

I. E. Palmer,
Stretching Cloth.

No. 88,505.

Patented Mar. 30. 1869.

Fig. 1.

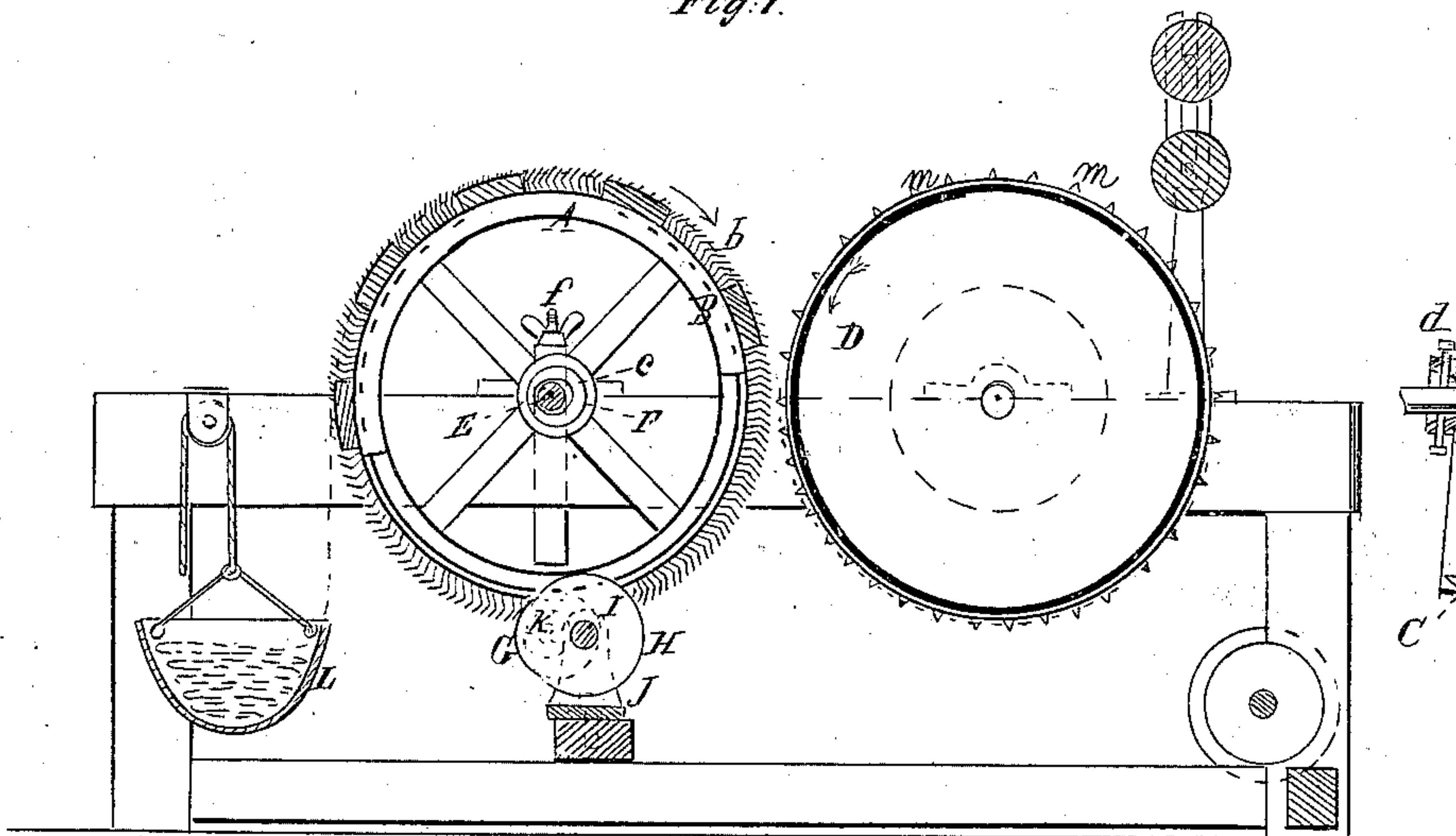


Fig. 3.

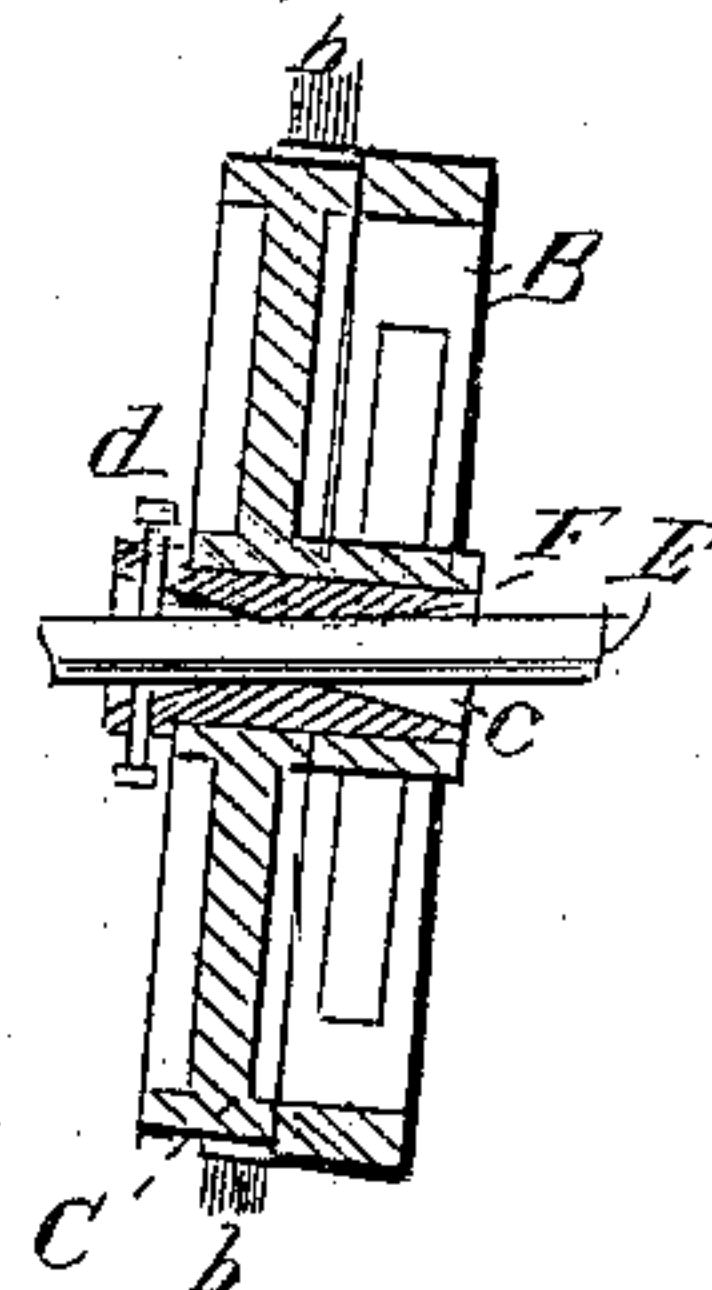
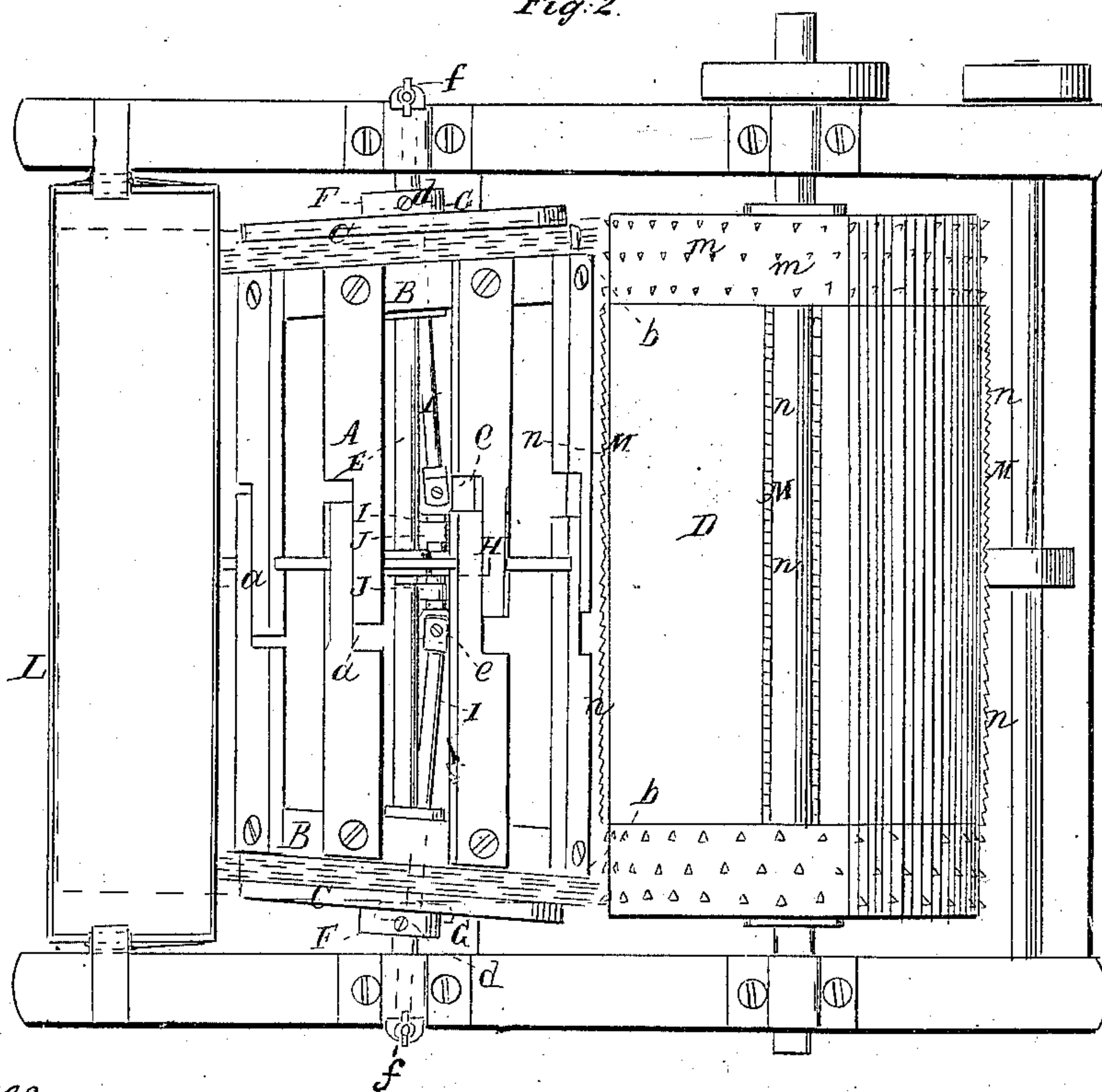


Fig. 2.



Witnesses:

McComb
Fred. Haynes

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United States Patent Office.

ISAAC E. PALMER, OF HACKENSACK, NEW JERSEY.

Letters Patent No. 88,505, dated March 30, 1869.

IMPROVEMENT IN MACHINE FOR STRETCHING FABRICS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ISAAC E. PALMER, of Hackensack, in the county of Bergen, and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Stretching and Dressing Mosquito-Net and other Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a vertical longitudinal section of the principal parts of a stretching and dressing-apparatus, constructed in accordance with my invention;

Figure 2, a plan of the same; and

Figure 3, a transverse section through one of the selvage-feeding and carrying rolls, or cylinders, and one end of the friction-frame, or structure, that, in connection with the selvage-rolls, serves to stretch the fabric as it passes over it.

Similar letters of reference indicate corresponding parts.

My invention consists—

First, in a combination of travelling selvage-feeding and carrying devices, or surfaces, with a stationary intermediate friction-frame, or surface, for stretching the fabric as it is passed over said surfaces to the dressing-machine, or otherwise, and whereby the body, or centre portion of the fabric is restrained from running ahead of the sides, or selvage-portions, and a more regular or even stretching-action of the fabric throughout its entire width secured, than where the fabric is stretched by or on a travelling surface, operating on the body, or centre, as well as the selvages of the fabric.

Secondly, the invention consists in a combination of independently-hung or travelling selvage-carrying and stretching devices, with friction-wheels, or appliances for driving the same, when said appliances are so hung, or the shaft which operates them so constructed and made capable of adjustment, as that either selvage-stretching device, or both, at the ends of the stretching-frame, may have its or their motion, as a driver of the fabric, temporarily arrested, and the same be left free to be moved by the latter, for the purpose of regulating the run of the fabric at the one selvage relatively to the other, or to the body, or centre portion of the fabric, as required.

Thirdly, the invention consists in a combination, with a divided expanding and contracting friction-stretching frame, of independently-revolving selvage-stretching rolls, and stationary hubs to said rolls, and ends of the friction-frame made adjustable in an oblique direction on a stationary shaft, for the purpose of varying the stretch, and to adapt the apparatus to different widths of fabric.

Fourthly, the invention consists in the employment of a fabric-platform, or receptacle, arranged in front of and below the stretching-surfaces, and so suspended, at opposite ends, as to admit of the heft of the fabric, between said receptacle and the stretching-surfaces,

being increased or diminished, either throughout the entire width of the fabric, or more at the one side than the other, for the purpose of regulating the run and stretch of the fabric over the stretching-surfaces.

Fifthly, the invention consists in a certain peculiar roughened construction of the drying-cylinder, whereby the fabric, in passing round or under said cylinder, is restrained, without puncture or damage to the fabric, from coming in contact with the smooth, or glazed surfaces of the cylinder, and the fabric kept at the stretch given it when damp, or from contracting by the action of the drying-cylinder.

Referring to the accompanying drawing—

A represents the friction stretching-frame, or surface, having oblique ends, B B, and cut, or divided as at *a a*, as usual in stretching-cylinders, to admit of its expansion and contraction to suit different widths of fabric, and to effect variation in the stretch; but said frame, when set, is here of a stationary character, and if made of curvilinear, instead of a flat configuration, either of which may be adopted, need not be more than a partial cylinder, as represented in fig. 1.

This friction-frame mainly serves as a drag to the body, or centre portion of the fabric, as the latter is passed over it, to prevent said centre part from running ahead, as it is apt, of the edges, or selvages, the selvage-portions being carried, and stretching-action at such parts being effected, by travelling surfaces, or devices, C C, which may be of any suitable endless character, but are here shown as of circular shape, constituting selvage-feeding and fabric-stretching rolls, or cylinders, they being provided with brush-like formations, *b b*, on their peripheries, to secure a proper hold on the fabric.

It is desirable that these selvage-carrying and stretching devices, or rolls, C C, should travel at a somewhat greater velocity than the steam or other drying-cylinder, D, so that the fabric *s*, in passing from the former to the latter, will be delivered loose, or free on to, or under against the drying-cylinder, which is not designed to exert any stretching-action, or effect, but, in addition to its drying-function, simply to preserve the fabric at the stretch previously given it.

E is a stationary shaft, and

F F, hubs, fitted on to or over opposite ends of it, and formed with reversely-tapering passages, *c*, through them for the purpose of varying the oblique position of said hubs on the shaft E, with which they are made stationary by set, or locking-screws, *d d*.

These hubs F F extend through the ends, B B, of the stretching, or dragging-frame, and through the naves, or centres of the selvage-rolls C C, which are arranged to freely and independently rotate on said hubs.

Thus it will be seen that on slacking the screws *d d*, facility is afforded for either expanding or contracting the stretching-frame A, and for varying the length of the entire stretching-surface or surfaces at the back,

relatively to the front, by varying the obliquity of the ends B B and selvage-rolls C C, to suit different widths of fabric, and for increasing or diminishing the amount of stretch.

The selvage-rolls C C are shown as driven by friction-wheels G G, acting on their peripheries.

These friction-wheels are driven by or through a pulley, H, arranged on their shaft, to rotate at a speed which will give to the selvage-rolls C C a slightly higher velocity than the drying-cylinder, for the purpose hereinbefore mentioned.

The shaft I, of the friction-wheels G G, is made in sections, and jointed, as at *e e*, to admit alike of the obliquity of the end sections of said shaft, and of the wheels G G, being changed to suit variations in the obliquity of the selvage-rolls C C, and which may be done by sliding in or out the standard J, that carries the centre section of the shaft I, and also to admit of either or both friction-wheels G G at pleasure being thrown into or out of driving contact with the independently-hung selvage-rolls C C, so that only one or both of the selvage-rolls may be driven to effect feed as well as stretch of the fabric, or either or both of the same be left simply to rotate with and by the passage of the fabric over it or them, whereby the timely run of either or both selvage-ports, relatively to the centre, or body of the fabric, or to each other, may be regulated to the greatest nicety, to secure a uniformity in the stretch throughout the width of the fabric.

This latter adjustment of the friction-wheels, to make them drivers or not, as required, may be effected by suspending the outer ends of the end sections of the shaft I, in raising and lowering-stirrups, or frames K, adjustable by screws *f f* from above.

The fabric to be stretched is laid on or in a platform, or receptacle, L, arranged in front of the stretching-devices, and below the upper surfaces of them, and so suspended by ropes and pulleys, or otherwise, at its opposite ends, as that, by raising or lowering it, not only the heft of the fabric uniformly throughout its width may be increased or diminished to vary the drag, or stretch, but, by raising or lowering one end of the receptacle more than the other, the heft of the fabric is made greater at or toward the one selvage, whereby, in case of any irregularity in the feed, or drag, the same is easily rectified.

In passing the fabric to the drying-cylinder D, from whence it is conducted either direct to the take-up roll above, or first run over or under any desired number of additional drying-cylinders, or surfaces, while it is desirable that the outer surface of said cylinder should, for the most part, be smooth, or free from projections, to facilitate the passage of the heat through it from the interior, it, nevertheless, is very objectionable for the damp fabric to come in actual contact with the same, especially where the fabric is starched, as it causes the starch to run into the meshes of the fabric.

To remedy this, without cutting the threads of the fabric, or injuring its woven character, I construct, or provide the drying-cylinder with longitudinal rows, or strips, M, at suitable distances apart, on or around its periphery, and form the same with teeth, *n*, inclining

in reverse directions on either side of a central plane, drawn transversely through the cylinder, or, in other words, cause the teeth to set outwardly away from the centre of the cylinder toward its ends, which construction, or arrangement of the teeth, not only holds the fabric without injury to its threads from contact with the smooth surfaces of the cylinder, but aids in keeping the fabric at its proper stretch.

To more effectually maintain, however, the stretch previously given to the fabric, and prevent alteration or unevenness to it in drying, the drying-cylinder has numerous roughened points, *m*, thrown up from its surface, in a scattered arrangement, by punching, or indenting the metal of which the cylinder is composed, from the interior, such points being preferably so formed as to be directed respectively toward the nearest end of the cylinder.

These roughened points will catch any portion of the fabric which comes in contact with them, without injuring it, in which respect their action is very different from that of the pins commonly used, which have to enter and penetrate interstices, or meshes of the fabric, and which, in mosquito-net, especially when their points do not happen to come directly opposite the centres of the interstices, or meshes, enlarge the latter and pull them out of shape.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of travelling selvage-feeding and carrying devices with a stationary intermediate friction-frame, or surface, operating as a drag to the centre, or body of the fabric, and acting, in unison with the selvage-carrying device, to effect the stretch of the fabric, substantially as specified.

2. The combination of independently-hung, or travelling selvage-carrying and stretching devices, with friction-wheels or appliances for driving the same, when said drivers are so hung and operated as to admit of either or both of the selvage-carrying devices, at opposite ends of the intermediate friction-frame, having feed given them, or otherwise allowed to freely move with and by the passage of the fabric over them, essentially as herein set forth.

3. The combination, with the divided expanding and contracting stretching-frame A, and the independently revolving selvage-carrying rolls C, of the stationary hubs F F, having reversely-tapering passages, *c*, through them, and adjustable in relation to the fixed shaft E, substantially as and for the purpose or purposes herein set forth.

4. The fabric-carrier, or receptacle L, hung so as to be capable of being raised or lowered, and adjustable from opposite ends, for operation in concert with and in relation to the fabric-stretching devices, or surfaces, essentially as specified.

5. The roughened points *m*, scattered over the surface of the body of the drying-cylinder, substantially as and for the purpose herein described.

ISAAC E. PALMER.

Witnesses:

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FRED. HAYNES.