

Nov. 23, 1965

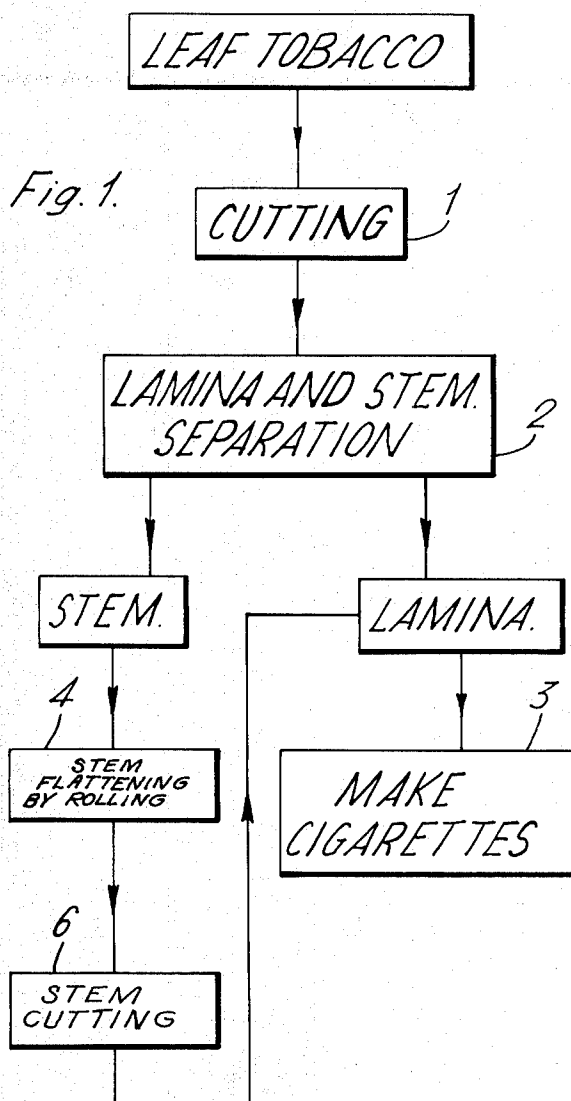
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METHOD OF TREATING TOBACCO FOR PRODUCING A TOBACCO ARTICLE

Filed Dec. 18, 1962

3 Sheets-Sheet 1



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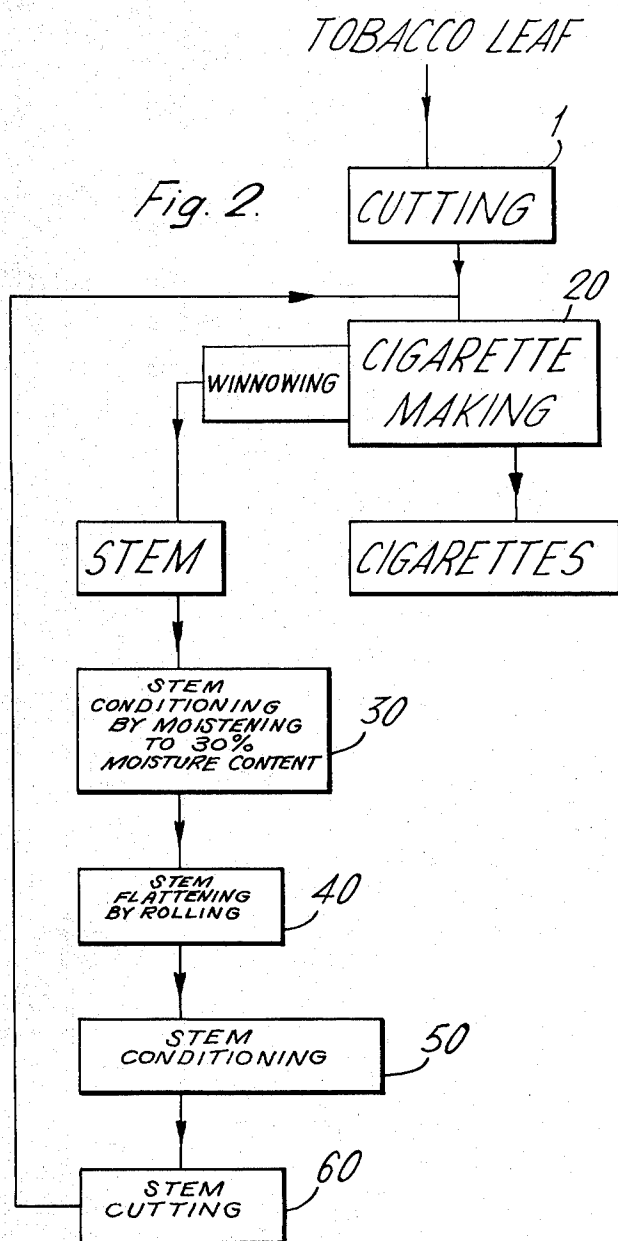
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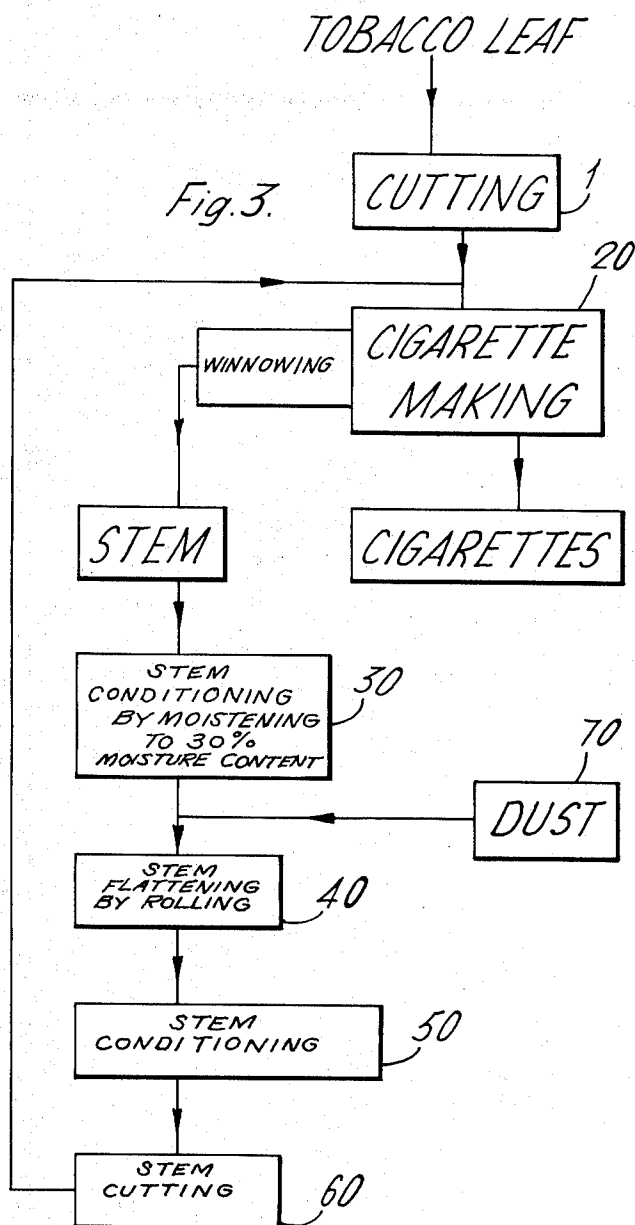
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METHOD OF TREATING TOBACCO FOR PRODUCING A TOBACCO ARTICLE

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Filed Dec. 18, 1962, Ser. No. 245,576

Claims priority, application Great Britain, Dec. 20, 1961, 45,572/61

7 Claims. (Cl. 131-140)

This invention concerns improvements in or relating to a method of treating tobacco for producing a tobacco article, and, in particular, for producing cigarettes.

In the manufacture of cigarettes, the stem or mid-rib portion is usually extracted from uncut leaf tobacco, and may be flattened and then cut, and the cut flattened stems may be mixed with the cut lamina portion of the tobacco leaf to provide what is known as the cigarette filler.

Frequently, however, pieces of stem which are too large to be suitable for incorporation in a cigarette remain in this filler, and these are normally extracted by winnowing apparatus in the cigarette-making machine, and are often subsequently rejected as waste.

According to the present invention there is provided a method of treating tobacco for producing a tobacco article, comprising the steps of cutting leaf tobacco to produce cut tobacco, of separating cut stems from cut lamina in the cut tobacco, of flattening the cut stems, to produce flattened stem, of cutting the flattened stem to produce cut flattened stem, and of adding the cut flattened stem to cut lamina to produce a product suitable for use in a tobacco article. Preferably the cut stems are passed between two rolling surfaces to produce flattened stem.

The cut stems may be moistened with water prior to their being flattened, and are preferably moistened to at least 30% by weight moisture content.

Tobacco dust may be added to the cut stems prior to their being flattened.

The cut stems may be flattened to substantially the thickness of the lamina portion of normal tobacco leaf, and the flattened stem may be cut to substantially the same width as the cut lamina.

The flattened stem may be mixed with tobacco leaf to be cut therewith.

The cut stems may be separated from cut lamina in the tobacco feeding mechanism of a cigarette-making machine, and the separation may be effected pneumatically.

It has been found that the flattening and cutting of the stem is facilitated by using pieces of stem as large as possible, and the leaf tobacco may therefore be fed in a cutting machine so that the longitudinal axes of the stems lie in a plane substantially parallel to the plane of the surface of the tobacco cheese exposed to the action of the cutting machine knife. In a tobacco-cutting machine the tobacco leaves or portions of leaves are normally compressed into a more or less solid mass known as a "cheese," and this term is, for convenience, used herein. The "cheese" is progressively fed forward to the plane of action of the knife or knives of the cutting machine which slice thin layers of tobacco therefrom.

Further according to the present invention there is provided a method of treating tobacco for use in a cigarette filler in a continuous rod cigarette-making machine, comprising the steps of extracting stem winnowings in the said machine, of moistening the stem winnowings with water to cause them to become pliable, of passing the moistened stem winnowings between two rolling surfaces to flatten them to approximately the thickness of the lamina portion of normal tobacco leaf, of cutting the flattened stem to approximately the same width as

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the cut lamina in the cigarette filler, and of adding the cut flattened stem to cut lamina in the cigarette filler.

Still further according to the present invention there is provided a method of treating tobacco in the manufacture of cigarettes, comprising the steps of cutting tobacco leaf to produce a cigarette filler, of feeding the cigarette filler to a continuous rod cigarette-making machine, of extracting stem portions from the filler, of moistening the extracted stem portions to at least 30% by weight moisture content, of flattening the moistened stem to approximately the thickness of the lamina portion of normal tobacco leaf, of cutting the flattened stem to approximately the same width as the cut lamina in the cigarette filler, and of adding the cut flattened stem to the cigarette filler prior to enclosure of the latter in a cigarette paper wrapper in the cigarette-making machine.

Methods of treating tobacco in accordance with the present invention will now be described by way of example with reference to the accompanying drawings, in which:

FIGURE 1 is a diagrammatic representation of a method of treating tobacco leaf in the production of cigarettes,

FIGURE 2 is a diagrammatic representation of another method of treating tobacco leaf in the production of cigarettes,

FIGURE 3 is a diagrammatic representation showing a modification of the method illustrated in FIGURE 2.

With reference to FIGURE 1, tobacco leaf, after being suitably conditioned, that is having its moisture content altered so that the tobacco is in a state of pliability found correct for the following stage of the process, is cut as indicated by reference 1. As the leaf contains both lamina and stem or midrib, the cut tobacco is a mixture of both with the lamina thin, about .002" to .005" thick, and, pliable, and the stem thick, up to 1/4" diameter, and hard. If cut to the usual width, i.e. from 25 to 70 cuts per inch, the resultant cut tobacco will contain lamina in a suitable state for use in a cigarette filler and cut stem which is unsuitable.

The mixture of suitable cut lamina and unsuitable cut stem is then fed into separation means, which might be an air classifier of known design capable of separating particles of differing densities, such as stem and lamina, the one from the other or might be the apparatus for feeding tobacco in a cigarette-making machine as disclosed in U.S. Patent No. 3,030,965 dated April 24, 1962. The stem portion, having been extracted from the lamina portion, is then conditioned by moistening with water to at least 30% moisture content, and is subjected to a rolling action, at 4, by being passed between two rotating cylinders, the gap between which is sufficiently small to cause the stem in passing through to be flattened. The gap can be regulated so that the final thickness of the rolled stem is as near as possible to the thickness of the lamina portion of normal tobacco leaf consistent with the preservation of sufficient strength remaining in the rolled or flattened stem so that it does not crumble when being cut. The rolled stem is again conditioned so as to contain the correct amount of moisture for cutting, and is then cut, either as shown in the drawing at 6, or, by being mixed with the tobacco leaf, at 1. Which alternative is used depends on the size of the stem pieces separated out in the separation stage and this depends on the width of cut on the tobacco leaf. If the stem pieces are small as will be the case if the tobacco leaf is cut at near to 70 cuts per inch, then the pieces should be mixed with the tobacco leaf since it has proved difficult to cut small rolled stem pieces on their own, as the action of the cutting machine knife tends to tear such small pieces away from a cutting machine mouthpiece instead of cutting them.

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The cut rolled stem can be added to and mixed with the cut lamina before being placed in the hopper of a cigarette-making machine, or it can be added in the hopper, such, for instance, as in a divided feed hopper of known design, or it can be added to showered cut lamina to form a sandwich of cut lamina—cut stem—cut lamina.

In the method illustrated diagrammatically in FIGURE 2, the mixture of suitable and unsuitable cut tobacco, produced by the cutting operation 1, i.e. the cut tobacco for use in the cigarette filler, is fed into the hopper of a cigarette-making machine, which produces cigarettes by the continuous rod process as indicated at 20, having a feed mechanism in which the cut tobacco is subjected to a pneumatic winnowing operation by the action of a high velocity air current. By a suitable arrangement of parts, for example as disclosed in U.S. Patent No. 3,092,117, dated June 4, 1963, the air stream can be used to separate out the particles of greater density, i.e. the pieces of stem, from the particles of lesser density, i.e. the cut lamina. The stem portion, having been extracted from the lamina portion, is then conditioned by moistening to at least 30% moisture content, indicated at 30 and is rolled, at 40, by being passed between two rotating cylinders, the gap between which is sufficiently small to cause the stem in passing through to be flattened by rolling action as previously described with reference to FIGURE 1.

The rolled stem is then again conditioned, indicated at 50, so as to contain the correct amount of moisture for the next process, namely cutting. The rolled stem is then fed to a cutting machine, as at 60, where it is cut with any desired number of cuts per inch, so as to be in a final state for playing its part in achieving maximum filling power in the production of cigarettes.

The cut rolled stem is added to and mixed with the product from the cutting stage shown at 1 for introduction into the hopper of the cigarette machine. Alternatively mixed with the cut lamina forming with the latter, the rolled stem may be mixed with tobacco leaf to be cut therewith. Since the stem pieces thus processed are of such a size, i.e. length and width and thickness, as to be comparable with the cut lamina portion of the tobacco leaf, they are no longer separated out by the winnowing action of the air stream. They therefore remain intimately mixed with the cut lamina forming with the latter the cigarette filler, which is enclosed to form the continuous cigarette rod.

The method illustrated diagrammatically in FIGURE 3 is similar to that described above with reference to FIGURE 2, and like references have been used to indicate like stages in FIGURES 2 and 3.

In the method illustrated by FIGURE 3, however, tobacco leaf, after being suitably conditioned, is fed into a cutting machine hopper so that the leaves lie broadside to the mouthpiece of the cutting machine, and in which the leaves form a tobacco "cheese". In other words, the central stem or midrib of each leaf is substantially parallel to the plane of the mouthpiece at which the cutting surface of the "cheese" is exposed to the action of the knife or knives of the cutting machine, which plane is the plane of the surface of the cheese from which tobacco is cut. The purpose of this is to cause the pieces of stem, which are extracted later in the process, to be as large as pos-

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sible, in order to facilitate the subsequent rolling and cutting of the stem.

As is indicated in FIGURE 3 by the reference 70, tobacco dust extracted either from parts of the cigarette-making machine, or from elsewhere in the process, may be added to the stem before or during rolling. The two rotating cylinders act to press the dust into, or otherwise incorporate the dust in the structure of the rolled stem.

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

1. A method of processing leaf tobacco for producing a product suitable for use in a cigarette, comprising the successive steps of: cutting said leaf tobacco including its stem to produce cut lamina in the form of strands and cut stems, in which each strand of lamina and each piece of stem is cut to substantially the same width as that of the strands in the cigarette; separating said cut stems from said cut lamina; flattening said cut stems to produce flattened cut stems; cutting said flattened cut stems to substantially the same width as said strands in said cigarette; and adding said flattened cut stems to said cut lamina to produce said product.

2. A method as claimed in claim 1, comprising the step of flattening the cut stems by rolling action to produce flattened stem.

3. A method as claimed in claim 1, comprising the step of moistening the cut stems with water prior to their being flattened.

4. A method as claimed in claim 1, comprising the step of adding tobacco dust to the cut stems prior to their being flattened.

5. A method as claimed in claim 1, comprising the step of mixing the flattened stem with tobacco leaf to be cut therewith.

6. A method as claimed in claim 1, comprising the step of separating cut stems from cut lamina by a pneumatic winnowing operation.

7. A method as claimed in claim 1 wherein during the step of cutting leaf tobacco the stems of the leaf tobacco are arranged so as to lie substantially parallel to the plane of cutting.

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