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ASBESTOS PAPER, ETC.

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To all whom it may concern:

Be it known that I, NATHAN SULZBERGER, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Asbestos Paper, Etc.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in asbestos paper, etc., and particularly asbestos paper adapted for use in making cigarettes, but also adapted for other purposes.

When ordinary asbestos paper, containing an organic binder, is used as a cigarette wrapper, the organic matter of the paper becomes charred during the burning of the cigarette and leaves the burned portion of the wrapper dark or black in color.

I have found that this objectionable darkening of the wrapper upon burning can be overcome by using a suitable oxidizing agent, such as saltpeter, either as an ingredient of the wrapper itself, or for treating the paper before it is used as a wrapper. The compounding of the saltpeter with the wrapper, or the treatment of the wrapper therewith, results in the more or less complete combustion and removal of the organic matter so that the wrapper of the burned portion of the cigarette is free from objectionable coloration. Furthermore, the presence of the oxidizing agent has a desirable effect in increasing the intensity of combustion so that the casing itself has a pleasing glow comparable with the glow of an ordinary cigarette with a paper wrapper while it is being smoked. In fact, the progress of the combustion can be followed by the bright incandescent band which separates the burned from the unburned portion of the cigarette and the presence of a dark or black line or ring between these two portions, which travels towards the mouth-end as the cigarette is smoked. It will be understood that an asbestos wrapper can readily be made with sufficient inherent strength so that it retains its form even after the burning of the tobacco filler so that the cigarette will remain of the same shape throughout combustion without accidental falling off of the ashes, although the burned portion of the cigarette and the asbestos wrapper can be broken off if desired. The ashes also appear to be white in color.

In preparing the wrapper, ordinary asbestos paper of sufficient thinness, and containing an organic binder which upon ordinary combustion would become objectionably darkened, may be compounded with a small amount of the oxidizing agent, such as saltpeter, in various ways. The oxidizing agent (the action of which may be increased by a catalyst) may thus be compounded with the ingredients from which the paper is made or the paper after it is made may be passed through a solution of the oxidizing agent or the oxidizing agent may be otherwise applied. Various strengths of solution can be used and the amount of oxidizing agent will obviously vary with the amount of organic matter to be removed by combustion.

The presence of the oxidizing agent in the cigarette wrapper seems to have a desirable and advantageous effect in promoting the smoking and combustion of the tobacco filler, as well as the more or less complete whitening of the asbestos paper itself. The presence of the oxidizing agent seems also to have a desirable effect in neutralizing or destroying objectionable odors from the combustion of the organic binder.

The binders used in the asbestos paper may be of different characters. Organic binders of a carbohydrate character can thus be used, for example, dextrin or certain sugars, as well as binders of animal origin, such as casein, gelatin or glue, or animal size, rosin soap, or other suitable ingredients and chemicals may be used in small amount provided the ingredients are unobjectionable for this particular purpose. The binder may also be of such a character that it contains its own oxidizing agent, for example, small amounts of nitro cellulose can be used which will supply the binder in the asbestos paper and which will likewise contain the oxidizing agent combined therewith. So also, cellulose acetate in small amount may be used or colloid binders, etc.

Another embodiment of the invention involves the compounding of asbestos with paper in such a way as to produce a composite wrapper for the cigarettes. Asbestos pulp and paper pulp may thus be mixed and the wrappers made from the mixed pulp. The paper pulp may be, for example, rice paper pulp, or paper pulp such as is ordinarily used in making cigarette paper;

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and such pulp may be mixed with the asbestos pulp or with finely divided asbestos and the paper made from the composite mixture. When made in this way, the paper may not require any added binder, although such binder can be used and may be desirable if the amount of paper is small. By omitting any other organic binder and using admixed paper fibres, the admixed paper fibres will burn more readily than the usual organic binders contained in asbestos paper and an oxidizing agent may not be necessary. The oxidizing agent can, however, be used with such a composite paper, particularly where the paper contains other organic binders which would result in darkening of the wrapper upon burning of the cigarette. That is, when admixed paper fibres and asbestos fibres are used for the wrapper, the wrapper may be made with or without added organic binder and with or without added oxidizing agent.

The absetos paper may be made in various colors, either white, or colored by means of coloring matter of various kinds, or designs, watermarks, etc., can be made on the wrapper. Cigarettes can thus be made with checker-work or other characteristic design which will add to the distinctive appearance of the cigarettes. The paper can also be compounded with fillers or loading material provided these are unobjectionable during the smoking operation.

Where the paper is made in the usual way and the oxidizing agent is subsequently used for treating the prepared paper, it may be desirable to give the paper a subsequent treatment on hot calendering rolls to dry the paper and remove the excess moisture and also to give it a desirable smoothness. So also, in the ordinary paper making operation, by which the asbestos paper or mixed asbestos and paper pulp paper is made, the operation can be finished by using the ordinary calendering rolls to give the finished paper a desirable smooth finish. This finish is of importance where the paper is to be printed and also for the purpose of facilitating the introduction of the tobacco where the cigarette wrapper is first formed into a tube and the filler subsequently introduced.

The method of forming the cigarette wrapper from the asbestos paper may be any of the usual methods. That is, the paper, for example, may be supplied in proper form so that the user may "roll his own." A particularly advantageous method of manufacture, however, is to supply the paper in the form of reels of appropriate width, for example, about one and one-quarter inches wide, such that the width of the paper is sufficient for the formation of the cigarette wrapper, and then feeding the paper from this reel into a cigarette machine where the paper is formed into a tube and the edges of the tube (either before or after filling with tobacco) secured together by crimping or by moistening. Where the asbestos paper contains a suitable organic binder, it will stick together sufficiently merely by moistening and pressing the edges together. The moistening may be with water alone or with water containing the oxidizing agent so that an added amount of oxidizing agent will be provided at the double thickness of the overlapping edges. Where the asbestos paper is not self-adhering when moistened, a suitable adhesive can be applied. The cigarette wrappers may thus be made in a substantially continuous manner from a reel of the asbestos paper and the wrappers thus made filled with tobacco and cut into appropriate length. They may be provided with cork tips in the usual way by applying a thin layer of cork transversely of the paper, using a cork strip sufficiently wide for two cigarettes, and subsequently cutting the cigarettes and attached cork strips to give the completed cigarettes. The improved method of making the cigarettes with the use of asbestos paper in the form of a reel is applicable with asbestos paper of various kinds, whether or not it is admixed with ordinary paper fibres and whether or not it is admixed with other organic binder and oxidizing agent; but this method is of particular advantage with asbestos paper that is self-adhering when wet since no added adhesive is then necessary.

In addition to making cigarette wrappers of the composite asbestos paper, holders of various shapes and sizes for the cigarettes can likewise be made of asbestos, and these holders can be so made that if they are heated by the complete or almost complete combustion of the stub of the cigarette therein they will not give any objectionable dark coloration and odor, but will leave the holder light in color. The asbestos of the holder may thus be compounded with suitable binders and with an oxidizing agent such that, if the holder is heated to incandescence, it will retain its light color and will not give any objectionable taste or odor to be inhaled.

The composite asbestos paper can similarly be used for making pipe cartridges, that is, prepared cartridges of tobacco for use in pipe smoking; and asbestos wrappers therefor can be made which will have a sufficient degree of strength combined with incombustibility and so compounded that the wrapper, after the smoking of the cartridge, will enable the more ready removal of the ashes.

It will be evident that the cigarettes made with the improved asbestos paper may be provided with a reinforced tip, such as an insert or more or less stiff paper at one end,

or they may be provided with a cork or a gold tip, etc., or the asbestos itself may be suitably treated at the mouth-end (waterproofed, etc.).

In some cases, the asbestos paper may be provided with an inorganic binder, such as sodium silicate in small amount, or the asbestos may be preliminarily compounded with sodium silicate to give a composition for use in the subsequent making of the asbestos paper, or for compounding with the ordinary cigarette paper pulp to make a composite paper.

With an asbestos paper wrapper such as that provided by the present invention, the cigarette will retain its shape while it is being smoked and accidental falling off of the ashes will be prevented. The cigarette may also be closed at its outer end (by using before filling a tube sealed at one end or in some other manner), to further prevent, if desired, accidental falling out of ashes from the lighted end. This closed end preferably being also impregnated with the oxidizing agent, will allow sufficient draft without being perforated. The cigarettes of the present invention therefore can be smoked in the ordinary way without the usual objections to cigarette smoking such as the accidental falling off of ashes or sparks or the necessity for their periodical removal. The cigarettes also smoke evenly and are thus of special value for smoking outdoors in the wind or when driving in automobiles, etc.

It will be evident that tobacco of various kinds can be used in making the cigarettes, and that the cigarettes may be made in various shapes and forms. The cigarettes may thus be "round" or "oval" or may be made as "Russian", "Egyptian", "Turkish", etc., cigarettes.

I claim:

1. Asbestos paper containing a cellulose ester binder and an oxidizing agent.

2. Asbestos paper containing a cellulose ester binder and also containing sodium silicate.

3. Asbestos paper containing cellulose acetate as a binder and also containing sodium silicate.

4. A paper composed of incombustible material and a cellulose ester binder.

5. A paper compound of incombustible material and cellulose acetate.

6. A paper made of asbestos and having a cellulose ester binder.

7. A paper containing asbestos and a cellulose derivative.

8. A paper containing asbestos and cellulose acetate.

9. A cigarette wrapping paper containing asbestos compounded with a colloid binder and an oxidizing agent, and said wrapper containing a cellulose ester.

10. A cigarette wrapping paper containing asbestos compounded with a colloid binder and an oxidizing agent, and said wrapper containing cellulosic acetate.

11. A cigarette wrapping paper composed of incombustible material and a cellulose ester binder, said paper being provided in the form of separate sheets, each of appropriate form and size for a cigarette.

In testimony whereof I affix my signature.

NATHAN SULZBERGER.

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