UNITED STATES PATENT OFFICE.

WALTER E. MASLAND, OF WILMINGTON, DELAWARE, ASSIGNOR TO E. I. DU PONT DE NEMOURS POWDER COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF NEW JERSEY.

METHOD OF PRODUCING PYROXYLIN-COATED FABRICS.

1,267,785.


To all whom it may concern:

Be it known that I, WALTER E. MASLAND, of Wilmington, in the county of New Castle, and in the State of Delaware, have invented a certain new and useful Improvement in Methods of Producing Pyroxylin-Coated Fabrics, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates particularly to an improvement in the methods of producing pyroxylin coated fabrics, but more especially to woven fabrics carrying a coating or layer of pyroxylin composition.

The object of my invention is to produce a product of this kind in which the layer of pyroxylin composition carried by the fabric will be very effectively and securely anchored on the fabric, and in which the coating composition will adhere in an effective manner to the fabric. A further object of my invention is to provide a method of producing pyroxylin coated fabrics, in which the coating composition will dry and harden in a uniform manner, and which will, therefore, be tough and of such a nature that it can be subjected to strains to a considerable degree without risk of damage.

While my invention is capable of being carried out in many different ways, for the purpose of illustration I shall describe only one way in which it may be carried out, and while, furthermore, it may be carried out in connection with any desired form of apparatus, for the purpose of illustration I have shown only one form of apparatus in the accompanying drawings, in which:

Figure 1 is a front elevation of a machine which may be used in connection with my process.

Fig. 2 is a side elevation of the same.

Fig. 3 is a plan view of a detail of the roll on which the coated fabric is wound.

Fig. 4 is an end elevation in detail of a shaft on which the fabric is carried when being fed into the machine.

Fig. 5 is an end elevation of one of the wooden shuttles used for carrying the fabric.

Fig. 6 is an end elevation of one of the gears, and Fig. 7 is a plan view of the guide plates for feeding the jelly upon the web of fabric.

In the drawings I have shown a machine having a main frame 1, in which there are carried three rolls 2, 3 and 4. These rolls 2, 3 and 4 are carried upon shafts 5, 6 and 7, respectively. The shaft 6 of the middle roll 3 is maintained in a fixed position in the main frame 1. The shafts 5 and 7, however, are supported in vertically movable boxes 60 and 61, which are adapted to be adjusted by means of screws 10 and 11, supported in the main frame 1 and having worm wheels 12 and 13 on their ends which mesh with worms 14 and 15, carried by two shafts 16 and 17, and adapted to be operated by handles 18 and 19. The shafts 5, 6 and 7 carry, near one end thereof, gears 20, 21 and 22, which are keyed to the shaft by means of removable keys 23, said gears 20, 21 and 22 being all of the same size. Upon the other end of the said shafts 5, 6 and 7, are carried gears 24, 25 and 26, the gear 25 being smaller than the gears 24 and 26, and said gears being keyed to their respective shafts in a similar manner to the gears 20, 21 and 22. Only one of these sets of gears is used at a given time. When the gears 20, 21 and 22 are used the keys are removed from gears 24 and 26, and when the gears 24, 25 and 26 are used the keys are removed from the gears 20 and 22. The gears 20, 21 and 22 are used when it is desired to have the rolls 2, 3 and 4 moved at the same speed, and the gears 24, 25 and 26 are used when it is desired to have the top and bottom rolls move slower than the middle roll. The central shaft 6 is extended at the one end of the machine so as to carry a large gear 27, which meshes with a small gear 28 having at one end thereof a tight pulley 29 and a loose pulley 30. Guide plates 31 and 32 are supported upon rods 33 and 34 from the main frame 1, said guide plates 31 and 32 fitting against the adjacent faces of the rolls 2 and 3 to retain a body of plastic material.
5 in place thereon. Near the bottom the main frame 1 supports in a pair of arms 36 a shaft 37 adapted to receive a wooden bobbin 38 carrying a roll of fabric such as cloth to be provided with a coating. A friction band 39 extends around the shaft 37, so as to retard the unwinding of the fabric and therefore maintain it taut. From the shaft 37, the fabric is fed over a guide roll 40, supported in the arms 36, and from this point the fabric passes under a doctor blade 41, supported in arms 42 from the main frame 1, and held in position by thumb screws 43. A body of jelly 44 is designed to be carried in front of the doctor blade 41, said body of jelly being confined in its proper position by a pair of angle plates 45, attached by thumb screws 46, to the doctor blade 41. From this point the fabric passes between the rolls 2 and 3, where it receives a coating of plastic material from the body of plastic material 35 on top of the jelly or cemented coat previously applied by the doctor 41. On the other side of the machine there is a further pair of arms 47 which support a shaft 48, carrying a wooden bobbin 49, the same as the wooden bobbin 38 already referred to. This wooden bobbin is driven by means of a gear 50, loosely supported upon the end of the shaft 48, and adapted to be connected more or less tightly thereto by means of an adjustable wheel 51 screw threaded on the end of the shaft 48. A train of gears 52 conveys power to the gear 50 from the gear 26.

In the operation of the machine, a coating of jelly is first applied to the fabric as a cement coating and on top of this is applied a coating of plastic. Both of these coatings may be of any suitable pyroxylin composition adapted for this purpose. After the fabric has been coated in this manner it is wound around the wooden bobbin 49 with the coating on the convex side under tension obtained by proper adjustment of the end wheel 51, and the coated fabric remains on this bobbin until the coated fabric is in proper condition for the next operation.

The plastic composition when applied still contains some volatile constituents which must escape from the composition before the product is entirely finished. Furthermore, it will be understood that the coating on the fabric has not yet become entirely hardened. In order to completely and securely anchor the coating of plastic material to the fabric, the coated fabric is wound around the shaft 48 with some degree of pressure. The rolled up fabric is maintained in this position until the coating composition has thoroughly settled in position on the fabric. The pyroxylin composition will then be securely and firmly anchored to the woven fabric and the coating composition itself will have become set in the uniform manner, so that there are not any undue stresses in the same.

While I have described my invention in detail I wish it to be understood that many changes could be made therein without departing from the spirit of my invention.

I claim:

1. The process which comprises coating a fabric with a pyroxylin composition of such consistency as to constitute substantially a surface coating and then placing the same under pressure while setting to anchor the coating on the fabric.

2. The process which comprises coating a fabric with a pyroxylin composition of such consistency as to constitute substantially a surface coating and then placing the same under pressure while setting by winding the same into a roll to anchor the coating on the fabric.

3. The process which comprises coating a fabric by pressing thereon a plastic pyroxylin composition of such consistency as to constitute substantially a surface coating and then placing the same under pressure while setting, to anchor the coating on the fabric.

4. The process which comprises coating a fabric by pressing thereon a plastic pyroxylin composition of such consistency as to constitute substantially a surface coating and then placing the same under pressure while setting, by winding the same into a roll to anchor the coating on the fabric.

5. A process which comprises winding a fabric having a coating of such consistency as to constitute substantially a surface coating, into a roll, and setting the coating while said fabric is so wound into a roll.

6. A process which comprises winding a fabric having a coating of such consistency as to constitute substantially a surface coating, into a roll under pressure, and setting the coating while said fabric is so wound into a roll.

7. A process which comprises winding a fabric having a coating of such consistency as to constitute substantially a surface coating, upon a roll with the coating on the convex side of the curved fabric, and setting the coating while said fabric is so wound into a roll.

8. A process which comprises winding a fabric having a coating of such consistency as to constitute substantially a surface coating, upon a roll under pressure with the coating on the convex side of the curved fabric and setting the coating while said fabric is so wound into a roll.

9. The process which comprises coating a fabric by pressing thereon a plastic pyroxylin composition of such consistency as to constitute substantially a surface coating,
containing a volatile solvent, and then placing the same under pressure while setting, by winding the same into a roll to anchor the coating on the fabric. 

10. The process of anchoring a coating of such consistency as to constitute substantially a surface coating upon a fabric which comprises winding the coated fabric tightly upon a roll before the coating has set, and maintaining the resulting pressure until 10 such setting has taken place.

In testimony that I claim the foregoing I have hereunto set my hand.

WALTER E. MASLAND.

Witnesses:
ARTHUR WRIGHT,
P. E. STRICKLAND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."