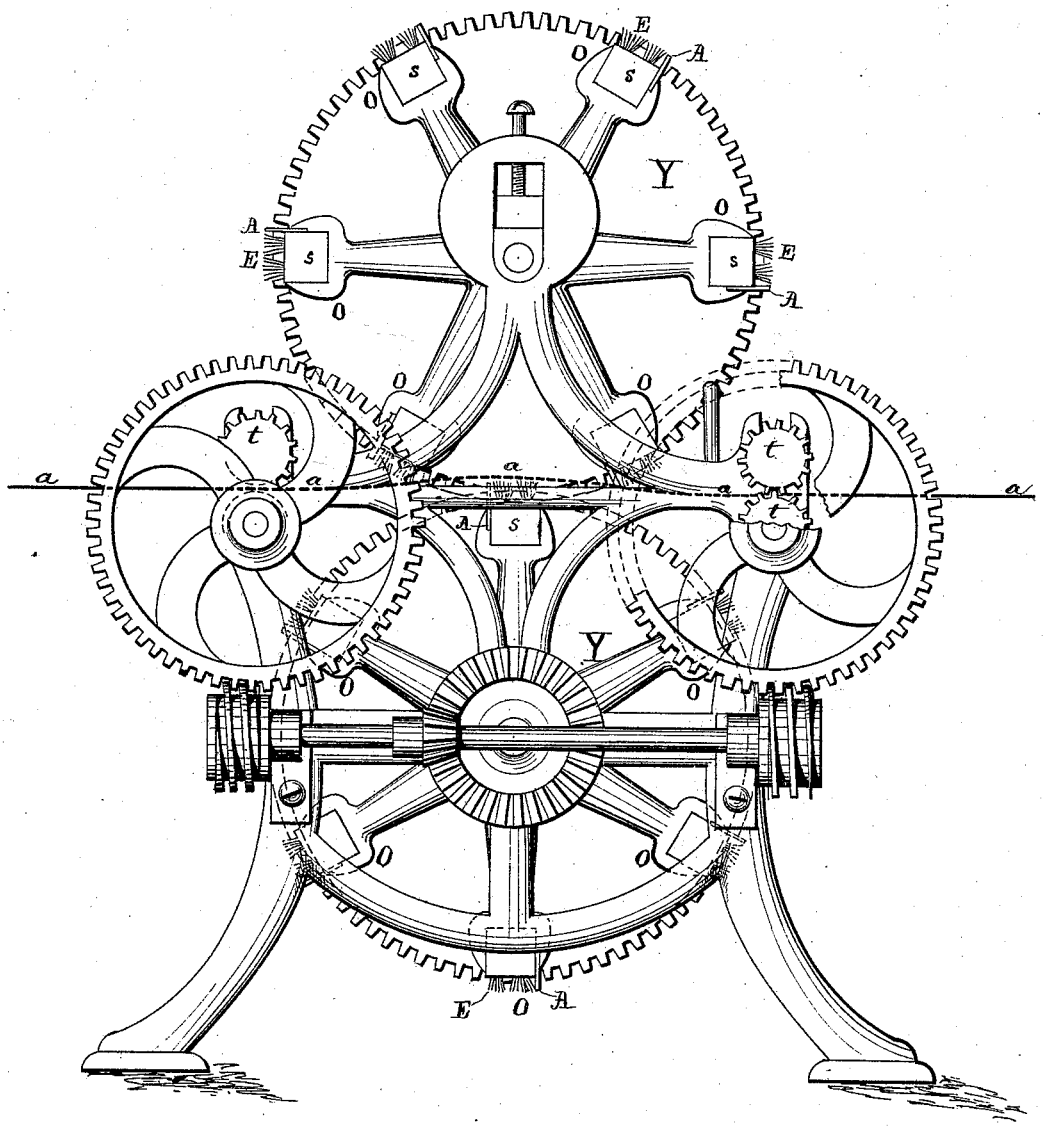
2 Sheets—Sheet 1.

B. THACKRAH.

CLOTH-NAPPING MACHINE.

No. 169,742. Patented Nov. 9, 1875.

Fig. 1.



Witnesses:

Charles P. Wineyan

L. M. Arnold

Inventor:

Benjamin Thackrah.

2 Sheets—Sheet 2.

B. THACKRAH.

CLOTH-NAPPING MACHINE.

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Fig. 2.

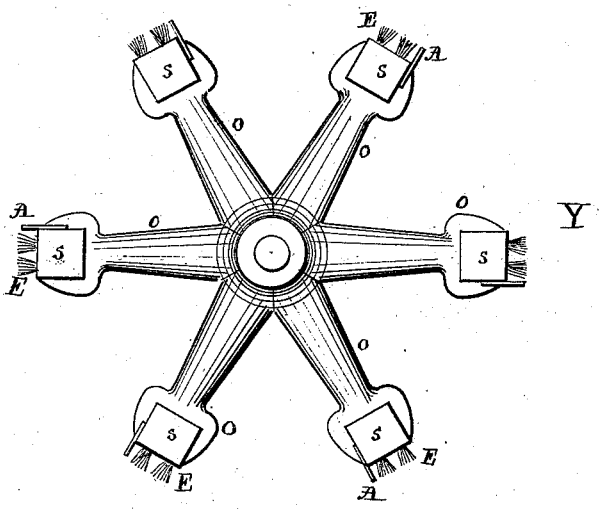
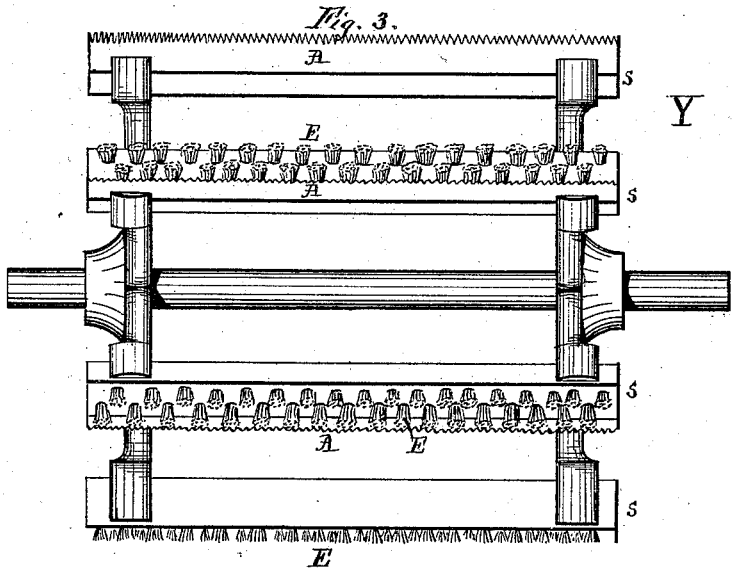


Fig. 3.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

BENJAMIN THACKRAH, OF AMSTERDAM, NEW YORK.

IMPROVEMENT IN CLOTH-NAPPING MACHINES.

Specification forming part of Letters Patent No. **169,742**, dated November 9, 1875; application filed April 28, 1875.

To all whom it may concern:

Be it known that I, BENJAMIN THACKRAH, of Amsterdam, in the county of Montgomery and State of New York, have invented a new and useful Improvement in Napping-Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation of one end of the machine, showing the relative position of the sectional cylinders Y Y, the feed-rollers, and the line of the fabric operated upon. Fig. 2 is an elevation of one of the sectional cylinder-heads, showing the arms *o* to receive the bars *s*, provided with brushes E and combs A. Fig. 3 is a side elevation of one of the sectional cylinders, showing its several parts.

Like letters of reference refer to like parts in each figure.

The object of my invention is to raise with rapidity, certainty, and safety, simultaneously upon each side of tubular knit fabrics, when closed together, or other fabrics, a fine and even nap of any desired grade or consistency.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

I fix upon the bars *s* the bristle brushes E, of suitable length, width, and thickness, and the metal combs A, substantially as shown. I form a sectional cylinder, Y, by placing at a proper distance apart, and at suitable distances from the ends of a shaft, a pair of sectional cylinder-heads, made substantially as shown in Fig. 3, consisting of a proper hub, having attached thereto arms *o*, said arms being provided at their outer ends with transverse slots or mortises to receive the bars *s*. These sectional heads I place and secure firmly upon the shaft, so that one arm of each head shall form a pair to receive a bar in such position that the outer surface of each bar formed of the brushes and combs shall be parallel to the shaft, and upon the same plane, the combs and brushes thus describing the same circle as the cylinder revolves. Two cylinders thus formed I so arrange and mount one above the other in a frame, and connect together by spur-gears, of equal diameters, attached to the outer ends of each shaft, that each cylinder shall have the same velocity, and so set the equal gears upon the shafts of each cylinder that the bars on one cylinder shall, when in motion, interpose or intersect at equal central distances between the bars on the corresponding cylinder.

I also construct and place upon each side of my machine, on a line horizontal with the intersection of the two cylinders Y Y, pairs of feed-rollers *t*, of equal diameters, and driven at equal speed, as fully shown in the drawings.

The operation of my invention is as follows: A roll of knit tubular goods, or other fabric, is taken, and the outer end is introduced to the action of the feeding-rollers *t* on one side of the machine, and passed through between the bars of each cylinder to the feed-rollers *t* on the opposite side, as indicated by line *a a*. Motion is given to the coacting cylinders in such a direction that the combs will precede the brushes on the same bar, and this motion is communicated, through connecting gearing, to the feed-rollers on each side, thereby passing the cloth evenly to the action of the coacting napping-cylinders Y Y, where it is napped on each side, and as evenly drawn away without any unnecessary stretching. As the alternate bars on each cylinder, when in motion, intersect, a serpentine or wave-like motion is given to the fabric. The combs comb off all surplus material, such as lumps, knots, specks, &c., and protect the brushes from excessive pressure, thereby preventing injury to them, and, by combining the brushes and the combs, as described, a nap is raised without cutting away the fibers of the goods.

By the combined action of the combs and brushes, arranged and operating as described, all danger of catching and tearing the fabric is avoided, and a very fine and even nap is raised on each side of the fabric.

By the intersection of the bars of one cylinder at equal distances from the bars of the corresponding cylinder all the usual devices for supporting the fabric, such as guides, rolls, &c., are dispensed with, thereby doing away with all unnecessary stretching, as the bars on one cylinder support the fabric on that side

at the same time that they are napping it, while the other cylinder naps and supports the other side.

The advantage of this invention consists in the simplicity of its construction and operation, and by its use improves in quality and appearance, and enhances in value, the fabric operated upon.

What I claim as my improvement, and desire to secure by Letters Patent, is—

1. A cloth-napping cylinder having bars provided each with a comb, A, and brushes E, as and for the purposes described.

2. The combination of two sectional cylinders provided with bars having combs A and brushes E, arranged as described, whereby the said bars shall intersect each other at equal distances apart, substantially as shown.

BENJAMIN THACKRAH.

Witnesses:

CHARLES P. WINEGAR,

L. M. ARNOLD.