

Whitney & Lawton.
Cloth Stretching Mach.
Nº 1,522. Patented Mar. 25, 1840.

Fig. 2.

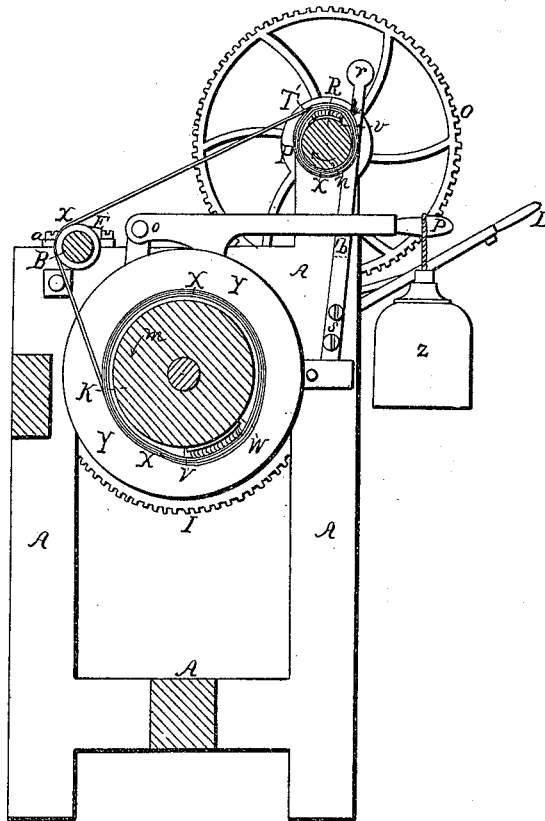
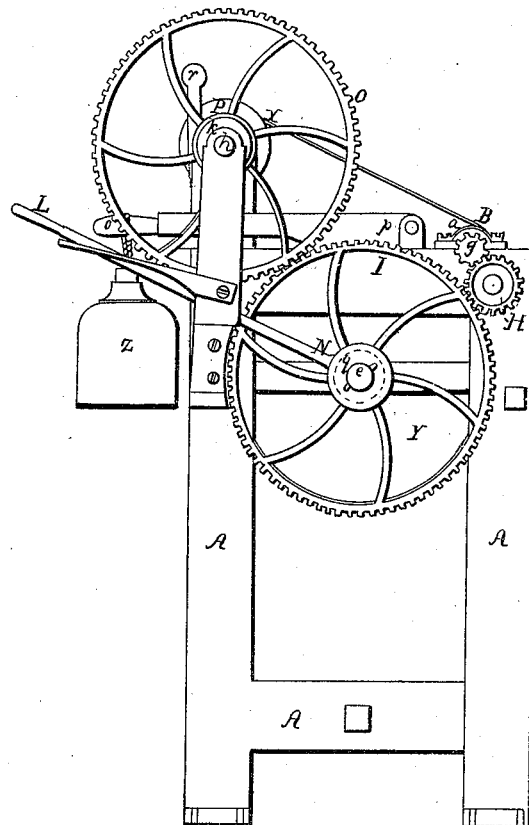


Fig. 1.



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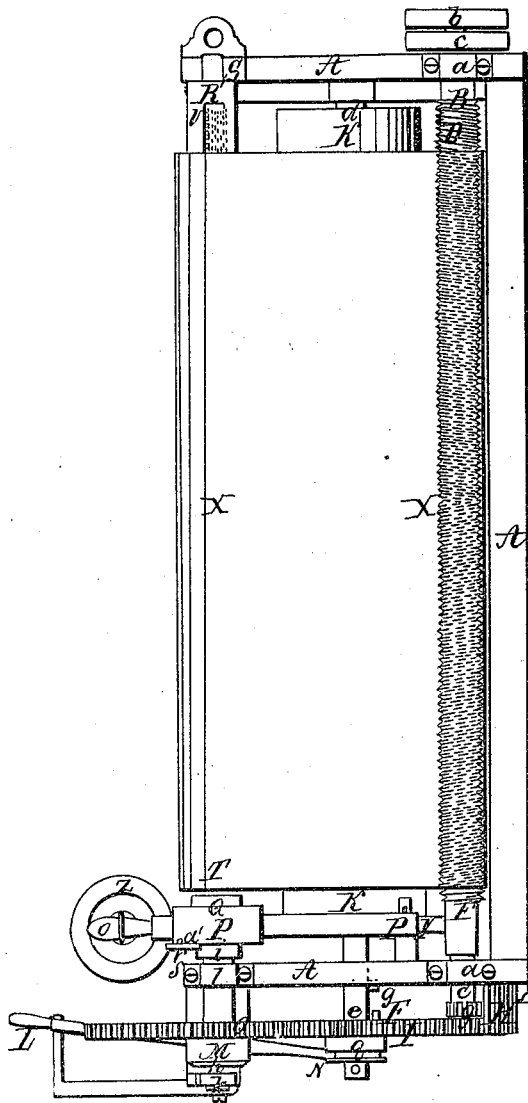


Fig. 2.

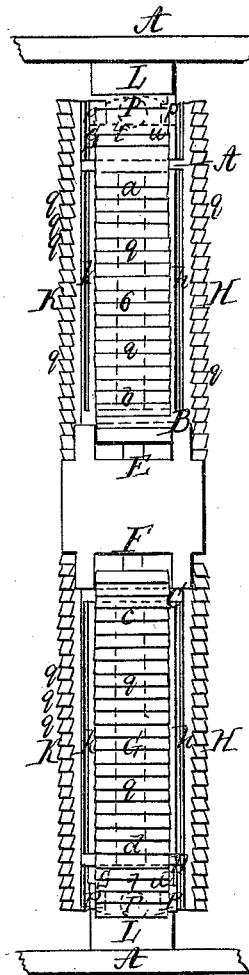
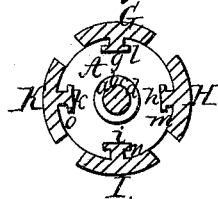


Fig. 3.



UNITED STATES PATENT OFFICE.

B. D. WHITNEY AND GEO. W. LAWTON, OF WINCHENDON, MASSACHUSETTS.

MACHINE FOR STRETCHING CLOTH IN THE PROCESS OF FULLING.

Specification of Letters Patent No. 1,522, dated March 25, 1840.

To all whom it may concern:

Be it known that we, BAXTER D. WHITNEY and GEORGE W. LAWTON, of Winchendon, Worcester county, Massachusetts, have
5 invented and applied to use certain new and useful improvements of machinery for preparing and stretching cloths both widthwise and lengthwise during the process of fulling the same and also after they are fulled or
10 steamed in order to produce a smooth surface thereon.

The said improvements, the principles thereof, and manner in which we have contemplated their application, together with
15 such parts, improvements, or combinations we claim as our invention and hold to be original and new, we have herein set forth and described, which description taken in connection with the accompanying drawings
20 herein referred to composes our specification.

During the process of fulling cloths it is often necessary to remove them from the fulling mill, and stretch them widthwise as
25 well as lengthwise by hand power. This stretching prevents "warping" or "curling" (as termed by the workmen) of the cloth, and has heretofore been done altogether by the hands and strength of the
30 operatives.

The object of our invention is to perform the same (in a more effectual and expeditious manner,) by machinery instead of manual labor.

35 Figure 1, Plate 1, represents an end view of our machine, and Fig. 2, a transverse section. Fig. 1, Plate 2, is a plan of the same. Figs. 2 and 3 being detailed views of one of the cylinders.

40 A, A, A, in all the different drawings is the framework, which may be constructed of iron, wood, or any other suitable material, and may be arranged in any proper manner to answer its extended purpose of supporting and connecting the operating parts of the machinery.

50 A cross shaft B C (Figs. 1 and 2, Plate 1, and Fig. 1, Plate 2) revolving in suitable boxes or bearings, *a, a*, placed on the sides of the framework, has a fast and loose pulley *b c* on one extremity. The belt from

the driving power, and which imparts a rotary motion to said shaft, runs on these pulleys. A right threaded screw D E (Fig. 1, Plate 2) is cut or otherwise properly formed
55 on one half of the shaft or from D to E while a left threaded screw E F is also formed on the other half or from E to F.

A small pinion G (Fig. 1, Plates 1 and 2) on the end C of the shaft B, C, engages with
60 a cogged wheel I (see Fig. 1, Plates 1 and 2) by means of an intervening toothed pinion H.

The cogged wheel I is placed on a horizontal shaft *d e* (Fig. 1, Plate 2) and slides
65 to and fro, on said shaft, laterally, a short distance. A cylinder or barrel K is fixed on, and revolves with, the shaft *d e*. The cogged wheel I (Fig. 1, Plates 1 and 2) has a small grooved pulley *g* connected to it, in
70 the groove of which, the extremity or fork of a lever L, M, N is inserted. The fulcrum of the lever is at M. A small dog or pin *f* (Fig. 1, Plate 2) projects from the inside of the cogged wheel I, which pin when the
75 wheel I is moved inward, by force applied to the extremity L of the lever L M N, comes in contact with a similar pin or dog *g* projecting from the side of the shaft *d e* and thus connects said cogged wheel I with the
80 shaft *d e* causing them to revolve together. Another cogged wheel O (Figs. 1 and 2, Plates 1 and 2) is placed on one end of a small horizontal shaft *h i* (Fig. 1, Plate 2, Fig. 2, Plate 1), the journals of said shaft
85 revolving in suitable boxes or bearings at *k* and *l*. By means of the lever L M N, (and whenever necessary) the cogged wheels O and I can be made to engage with each other. A chuck P is placed on one end of
90 the shaft *h i*. This chuck has a square or other proper shaped chamber into which the end Q of a cylinder or roller Q R is inserted its other extremity R resting and revolving in a box S. On the roller Q R a strip of
95 card teeth T U is affixed throughout its length, the teeth pointing or being bent as seen in the section (Fig. 2, Plate 1). Another and similar strip (V W,) of card teeth is attached to the circumference of the cyl-
100 inder or barrel K.

The cogged wheel I being moved out of

gear with the cogged wheel O, and arranged so as to engage with the shaft *d e* by means of the pins or dogs *f g*, we place one end, of the piece of cloth X X X to be stretched
 5 upon the wire points or card teeth V W. On shifting the driving belt upon the fast pulley *b*, the cylinder or barrel K is set in motion in a direction indicated by the arrow
 10 *m* (Fig. 2, Plate 1), thus winding the cloth around the periphery of said cylinder. The belt is then to be thrown on the loose pulley *c* and the opposite end of the piece of cloth should be passed upward over the threads of the screws on the shaft R, C, to the strip T
 15 U of card wires on the roller Q R, pressing the edge of the cloth on the same to secure its adhesion.

A spring, *r, s*, (Figs. 1 and 2, Plate 1, and Fig. 1, Plate 2) is attached at its foot to the side of the frame. It has a small pin *c'* (Fig. 1, Plate 2) projecting from its side, which pin, on raising the lever *o p* (which lever when down rests against the shelf *h'* on the side of the spring) falls onto a notch or hole in the side of the chuck P, as the card wires T U are brought into a suitable position to attach the extremity of the piece of cloth to them. When the lever *o p* is raised it rests on a shelf *h'* formed on the side of the spring. On pressing or moving the spring laterally, so that the pin *c'* may be disengaged from the hole in the side of the chuck the lever *o p* will drop upon the friction drum Y. This operation being completed, the lever L M N is then to be shifted so as to cause the cogged wheels I and O, to gear with each other, and the driving belt changed to the surface of the fast pulley. The barrel or roller Q R is thus put in motion in the direction indicated by the arrow
 40 *n* (Plate 1, Fig. 2) and draws the cloth away from the surface of the cylinder K, at the same time winding it upon itself. At one end of the barrel K, a narrow friction drum or pulley Y (Plate 2, Fig. 1) is fixed on the shaft *d, e*. A lever *o p* whose fulcrum is at one extremity *p*, rests on the periphery of the drum. A weight, Z, is hung on or attached to the opposite end of the lever. The friction thus created on the drum Y, retards the revolution of the barrel or cylinder K and stretches the cloth lengthwise. It will be perceived that as the cloth presses over the screw D E, E F, the thread of said screw acting in opposite directions, will enter into the nap and stretch said cloth widthwise. The next operation is to throw the cogged wheels I and O out of gear with each other but not so far as to engage the cogged wheel I with the shaft *d e*. The cloth is then to be removed, by drawing it from the roller Q R, which with the shaft *h i* can be freely revolved during the operation.
 65 Instead of the right and left threaded

screw D E, E F, as above described on the shaft B, C we intend also to make use of another contrivance for stretching the cloth widthwise, the same being exhibited in (Plate 2, Figs. 2 and 3). The whole when
 70 completed and ready for operation forms a cylinder, the segments of which, being fluted transversely, are movable laterally. The nap of the cloth sinking into the plutes or grooves, during its passage over the surface, and as the lugs or segments are at the same time moved sidewise or laterally, the cloth is thus stretched widthwise.

In Figs. 2 and 3, Plate 2, *a, b, c, d*, represents the shaft as denoted by dotted lines in red. Four circular plates or heads A B C D, are affixed on the shaft, the interval or space E F, between B and C being a solid cylinder as seen in the drawing. The segments G H I K of which there may be any sufficient number, have each a dovetailed ledge or strip of metal *g h i k*, Fig. 3, attached to their under sides. The sections of these ledges are exhibited more particularly in Fig. 3, Plate 2. The circular plates or heads A B C D have dovetailed or proper shaped spaces *l, m, n, o*, Fig. 3, formed or cut through them at or near their circumferences, these spaces corresponding with the dovetailed tenons or ledges *g h i k* attached to the lower side of the segments. Each of the segments has a small roller *p* attached to the lower side of the ledge as represented in Fig. 2, by dotted lines. These rollers traverse in a winding or spiral groove *s t u* shown by dotted lines formed in a cylinder L attached to the side of the frame. This groove is so cut in the surface of the cylinder L as to cause each of the ledges as it traverse through the upper half of its circle of revolution to recede or move outward in a longitudinal direction, and also while they are traversing through the lower half of the circle of their revolution to return to their former position. These ledges are fluted or grooved transversely as seen in the drawings at *q, q, q, q*, (Fig. 2). Thus it will be observed that when the cloth is drawn tightly over the segments, by the action of the drawing roller Q R the nap or under surface must sink into the grooves *q, q, q, q*, so that as the segments move laterally, in a parallel direction to the center shaft, the cloth must be stretched widthwise.

The saving of hand labor by the substitution of our machinery is very great. The machinery may be applied for stretching the cloths; after they are fulled and steamed, in order to produce a smooth surface on them. We thus add firmness to the texture, and cause them to hold out in length, better than they would otherwise, do.

We claim—

Stretching the cloth width-wise during the process of fulling, or after it is fulled
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and steamed, by means of the right and left threaded screws, D E, E F, (Plate 2, Fig. 1) or fluted segments G H I K, (plate 2, Fig. 2) in manner as above described.

5 In testimony that the above is a true description of our said invention and improvement we have hereto set our signatures this

third day of January in the year of our Lord eighteen hundred and forty.

BAXTER D. WHITNEY.
G. W. LAWTON.

Witnesses:

A. K. BRAYTON,
E. W. BRAYTON.