

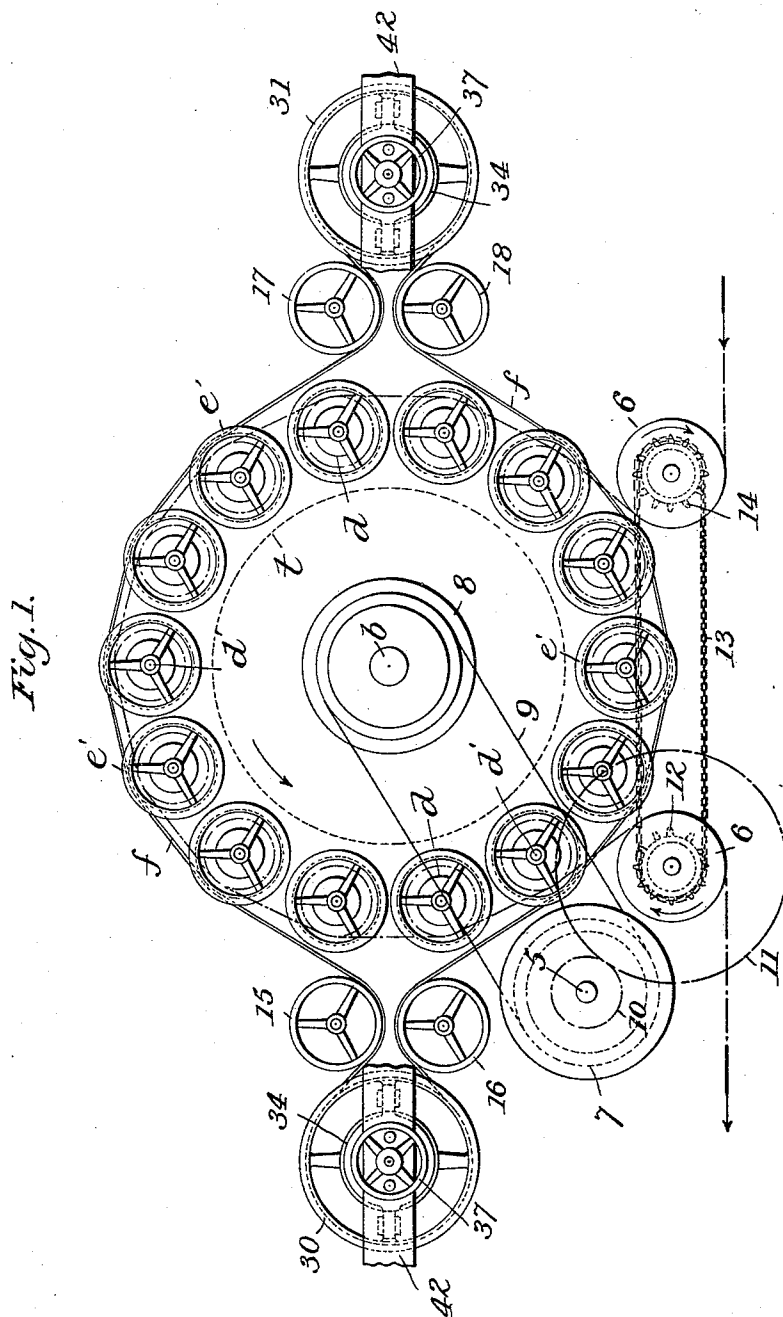
(No Model.)

2 Sheets—Sheet 1.

C. WOOD.
CLOTH NAPPING MACHINE.

No. 536,679.

Patented Apr. 2, 1895.



Witnesses
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J. A. Fairgrieve

Inventor
Charles Wood
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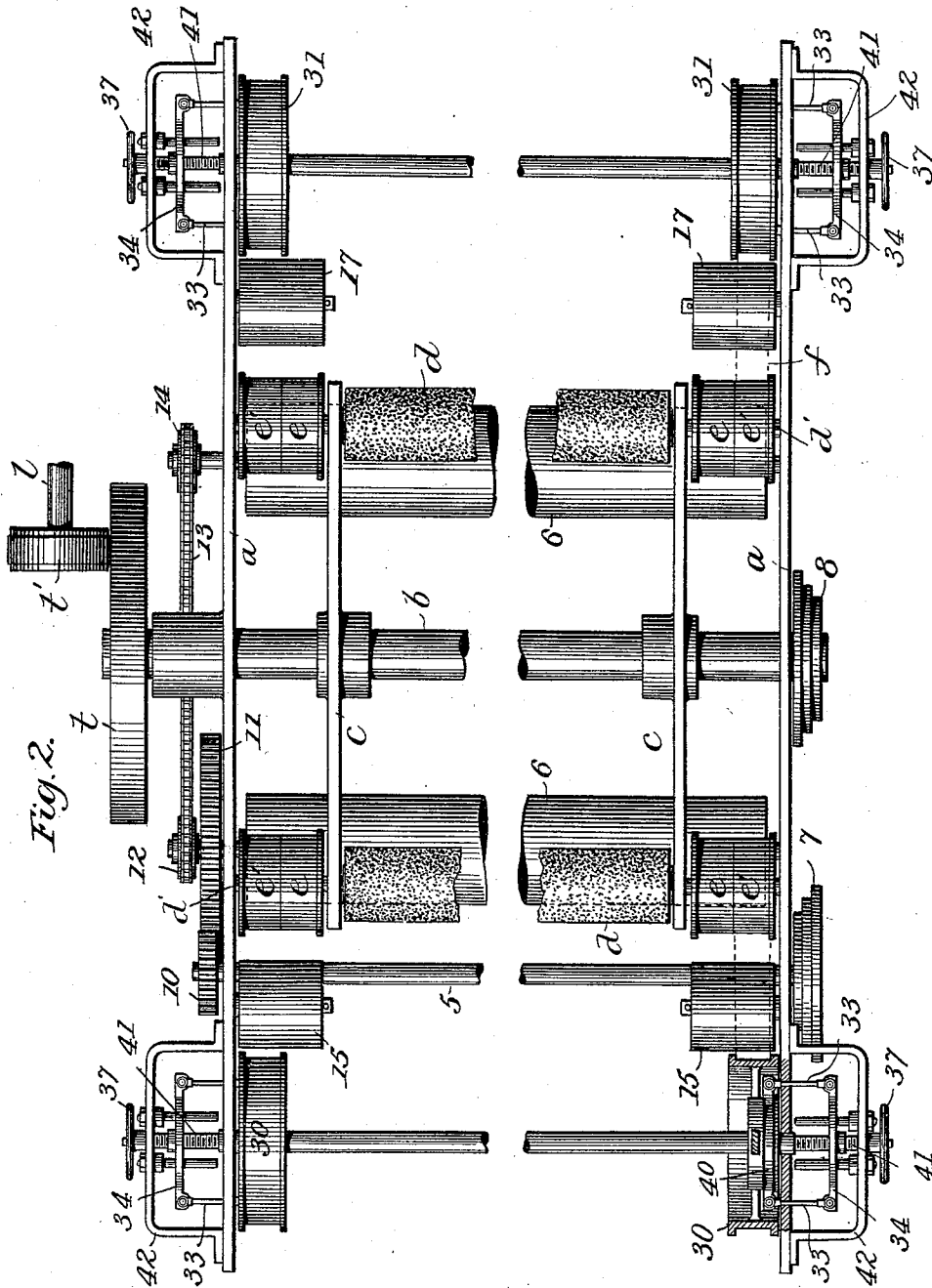
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UNITED STATES PATENT OFFICE.

CHARLES WOOD, OF HEATON-NORRIS, ENGLAND.

CLOTH-NAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,679, dated April 2, 1895.

Application filed November 23, 1894. Serial No. 529,737. (No model.) Patented in England April 5, 1894, No. 6,770, and in Belgium September 7, 1894, No. 111,700.

To all whom it may concern:

Be it known that I, CHARLES WOOD, a subject of the Queen of England, residing at Heaton-Norris, near Manchester, England, have invented certain new and useful Improvements in Cloth-Napping Machines, of which the following is a specification.

My invention relates to that class of napping machines in which a series of napping rolls is carried by a revolving head, and my invention which is set forth in British Patent No. 6,770, of April 5, 1894, and Belgian Patent, No. 111,700, dated September 7, 1894, consists in means for regulating the movements of the said rolls for varying the energy of the operation of the same upon the fabric, as fully set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of sufficient of the revolving head and adjuncts of a napping machine to illustrate my improvement. Fig. 2 is a plan view of the same.

The frame *a* of the machine is constructed in any suitable manner and in bearings thereof turns the drum-shaft *b*, carrying the drum heads *c, c*, having bearings for the shafts *d'* of the napping rolls *d*. In the case of a single acting machine the napping rolls have cloth with teeth pointed in the direction of the rotation of the drum, but in a double acting machine where the alternate rolls turn in reverse directions the teeth are pointed in reverse directions.

The drum shaft may be driven directly by a belt, or it may be provided with devices, as a friction disk *t*, and driving wheel *t'* on an adjustable shaft *l* whereby it may be driven at different speeds as set forth in my British Patent No. 6,770, dated April 5, 1894. The shaft 5 drives the cloth rollers 6, arranged in any suitable manner, and said shaft may be driven through the medium of cone pulleys 7, 8 on the shafts 5 and *b*. On the shaft of one of the cloth rollers 6 is a pinion 12 from which a chain 13 passes to a pinion 14 on the shaft of the other cloth roller and motion is imparted to the first roller by gears 10, 11, the former on the shaft 5.

Upon one or both ends of the shaft of each napping roll are two pulleys *e, e'*, the former

fixed to the shaft and the latter turning loosely thereon. At each end of the drum is what I term a band. As shown the band incloses the pulleys and is of such a width that it may be shifted from the pulleys *e* to the pulleys *e'*, and vice versa. As shown, the band *f* is at each end of the drum in the form of a flexible belt which passes over the pulleys beneath two guide drums 15, 17, around two flanged shifting pulleys 30, 31, back over two guide drums 16, 18, and beneath the pulley at the end of the drum, as best shown in Fig. 1. I have shown this arrangement as one of different means which can be employed for shifting the bands from the fixed to the loose pulleys to a greater or less extent and for holding them in any position to which they may be put. When these bands are on the loose pulleys *e'*, the drum will revolve carrying the said pulleys upon the band and there will be no tendency to impart movements to the band and no effect on the fabric will be produced but if the bands are carried to any extent onto the fixed pulleys *e*, the bands tend to resist the rotation of the fast pulleys and of the napping rolls causing more or less drag thereof, and increasing the energy of their action upon the fabric, and this resistance is increased in proportion as the bands are carried farther on to the fixed pulleys. It therefore follows that the energy of the napping rolls may be varied by shifting the band or bands, the maximum resistance and strongest raising action being obtained when the band is fully upon the fast pulleys.

The shifter wheels 30 and 31, may be moved to carry the band or bands in any suitable manner. As shown, each shifter wheel has a hub receiving a ring 40 connected by links 33, with a plate 34, and through a threaded hub of said plate passes an adjusting screw 41, turning in a bracket 42 and provided with a hand wheel 37. By turning the hand wheel 37 the plate 34 and the ring 40 may be carried in or out carrying with it the wheel 30 or 31 and the band which is engaged by the flanges of said wheel.

It will be seen that the speed at which the cloth is caused to travel in respect to the speed of the drum may be varied by altering

the position of the belt 9, upon the cone pulleys 7, 8, but it will be evident that other speed changing devices may be employed such for instance as described in my afore-

5 said British patent.

Where a band or ring, is mounted so as to make contact with the pulleys at the ends of the napping roll shafts, and when the napping rolls are turned backward by the en-
10 gagement of their teeth with the fabric, there is a tendency when the drum is rotating at a slow speed for the pulleys to drive the band backward in a direction the reverse of that in which the drum turns; but I have found
15 that as the speed of the drum is increased there is a corresponding tendency to carry the band forward, and that when the drum is at such a speed that the napping rolls act with the maximum energy that the cloth will
20 bear, the tendency to carry the band in one direction is counteracted by the tendency to drive it in the opposite direction and the band becomes stationary or practically so.

It will thus be seen that there are two
25 modes of control in the construction above set forth: first, what may be termed the self-adjustment which results, from imparting a proper speed of rotation to the drum in proportion to the speed of travel of the fabric, and which is more fully set forth in my
30 application Serial No. 513,255; and, second, that which results from shifting the ring to a greater or less extent from a series of loose pulleys onto a series of fixed pulleys, and that
35 by the combination of both these features of adjustment in one machine I am enabled to operate upon the cloth with many different degrees of energy thereby adapting a single machine to the treatment of great varie-

ties of fabrics to produce different degrees of 40 finish.

Without limiting myself to the precise construction and arrangement of parts shown, I claim as my invention—

1. The combination in a napping machine, 45 of a rotating head provided with rotating napping rolls, a fixed and a loose pulley upon the shaft of each roll, a band engaging said pulleys, and means for shifting the band from one series of pulleys to the other and for hold- 50 ing it in position, substantially as set forth.

2. The combination in a napping machine of a rotating head, napping rolls carried thereby, a band and fixed and loose pulleys carried by the shaft of each roll, and means 55 for shifting the band, substantially as and for the purpose set forth.

3. The combination with the revolving head and rollers of a napping machine, of means for varying the speed of rotation of the head, 60 fixed and loose pulleys upon the shaft of each of the napping rollers, a band engaging said pulleys, and means for shifting the band, substantially as set forth.

4. The combination with a revolving head 65 and napping rolls, fixed and loose pulleys upon the shaft of each of the napping rolls, a band and means for shifting the same, means for varying the speed of the revolving head, cloth feeding rolls and means for varying the speed 70 thereof, substantially as set forth.

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

CHAS. WOOD.

Witnesses:

CHAS. HEAP,

J. W. GRIMSHAW.