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PROCESS OF PREPARING PARAFFINIC
ANTICORROSIVE STRIP MATERIAL
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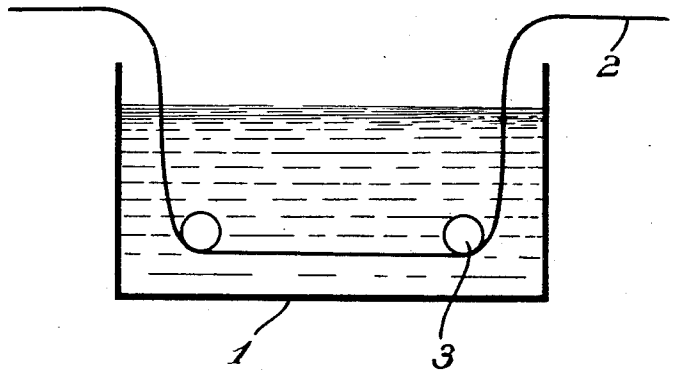

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PROCESS OF PREPARING PARAFFINIC ANTI-CORROSIVE STRIP MATERIAL

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1 Claim. (Cl. 117—115)

My invention relates to corrosion-preventing coats made of paraffinic material adapted to be laid in strips.

The application of paraffinic hydrocarbons as such or as a mixture incorporating a filler or otherwise, to form a corrosion-preventing protective coat has heretofore been limited by the difficulty of finding a suitable carrier for the laying of said coat on a metal surface.

A carrier of a cellulosic nature such as cellulose or its derivatives, has heretofore been employed and in practice has a part to play that is very important, although it has not been disclosed properly heretofore, in a coat of the type considered.

As a matter of fact, the above mentioned hydrocarbons to which a filler has been possibly incorporated and that are used singly or in admixture with waxes or resins retains a strictly amorphous structure and consequently the carrier thereof forms of necessity the coherent part of the protective means to which they are incorporated.

On the other hand, the cellulosic nature of the carriers is not devoid of drawbacks of which the chief disadvantages are as follows:

(*a*) Absorption of moisture;

(*b*) Sensitiveness with reference to fermentation processes generally speaking, such as provided by bacteria and the like.

Various remedies have been proposed, but they have not been very efficient, because it should be kept in mind that the main object to be achieved is the anticorrosive protection of the metal, while the carriers used hereinbefore formed in practice a mere reinforcement of the actual coat. After a certain time of exposure to corrosive action, said carrier finished by cancelling the actual protective properties of the above mentioned hydrocarbons either through the absorption of water or through decay.

My invention has for its object the complete removal of the drawbacks of cellulosic carriers or of carriers having for their basis cellulosic derivatives, while retaining the advantages of the use of paraffinic hydrocarbons that form actually perfect protecting agents and consequently my invention leads to the provision of a wholly paraffinic coat in the shape of a strip, said shape being extremely convenient as it facilitates application to any type of surface, such as pipes, shaped members and the like.

According to my invention, I resort to high synthetic paraffinic polymers, having the properties of being easily shaped and, in addition thereto, of being soluble under certain conditions in protoparaffinic or paraffinic hydrocarbons having a low molecular weight.

Thus, it is possible to produce:

(*a*) Either a coat that is complete in itself and that is constituted by paraffinic or protoparaffinic hydrocarbons having a mean or low molecular weight and that are preferably admixed with a filler, for improved cohesion, and forming the two surfaces of the coat assuming the shape of a strip, while synthetic hydrocarbons having a high molecular weight form the core of said coat;

(*b*) Or a plastic mass, having novel and interesting features, that is adapted to be laid over any intermediary carrier and the protecting properties of which are influenced to a substantially lesser extent by the actual drawbacks of said intermediary carrier.

The invention achieves the benefits of the property shown by synthetic paraffinic hydrocarbons having a high molecular weight, of being capable, without any intermediary carrier, of being laid over the surface to be protected and of forming thereon a coat adapted to retain the shape given to it, even when submitted to certain mechanical stresses, which is not the case for paraffinic hydrocarbons having a molecular weight that is comparatively low.

The use of such high polymers would be perfectly suitable if the coat thus formed had a proper adherence to the metal base it is to protect. Unfortunately, this is not the case as pitting, brittleness, lack of elasticity, low adherence and the like, cause such a coat to be inefficient.

In other words, the constitution of a completely paraffinic coat, having a proper adherence to the surface to be protected and a plasticity that is not devoid of some rigidity adapted to prevent any deformation of the coat through mechanical action, is desirable.

The coats forming the object of the invention show the above advantageous features and solve said problem.

The expression "paraffinic hydrocarbon" is intended to cover any hydrocarbon of the series $C_nH_{2n}+2$ either alone or in admixture with its homologues, either for forming a semi-solid oil or wax having a melting point that is not definite or, on the contrary, a wax having a melting point that is more definite and that is generally termed a paraffin wax.

Obviously, this expression "paraffinic hydrocarbon" also includes the raw products containing possibly some unsaturated compounds as well as the refined products, the word "paraffinic" being used chiefly for illustrating the predominantly saturated character of the hydrocarbons in the mixture.

The expression "synthetic paraffinic hydrocarbon" having a high molecular weight and corresponding to high synthetic paraffinic polymers is intended to cover hydrocarbons produced synthetically and corresponding to the general structural formula $CH_3(CH_2)_nCH=CH_2$ without it being clearly ascertained as yet whether the above double link is actually to be found in the molecule. The molecular weights adapted for use according to the invention vary between 500 and 30,000 but, in the case of the applications to be considered more particularly, values of between 8,000 and 20,000 are the preferred molecular weights.

The above products are obtained at the present time through polymerisation of ethylene under high pressure and they are generally defined as "polyethylenes"; these are sold under various trade-marks in different shapes, such as granules, powders intended for molding or directly under a molded shape such as that of films.

EXAMPLES

Obtention of a paraffinic strip-shaped coat

The paraffinic hydrocarbons having a low molecular weight are melted and possibly admixed with one or more fillers after which they are introduced in a liquid state into vats designed so as to allow the passage therethrough of high synthetic paraffinic polymers shaped previously into films.

Accompanying drawing illustrates a vat **1** into which are introduced the paraffinic hydrocarbons having a low molecular weight. **2** designates the path through which the high polymer film is guided over the rollers **3**.

The temperature of the molten mass is held within a range of say 60 to 95° C.

Above 60° C., the high synthetic paraffinic polymers are soluble in paraffins having a low molecular weight.

The speed of progress of the film is adjusted in a manner such that the high polymer begins dissolving as it passes through the molten paraffin and this produces a strip that is paraffinic throughout its thickness without the actual characteristics of the two sorts of hydrocarbons used being modified. It is thus possible to lay such a paraffinic coat on any sort of surface without any risk of its protective properties being minimized after a certain time by physical causes such as shocks, absorption of water, reduction in adherence or the like, or else for biological reasons, such as decay that are characteristic of cellulosic carriers.

Obtention of a paraffinic compound adapted to protect metals against corrosion

In this example, use is made of high polymers in the shape of granules or powder. At temperatures above 110° C., the mixing of high polymers with paraffinic hydrocarbons having a low molecular weight is performed through simple stirring. A filler is incorporated, if required. The compound obtained may be used in the formation of a paraffinic coat, as described previously, or else it may be used in cooperation with a suitable intermediary carrier for application onto the surface to be protected. However the presence of high polymers reduces substantially the objectionable influence of an intermediary carrier, even if the latter is of a cellulosic nature; on the other hand, a substantial rise of the Ubbelhode pour point is obtained.

For instance, a mass constituted by 100 parts by weight of paraffinic compounds and 75 parts by weight of fillers such as silicates or the like, can be used only at temperatures that do not rise above 45° C. (pour point: 54–55° C.) while a mass comprising 100 parts of paraffinic compounds, 75 parts of a filler and 7 parts of high synthetic paraffinic polymers can easily resist a permanent temperature of use of about 70 to 75° C. (Ubbelhode pour point: 84° C.).

This example is obviously not to be construed as limitative.

What I claim is:

A process of preparing a paraffinic anti-corrosive strip, comprising immersing a film of polyethylene having a molecular weight between 8,000 and 20,000 into a molten bath of paraffin hydrocarbon of lower molecular weight than the polyethylene film and at a temperature of at least 60° C. forming a coating on both sides of the film and combining the polyethylene and the paraffin hydrocarbon at the surface of the film.

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