

UNITED STATES PATENT OFFICE

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MANUFACTURE OF COMPOUND SHEETS OF GLASS AND CELLULOSE DERIVATIVE COMPOSITION

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This invention relates to the manufacture of compound sheets, comprising a sheet of cellulose derivative composition, such as cellulose acetate, interposed between and adherently secured to two sheets of glass.

According to the invention, two sheets of glass are caused to adhere to an interposed sheet of cellulose derivative composition, such as cellulose acetate, by moistening the surface of the cellulose derivative composition sheet with a plasticizer or solvent of high boiling point; initially pressing together the three sheets by an inert gas under pressure, so that they are in direct, close, surface contact, the glass sheets and edges of all the sheets being freely exposed to the gas; and finally subjecting the sheets to steam under pressure. The steam is at a temperature less than the boiling point of the plasticizer or solvent, and the sheets are similarly freely exposed to the steam as they were to the inert gas.

Prior to subjecting the sheets to gas and steam pressure, superfluous liquid and air are eliminated. This can be done by passing the sheets between rubber faced rollers.

The gas and steam pressure treatments can be effected in an autoclave into which compressed air is admitted to effect the initial pressing and subsequently the steam to effect the final pressing.

A suitable plasticizer for use with cellulose acetate is triacetin.

A representative example of one way of carrying out the above described process is as follows:

A sheet of cellulose acetate, which has been previously moistened with triacetin by immersion in a bath thereof, is interposed between two sheets of glass, and the three sheets are first rolled between rubber faced rollers to express air and excess liquid from between the sheets. The combined pack of sheets is then placed in a closed chamber and subjected to the direct pressure of compressed air at a pressure of approximately 50 pounds absolute per square inch for a period of 15 minutes. After slight relaxation of the air pressure, steam at a pressure of approximately 50 pounds absolute to the square inch is

then admitted to the closed chamber, and the pack of sheets is subjected to the pressure and temperature of the steam for a period of 15 minutes. The gaseous pressure is then released, not unduly rapidly, and the adhering sheets are then removed from the chamber.

The temperature of steam at the above pressure is below the boiling point of triacetin which is 258° C. at atmospheric pressure.

The above mentioned pressures and periods can be varied somewhat without materially affecting the resultant product.

Claims:

1. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose derivative composition, consisting in moistening the surface of said cellulose derivative composition sheet solely with a plasticizer of high boiling point, initially freely exposing and pressing together said glass sheets with said moistened cellulose derivative composition sheet interposed in a gas under pressure inert to said cellulose derivative composition sheet, and finally freely exposing and pressing said sheets in steam under pressure and at a temperature lower than the boiling point of said plasticizer.

2. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose derivative composition, consisting in moistening the surface of said cellulose derivative composition sheet solely with a plasticizer of high boiling point, initially freely exposing and pressing together said glass sheets with said moistened cellulose derivative composition sheet interposed in compressed air, and finally freely exposing and pressing said sheets in steam under pressure and at a temperature lower than the boiling point of said plasticizer.

3. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose acetate, consisting in moistening the surface of said cellulose acetate sheet solely with triacetin, initially freely exposing and pressing together said glass sheets with said moistened cellulose acetate sheet interposed in a gas under pressure inert to said cellulose acetate sheet, and

finally freely exposing and pressing said sheets in steam under pressure and at a temperature lower than the boiling point of said triacetin.

4. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose acetate, consisting in moistening the surface of said cellulose acetate sheet solely with triacetin, initially freely exposing and pressing together said glass sheets with said moistened cellulose acetate sheet interposed in compressed air, and finally freely exposing and pressing said sheets in steam under pressure and at a temperature lower than the boiling point of said triacetin.

5. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose derivative composition, consisting in moistening the surface of said cellulose derivative composition sheet solely with a plasticizer of high boiling point, initially freely exposing and pressing together said glass sheets with said moistened cellulose derivative composition sheet interposed in a gas under pressure inert to said cellulose derivative composition sheet, slightly relaxing the pressure of said inert gas, and finally admitting to said gas under relaxed pressure steam under pressure and at a temperature lower than the boiling point of said plasticizer.

6. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose derivative composition, consisting in moistening the surface of said cellulose derivative composition sheet solely with a plasticizer of high boiling point, initially freely exposing and pressing together said glass sheets with said moistened cellulose derivative composition sheet interposed in compressed air, slightly relaxing the pressure of said compressed air, and finally admitting to said compressed air under relaxed pressure steam under pressure and at a temperature lower than the boiling point of said plasticizer.

7. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose acetate, consisting in moistening the surface of said cellulose acetate sheet solely with triacetin, initially freely exposing and pressing together said glass sheets with said moistened cellulose acetate sheet interposed in a gas under pressure inert to said cellulose acetate, slightly relaxing the pressure of said inert gas, and finally admitting to said gas under relaxed pressure steam under pressure and at a temperature lower than the boiling point of said triacetin.

8. A process for effecting the interadherence of two sheets of glass to an interposed sheet of cellulose acetate, consisting in moistening the surface of said cellulose

acetate sheet solely with triacetin, initially freely exposing and pressing together said glass sheets with said moistened cellulose acetate sheet interposed in compressed air, slightly relaxing the pressure of said compressed air, and finally admitting to said compressed air under relaxed pressure steam under pressure and at a temperature lower than the boiling point of said triacetin.

In testimony whereof I have signed my name to this specification.

WILLIAM JOHNSTON.