

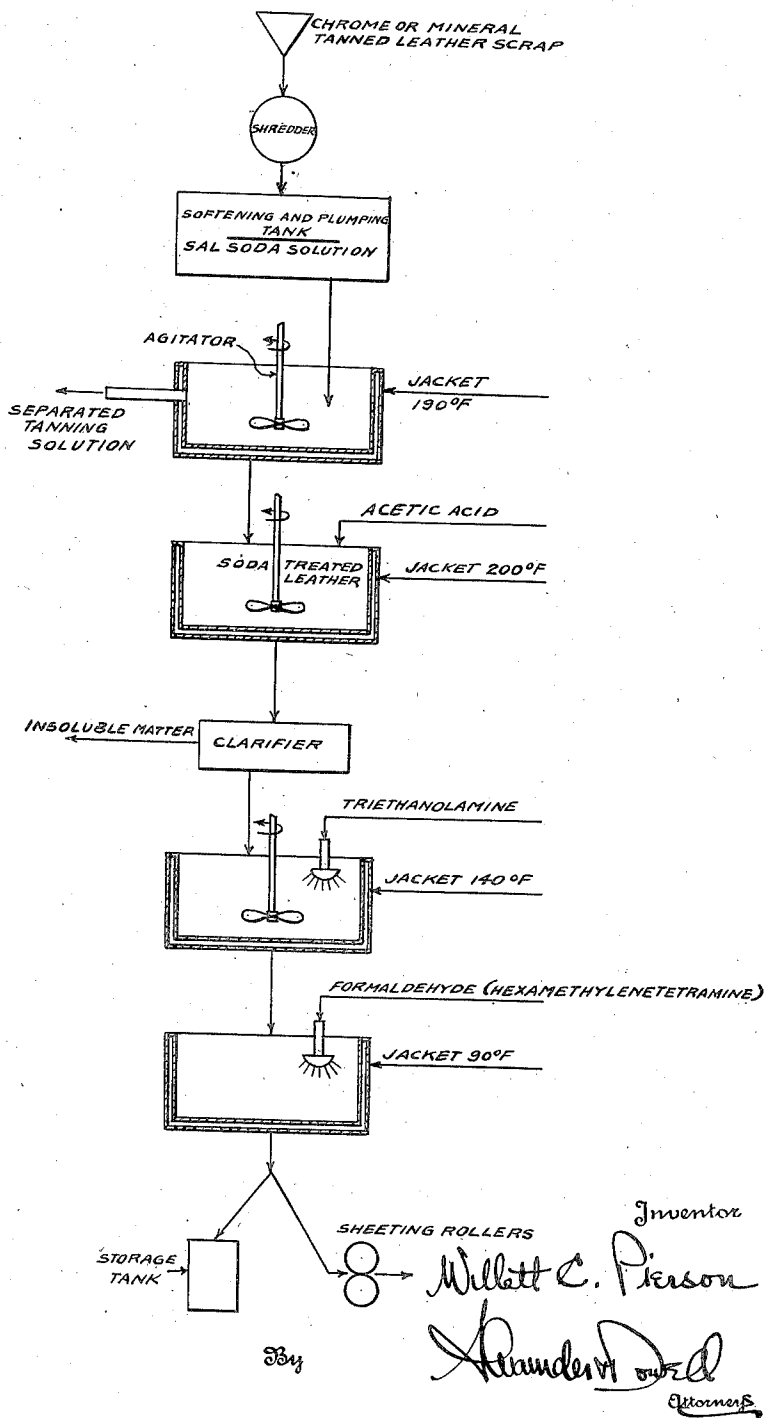
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PLASTIC MATERIAL

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PLASTIC MATERIAL

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9 Claims. (Cl. 106—38)

My invention relates to improvements in plastic materials and the methods of making the same. Motion picture film, and the so-called Cellophane now in extensive use, are highly inflammable.

Furthermore, under continual exposure to light and heat, Cellophane becomes brittle and tears easily.

With the foregoing in mind, it is one of the objects of my invention to provide an improved plastic material which, by itself, can be used for making motion picture film, or which can be sheeted out to resemble and have the same general characteristics as and serve the same purposes as the so-called Cellophane, but which, when so used, is tougher, is fire-resisting, and will not ignite under the same conditions of heat or temperature necessary to ignite the present-day motion picture film or Cellophane.

Another object of my invention is the provision of a material of the character referred to which can be made in liquid form for spraying onto motion picture or sheets of Cellophane, and which then renders these materials or articles substantially more resistant to fire than they were before being sprayed with my improved material.

Another object of my invention is the provision of a material of the character referred to which can be made largely from waste raw material which is now in abundance, and which is more or less a drug on the market.

Other objects and advantages will hereinafter appear.

The drawing diagrammatically illustrates the various steps of the process.

As a first step in making my improved plastic material, fifty pounds, for example, of chrome or mineral tan leather waste cuttings, which may be shredded if desired, are steeped at room temperature in, for example, a substantially 8% solution of sal soda made of 100 pounds of water and 8 pounds of sal soda ($\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$), or made of 100 pounds of a 4% solution of soda ash. The leather waste cuttings are allowed to remain in the sal soda for a period of eight to ten hours, for example.

The first step above described softens and plumps the leather waste by separating out part of the chrome or other tanning solution. If the bath or bate contains chrome-alum, some of this is also removed during this step.

The second step in my improved method consists in placing the mass into a steam-jacketed kettle provided with an agitator, and with the temperature maintained at substantially 190 de-

grees Fahrenheit, for example, agitating or stirring the mass from about one hour to about one and a half hours, for example, or at least until a sample placed on a glass plate shows the characteristic of being clear or substantially transparent. This treatment further softens the leather waste and also further plumps it and separates out more of any chrome or other tanning ingredients which might still be present at this time. The separated tanning solution is then drained off.

The next and third step in my improved method resides in adding to and thoroughly stirring into the soda-treated leather 8 pounds, for example, of 28-percent-strength acetic acid and maintaining this bath at a temperature of about 200 degrees Fahrenheit from about one to about one and a half hours.

The whole mass is now a heavy viscous liquid which is now passed through suitable filters or placed into settling tanks, or centrifuged to clarify the batch by removing insoluble matter.

For the fourth step in my improved method, the heavy clarified liquid is run into another tank provided with an agitator, and is stirred and permitted to cool to about 140 degrees Fahrenheit. At this time, and while the liquid is still being agitated, one-half pound, for example, of triethanolamine is gradually sprayed into the mass. The triethanolamine acts as a plasticizer and tends to keep the finished product always flexible.

The fifth step in my improved method consists in allowing the contents of the tank to cool down to about 90 degrees Fahrenheit. When this point is reached, and while the contents of the tank are vigorously stirred, one pound, for example, of 40% strength formaldehyde or one-quarter pound, for example, of hexamethylenetetramine, is slowly sprayed into the mass. This makes the solution, when dried, insoluble in water, i. e., waterproof.

The solution may now be stored in drums and used for coating paper or cloth, or it may be sheeted by passing it through rolls.

By my improved method, as above described, is made a plastic, viscous, leathern material in the form of a substantially homogeneous mass capable of being rolled out into relatively thin, flexible, waterproof, fire-resisting sheets. When relatively thin, these sheets are substantially transparent.

It is contemplated to use my improved material for making motion picture film, or for spraying the film now in extensive use to make it fire-resisting.

It will be understood that the values given have been by way of example, and that these may be varied somewhat without departing from the spirit of my invention or the scope of the claims.

5 I claim as my invention:

1. The method of making a transparent plastic material which comprises the steps of softening and plumping mineral tanned leather scrap with an alkaline water solution to separate the tanning ingredients; removing said separated tanning ingredients to produce a substantially transparent mass; heating the mass with a solution of acetic acid to render the mass relatively heavy and viscous; clarifying the mass; and adding a plasticizing agent thereto, and adding a water-proofing agent thereto.

2. The method of making a transparent plastic material which comprises the steps of softening and plumping mineral tanned leather scrap with an alkaline water solution to separate the tanning ingredients; removing said separated tanning ingredients to produce a substantially transparent mass; heating the mass with a solution of acetic acid to render the mass relatively heavy and viscous; clarifying the mass; and plasticizing said mass.

3. The method of making a transparent plastic material which comprises the steps of softening and plumping chrome tanned leather scrap by heat-treatment in a sal soda water solution to separate the tanning ingredients; removing said separated tanning ingredients to produce a substantially transparent mass; heating the mass with approximate 28% strength acetic acid to render the mass relatively heavy and viscous; clarifying the mass; and adding a plasticizing agent to said mass.

4. The method of making a transparent plastic material which comprises the steps of softening and plumping chrome tanned leather scrap by heat-treatment in a sal soda water solution to separate the tanning ingredients; removing said separated tanning ingredients to produce a substantially transparent mass; heating the mass with approximate 28% strength acetic acid to render the mass relatively heavy and viscous; clarifying the mass; and plasticizing said mass and adding a waterproofing agent thereto.

5. In a method as set forth in claim 4, the proportion of sal soda solution to leather being substantially 100 lbs. of 8% solution to 50 lbs. of leather.

6. In a method as set forth in claim 4, the proportion of soda solution to leather being substantially 100 lbs. of 4% soda ash solution to 50 lbs. of leather.

7. In a method as set forth in claim 4, the proportion of acetic acid to leather being substantially 8 lbs. of acid to 50 lbs. of leather.

8. A transparent plastic material comprising viscous mineral tanned leather from which the tanning ingredients have been substantially removed; and a plasticizing agent; said leather being rendered viscous by addition of acetic acid thereto.

9. A transparent plastic material comprising viscous mineral tanned leather from which the tanning ingredients have been substantially removed; a plasticizing agent, and a water-proofing agent; said leather being rendered viscous by addition of acetic acid thereto.

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