H. LOEWENBERG.

APPARATUS FOR COATING FABRICS WITH PLASTIC COMPOSITONS.

No. 176,019. Patented April 11, 1876.

Fig. 1.

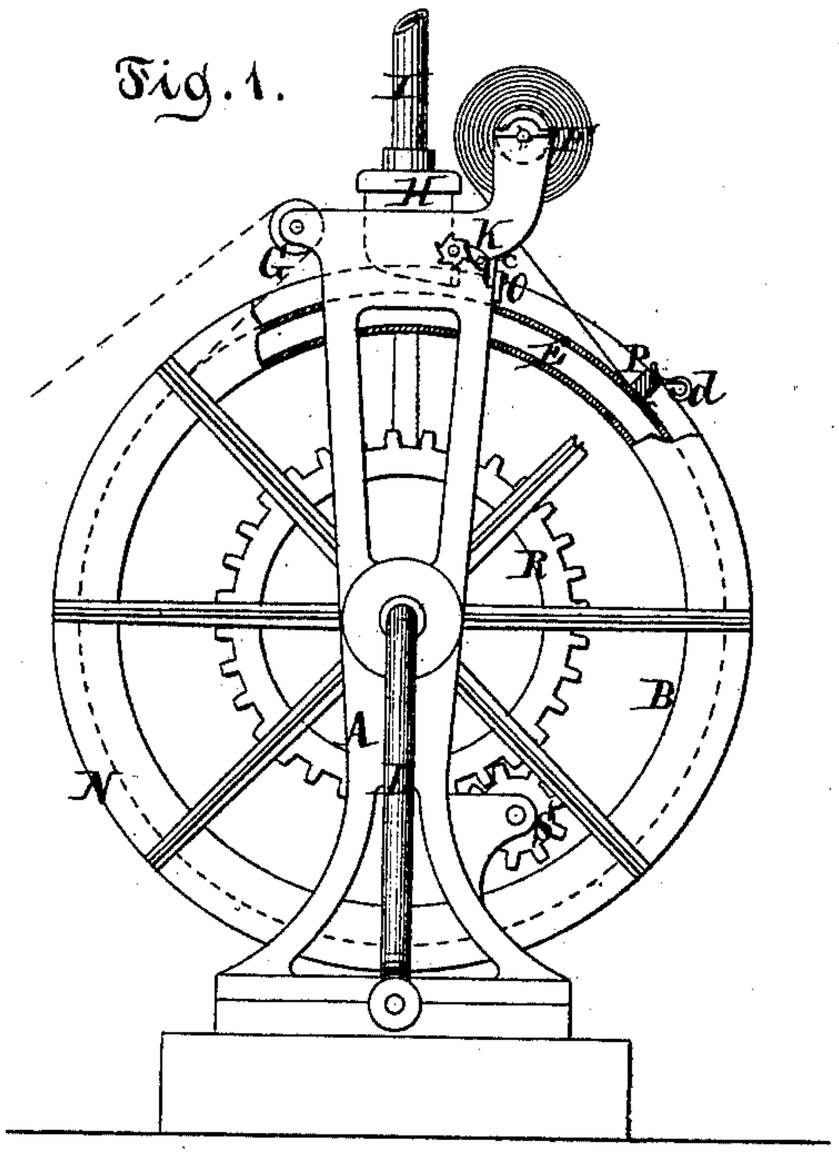


Fig. 2.

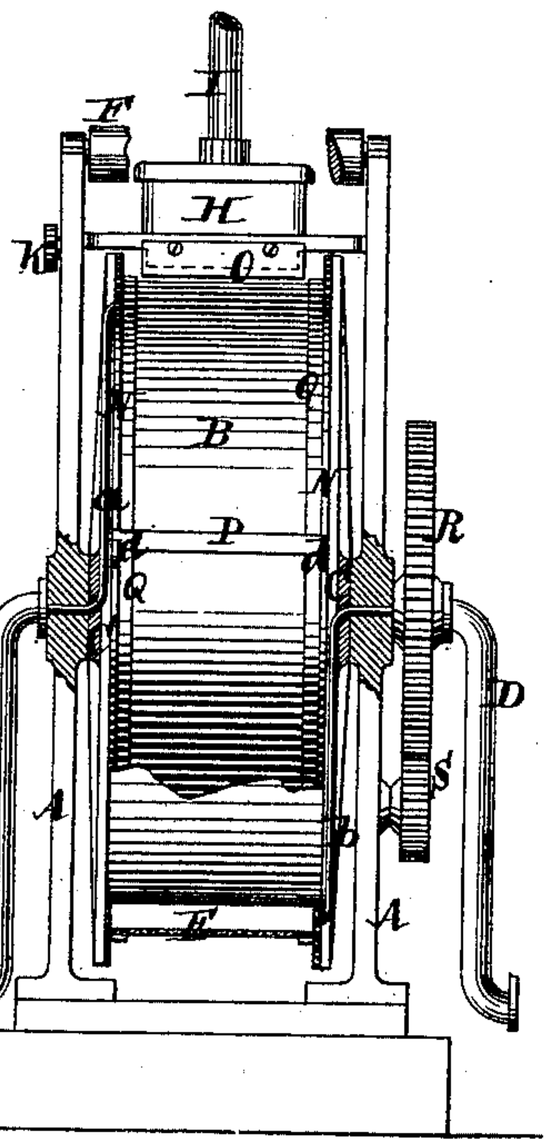
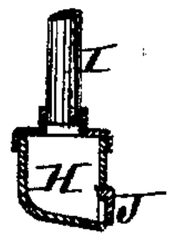


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY LOEWENBERG, OF CHARLOTTENBURG, PRUSSIA.

IMPROVEMENT IN APPARATUS FOR COATING FABRICS WITH PLASTIC COMPOSITIONS.

Specification forming part of Letters Patent No. **176,019**, dated April 11, 1876; application filed February 9, 1876.

To all whom it may concern:

Be it known that I, HENRY LOEWENBERG, of Charlottenburg, Prussia, have invented a new and improved Apparatus for Coating Fabrics with Plastic Compositions, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of my apparatus, partly in section. Fig. 2 is a front elevation of the same, partly in section. Fig. 3 is a cross-section of the reservoir.

Similar letters indicate corresponding parts.

My invention relates to an apparatus for coating fibrous or textile fabrics with plastic compositions, and which is applicable to the manufacture of imitation articles of leather or straw, enameled cloth, trimmings, embroideries, &c.

The invention consists in a revolving cylinder which is provided with hollow gudgeons for the admission and discharge of a cooling or heating medium to and from the cylinder, in combination with feed and discharge rollers by which the fabric to be coated passes onto and off from the cylinder, and with a reservoir adapted to receive and discharge the plastic composition for coating the fabric, the reservoir being arranged in such a manner that it discharges on the surface of the cylinder, and thus if a strip of the selected fabric is caused to pass round the cylinder and a suitable heating or cooling medium is admitted to the cylinder, the fabric not only becomes coated with the composition, but at the same time is subjected to a process of drying or hardening, and hence the fabric passes off the cylinder in a finished state, while if the surface of the cylinder is provided with a suitable die or dies, fac-similes of certain articles may be produced. The reservoir containing the plastic composition is provided with an adjustable gate, by which a greater or less quantity of the composition may be allowed to escape. The cylinder has an annular chamber near its surface to receive the heating or cooling medium, such chamber communicating with the hollow gudgeons of the cylinder. The cylinder, moreover, is provided with circumferential flanges on its opposite edges, for the purpose of preventing the escape of the plastic composition from the surface of the cylinder. With the cylinder and the reservoir is combined a "doctor," through the agency of which the composition is spread evenly on the surface of the cylinder as it discharges from the reservoir. The cylinder is provided with a griper for the purpose of clasping the end of the fabric to be coated and carrying it round the cylinder at the commencement of the operation of my apparatus.

In the drawing, the letters A A designate standards composing the frame of my apparatus. The standards form bearings for the cylinder B, which has hollow gudgeons, C C, to which are connected pipes D D, which extend in opposite directions from the cylinder. A rotary motion is imparted to the cylinder B by means of gear-wheels R S, or by any other means suitable for the purpose.

The hollow gudgeons C C communicate by means of a feed-pipe, *a*, and a discharge-pipe, *b*, with an annular chamber, E, formed in the interior and near the surface of the cylinder B. If one of the pipes D is connected to a generator of cold or hot air, or of any other cooling or heating medium, such air is admitted to the chamber E through the adjacent gudgeon C and the feed pipe *a*, while it discharges from the chamber by the pipe *b*, the gudgeon C connecting with this pipe and the pipe D. The advantage of using the chamber E in lieu of the entire inner part of the cylinder B consists in that the cooling or heating medium is thus concentrated to the best possible advantage, and no waste takes place.

The letters F G designate rollers which are mounted in the standards A A. The fabric or material to be coated is wound on the roller F, and thence is fed to the cylinder B, while it is conducted over the roller G after it has discharged from the cylinder. The bearings of the feed-roller F are so made that when all the material has been taken from the roller the latter may be removed and another or full one substituted for it.

Above the cylinder B and between the rollers F G is situated a reservoir, H, which is made water-tight, and which receives the plastic composition for coating the fabric, the composition being introduced to the reservoir

through a pipe, I, projecting from it in an upper direction. The reservoir H has a discharge-orifice, which is closed by means of a gate, J, (Fig. 3,) and when this gate is opened the composition escapes from the reservoir and discharges on the surface of the cylinder B. The gate J is made adjustable through the medium of a ratchet-wheel, K, which forms part of the gate, and which is engaged by a stop-pawl, *c*, and by a proper adjustment of the gate a greater or less quantity of the composition may be allowed to escape.

On the opposite edges of the circumference of the cylinder B are formed or secured flanges N N, which are made of such height as to effectually retain the composition on the surface of the cylinder in the process of coating the fabric.

In front of the reservoir H is stationed a so-called "doctor" or spreader, O, which is parallel with the surface of the cylinder B, and extends entirely across such surface, being fastened to or between the standards A A. By the doctor O the plastic composition discharging from the reservoir H becomes spread evenly on the surface of the cylinder, and a layer of uniform thickness is presented to the fabric to be coated.

In order to permit of carrying the front end of the fabric round the cylinder B, at the commencement of the operation of my machine, I combine with the cylinder a griper, P, consisting of a flat bar, which extends across its surface and is held in place by the action of springs *d d* attached to each end of the griper, and said springs being riveted to the flanges N N. If the griper P is made to clasp the end of the fabric which is taken from the roller F, and the cylinder B is made to describe a partial revolution sufficient to bring the griper opposite, or nearly so, to the discharge-roller G, the fabric may be drawn over such roller, and the operation of the machine proceeded with.

When it is desired to produce fac similes of leather, straw, enameled cloth, trimmings, embroideries, and other articles of a similar nature, I attach to the surface of the cylinder B a die or dies of suitable configuration, and to permit of fastening the die or dies I provide the cylinder with bands Q Q.

The plastic composition which I prefer to use is one which is soluble under the influence of heat, and which congeals and hardens when cooled.

The operation of my machine is as follows: The selected composition, in a plastic state, is allowed to run into the reservoir H, and when the end of the fabric from the feed-roller F has been fastened to the cylinder B by the griper P, the gate J is opened. The plastic composition thus escaping becomes spread by the action of the doctor O on the surface of the cylinder B, or on the die or dies attached to such surface. Simultaneous with the opening of the gate J a suitable cooling or heating agent (according to the nature of the composition) is admitted to the chamber E, whereby the surface of the cylinder B becomes cooled or heated, as the case may be, and after the end of the fabric, together with the griper P, has been drawn over the discharge-roller G, a continuous revolving motion is given to the cylinder till the entire length of the fabric receives a coat of the composition. By my machine a strip of fabric of any desired length can be coated, and not only coated but also dried or hardened, in one operation.

What I claim as new, and desire to secure by Letters-Patent, is—

1. In an apparatus for coating fabrics with plastic material, the combination of the revolving cylinder B, having hollow gudgeons C C for the purpose specified, with feed and discharge rollers F G and reservoir H, located above the cylinder B in such position as to feed the plastic material between said cylinder and the fabric to be coated, substantially as described.

2. In combination with the reservoir H, the gate J, ratchet-wheel K, and stop *c* for adjusting the gate, substantially as described.

3. The combination of an annular chamber, E, and feed and discharge pipes *a b* with the cylinder B and its hollow gudgeons C C, substantially as described.

4. In combination with the cylinder C of the griper P and springs *d d* riveted to the flanges N N for pressing said griper against said cylinder, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 4th day of January, 1876.

HENRY LOEWENBERG. [L. S.]

Witnesses:
HERMANN KREISMANN,
EDWARD P. MACLEAN.