May 26, 1931. E. CZAPEK ET AL 1,806,841

PROCESS OF MANUFACTURING ARTIFICIAL LEATHER, LEATHER BOARD, WAXED CLOTH, AND THE LIKE

Filed Oct. 2, 1924

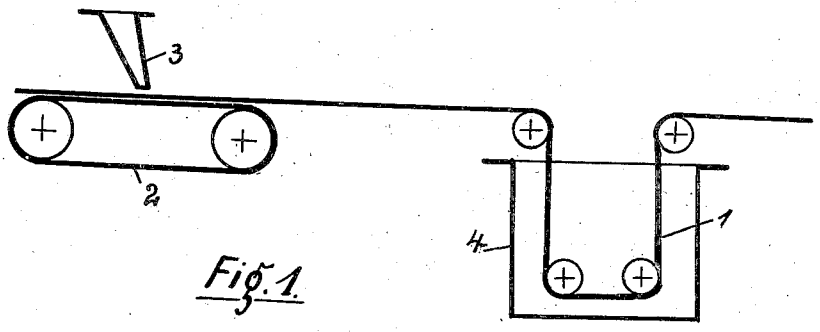

Fig. 1.

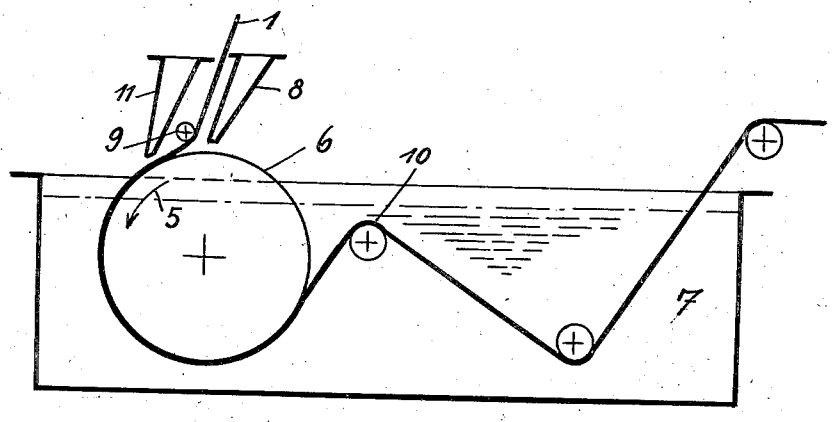

Fig. 2.

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Patented May 26, 1931

1,806,841

UNITED STATES PATENT OFFICE

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PROCESS OF MANUFACTURING ARTIFICIAL LEATHER, LEATHER BOARD, WAXED CLOTH AND THE LIKE

Application filed October 2, 1924, Serial No. 741,294, and in Germany June 7, 1923.

This invention has reference to a process of manufacturing artificial leather, from cellulose solutions, and it is intended to improve and simplify the process of manufacture and to generally improve the quality of the product obtained. The methods heretofore employed for manufacturing artificial leather, and the like from cellulose solutions either necessitate high pressure or vacuum, in order to combine the cellulose with the web of material. According to other methods attempts have been made to apply textile fibers to a layer of cellulose by blowing, such layer being delivered from a receptacle having a spout or by a pouring device. All these methods are very complicated and require a considerable consumption of energy, and a complicated system of apparatus.

In the course of our researches it has been ascertained that it is possible to obtain from cellulose solutions a very satisfactory product adapted for use as artificial leather, and the like in a very simple manner of manufacture by applying the cellulose to a carrier web of textile material from a spout, pouring or by the use of any appropriate means for coating a web of fabric with a cellulose solution, and by then causing the web with the coating thereon to pass in the usual manner through a precipitating liquor. The invention may be used in connection with all cellulose solutions which are capable of precipitation by acid or salt solutions or by a mixture of the same in the well known manner. Of the various cellulose solutions we prefer to employ the so-called viscose which is precipitated by salt solutions, though our invention is not restricted thereto. The fabric upon which the viscose is deposited is a carrier web of textile material we have preferably made use of thin and loosely woven cotton fabrics.

It has been found to be advantageous in the manufacture of the product and to facilitate the thorough permeation of the web of textile material by the cellulose solution applied thereto by a suitable selection of the viscosity of the solution. For the same purpose the viscose may be given sufficient time between the caster and the precipitating liquor to thoroughly enter into the web of textile fabric. This purpose may, for instance, be accomplished by causing the carrier web of fabric to pass in a horizontal or inclined direction for a certain distance and with suitable velocity before entering the precipitating bath.

After the precipitation the product obtained is further treated in the usual manner. The viscosity of the cellulose solution should be regulated in accordance with the thickness of the coating to be obtained, so that, for example, in the case of comparatively thick coatings a solution of greater viscosity is to be employed than with thinner coatings. If it is desired to coat a fabric on both sides with cellulose, one may proceed by applying cellulose solution upon a casting carrier, then passing the web of material above and along this solution, and applying such solution likewise to the other side of the fabric. By this means we are enabled to obtain in a single course of operation and with simple expedients a product which may be used on both sides as leather board or artificial leather or the like. In order to produce a rapid precipitation, the carrier or support may be wetted with the precipitant before applying the cellulose solution. Our invention will be more particularly described with reference to the accompanying drawings showing by way of example an apparatus by means of which the new process may be carried out, in a diagrammatic manner in two forms of execution to Figures 1 and 2. In accordance with Figure 1 a product coated with cellulose on but one side is obtained for instance by causing a web of fabric 1, of cotton fiber for instance, to pass underneath the spout or caster 3 by means of the endless apron 2 which is moved by any suitable means, the viscose being delivered from the caster 3 upon the web 1. Before the web of fabric 1 provided with the viscose layer is conducted into the precipitating bath 4, it is passed through a certain distance with suitable velocity, so as to afford sufficient time to the viscose to well enter into the web of

fabric. After having been led through the precipitating bath 4 the artificial sheet consisting of web of fabric and viscose is washed and dried in the ordinary manner, or is otherwise further treated.

In the arrangement of apparatus according to Figure 2 the web of textile fabric 1 is provided on both sides with the layer of viscose. With this end in view the drum 6 which is rotated in the direction of the arrow 5, and which serves as the casting support or carrier is immersed into the precipitating bath 7, so that it is wetted with the precipitant, when it arrives below the caster 8 from which a solution of viscose flows unto the drum 6 wetted with the precipitant. Above and along this coating of viscose supplied to the drum 6 the web of fabric 1 is conducted for instance by means of the rollers 9 and 10, so that the layer of viscose may penetrate into the adjacent side of the web of fabric. Upon the other side of the web of fabric viscose is likewise applied by means of another casting device 11, so that the web of fabric 1 which is detached from the drum 6 below the level of the liquor by means of the roller 10 has been covered on both sides with a layer of viscose. After having been passed through a precipitating bath the product may then be further treated in any suitable manner.

The invention has been described and shown in its broad aspects only, and it should be understood that it is susceptible of various modifications and changes and different kinds of apparatus may be used to apply and detach the coatings, and other changes may occur to the expert, without deviating from the spirit of the invention, as set forth in the appended claims.

We claim:—

1. The process of manufacturing artificial leather and the like from viscose and similar cellulose solutions capable of precipitation by acids and salts, which consist in wetting, a rotary supporting surface with a precipitant, then applying cellulose solution onto said wetted surface in a layer of a thickness being equal after coagulation of the cellulose to a portion of the thickness of the final product, causing a web of fabric to pass in contact with said layer of cellulose solution at the same speed as the rotating supporting surface then applying another supply of cellulose solution to the opposite side of the fabric in a layer having a thickness being practically equal after coagulation of the cellulose to the other portion of the total thickness of the final product, passing and guiding the two layers of cellulose solution and the intermediate web of fabric through a precipating bath and finally washing and drying the product obtained after coagulation.

2. The process of manufacturing artificial leather and the like from viscose and similar cellulose solutions which may be precipitated by acid and salt solutions, which consists in applying such a liquid precipitating solution to the surface of a roller maintained in a bath of the precipitating fluid, depositing upon the wetted surface of the roller a coating of the cellulose solution, guiding a carrying strip of fabric about and beyond the coated surface of the roller, applying a coating of cellulose solution upon the opposite side of the carrying strip of fabric, guiding the coated strip through the bath of precipitating solution, washing and drying the product and then impressing surface ornamentation into the hardened surface.

3. The process for manufacturing artificial leather and the like from viscose and similar aqueous cellulose solutions capable of precipitation by acids and salts which consists in wetting a rotating drum with a precipitant, then applying a layer of cellulose solution upon the wetted drum, passing a thin web of fabric in contact with said layer at the same speed as this drum, conducting the web and the layer of cellulose solution together through a precipitating bath by means of the rotating drum and finally washing and drying the coagulated product.

In testimony whereof, we affix our signatures.

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