

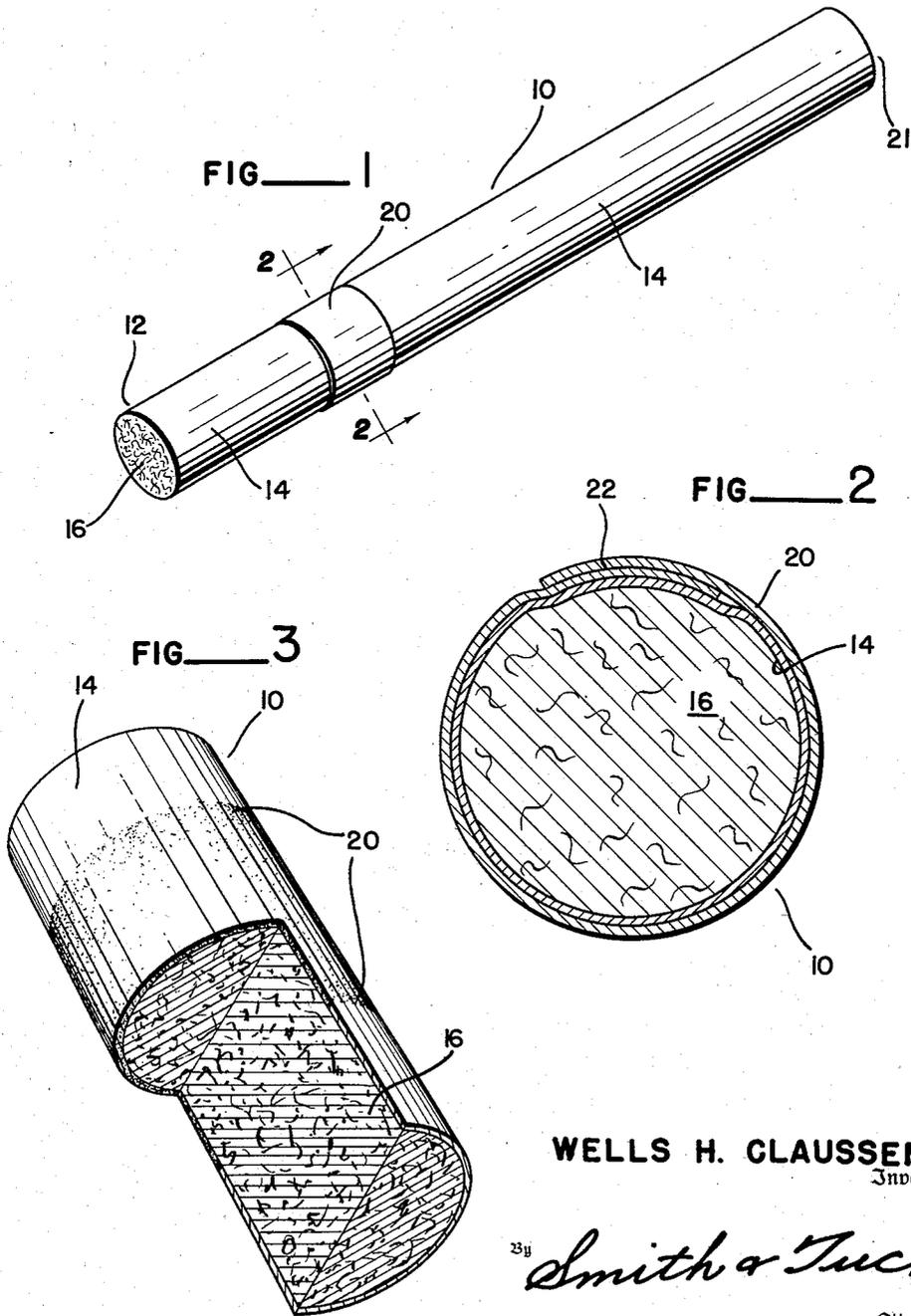
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W. H. CLAUSSEN

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HEAT ABSORBING AND TRANSFERRING BAND FOR CIGARETTES

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WELLS H. CLAUSSEN
Inventor

311 *Smith & Tuck*

Attorneys

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HEAT ABSORBING AND TRANSFERRING BAND FOR CIGARETTES

Wells H. Claussen, Seattle, Wash.

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1 Claim. (Cl. 131-4)

This invention relates to a metallic band to be placed upon cigarettes during the process of manufacturing the same and which will absorb heat as the coal approaches the band and transfer this heat across the area of dried tobacco to the damp tobacco in the butt of the cigarette. This transfer of heat from the ignited portion of the cigarette to the damp butt portion provides a certain method of extinguishing a cigarette that is no longer in use.

In the past many devices have been employed with the avowed purpose of extinguishing a cigarette as the cigarette has been consumed down to its predetermined butt length. These devices observed have relied upon the general plan of smothering the cigarette coal by depriving it of sufficient oxygen to continue the burning of the tobacco. A careful study of many types of such devices indicates that they will operate as intended many times but that they cannot be depended upon to extinguish the cigarette under all conditions. This is especially true of a cigarette that has been cast aside and may come to rest in an inclined position where the normal laws of convection will tend to produce or to continue a draft through the burning coal and thus continue the burning of the cigarette. If a device is going to be depended upon to extinguish a cigarette then it is essential that it function under all conditions and thus to actually produce a cigarette butt that can be safely cast aside.

The principal object of this present invention is to provide a cigarette extinguishing device that is unobtrusive, is easily put in place and is itself economical to manufacture.

A further object of this invention is to provide means which will take full advantage of the well recognized heat transfer properties of metal and to use this principle to conduct the heat from the coal of the cigarette over that portion of the tobacco near the burning coal and then to distribute the heat throughout the butt of the cigarette so that the same will extinguish the cigarette.

Further objects, advantages and capabilities will be apparent from the description and disclosure in the drawings, or may be comprehended or are inherent in the device.

In the drawings:

Figure 1 is a perspective view showing a cigarette made after the teachings of this present invention;

Figure 2 is an enlarged cross-sectional view of a cigarette and my extinguishing band, taken along a plane passing through line 2-2 of Figure 1.

Figure 3 is a fragmentary perspective view, partly in section, showing an alternate form of heat conductive band.

Referring more particularly to the disclosure in the drawings, the numeral 10 designates generally the body of a conventional cigarette. The majority of cigarettes are so constructed that it is immaterial which end is placed in the mouth. However, there are many types of cigarettes in which mouth-piece portions or cork or metal tips

are used which require that the treated end be placed in the mouth. In the showing in Figure 1 no such devices have been illustrated but one end 12 is designated as the end to be placed in the mouth and will be termed the butt.

A cigarette after the showing is composed of a paper envelope 14 of a tubular form normally, although in many instances some form of an oval cross-section is employed. The exact form is immaterial in that the tobacco filler 16 lends itself to distortion and the final manner of packing can produce the desired shape.

A heat transferring band 20 is secured on cigarette body 10, after the showing of Figure 1 and forms the butt portion 12 and the smoking portion 21, although no break is made in the envelope 14 or the tobacco filler 16. This band may be formed in a number of ways and from many different metals. In Figure 2 I have illustrated a band formed of sheet stock which, because of its extreme thinness, is normally referred to as foil. A preferred arrangement of the sheet stock band is to have the same overlapping as at 22 so that the band can be secured by the overlap and held in the predetermined position without danger of slippage. To guard against the band slipping it should be placed on the cigarette with considerable pressure so as to be somewhat imbedded in the cigarette.

Practically any ductile metal can be formed as a foil can be used as practically every metal has a reasonable high heat conductivity factor. The preferred metal, however, appears to be aluminum. It does not tarnish readily, it has a high conductivity factor and it can be easily rolled to the foil thickness. The exact thickness of the band is relatively immaterial; it being a matter of the ease of manufacturing the same and establishing it in the desired position. Extensive experiments have been conducted and it has been found that aluminum foil as thin as .0007 inch will still function satisfactorily after the teachings of this invention.

Considering the fact that a very thin foil will function, as will be hereinafter explained, experiments have been conducted in a high temperature vehicle with metallized paint and certain of the paints having powdered aluminum and these have proved to be satisfactory. Manufacturers guarantee their products against temperatures as high as 1100 degrees Fahrenheit, which of course is many times the temperature that can possibly be achieved in this present arrangement. With certain kinds of cigarette making equipment, however, it might be more simply arranged to spray or paint the aluminum band on the cigarette than to wrap it with a strip of the thin foil as shown in Figure 3. In either case, however, the functioning is substantially the same.

The emissivity factor of the aluminum in the powdered form carried in a paint vehicle appears higher than the aluminum foil if it is left bright. However, the etching of the aluminum, as by sodium hydroxide can be achieved very easily and cheaply and will add very appreciably to the emissivity of the band.

Numerous experiments involving a large number of cigarette smokers have shown that the general condition encountered is substantially as follows: Where a smoker enjoys his cigarette he is drawing air through the cigarette. This produces a draft which causes combustion and causes it to continue. However in the burning of the tobacco a very appreciable amount of water vapor is produced and as the burning of the cigarette continues this water vapor to a large degree is concentrated in the butt end well. There is also of course the possibility of a person wetting the butt end of the cigarette slightly with saliva. However it is not believed that this is a very important factor in the thorough saturation of the cigarette butt, but certainly it adds to that end result.

By having a number of different smokers smoke cig-

arettes equipped with this band to a point just above the band and then clipping the cigarette carefully with a sharp instrument, as a razor blade, for instance, it becomes apparent that the tobacco adjacent the burning embers or coal is dried by the heat of combustion but that this dried area is relatively thin, in most cases not exceeding $\frac{1}{16}$ of an inch although in the case of a heavy smoker who draws with considerable force this distance can be substantially increased. The balance of the butt of the cigarette, however, will be found to be quite damp due to condensation and a very pronounced area of condensation is under the metal band 20. It therefore follows that as soon as the coal comes into contact with the metal band 20, the heat is conducted away from the coal thus bridging over the dry tobacco area and the heat is to a large degree dissipated within the area of condensation under band 20. The heat, however, is then dissipated into the butt itself due to the moisture content of the same and thus a large amount of the heat is drawn away from the coal and distributed throughout the unburned butt of the cigarette. It has been found that the metal band 20 becomes quite hot. It will usually be uncomfortable to touch as the temperature is above that which can be held for any length of time and the band becomes an excellent radiator of heat. In the case of the powdered aluminum carried in a high temperature paint base a very effective radiant surface is provided. The amount of heat, however, radiated from the band 20 of say one-quarter inch length is only a small part of the total heat present, but will be sufficient to stop burning together with the heat transferred to the moist tobacco in the butt. However, if the band is made longer the amount of heat dissipated will be materially increased and the time required to extinguish a cigarette will be shortened.

From the foregoing it is believed that it will be clear that a device has been provided, not for smothering a

cigarette but really for conducting the heat away from the burning coal and dissipating it so that the coal will soon be reduced in temperature below the kindling point and will be extinguished. In this manner a dependable extinguishing means is provided for cigarettes which will furnish as described without regard to the nature of the material upon which it rests or the angle of inclination it assumes in final repose.

What I claim is:

A self-extinguishing cigarette, comprising: a cigarette body of the usual form having a paper wrapper and a tobacco filler; a thin, aluminum foil band of narrow width positioned in encircling relationship outside of said wrapper with its ends overlapped, said band being tightly wrapped so as to embed in said body compressing the tobacco in the area of the band and preventing the band from moving on said body; said band being positioned nearer one end than the other end of said body and being spaced from the closer end defining a butt portion therebetween; and said band being etched, thereby increasing its heat emissivity.

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