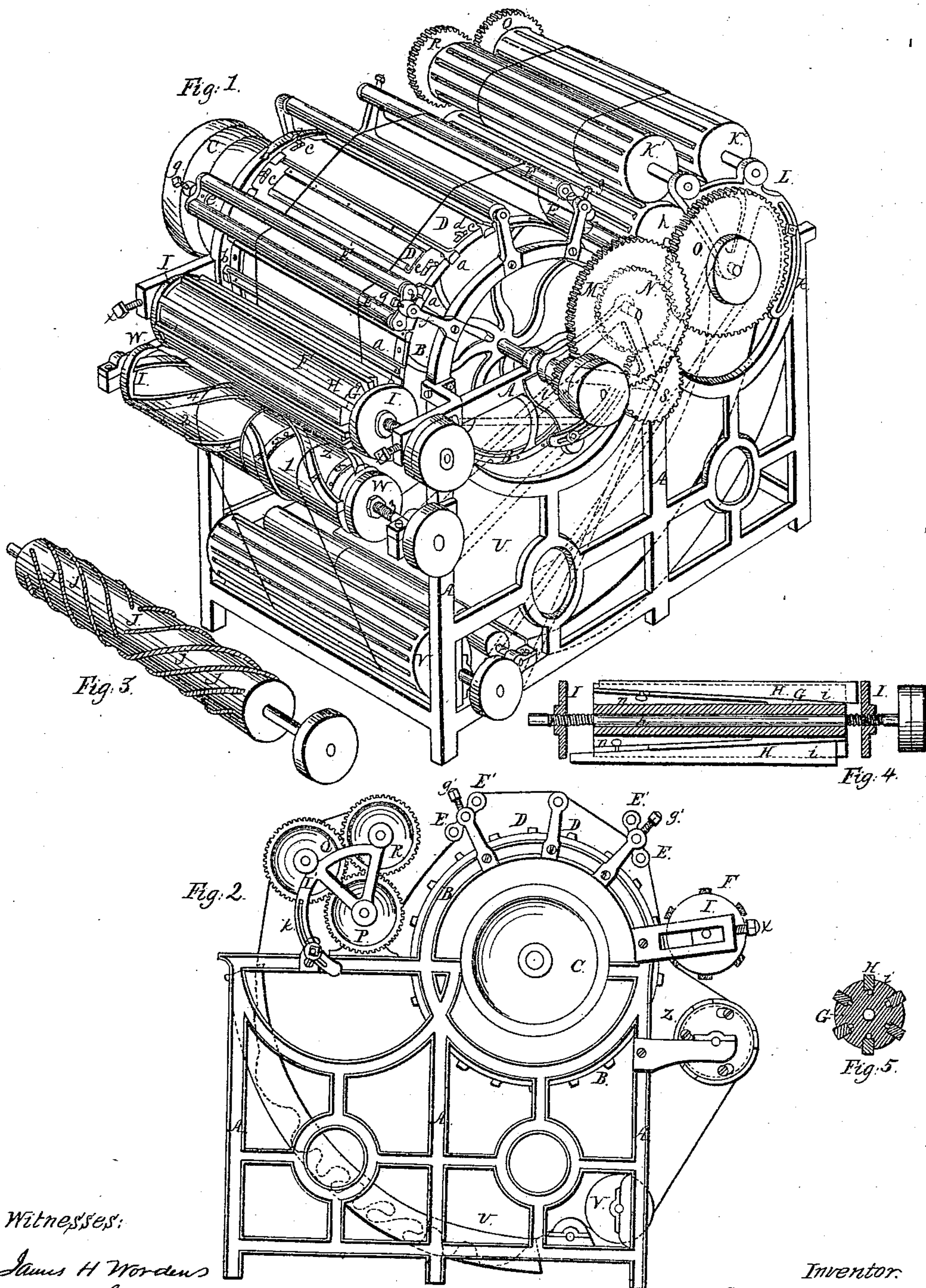


J. C. MILLAR
GIG MILL.

No. 36,550.

Patented Sept. 23, 1862.



Witnesses:

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JOHN C. MILLAR, OF TROY, NEW YORK, ASSIGNOR TO HIMSELF AND
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IMPROVEMENT IN GIG-MILLS.

Specification forming part of Letters Patent No. 36,550, dated September 23, 1862.

To all whom it may concern:

Be it known that I, JOHN C. MILLAR, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements on a Gig-Mill for Napping Cloth; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a perspective view of the machine. Fig. 2 is an elevation of the left-hand side of Fig. 1. Fig. 3 is a view of an improved stretching-roller temporarily detached from the machine and used in the machine in dressing some descriptions of cloth. Fig. 4 is a longitudinal sectional view of an improved gigging-roller for napping the back side of the cloth, and Fig. 5 is a cross section of the same.

The same letters have reference to like parts in each of the figures.

The blue lines in the drawings show the manner of arranging the cloth in the machine preparatory to napping the same.

The nature of my improvements consists in so constructing a napping-roller for napping the back side of the cloth or of blankets conjointly with napping the face side by the napping-cylinder that the lengths of card or teasel points acting upon the blankets or cloth may be regulated from the full length of the point to any smaller length; or the action of the card or teasel points, when desired, may be wholly excluded from action on the surface of the cloth by means of regulating-rods operated, for the purposes above, in the manner as hereinafter fully described; and it also consists in an improved construction and arrangement of the drawing-rollers by providing them with adjustable bearings for the purpose of regulating the tension of the rollers on the cloth to the proper amount required for drawing the cloth over the napping-cylinder in the manner as hereinafter set forth.

To enable others skilled in the art of constructing gig-mills to make and use my improved mill, I now describe its construction and operation as follows:

A A is the frame-work of the machine.

B B is the napping-cylinder.

C is the driving-pulley of napping-cylinder.

a a are tie bars or rails constructed in a hook form at the end b. (See Fig. 1.)

D D are gig-rods for holding the teasels while napping the cloth. These rods have slots c c through them at each end and a chamfered notch made on each corner, that the corner ends of the rod may fit into the hooks b, which, with the aid of the dogs d d, passing through the slots into the rim of the cylinder B, secure, while napping cloth, the gig-rods firmly to the cylinder in the manner as shown in Fig. 1 and admit of each of the rods being reversed end for end at will.

The teasels or cards used in napping the cloth are secured to the gig-rods in any of the known ways suitable for that purpose. The teasels are arranged in the gig-rods so as to have their points all in the same general direction; but the gig-rods holding the teasels are to be arranged upon the face of the napping-cylinder B in pairs and in such a manner that each successive pair of gig-rods shall present their teasel-points in opposite directions to each other; or each gig-rod holding teasels to operate by direct motion of cylinder can be arranged upon the face of the cylinder in reciprocal succession, with each gig-rod holding teasels to operate by reverse motion of cylinder, so as to secure a balance arrangement and equal distribution around the face of the napping-cylinder of the teasels both for the direct motion and for the reverse motion of said cylinder, alternating these motions as the progress of the napping process may require.

E E' are adjusting-rollers for regulating the contact of the cloth on the teasels. These rollers are affixed to head-pieces e e, E' being fixed, and E a loose roller. The head-pieces are pivoted to the studs f f and their adjustment regulated by means of the set-screws g g.

F is a napping-roller for napping the back side of blankets or of cloth, and may act conjointly with the napping-cylinder B.

G is the cylinder-stock, secured to the shaft h. The stock has formed in it a number of grooves, i i, in a line with its axis. The bottoms of these grooves form inclined planes, as seen in Fig. 4.

H H are regulating-rods, whose sectional form is seen in Fig. 5. The bottom sides of these rods are inclined at the same pitch as the bottoms of the grooves i i, so that when

the rod slides on the inclined plane the upper or regulating edge of the rod may always be parallel to the surface of the cylinder. The rods are prevented from falling out of position by the button *n*, affixed to the bottom of the rod and working through a slot in the incline plane of the stock *G*, and catching on the edges of a recess made for that purpose. Teasels or cards for napping are affixed to this cylinder by any of the known ways.

The regulation of the bars is effected by the hand-wheels *I I*, working on the screw-thread cut on the shaft *h*. By running the hand-wheels to and from the stock *G* the regulating-rods are made to move up or down the inclined planes *i i*, thus regulating the amount of edge of rod above the roller's surface, consequently regulating the length of tassel-points acting on the cloth, or excluding such action entirely. The tension of this napping-roller on the cloth is adjusted by means of the set-screws *x x*, shifting the bearings of the roller. The roller takes its motion from a pulley on shaft of the napping-cylinder by a belt, as seen in Fig. 1.

J is a stretching-roller for stretching the cloth by continuous action upon the cloth's surface from its center outward to its selvage edge while the roller is in revolution. Upon the surface of this roller, starting from the central surface and proceeding to the end edges, is affixed a series of screw-threaded rods, *j j*, or their equivalents. These rods are arranged in spiral courses upon the surface of the cylinder, in the manner as seen in Fig. 3. This stretching-roller is used in place of the stretching-roller *Z* when napping the lighter descriptions of cloth. This stretching or breaking roller *Z* is constructed in two cylindrical sections, 1 and 2, arranged upon the shaft 3. These sections have spiral grooves holding the spiral ribs 4, which operate each in its respective groove, each rib having a spring, 5, under its end, but with play enough to allow the rib to be depressed somewhat into the groove when necessary. The sections 1 and 2, with their spiral ribs, are held in adjusted positions by means of the set-screw wheels *W W*, working upon screw-threads cut upon the shaft 3. This roller may be made to perform simultaneously, in addition to stretching the cloth, that of napping the cloth, by affixing in any of the known ways teasels or cards to the surfaces of the rollers between the spiral ribs.

K K' K'' are drawing-rollers of the usual form for drawing the cloth over the napping-cylinder. It has been found by experience that if some means could be devised to regulate the tension of the drawing-rollers on the cloth the capacity of the gig-mill for cloth-dressing would be much increased, as very light as well as very heavy cloths might be dressed in a mill having such an improvement. To attain such end, I make the two upper rollers have adjustable distances from the napping-cylinder, to vary tension on the

shaft of roller *K*, near its bearings, are the quadrantal head-pieces *L L'*, (shown in Figs. 1 and 2,) and having slots *k k*.

In the head-pieces are mounted the drawing-rollers *K' K''*, having their line of adjustment in the arc of a circle, and retained in any adjusted position by means of the slot *k*, sliding on a pin when adjusting, then held in position by set-screws. (See Fig. 2.) This construction and arrangement allow the tension on the cloth being dressed to be regulated according to weight of cloth, so that light cloths may be dressed without danger of straining them in the operation. Direct rotatory motion is given to the drawing-rollers by the train of gearing *l, M, N*, and *O*, Fig. 1, and *P Q R*, Fig. 2. Reverse motion is given by throwing gear-wheel *N* out of gear with *O* and gear-wheel *S* into gear with *O* by means of the reversing device *T*, constructed in a triangular form and having its center bearing on the shaft of the napping-cylinder. At the upper corner is a stud or pin carrying the gear-wheels *M* and *M'*, and at the lower corner is a stud carrying the gear-wheel *S*. To the lower side of this triangular frame is affixed an arched slot sliding on a pin provided with a set-screw. When the gearing is adjusted as desired, the set-screw holds the same in adjusted position, the whole constructed in the manner as shown partly by dotted lines in Fig. 1, and is substantially the same as in common use and well-known to persons skilled in constructing machinery.

U is a passage-way or shield for the cloth when passing below the teaseling-cylinder, and is for the purpose of protecting the cloth from dust or waste matter falling from the teasels during the operation of napping.

V is an auxiliary drawing-roller employed in combination with the adjustable rollers *K K' K''*, and taking its motion by belt from a pulley on the driving-shaft of the drawing-roller *K*, that it may have the same velocity of contact on the surface of the cloth that the adjustable rollers have.

The foregoing description of my machine is limited to describing the improvements made and to such old parts in common use as to show the connection of the improved with the old parts, this description being deemed sufficiently explicit for those persons skilled in the art of constructing such machines.

The operation of napping cloth in my machine is thus: The cloth is passed through and arranged in the mill and the ends sewed together, forming, as it were, an endless apron, in the manner as shown by the blue lines in Figs. 1 and 2. The adjusting and drawing rollers being properly adjusted and set in their adjustment in the manner as before described, the mill is ready for work, and is set in motion by applying power to the main driving-pulley by straight and cross belts for either direct or reverse revolutions of napping-cylinder, as wanted, in the manner well known to operators of cloth machinery. This mode of

eration permits the nap to be raised from both directions without the necessity of changing the cloth end for end by handling, as done in old methods, thus securing a finer and more even nap on the cloth.

In my improvements, as described, I wish to be understood to lay no broad or exclusive claims to a napping cylinder or cylinders heretofore of known construction and use or any exclusive claim to drawing-rollers, or any broad claim to stretching-rollers irrespective of their peculiar construction, or to tumbling or adjusting rollers substantially in common use; nor do I lay any broad or exclusive claim irrespective of any special arrangement of parts of machinery for such purpose to the method of raising a nap on the cloth longitudinally in both directions, reverse and direct, without the necessity of shifting the cloth in the mill by hand before such end can be attained; but

What I do claim as new, and desire to secure by Letters Patent, is—

1. The back-side napping-roller F, constructed substantially in the manner as herein described and shown, and operating in the manner and for the purposes as herein specified.

2. In combination with the napping-cylinder B, the adjustable drawing-rollers K K' K² when the rollers K' K² are constructed with adjustable bearings and arranged substantially in the manner as herein shown and described, and operating as set forth for the purpose of regulating the degree of tension on the cloth drawn over the napping-cylinder, in the manner as herein specified.

3. In combination with the improved napping-cylinder B, having either a direct or reverse revolution at will, as herein described, the general arrangement of the adjustable rollers E E', the back-side napping-roller F, the stretching-rollers J or Z, the adjustable drawing-rollers K K' K², and the auxiliary drawing-roller V, for the purpose of napping blankets and both sides of the cloth together or at one operation and raising the nap longitudinally in both directions, direct and reverse, without the necessity of shifting the cloth in the machine by hand, end for end or side for side, before such operation can be completed.

JOHN C. MILLAR.

Witnesses.

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