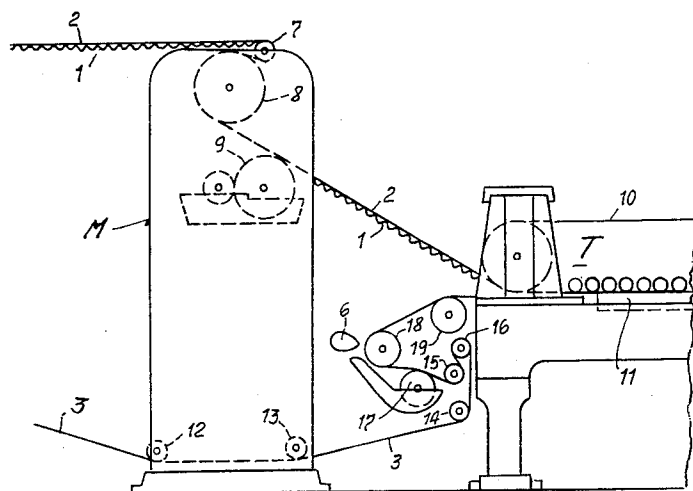
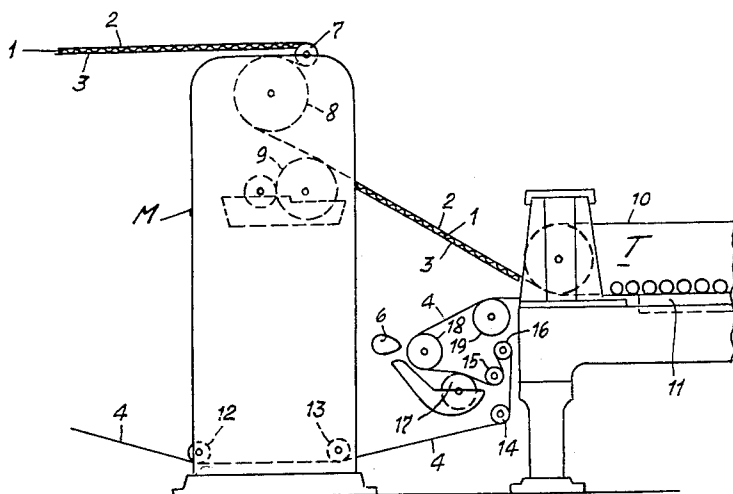


H. BACHOFEN

CORRUGATED PASTEBOARD

2 Sheets-Sheet 1



Lowry & Rinehart

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CORRUGATED PASTEBOARD

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2 Claims. (Cl. 156-210)

Corrugated pasteboards known so far comprise an internal corrugated layer and on both sides thereof a flat cover web which, however, are not water proof and are affected at low moistness. The attachment of an additional waterproof insulating layer requires an additional cost-raising operation and could not be carried out at all with the conventional machines for fabricating corrugated pasteboard.

So-called laminated paper is known per se, in which are combined a plurality of paper webs by means of glue, synthetic resin adhesive or glue. Such laminated papers, however, were not suited for the production of corrugated pasteboard on account of their stiffness which complicates the passage through the machine, since when running over a plurality of idling rollers, the impregnation or the adhesive itself cracked or broke up.

The subject matter of the present invention is a method of producing a corrugated pasteboard, and a pasteboard made in accordance with such method. In this method a thermoplastic protective coating that insulates against water and moisture and comprises two corrugated-pasteboard webs is formed concurrently with the application and setting of adhesive between said two webs. The corrugated pasteboard made according to the present method is distinguished by the fact that between two corrugated pasteboard webs is positioned a thermoplastic protective coating which insulates against water and moisture and at the same time interconnects said two webs, said protective coating consisting of set solidified adhesive.

Mounting an insulation against water and moisture thus is effected concurrently with the operation of sticking together the various corrugated-pasteboard webs. As such latter operation is necessary all the same, apart from such mounting, no additional operation nor special machine is required. The corrugated pasteboard disclosed by the present invention may be made with the aid of conventional corrugated-pasteboard fabricating machines after adding a relatively simple attachment in the form of a plastic-dispersion gluing unit.

In the drawing:

FIGS. 1 to 3 show schematically corrugated-pasteboard fabricating machines requisite for carrying out the present method, and

FIGS. 4 and 5 each illustrate an example of the present corrugated pasteboard.

The corrugated pasteboard shown in FIG. 4 conventionally comprises a corrugated layer 1 and cover webs 2, 3 comprising flat paper webs. Layer 1 is assembled with the cover webs 2, 3 by gluing, as will be described below. For the purpose of excluding water and moisture, an insulating protective coating 5 is disposed between the inside of cover layer 3 and the corrugated layer 1. Coating 5 suitably comprises flexible and/or dilatable plastic material such as polyvinylchloride, cellulose acetate, epoxy resin and the like. The plastic shall be an adhesive such as synthetic resin glue which is applied in the form of solutions or aqueous dispersions and solidifies by thermal effect after setting. The adhesive may be an adhesive resin, glue resin or adhesive cement and belong to the thermohardening or thermoplastic group. The coating 5 when setting also fastens together the cover layer 3 and the adjacent corrugation crests of the corrugated layer 1. Formation of the insulating protective layer 5 and fastening together the cover layer 3 and the corrugated layer 1 is effected in the same operation so as to do away with

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the necessity for two separate operations, having a very favorable effect on the production costs.

The corrugated pasteboard according to FIG. 5 has a more rigid structure, and the insulating protective coating 5 is arranged only between the cover layer 3 and a third cover layer 4. The coating 5 consists of the same material or plastic as described above. The coating 5 of thermo-hardening or thermoplastic material bonds the cover layers 3, 4 and constitutes the seal or insulation against water and moisture.

When fabricating the corrugated pasteboard by means of the machine shown in FIG. 1, a web formed of a cover layer 2 and the corrugated layer 1 is fed over idling cylinders 7, 8 in the machine section M to a gluing unit 9. In the latter, the lower freely exposed side of the corrugated layer 1 and the cover layer 2 is advanced to a conveyor belt 10 of the drying and pressing unit 11. The second cover layer 3 is fed via guide rollers 12, 13 and idling rollers 14 to 16 to a plastic-gluing unit 17 in which the cover layer 3 on the inside is provided with a metered coat of a plastic-dispersion that forms the insulating protective coating 5. Said coat then is spread under the action of an airbrush 6 uniformly on the surface of layer 3. From unit 17 the cover layer 3 is run via guide cylinders 18, 19 to a conveyor belt 10 and combined with the corrugated layer 1 and solidly interconnected by gluing in the conventional drying-and-pressing unit 11. After setting and solidification, the adhesive forms the insulating protective coating 5.

According to the second example, with the aid of the machine shown in FIG. 2, the cover layer 2, the corrugated layer 1 and the cover layer 3, pre-consolidated in the form of a corrugated pasteboard, are advanced into the machine section M, and 7, and 8 again denote idling cylinders, while 9 designates the gluing unit. In the latter, a thin coat of glue is applied to the underside of the prefabricated corrugated pasteboard 1 to 3. From the gluing unit 9 the prefabricated corrugated pasteboard is fed directly to the drying section T by means of the conveyor belt 10. A third cover layer 4 is supplied via the guide rollers 12, 13 and the idling cylinders 14 to 16 to the gluing unit 17. In the latter, layer 4 on the inside is provided with a coat of plastic-dispersion which subsequently forms the insulating protective layer 5 shown in FIG. 5, and such coat then is spread uniformly over the surface of the cover layer 5 under the action of the airbrush 6. Leaving the unit 17, the cover layer 4 is united with the prefabricated corrugated pasteboard 1 to 3 by the guide cylinders 18, 19 and dried and pressed in passing through unit 11.

In the method carried into effect by means of the machine shown in FIG. 3, a corrugated pasteboard formed of the corrugated layer 1 and the cover layer 2 is fed via the idling cylinders 7, 8 to the gluing unit 9 in which the corrugation crests of layer 1 are coated with glue and advanced into the drying section T by means of the conveyor belt 10. The second cover layer 3 is led via idling rollers 20, 21 to a further gluing unit 22 in the machine section M in which a coat of glue is applied on its side remote from layer 1. Leaving unit 22, layer 3 on entering the drying-and-pressing unit 11 is united with corrugated layer 1. A third, additional cover layer 4 via the guide rollers 12, 13 and the deflecting cylinders 14 to 16 is led into the gluing unit 17 in which its inside is provided with an insulating protective coating 5 of a plastic-dispersion, whereupon said coating is spread evenly over the surface of layer 4 under the action of airbrush 6. Through the guide cylinders 18, 19 and the conveyor belt 10, cover layer 4 finally is united with cover layer 3. When passing through unit 11, the adhesive applied to cover layer 4 by means of gluing unit 17, is dried and after

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setting and solidification forms the insulating protective coating 5 (FIG. 5).

Gluing unit 17 is the only additional attachment required and is mounted between the sections M and T of the corrugated pasteboard fabricating machine known per se on the intake side of the drying-and-pressing unit 11. It is essential for the invention that the plastic-glue unit 17 is positioned in the immediate range of the drying section T and close to the intake side thereof.

The application and uniform spreading of the dispersed material may, of course, be applied and spread uniformly in some other way than described, as is known in the art.

While the invention has been described in detail with respect to a now preferred example and embodiment of the invention it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended, therefore, to cover all such changes and modifications in the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A method of fabricating a corrugated pasteboard having a moisture barrier fabricated therein, comprising the steps of advancing a web of corrugated material and a web of planar cover material, applying a coating of insulating material in an adhesive dispersion entirely upon a surface of the cover web, said insulating material forming a film substantially impervious to moisture when it solidifies, directing air against the coating as said cover web curves over a roller while moving vertically to uniformly spread the coating upon the surface of the cover web and prevent puddling of said coating thereon, combining the cover and corrugated webs by contacting crests

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of the corrugated web against the coated surface of the cover web, and solidifying the coating whereby the webs are both joined together and a protective insulation barrier is formed between the webs.

2. A method of fabricating a corrugated pasteboard having a built in moisture barrier, said method comprising the steps of advancing a web of corrugated material and at least three webs of planar cover material, superimposing first and second webs of the cover material on opposite surfaces of the corrugated web, applying a coating of liquid insulating material which is substantially impervious to moisture when solidified completely upon a surface of one of the three cover webs, directing air against the coating to uniformly spread the coating upon the surface of the one cover web at a location where said web is curved while passing vertically over a roller, combining the third web and the one cover web by contacting the coated surface against a surface of the one cover web, and solidifying the coating whereby the coating both joins and forms an insulation barrier between the one and third webs.

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