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METHOD OF CLOTH FINISHING

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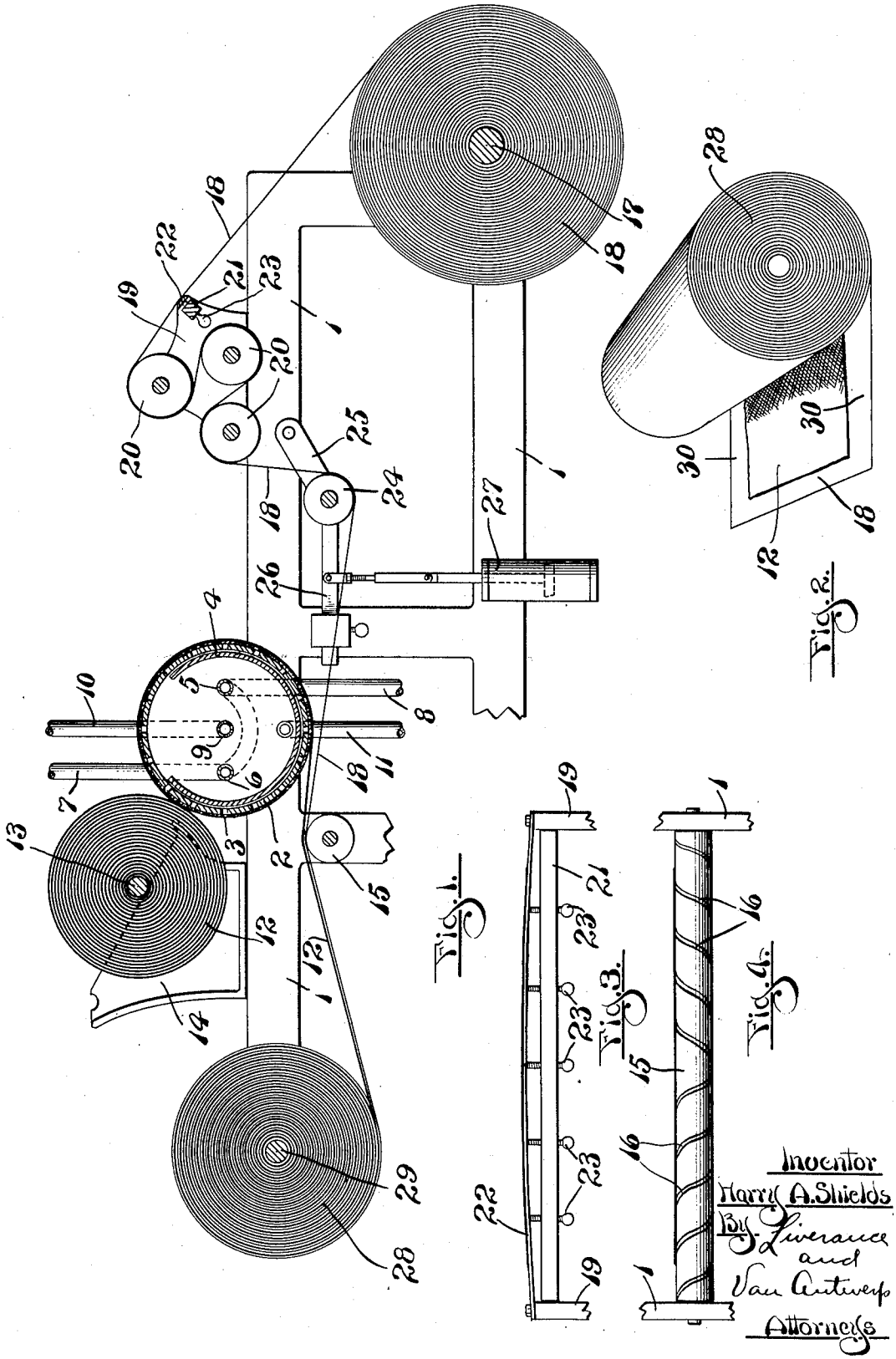


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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METHOD OF CLOTH FINISHING

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8 Claims. (Cl. 26—38)

This invention relates to a method of cloth finishing. Cloth, after it is woven or knitted, requires finishing, and one accepted method of finishing largely employed at the present time is to pass it over calendering rollers, or between such rollers, with the application of heat and pressure, the cloth lying directly against the rollers. Such method of finishing is unsatisfactory in many respects, particularly in the production of so-called "slicks", which are the same in effect as the pressure of a heated flat iron directly against fabric, making surfaces of a shiny character when the light strikes thereon. Furthermore, after the cloth has been calendered, it is rolled into a bolt without protection and is subject to the action of light and has nothing engaging the surfaces of the cloth to maintain it in a finished position.

The present invention is directed to a novel method of finishing cloth wherein there is an application of heat and moisture in the form of steam to the cloth, and rolling thereof with a continuous length of paper, the paper and cloth being rolled together and the paper maintained smooth under tension lengthwise and spread laterally so as to eliminate all wrinkles in the paper. The rolled cylinder of cloth and paper is not disturbed until the cloth is to be used, the paper maintaining the cloth in a finished condition and protecting it at all times from injury of any character.

With this method of finishing cloth there is a complete elimination of so-called "slick" spots or areas on the cloth, and the finish of the cloth is uniform throughout and of an exceptionally attractive appearance, which is maintained at all times by the tightly wound contact of the cloth and paper, any two layers of cloth within the cylindrical roll produced being separated from each other by an intervening layer of paper.

An understanding of the invention may be had from the following description taken in connection with the accompanying drawing, in which,

Fig. 1 is a fragmentary longitudinal vertical section illustrative of one apparatus by means of which the method may be practiced, only the essential elements of the apparatus for carrying out the process being disclosed.

Fig. 2 is a perspective view showing the cylindrical roll of paper and cloth.

Fig. 3 is a fragmentary end elevation showing the lateral spreading means over which the paper passes for eliminating possible longitudinal wrinkles in the paper, and

Fig. 4 is a similar fragmentary end elevation of a roller over which the paper last passes, grooved spirally in opposite directions from its center to aid in the elimination of any longitudinal wrinkles which may be in the paper.

Like reference characters refer to like parts in the different figures of the drawing.

The mechanism illustrated, which is a very practical and efficient mechanism for carrying out the process, comprises a supporting frame-work, indicated at 1, transversely of which a cylinder 2 is mounted for rotation. The cylinder is hollow and is perforated over substantially its entire surface with a number of closely spaced holes and is covered with a fabric covering 3. Within the cylinder is a stationary curved trough 4 open at its upper side. The cylinder is maintained in a heated condition by steam which is passed through coils 5 and 6 lengthwise thereof, the steam entering through an entrance pipe 7 and leaving through an outlet pipe 8. Free steam is entered into the cylinder through a perforated pipe 9 which extends lengthwise of and centrally of the same, entering therethrough through an entrance pipe 10; and any excess of steam which is not passed outwardly through the openings in the cylinder 3 leaves the same through an outlet pipe 11.

The cloth 12, which is to be finished, is in a cylindrical roll over a central core 13, the ends of which ride down inclines of brackets 14, as shown, carried by the sides of the frame 1 so that the roll of cloth bears against the outer surface of the covering of the steam cylinder 2. The cloth is carried upwardly over and around the steam cylinder to the underside thereof and thence led over a horizontal roller 15 over which the paper is also carried. The roller 15 is spirally grooved from its center outward in opposite directions, as indicated at 16, the purpose of which will later appear.

The paper, which is used, is wound in a cylindrical roll indicated at 18 carried on a central core or shaft 17. The paper is at one end of the frame 1 and is carried upwardly and toward the opposite end. Brackets 19 carried on the sides of the frame 1 support a plurality of rollers 20 through which the paper is threaded, and also carry a cross bar 21 over which is a flexible bar 22, fastened at its ends to the upper edges of the brackets 19 (Fig. 3). The flexible bar 22 may be flexed and adjusted to have a greater or less crown by means of a plurality of screws 23 which thread through the fixed bar 21 against the inner sides of the flexible bar 22, whereby the paper passing over the bar is automatically stretched laterally to

eliminate any longitudinal wrinkles there may be therein.

After the paper 18 has passed over the concaved bar 22 and the rollers 20, it is led to and underneath an additional tensioning roller 24 which is mounted on arms 25, in turn pivotally connected to the sides of the frame 1. The roller 24 is mounted at the elbow of a bell crank of which the arm 25 is one portion, the other portion comprising a horizontally extending bar 26 which may have force applied thereto so as to normally tend to move the roller 24 in a downward direction thereby putting the paper under tension. As shown in the drawing, the arm 26 is weighted but any other means of getting the desired and necessary tension on the paper may be used, such as spring means or the like. The dash-pot mechanism indicated at 27 is to check too rapid or extreme movements by the tensioning mechanism and insure against rupture of the paper.

After the paper 18 leaves the underside of the roller 24 it is carried over the grooved roller 15 and the cloth 12 likewise carried over said roller above and in close contact with the upper side of the paper. The paper 18 and the cloth 12 are wound together in a cylindrical roll 28 around a shaft 29 which may be driven in any suitable manner.

The cloth, as it is carried around the steam cylinder 2, is penetrated by the free steam which escapes from the cylinder through the fabric covering 3 thereover by passing through the perforations in the cylinder, and there is an application of heat and moisture to the cloth so that when the cloth contacts with the paper the paper is heated by the cloth engaging therewith. The heated paper and the heated and moistened cloth are wound together in a single roll 28. The cloth and paper are wound together in snug engagement with each other. The cloth is thus maintained in a pressed and finished condition by the contact of the heated paper therewith and after a roll of cloth 12 has been treated in the manner described, the paper is cut across beyond the end of the cloth and the package is sealed by cementing the free end of the paper to the outer surface of the paper of the roll beyond said free end of the cloth.

It will be noted that the paper is wider than the cloth whereby projecting edges 30 of paper extend beyond the edges of the cloth. This protects the edges of the cloth from dirt, dust and the like and also from the action of light thereagainst which in many instances affects the color of the cloth.

The specific detail of construction of the machine for carrying out the method is not disclosed in the present invention as it is to form the subject matter of a co-pending application for patent directed to said machine. The present method may be performed in many different ways either by machines or in a large measure by hand operation. With it an exceptionally attractive finish to cloth may be secured and the cloth protected against detriment thereto and to its finish until it is to be used. This method of finishing cloth has been used with marked success and has proved exceptionally satisfactory. The invention is defined in the claims appended thereto.

I claim:

1. The method of cloth finishing and preservation, which consists in winding paper and cloth into a roll, and subjecting the cloth to the action of steam immediately prior to said winding of the cloth and paper.

2. The method of finishing and of preservation of cloth, which consists in winding the cloth and paper, into a roll, applying heat and moisture to the cloth immediately prior to its being wound with the paper, and subjecting the paper to longitudinal tension as it and the cloth are being wound.

3. The herein described method, which consists in carrying cloth past a predetermined position, applying steam to the cloth continuously as it passes said position, bringing the cloth to and against paper and moving the paper lengthwise continuously with the cloth, and winding the cloth and paper together, into a roll.

4. The herein described method of treating cloth which consists, in moving a continuous length of paper in the drection of its length, bringing cloth thereto, applying steam to the cloth previous to its coming to the paper, and winding the cloth and paper together, into a roll.

5. The herein described method of treating cloth which consists, in running a length of paper continuously in the direction of its length, subjecting it to longitudinal tension and to transverse strain, passing a length of cloth to the paper, applying steam to the cloth immediately prior to its contact engagement with the paper, and winding the cloth and paper, with the cloth inside of the paper, into a cylindrical roll.

6. The method of treating cloth which consists, in applying heat and moisture to cloth, and winding the cloth tightly with paper into a continuous roll, with the cloth at the inner sides of the paper.

7. The method of treating cloth to finish the same and to preserve said finish which consists in rapidly winding cloth to which steam has been applied with paper into a cylindrical roll with the paper subjected to tension to make a tight and snug contact with the surface of the paper against the surface of the cloth.

8. The method of cloth finishing and preservation, which consists in winding paper and cloth into a roll, subjecting the cloth to the action of steam immediately prior to said winding of the cloth and paper and then maintaining said paper and cloth in undisturbed relationship until the cloth has dried.

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