

Jan. 27, 1953

F. G. PEARCE

2,626,612

TOBACCO SHEET MATERIAL AND METHOD OF MAKING SAME

Filed Oct. 2, 1948

2 SHEETS—SHEET 1

FIG. 1

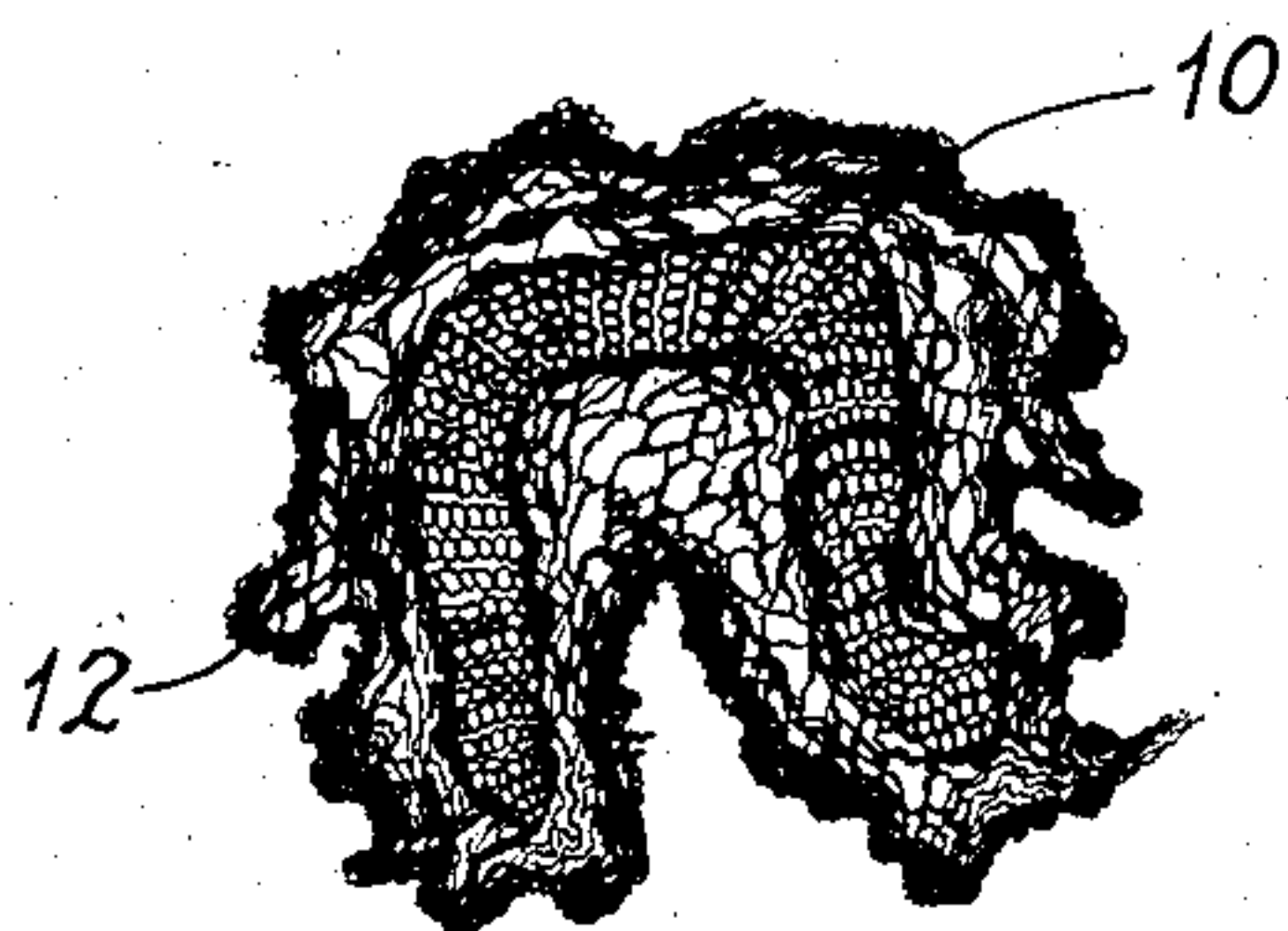


FIG. 3

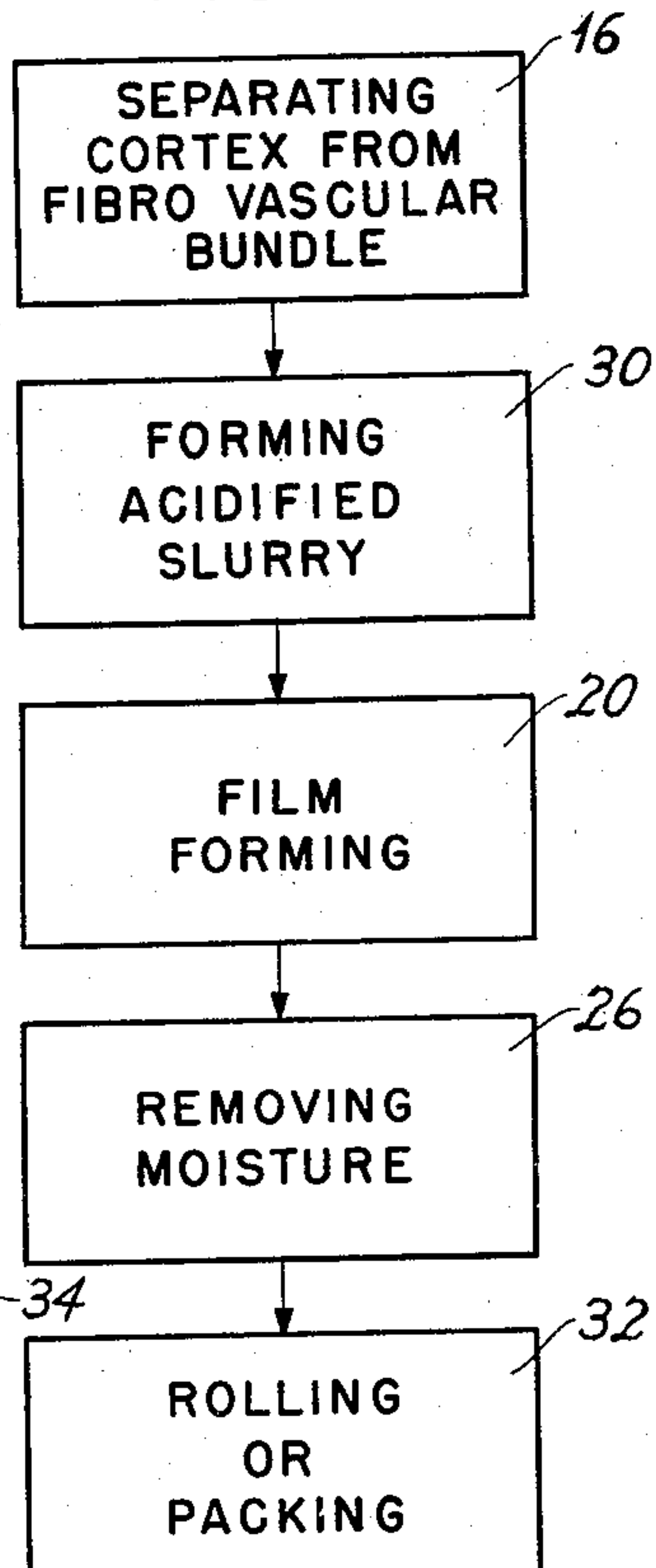


FIG. 4

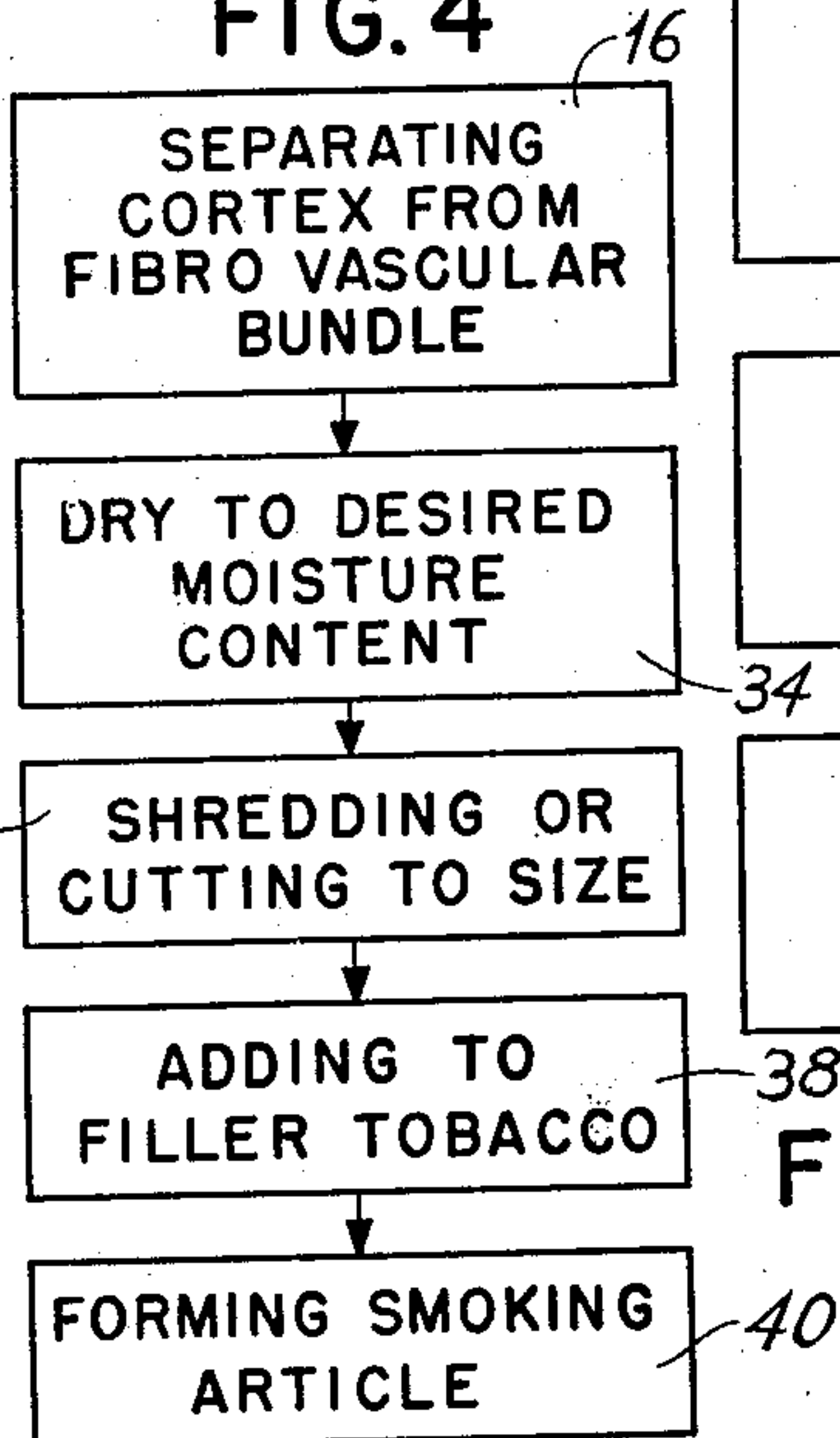


FIG. 2

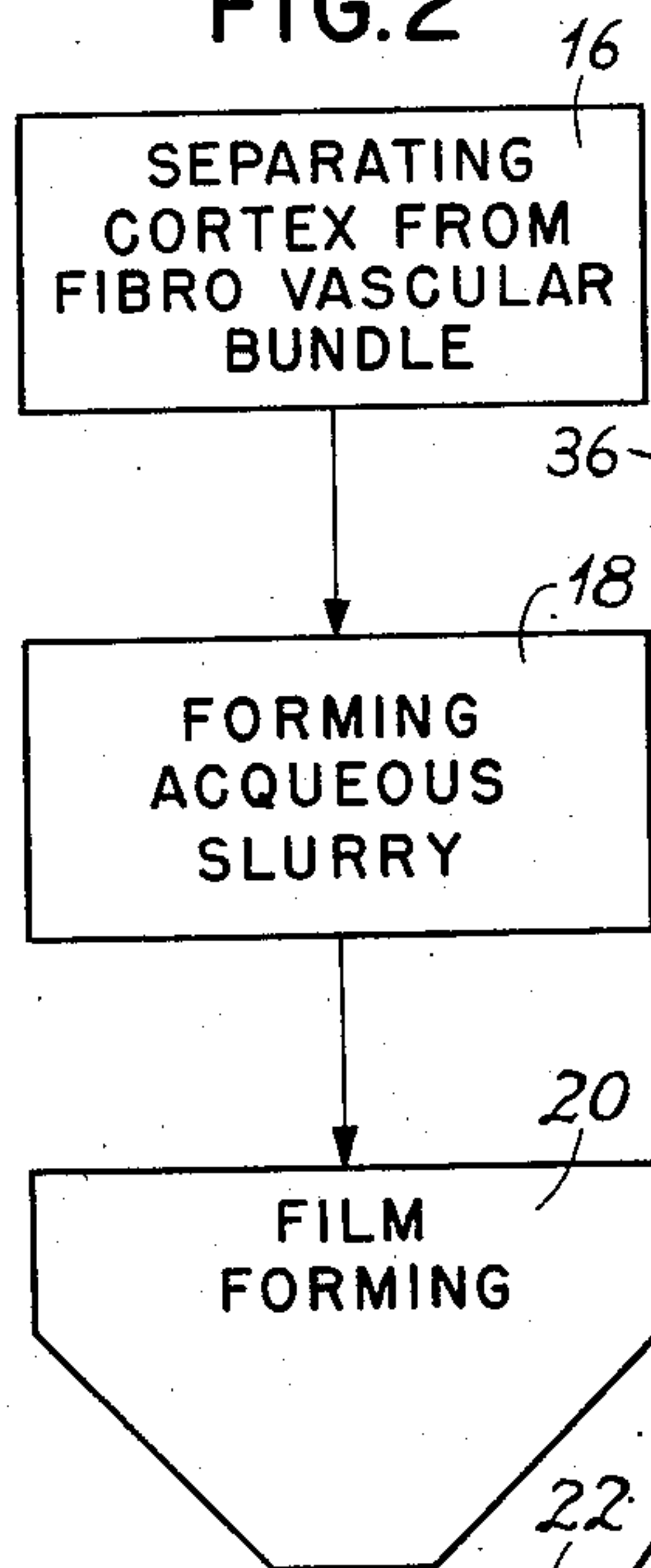
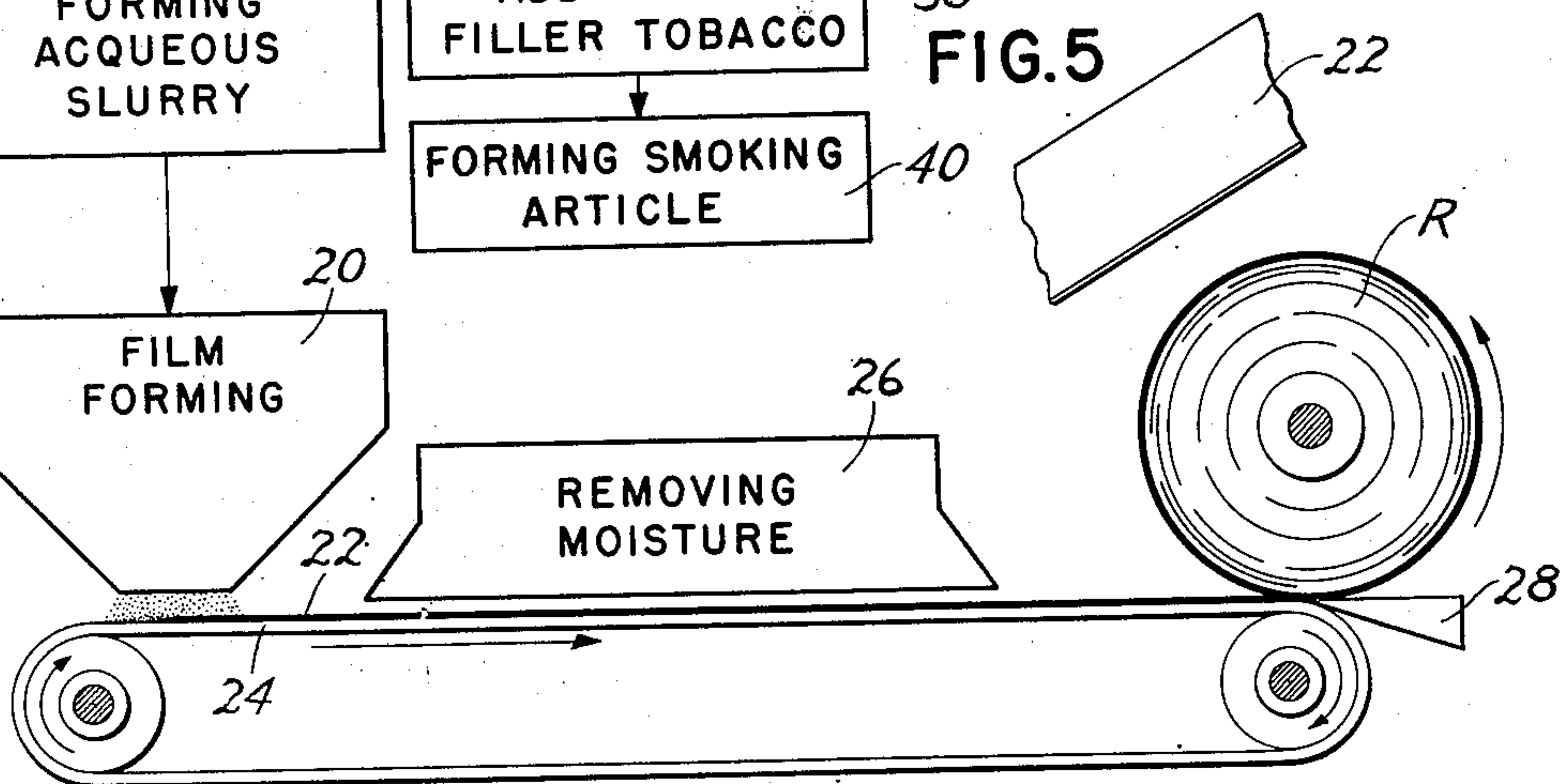


FIG. 5



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2 SHEETS—SHEET 2

FIG. 6

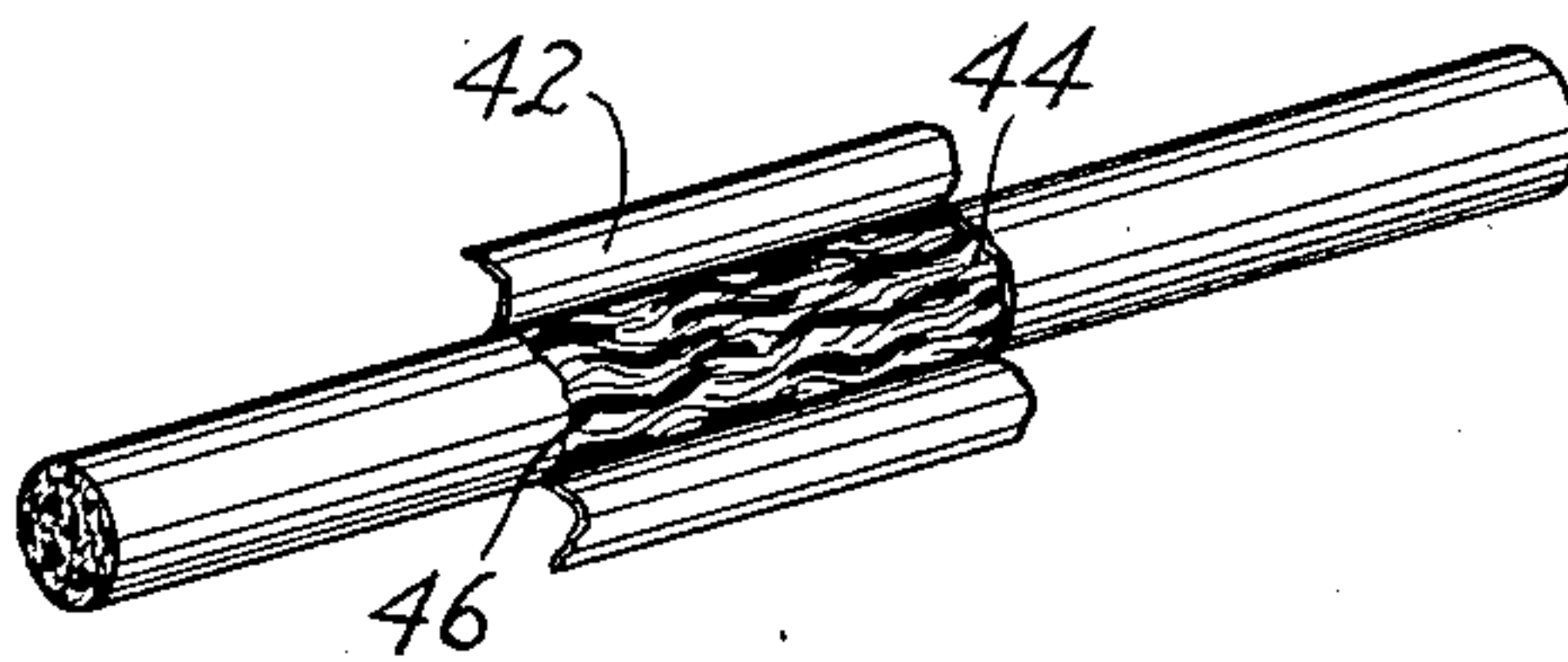


FIG. 7

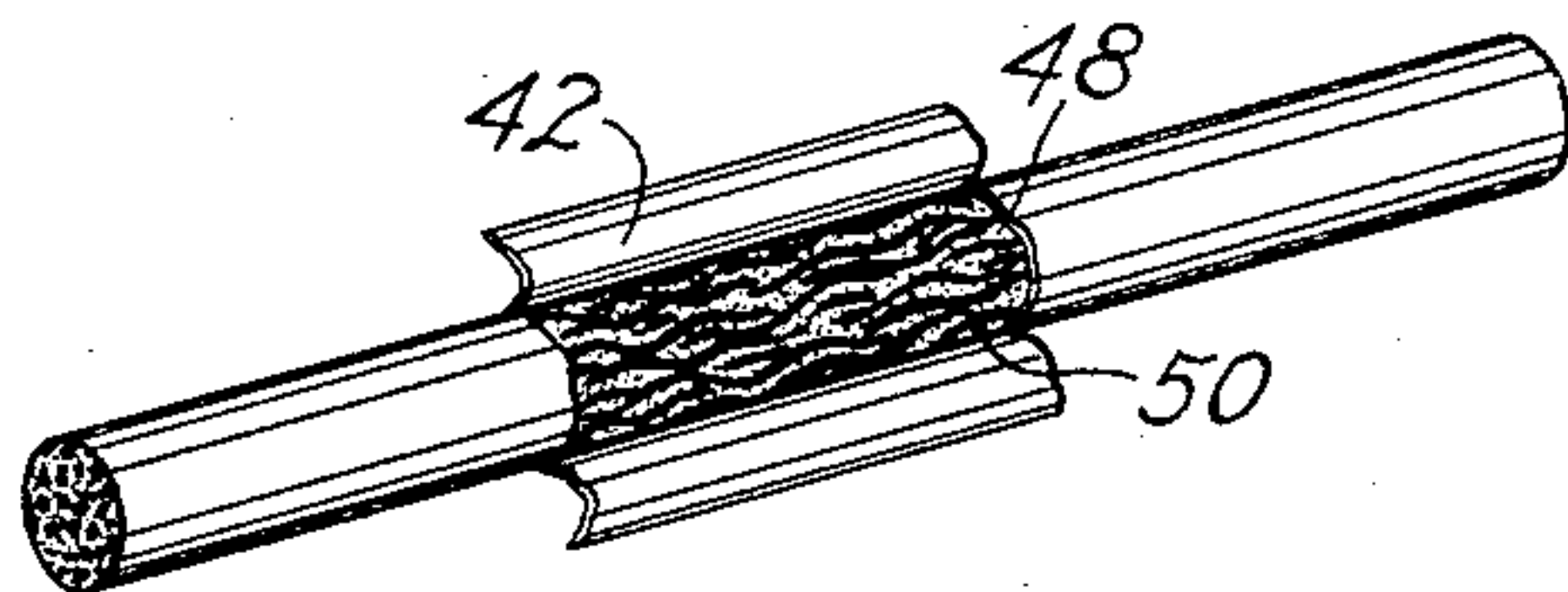


FIG. 8

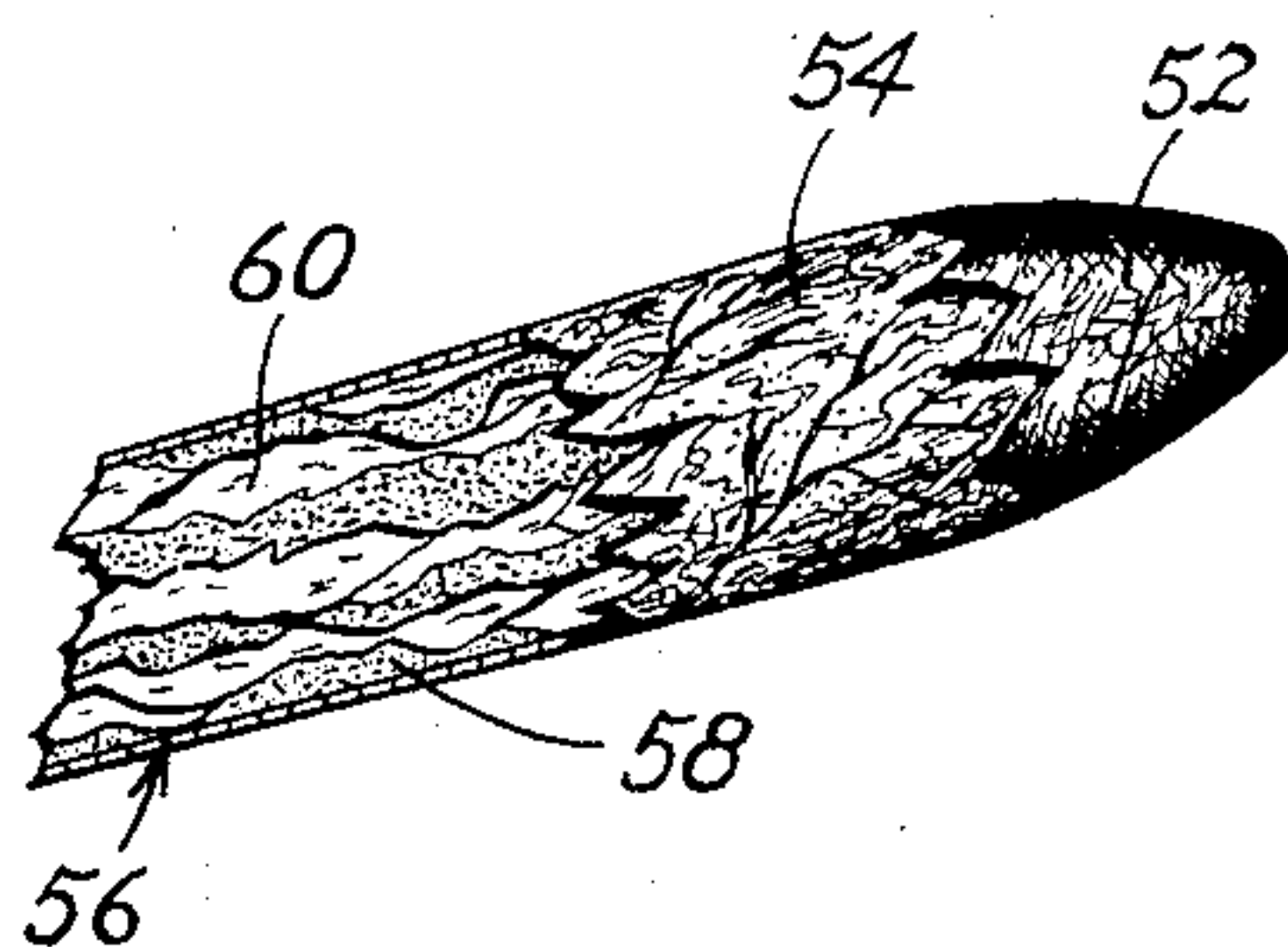
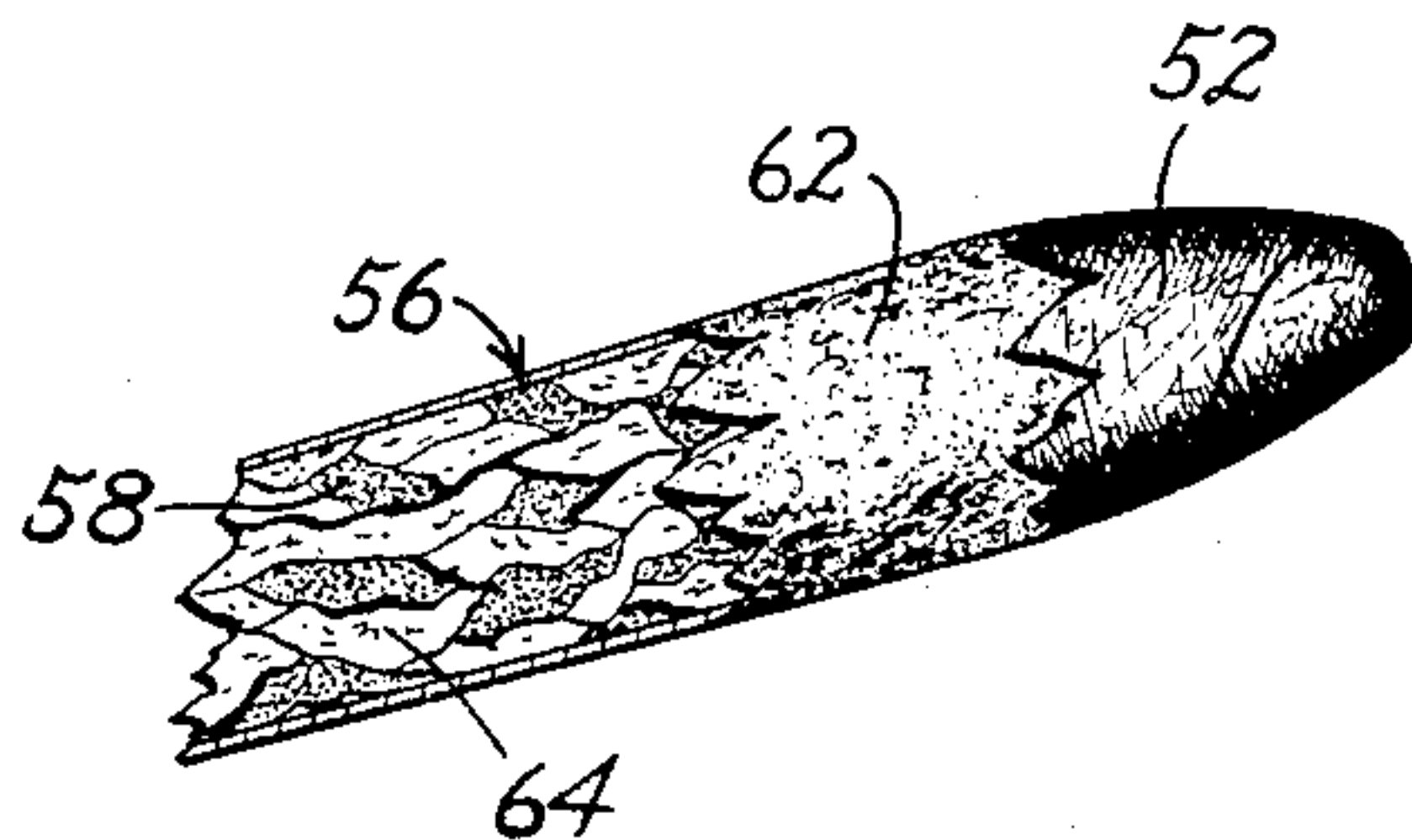


FIG. 9



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2,626,612

TOBACCO SHEET MATERIAL AND METHOD
OF MAKING SAME

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Application October 2, 1948, Serial No. 52,537

5 Claims. (Cl. 131—17)

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This invention relates to novel smoking materials, the method of producing same, and to smoking articles made therefrom. It relates more especially to reconstituted tobacco sheet material or film made from a selected portion of the stems of tobacco, and methods of producing the same.

It is well known that stems of tobacco are considered to be of relatively poor quality insofar as smoking characteristics are concerned, and for that reason, large quantities are discarded annually and sold for use in making by-products.

Tobacco stems in general are made up of two parts: a center portion, which can be designated the fibro-vascular bundle, and an outer portion designated the cortex. The term "cortex" as used herein is defined in Webster's New International Dictionary of the English Language, Second Edition, Unabridged, 1941 as: "In vascular plants the portion of a stem or root external to the vascular tissue." The epidermis which is a thin layer of cells forming the external integument of the stem is regarded as a part of the cortex for descriptive purposes in this application. I have found that although tobacco stems tend to burn with acidity, this is not the case when the cortex alone is burned. It appears therefore that the cortex contains desirable characteristics and properties similar to those found in natural tobacco leaf. It can therefore be smoked or incorporated with the filler tobacco of smoking articles, or formed into reconstituted tobacco cortex sheet material for use in cigarettes, cigars and other smoking articles.

My invention, therefore, contemplates the use of a selected portion of tobacco stems as an additive to smoking articles such as cigars, cigarettes, smoking tobacco and the like.

My invention also consists in the use of cortex, the outer covering of tobacco stems, as an additive to smoking tobacco articles.

My invention also consists in the formation of reconstituted tobacco cortex sheet material formed from the cortex of tobacco stems, and the incorporation thereof in smoking articles, such as cigarettes, cigars and other smoking articles.

A further object of my invention is to provide a novel reconstituted tobacco sheet material formed from cortex removed from the stems or heavy veins of tobacco.

My invention also consists in the provision of novel smoking articles such as cigars and cigarettes in which the filler contains a quantity of natural tobacco cortex.

My invention is also characterized by the pro-

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vision of novel smoking articles such as cigarettes and cigars. In cigarettes, shredded reconstituted tobacco cortex sheet material is used. In cigars, pieces of reconstituted tobacco cortex sheet material are used. The quantity of such material employed in cigarettes and cigars will vary in accordance with the blend specifications of a given manufacturer.

Other objects of my invention will be set forth in the following description and drawings which illustrate preferred embodiments thereof, it being understood that the above statement of the objects of my invention is intended generally to explain the same without limiting it in any manner.

In the accompanying drawings which form a part of this specification, and in which like characters of reference indicate the same or like parts:

Figure 1 is a microscopic view of the cross section of a tobacco stem showing the cortex and fibro-vascular bundle;

Figure 2 is a schematic and diagrammatic illustration of a preferred method of carrying out my invention;

Figure 3 is a schematic and diagrammatic illustration of a modified method of carrying out my invention;

Figure 4 is a schematic and diagrammatic illustration of an additional modified method of carrying out my invention;

Figure 5 is a view showing a small piece of my novel cortex reconstituted sheet material;

Figure 6 is a view showing a cigarette with part of the wrapper broken away to disclose the filler consisting of shredded cortex and shredded tobacco;

Figure 7 is a view showing a cigarette, similar to Figure 6, in which the filler consists of shredded cigarette tobacco and shredded reconstituted tobacco cortex sheet material;

Figure 8 is a view of a part of a cigar in which part is broken away to disclose the filler composed of filler tobacco and tobacco cortex; and

Figure 9 is a view similar to Figure 8 in which the binder is made of reconstituted tobacco cortex sheet material and the filler is composed of filler tobacco and reconstituted tobacco cortex sheet material.

Referring to Figure 1, 10 designates the fibro-vascular bundle found in tobacco stems and veins which is made up of a plurality of relatively hard, fibrous tendon-like cellulose members closely secured together by fibrous vegetable connecting tissue. Surrounding the fibro-vascular bundle, is the cortex designated 12 which is formed of a

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relatively sponge-like vegetable tissue or covering constituting the larger portion of the stem and the portion which is closer in characteristics and properties to the lamina of the tobacco leaf.

The tobacco cortex can be separated from the fibro-vascular bundle manually or by suitable decorticating machinery. For the purposes of the present disclosure, a batch of stems, from which the cortex is to be removed, can be moistened, which causes the cortex to soften and swell. The cortex is then removed manually as at 16, Figure 2. Following the removal of the cortex, it is formed into an aqueous slurry, designated at 18, in the same general manner as that set forth in Wells and Sowa Patent 2,433,877, wherein the resulting slurry contains a substantial proportion of colloidal cortex particles dispersed therein. The conversion of the tobacco cortex into an aqueous slurry can be accomplished by using a suitable type of mill, such as a ball mill or colloid mill. Any desired ratio of cortex to water can be used. It has been found that ratios of 1:8 to 1:14 give satisfactory results. When the milling or slurry forming operation is completed, the slurry is deposited in a film forming device 20 and applied in the form of a continuous film or web 22 upon a suitable film forming surface. It is preferred to use an endless belt 24, preferably one having a substantially imperforate film forming surface, such that when the slurry is spread out in the form of web or film 22 thereon, substantially all soluble and insoluble constituents of the tobacco cortex will be retained in the final reconstituted tobacco sheet or film. Belt 24 carries the film 22, formed thereon, through a moisture removing zone 26 of suitable conventional construction where excess moisture is removed, whereupon the web or film 22, such as shown in Figure 5, is separated by blade 28 extending transversely across belt 24 and is rolled in a reel R or cut into sheets or shredded by suitable well known means (not shown) for use in the formation of cigarettes or cigars or other smoking articles.

In the modified method illustrated in Figure 3, the same general steps are performed, i. e. the cortex 12 is separated from the fibro-vascular bundle and a small quantity of acid is added at 30. It is preferred to use phosphoric acid because this acid has the effect of making the product blander and also has some influence in regulating the rate of burn of the resulting sheet or film 22. I have found that the optimum quantity ranges between 2% to 5%. Following the formation of the acidified slurry at 30, it is passed through a film forming device 20 which casts it upon belt 24, whereby the film 22 is carried through moisture removing zone 26 which removes excess moisture from the reconstituted tobacco cortex sheet material 22, after which the finished film or web 22 is either rolled into reel R, or cut, shredded and packed as designated at 32.

Figure 4 discloses a modified method in which cortex is added in its natural state to filler tobacco and formed into smoking articles. The filler tobacco can be shredded cigarette tobacco, tobacco which is to be shredded, or cigar filler tobacco. The cortex is separated from the fibro-vascular bundle at 16 and dried to desired moisture content in a suitable conventional type of moisture removing device 34. After this treatment, cortex 12 is shredded or cut to size depending on its ultimate use. If it is to be added to a shredded cigarette blend, it can either be shredded first as at 36 and added to the blend

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at 38, or added to the blend and shredded subsequently. The blended shredded cigarette tobacco containing shredded cortex 12 is then formed in known manner, designated 40, into smoking articles such as cigarettes. Cortex can also be added in desired amounts to cigar filler tobacco. The cortex used in this case can be removed from any desired source such as ordinary filler tobacco stems and veins or special types of blending tobacco such as Havana.

Figure 6 discloses a cigarette in which the conventional paper wrapper 42 encloses the filler consisting of shredded cigarette tobacco 44 and shredded natural tobacco cortex 46 in any desired proportions, depending upon the requirements of a manufacturer's blend and types of tobaccos used therein.

Figure 7 discloses a cigarette in which the conventional wrapper 42 encloses a filler consisting of shredded cigarette tobacco 48 and shredded reconstituted tobacco cortex film material or preformed reconstituted tobacco cortex filaments 50 in any desired proportion. If the tobacco cortex filament material is formed initially as filaments, it can be produced in a manner and by means similar to that disclosed in Wells and Sowa Patent 2,433,877, above referred to. It is evident that the shredded tobacco cortex sheet material can be made from different types of tobacco in order that desired results can be obtained. For example, it can be made from the cortex taken from the stems and veins of relatively expensive tobaccos such as Samsoun and Latakia. It can also be formed of Burley stems or the stems of one or more well known types of cigarette tobacco. The quantity and type of cortex sheet material used will vary with a given manufacturer's blend.

Figure 8 shows a cigar having a tobacco leaf wrapper 52, binder 54 and filler designated generally 56. The natural tobacco filler which is designated 58, can be either long or short filler depending upon the type of cigar. The filler also contains a quantity of tobacco cortex 60, the size of the pieces of which will also vary in accordance with whether it is mixed with long or short filler tobacco 58. The tobacco cortex 60 can be separated from the stems and large veins of a blending tobacco such as Havana, or can be obtained from the stems and large veins of well known types of domestic cigar filler tobacco.

In the cigar shown in Figure 9, the wrapper is designated as 52. This cigar has a binder 62, preferably formed of reconstituted tobacco cortex sheet material. The binder encloses a cigar filler tobacco designated generally 56 which consists of long or short filler tobacco 58, depending upon the type of cigar, and pieces of reconstituted tobacco cortex sheet material 64 mixed with the filler tobacco 58 in proper proportion depending upon the manufacturer's blend. If desired, instead of a binder formed from reconstituted tobacco cortex sheet material 62, a conventional type of natural tobacco leaf binder, such as leaf binder 54 of Figure 8, can be used. So also in the cigar of Figure 9, the filler tobacco can be composed entirely of natural leaf tobacco 58.

The invention above described may be varied in construction within the scope of the claims, for the particular embodiments selected to illustrate the invention are but a few of the possible concrete forms which my invention may assume. The invention, therefore, is not to be restricted to the precise details of the structures shown and described.

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What is claimed is:

1. The method of forming continuous, self-supporting reconstituted tobacco cortex films or sheets which comprises removing the cortex from the stems and veins of tobacco, forming an aqueous slurry from said cortex, forming said cortex slurry into a continuous thin web, and removing moisture from said web.

2. The method of forming continuous, self-supporting reconstituted tobacco cortex films or sheets which comprises removing the cortex from the stems and veins of tobacco, forming an aqueous slurry from said cortex, adding a small quantity of acid to said slurry, forming said cortex slurry into a continuous thin web, and removing moisture from said web.

3. The method of forming continuous, self-supporting reconstituted tobacco cortex films or sheets which comprises removing the cortex from the stems and veins of tobacco, forming an aqueous slurry from said cortex, adding from 2% to 5% of phosphoric acid to said slurry, forming said cortex slurry into a continuous thin web, and removing moisture from said web.

4. Reconstituted tobacco cortex sheet material comprising solely natural tobacco stem and tobacco vein cortex, said cortex consisting of the outer covering of tobacco stems and tobacco veins, formed into a self-supporting sheet containing finely divided and colloidal cortex particles held

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together by the self-glutinating effect of the particles of cortex.

5. As a new article of manufacture, continuous and self-supporting tobacco cortex sheet material comprising hydrated finely divided and colloidal particles of natural tobacco cortex only bound together by the natural cohesive attraction of said hydrated particles.

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