C. HASTINGS.
Finishing Yarns.

No. 214,658. Patented April 22, 1879.

Fig. 1.

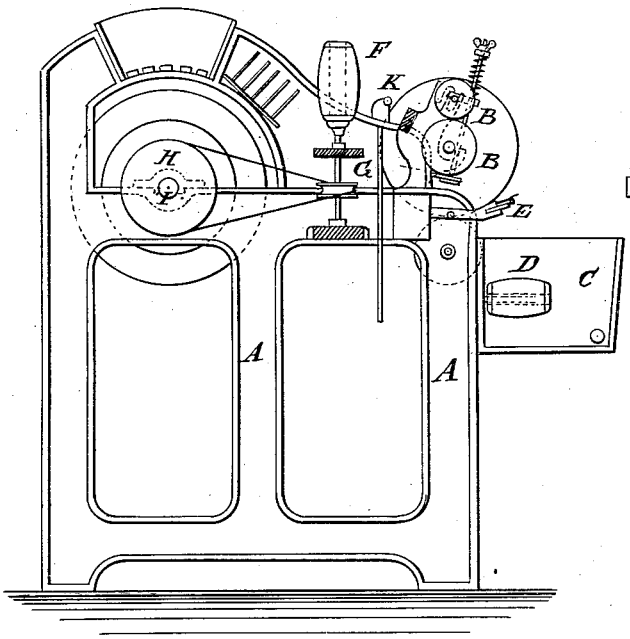


Fig. 2.

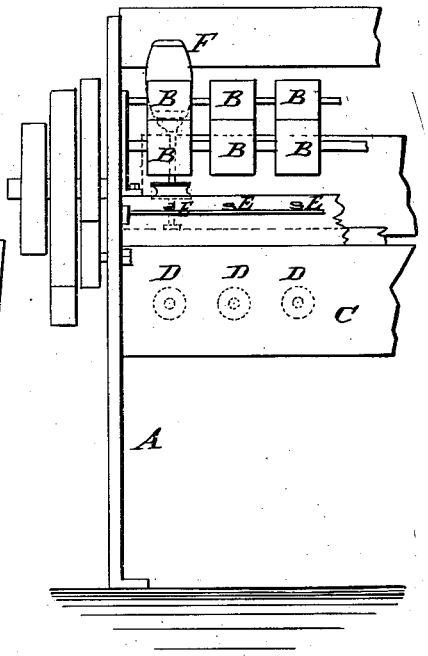
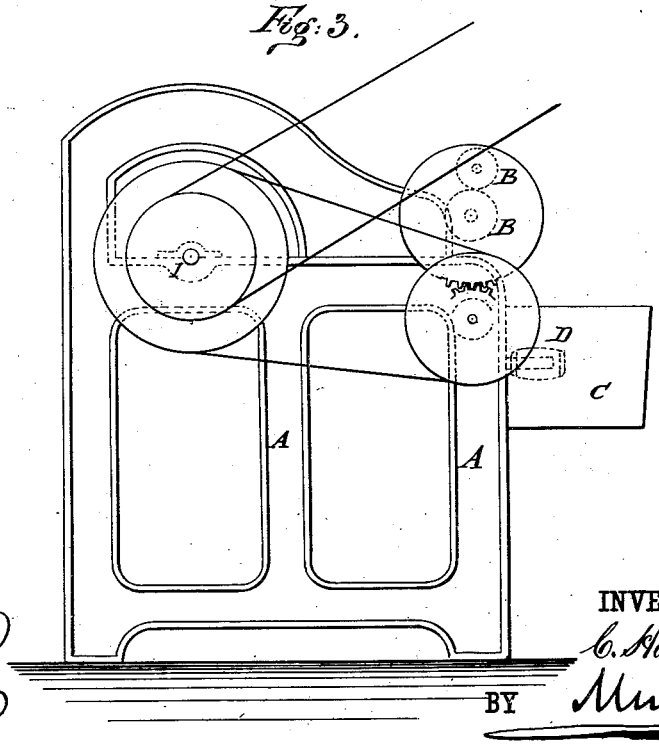


Fig. 3.



WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

C. Hastings

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES HASTINGS, OF BRADFORD, ENGLAND.

IMPROVEMENT IN THE ART OF FINISHING YARNS.

Specification forming part of Letters Patent No. **214,658**, dated April 22, 1879; application filed July 3, 1878; patented in England, September 6, 1877.

To all whom it may concern:

Be it known that I, CHARLES HASTINGS, spinner, of Bradford, in the county of York, England, have invented Improvements in the Art of Finishing Yarns made of Wool and other fibrous substances, and do hereby declare the nature of my improvements to be as follows:

The object of my invention is to so treat yarns of wool or of soft hair—such as camels' hair, mohair, and alpaca, or yarns composed of mixtures of one or more of these—with wool as to give them additional strength, and otherwise improve their quality as respects smoothness, evenness, and luster, and this at a considerable reduction of cost in their manufacture.

The mode in general use for smoothing and finishing yarns of this class, commonly called "genapping," may be shortly described as follows: The bobbins of yarn, as taken from the twist-frame, are reeled off into hanks preparatory to boiling, which operation of boiling is intended to set, or partially set, the yarn. The reels filled with hanks of yarn are immersed in a pan of lukewarm suds. They are then immersed in a pan of boiling suds, and in some cases there is a third immersion, the heat of the suds being graduated from tepid to boiling. The hanks are then stripped from their reels, scoured, and wrung out by squeezing-rollers, after which they are hung up in a drying-room, and when dry they are wound upon bobbins, to prepare them for the gassing or singeing process. When this process is completed the yarn is again reeled and washed on the reel, to remove the singeings, after which it is rinsed in cold water and then plunged into boiling water to complete the set of the yarn. The yarn is then dried upon the reel, and the hanks when dry are taken off and made up into bundles.

The invention consists in drawing previously-gassed yarn from the bobbins through a suds to wash off the ashes; next, through pressure-rolls, to perforated bobbins; then in boiling the yarn on the bobbins to set the twist; then in winding, rinsing, and boiling it on the reel; and, finally, in rotating it in the air and drying it under tension, as hereinafter more particularly described.

A machine employed by me in carrying my process into effect is shown in the accompanying drawings in partial sectional side elevation at Figure 1, and in elevation at Fig. 2. The gearing for giving motion to the working parts of the machine is shown in elevation at Fig. 3.

A A is the framing of the machine, fitted with a row of upper and lower squeezing-rollers B B, which are driven at a regulated speed. Below these rollers, and in front of the framing A, is a trough, C, extending from end to end of the scouring-frame, which trough is intended to contain suds or other suitable scouring-liquor, which is maintained at a lukewarm temperature by a steam-pipe introduced into the liquor. Projecting from the inner face of this trough is a row of pins, which are intended to receive the bobbins carrying the gassed yarn that is to be scoured. The position of these bobbins is shown at D.. The yarn from these bobbins is led up, through guides E E, to the several pairs of squeezing-rollers B B, and thence to take-up bobbins F, which are mounted on live spindles G, driven by bands from the drum H on the main driving-shaft I. These bobbins F are driven by frictional contact with the spindles in order to take up the yarn as it is delivered from the squeezing-rollers B B, the distribution of the yarn over the bobbins being effected by a traversing bar, K, furnished at its front edge with a glass rod, to prevent injury to the yarn from friction. The bobbins D, filled with the gassed or singed yarn, are immersed in the scouring-liquor, and as the several ends are drawn therefrom they will pass up singly out of the liquor and through the guides to the squeezing-rollers, leaving behind them the greater part, if not the whole, of the singeings. The action of the squeezing-rollers will be to express the liquor from the yarn in a uniform manner and deliver it to the bobbins F in a comparatively clean state.

It may be here remarked that if the pressure of the upper squeezing-rollers, is carefully regulated, any ridgy appearance in the yarn resulting from unequal tension or unequal thickness in the doubled strands will be to a great extent removed. The bobbins of scoured yarn when removed from the machine are

piled up on skewers set in a framing and immersed in boiling suds, whereby the set of the yarn is to a great extent effected. The bobbins are pierced, in order to facilitate the penetration of the suds into the mass of the yarn.

The time required for insuring the set will depend upon the hardness of the twist and the size of the yarn. A little experience will enable the operator to judge of the time required; but it is preferable to determine the time requisite by previously testing the different qualities of yarn brought under treatment. From three to five minutes will in general suffice; but some kinds of yarn will require longer time. The next operation is to wind off the yarn onto reels, and thereby to prepare it for the rinsing and a further boiling process similar to that at present in use. The subsequent treatment of the yarn is also similar to the old plan. Thus the yarn, while on the reel and wet from the boiling process, is rapidly rotated to discharge the moisture by centrifugal action, and the reel is then carried to the drying-room, where the yarn is dried at tension. The hanks are then removed and made up as usual for the market.

I have found by experiment that the first boiling, so far as the cleansing of the yarn is concerned, is rendered useless by the subsequent gassing operation, which loads the yarn with minute particles of ash, and, further, that the setting of the yarn is effectually performed subsequently to the gassing. This renders the first reeling, setting, scouring, drying, and winding of the old process unnecessary.

Having now set forth the nature of my invention of improvements in finishing yarns made of wool and other fibrous substances, and explained the manner of carrying the same into effect, I wish it to be understood that I claim—

The herein-described process of finishing previously-gassed yarn, that consists in drawing the gassed fiber from the bobbins through a suds that washes off the ashes, and then through pressure-rolls to perforated bobbins, then boiling the yarn in a suds on the bobbins to set the twist, then winding, rinsing, and boiling it on the reel, and finally rotating it in the air, and then drying the same under tension, as set forth.

CHARLES HASTINGS.

Witnesses:
TOM PITTS,
JOHN WAUGH.