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CIGARETTE CONSTRUCTION

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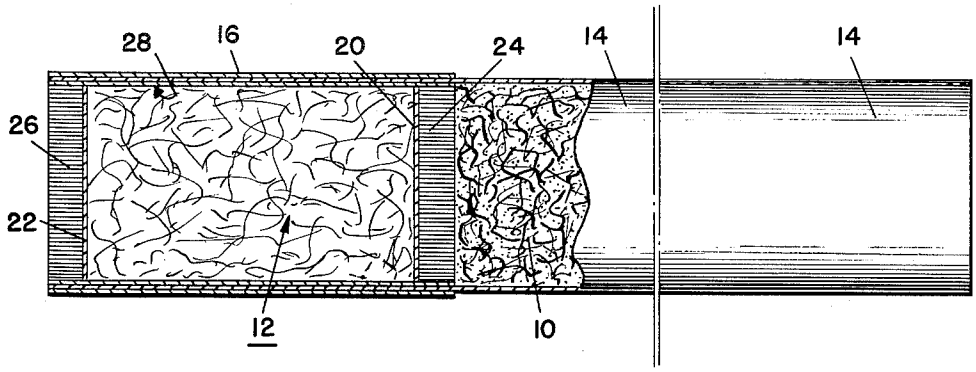


FIG. 1.

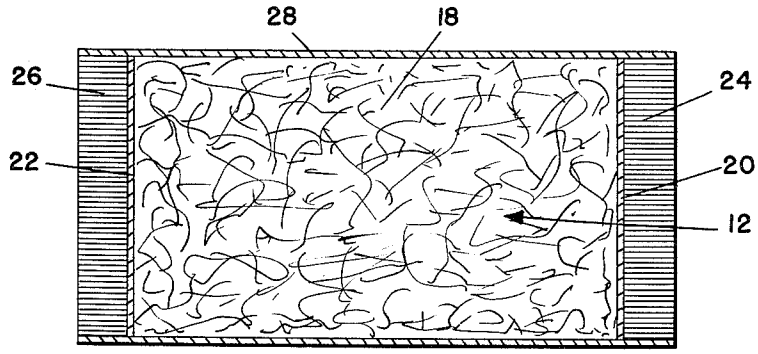


FIG. 2.

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CIGARETTE CONSTRUCTION

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This invention relates generally to cigarettes and particularly to filters therefor.

In the construction of filter tip cigarettes, it is known to provide one end of the cigarette with a filter cartridge containing a liquid-impregnated filter material and sealed tight to keep the fluid from leaking, flowing, evaporating or being squeezed out. The opposite end closures of the cartridge are breakable by the application of finger pressure which is applied by the smoker when he is about to use the cigarette. This known type of construction has not proved to be entirely satisfactory because the end closures of the cartridge are made of material which not only seals in the fluid but also prevents the free passage of smoke through the cartridge. Only when these end closures are broken by the smoker can the latter draw smoke through the cigarette. Accordingly, an important object of the present invention is to provide a cigarette with a filter cartridge which eliminates the necessity for breaking any seals before the cigarette can be used.

It is also known to provide the filter cartridge with a supply of fluid sealed in a capsule, the capsule being breakable by the application of finger pressure to the cartridge, applied by the smoker when he is about to use the cigarette. Neither of the aforementioned types of construction have proved to be entirely satisfactory because when the end closures or the capsule is broken, the fluid may wet the adjacent tobacco and/or the other adjacent material in the tip of the cigarette, including the cigarette paper surrounding or adjacent to the tip. Accordingly, another object of the present invention is to provide a cigarette with means for preventing the fluid with which the filter material in the cartridge is wetted from also wetting the adjacent materials of the cigarette.

Another important object of the present invention is to provide such a cartridge in which the opposite ends of the cartridge are made of waterproof, smoke-permeable material.

Other objects will become apparent from the following description when read in conjunction with the accompanying drawing, in which:

FIGURE 1 is a longitudinal section through a cigarette constructed in accordance with and embodying the principles of the present invention; and

FIGURE 2 is an enlarged longitudinal section of the filter cartridge of FIGURE 1.

Referring particularly to FIGURE 1, the exemplary form of the cigarette comprises a cylindrical body of tobacco **10**, a filter cartridge generally designated **12**, a sheet of cigarette paper **14** wrapped around tobacco **10** and cartridge **12**, and a cork tip **16**.

Now referring particularly to FIGURE 2, the cartridge comprises a cylindrical body of filter material **18** having at opposite ends thereof respectively a pair of end closure membranes **20** and **22** and a pair of filter elements **24** and **26**. Wrapped around the body of filter material **18**, the membranes **20** and **22** and the filter elements **24** and **26** is a waterproof sheet **28**.

The filter material **18** may be in any conventional form which can be wetted with water or other suitable liquid or solution. The filter elements **24** and **26** may be made of any conventional dry filter material.

The end closure membranes **20** and **22** are made of a material which is liquid-repellent and smoke-permeable,

the selection of material depending upon the liquid used for wetting the filter material **18**. The material must be capable of passing smoke freely and at the same time capable of preventing the passage of water, other liquid or moisture. Membranes **20** and **22** are imperforate in the sense that they are pervious, i.e. as to the passage of smoke, by virtue of their inherent porosity but not because of any actual "perforations" therein. It has been found that a suitable material from which the membranes **20** and **22** may be made is 100% Dacron in a form used for electrical insulation, manufactured by E. I. du Pont de Nemours & Company, Incorporated (page 8, Bulletin No. A5034, "New Opportunities in Non-Woven Fabrics in a report by du Pont"). Other suitable materials are EM–317–Dynel, EM–343–Dacron and EM–345–Dacron manufactured by E. I. du Pont de Nemours & Company, Incorporated (Booklet No. AS–707 and 6–57, "WEBRIL–M, Non-Woven Fabrics," by The Kendall Company, Kendall Mills Division, Walpole, Mass.). Another material found to be suitable for the purpose intended is Paterson Custom Made Code 541, treated, by Paterson Parchment Paper Company, Bristol, Pennsylvania.

It will be understood, of course, that the present invention, as shown and described, is susceptible of various changes and modifications which may be made from time to time without any departure from the general principles or real spirit of the invention. For example, it will be evident that the filter elements **24** and **26** may be omitted at either or both ends of the filter cartridge. In addition, it will be evident that the cartridge may be secured to the body of the cigarette by means other than by extending the wrapper **14** and wrapping it around the filter cartridge. Furthermore, the sheet **28** wrapped about the cartridge may be made of the same liquid-repellent and smoke-permeable material as the end closure membranes **20** and **22** to facilitate manufacture of the cartridge, in which case the wrapper **14** should be extended and wrapped around the cartridge. Still further, the wrapper **14** may be made of the same liquid-repellent and smoke-permeable material as the end closure membranes **20** and **22** to permit the body of the cigarette to "breathe." Accordingly, it is intended to claim the present invention broadly as well as specifically as indicated in the appended claims.

What is claimed is:

1. A cigarette comprising a cylindrical body of tobacco, a wrapping sheet around said tobacco, and a cylindrical cartridge proximate one end of the tobacco body and in alignment therewith including a liquid-impregnated porous mass of filter material, a shell having a liquidproof cartridge wrapper around said mass of filter material, and means extending across at least one end of said cartridge wrapper including a liquidproof and smoke-permeable membrane.

2. A cigarette comprising a cylindrical body of tobacco, a cylindrical cartridge proximate one end of the tobacco body and in alignment therewith including a liquid-impregnated porous mass of filter material, a shell having a liquidproof cartridge wrapper around said mass of filter material, and a pair of liquidproof and smoke-permeable membranes extending respectively across opposite ends of said cartridge wrapper, and a wrapping sheet around said tobacco and cartridge.

3. A cigarette comprising a cylindrical body of tobacco, a cylindrical cartridge proximate one end of the tobacco and in alignment therewith including a liquid-impregnated porous mass of filter material, a shell having a liquid proof cartridge wrapper around said mass of filter material, and means extending across at least one end of said cartridge wrapper including a dry filter ele-

ment, and a liquidproof and smoke-permeable membrane intervening said dry filter element and mass of wet filter material, and a wrapping sheet around said tobacco and cartridge.

4. A cigarette comprising a cylindrical body of tobacco, a cylindrical cartridge proximate one end of the tobacco body and in alignment therewith including a liquid-impregnated porous mass of filter material and a shell having a liquidproof cartridge wrapper around said mass of filter material, a pair of liquidproof and smoke-permeable membranes extending respectively across opposite ends of said cartridge wrapper, a pair of dry filter elements extending respectively across opposite ends of said cartridge wrapper, each of said membranes being disposed between one of said dry filter elements and said mass of wet filter material, and a wrapping sheet around said tobacco and cartridge.

5. In a cigarette, a filter cartridge comprising a liquid-impregnated porous mass of filter material, a shell having a liquidproof wrapper around said mass of wet filter material, and means extending across at least one end of said wrapper including a liquidproof and smoke-permeable membrane.

6. In a cigarette, a filter cartridge comprising a liquid-impregnated porous mass of filter material and a shell having a liquidproof wrapper around said mass of wet filter material, and means extending across at least one end of said wrapper including a dry filter element, and a liquidproof and smoke-permeable membrane intervening said dry filter element and mass of wet filter material.

7. A cigarette comprising a cylindrical body of tobacco, a wrapping sheet around said tobacco, and a cylindrical cartridge proximate one end of the tobacco body and in alignment therewith including a liquid-impregnated porous mass of filter material and a shell having a cartridge wrapper around said mass of filter material, and means extending across at least one end of said cartridge wrapper including a liquid-repellent and smoke-permeable membrane.

8. A cigarette comprising a cylindrical body of tobacco, a wrapping sheet around said tobacco, and a cylindrical cartridge proximate one end of the tobacco and in alignment therewith including a liquid-impregnated porous mass of filter material, a shell having a filter wrapper around said mass of filter material, and means extending across at least one end of said cartridge including a membrane, said wrapping sheet, cartridge wrapper and membrane each being made of liquid-repellent and smoke-permeable sheet material.

9. A cigarette comprising a cylindrical body of tobacco, a wrapping sheet around said tobacco, and a cylindrical cartridge proximate one end of the tobacco and in alignment therewith including a liquid-impregnated porous mass of filter material, a shell having a cartridge wrapper around said mass of filter material, and means extending across at least one end of said cartridge including a membrane, said cartridge wrapper and membrane each being made of liquid-repellent smoke-permeable sheet material.

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