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J. WAYLAND.

Cloth-Winding and Measuring Machine.

No. 162,438. Patented April 20, 1875.

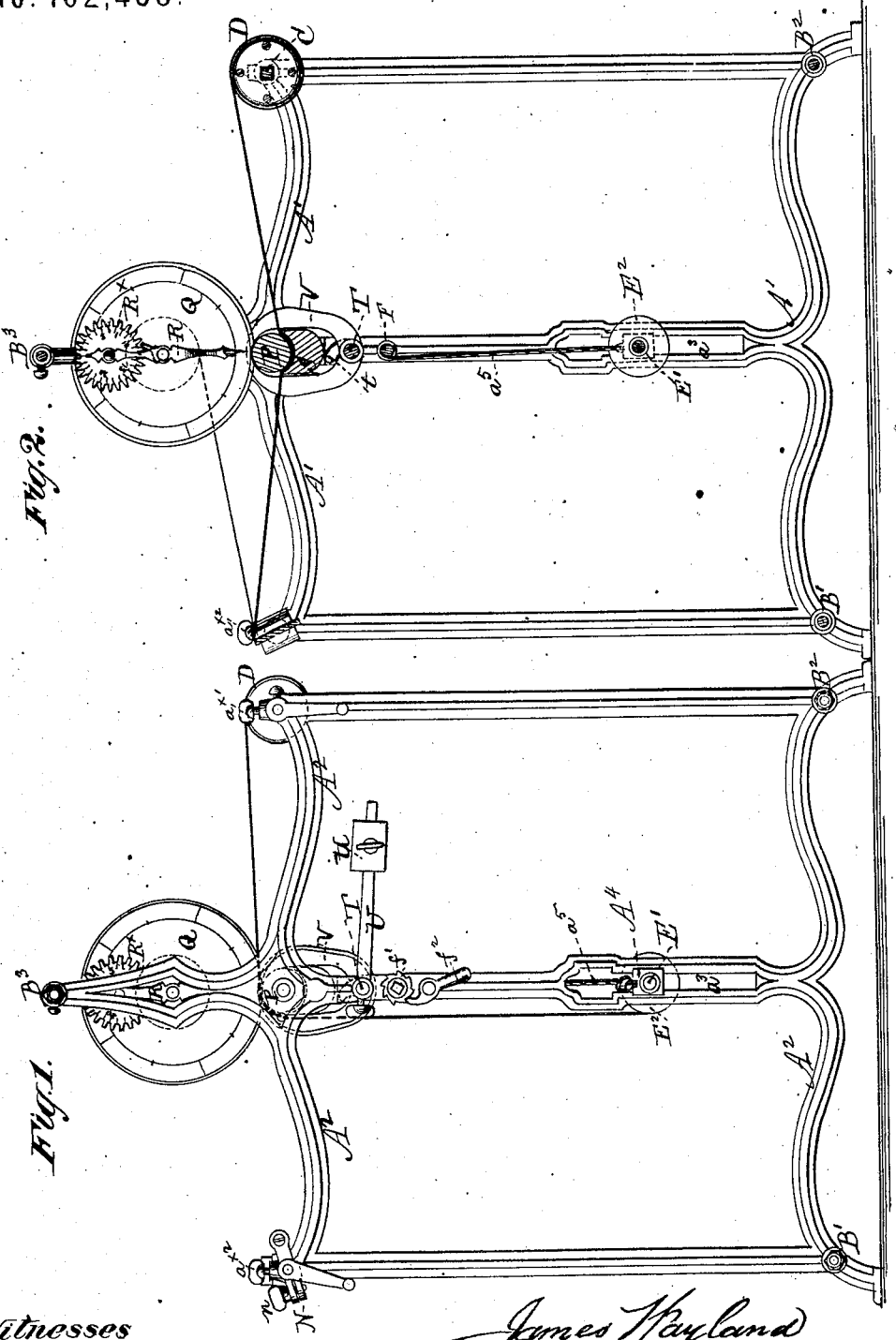

Fig. 2.

Fig. 1.

Witnesses
John Becker
Fred Haynes

James Wayland
by his Attorneys
Brown & Allen

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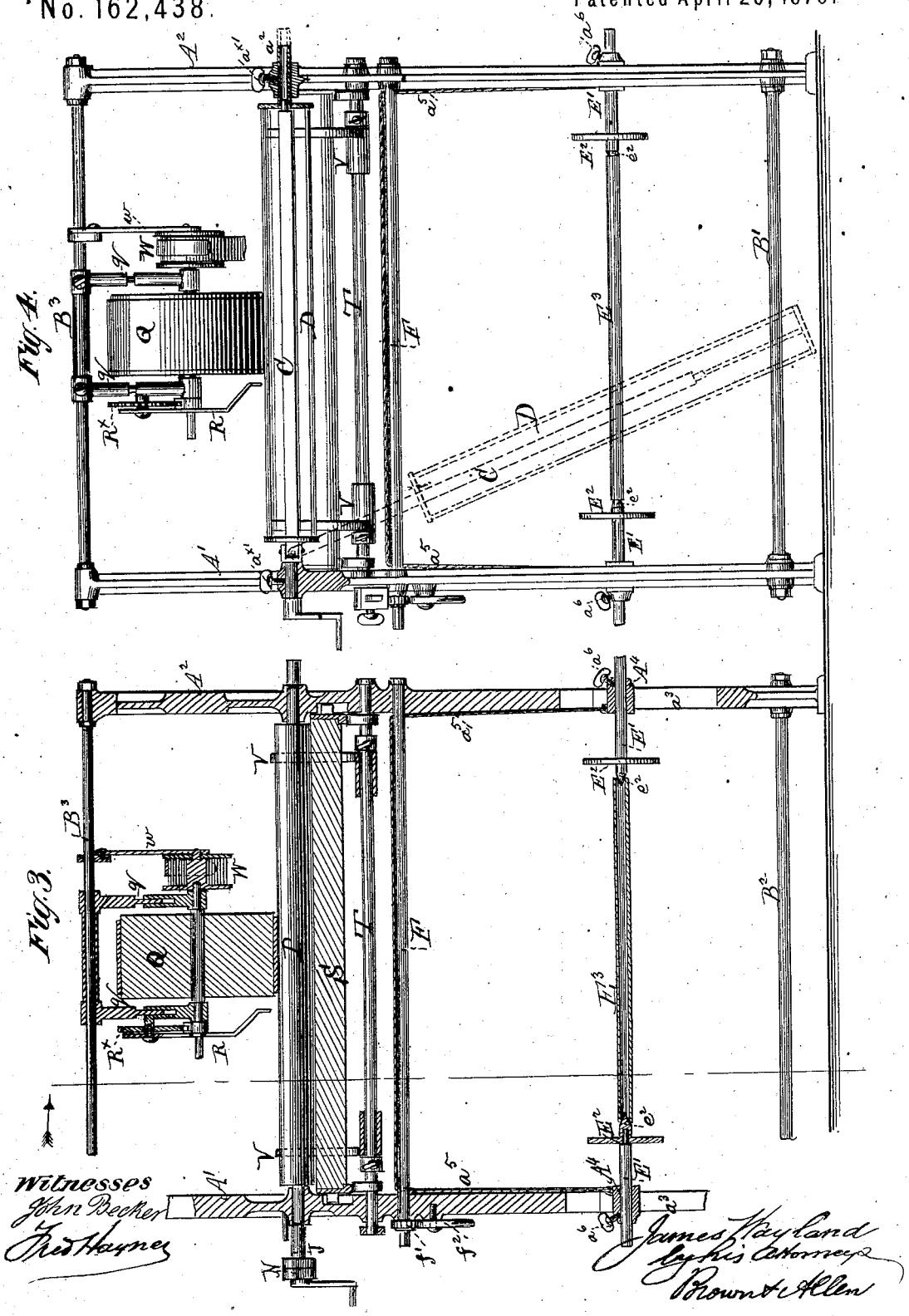

Fig. 4.

Fig. 3.

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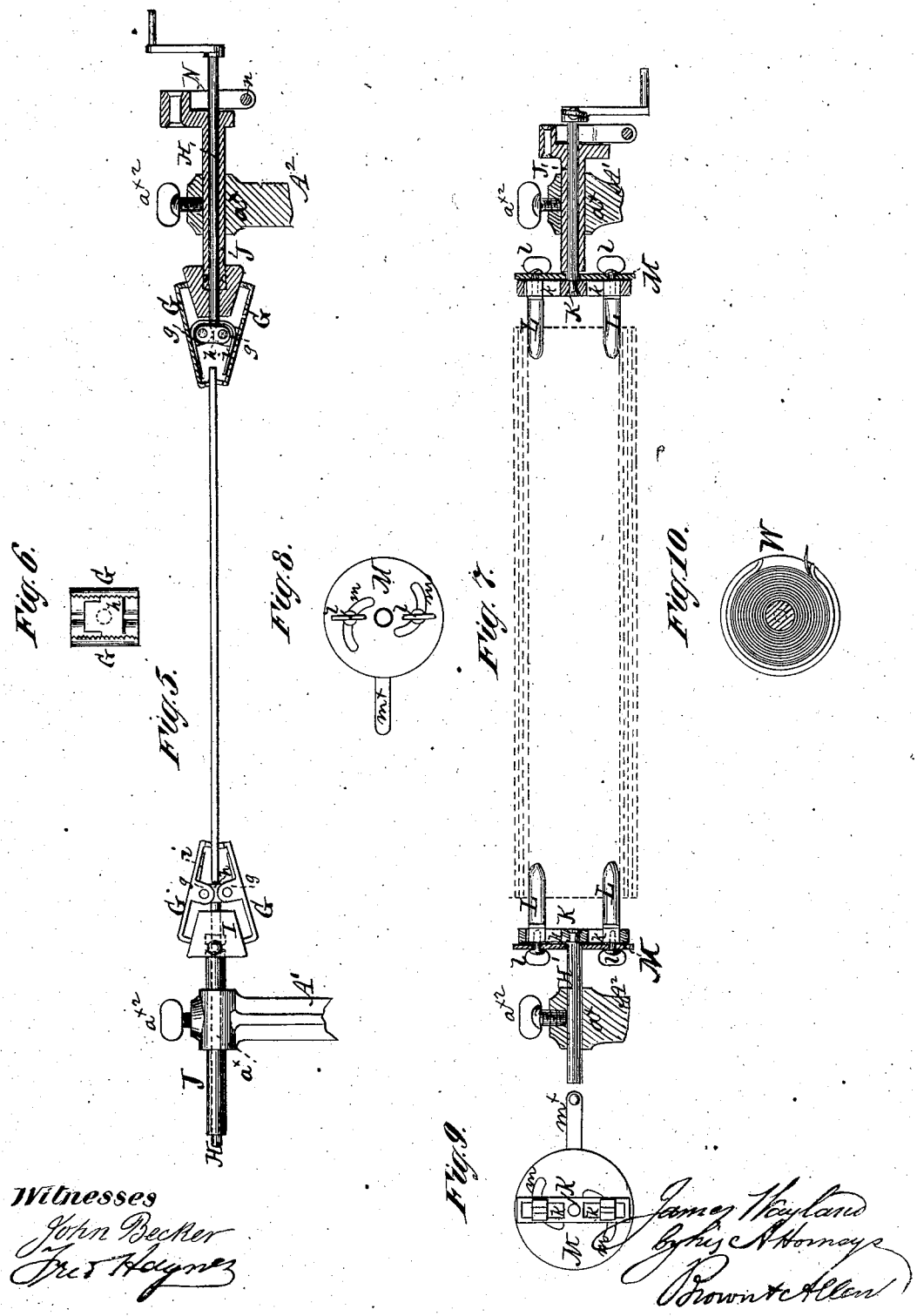

Fig. 6.

Fig. 5.

Fig. 8.

Fig. 7.

Fig. 10.

Fig. 9.

Witnesses
John Becker
Fred Haynes

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Brown & Allen

UNITED STATES PATENT OFFICE.

JAMES WAYLAND, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND THOMAS M. BRINTNALL, OF SAME PLACE.

IMPROVEMENT IN CLOTH WINDING AND MEASURING MACHINES.

Specification forming part of Letters Patent No. **162,438**, dated April 20, 1875; application filed February 24, 1875.

To all whom it may concern:

Be it known that I, JAMES WAYLAND, of New York, in the county and State of New York, have invented certain Improvements in Cloth Winding and Measuring Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing forming part of this specification.

My invention consists in the novel construction, arrangement, and combination of various parts of the machine, as hereinafter particularly described, whereby the operations of winding, measuring, and recording the measurement of cloth and other fabrics are greatly facilitated, and whereby, also, a measuring-tape or continuous tag may be introduced into the bolt or roll of cloth to designate the number of yards therein.

In the accompanying drawing, Figure 1 is a side view of my improved cloth-measuring machine. Fig. 2 is a vertical section of the same. Fig. 3 is a vertical section at right angles to Fig. 2. Fig. 4 is an end view. Figs. 5, 6, 7, 8, 9, and 10 are detail views, hereinafter referred to.

The working parts of the machine are supported by a frame composed of side pieces A^1 A^2, connected by bars B^1 B^2 B^3. In the upper portions of the side pieces A^1 A^2, at one end of the machine, the winding-shaft C and winding-reel D have their bearings. In the side piece A^1 is journaled one end of the shaft C, and in the side piece A^2 is arranged a short tube or rod, a^2, for receiving the other end of said shaft. The bearings in said side pieces are cylindrical, and are provided with set-screws $a^{\times 1}$. The shaft C is hinged or jointed near the point where it has its bearings in the side piece A^1, so that it may be raised or lowered without removing that portion from its bearings. At its outer end is a pivot or gudgeon for engagement with the tube or rod a^2. When the fabric has been wound upon the shaft C and it is desired to remove it, the set-screw $a^{\times 1}$ in the side piece A^2 is loosened, the tube or rod a^2 is moved outward to disengage it from the pivot or gudgeon of the shaft, when the shaft is inclined downward, as shown in dotted lines in Fig. 4, and the roll of fabric is removed therefrom without disengaging the shaft from its other bearing.

The reel D is intended to be used in some cases where the shaft C is not used, and is jointed and journaled in the same manner. The reel may be made separate from and independent of the shaft C; but in the drawing it is represented as being so constructed that it may be attached to the shaft C by passing said shaft through the end pieces of the reel, in which case it may be readily removed when desired without removing the shaft. The same bearings which support the jointed shaft or reel may also be used to support a roller, which may be provided with adjustable clamping-guides.

In the side pieces A^1 A^2, about midway between the ends of the machine, and near the lower portions, are slots a^3 in which work blocks or journal-boxes A^4, to which are attached the lower ends of cords or chains a^5, which pass upward and have their upper ends attached to a shaft, F, journaled in the upper part of the frame. One end of the shaft is provided with a crank or other means for turning it, and also with a ratchet, f^1, for engagement with a pawl, f^2, pivoted to the frame. The blocks A^4 are bored horizontally to form bearings for rods E^1, and are provided with thumb-screws a^6 for holding said rods in position. The inner ends of the rods E^1 engage with the outer sides of flanged centers E^2, the points e^2 of which engage with the ends of a tube or shaft, e^3.

When a large roll of carpet or other heavy goods is to be measured the roll is placed on the floor between the side pieces of the frame, the tube or shaft E^3 is passed through the center of the roll, the blocks A^4 are adjusted to a height exactly opposite the ends of the shaft, the centers E^2 are made to engage with the ends of the shaft, and the rods E^1 are moved inward to engage with the centers, and fastened by means of the thumb-screws a^6. The shaft F is then turned so as to wind the cords or chains a^5 around it sufficiently far to raise the roll from the ground, and allow it to revolve freely. The fabric may then be easily

unwound from the roll, and carried to the winding shaft or reel, or to the measuring apparatus hereinafter described.

In some cases the tube or shaft E^3 may be dispensed with, and the centers E^2 applied directly to the ends of the roll, the flanges serving as guides for the fabric.

At the end of the machine opposite to that which carries the jointed shaft or reel, bearings $a^\times$ for winding-shafts are formed in the upper portion of the side pieces, said bearings being provided with thumb-screws $a^{\times 2}$.

The winding- shafts may be provided with clamps for holding the bolt-board when the cloth is to be wound upon a board, or with devices for holding the cloth when it is to be wound or unwound without a board.

The board-clamping device (see Figs. 5 and 6) consists of a pair of jaws, G G, with inwardly-projecting ears or lugs *g* about midway of their length, and with their ends turned inward toward each other. By means of the ears or lugs *g* the jaws G are pivoted to a head, *h*, on one end of a shaft, H, the other end of which is provided with a crank for turning it. The shaft H passes through a sleeve, J, on the inner end of which is a wedge, I, attached to the sleeve by a screw passing through the wedge, and having its point engaging with a groove running around the sleeve, by which means the wedge is prevented from slipping off the sleeve, and yet is free to revolve thereon. When the cloth is to be wound upon a board two of these board-clamping devices are used, one in each of the bearings $a^\times$. The bolt-board is placed with each of its ends between one of the pairs of jaws, and the shaft H is pushed in until the wedge I enters between the outer arms of the jaws G, so as to expand the same and contract their inner arms upon the end of the bolt-board and clamp it firmly. The sleeve J is then adjusted to the proper position, and fastened by the set-screws $a^{\times 2}$, so as to hold the jaws and wedge in place with relation to each other, and the parts are then ready for use for winding the cloth upon the board. The jaws G are provided with springs *i* for expanding their inner arms when the wedge is disengaged. By means of the wedge I the jaws G are made to press equally and uniformly at all times, and accommodate themselves to boards of various thicknesses.

When the cloth is to be unwound from a bolt without a board the devices shown in Figs. 7, 8, and 9 are used instead of the board-clamping devices. To one end of a shaft, H′, similar to the shaft H, is attached a bar, K, in which are two longitudinal slots, *k k*, between the center and ends. In these slots work the shanks of two fingers, L L.

The shaft H′ passes loosely through a disk, M, which rests against the rear side of the bar K. In the disk M are two eccentric slots, *m m*, in which work two thumb-screws, *l l*, which pass into the shanks of the fingers L. The disk may be provided with a handle, $m^\times$. By turning the disk M in one direction or the other, the fingers L are made to move nearer to or farther from each other, owing to the engagement of the screws *l* with the slots *m*, and with the shanks of the fingers. By this means the fingers may be adjusted to and inserted in the openings in bolts which have been wound without boards; or they may be used to wind up a bolt by wrapping the fabric around a frame of suitable construction attached to the fingers, which frame may be withdrawn when the bolt is completed. They may also, if desired, be moved toward each other near enough to clamp the end of a bolt-board between them; or they may be replaced by board-clamping fingers. Two of these devices are used together, one in each of the bearings $a^\times$, and one of the bearings is provided with the sleeve J before described. This winding mechanism and the one before described are adjustable to fabrics of various widths by means of the bearings $a^\times$ and thumb-screws $a^{\times 2}$.

The outer end of the sleeve is provided with a supporting-arm, to which is attached a brake consisting of a divided bar, N, having one end attached to the arm, and the other end provided with a set-screw, *n*, passing through both branches of the divided portion. The shaft H or H′ passes between the two branches, and by tightening or loosening the screw *h* the branches are made to press more or less tightly on the shaft, and thus act as a brake and regulate the speed at which the shaft revolves.

The measuring mechanism consists of a roller, P, journaled in the upper portions of the side pieces of the frame, and a drum, Q, journaled in telescopic hangers *q*, attached to the uppermost cross-bar B^3, the drum being faced with a seamless woven or knit fabric, and bearing upon the face of the roller. One end of the drum is marked with figures arranged in a circle, denoting one yard and fractions thereof. One end of the shaft of the drum is elongated, and passes through a double-armed pointer or index-finger, R, in the upper part of which and in the hanger *q* is journaled a toothed wheel, $R^\times$, on one side of which is a circular series of figures denoting yards. The drum-shaft carries a tooth, *r*, for engagement with the toothed wheel $R^\times$. Before passing the fabric between the roller and drum, said drum and the toothed wheel are adjusted with the cipher on the drum opposite the lower end of the pointer R, and the cipher on the wheel opposite the upper end of said pointer. When the drum makes one revolution the tooth *r* moves the wheel $R^\times$ one tooth, so as to bring the first figure on the wheel opposite the upper end of the pointer, and thus the numbers of revolutions are duly recorded.

For automatically regulating the tension of the cloth, I employ the following devices: A

bar, S, is arranged in grooved bearings in the side pieces of the frame, so as to be readily moved vertically up or down, and to bear against the under side of the roller P. The upper side of this bar may be either concave, flat, or convex; but I prefer to make it concave, as shown. Immediately under the bar S is journaled a shaft, T, near the ends of which are cams *t*, which bear against the under side of the bar S. At one end of the shaft T is attached an arm or lever, U, on which is a sliding weight, *u*, provided with a set-screw for holding it in positions, in which it is placed upon the arm. By moving the weight along on the arm the amount of pressure exercised thereby is regulated, and the tension upon the cloth passing between the bar S and roller P is governed accordingly and in an automatic manner.

Instead of the cams *t*, I may use a rack and pinion, or other equivalent device, attached to the shaft T, and operated by the weighted arm U, which will raise and lower the tension-bar in the same manner, and regulate the tension automatically.

Adjustable sliding guides V for guiding the fabric are arranged to slide upon the shaft T, surrounding the roller P and bar S, and are provided with set-screws for holding them in place.

A tape-reel, W, is arranged in the upper part of the frame, whereby a tape or strip of paper (marked to indicate a certain number of yards and forming a continuous tag) may be rolled up with the cloth as it is wound by the mechanism before described. This tape-reel W may be of any suitable construction, and attached to the machine in any suitable manner. It is shown herein as consisting of a simple reel with flanged sides, attached to the machine by hanging bearings, one of which is an elastic bar, *w*, so that it may be readily attached and detached, by which means the reel may be applied to cloth-measuring machines of various constructions.

By the use of this device the number of yards in a roll or bolt of cloth is easily ascertained without unrolling it to measure it. By its use, also, it prevents mistakes or disagreements as to the number of yards in a piece, as the number marked on the tape or strip corresponds with the number measured by the machine.

The usual operation of my machine is as follows: The cloth to be measured is first placed either on the tube or shaft E^3, or in the board-clamping or cloth-clamping devices, and is run through between the drum Q and roller P without applying the tension, and is wound upon the jointed shaft or reel. It is then passed between the roller P and the tension-bar S, (the proper tension being applied, as before described,) and is wound either upon a bolt-board, or without a bolt-board, by either the board-clamping device or the cloth-clamping device, the tape or continuous tag from the reel being fed in and wound with the cloth by the same operation.

In some cases once winding is sufficient, as in the case of carpets or other fabrics in which the nap is not affected by the winding. In such cases the roll is placed on the tube or shaft E^3, and the fabric is first passed under the roller P, and between said roller and the tension-bar S, and then over the roller P, and between it and the measuring-drum Q. The fabric may then be wound either upon the jointed shaft or reel at one end of the machine, or carried to the other end and wound by the board-clamping or cloth-clamping devices—the continuous tag being fed in and wound as before described.

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

1. The cloth-clamping and winding device, consisting of the slotted bar K, finger L, set-screws *l*, eccentrically-slotted disk M, and shaft H′, substantially as shown and described.

2. The jaws G G, pivoted at their centers to a head on the shaft H, in combination with the sliding sleeve J and revolving conical wedge I, attached to the said sleeve, substantially as and for the purpose described.

3. The combination, with the sleeve T and shafts H H′, of the brake N, consisting of a divided bar attached at one end to a support upon the said sleeve, and provided at its outer end with a set-screw, substantially as described.

4. The combination of the tube or shaft E^3, detachable centers E^2, rods E^1, adjustable boxes A^4, cords or chains a^5, shaft F, ratchet f^1, and pawl f^2, substantially as and for the purpose described.

5. The combination of the shaft T, provided with cams *t*, the arm or lever U, attached to the said cam-shaft, and provided with an adjustable weight, *u*, and the vertically-adjustable tension-bar S, and the tension-roller P, substantially as and for the purpose described.

6. The adjustable guides V, sliding on the shaft T, and surrounding the roller P, and tension-bar S, substantially as shown and described.

7. The drum Q, journaled in adjustable telescopic hangers *q*, in combination with the shaft of the drum, having a tooth, *r*, the slotted double pointer or index R, and the toothed wheel $R^\times$, substantially as and for the purpose described.

8. The drum and its axis or shaft, in combination with the tape-reel mounted on said axis or shaft of the drum, as and for the purpose described.

JAMES WAYLAND.

Witnesses:

MICHAEL RYAN,

BENJAMIN W. HOFFMAN.