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CRIMPED WRAPPER FOR CIGARETTES

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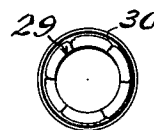
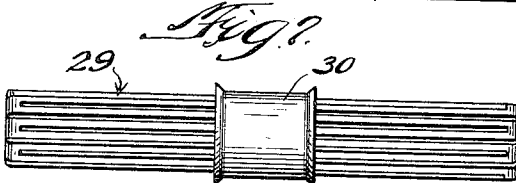
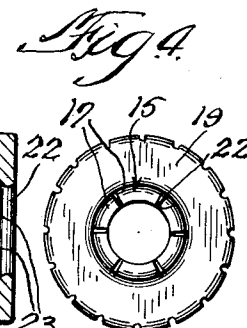
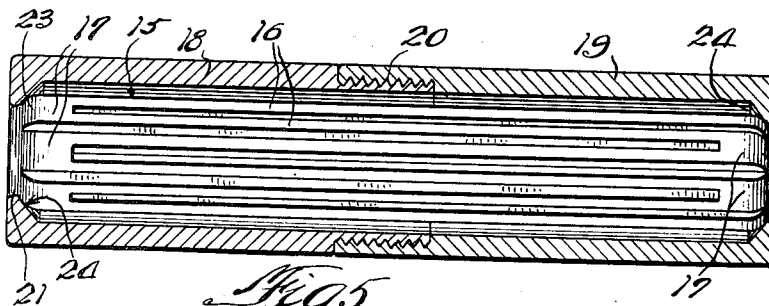
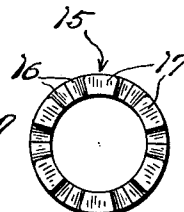
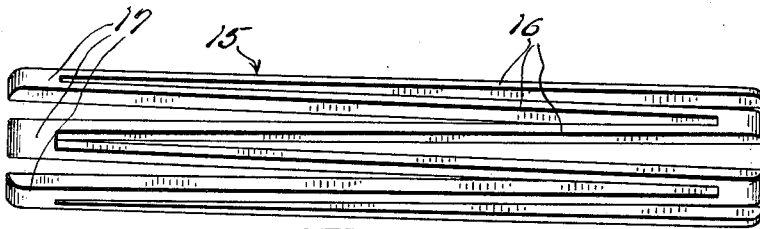
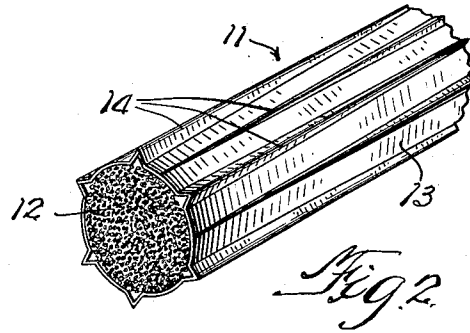
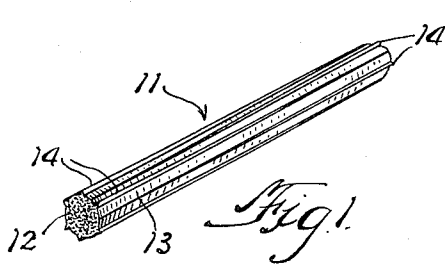


Fig. 9.

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UNITED STATES PATENT OFFICE

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CRIMPED WRAPPER FOR CIGARETTES

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8 Claims. (Cl. 131-9)

1

This invention relates to cigarettes and has particular relation to the formation of a cigarette in which the paper wrapper is crimped to form a plurality of passages between the wrapper and the filler, through which a limited amount of air may be drawn during the smoking of the cigarette.

In the conventional form of cigarette all of the air that is drawn in during smoking must pass directly through the burning end or ember, which may attain a temperature of approximately 1500° F. Thus the air is raised to a very high temperature before passing through the remainder of the cigarette, where the smoke is produced, and the temperature of the smoke entering the smoker's mouth is correspondingly elevated. This is objectionable, not only because the smoker derives less enjoyment than from a cooler smoke, but also because the tobacco is subjected to a much higher temperature than that required for the production of smoke, which results in the formation, through destructive distillation, of undesirable end products. A temperature in the neighborhood of 500° F. is sufficient for the smoke-producing oxidation of cigarette tobacco, and the heating thereof to a much higher degree is detrimental for the reason stated.

The primary object of the present invention is to overcome or to minimize the objectionable conditions just described.

A more specific object of the invention is to provide a cigarette whereby a portion of the air drawn in during smoking passes only in proximity to the burning ember of the cigarette rather than actually passing through the same, so that the temperature rise imparted to this portion of the air is substantially less than in a conventional cigarette; as a result of which the tobacco is not raised to such a high temperature in the smoke-producing zone, and the temperature of the smoke entering the smoker's mouth is likewise substantially reduced.

According to a preferred embodiment of the invention a cigarette is formed with crimps or pleats in its paper wrapper extending substantially longitudinally thereof and forming a plurality of passages between the wrapper and the filler. The crimping of the wrapper is accomplished by pleating the same after the filler has been enclosed thereby and is accompanied by at least a slight amount of compression of the filler to accommodate the taking up of portions of the wrapper into the crimped or pleated portions thereof. The operation is such that the filler

2

retains substantially its compressed form after removal of the pressure applied thereto during the crimping operation. Thus, open passages are left between the filler and portions of the wrapper, into which air may be drawn during smoking without passing through the burning ember of the cigarette.

The invention will be better understood, and other objects and advantages thereof will appear, from a consideration of the detailed description appearing hereinafter, in conjunction with the accompanying drawings, in which

Figure 1 is a perspective view of a cigarette formed in accordance with the invention;

Fig. 2 is a fragmentary perspective view on an enlarged scale showing one end portion of the same cigarette in greater detail;

Fig. 3 is a side view of one form of crimping member that may be used to form cigarettes of the type shown in Figs. 1 and 2;

Fig. 4 is an end view of the crimping member shown in Fig. 3;

Fig. 5 is a view, partly in side elevation and partly in longitudinal section, of a crimping device including a crimping member of the type shown in Figs. 3 and 4 compressed within a separable casing;

Fig. 6 is an end view of the device shown in Fig. 5;

Fig. 7 is a side view of a modified form of crimping device;

Fig. 8 is an end view of the device shown in Fig. 7;

Fig. 9 is a side view of still another form of crimping device; and

Fig. 10 is an end view of the device shown in Fig. 9.

Referring to Figs. 1 and 2, a cigarette generally designated by the reference character 11 comprises a tobacco filler 12 and a paper wrapper 13. The wrapper is formed with a plurality of longitudinally extending crimps or pleats 14 protruding outwardly away from the filler 12 and forming passageways between the latter and the inside of the wrapper.

The crimps or pleats 14 in this form of construction are formed so that they taper from one end of the cigarette to the other, being of maximum size at one end and substantially feathering out or disappearing at the other end. As best shown in Fig. 2, alternate ones of the crimps or pleats 14 have their maximum size or cross section at the end of the cigarette shown in the foreground and taper out toward the opposite end of the cigarette. The other alternate

ones of the crimps or pleats are oppositely disposed, tapering from the rearward end of the cigarette toward the end shown in the foreground. The cigarette is thus of symmetrical form endwise.

The number of crimps or pleats formed in the cigarette may vary, but it has been found that about twelve such formations having a substantially uniform radial spacing around the periphery of a conventional cigarette give satisfactory results. The exact size and shape of the pleats may also be varied considerably, but as a specific example it may be stated that the pleats may be of triangular shape in cross section with a maximum width at the base thereof adjacent the filler of about .015" and a height of about .010" when the cigarette has assumed its final set.

A cigarette of the form thus described may be produced by the use of crimping devices such as shown in Figs. 3 to 10, inclusive. The device shown in Fig. 3 is in the nature of a spring-wire collet designated generally by the reference character 15. This device comprises a plurality of longitudinal members or portions 16 made of spring steel or other resilient material of a more or less square cross section. The ends of the members 16 are disposed in the annular arrangement shown in Fig. 4 and are secured together or integrally formed in alternating pairs at their opposite ends through connecting end portions 17, so that the complete device is in the form of a continuous square sectional wire or the like repeatedly doubled back upon itself.

The resiliency of the material of which the device is made and the interrelationship of the parts thereof are such that the portions 16 are biased apart to an appreciable extent whereby the complete device, when not constricted radially, will assume a condition substantially as that shown in Figs. 3 and 4, with each pair of adjacent members 16 diverging from the respective connecting end portion 17 thereof toward their opposite unconnected ends. The construction may be radially compressed, however, so that adjacent members or portions 16 may be brought substantially into contact with each other throughout their length.

The internal diameter of the collet-like device 15 when not radially compressed is such that a cigarette of conventional size may be readily inserted into the central open space within the device. When this is done and the device is then radially compressed, the wrapper of the cigarette will be formed with crimps or pleats of substantially triangular cross section tapering from end to end of the cigarette and with alternate pleats tapering away from opposite ends of the cigarette.

The compression of the member 15 in this manner may be accomplished by direct manipulation, as by squeezing and rolling between the fingers, without the aid of any other instrumentality, but another convenient manner of performing the operation is to place the member 15 within a tubular casing consisting of parts 18 and 19 screw-threaded together at 23, as shown in Fig. 5. The internal diameter of the casing portions 18 and 19 is such as to receive the member 15 in its normally expanded condition as shown in Fig. 3, or at least in a sufficiently expanded condition to receive a conventional cigarette within its central open space. The casing portions 18 and 19 are formed with end openings 21 and 22, respectively, through either of which a cigarette may be inserted.

The extremities of the connecting end portions

17 of the member 15 are beveled or tapered as shown at 23, and the end walls of the casing members 18 and 19 are correspondingly internally beveled or convergent as shown at 24. The relative lengths of the member 15 and the casing 18, 19 are such that when the member 15 is placed within the casing and the portions of the latter are screwed all the way together, as shown in Fig. 5, the member 15 will be compressed by the pressure of the convergent end wall portions 24 of the casing members upon the beveled or rounded end portions 23 of the member 15. Thus the crimping operation may be very readily performed by screwing the casing portions 18 and 19 all the way together. Upon unscrewing the casing portions a short distance, the pressure on the ends of the member 15 is relieved and this member thereupon automatically returns to its expanded condition by reason of its resiliency. The crimped cigarette is then free to be removed.

The modified form of crimping device shown in Figs. 7 and 8 comprises a crimping member 25 which may be generally similar to the member 15 already described. This member is encased within a casing 26 having fixed dimensions, and without relatively movable parts. The casing has an internal diameter such as to receive the crimping member 25 in its expanded condition wherein the central open space inside the same is large enough to receive a cigarette of conventional size. The casing walls are turned inwardly at both ends to form partial end wall portions 27 sufficient to retain the crimping member 25 within the casing. The central openings in the ends of the casing are of sufficient size to permit the crimping member to be inserted therethrough when compressed and to permit the insertion of cigarettes into the interior of the crimping member when the latter is thus assembled with the casing. Two or more openings 28 are formed in the side wall of the casing 26 to expose the exterior of the crimping member 25, whereby the latter may be squeezed and rolled between the fingers to compress the inserted cigarette and to form the desired crimps or pleats in the wrapper thereof by such manipulation.

A still further form of crimping device shown in Figs. 9 and 10 again comprises a collet-like crimping member 29 and a compressing band or ring 30 preferably having slightly flared ends whereby this member may be forced over and along the length of the crimping member 29 to compress the same for the purpose of carrying out the same cigarette-crimping operation already described.

Any other desired type of crimping device or apparatus may, of course, be utilized to carry out the crimping operation, either during the original course of manufacture of the cigarettes or after completion thereof in conventional form. The use of collet-like members of any of the types referred to herein is not to be regarded as essential to the carrying out of the method, but such devices are disclosed by way of examples of suitable apparatus.

Regardless of the specific form of apparatus that may be used, the finished cigarettes formed according to the invention are provided with air passages extending substantially longitudinally of the wrapper and located between it and the somewhat compressed filler. Thus when the cigarette is being smoked, a portion of the total air intake enters these passages around the periphery of the burning end or ember without being required to pass directly through the same. Consequently, a substantial portion of the air enters the smoke-

5

producing zone at a much lower temperature than that obtaining in a conventional cigarette. The number and size of the crimps or pleats in the wrapper are such that suitable proportions of air at relatively high temperatures and at substantially lower temperatures are supplied to the smoke-producing zone, with the result that the oxidation of the tobacco occurs at a substantially reduced average temperature, and the smoke that is drawn into the smoker's mouth is likewise much cooler than that from a conventional cigarette.

It has been found by actual tests that the maximum temperature of the smoke as drawn out of a conventional cigarette during normal smoking may commonly reach 85° to 90° F., whereas the smoke delivered by cigarettes formed according to the present invention rarely, if ever, attains a temperature more than about 75° or 76° F. This differential, together with the substantial elimination of undesirable end products resulting from destructive distillation in the much higher temperatures prevailing in the smoke-producing zone in a cigarette of conventional form, makes for greatly increased enjoyment of smoking and reduction of deleterious effects thereof.

Other advantages are also achieved by the invention. The crimped cigarettes are less likely to roll when placed upon an inclined surface. There is less tendency for crumbs of tobacco to enter the smoker's mouth, and the finished cigarette presents a novel and pleasing appearance.

A cigarette formed with crimps or pleats of tapering cross section, some of which taper in one direction and others in the opposite direction along the length of the cigarette, such as illustrated in Figs. 1 and 2 of the drawings, may be lighted at either end without difference in result.

While only certain specific embodiments of the invention have been illustrated and described herein, it will be readily understood by those skilled in the art that various changes and modifications may be made in the details of design and mode of construction thereof without departing from the spirit and scope of the invention.

What is claimed as new and is desired to be secured by Letters Patent, therefore, is:

1. A cigarette comprising a crimped paper wrapper providing a plurality of passages between the wrapper and the filler of the cigarette, said passages extending substantially longitudinally of the cigarette and substantially throughout the length thereof, the axial longitudinal cross section of each of said passages tapering from substantially one end of the cigarette to the other.

2. A cigarette comprising a crimped paper wrapper providing a plurality of passages between the wrapper and the filler of the cigarette, said passages extending substantially longitudinally of the cigarette and substantially throughout the length thereof, the transverse cross section of each of said passages being substantially triangular and the axial longitudinal cross section thereof tapering from substantially one end of the cigarette to the other.

3. A cigarette comprising a crimped paper wrapper providing a plurality of passages between the wrapper and the filler of the cigarette, said passages extending substantially longitudinally of the cigarette and substantially throughout the length thereof, the axial longitudinal cross sec-

6

tion of each of said passages tapering from a maximum value at one end of the cigarette to substantially zero adjacent the other end.

4. A cigarette comprising a crimped paper wrapper providing a plurality of passages between the wrapper and the filler of the cigarette, said passage extending substantially longitudinally of the cigarette and substantially throughout the length thereof, the axial longitudinal cross section of each of said passages tapering from substantially one end of the cigarette to the other, and alternate ones of said passages being tapered in opposite directions.

5. A cigarette comprising a crimped wrapper providing a plurality of passages between the wrapper and the filler of the cigarette, said passages extending substantially longitudinally of the cigarette and substantially throughout the length thereof, the axial longitudinal cross section of each of said passages tapering from substantially one end of the cigarette to the other.

6. A smoking article comprising tobacco shreds in rod-like form and a wrapper surrounding the same and in abutting relation thereto, said wrapper having longitudinal corrugations substantially the full length of the wrapper, the bases of the corrugations contacting the tobacco so as to form between adjacent bases channels of substantial extent, the ridge of each corrugation progressively approaching the tobacco shreds along the length of the smoking article.

7. A smoking article comprising tobacco shreds in rod-like form and a wrapper surrounding the same and in abutting relation thereto, said wrapper having longitudinal corrugations substantially the full length of the wrapper, the bases of the corrugations contacting the tobacco so as to form between adjacent bases channels of substantial extent, wherein some of the channels are longitudinally tapered.

8. A smoking article comprising tobacco shreds in rod-like form and a wrapper surrounding the same and in abutting relation thereto, said wrapper having longitudinal corrugations substantially the full length of the wrapper, the bases of the corrugations contacting the tobacco so as to form between adjacent bases channels of substantial extent, wherein some of the channels progressively decrease in size from one end thereof to the other and adjacent portions of the wrapper on opposite sides thereof define a smooth curve, corresponding substantially to the contour of the rod-like form of the tobacco shreds.

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