No. 606,869. Patented July 5, 1898.

# C. C. MACBRAIR.

## APPARATUS FOR COATING PAPER OR OTHER FABRICS.

(Application filed Oct. 4, 1897.)

(No Model.)

Fig. 1

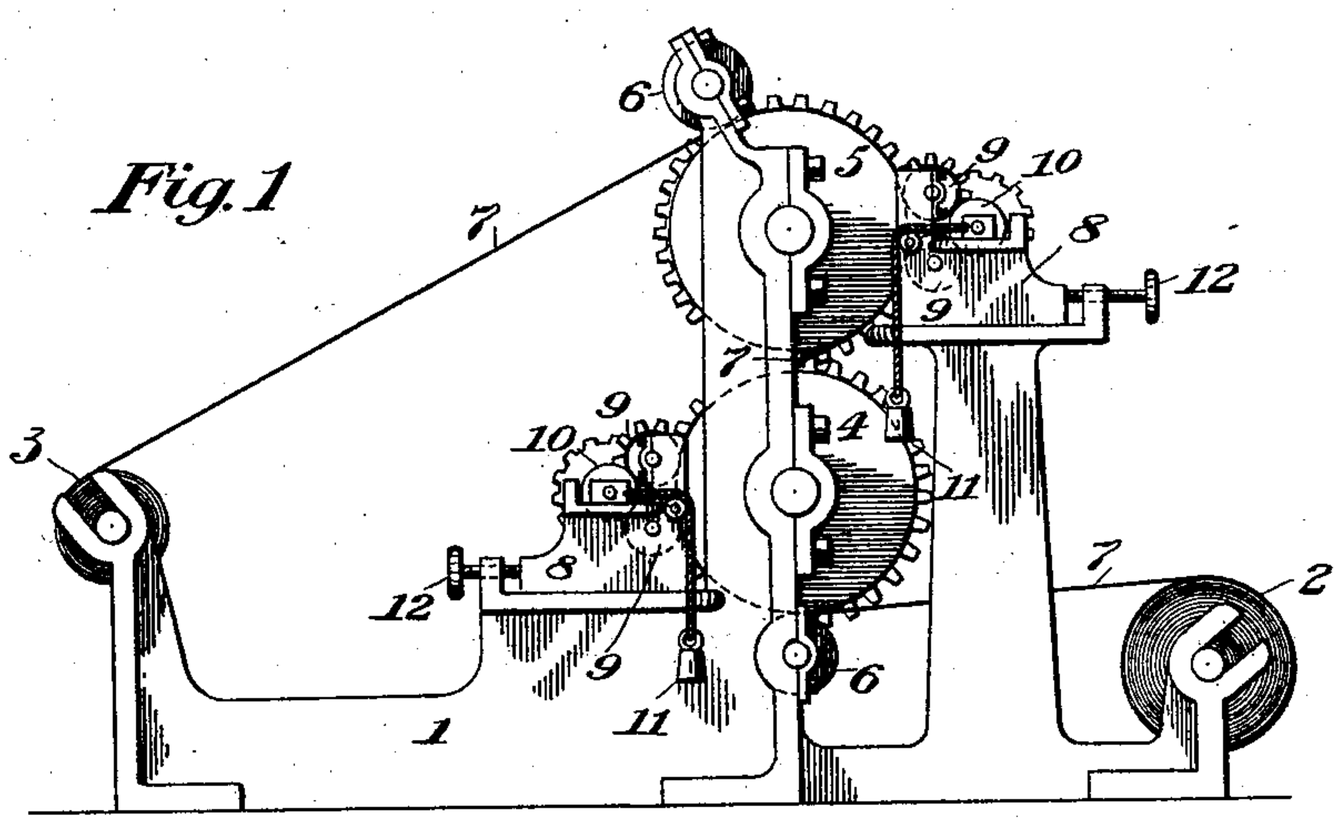



Fig. 2

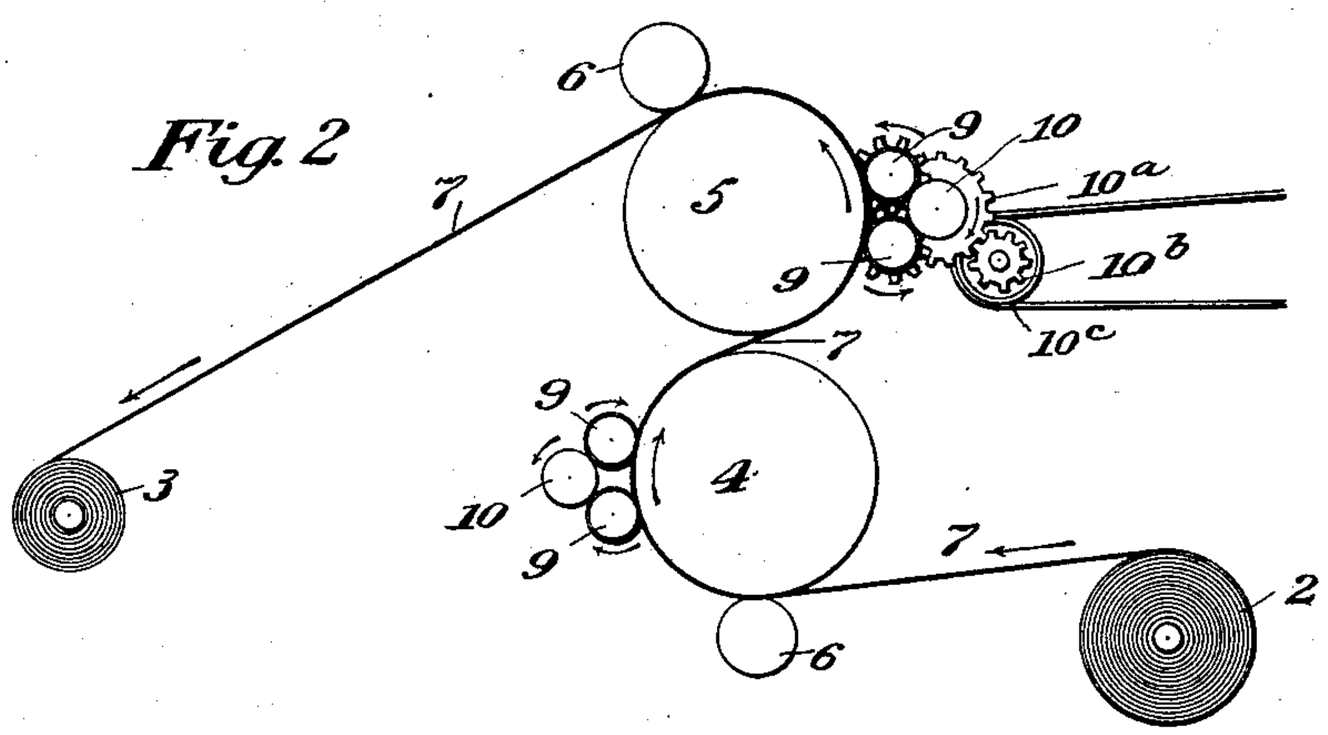



Fig. 3

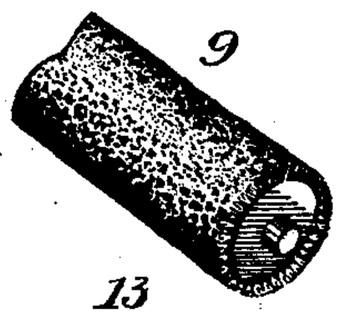



Fig. 4

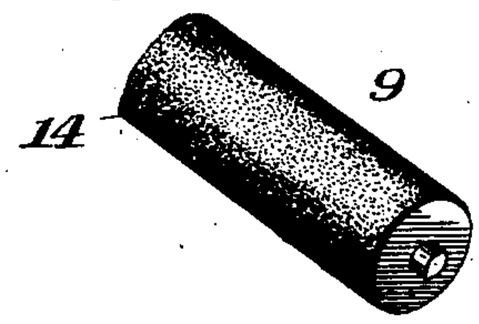
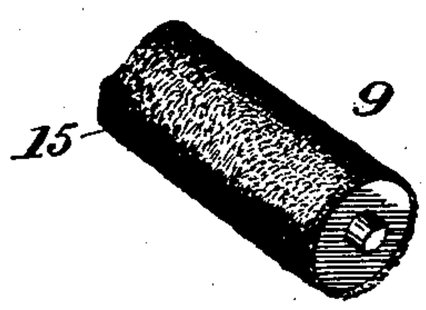



Fig. 5




Witnesses:
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J. L. Caplinger

Inventor
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By his Attorney,
John Elvis Jones.

# UNITED STATES PATENT OFFICE.

CHARLES C. MACBRAIR, OF CINCINNATI, OHIO, ASSIGNOR TO C. C. MACBRAIR & CO., OF SAME PLACE.

## APPARATUS FOR COATING PAPER OR OTHER FABRICS.

SPECIFICATION forming part of Letters Patent No. 606,869, dated July 5, 1898.

Application filed October 4, 1897. Serial No. 653,989. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES C. MACBRAIR, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Apparatus for Coating Paper or other Fabrics; and I do 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 the figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in coating paper and other fabrics with wax, paraffin, and the like; and the object of the invention is to improve and simplify the means for supplying the wax, paraffin, or other substance with which the paper is to be coated to the brush or other applying device, so as to permit of effecting an economy in using the coating substance and also to permit of varying the thickness of the coating.

The invention contemplates certain novel features of the construction, combination, and arrangement of the various parts of the mechanism employed for carrying my invention out in practice, whereby certain important advantages are attained, and the mechanism is made simpler and is otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

Heretofore in coating paper and similar fabrics with wax, paraffin, and the like it has been customary to apply the coating to the fabric by means of a brush or other similar applying device, as set forth in my prior Letters Patent, No. 532,172, dated January 8, 1895, the said brush being arranged to revolve in contact with a block or supply of solid wax, paraffin, &c., so that as the brush is revolved it takes up a supply of coating substance and applies the same to the paper with which it is also in contact. This method of supplying the coating substance to the brushes has been found in practice to be somewhat imperfect by reason of the waste of the wax or other coating substance caused not only by its being thrown off from the brush in minute particles, but also on account of the heating action of the brush running in contact with the solid coating substance, which softens said substance, so that too much thereof is taken up by the brush.

In carrying out my invention I impart to the supply of coating substance while in a solid state and held in contact with the surface of the brush or other applying device movement in the direction in which the said brush is moving, so that the heating effect of the brush in contact with the paraffin is lessened, so as to prevent the wasting of the paraffin. By varying the speed with which the supply of coating substance is moved relatively to the brush I also regulate the application of the coating substance to the paper, so as to permit of coating either rough or smooth surfaced fabrics. By imparting movement to the supply of solid coating substance in this manner it will be seen that the moving supply will constantly present to the rotatory brush or applying device a fresh and cool surface, so that the wax or paraffin will not become heated and softened by the continued frictional contact of the brush with one point of its surface.

In the accompanying drawings I have shown an apparatus or machine constructed according to my invention, in which—

Figure 1 is a side elevation of the machine, and Fig. 2 is a diagraphic view showing the arrangement of the coating devices. Figs. 3, 4, and 5 are similar fragmentary perspective views showing three different forms of brush or applying device for use in carrying out my improved method.

In the views, 1 indicates a suitable frame, having at opposite ends supports for rolls 2 and 3, carrying paper or other fabric to be coated, the paper passing through the machine in the direction indicated by the arrows from the roll 2 and being wound or rolled up on the roll 3 after being coated with the wax, paraffin, or other coating substance, as will be hereinafter explained.

4 and 5 indicate two similar supporting or carrying drums, between and around opposite

sides of which the paper or other web to be coated is arranged to pass, said drums being driven by gearing of any kind, and 6 6 indicate idler-rolls for holding the paper web (indicated at 7 in the drawings) in contact with the said drums. Any number of idler-rolls may be employed, arranged in any desired manner. In lieu of drums other forms of backing for the paper may be employed.

S S indicate carriages arranged on opposite sides, respectively, of the lower and upper drums 4 and 5, these carriages being mounted upon tracks formed in the frame 1 of the machine for movement in directions substantially radial to the respective drums 4 and 5 to which they are adjacent, and upon said carriages are arranged the devices for coating the paper or other fabric and also the supplies of coating substance.

The carriages S S and the mechanisms mounted thereon are substantially duplicates of one another, the object in providing two sets of carriages and coating mechanisms being to coat both sides of the paper web 7 which in its passage between and around the drums 4 and 5 presents one surface to one set of coating devices and the other surface to the other set, as will be readily understood. Of course where but one side of the web is to be coated but one carriage and the mechanisms thereon need be employed, the other being thrown out of operation or omitted entirely.

9 9 indicate cylindrical brushes employed for applying the coating substance to the web, there being, as shown, two such brushes upon each carriage, arranged to run in contact with the surface to be coated, although but one brush may be used, if desired. The brushes 9 of each pair are, as shown herein, arranged to run in a direction opposite to the direction of movement of the web 7 to be coated, as indicated by the arrows in Fig. 2, so as to generate friction sufficient to insure that a proper coating will be imparted to the said web. The speed at which the brushes 9 move relatively to the web 7 may be varied, if desired, to suit the fabric to be coated, and in order to insure an even and uniform coating of the web I prefer to impart endwise-reciprocating movement in opposite directions to the respective brushes of each pair, so that the coating substance carried upon the brushes is spread transversely across the web of fabric.

10 indicates the supply of wax, paraffin, or other solid coating substance, herein shown as cast or otherwise made in the form of a roll or cylinder, having a core-like shaft mounted in bearings which are themselves in the machine here represented mounted on the carriage S for movement toward and away from the brushes 9, so that as the wax, paraffin, or other substance is removed from said roll-like or cylindrical supply the supply may be moved so as to always be in contact with the brushes. As herein shown, weights 11 are employed for holding the supply of coating material 10 in contact with the brushes 9, and a screw 12 is provided for moving each carriage radially of its respective drum to regulate the pressure of the brushes upon the web 7.

In order to prevent the wasting of the supply 10 of coating substance resulting from the engagement therewith and the consequent heating effect of the brushes 9, I impart movement to the roll or cylinder 10 in any desired manner. As herein shown, the core or shaft of said roll or cylinder carries a spur-wheel $10^a$, meshing with a pinion $10^b$, mounted on a shaft driven by a belt $10^c$. The roll or cylinder 10 is by this means driven in the same direction as the brushes 9, as indicated by the arrows in Fig. 2, and the speed of said roll or cylinder relatively to the brushes 9 may be less or greater or may be varied to suit the requirements of the work to be done. The greater the difference in speed between the roll or cylinder 10 and the brushes the greater will be the frictional effect of the latter, and consequently there will be increased feed of the coating substance. In some cases the roll or cylininder 10 may be revolved in a direction opposite to that in which the brushes 9 move.

In making the brushes 9 the rolls of which they are formed are provided with surface coatings or facings, as shown in Figs. 3, 4, and 5, and said facings may be of different materials. As shown in Fig. 3, the brush 9 is formed with a facing or coating of bristles 13, and, as shown in Fig. 4, the brush is formed with a facing of felt 14. As shown in Fig. 5, the brush or applying device is made with a facing of lamb skin or pelt 15, and this construction of the brush is much preferable, especially for fine work, since the hairs of the lambskin are soft and elastic and still are non-resilient, so that they do not cut into or heat the roll or cylinder 10 and do not throw off minute particles of the coating substance, so as to waste the same, as is the case with bristle brushes and more especially with stiff ones.

From the above description it will be seen that the machine embodying my improvements is of an extremely simple and efficient nature and is especially well adapted for the purposes for which it is designed, and it will also be seen that the device is capable of considerable change without material departure from the principles and spirit of the invention, and for this reason I do not wish to be understood as limiting myself to the precise form and arrangement of the parts herein set forth.

Having thus described my invention, I claim—

1. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a rotative brush arranged to contact with the fabric passed over the support, and means for holding a supply of coating substance in contact with the brush, said means being mounted for

movement in a direction tangential to the contacting surface of the brush substantially as set forth.

2. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a rotative fabric-coating device arranged to contact with the fabric passed over the said support, means for holding a supply of coating substance in contact with said coating device, and means for moving the said supply in a direction tangential to the surface of the coating device, substantially as set forth.

3. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a fabric-coating device arranged to contact with the fabric passed over said support, and means for supplying coating substance to said coating device, said means being mounted for tangential movement relative to the coating device while said coating device is in contact therewith, substantially as set forth.

4. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a fabric-coating device arranged to contact with the fabric passed over the said support, means for holding a supply of coating substance in contact with said coating device, and mechanism for rotating said supply-holding means while said coating device is in contact with the coating substance, whereby the supply presents a constantly-changing surface in contact with the coating device, substantially as set forth.

5. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a rotative brush arranged to contact with the fabric passed over said support, means for holding a supply of coating substance in contact with the brush, said means being mounted for movement while said brush is in contact with said supply, and mechanism to feed said supply toward said brush, substantially as set forth.

6. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a rotative brush arranged to contact with the fabric passed over said support, means for holding a supply of coating substance in contact with said brush, mechanism for rotating said supply-holding means while said brush is in contact with said supply, and means to feed the said supply toward said brush, substantially as set forth.

7. In an apparatus for coating paper or other fabrics, the combination of a support over which the fabric is passed, a carriage movable toward and away from the support, a brush on the carriage arranged to contact with the fabric passed over the support, means for holding a supply of coating substance on the carriage for movement in contact with said brush and means to feed said supply toward said brush, substantially as set forth.

8. In an apparatus for coating paper or other fabric, the combination of a support over which the fabric is passed, a rotative brush arranged to contact with the fabric passed over said support and formed of a roller having a facing of lambskin, means to hold a supply of coating substance in contact with the brush and means for moving said supply while held in contact with said brush, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES C. MACBRAIR.

Witnesses:

JOHN ELIAS JONES,

J. D. THORNE.