

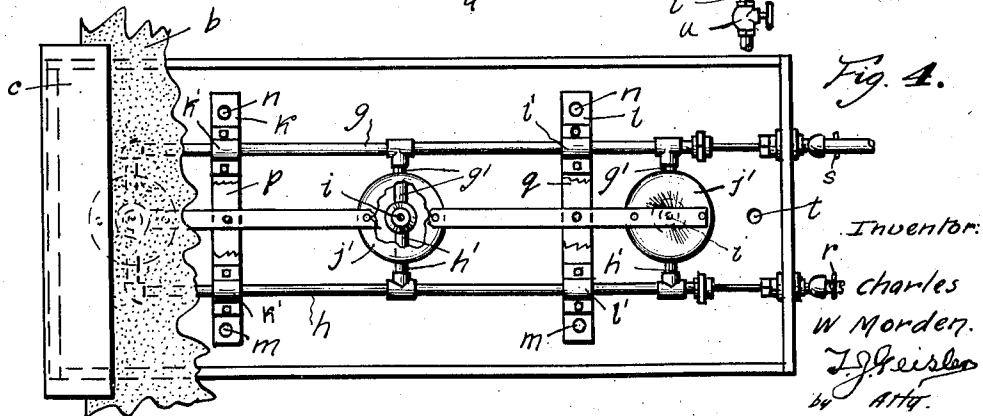
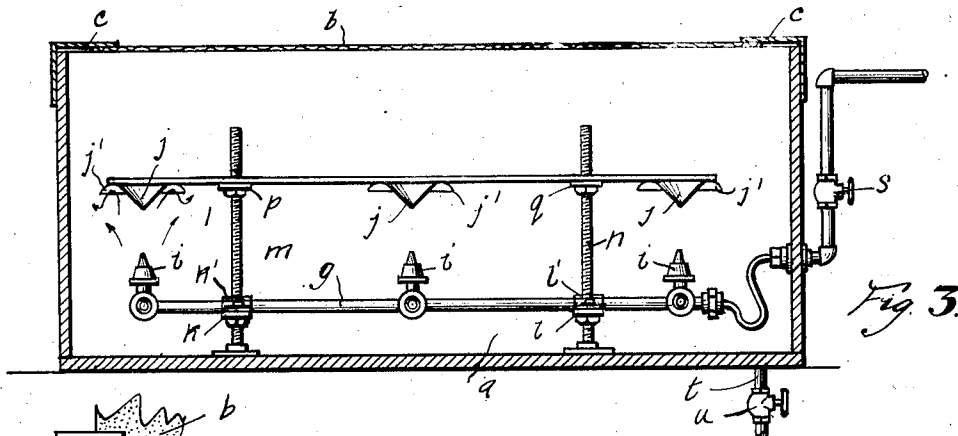
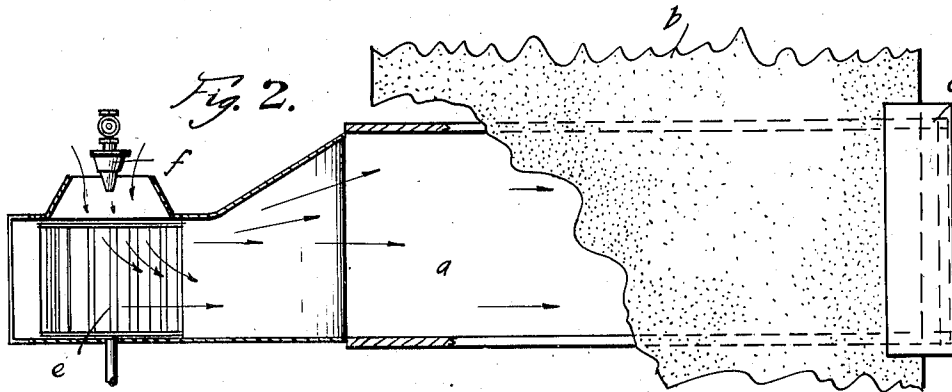
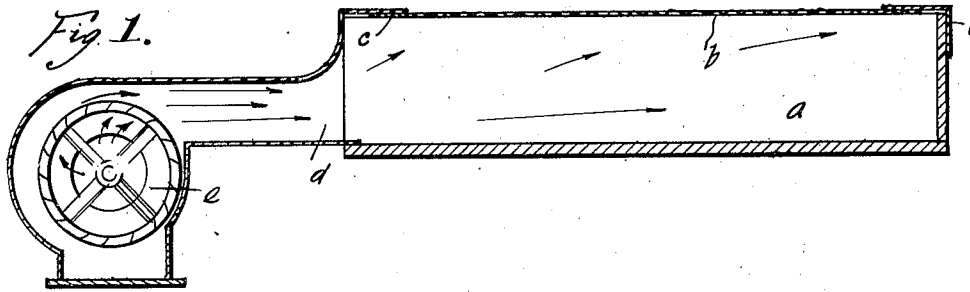
July 28, 1925.

C. W. MORDEN

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METHOD AND MEANS FOR IMPREGNATING A SHEET OF MATERIAL WITH LIQUID

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UNITED STATES PATENT OFFICE.

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METHOD AND MEANS FOR IMPREGNATING A SHEET OF MATERIAL WITH LIQUID.

Application filed July 27, 1922. Serial No. 577,997.

To all whom it may concern:

Be it known that I, CHARLES W. MORDEN, a citizen of the United States, and a resident of West Linn, county of Clackamas, and State of Oregon, have invented new and useful Improvements in Methods and Means for Impregnating a Sheet of Material with Liquid, of which the following is a specification.

My invention relates to the impregnation of a thin web of material with some liquid, as for example the impregnation of fruit wrappers with a preserving oil.

The object of my invention is to provide an improved method, and improved devices, for doing the work.

Since the sheet of paper used for making wrappers is usually very thin, the sheet may only be moistened; for, if any undue quantity of liquid be applied to parts of the sheet it is apt to tear at those parts.

I attain my object by atomizing the impregnating liquid to a fog devoid of particles moving with impinging force, and drawing the web across an opening of a chamber filled with the fog. The density of the fog may be varied according to conditions, and degree of impregnation.

The process may be practically carried out by means for impregnating a sheet of material with a liquid comprising, means for atomizing the liquid into a fog, said means adjustable to vary the density of the fog, a baffle located between the sheet and the atomizing means to prevent particles of the liquid being directly impinged upon the sheet, so that the latter is exposed only to the fog of liquid floating in the chamber.

The details of these devices and of my process are hereinafter fully described with reference to the accompanying drawings.

In the drawings:

Fig. 1 is a longitudinal sectional view of a saturating device in which the atomized liquid is blown into the saturating chamber by a fan;

Fig. 2 is a plan view of this device partially shown in section and illustrates the web passing over the chamber;

Fig. 3 is a longitudinal sectional view of a saturating device in which baffles are interposed to prevent unatomized particles of fluid from striking the passing web; and

Fig. 4 is a plan view of the device shown in Fig. 3 with a portion of the web broken

away to disclose the mechanism underneath.

The device for impregnating a sheet of material with a liquid consists of a chamber *a* which is open at the top. The web *b* passing over the open top is sealed by clips *c* which also prevent the paper from moving away from the container. One leg of this clip extends outwardly from the sides of the container. Air is forced into this chamber thru an opening by a fan *e*. This air may be moved into chamber by any equivalent means, however, such for example as a compressor. An atomizer nozzle *f* is positioned in the intake side of the fan or compressor so that the atomized liquid will be drawn into the fan and be mixed more thoroughly with air and then be blown into the chamber. The passage way into the chamber for the air is arranged so that any particles of liquid which have not been thoroughly atomized will not strike the web but the only particles which will strike it will be those that are small enough that they will be virtually suspended in the air in the form of a fog.

A modified device which also prevents the solid particles from striking the moving web is shown in Figs. 3 and 4. Air is received thru the pipe *g* and liquid thru the pipe *h* and the outlets *g'* and *h'* are tapped into nozzles *i* which are connected to both pipes.

The force of the air striking the liquid atomizes the same and the co-mingled product is blown upward. Baffle plates *j* are preferably placed directly over the outlet of the atomizing nozzle to prevent any particles from being forced against the moving web, and to permit the fog which is suspended in the air solely to strike the web. These baffle plates preferably are made in the form of inverted cones with flaring pendant flanges *j'* which encompass the enlarged portion or base of the cone. The pipes *g* and *h* are mounted in hangers *k* and *l* which are supported by threaded perpendicular rods *m* and *n*. These hangers have removable caps *k'* and *l'* which permit the pipes to be readily replaced or adjusted. The baffle plates *j* are mounted on a common rod *o* which is fastened to transverse bars *p* and *q* supported by the threaded rods *m* and *n*. Nuts *p'* and *q'* allow the baffle plates to be adjusted so that they are spaced any desired distance above the atomized nozzles *i*. Valves *r* and *s* in the supply lines provide

an adjustment by which to control the amounts of air and liquid which flow thru the atomizing nozzle. A drain pipe *t* controlled by a valve *u* extends thru the bottom of the chamber and functions to drain off the unatomized liquid.

I claim:

1. The method of impregnating a sheet of absorbent material with liquid consisting in exposing the sheet to said liquid atomized into a floating fog, situated below said sheet.

2. The method of impregnating a sheet of absorbent material with liquid consisting in converting said liquid by atomization into a floating fog, and exposing the sheet to a substantially quiescent cloud of said fog, with the sheet arranged substantially out of position for receiving any deposit by gravity from said fog.

3. In an apparatus of the character described the combination of a chamber having an open side, means for filling said chamber with a floating fog of atomized liquid, and means for exposing a strip of material to said open side and so arranged as to be substantially out of position for receiving any deposit by gravity from said fog.

4. In an apparatus of the character described the combination of a chamber having an open side for receiving a strip of material, means for filling said chamber with

a fog of atomized liquid, means for preventing unatomized particles of the liquid being impinged upon the sheet.

5. In an apparatus of the character described the combination of a chamber having an open side for receiving a web of material, means for filling said chamber with a fog of atomized liquid, and a baffle interposed between the sheet and the atomizing means.

6. In an apparatus of the character described the combination of a chamber having an open side for receiving a web of material across said open side, means for filling said chamber with a fog of atomized liquid, and a baffle interposed between the sheet and the atomizing means, said baffle consisting of an inverted cone with a flaring pendent flange encompassing the base of the cone.

7. In an apparatus of the character described the combination of a chamber having an open side for receiving a web of material across said open side, means for filling said chamber, with a fog of atomized liquid, and a baffle interposed between the sheet and the atomizing means, the baffle and the atomizing means being adjustable relatively to each other for the purpose specified.

CHARLES W. MORDEN.