

J. FOLTZER.
METHOD OF MAKING IMITATION TEXTILE PRODUCTS FROM SOLUTIONS OF CELLULOSE
OR PLASTIC SUBSTANCES.
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2 SHEETS-SHEET 1.

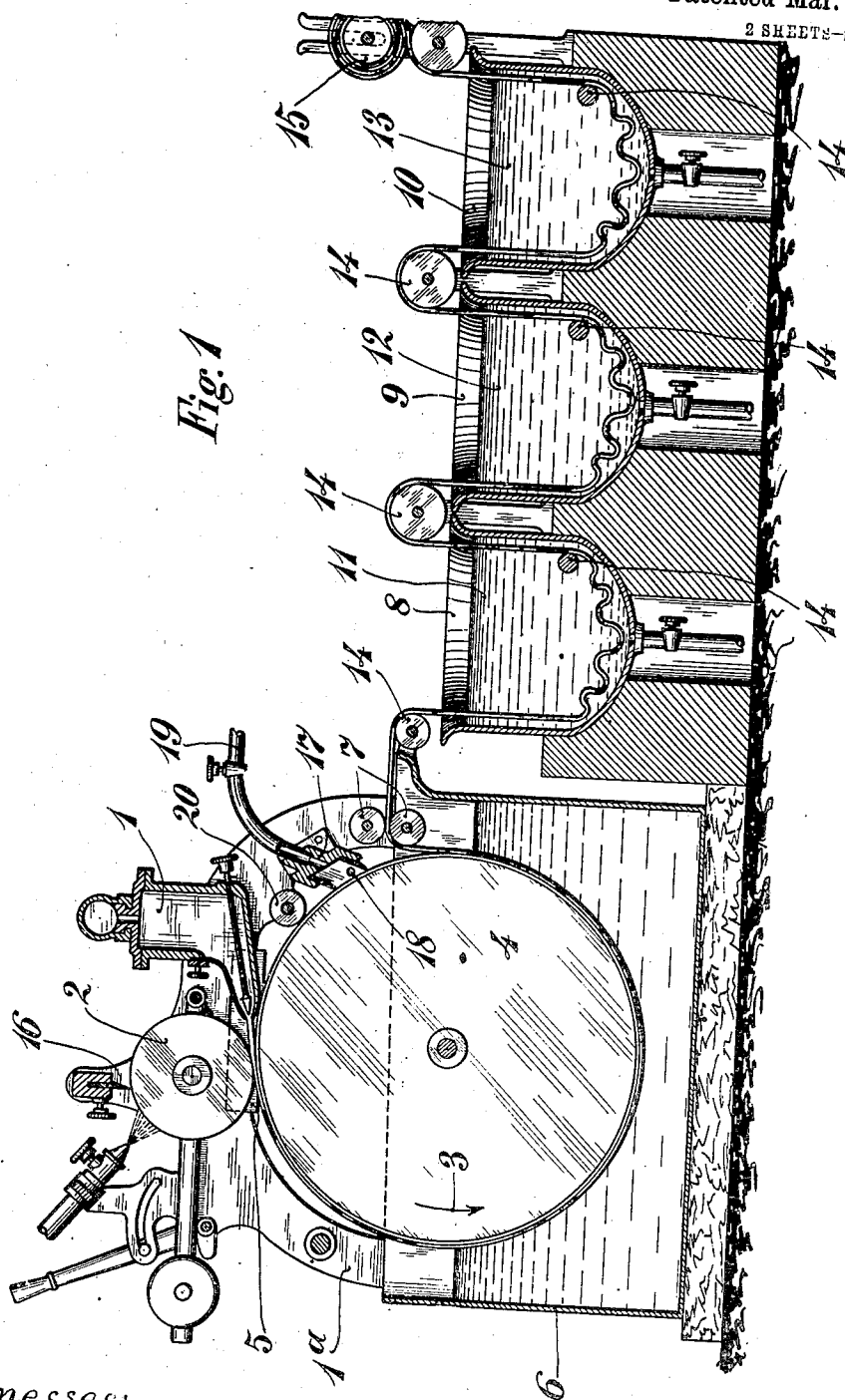
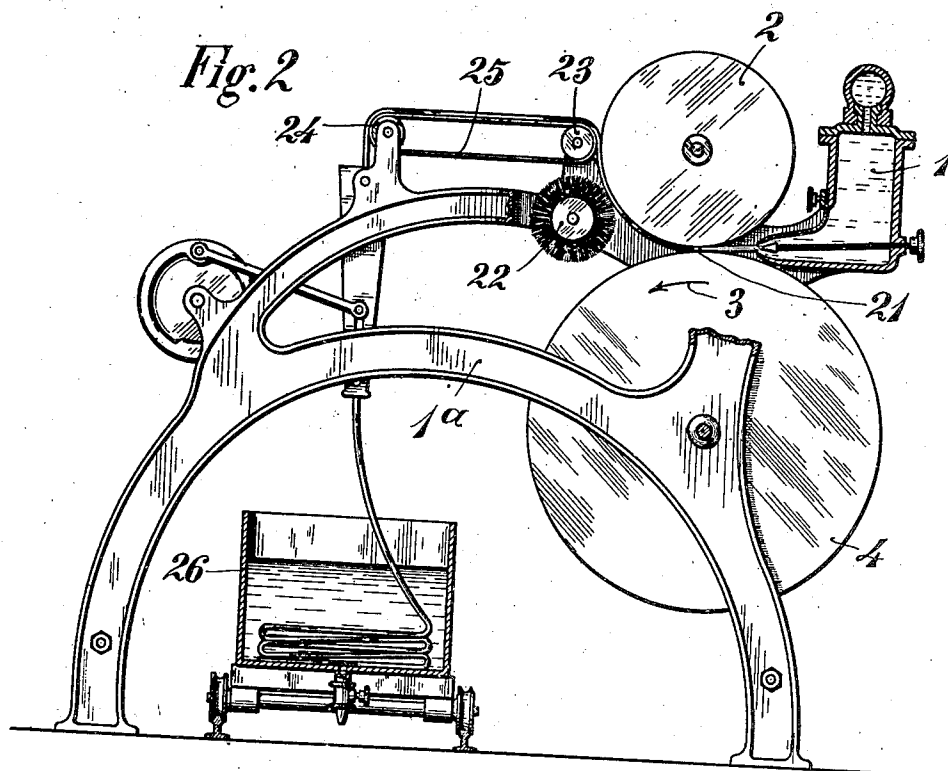
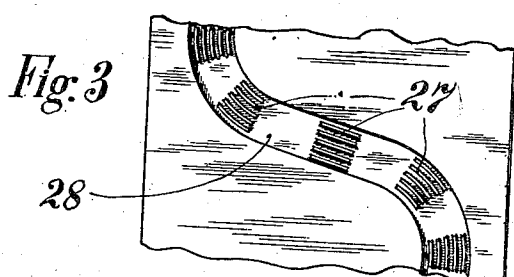
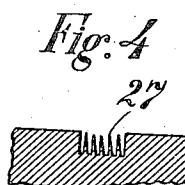


Fig. 1

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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING IMITATION TEXTILE PRODUCTS FROM SOLUTIONS OF CELLULOSE OR PLASTIC SUBSTANCES.

1,133,548.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEF FOLTZER, a subject of the Emperor of Germany, residing at Metz, Germany, have invented new and useful Improvements in Methods of Making Imitation Textile Products from Solutions of Cellulose or Plastic Substances; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to a method of making imitation textile products from solutions of cellulose, (nitro-cellulose, viscose, acetyl cellulose and the like) or from plastic substances (casein, fibrin, and the like) or from rubber composition, said solutions or substances being applied in a thin layer corresponding to the thickness of the desired body by means of a spreading apparatus to a base, a cylinder, a disk or an endless cloth-band. The substance applied to said base is crowded in front of an engraved pressure or goffering roll, which is arranged immediately behind or at a certain distance from the laying on or spreading apparatus, which is directly connected to the pressing apparatus. The positively driven engraved roll presses against the base and stamps out of the viscous mass bodies corresponding in their form to the engravings of said goffering roll.

The method according to the present invention may be carried out, for instance, by means of the devices illustrated on the accompanying drawings, in which—

Figure 1 shows a vertical longitudinal section through a first form of such a device, Fig. 2 shows a front view of a second form and Figs. 3-4 show details of the device illustrated in Fig. 2.

The solution of cellulose or viscous mass contained in the laying on or spreading hopper 1 shown in Fig. 1 is laid in a thin layer, corresponding in thickness to the engravings of a pressure or goffering roll 2, on the surface of a cylinder 4 arranged beneath said roll 2 and rotating in the direction of the arrow 3.

1^a denotes a frame carrying the apparatus 1. The solution or mass is fed toward the pressure roll 2 provided with engraved patterns for tulle, textile or embroidered goods and it is crowded in front of this roll so that it is uninterruptedly pressed out by the engraved parts of said roll 2. At this time the laid on substance has already become solid. In order to prevent a lateral pressing out of the mass there are provided on the cylinder 4 two lateral wings or blades 5 connecting the laying on apparatus 1 to the pressure roll 2. The product, which has become sufficiently solid, is now conveyed farther upon the circumference of the cylinder 4 and it is then immersed into a hardening liquid contained in a tank 6, in which said cylinder 4 is partly arranged. The shaped product is then pulled off by the cylinders 7 and it is finally fed by means of continually rotating rolls 14 to several suitable baths 11, 12 and 13 contained in tanks or receptacles 8, 9 and 10, respectively for the purpose of being further treated (for instance, acidified, cleansed and the like). The finished product is then finally wound upon a reel 15.

It has been found in practice that the pressed out imitation products adhere very frequently to the engraved parts of the pressure roll 2 from which they can then only be detached with difficulty. This is particularly the case if thick embroidery imitations are used, and in order to prevent such an adhering of said products it is necessary to sprinkle the engravings of the roll 2 with a suitable liquid for precipitating or hardening the mass, the excess of the liquid being carefully taken off the surface of the roll by means of stripping off knives 16. Also the circumference of the drum 4 has to be cleaned very carefully before it comes again near the outlet of the laying on hopper 1 to take up a new layer of cellulose. For this purpose there is provided a receptacle 17, which lies close against a part of the circumference of the drum 4 and which is provided with a lateral outlet opening 18. This receptacle 17 is also connected to a pipe 19, which may convey into said receptacle a cleansing liquid which neutralizes the preceding precipitating bath. As indicated in the drawing, the lateral walls of

the receptacle 17 act at the same time as stripping off members, while a heated drum 20 arranged between the receptacle 17 and the laying on hopper dries the circumference of the drum 4.

An adhering of the products to the engravings of the pressure roll 2 may also be prevented by heating the roll to such a temperature that the heat causes a superficial coagulation of the products. Special effects may be attained if fine fibrous powder of the same color or of different colors is mixed with the solution of cellulose or with the plastic substance, or the appearance and texture of the products are affected if such powder is sprinkled together with the precipitating fluid into the engravings of the pressure roll 2, so that these fibers adhere to the surface of the products while the plastic mass is shaped and simultaneously precipitated.

In choosing the different dimensions of the engravings it has to be taken into consideration that the products shrivel considerably during the drying process, notwithstanding the tension exerted upon them, and since said tension acts usually only in the longitudinal and the transverse direction of the products the shriveling will be greater in the thickness of the latter which is reduced during the drying of said finished products, and instead of being an imitation of cloth the product will have more of a paper or parchment like appearance. The engravings of the pressure roll have to be, therefore, at least 40-80% deeper and about 25-50% larger than the finished goods. The finished product, or its relief or raised parts, may be ornamented between two goffering or silk-finishing calenders held correspondingly apart, whereby care has to be taken that the thickness of the fabric is not much reduced, but above all that the products are not pressed flat.

Instead of using a mass consisting of a solution of cellulose there may be used a mass consisting of cellulose, for instance cotton fibers or cellular tissue, which are not completely dissolved by the solvent liquid, but only rendered soluble. There may also be mixed with the said mass starch and gluten, dissolved for example in lye, as well as a shining, homogeneously or differently colored glass powder. These dough like substances produce softer and less vitreous products and the small particles of glass powder produce in the products special light effects. Instead of producing imitation metal-like bodies by admixing metal powder with the mass, said bodies may be metallized by means of galvanizing processes and by using electricity. Such products can also be metallized by mixing iron powder with the mass and the finished product may be covered with copper by dipping it into a

solution of copper. The presence of iron causes the copper to precipitate in the form of a thin layer on the fabric imitation, which eventually may be covered with lacquer. Cheap imitation textile goods have only to be covered with a metallic or glazed lacquer. It is also possible to make light, soft and porous products by preparing a mass consisting of two different solutions and of different primary products (for example of a solution of cellulose and of fibrin) one of these primary products (for example the fibrin) being afterward removed from the finished product. There remains then a connected microscopic skeleton, which can easily be colored and which is of particularly soft texture.

For the treatment of the substance in the hereinbefore described manner there may be used, for example, the device shown in Figs. 2-4, the parts corresponding to those shown in Fig. 1 having the same reference letters.

1 designates the spreading or laying on hopper, 1^a the frame carrying the latter, 2 the pressure or goffering roll and 4 the cylinder forming the base and revolving in the direction of the arrow 3. This cylinder may, however, also be replaced by a plate or an endless band. The speed of rotation of the pressure roll 2 can be chosen quite independently from that of the cylinder 4; in other words, said roll may have a greater or smaller velocity than the cylinder. If there exists such a difference in the speed of rotation between the parts 2 and 4 there is produced at the point where these parts 2, 3, 4 touch each other, a certain friction which results in better formed products. If the press roll 2 does not touch the cylinder 4 and if there is provided between these two parts a small space, then the produced product will not be perforated and the formed articles adhere to a simultaneously produced film-like base, the thickness of which corresponds to the distance between the pressure roll 2 and the cylinder 4. This arrangement produces intagliated products.

For the manufacture of products, which have to be perforated there may be provided on the pressure roll 2 a stripping off or rotatory brush 22, which brushes off or removes the film parts eventually adhering to the unperforated products. In the arrangement shown in Fig. 2 the stamped out textile product is not conveyed farther by the cylinder 4 but it remains inserted in the engravings of the roll 2 till it is conveyed to a stripping off roll 23. The product passes over an endless band 25 passing over rolls 23 and 24 and it afterward falls into a receptacle 26, where the loose or wound up products are successively acted upon by different baths and chemical products which

may harden, subsequently treat, cleanse and eventually bleach or dye said product. This arrangement eliminates different manipulations, so that the goods are less torn or damaged. The cleansed products may be treated with magnesium chlorid, glycerin or glycerin-like solutions. These textile products have the drawback in that their thicker parts feel much too hard as compared with ordinary cloth or embroidered fabric pieces. As the engravings of the pressure roll have to be about 50-80% deeper and in particular larger than the finished, dried product, it is possible to obtain, in an indirect manner, a much softer and a more plastic product if thick threads are not produced by means of a single, large and deep engraved line, but produced, as shown in Figs. 3 and 4, by means of engraved lines provided at several places with thin ribs 27 and having between the latter fuller parts or knots 28, whereby a kind of joints formed by the ribs 27 are formed in the products. After the drying the breaks or discontinuances formed by the ribs 27 are hardly visible; they form however, a kind of joint making the product much more flexible.

I claim:

1. The method of making imitation textile products from a mass capable of hardening, which comprises forming the mass into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the mass between said surfaces to fill the intaglio only and produce of said mass designs corresponding to the intaglio, and hardening the mass.

2. The method of making imitation textile products from a mass capable of hardening, which comprises forming the mass into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the mass between said surfaces to fill the intaglio only and produce of said mass designs of greater dimensions than the designs of the finished article, and hardening the designs as they are formed.

3. The method of making imitation textile products from a mass capable of hardening, which comprises forming the mass into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said mass designs corresponding to the intaglio surface, applying a hardening agent to said intaglio surface before contacting with said mass and bodily hardening the mass.

4. The method of making imitation textile products from a mass capable of hardening, which comprises forming the mass into a sheet on a smooth surface, stemming the

mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only, and produce of said mass designs corresponding to the intaglio surface, applying to said intaglio surface before contacting with said mass a hardening liquid mixed with a decorating substance, bodily hardening the decorated mass and then drying the latter.

5. The method of making imitation textile products from a mass capable of hardening, which comprises forming the mass into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said mass designs corresponding to the intaglio surface, applying to the intaglio surface before contacting with said mass a hardening liquid, providing the sheet with an outer surface consisting of another substance than the mass of the sheet, bodily hardening the decorated mass, and then drying the latter.

6. The method of making imitation textile products from a mass capable of hardening, which comprises forming the mass into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said mass designs corresponding to the intaglio surface, applying to the intaglio surface before contacting with said mass a hardening liquid, applying a substance to said smooth surface for neutralizing the hardening liquid adhering thereto, heating said smooth surface to dry it, and hardening the mass provided with designs.

7. The process of making imitation textile products, which consists in making a solution of cellulose or cellular tissue and an admixture of dissolved starch, gluten, and shining glass powder, forming the solution into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said mass designs corresponding to the intaglio surface, bodily hardening the mass and then drying the latter.

8. The process of making imitation textile products, which consists in making a solution of cellulose or cellular tissue dissolved at a low temperature in caustic soda lye and an admixture of dissolved starch, gluten, and shining glass powder, forming the solution into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said

mass designs corresponding to the intaglio surface, bodily hardening the mass and then drying the latter.

- 5 9. The process of making imitation textile products, which consists in making a solution of cellulose or cellular tissue dissolved at a low temperature in caustic soda lye and an admixture of dissolved starch, gluten and shining glass powder, forming
10 the solution into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface and produce of said
15 mass designs corresponding to the intaglio surface, metallizing the article, applying a surface hardening agent to the intaglio, before bodily hardening the mass and then drying the mass provided with designs.
- 20 10. The process of making imitation textile products, which consists in making a solution of cellulose or cellular tissue and an admixture of dissolved starch, gluten and shining glass powder, forming the solution
25 into a sheet on a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said mass
30 designs corresponding to the intaglio surface, applying a surface hardening agent to said intaglio surface before contacting with said mass, bodily hardening the decorated mass, successively treating said mass with
35 several baths and chemical products to precipitate, further treat and cleanse said mass, and then drying the sheet.

11. The process of making imitation textile products, which consists in making a solution of cellulose or cellular tissue and an admixture of dissolved starch, gluten and shining differently colored glass powder, forming the solution into a sheet onto a smooth surface, stemming the mass in front of an intaglio surface while on said smooth surface, passing the sheet between said surfaces to fill the intaglio surface only and produce of said mass designs corresponding to the intaglio surface, applying a surface hardening agent to said intaglio surface before contacting with said mass, bodily hardening the decorated mass, cleansing said mass, treating the cleansed mass with magnesium chlorid and glycerin, and then drying the sheet.

12. The method of making imitation textile products of a suitable mass capable of being hardened, which comprises forming the mass while plastic into a sheet on a smooth surface stemming said mass between said smooth surface and an intaglio contacting surface, thereby filling only the intaglio surface under pressure while forcing the excess mass back into the stemmed portion and simultaneously hardening the mass inclosed in said intaglio surface.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOSEF FOLTZER.

Witnesses:

ROBERT BIJUY,
FANNY R. JEWETT.