

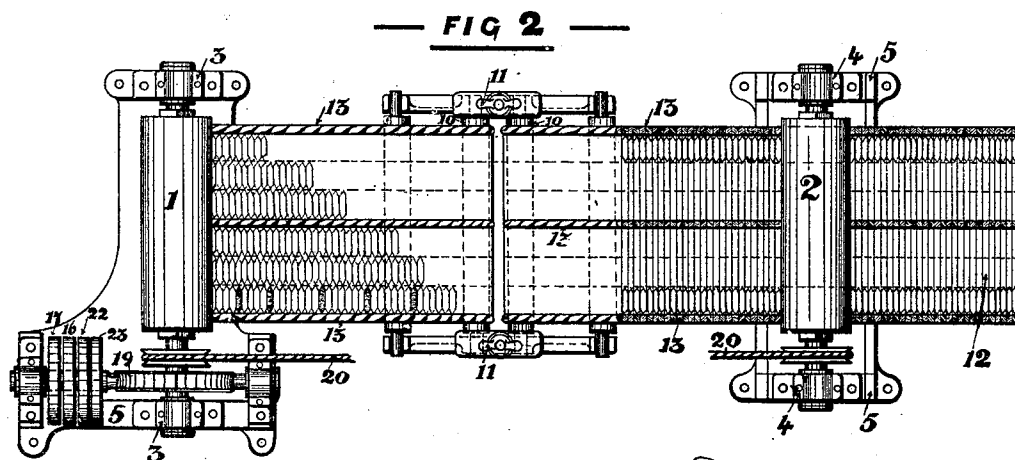
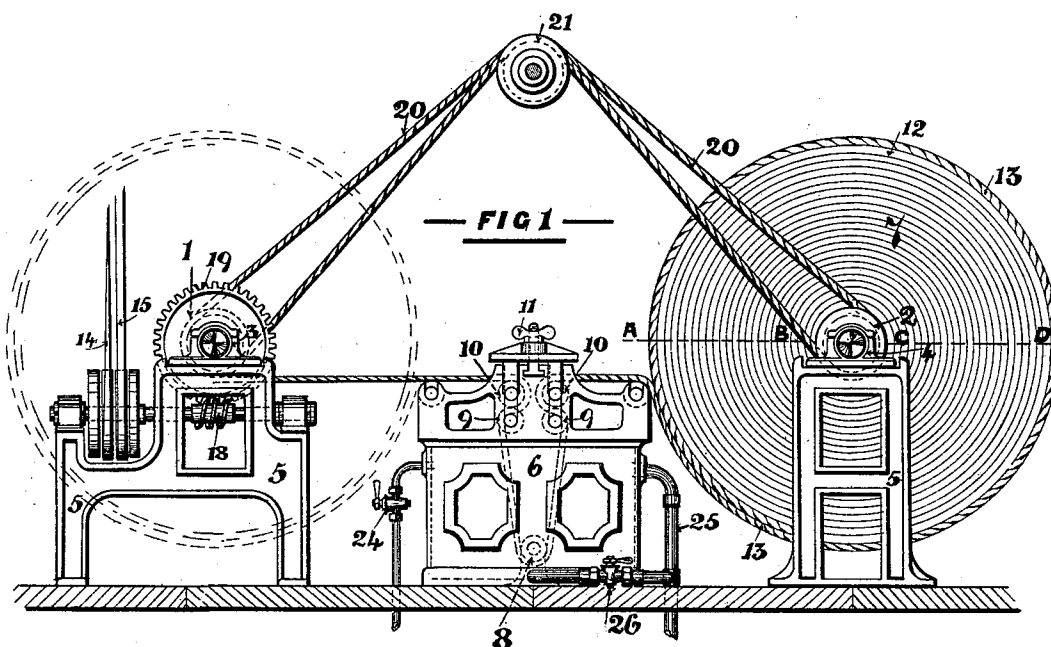
(No Model.)

J. T. PEARSON.

MEANS AND APPARATUS FOR HUMIDIFYING FIBROUS SUBSTANCES.

No. 520,703.

Patented May 29, 1894.



Witnesses:
J. A. Rutherford.
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JAMES TOWNSLEY PEARSON, OF BURNLEY, ENGLAND.

MEANS AND APPARATUS FOR HUMIDIFYING FIBROUS SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 520,703, dated May 29, 1894.

Application filed June 1, 1891. Renewed February 12, 1894. Serial No. 499,973. (No model.) Patented in England May 2, 1889, No. 7,315.

To all whom it may concern:

Be it known that I, JAMES TOWNSLEY PEARSON, engineer, a subject of the Queen of Great Britain, residing at Burnley, in the county of Lancaster, England, have invented new and Improved Means and Apparatus for Humidifying Fibrous Substances, (for which I have obtained a patent in Great Britain, No. 7,315, dated May 2, 1889,) of which the following is a specification.

This invention is designed for the humidification of various substances requiring moisture but more particularly cotton, worsted and other yarns.

It is a fact well understood, that weft not from the spindle is not in a fit state to be woven into cloth, for if so used the cloth would have a much inferior appearance, and the weft would have a greater tendency to break than if it were submitted before using to a process of humidification. The usual practice has been to place the yarn in a room or cellar, having a specially constructed floor containing water for humidifying purposes, the effect of humidification being more or less in accordance with the length of time the yarn is allowed to remain in the cellar, which is usually about ten days. Therefore a stock of yarn equal to ten days' production is constantly under humidification at one time.

To expedite more effectually the process of humidification is the object of the present invention. I arrange the cops or yarns in layers, one above the other, with a wet or damp sheet between each single, double or more layers, so that each layer of cops or yarn may be in actual contact with the damp surfaces of the sheets, and absorb moisture therefrom, which is conveyed to the center or core of the threads of yarn by capillary attraction; twenty-four hours being quite sufficient to effect the required degree of humidification, after which the yarn is ready for use, or to be packed in the usual manner. It will therefore be obvious that by my improved process of humidifying or conditioning yarns, each day's production is dealt with in the following twenty four hours, only one day's instead of ten days' stock being under humidification at one time and consequently fewer cans or skips are required for the purpose.

In order that my invention may be properly understood and readily carried into practical effect, I have hereunto attached the accompanying sheets of drawings, marked with figures of reference, representing an arrangement of mechanism, by which the process of humidification may be expeditiously performed.

Figure 1, is a side elevation, and Fig. 2, is a plan, partly in section, representing an arrangement of machinery, by which the process of humidification may be efficiently and expeditiously effected.

In the drawings the reference numerals 1 and 2 represent two wooden rollers supported in bearings 3 and 4, on the framing 5, and are situated one on each side of the cistern or water tank 6. These rollers receive in a roll alternately the bulk of canvas or cloth 7 in a wet or moist state. In its passage from roller to roller the said canvas or cloth is drawn through the cistern or tank 6 being conveyed downward under the conducting roller 8, in the manner seen in dotted lines in Fig. 1 and then upward between a pair of squeezing rollers 9 and 10, by which the amount of moisture absorbed by the canvas or cloth is regulated by thumb screws 11 before being wound in a bulk as represented on the roller 2. The annular space between each lap or fold of the cloth wound or wrapped upon the roller 2 is an inclosure or layer of weft or yarn, in the shape of cops, hanks, skeins or otherwise, one layer outside another, in the manner shown in plan view Fig. 2, in which view the bulk or roll of canvas or cloth is shown in section taken through the lines A B and C D in Fig. 1. The yarn so inclosed within the walls of the cloth or canvas is allowed to remain for twenty four hours or thereabout, during which time the weft or yarn so inclosed will have absorbed by capillary attraction, the moisture from the walls of canvas or cloth surrounding the annular or spiral spaces 12.

To prevent the walls of canvas from pressing unduly upon the yarn, suitable ropes or flexible ribs 13 are attached to the surface of the canvas or cloth, the thickness of the ribs is preferably that of the diameter of the cops or yarn. The yarn having remained within the canvas during the twenty four hours, as

above stated, may now be considered as properly humidified, or in proper condition to be removed for use or packed in skips or cans for delivery. The machine may now be set in motion to unwind the roll of canvas from the roller 2 and transfer it to roller 1. This is effected by shifting the driving straps 14 and 15, so as to bring the open strap 15 from the loose pulley 23, seen in Fig. 2, to fast pulley 22, whereupon a slow revolving movement is imparted to rollers 1 and 2 through the medium of worm 18 and worm wheel 19. The two rollers 1 and 2 are connected together by an endless rope 20, which is elevated over a pair of guide pulleys 21, so as not to obstruct the persons employed in removing the humidified yarn from the canvas, and supplying or feeding the same with yarn for humidification, both operations being effected during the traverse of the canvas from one roller to the other. Assuming the roller 1 to be now full of canvas, with the yarn to be humidified inclosed between the damp walls of the canvas in a similar manner as described in relation to the roller 2, the machine is now stopped by shifting strap 15 from fast pulley 22 to loose pulley 23, in which position it now remains the allotted time, to allow the yarn to absorb the required amount of moisture from the damp surfaces of the walls of canvas. The humidification of the yarn being now complete, the machine is again set in motion in a reverse direction, by shifting the cross strap 14 from the loose pulley 16 to the fast pulley 17, the removal and feeding of the yarn being the same as that previously described.

The cistern or tank 6 is supplied with water from the tap 24 any excess being carried away by overflow pipe 25, and for the purpose of emptying the said tank, the discharge tap 26 is provided.

In the operation of the machine shown in the drawings, the canvas or cloth on one roller will in the beginning unwind more rapidly than it is wound on the other roller, but as the diameter of the roll on the last mentioned roller increases it will gradually take up the accumulation of canvas or cloth which is unwound from the first mentioned roller, and during the taking up of the accumulated canvas or cloth alluded to, the unwinding roller continues to rotate and unwind more canvas or cloth, so that in the end all the cloth is wound on the winding up roller.

Having now described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a machine for the humidification of fibrous substances the combination with the rollers 1 and 2, the tank 6, between said rollers squeezing rollers 9 and 10, supported at the top of said tank, and a guide roller 8 in said tank, of canvas 7, having flexible ribs 13, and the worm and worm wheel 18 and 19, of the reversible gear for winding and rewinding the canvas from rollers 1 and 2, respectively, substantially as described.

2. In a machine for the humidification of fibrous substances, the combination with a water tank, of squeezing rollers supported at the top of said tank, a cloth or canvas provided with flexible ribs, and means for passing said cloth into the water tank and through the squeezing rollers, substantially as described.

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

JAMES TOWNSLEY PEARSON.

Witnesses:

JOSEPH HOWARTH,
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