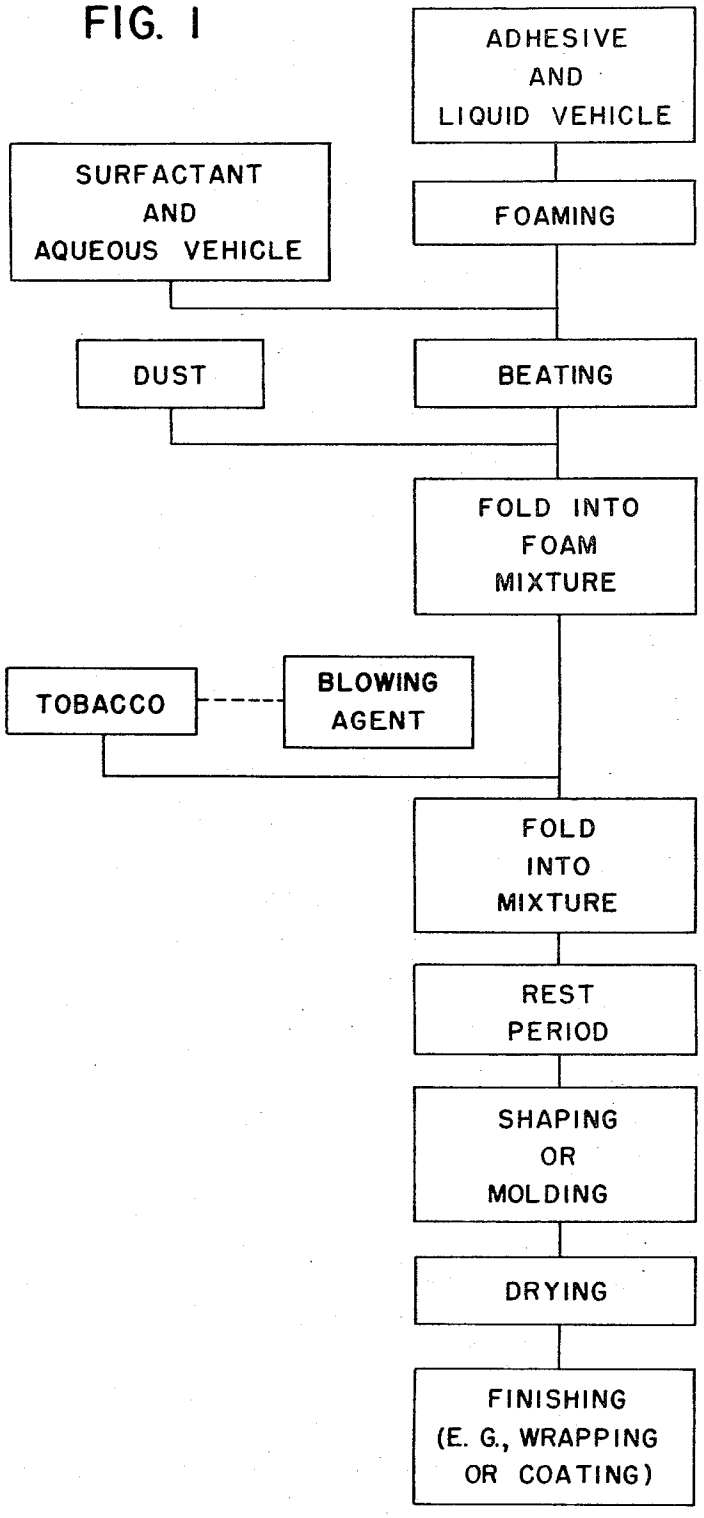
Jan. 23, 1968 R. J. MOSHY ETAL 3,364,935

TOBACCO PRODUCT AND PROCESS FOR MAKING SAME

Original Filed Aug. 11, 1961 3 Sheets-Sheet 1

FIG. 1



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TOBACCO PRODUCT AND PROCESS FOR MAKING SAME

Original Filed Aug. 11, 1961 3 Sheets-Sheet 2

FIG. 2

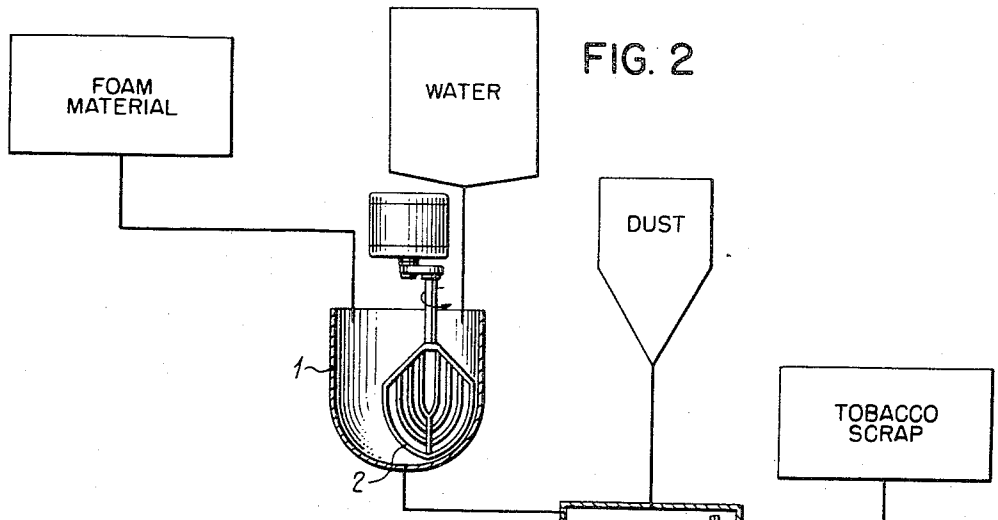
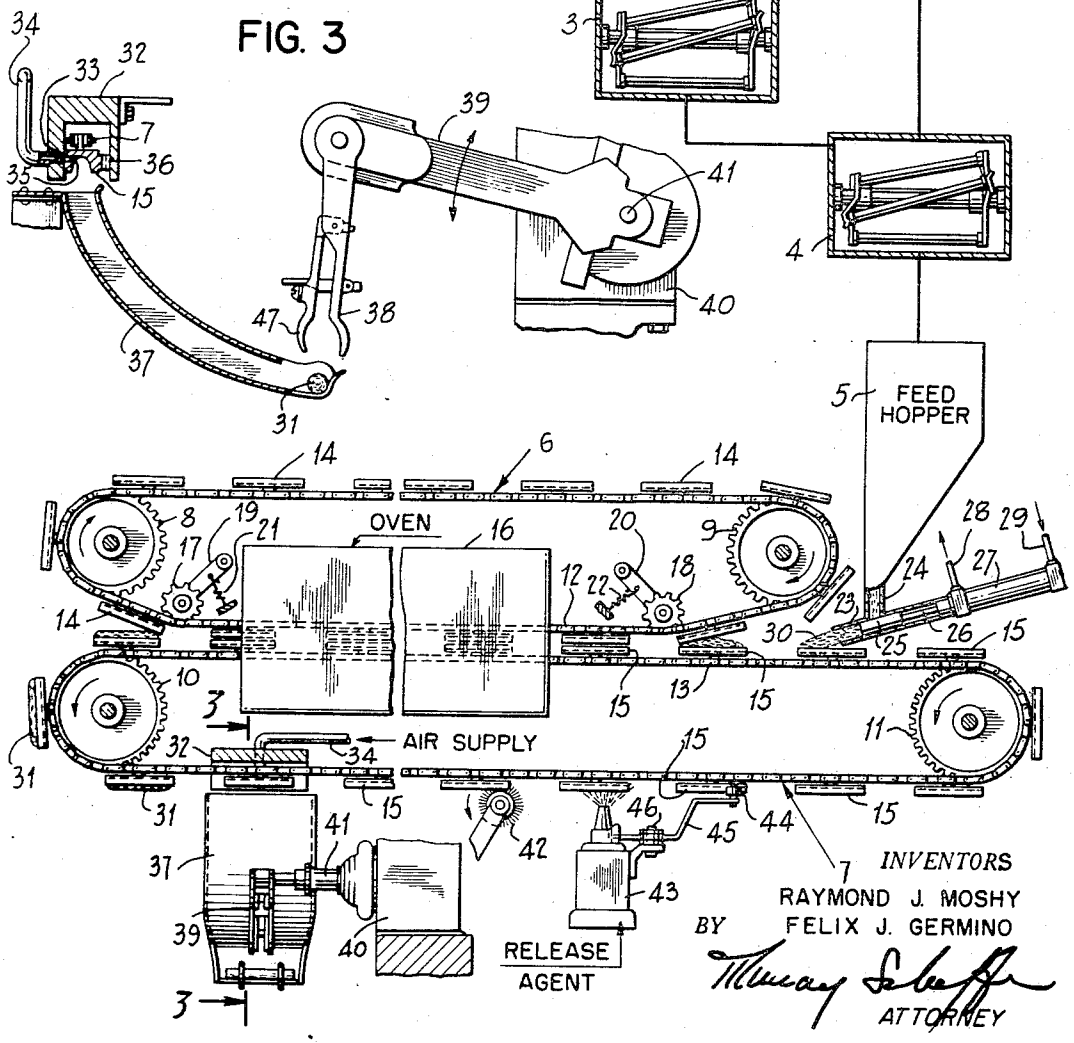


FIG. 3



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Original Filed Aug. 11, 1961 3 Sheets-Sheet 3

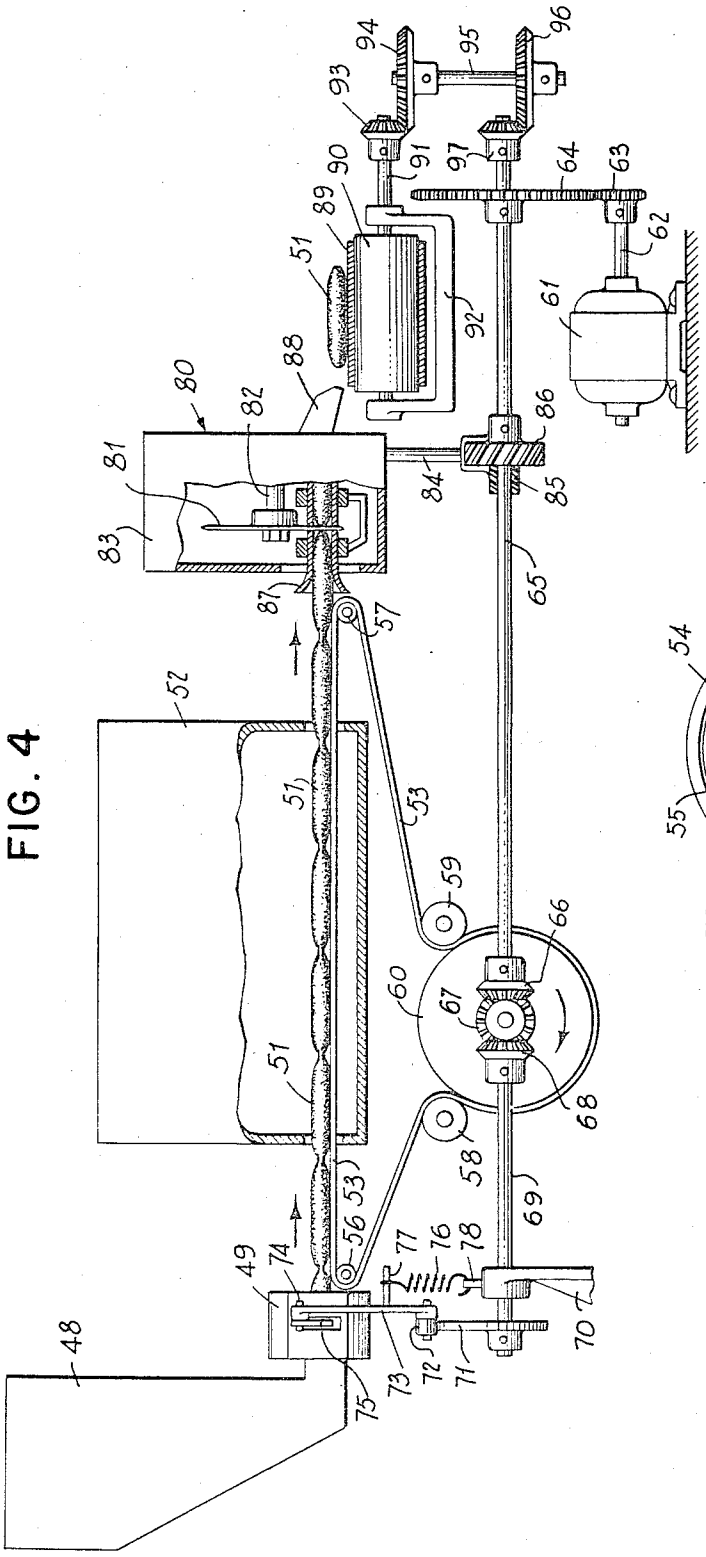


FIG. 4

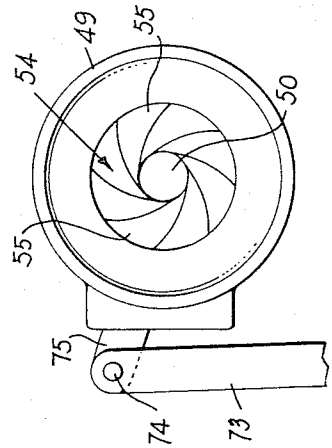


FIG. 5

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3,364,935

TOBACCO PRODUCT AND PROCESS FOR MAKING SAME

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Original application Aug. 11, 1961, Ser. No. 130,829. Divided and this application Aug. 20, 1965, Ser. No. 493,950

7 Claims. (Cl. 131—140)

This is a divisional application of Serial No. 130,829, filed August 11, 1961, now abandoned.

This invention relates to a new smoking product and the process for making it.

It is an object of the invention to form a tobacco paste or slurry which may be formed into an article suitable for smoking.

It is a further object of the invention to provide such a tobacco paste or slurry which is capable of being formed into a smoking article of predetermined shape and which because of its composition and mode of formation will have desired draw characteristics.

It is a further object of the invention to make such a slurry or paste adaptable for forming into a smoking article that will be uniform in construction, feel, appearance, composition, bulk density and burn.

Still another object of the invention is to provide a method of manufacture of a smoking article that will be adaptable to a uniform predetermined blending of various tobacco types as well as a uniform blending of desired ingredients such as casings, humectants, burn additives, ash additives and the like.

It is accordingly an object of the invention to provide a novel smoking article having unusual uniformity in both its physical characteristics, and its organoleptic qualities.

It is an object of the invention to provide a means and a method for forming a tobacco cast suitable for use in a pipe, or a cigar, or a cigarette.

It is a further object of the invention to form a tobacco core which may thereafter be coated or treated to form a finished smoking article.

One of the objects of the invention is to provide a novel smoking article formed from a viscous, plastic tobacco paste or slurry which will form a relatively rigid porous structure suitable for wrapping in a conventional manner, or which may be finished by novel methods such as coating or otherwise sealing the surface pores.

It is an object of the invention to form a slurry or paste comprising tobacco particles mixed in a liquid vehicle with foaming and adhesive agents.

It is also an object of the invention to provide a process for manufacturing a novel smoking article which is readily adaptable to continuous processing advantageous to reducing the costs of a commercial operation.

It is an object of the invention to improve or enhance the natural qualities of tobacco by providing a means for increasing uniformity to a heretofore unheard of degree in blend, bulk density and draw.

It is a further object of the invention to improve the smoking qualities of tobacco by forming a smoking article having a continuous open cell filter matrix.

Accordingly, it is an object of the invention to produce a foamed tobacco slurry which when cast or otherwise formed into a desired shape and suitably treated will provide an open cellular structure. This produces a smoking article of improved mildness.

With the foregoing and other objects in view, the advantages of the novel smoking article and of the method

for forming same will appear from the following description of several preferred embodiments with reference to the accompanying drawings, wherein:

FIG. 1 is a flowsheet showing various steps for practicing the invention;

FIG. 2 is a view, partly diagrammatic, of one form of apparatus according to the present invention;

FIG. 3 is a vertical section taken along the line 3—3 of FIG. 2;

FIG. 4 is an elevation of another form of apparatus for practicing the present invention, parts being broken away for clarity; and

FIG. 5 is a detail of the extruding orifice of FIG. 4.

The process as hereinafter more particularly described comprises, foaming an adhesive, adding a foam stabilizer and refoaming, adding shredded or finely divided tobacco preferably with a blowing agent to form a stabilized foamed slurry. The slurry is then formed into a desired shape and dried to a preselected moisture content, ranging from 5% to 40%, typically 20% to 40%, and preferably about 35%. During the drying, the blowing agent or, in the absence of blowing agent, expanding gases reforms the foam to provide a skeletal structure in the final porous cohesive tobacco product.

While it is preferred to initially foam the adhesive and refoam same after adding a foam stabilizer, the foaming operation may be performed by foaming the stabilizer and then adding adhesive and refoaming the mixture, or a mix of adhesive and stabilizer may be foamed.

In adding the tobacco particles to the foamed adhesive, tobacco shreds are preferably added at first, followed by tobacco dust, although either shreds or dust may be used. Otherwise, when the preferred method of foaming the adhesive is employed, the tobacco particles may be admixed with the foam stabilizer and foamed in situ.

In accordance with the invention the slurry or paste foam may be made with water or a mixture of water and organic liquids. Satisfactory results have been obtained from the water paste system. Satisfactory foam agents include hydrophilic gums derived from natural or synthetic sources. The naturally occurring hydrophilic gums would include the broad carbohydrate and protein classes. The former class comprises gums from animals, plants and microbial sources. The animal sources would include glycogen, etc. The plant gums and derivatives would include cellulose ethers, cellulose esters, starches, starch ethers, starch esters, amylose, amylopectin and their ester and ether derivatives, locust bean gum, guar gum, gum arabic, and related seed gums and plant exudate gums. The plant gums also include marine plant gums such as the algins, carageenans, laminarins, agar. The microbial gums include the dextrans, phosphomannans such as the USDA B-1459, B-1428, and the glucoronic acid containing microbial gums such as the USDA Y-1409 gums. The synthetic hydrophicolloids, which have proved satisfactory, are polyvinyl alcohol, polyoxyethylene and polyacryamide.

In a preferred embodiment of the invention we have found that the methylhydroxypropyl celluloses as a class give excellent results. We have further found that excellent results are produced with dispersible proteins including animal proteins such as hydrolyzed keratins, egg albumin, and vegetable proteins such as gluten, zein, soy and cotton seed whipping proteins, and also microbial proteins such as torula yeast proteins.

Following is an example of the manufacture of a cigar or cigar-like smoking product in accordance with the invention.

Example No. 1

A mixture consisting of 4 grams of Methocel,[1] and 200 milliliters of water was beaten into a foam at 25° C. with a household type mixer for four minutes. A solution consisting of 0.9 gram of Alipal–CO436[2] in 3 milliliters of water was beaten into the foam for four minutes at a high speed setting. A tobacco mixture consisting of 27 grams of powdered tobacco (—80 U.S. standard mesh) 63 grams of shredded tobacco (average dimension 0.06" by 0.75") was folded into the stabilized foam to form a tobacco paste foam. The tobacco paste foam was tempered by allowing it to stand at a room temperature for fifteen minutes. The tobacco paste-foam was poured into a polystyrene mold, pre-coated with a silicone type release agent. The dimensions of the mold were I.D. ⅝", O.D. 1¼", length 6". The foam paste was heated for 1.5 minutes in a Raytheon Radar Range using 800 watts power and dried to a 30% moisture level. The formed tobacco was conditioned overnight at 60% RH, 70° F. The formed tobacco core was wrapped with a cigar wrapper leaf. The density of the finished article was 0.35 and had a pressure drop of 0.9 inch of water.

It should be here noted that commercial cigars have a density in the generally acceptable range of 0.2 to 0.6 and a pressure drop in the generally acceptable range of 0.4 to 2.5 inches of water. The pressure drop referred to relates to a known capacity commonly used in the industry drawing a maximum of 8 inches of water.

Example No. 2

Six grams of commercial baking powder were added to the mixture of Example No. 1 and the foam-paste was dried in a hot air oven at 63° C. to a 35% moisture content.

Example No. 3

Example No. 1 was repeated except that 1 gram of Methocel was treated with 0.2 gram Igepal Co–630[3] instead of Alipal CO436. The formed paste-foam was dried for 1½ minutes to a 35% moisture content. The pressure drop was 0.5 inch of water.

Example No. 4

3½ grams of Methocel, 15,000 cps., and 0.5 gram of locust bean gun were mixed with a household type mixer into 180 ml. of water at 25° C. for two minutes. A premix containing 6 grams of commercial baking powder and 72 grams of powdered tobacco (—80 mesh) and 18 grams of shredded tobacco was blended into the foam. The paste was placed in cylindrical aluminum molds, cut lengthwise (I.D. ⅝", O.D. 1¼, length 6"), which were precoated with a lecithin mold-release agent. The molds were joined together with dowels and placed in a hot air oven for 1 hour at 63° C. The drying was completed at 63° C. in vacuo. In order to facilitate drying, the molds have small vent holes drilled through their walls but at a high angle to the axis of the mold to prevent expansion of the mix passing out the vent holes. Additionally, when the mold halves were doweled together the edges of the molds did not meet but were kept a small distance apart, on the order of 1/32". This facilitated escape of liquid vapors. The density of these tobacco cores was 0.39. The cores were in some instances wrapped with natural wrapper leaf without a binder layer and in other instances wrapped with manufactured tobacco wrapper sheet also without the necessity of a binder layer. The result was a cigar having the appearance, bulk density, aroma, drag and burning quality comparable to ordinary good commercial cigars.

[1] Methocel is the proprietary trade name for a methylhydroxypropyl cellulose containing 20–30% methyl and 2–15% hydroxypropyl groups. It has a viscosity of 4000 cps. (measured on a 2% solution at 20° centigrade). Although the examples are not specifically set forth here, good results have been obtained with viscosities ranging from 100 cps. to 15,000 cps. and higher viscosities have been employed, although it was often necessary to go to an organic solvent system rather than an aqueous system because of the low solubility of the Methocels of the higher viscosity.

[2] Alipal–CO436 is the proprietary trade name for an anionic surfactant made as the ammonium salt of sulphate ester of alkylphenoxy (ethyleneoxy) ethanol (58% active ingredients).

[3] Igepal Co–630 is a proprietary trade name for a non-ionic surfactant—nonylphenoxypolyoxyethylene ethanol (100% active ingredients).

Referring to the above examples, it will be noted that Example No. 1 employs an anionic foaming agent and uses no blowing agent. Example No. 2 has a blowing agent and is dried in hot air which provides time for the blowing agent to operate. Example No. 3 has no blowing agent but employs a non-ionic foam stabilizer. Example No. 4 has no stabilizer but a blowing agent operating in a hot air drier.

Additionally, in the first and third examples drying was accomplished in 1 to 1½ minutes by microwave drying. Examples 2 and 4 were accomplished by ordinary heat drying for a longer period of time. The blowing agent operates during the heating period to sustain and/or reconstitute the foam.

At the time of folding in the tobacco the foam is substantially diminished. We have found that with the more rapid microwave drying it is preferable to have a foam stabilizer to reduce this since apparently in rapid drying a blowing agent, if employed, has less time in which to work. In the case of heat drying, a stabilizer may be omitted or reduced in quantity due to the longer drying period which is beneficial to the blowing agent for reconstituted foam.

In accordance with the invention, the hydrophilic colloid serves the dual function of providing a foam-like matrix as well as serving as an adhesive for bonding the tobacco particles.

A blowing or gassing agent is useful in reconstituting the foam that may have collapsed during the folding in process. The usefulness of such an agent will, of course, depend on the foam setting or drying method employed. Where a slow heat method is employed, the agent has more time in which to work and is accordingly more effective. In rapid heat or rapid vacuum drying the effective action of the agent may be nil. In such case the use of a good foam stabilizer is desirable. The stabilizing agent effects a beneficial action increasing the stability and the overrun of the foam. Foam stabilizing agents are chosen from the general class of surfactants or detergents. A wide chemical range of surfactants perform satisfactorily. These include ionic and nonionic types. For example, the salts of the sulfate esters of the alkylphenoxypolyoxyethene ethanols, the parent alcohols such as nonylphenoxypoly oxyethylene ethanol, the salts of sulfate compounds of the type N-methyl-N-oleoyl taurine, sorbitan esters such as sorbitan monostearate (Span 60) or the monooleate (Span 80), ethylene oxide-sorbital condensation products, and lecithins and lecithin derivatives.

It should be pointed out that the above are preferred examples and examples which have been tried successfully. However, since the stabilizing agent is also, in fact, a foaming agent, and since the foaming agent is, in fact, a stabilizing agent their roles can be reversed in certain formulas so long as adhesive is present. That is to say, a foam prepared from a hydrophilic gum may be stabilized with a different hydrophilic gum or a surfactant, but a surfactant foam must be stabilized with a hydrophilic gum for its adhesive properties.

Using the formulation of Example No. 2, the tobacco paste foam was extruded through an orifice to produce a continuous rod which then was dried. The rods were then severed into desired cigar lengths which were then wrapped in natural or manufactured tobacco wrapper sheet. In extruding the core as a continuous rod a varying orifice may be employed to provide a predetermined shape to the formed article. One such varying orifice is shown in FIG. 5 and will be described hereinafter in connection with FIG. 4 of the drawings.

Considerable variations within the spirit of the invention is possible. The above examples are thought sufficient

to give one skilled in the art an understanding of the invention.

In addition to the unique possibilities for uniform blending, the invention allows the unusually uniform addition of burn accelerators or inhibitors and/or ash additives. The known burn accelerators such as nitrate salts, or inhibitors such as halide salts may be advantageously incorporated during the mixing operation to obtain uniquely uniform distribution throughout the smoking mass. The same is true of the known ash additives which include titanium dioxide or diatomaceous earths. In fact, the invention is adapted to the uniform addition of any desired additive such as flavoring agents, humectants, biocides and the like.

The above examples and disclosure relate to a novel article of manufacture. Usually, the article is formed or finished into a cigar shape or wrapped in a cigar wrapper, natural or synthetic. However, the article could be shaped and, if desired, wrapped as a cigarette or as a pipe charge. Several such samples were made and proved quite satisfactory. The invention thus may be employed to form known types of smoking articles as well as completely novel types, as for example the coated or "unwrapped" article, to be described below.

The tobacco product of the present invention may be formed in any desired shape, for example, as pipe plugs or fillers, in addition to rod-like cigar or cigarette forms. Moreover, the paste or slurry foam may also be cast in continuous sheets in thicknesses approximating the diameters of cigars or cigarettes, then dried and cut into rod-like lengths of cigarettes or cigars.

The shaped smoking article, particularly a cigar, or cigarette shape, may be covered with a relatively non-porous covering or envelope as, for example, a web of combustible material compatible with smoking, such as cigarette paper, natural tobacco leaf wrapper and reconstituted tobacco web.

Another aspect of the invention is the novel use of a novel coating composition in the form of dispersions with which the shaped article, such as a cigar or cigarette core, may be coated as by dipping or spraying. Upon drying, the residue of the coating forms a relatively non-porous covering similar to wrapper material.

The tobacco dispersions employed in forming tobacco sheets such as disclosed in Letters Patent No. 2,769,734 to D. Bandel and Letters Patent Nos. 2,887,414 and 2,988,445 to S. Rosenberg et al., form ideal coating compositions. The following two examples have proved satisfactory:

Example No. 5

Amylose acetate (D.S. 2.6–2.9)	g.	2.6
Havana seed tobacco (ball milled)	g.	10.6
Chloroform	ml.	80.0
Methylene chloride	ml.	20.0

Example No. 6

Cellulose triacetate	g.	2.6
Havana seed tobacco (ball milled)	g.	10.6
Chloroform	ml.	80.0
Methylene chloride	ml.	20.0

When a tobacco product of the invention is coated with a coating composition and the vehicle permitted to evaporate, there remains a relatively non-porous residue of tobacco in a film or matrix of the adhesive equivalent, if not superior, to the wrapper materials mentioned previously.

The smoking articles of the present invention may be cast, group or continuously molded, extruded, etc. A novel apparatus for continuously molding cigar or cigarette cores, for example, is shown in FIGS. 2 and 3. The adhesive agent or foam material and a liquid are admixed in a kettle **1** provided with a high speed motor driven dasher **2**. After being whipped into a foam, the mixture is transferred to a folder **3** to which tobacco dust is admixed and blended and folded into the foam. Optionally, a second folder **4** may be provided to which the foamed tobacco and adhesive slurry may be transferred for further blending with tobacco scrap. The foamed slurry is ultimately transferred to a feed hopper **5** associated with the molding apparatus.

The molding apparatus includes a pair of endless conveyors, shown here as sprocket chains **6** and **7** respectively, travelling around horizontally spaced sprockets **8**, **9** and **10**, **11**. The lower lap **12** of sprocket chain **6** is slightly spaced above and generally parallel to the upper lap **13** of sprocket chain **7**. Each of sprocket chains **6** and **7** mounts a plurality of complementary or mating mold portions **14**, **15** generally concave in cross section. The adjacent laps of sprocket chains **6** and **7** are parallel along an intermediate portion thereof whereby mold portions are mated prior to passing through an oven **16** and separated after leaving the oven. It is to be understood that sprocket chains **6** and **7** are driven in synchronism at a speed determined by the drying time required for the slurry of foamed adhesive, tobacco particles and liquid vehicle to be dried and this is governed by whether microwave or heat drying is employed in the oven.

Idler sprockets **17** and **18** mounted on pivoted arms **19** and **20** are biased downward by means of tension springs **21** and **22** against the lower lap **12** of sprocket chain **6** adjacent sprockets **8** and **9** whereby to maintain the intermediate portion of said lower lap horizontally parallel to the upper lap **13** of sprocket chain **7** and spaced from said upper lap at correct mold mating distance.

As may be seen in FIG. 2, slurry from feed hopper **5** is intermittently metered through an orifice **23** communicating with the hopper **5** through a conduit **24**. A plunger type valve **25** is adapted to reciprocate in the orifice to intermittently shut off the conduit **24** and thereby prevent delivery of foamed slurry to orifice **23**. The plunger reciprocation is timed to permit delivery of foamed slurry only when a mold cavity **15** passes beneath the orifice **23**, and to that end the plunger is fixed to the end of a rod **26** extending from a double-acting piston (not shown) in a cylinder **27**, the piston being reciprocable by alternately supplying pneumatic or hydraulic pressure to opposite ends of cylinder **27** through conduits **28** and **29**.

After a supply of foamed slurry **30** has been metered into a lower mold portion **15**, an upper mold portion **14** effects a closure which is maintained during the travel of the complete mold through the oven **16**, and upon emerging from the oven the upper mold portion **14** separates leaving a dried tobacco core **31** attached to the lower mold portion **15**. The dried core **31** is carried by mold portion **15** around sprocket wheel **10** to the lower lap of sprocket chain **7** past means for releasing the dried and molded core **31** from the mold portion **15**.

This core releasing means includes an inverted U-shaped housing **32** provided with a side aperture **33** to which a source of pneumatic pressure is supplied through conduit **34**. Each mold cavity **15** is also provided with an aperture **35**, and the housing **32** straddles the lower run of sprocket chain **7** so that successive mold portions **15** pass through the housing and successively index the mold portion and housing apertures, a cam surface **36** biasing the mold portion to that side of the housing wherein the apertures register or index. The pneumatic pressure supplied through conduit **34** then literally blows the tobacco core **31** out of mold portion **15** into a chute **37**. At the bottom of the chute **37**, the tobacco core is picked up between fingers **38** and **47** mounted on an oscillatable transfer arm **39** pivoted at **41** in a bracket **40** for transfer, for example, to a cigar wrapping station, which step is well known in the art of cigar making machines and is not further described herein as it forms no part of the present invention. Alternately, the cores may be delivered to a collecting station for dipping or coating with a coating dispersion.

After the cores 31 are released from successive mold portions 15, these mold portions pass across a rotary brush 42 which scrubs each mold portion clean. Thereafter, the successive mold portions 15 are sprayed with a release agent prior to returning to the upper run of sprocket chain 7 for receiving another charge of foamed slurry. The release agent is sprayed onto the mold portions 15 from a container 43, and it will be seen from FIG. 2 that the spray is intermittently actuated by pivoting of a spray release lever 45 about pivot 46 on the container 43, a mold portion 15 which has just been sprayed effecting this spraying action on a following mold portion by contact with a roller 44 mounted on the outer end of the pivot arm 45.

The mold portions may be of aluminum or steel, for example. However, when microwave irradiation is used in the oven, cross-linked polystyrene or other suitable mold materials are used.

In FIGS. 4 and 5, there is illustrated apparatus for forming a continuous rod or core of tobacco for cigars by extruding the foamed slurry through an orifice.

In this embodiment the foamed slurry may be pressure extruded from hopper 48 through a variable orifice 50 in orifice housing 49 onto a travelling endless belt 53. The orifice is of the iris type in which there is an adjustable diaphragm 54 consisting of a plurality of discs 55 which can be turned by a ring (not shown) to change the diameter of the central opening or orifice 50, the orifice being variable in synchronism with the speed of foamed slurry extrusion which is the same as the speed of conveyor belt 53.

The belt 53 is passed over end rollers 56 and 57, thence over lower tension rollers 58 and 59 and finally around a driving pulley or drum 60. This drum 60 is in turn driven from a motor 61 through a motor drive shaft 62 which mounts a spur gear 63 meshing with a spur gear 64 fixed to an end portion of a shaft 65, the other end of shaft 65 mounting a bevel gear 66 meshing with a similar gear 67 on the face of pulley 60.

The diameter of orifice 50 is synchronously varied with the speed of belt 53 through a bevel gear 68 in mesh with the pulley gear 67 and mounted on one end of a shaft 69 journalled in a bracket 70. The other end of shaft 69 mounts a cam 71 in contact with a roller 72 on one end of a link 73 pivoted at its other end 74 to an arm 75 which upon oscillating varies the diameter of orifice 50 through mechanism (not shown) of a conventional iris type orifice. The roller 72 is biased into contact with cam 71 by means of a tension spring 76 working between a pin 77 on link 73 and a pin 78 on bracket 70. As described thus far, it is obvious that the arrangement is adapted to deliver a sausage-like string of taper-ended foamed slurry cigar cores 51 to the conveyor 53, the series of cores being interconnected by short lengths of slurry.

The string of formed cores 51 is carried by conveyor 53 through an oven 52 and dried in a manner already described. After drying, the string of cigar cores 51 is passed through a severing or cutting mechanism 80 where the individual cores are severed and then removed.

The core severing mechanism may be of the type described in Letters Patent No. 1,729,436 to W. B. Bronander. Briefly, a vertical rotary cutter 81 is adapted to reciprocate simultaneously both horizontally with its supporting shaft 82 and vertically within a housing 83, all such motions being synchronized with the delivery of the string of cores 51 into the housing 83, and being actuated through mechanisms (not shown) in the housing from a shaft 84 coupled to shaft 65 through helical gears 85 and 86. The string of cigar cores 51 is delivered from conveyor 53 into a funnel-mouthed tube 87 and guided past the cutter 81 which moves to the right (as viewed) at the same speed as the cores and simultaneously downwardly and upwardly to sever the connecting link between a pair of cores 51, whereupon the cutter is reciprocated to the left (as viewed) in its upward or non-cutting position to its original starting position preparatory to severing the next connecting link between cores.

The severed cores 51 are discharged through a chute 88 to a conveyor belt to be conveyed to a conventional cigar wrapping station or to a collection point for coating with a coating dispersion.

The conveyor belt 89 passes around a drive pulley 90 whose shaft 91 is journalled in the vertical posts of a U-shaped bracket 92. Shaft 91 takes its drive through meshing bevel gears 93 and 94, a vertical shaft 95 mounting gear 94 at one end and bevel gear 96 at its other end, gear 96 being in mesh with a bevel gear 97 mounted on one end of main drive shaft 65.

It is of course within the concept of the invention to constantly vary the diameter of the orifice 50 to produce a tapered article or, where desired, to hold the orifice constant for an article of constant diameter.

The term "tobacco" as used herein includes tobacco, substitutes therefor, tobacco-like substances and reconstituted tobacco.

The invention is not to be restricted to the particular embodiments described and exemplified, as modifications thereof may be made which fall within the scope of the appended claims.

What is claimed is:

1. A process of manufacturing a smokable product comprising, the steps of creating a foam from a foaming agent, combining tobacco particles with said foam to form a tobacco-foam mixture slurry, at least one element of said mixture being adhesive, forming said mixture in a predetermined shape and drying said shaped slurry to a preselected moisture content in which tobacco particles are spaced from each other by a gaseous media to form a stable foamed mass.

2. A process of manufacturing a smokable product comprising, the steps of creating a foam from a foaming agent, combining tobacco particles with said foam to form a tobacco-foam slurry admixing therewith an adhesive agent, forming said mixture in a predetermined shape and drying said shaped slurry to a preselected moisture content in which tobacco particles are spaced from each other by a gaseous media to form a stable foamed mass.

3. The process according to claim 1 wherein the foaming agent is an adhesive chosen from natural or synthetic hydrophilic gums in which the natural gums are selected from carbohydrate classes including the animal gums such as glycogen, plant gums and their derivatives, such as, cellulose ethers, cellulose ester, starches, starch ethers, starch esters, amylose, amylosepectin and their ester and ether derivatives, locust bean gum, guar gum, gum arabic and related seed gums and plant exudate gums, marine plant gums, such as, algins, carageenans, laminarins and agar, and microbial gums such as the dextrans, phosphomannans such as the USDA B–1459 and B–1428, and the glucornic acid microbial containing gums such as the USDA & 1409 gums, and protein classes including water dispersible proteins such as animal proteins such as hydrolized keratins, egg albumin, and vegetable proteins such as gluten and the synthetic gums are selected from the group consisting of polyvinyl alcohol, polyoxyethylene and polyacramide.

4. The process according to claim 1 including the additional steps of admixing with the slurry a foam stabilizing agent selected from the class of ionic and non-ionic surfactants consisting of the salts of the sulfate esters of the alkyphenoxypolyoxyethylene ethanol, the salts of sulphate compounds of the type N-methyl-N-oleoyl taurine, sorbitan esters such as sorbitan monostearate (Span 60) or the monooleate (Span 80), ethylene oxide-sorbital condensation products, and lecithins and lecithin derivatives.

5. The process according to claim 1 including the additional step of admixing with the slurry a blowing agent.

6. The process according to claim 5 wherein baking powder is used as the blowing agent.

7. The product made by the process according to claim 1.

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