D. WRIGHT.

Art of Treating Yarn to Set the Twist.

No. 165,779. Patented July 20, 1875.

Fig. 1.

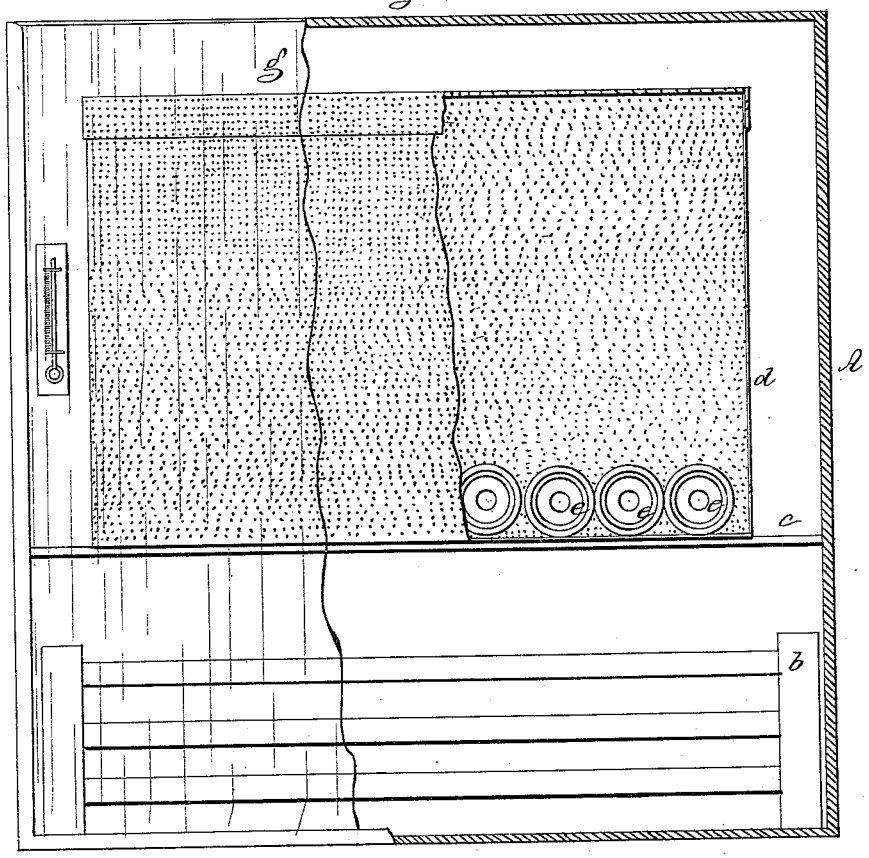


Fig. 2.

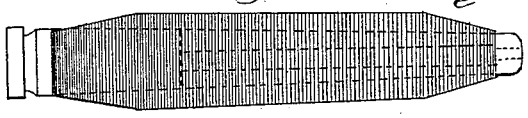
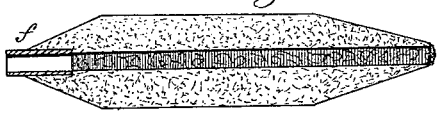


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE

DANIEL WRIGHT, OF LOWELL, ASSIGNOR TO GEORGE DRAPER & SON, OF MILFORD, MASSACHUSETTS.

IMPROVEMENT IN THE ART OF TREATING YARN TO SET THE TWIST.

Specification forming part of Letters Patent No. **165,779**, dated July 20, 1875; application filed April 24, 1875.

To all whom it may concern:

Be it known that I, DANIEL WRIGHT, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a Process for Treating Yarn, of which the following is a specification:

This invention relates to an improved process of treating yarn to prevent it from kinking when used as filling or otherwise.

It is now customary to subject cops of mule-spun yarn, spun on cop-tubes and to be used for filling, to the direct action of steam to heat and moisten the yarn to set the twist, and, therefore, counteract the tendency of the yarn to kink when being woven into cloth. Cotton yarn, if used as filling, soon after it is spun is specially liable to kink, and more so than woolen yarn, as it is not held under as much tension. This steaming process swells the cops, owing to the action of the water in the steam, and if left too long in the steam-chamber the cops will be so much swollen that the yarn will be matted, and will fail to unwind properly, and such cops will be spoiled. It also frequently happens that the cops swell from the inside into the passage through the cop previously occupied by the spindle, and when this happens, the spindle of the shuttle, when inserted in the cop, will interfere with such yarns so misplaced, and cause much waste, for the cop will not all unwind.

There is another class of filling-yarn which is spun on bobbins and by ring-frames, and this class of filling-yarn is being used more and more each year, and in place of mule-spun yarn.

The steaming process is not applicable to this class of yarn spun on bobbins, because the steam injuriously affects the bobbins and spoils them.

This invention consists in subjecting the yarn wound on cops or bobbins to the action of heated air rather than steam, whereby the tendency of the yarn to kink is lessened or quite obviated, and without swelling the yarn on the bobbins.

Figure 1 is a view, partially in section, of a box or apartment for treating yarn according to this invention. Fig. 2 is a view of a bobbin filled with yarn, and Fig. 3 is a view of a cop of yarn wound on a cop-tube.

A is a chamber, of suitable size, shape, and material, heated, preferably, by a series of closed pipes, *b*, containing steam, and connected with a suitable steam-generator. Within the chamber are shelves or supports *c*, on which are placed boxes or receptacles *d*, in which are placed the bobbins *e*, or they may be cops *f* to be treated by heat. The boxes *d* are preferably of perforated tin or of wire, and of suitable size to receive the desired number of bobbins or cops. A door, *g*, closes the apartment A. Within the apartment is placed a thermometer, *h*, and it will preferably be covered with a glass, so that the thermometer may be seen from outside the chamber. The heat in this apartment is maintained at the temperature of about 110° or 120° Fahrenheit, and the yarn is allowed to remain in the apartment for about two hours, when the twist is found to be set sufficiently, so that the tendency of the yarn to kink is in a great measure, if not quite, overcome. The heat acts to overcome the tendency of the fibers to resume their position before being twisted, and to cause the fiber to remain in its twisted position.

The apartment A may be heated in any well-known way, so long as the air is brought to the proper temperature and is not filled with moisture, and in practice the box *d* or other suitable receptacle for bobbins may have rollers, so that it may be rolled into the heated apartment. Were the bobbins *e* subjected to the action of steam, they would be swollen and spoiled. These bobbins are spun and wound on ring spinning-frames, and the yarn is usually employed for filling, and instead of cop-yarn spun on mules, and as represented at Fig. 3. It is very essential that this yarn on bobbins be treated to remove the tendency of the yarn to kink before the bobbins are placed on the shuttle-spindles, and this can only be done properly by the action of heat. At the same time that this process is specially adapted to the treatment of yarns on wooden bobbins, it has also advantages over the steaming process when used in connection with mule-spun yarn on cops, for such cops are not swollen by the action of heat without moisture. When these cops are left too long in the steam-chamber the cops swell, and the yarn becomes drawn

or wedged layer between layer, so that it will not properly unwind, and such cops are worthless; also, it happens that the hole through the center of the cop, (see Fig. 3,) becomes choked with yarn from the inner wall of the cop, and such swelling of the yarn fills the opening through the cop and makes it difficult to crowd the cop on the spindle of the shuttle, and the yarn becomes wedged and entangled, and a large quantity of yarn is lost in the shape of cop-waste.

It is not desired to limit this invention to any form or size of chamber, or to any particular means for heating it; but

Having described this invention, I claim—

The described improvement in the art of treating yarn on bobbins or cops, to reduce the tendency of the yarn to kink in subsequent operations, consisting in subjecting the yarn to the action of heated air in a chamber, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL WRIGHT.

Witnesses:

M. A. WRIGHT,

J. F. SLATER.