

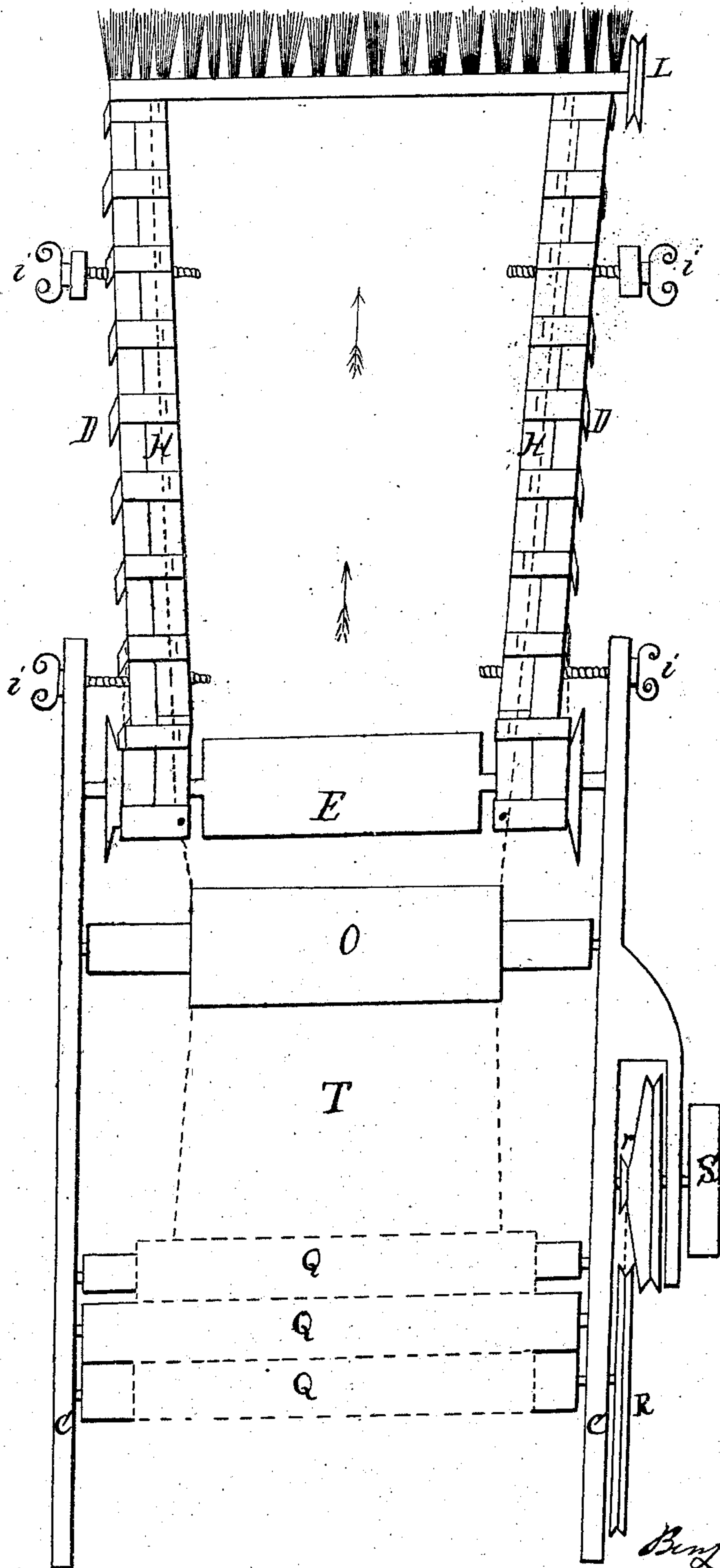
B. J. Tayman.

Stretching and Drying Cloth.

N^o 11,952

Patented Nov. 14, 1854.

Fig. 1.



Witnesses.
C. F. Brown
Chas. Williams.

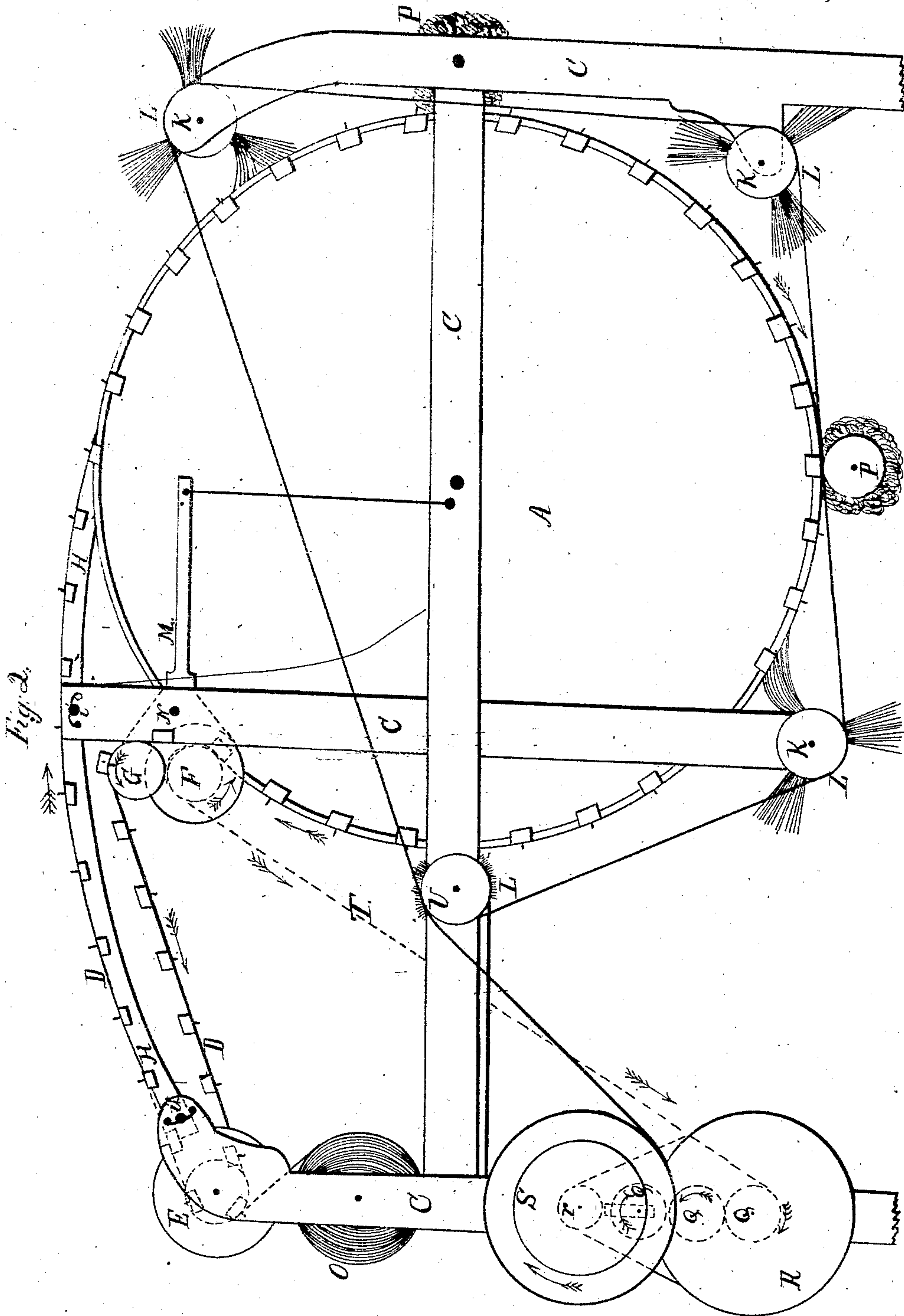
Inventor.
Benj. Jas. Tayman.

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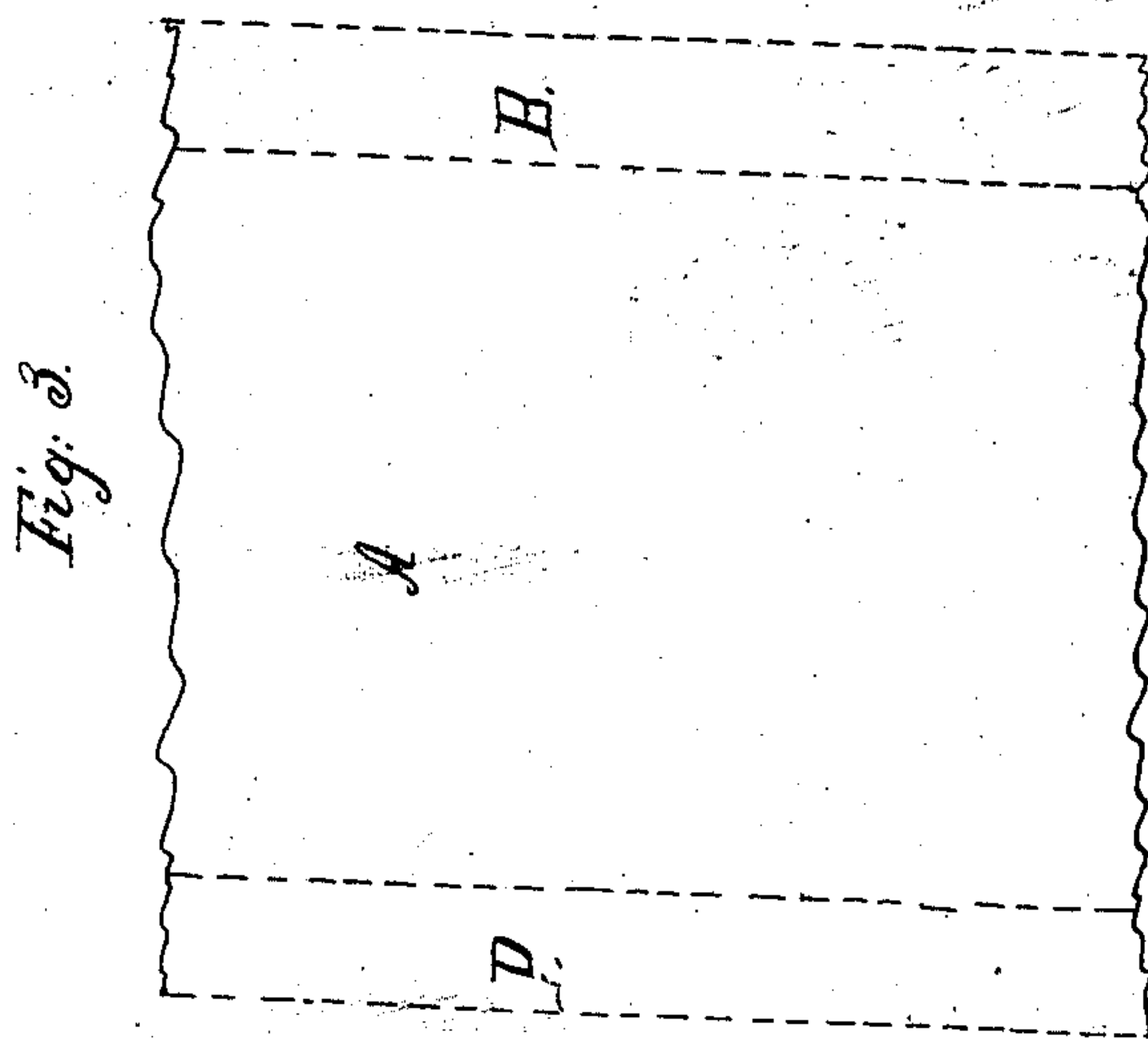
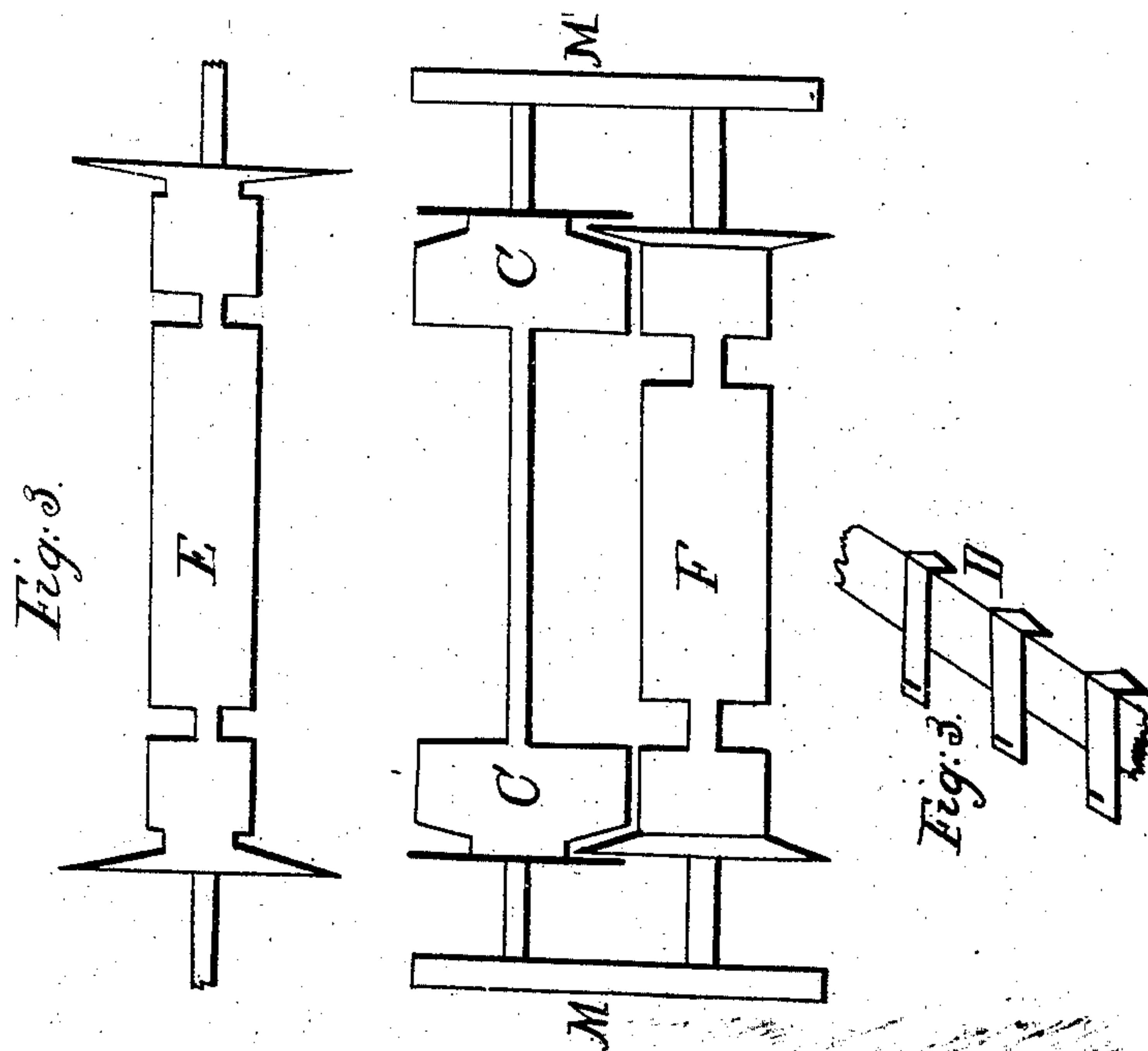
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Witnesses.

C. Brown
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UNITED STATES PATENT OFFICE.

BENJAMIN J. TAYMAN, OF PHILADELPHIA, PENNSYLVANIA.

MACHINERY FOR STRETCHING AND DRYING CLOTH.

Specification of Letters Patent No. 11,952, dated November 14, 1854.

To all whom it may concern:

Be it known that I, BENJAMIN JAMES TAYMAN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Machinery for Stretching and Drying Cloth; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an end view; Fig. 2, a side view, taken through the machine; and Fig. 3, detached views of that portion not fully shown in Figs. 1 and 2.

A, Fig. 2 is the large steam drying cylinder made and constructed in the usual way for introducing steam, and should be from 9 to 12 feet in diameter, and from 6 to 8 inches wider than the widest cloth intended to be stretched and dried. Two hoops or bands B B, Fig. 3, (as shown by the dotted red lines on a detached view of the cylinder) are made to fit on each rim of the cylinder that they can be adjusted to suit the width of the cloth to be operated upon. This cylinder is mounted upon journals in the frame work C C C C. The endless stretching belts D D, Figs. 1, 2, and 3, are a series of metallic plates with a hook or paw bent on one end and a sharp point inserted near the other, these metal plates are secured to an endless belt of canvas or leather at such distance apart as will render them pliable in moving around the rollers E, F, and G, Figs. 2 and 3.

The incline planes H H, for guiding the stretching belts, are made either of iron or wood and faced with iron, are attached to the sides of the frame, by the set screws I I I I, Fig. 1 with one end resting on the surface of the drying cylinder A while they form an arc of a circle with the other end terminating near the roller E, these incline planes should be from 5 to 8 feet long and the same width of the bands B B, and the stretching belts, (which may be from 3 to 6 inches wide), as the belts travel on the incline planes while the hook or bent end of the metal plates glide along the outer edge in the operation of stretching the cloth, the incline planes are susceptible of any degree of adjustment by the thumb or set screws I I I I, Fig. 1 and the bands B B being adjusted to suit the outer edges of the incline

planes forms the parallel guides for the stretching belts after they (the belts) leave the incline planes.

The belt roller E, Figs. 1, 2 and 3, are made of wood with iron journals, and two movable heads working free on the journals, and independent of the main roller, these movable heads are the same width on their face as the stretching belts D D and turned with a flanch to guide and a groove to receive the metal hooks on the endless belts, and made to move on the journals to accommodate the width of the wet cloth. This roller is shown best in E, Fig. 3.

The binding roller F, Figs. 2 and 3 and small belt, roller G (same figures) are mounted with their bearings working on the levers or arms M and supported by a pin or bolt at the fulcrum N, with a cord attached to the other end of the lever or arm, to raise or lower the beam and roller F and G at pleasure. They are placed as near the point on the cylinder A where the incline planes rest, (just allowing sufficient room to operate the lever in tightening the stretching belts D D) in order to have as much benefit of the drying surface of the cylinder as possible. The beam F is made similar to belt roller E with the addition of the small counter rollers G which is turned to revolve free on a shaft, and a groove to allow the flanch of beam F, to work freely to keep the small rollers in their place to receive the endless stretching belts D D as they leave the cloth at the binding beam F, (as shown in Fig. 2,) the flanch on the heads of the binding roller F being always outside the bands B B, on the rims of the cylinder A, so that when the bands are altered to suit the incline planes the flanch on the roller heads follow and carry with them the upper rollers, as shown at F and G, Fig. 3.

The let off or wet cloth roller O, Fig. 2, is a plain roller working in bearings on two standards of the frame, on this roller the wet cloth intended to be stretched and dried are wound.

The fan brushes K K K, Fig. 2, are placed around the surface of the cylinder A, (the first one near the point where the incline planes H H rest), with their journals supported by boxes in the frame, and made to revolve rapidly by means of the endless belt or cord on the pulleys L L L L, Fig. 2. These brushes are made of the longest

bristles and set or drawn in slats or staves each stave confined to the roller or shaft at such distance from the other as to form wings similar to a rotary fan. These fan brushes are essential toward whipping or
 5 flirting off the dew or mist that are forced to the surface of the cloth by the action of the heated cylinder, agitating and expelling (to some extent) the damp atmosphere
 10 around the cloth on the drying cylinder A.

The sponge rollers P P, Fig. 2, are placed between each fan brush around the drying cylinder, with their bearings supported in like manner to the fan brushes and their
 15 surface pressing hard against the damp cloth on the cylinder, these rollers I employ in connection with the fan brushes to facilitate the process of drying by absorption, these sponge rollers are made by having a
 20 shaft of wood turned to receive a head at each end, (of about 12 inches in diameter) a piece of wire sieve is then used to form a roller by fastening the sieve to the heads on the shaft. I then take sponge and cut
 25 it in pieces of about one inch thick and sew them together on a thin piece of muslin it is then lapped around the wire sieve roller and secured, thus presenting a roller of sponge cloth, the object for using wire sieve to form
 30 the body of the roller is to allow a free circulation of air to pass through the pores of the sponge in order to have full benefit of its absorbing properties, a double set of these sponge rollers is necessary so that when
 35 one set becomes too wet to be effective they can be taken out and dry one put in instead.

The draw rolls Q Q Q, Figs. 1 and 2 are three plain wood rollers (of the ordinary size used for that purpose) whose journals
 40 are supported in bearings on the frame work, the bottom one turn upon fixed bearings, the second rests upon the surface of the first while the third or winding roller runs in vertical slots and rests upon the surface of
 45 the second, they receive their motion from the wheel and pinion R, r which derive their motion from main pulley or drum S, and also imparts motion to the fan brushes K K K, and finishing brush U.

The apron or carrier T as shown by the dotted red lines in Fig. 2, a piece of cloth long enough to reach from the belt roller
 50 E, around the cylinder, in the direction indicated by the arrows, to the top draw roll, and there fastened. The finishing brush U is an ordinary cylinder brush, its position are shown in Fig. 2.

Mode of operating the machine: The rollers o are supposed to have the wet cloth
 60 on it ready to be stretched and dried. I take hold of the end and skewer it to the loose end of the apron T, (steam being let in the cylinder A) the machine is then put in motion by the driving wheel or drum S S,
 65 giving a rapid motion to the brushes and

causing the draw rollers Q Q Q to move slowly drawing the apron T, and starting the drying cylinder A which gives motion to the stretching belts with the sharp points catching on the selvage of the cloth, the
 70 hooks or bent ends of the metal plates on the belts, glide along the outer edge of the inclined planes H H, (whose ends are inclined toward each other at the belt roller E and recedes to the parallel bands or hoops
 75 B B, on the rim of the cylinder) thus gradually stretching the cloth until it reaches the surface of the drying cylinder, the hooks on the belts now leave the inclined planes, take hold on the edge of the bands on the cyl-
 80 nder, the cloth being now stretched to the desired width, is held in that position on the face of the cylinder while it passes slowly with the revolving cylinder under the operation of the pivot fan brush, whipping off
 85 the dew or mist that are driven to the surface of the cloth by the heated cylinder, then on until it comes in contact with the sponge roller absorbing the moisture, it continues thus alternately passing under the
 90 operation of the fan brushes and sponge rollers until it reaches the binding beam F being now thoroughly dry leaves the stretching belts at this point and proceed toward and draw rolls (as indicated by the arrows)
 95 while the stretching belts pass up and over the counter roller C, when the wet cloth is all off the beam O have another piece ready to skew to the end of the piece now being dried as the first was attached to the apron,
 100 and so on as long as you want the machine to run.

The distinctive advantages of this machine over all others consists 1st in the positive stretching belts, the adjustable inclined
 105 plane with the adjustable ways on the rim of the large cylinder wherein the cloth is stretched to the desired width, and held so until thoroughly dried. 2nd. The fan brushes in connection with the sponge rollers
 110 placed around the surface of the drying cylinder to facilitate the process of drying by whipping off the dew and absorbing the moisture that is driven to the surface of the cloth by the action of the heated cylin-
 115 der, thus effectually drying the cloth by heat, air, and absorption combined, without impairing the fiber of the cloth, and avoiding the wiry and harsh appearance when dried by heat alone, and leaves it soft as if
 120 stretched and dried in the open air and on tenter frames.

Having thus fully described the construction and operation of my machine,

What I claim as new is:

1. The means herein shown for stretching the cloth while wet and carrying the same parallel while being dried, consisting of the endless belts of tenter hooks traveling on ad-
 130 justable guides or ways to accommodate

different widths of cloth, which ways are parallel to each other except at the ends where they converge to allow the cloth to be hooked on and stretched the same as it is moved forward, substantially as specified.

2. I claim the application of sponge rollers and fan brushes in combination with

the drying cylinder to hasten the process of drying the cloth as specified.

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Witnesses:

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