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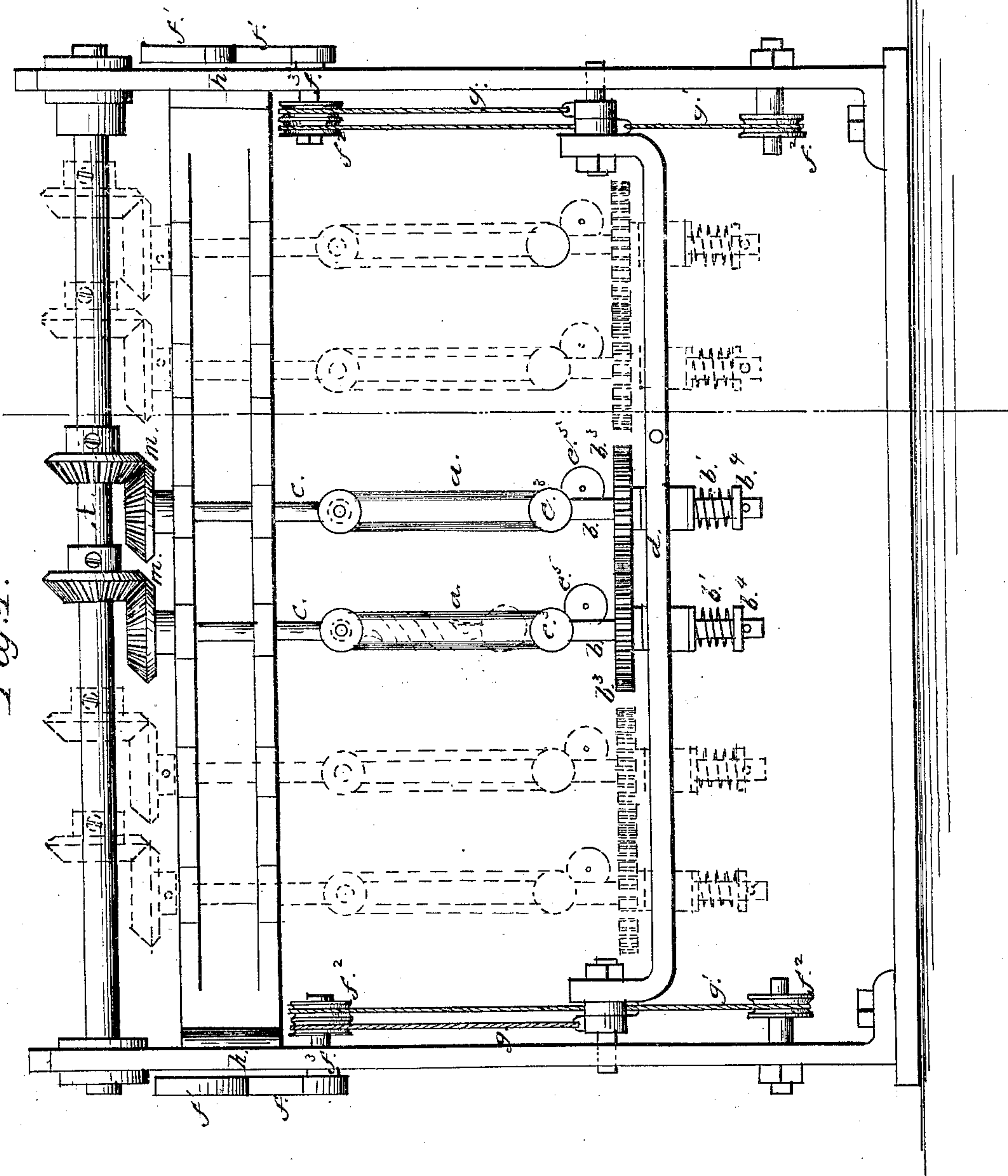
S. Barbour

Thread Finishing Mach.

Nº 69,159.

Patented Sep. 24, 1867.

Fig. 1.

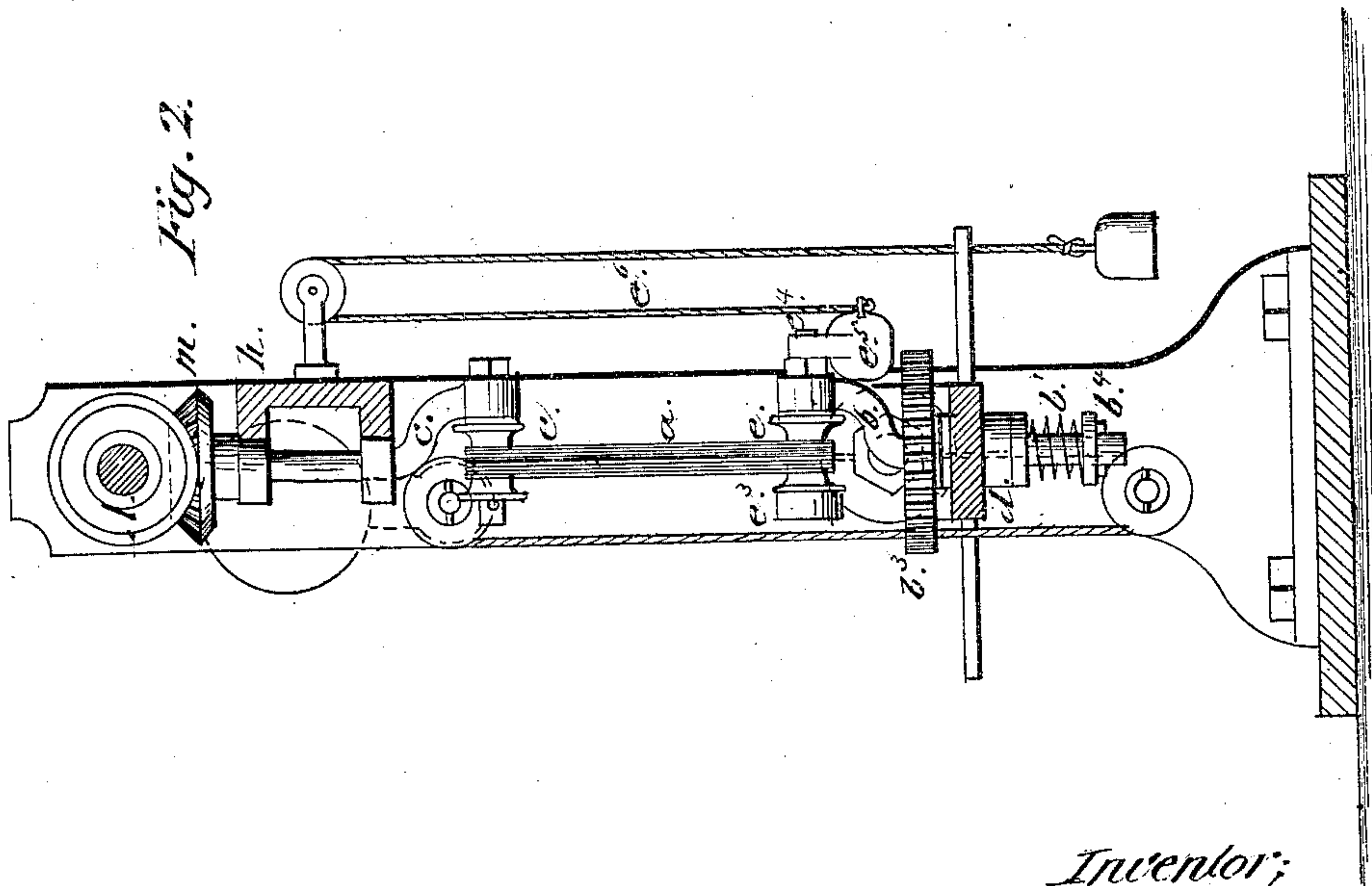
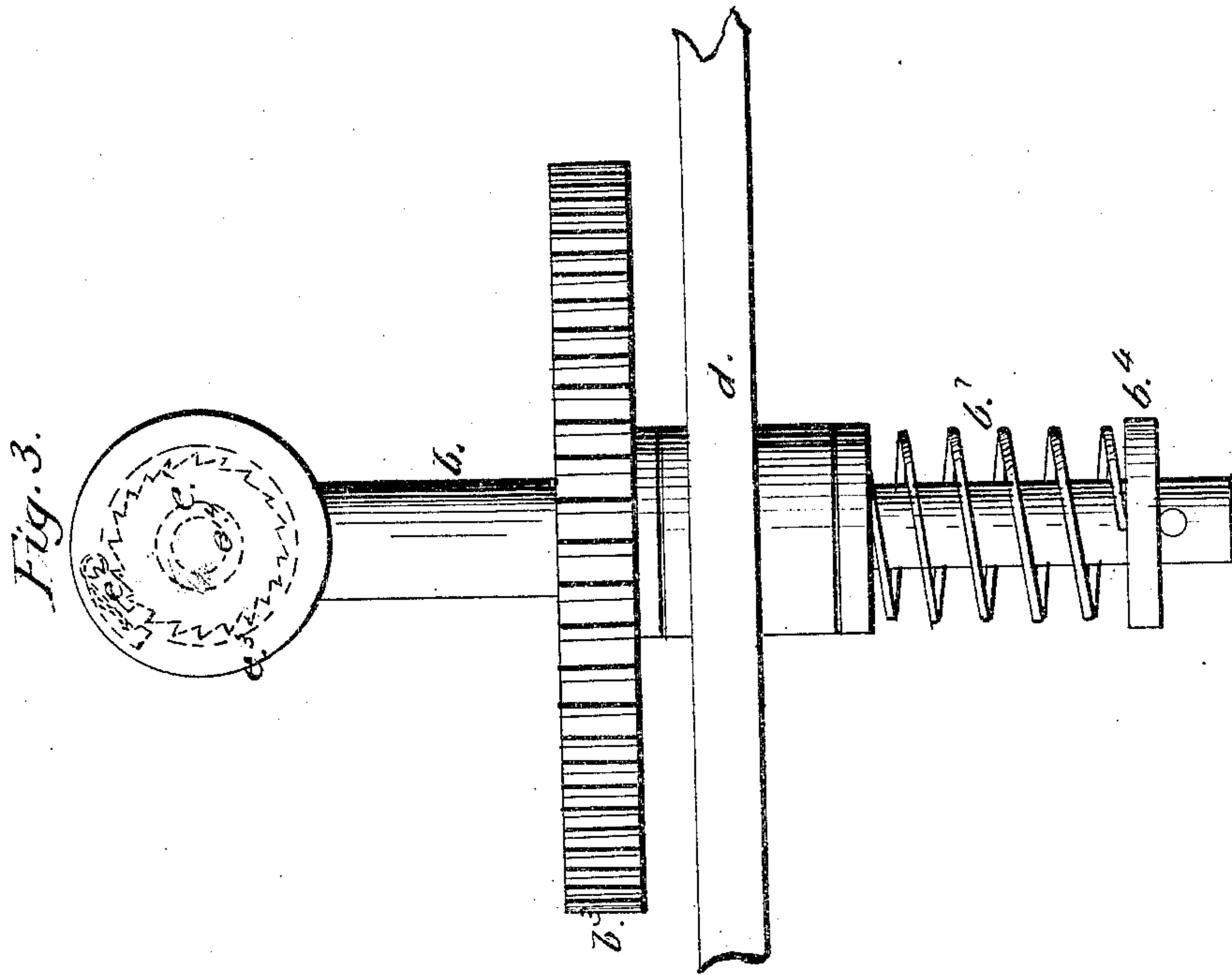


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Sheet 2. 2 Sheets.

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Thread Finishing Mach.
Nº 69,159. *Patented Sept. 24, 1867.*



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SAMUEL BARBOUR, OF LISBURN, IRELAND.

Letters Patent No. 69,159, dated September 24, 1867; patented in England May 14, 1866.

IMPROVEMENT IN MACHINE FOR FINISHING THREAD.

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, SAMUEL BARBOUR, of Lisburn, Ireland, have invented a new and useful Improvement in Machinery for Finishing Sewing-Thread or Yarn; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to certain improvements upon a machine used for finishing sewing-thread. In the accompanying drawing—

Figure 1 is a front elevation of the machine in its improved form.

Figure 2 is a cross-sectional elevation; and

Figure 3 is an enlarged view of some of the parts.

The first of these improvements consists in an arrangement of parts whereby the tensional strain put on the hank of thread or yarn by means of pairs of hooks is made more uniform than heretofore. This is effected by allowing each bottom hook to approach the corresponding top hook independently of the remaining bottom hooks, for the purpose of accommodating itself to the unavoidable variations in the lengths of the different hanks without subjecting the hanks to undue tensional strain.

For the purpose of explaining this part of the invention, I would remark that the hanks are shown at *a* as laid over tension-pulleys, hereafter more particularly referred to, which pulleys are carried by short cranked rods or hooks *b* *c*, the hooks *b* being mounted in a longitudinal raising-bar, *d*, and the hooks *c* in bearings in a longitudinal fixed frame, constituting a portion of the main framing *h* of the machine. The bar *d* is free to move up and down, as will be hereafter described, to permit of the hanks being held at tension at their full length, and to allow for the contraction of their length under the twisting "action." To the shank of each bottom hook *b* a helical spring, *b*¹, is applied, so that, as the hook is lifted by the thread, the spring is compressed until the bottom movable rail *d* is sustained equally, or nearly so, by each hank. The hooks *b* are prevented from rising so far as to take the spur-wheels *b*³, which they carry out of gear with each other by means of a collar-plate, *b*⁴, fastened at the end below the spring *b*¹. The tensional strain of the hanks may also be equalized by a similar arrangement applied to the top hooks *c*, or by the use of separate weights applied to either top or bottom hooks, or in any other convenient manner; but I prefer the helical spring at each bottom hook for providing against the inequalities of strain heretofore experienced.

The second improvement consists in allowing the bottom hooks *b* to revolve on their axles instead of being fixtures, as at present, and connecting each adjoining pair by toothed wheels *b*³, which equalize the tension on the hanks.

The third improvement consists in an arrangement by means of which a motion is given to each hank of thread in the direction of its length during the finishing process without stopping the machine, (as has been necessary heretofore,) for the purpose of subjecting each portion to an equal amount of action or finish. This is effected by mounting a pulley, *e*, (which is free to revolve,) on each of the hooks *b* and *c* to receive the thread, and by communicating a slight rotary movement to the pulleys on the bottom hooks or studs *b* at each descent of the bottom bar *d*, to which all the bottom hooks *b* are attached. This rotary movement is effected by fixing on the end of each of the pulleys *e* of the lower hooks *b* a ratchet-wheel, *e*¹, (fig. 3,) that is acted upon by a pawl or catch, *e*², carried by a plate, *e*³. The pulley is mounted loosely on a spindle, *e*⁴, which has its bearing in the hook *b*. Keyed to the spindle at one end is the plate *e*³; and to the other end of this spindle *e*⁴ is fastened the weighted lever *e*⁵, which is lifted by the rope or chain *e*⁶ every time the bottom hooks *b* are at their lowest point; and thus the catch *e*² is brought into action, and caused to turn the pulley *e* partially round. As the hank is at this time hanging without twist, it is carried round a little by the motion of the pulley *e* on the hook *b*, and thus each part of the hank is in turn exposed to an equal amount of the action of twisting.

The last improvement consists in an arrangement for regulating the tension on all the hanks in the machine at one time, so as to facilitate the formation of "curls or kinks" in the hanks during the twisting process. This is effected by counteracting the weight of the bar *d*, to which the bottom hooks *b* are attached, by means of a weight, *f*¹, or weights *f*¹ and levers *f*, which are connected to this bar *d*, which bar is sustained by the thread at the proper times only, and relieved from it when required. This will be understood on reference to

the drawing, fig. 1, where the bottom bar *d* and its set of hooks *b* are shown in the lowest position. To each end of this bar *d* are attached two ropes or chains *g g'*, which are joined together by their ends being attached to their respective pulleys *f²*. These pulleys are keyed to short shafts *f³*, which pass through the main framing *h* at opposite ends of the machine. To these shafts *f³* are fixed the two weighted levers *f*, which are so set that, when the bottom bar *d* rises so far, by the twisting of the hanks *a*, as to be ready for the formation of a "kink" or second twist, the weights *f¹* are almost a counterbalance, the levers *f* being horizontal. The driving-shaft *A* is connected by pulleys or gear of any suitable kind for receiving the requisite motion transmitted by bevel-gear *m* to the upper hooks *c*.

Having now set forth the nature of the invention of "improvements in machinery for finishing sewing-thread or yarn," and explained the manner of carrying the same into effect, I wish it to be understood that I claim—

1. The bottom hooks *b*, revolving upon their axes, each adjoining pair connected by toothed wheels *b³*, to equalize the tensional strain on the hanks, as herein shown and described.
2. The combination of the hooks *b*, ratchet-wheel *c¹*, catch *c²*, spindle *c⁴*, weighted lever *c⁵*, and weighted cord *c⁶*, all operating, as described, to equalize the finish on the thread, as herein set forth.
3. The weights *f¹*, levers *f*, pulleys *f²*, and ropes or chains *g g'*, in combination with the bar *h* and its hooks *b*, for regulating the tension on all the hanks simultaneously, as herein shown and described.

In witness whereof I, the said SAMUEL BARBOUR, have hereunto set my hand and seal the twenty-fifth day of September, in the year of our Lord one thousand eight hundred and sixty-six.

SAML. BARBOUR. [L. s.]

Witnesses:

JAMES BARBOUR, *Belfast*.

WILLIAM SIMMS, *Notary Public, Belfast*.