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METHOD FOR FORMING A MATTE FINISH ON A SURFACE

Filed Dec. 7, 1970

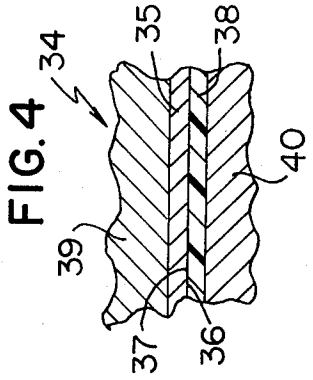


FIG. 4

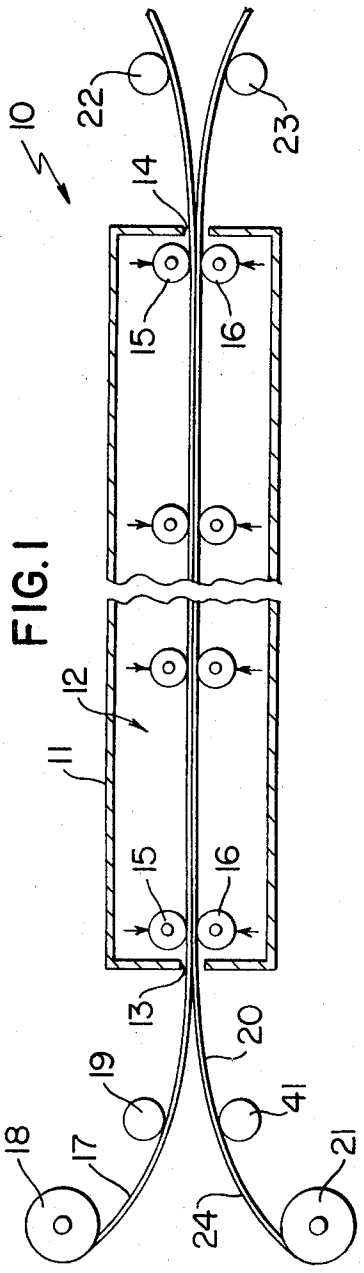


FIG. 1

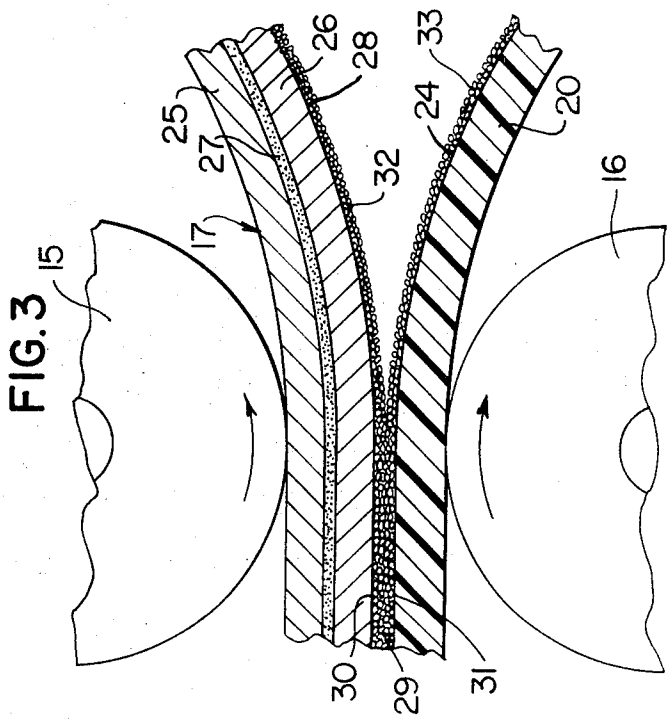


FIG. 3

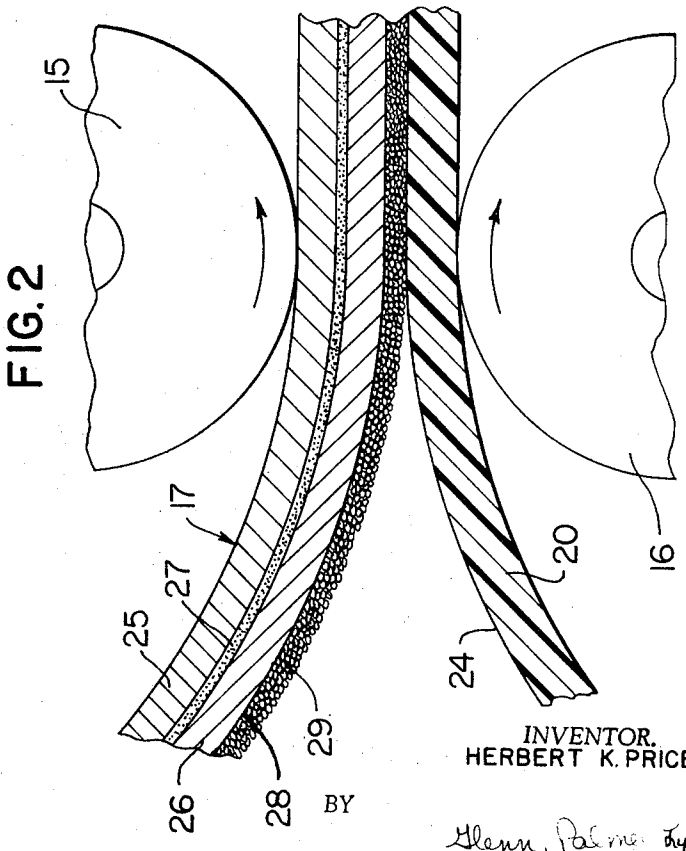


FIG. 2

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METHOD FOR FORMING A MATTE FINISH ON A SURFACE

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ABSTRACT OF THE DISCLOSURE

A matte finish is provided on a desired surface by the heating and compressing of a fluorocarbon coating to the desired surface so that the coating is secured thereto. Thereafter, the coating is split between opposed sides thereof so that one split part of the coating remains on the surface to provide the matte finish thereon and the other split part of the coating is removed from the surface.

BACKGROUND OF THE INVENTION

Attempts have been made to obtain a desired matte effect or finish on a desired surface through the use of liquid or dry lubricants, but such attempts have failed in that they did not produce the desired matte finish. Also, the use of particulate material to produce a matte finish on a desired surface failed because it prevented release of the particulate carrying member after the heat and pressure application thereof to secure the particulate material to the desired surface.

SUMMARY

This invention provides an improved method for making a matte finish on a desired surface in a simple and effective manner, this invention also providing a member for forming the matte finish as well as the matte finished article.

In particular, one feature of this invention provides a member for providing a matte finish to a desired surface wherein the member is adapted to be pressed into heat contact with the desired surface and, therafter, be readily released from that surface while providing a matte finish thereto.

One method of this invention comprises the method steps of disposing a coated side of a finish producing member against the desired surface with the coating being a material that is adapted to become secured to that surface and readily split between opposed sides thereof, causing the coating of the one side of the member to become secured to the surface and, thereafter, separating the member from the surface intermediate the opposed sides of the coating so that the coating splits and leaves a layer thereof on the surface to provide the desired finish thereof.

Other details, uses and advantages of the invention will become apparent as the following description of the present preferred embodiments thereof in the accompanying drawing proceeds.

BRIEF DESCRIPTION OF THE DRAWING

The accompanying drawing shows schematically the present preferred embodiments of the invention, in which:

FIG. 1 is a schematic view, partially in cross section, illustrating one embodiment of the method of this invention for forming a matte finish on a strip of material.

FIG. 2 is an enlarged, fragmentary, cross-sectional view illustrating the inlet side of the heating chamber of FIG. 1.

FIG. 3 is a view similar to FIG. 2 and illustrates the exit side of the heating chamber of FIG. 1.

FIG. 4 is a fragmentary, cross-sectional view illustrating another method of this invention for forming a matte finish on a desired surface.

DESCRIPTION OF ILLUSTRATED EMBODIMENTS

Referring now to FIGS. 1, 2 and 3, one embodiment of the method of this invention is generally indicated by the reference numeral **10** and comprises a housing or frame structure **11** defining a heating chamber **12** therein with the housing **11** having an inlet **13** at one end thereof and an outlet **14** at the other end thereof for permitting sheet material to be passed through the housing **11** to be heated in the chamber **12** thereof and be compressed by suitable pairs of opposed roller means **15** and **16** spaced and disposed throughout the chamber **12** in the desired number and manner with one or more of the rolls **15** and **16** of each pair being urged toward the other with a desired pressure for a purpose that will be apparent hereinafter.

A first sheet of material **17** is adapted to be fed from a supply roll **18** thereof past a suitable guide roll **19** and be combined with another sheet of material **20** also being fed from a supply roll **21** thereof and past a guide roll **41** so that the two sheets of material **17** and **20** can be brought together at the entrance **13** to the housing **11** and be passed through the nips of the roller means **15** and **16** throughout the length of the chamber **12** to exit from the outlet **14** thereof. The sheet **17** is separated from the sheet **20** at the outlet **14** and is passed by a suitable guide roll **22** to a desired location while the sheet **20** passes by a guide roll **23** to a desired location, such as to a windup roll to provide a supply roll thereof.

The sheet of material **17** of this invention is so constructed and arranged that the same is adapted to impart a matte finish to the facing side **24** of the sheet of material **20** as the same are heated and compressed together in the housing **11** so that when the sheets **17** and **20** are subsequently separated at the exit side **14** of the housing means **11**, the surface **24** of the sheet of material **20** is provided with a matte finish which has improved scuff resistance and has reduced water spotting characteristics as a result of a transfer to the surface **24** of part of a coating of the sheet of material **17** as will now be described.

The sheet of material **17** is best illustrated in FIGS. 2 and 3 and is a lamination comprising a paper sheet **25** secured to a metallic foil sheet **26** by an interposed adhesive layer **27**, the metallic foil **26** comprising aluminum containing metallic material, if desired. The foil, adhesive and paper substrates **26**, **27** and **25** provide a nonporous and thermally stable lamination which characteristics could be provided by other substances, if desired to practice this invention as hereinafter set forth.

The outer surface **28** of the foil sheet **26** of the lamination sheet **17** is provided with a coating **29** formed of particles of fluorocarbon selected from the group of fluorocarbon particles, such as tetrafluoroethylene, chlorotrifluoroethylene, dichlorodifluoroethylene, trichlorofluoroethylene, and the like.

The coating **29** is adapted, when heated and pressed into contact with the surface **24** of the sheet **20** by the roller means **15** and **16** in a manner hereinafter described, to become secured to the surface **24** of the sheet **20** so that when the sheets **17** and **20** are subsequently separated from each other at the exit **14** of the housing **11**, the coating **29** will split between the opposed surfaces **30** and **31** thereof whereby a part or layer **32** of the coating **29** remains secured to the sheet **17** and the remaining split part or layer **33** thereof remains secured to the surface **24** of the sheet **20** to provide the matte finish thereon,

some of the particles of the coating **29** splitting in two so that part thereof remains secured to the sheet **17** and the other part thereof remains secured to the sheet **20**. In this manner, the split part or layer **33** of the coating **29** provides the desired matte finish **33** on the desired surface **24** of the sheet **20**.

While the sheet **20** can be any desired surface, typical examples of the sheet **20** include resin impregnated paper and fiberboard used as an overlay on a wood, metallic or plastic base so as to provide furniture veneer, counter tops, desk tops, vertical wall panels and the like. Typical resins include heat curing type resins such as melamines, phenolics, formaldehydes, expoxies, polyesters, and the like, as well as combinations thereof. Such matte finished materials are found to be scuff resistant on the matte surface thereof as well as have a reduced water spotting characteristic.

While the pressure being imparted to the sheets **17** and **20** to cause the coating **29** to become secured to the surface **24** of the sheet **20**, as well as the temperature in the chamber **12** and the length of time the sheets **17** and **20** remain in contact with each other, are not critical values when practicing this invention, optimum results have been obtained using a pressure in a range from about 200 to 5000 pounds per square inch at a temperature in the range from about ambient temperature to 400° F. for a period of time from approximately three minutes to two hours. The pressure, temperature and contact time can vary with requirements relating to thickness of the substrates, curing time for the surface receiving the matte finish and types of material utilized.

Because of the use of the fluorocarbon particles for the coating **29**, not only is the matte finish provided for the desired surface in the manner previously described but also in the method of producing the matte finish after the heat and pressure have been utilized to secure the coating **29** to the sheet **20**, the coating **29** readily releases by splitting the fluorocarbon particles so that the aforementioned difficulty in separating a particulate carrying member is substantially eliminated as the fluorocarbon particles provide good release from the desired surface.

While the method of this invention has been previously described as being performed with the sheet **20** and transfer sheet **17** being in roll form, it is to be understood that the transfer sheet or member **17** and the sheet or member **20** receiving the desired finish on the surface thereof can by any desired structure and can be heated and compressed together while in a flat configuration.

For example, reference is now made to FIG. 4 wherein another method of this invention is generally indicated by the reference numeral **34** and comprises a first member **35** having the side **36** thereof provided with a fluorocarbon particle coating in the manner previously described and engaging against a desired flat surface **37** of another member **38** that is to receive the matte finish thereon in the manner previously described, the members **35** and **38** being of any desired thickness and being compressed together by cooperating die blocks **39** and **40** whereby after the coating on the surface **36** of the transfer member **35** has been secured to the surface **37** of the member **38**, the members **35** and **38** are separated from each other by the fluorocarbon coating splitting therebetween so as to provide the matte finish on the surface **37** of the member **38** in the manner previously described.

Therefore, it can be seen that this invention not only provides an improved method of providing a desired finish on a desired surface, but also this invention provides an improved member for imparting the finish to a desired surface as well as an article having a matte finish on an exposed surface thereof.

While present preferred embodiments of the invention, and methods of practicing the same, have been illustrated and described, it will be recognized that the invention may be otherwise variously embodied and practiced within the scope of the following claims.

What is claimed is:

1. A method for forming a matte finish on a surface comprising the steps of securing a coating of fluorocarbon material on said surface, and, thereafter, splitting said coating between opposed sides thereof so that one split part of said coating remains on said surface to provide said matte finish thereof as the other split part is removed from said surface.

2. A method as set forth in claim **1** and including the step of forming said surface from a resin impregnated fibrous material.

3. A method as set forth in claim **2** and including the step of selecting said resin for said fibrous material from the group consisting of melamines, phenolics, formaldehydes, epoxies and polyesters.

4. A method as set forth in claim **1** wherein said coating of fluorocarbon material is a coating of fluorocarbon particles.

5. A method as set forth in claim **4** and including the step of selecting said fluorocarbon particles from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene, dichlorodifluoroethylene and trichlorofluoroethylene.

6. A method for forming a matte finish on a surface comprising the steps of disposing a coated side of a member against said surface with the coating of said side comprising a fluorocarbon material that is adapted to become secured to said surface and split between opposed sides thereof, causing said coating of said side of said member to become secured to said surface, and separating said member from said surface whereby said coating splits intermediate its opposed sides to leave a layer thereof on said surface to provide said matte finish thereon.

7. A method as set forth in claim **6** wherein said member is a non-porous thermally stable member and said step of causing said coating of said member to become secured to said surface comprises the steps of heating said coating and compressing said coating against said surface.

8. A method a set forth in claim **6** wherein said step of causing said coating of said member to become secured to said surface comprises contacting said coating against said surface.

9. A method as set forth in claim **8** wherein said coating of fluorocarbon material is a coating of fluorocarbon particles.

10. A method as set forth in claim **9** and including the step of selecting said fluorocarbon particles from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene, dichlorodifluoroethylene and trichlorofluoroethylene.

11. A method as set forth in claim **9** and including the step of forming said member from a non-porous and thermally stable flexible sheet.

12. A method as set forth in claim **6** and including the steps of forming said member from a lamination of paper and aluminum containing metallic foil by laminating said paper to one side of said foil and coating the other side of said foil with said coating.

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