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ANTIOXIDIZING PARAFFIN COMPOSITION

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This invention relates to anti-oxidants for paraffin waxes and oils and has for an object to prevent paraffin compositions from oxidizing, discoloring or developing an objectionable odor.

Another object is to provide an anti-oxidant of the above type having novel and improved characteristics.

Another object is to provide an anti-oxidant of the type above indicated which is effective in extremely small percentages.

Another object is to provide an anti-oxidant which is suited to commercial use in connection with wax baths used, for example, for paper treatment or the like.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

Although the novel features which are believed to be characteristic of this invention are pointed out more particularly in the claims appended hereto, the nature of the invention will be better understood by referring to the following description in which certain specific embodiments thereof have been set forth for purposes of illustration.

In the following description and in the claims certain specific terms have been used for convenience in referring to various details of the invention. These terms, however, are to be given as broad an interpretation as the state of the art will permit.

It has been found that baths of paraffin wax such, for example, as those used commercially for water-proofing, sizing or impregnating paper, tend to foul and to cause discoloration or undesirable odors due to oxidation of the paraffin, particularly after long continued use at elevated temperatures. I have discovered that certain other substances, even when present in minute quantities in a bath of paraffin waxes or paraffin oils, have the property of preventing such oxidation and permit the bath to be used commercially for long periods of time without fouling.

The invention is particularly applicable to paraffin wax baths to be used for impregnating or treating paper for the formation of bottle caps in accordance with the process set forth in the Baum Patent 1,668,349. In that process it is necessary to maintain a bath of wax at a temperature of, for example, 235° F. to 240° F. for indefinite periods of time. As operated commercially, the bath is maintained continuously at this temperature, new wax being added to replace wax which is used up in the process.

As one example, I have found that about .04 percent of crude montan wax is suited to prevent oxidation of a paraffin wax bath when the bath is operated at the above temperature. In fact, this percentage has been found satisfactory for a bath maintained in an atmosphere of oxygen at a temperature as high as 294° F. during a seven hour test period. The percentage required for a bath that is used at a lower temperature is even less. For example, about .02 percent is sufficient if the bath is maintained at a temperature of from 160° F. to 210° F. It is to be understood that the percentage of anti-oxidant required increases in accordance with the temperature of the bath and at the higher temperatures the increase is much more rapid.

In addition to the above named anti-oxidant, it has been found that about .6 percent of ceresin breaks down the crystalline structure of the paraffin and tends to make the wax harder and more water resistant. A bath of paraffin wax of the type melting between 133° F. and 138° F., containing about .6 percent ceresin and about .04 percent crude montan wax is particularly suited to the paper treating process set forth in the Baum patent above mentioned. This composition possesses the necessary hardness and water-resistance to prevent the skirt of the cap from softening or opening up on the bottle due to absorbed water. The bath will not oxidize, foul or develop objectionable odors even after long continued use at elevated temperatures. Furthermore, in the small percentage used the crude montan wax does not introduce any objectionable discoloration.

While crude montan has been found particularly satisfactory for the above purpose because of the extremely small quantities which may be used, various other waxes and bituminous materials have also been found to possess anti-oxidant properties in varying degrees, as set forth in the following table:

Anti-oxidant material	Approximate per cent required to prevent oxidation in an industrial paraffin bath at 230° F.–240° F.	Approximate per cent required to prevent oxidation in an industrial paraffin bath at 160° F.–210° F.
Crude montan wax	.04	.02
Ozokerite (crude)	.1	.05
California asphalt	.2	.1
Carnauba wax	.6	.3
Candelilla wax	.6	.2
Esparto wax	.8	.4

It is to be understood that the above examples

are representative only and that various other waxes and bituminous materials such as tars, pitches and the like having similar properties may be used.

It is also to be understood that the wax baths above mentioned are suitable for various uses in the paper and allied industries, such as treating, sizing, waterproofing, impregnating, etc., and that the invention is not to be restricted to the particular use above set forth. Various changes and modifications may be made therein as will be readily apparent to a person skilled in the art. The invention is only to be limited in accordance with the scope of the following claims.

What is claimed is:

1. A wax composition for the treatment of paper comprising a paraffin wax having incorporated therein about .02 to .04 percent of montan wax.

2. A wax composition for the treatment of paper comprising a paraffin wax having incorporated therein about .02 to .04 percent of montan wax and about .6 percent ceresin.

3. The method of preventing oxidation of molten paraffin wax baths and hot paraffin oil baths which comprises maintaining in the bath about .02% to .04% of montan wax while operating the bath at elevated temperatures of not over about 294° F. and under conditions such that oxidation would otherwise take place.

4. The method of preventing oxidation of molten paraffin wax baths and hot paraffin oil baths which comprises maintaining in the bath about .02 percent to about .8 percent of a substance selected from the group consisting of montan wax, carnauba wax, candelilla wax, esparto wax and ozokerite.

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