

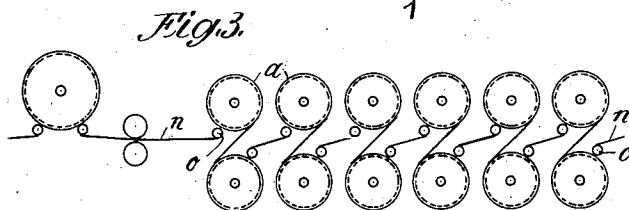
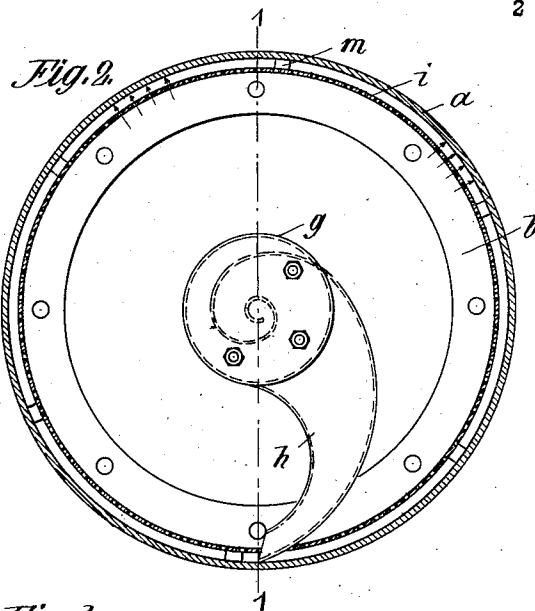
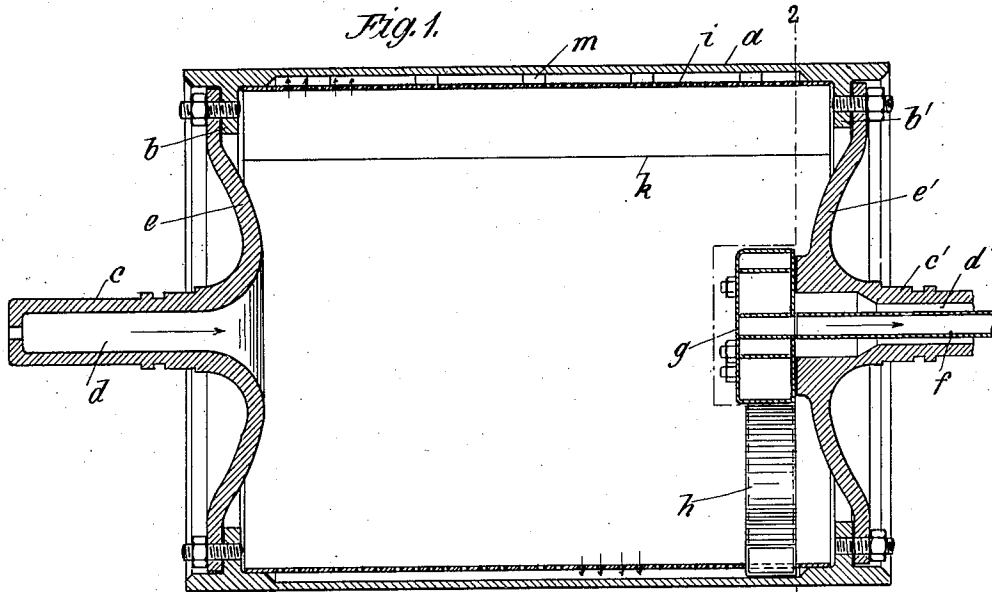
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E. LÜTSCHEN

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DRYING CYLINDER FOR PAPER MACHINES AND TEXTILE GOODS DRYING MACHINES

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Inventor:
Emil Lütchen
by: *J. H. M. S.*
Attorney.

UNITED STATES PATENT OFFICE.

EWALD LÜTSCHEN, OF MUNICH, GERMANY.

DRYING CYLINDER FOR PAPER MACHINES AND TEXTILE-GOODS-DRYING MACHINES.

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This invention relates to a drying cylinder for paper machines and textile goods drying machines, and it has for its object to condensate the steam more rapidly than at present, and to effect consequently a more rapid drying of a sheet of cellulose or of fabric, for instance of a dyed wet-sheet of fabric, passing over a number of such cylinders. Owing to the more rapid drying, a lesser number of such cylinders are required in one machine, wherefrom results considerable economy in expense, of space, and of time.

This invention consists essentially in mounting a perforated sheet-metal drum in the cylinder, and in means to maintain this sheet-metal drum at all points at the same but short distance from the inner surface of the cylinder. The injected steam is thus divided into thousands of very thin jets when it is passing through the perforations of the sheet-metal drum, said jets flowing at increased velocity through the nozzle-like perforations to strike against the inner wall of the cylinder, where they prevent the formation of a coating of water on this inner wall and ensure consequently a more perfect heat-exchanging between the steam and the cylinder wall.

An embodiment of the invention is shown, by way of example, in the accompanying drawings, in which:—

Fig. 1 shows a drying cylinder in longitudinal section on line 1—1 of Fig. 2.

Fig. 2 is a cross section on line 2—2 of Fig. 1.

Fig. 3 shows a diagrammatic view and on smaller scale how the drying cylinder is used in a paper machine.

The cylinder *a* has on its inner wall at each end an inwardly projecting annular flange *b*, *b'*. One journal *c* of the cylinder has a central bore *d* through which steam is to be injected and this journal is fixed by means of a disk *e* on the annular flange *b*. The second journal *c'* is fixed by means of a disk *e'* on the flange *b'* and it has a central bore *d'* through which passes a pipe *f* for discharging the water from condensation. On the inner surface of the hub of journal *c'* a scooper *g* is mounted and a beak-shaped tube *h* of said scooper extends to the inner surface of the cylinder to conduct the water from condensation into the discharging pipe *f*.

According to the invention a perforated sheet-metal drum *i* is mounted in the cylin-

der *a* at a very short distance from the inner surface of said cylinder. This sheet-metal drum *i* is made from a strip of perforated sheet metal which is rather thin and of such width that it just tightly fits between the two annular flanges *b*, *b'* of the cylinder *a*. This sheet-metal strip, when being inserted into the cylinder, is wound up in spiral shape so that it can be inserted between the annular flanges *b* and *b'* before the building in of the corresponding journal. In the cylinder *a* the rolled up sheet metal strip is unwound to form a drum the joining edges $\frac{1}{2}$ of said strip being then connected by soldering. The sheet metal strip is of such length that the outer diameter of the drum made from said sheet metal strip is very little shorter than the inner diameter of the cylinder. On the inner surface of the cylinder *a* blocks *m* are fixed at suitable distances apart in order to keep the drum *i* at uniform distance from the inner surface of the cylinder. The blocks *m* may also be fixed on the outer surface of the drum *i*.

The steam which flows through the perforations of the drum *i* and strikes against the inner wall of the cylinder *a* condenses very rapidly and consequently the heat of said steam is very rapidly transferred to the cylinder *a*, so that in one paper machine only about half the number of drying cylinders is required as are actually necessary. In order to dry a cellulose sheet *n* guided over guide pulleys *o* as shown in Fig. 3, twenty-four drying cylinders *a* are actually required, only 12 such cylinders, improved according to the invention by a perforated drum, being sufficient to dry the same cellulose sheet at the same time and with the same amount of steam. When the same number of drying cylinders is used in one machine as at present, the cylinders can rotate at double the speed as at present, so that the efficiency of the machine is doubled. The same results are obtained in drying sheets of fabric which come from the dye-bath.

I claim:—

A drying cylinder for paper machines and drying machines for textile goods, comprising in combination with the cylinder proper, two annular flanges inwardly projecting from the inner surface of said cylinder near the ends of the same, a perforated sheet-metal strip inserted into said cylinder between said two annular flanges the joint edges of said sheet-metal strip being soldered

to form a drum, a number of spacing blocks between the outer surface of said perforated drum and the inner surface of said cylinder for holding said perforated drum at a uniform short distance from the inner surface of said cylinder, a hollow journal in one end of said cylinder the inner end of said journal forming a disk fixed on the corresponding annular flange of the cylinder a hollow journal in the other end of said cylinder the inner end of said journal forming a disk fixed on the corresponding annular flange of the cylinder, a scooper on the inner end of said second mentioned journal, a discharging pipe extending from said scooper through said hollow journal, and a scooping tube extending from said scooper to the inner wall of said cylinder for collecting the water from condensation.

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In testimony whereof I affix my signature.

EWALD LÜTSCHEN.