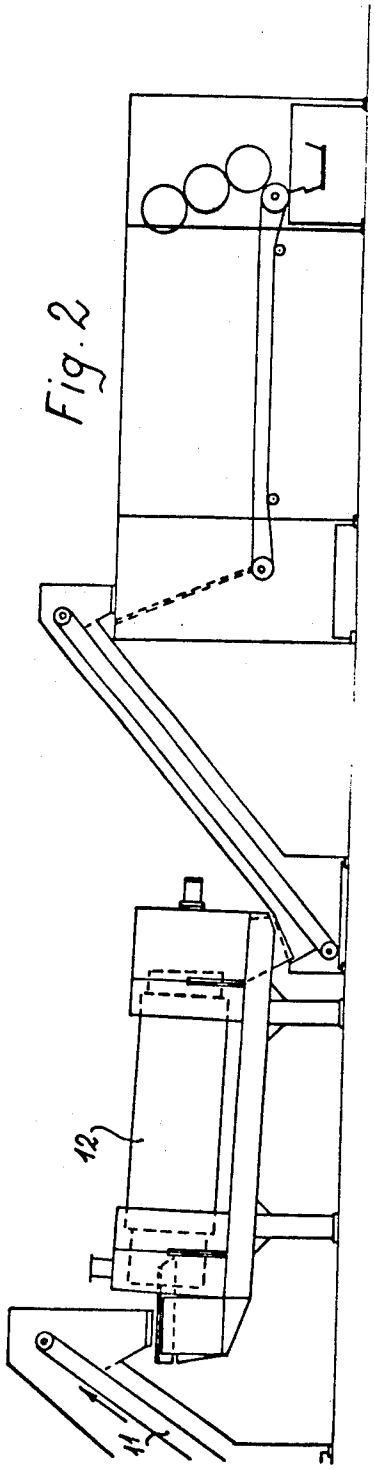


Fig. 2

INVENTOR.
RODOLFO QUARENGHI
BY
ATTORNEY

WET PROCESSING OF TOBACCO STEMS

This invention relates to the treatment of tobacco and more particularly to the method of and apparatus for treating stems and veins which are an integral part of tobacco leaves, and parts of tobacco leaves such that the stems are converted into a form in which they can be readily incorporated in smoking articles.

Heretofore, in preparing tobacco for processing into smoking articles, such as cigarettes and cigars, it has been necessary to remove stems either by the use of stemming machines which strip the stems from the tobacco leaves, or by the use of threshing machines which break up the leaves and thresh the stem portions and large veins from leaves or laminae, after which, by a winnowing section, the heavier stems and large vein pieces are separated from the lighter leaf or laminae parts of the leaves.

Attempts have been made in the past to utilize stems in smoking articles, such as cigars and cigarettes. Methods and apparatus have been proposed for preparing them for addition to stemmed leaves and threshed leaf. A common technique is to crush the stems by steaming and rolling. However, the hard, splinty characteristics of the stems remain and are carried over into the final smoking articles where they have the unsatisfactory effect of burning at a different rate. Also, small hard pieces of stems fall out of the end of cigarettes, the tongue and fingers detect the presence of stems due to sharp points which sometimes puncture the paper wrapper. There is a deterioration in the taste of cigarettes, and the presence of hard spots makes it difficult for the final smoking article to assume proper shape and form.

The present invention constitutes an important solution of the problem of utilizing stems and eliminating an obvious waste on the part of a manufacturer of smoking articles because it makes possible the use of stems, which in the past, except for limited quantities, have been sold as waste for manufacture into tobacco by-products, fertilizer, and other products which use stems.

According to the present invention, tobacco stems and/or portions of tobacco leaves containing stems and veins are water soaked or wet softened by water and/or stem to completely soak the stems and veins and dissolve part of their soluble organic and inorganic constituents. The wet softened stems and veins are then fed to a refiner wherey they are mechanically opened by crushing or rolling. Thereafter, the opened stems and/or veins are fed to a drier where the moisture content is reduced to the level of the cut tobacco with which they will be mixed.

It is an object of this invention to provide a method and apparatus for treating stems and/or veins to permit them to be mixed with cut tobacco.

It is another object of this invention to eliminate the woody rigidity of stems and/or veins without requiring the use of harmful substances.

It is still another object of this invention to provide treated stems and/or veins which can be added to cut tobacco without altering the aroma and taste of tobacco.

It is also another object of this invention to reduce the unutilized portion of the tobacco leaf used in making cigarettes and cigars.

It is yet another object of this invention to provide a method which is simple and a device which is economical to build and reliable in operation.

The novel features that are considered characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, as well as additional objects and advantages thereof, will best be understood from the following description when read in connection with the accompanying drawings wherein:

FIGS. **1** and **2** illustrate, in sequence, the various steps of the process of the invention and the effecting of the steps in structure in accordance with the principles of the invention.

The stems to be processed are fed to a belt conveyor **2**, are then transferred to an ascending metering belt **3**, and are then fed to a hopper **4**. The stems are, subsequently, introduced into a digester **5** through a deflectable bottom discharge unit of hopper **4**. The discharge unit **6** of the hopper **4** is controllable to discharge either alternately or at will, into a digester **5** or into an emergency bin or bucket **7**.

Digester **5** is equipped with a motorized agitator **105**, an upper aperture **205** through which water can be supplied and a bottom duct **305** for feeding steam to the digester.

The stems within digester **5** are first subjected to a room temperature water soak. The processing period in the digester may vary, for instance, from **30** to **60** minutes. Its purpose is to completely soak the stems and dissolve part of their soluble organic and inorganic constituents. In the water processing stage, the consistency of the stem dispersion in water may change from 5 to 10 percent.

Thereafter, in the digester **5**, the water soak is followed by a steam process. Steam is fed into digester **5** through the bottom aperture **305**, to gradually raise the temperature within the digester to 125° – 130° C. in a period of 40–60 minutes. Thereafter, this temperature is kept constant without any further steam feed but with the introduction of hot water and/or steam into an outer jacket of the vessel.

At the completion of this process, the woody rigidity of the stem is reduced considerably. The stems are then fed to and opened by a cone type refiner **8** or a fluted roller flattener rotating at differential speeds, with the fastest roller rotating at a maximum of 300 RPM. The adjustment of the working surfaces is effected by setting the working clearance variable between 1.5 and 2.8 mm approximately.

The product obtained is fed to and carried by a perforated belt conveyor **9** or other suitable means associated with an opened drained water collecting case **10**. The opened and drained stems are fed from the belt conveyor **9** to an elevator belt **11** which transports the product to a dryer **12**.

The drained water contains a considerable percentage of nicotine which can be used as a by-product. Moisture content of the product at the dryer inlet is 80 percent. At the outlet, the moisture content of the product is 30 percent and the product has features which are similar to cut tobacco. Thus, the product can be mixed with the cut tobacco prior to toasting the cut tobacco.

The product obtained with the process according to the invention is of a filiform nature, very similar to the cut tobacco and ensuring a good cigarette filling coefficient. Furthermore, the process according to the invention is not limited to the utilization of the stems selected in the cigarette makers, but is perfectly suitable for handling the stems originating from other sources such as, for instance, from the threshing line without any previous flattening and cutting operation. The economical advantages resulting from the elimination of the stem flattening and cutting lines are quite evident.

It is understood that the process according to the invention is not limited to the embodiment which has been illustrated and described but that many changes could be incorporated. Thus, for instance, with some types of stems, the process can be simplified by eliminating the use of steam. The room temperature water soak is in some instances sufficient to weaken the woody rigidity of the stems so that they can then pass directly to the successive opening stage in the refiner. Furthermore, the above mentioned ranges of variation

of the time and temperature values can be widely changed in relation to the stem percentage quantity and the relative sizes.

What is claimed is:

1. A method of processing stems separated from cut tobacco to modify their woody rigid structure, comprising the steps of:

raising the moisture content of the stems to at least 80 percent by soaking said stems in room temperature water for between 30 and 60 minutes, and then steam soaking said stems,

opening the stems mechanically,

draining the opened stems to a moisture content of 80 percent, and

drying the drained stems to the moisture content of cut tobacco.

2. The method of claim 1, wherein the step of steam soaking said stems raises the temperature of the stems to between 125° C and 130° C in less than 60 minutes after the completion of said room temperature water soak by said steam soak.

* * * * *