

(No Model.)

2 Sheets—Sheet 1.

T. J. & T. H. GIFFORD.
Leather Scratching Machine.

No. 241,644.

Patented May 17, 1881.

Fig. 2.

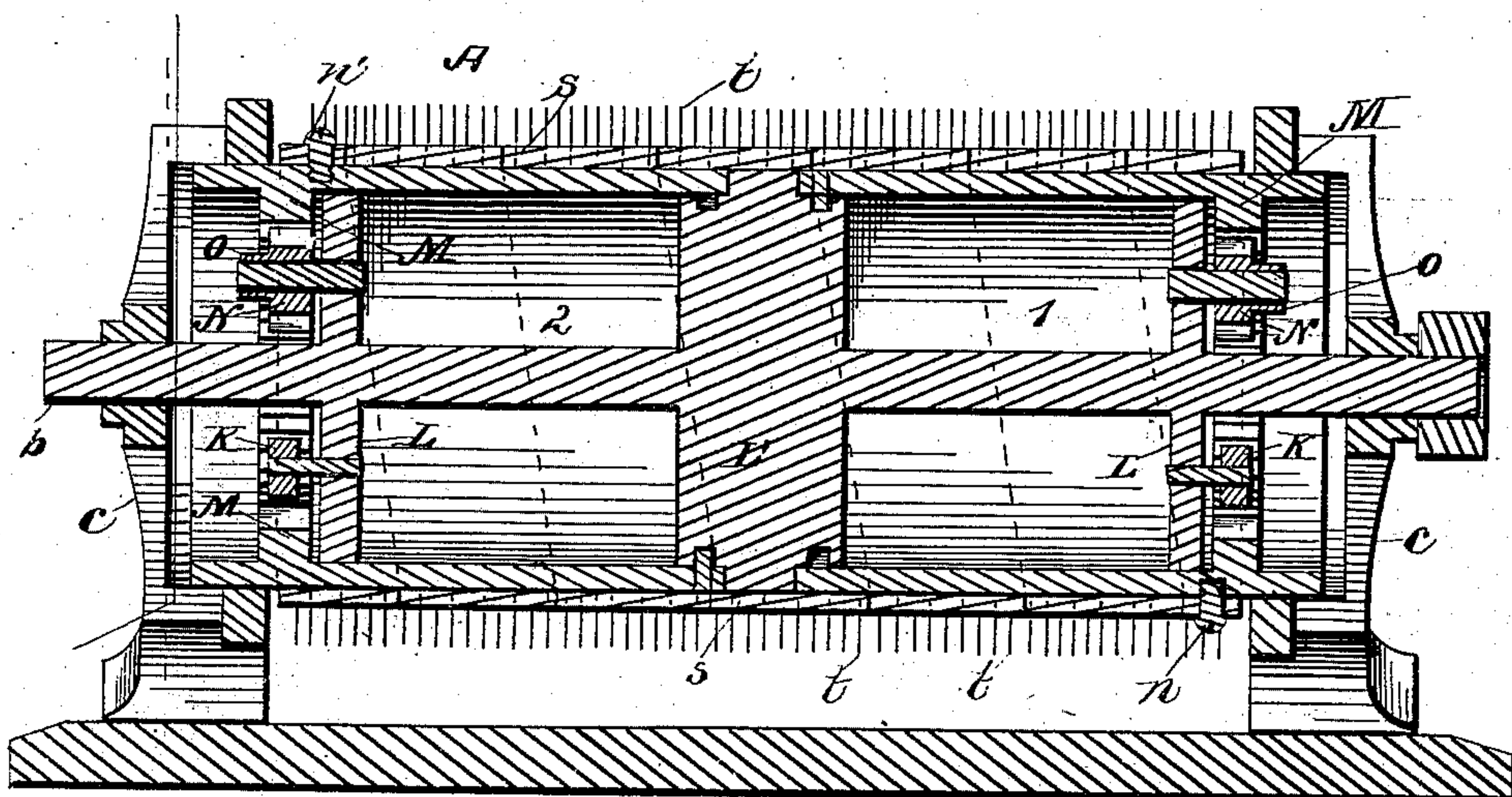
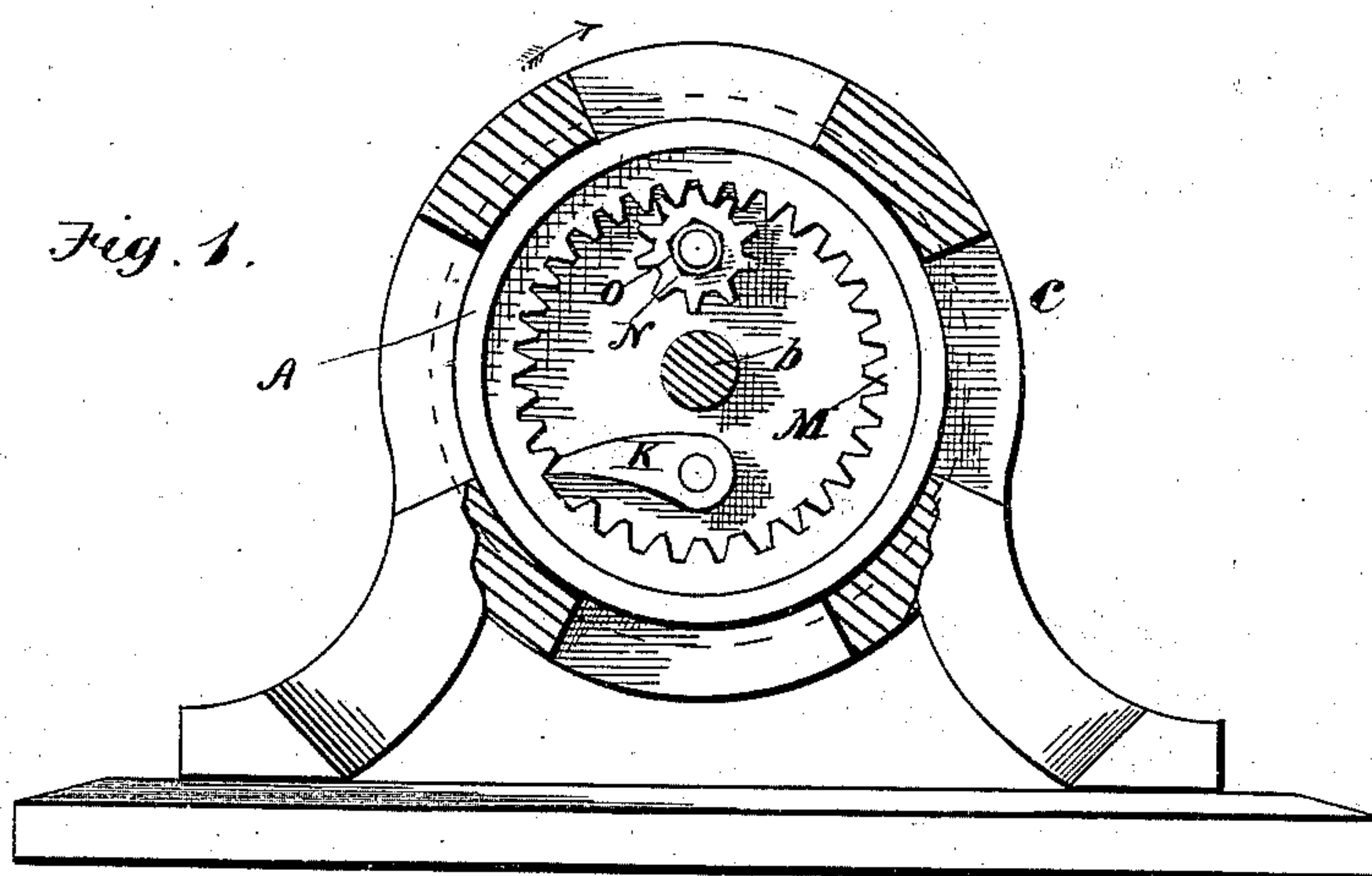


Fig. 1.



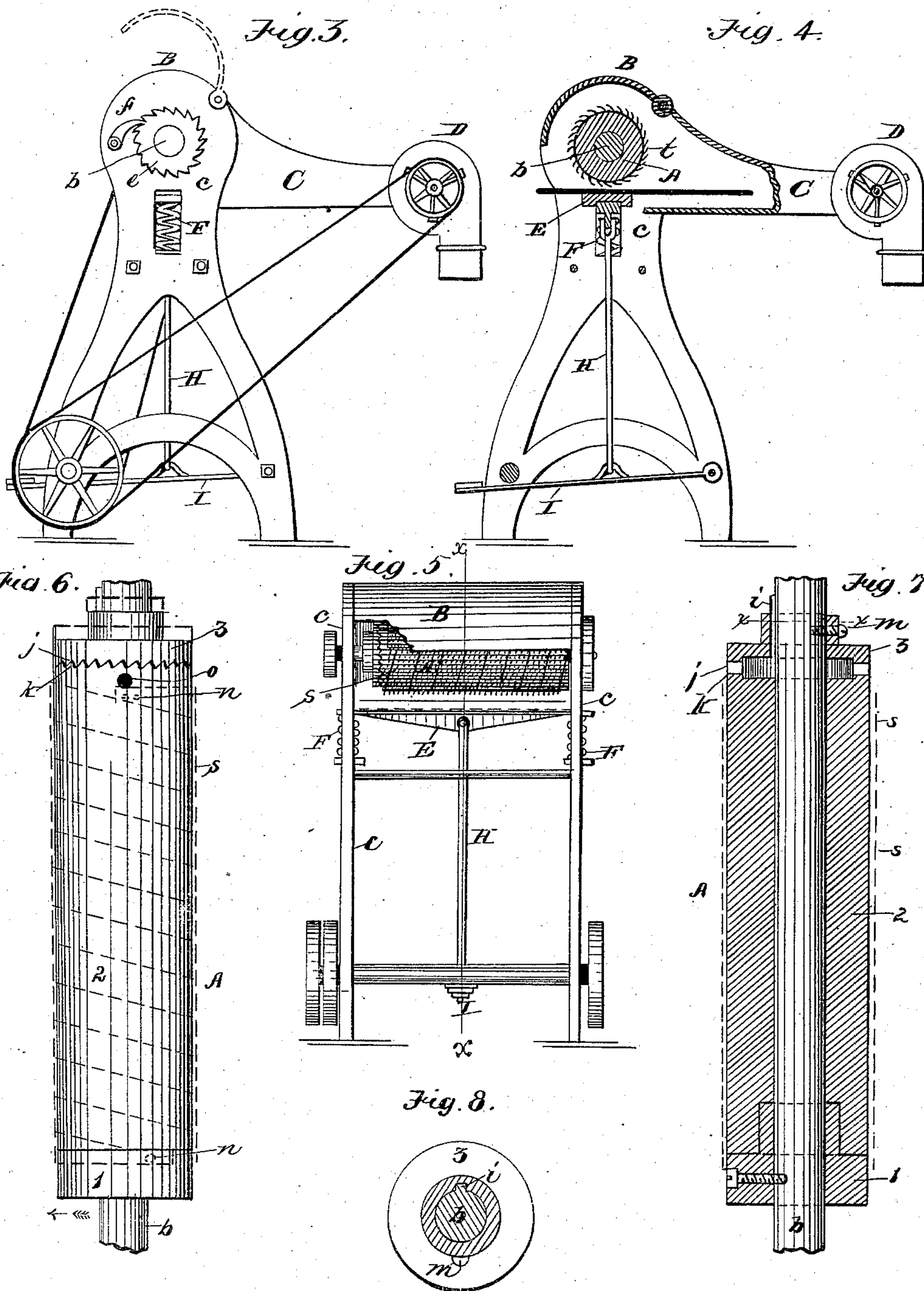
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UNITED STATES PATENT OFFICE.

THOMAS J. GIFFORD AND THOMAS H. GIFFORD, OF SALEM, MASS.

LEATHER-SCRATCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 241,644, dated May 17, 1881.

Application filed March 17, 1881. (No model.)

To all whom it may concern:

Be it known that we, THOMAS J. GIFFORD and THOMAS H. GIFFORD, of Salem, in the county of Essex and State of Massachusetts, have invented certain Improvements in Leather-Scratching Machines, of which the following is a specification.

This invention relates, chiefly, to mechanism for scratching the upper surface of a leather sole or of a piece of sole-leather to be cut up into soles, to enable such surface to be firmly glued or cemented to the upper, in the manufacture of "compo" shoes, or shoes in which the sole is attached to the upper by glue or cement. In organized machines for performing this kind of work a scratching device is usually employed, consisting of a journaled cylinder having nailed to its periphery a strip or sheet of leather provided with wire teeth. Much difficulty has been experienced in keeping the leather tight on the periphery of the cylinder, the strip being liable to stretch and expand until it stands out from the cylinder in waves and bunches, so that the scratching effect of the teeth on the leather is interfered with.

This invention has for its object to provide a scratching device in which the slack of the toothed leather can be easily and quickly taken up, so that the leather can be kept in a smooth condition upon the cylinder.

The invention also has for its object to provide certain improvements relating to a bed to support and present the leather to a rotary scratching device, whereby said bed is enabled to yield to conform to the thickness of the leather.

To these ends the invention consists in the improvements hereinafter described and claimed.

Of the accompanying drawings forming a part of this specification, Figure 1 represents an end elevation of a scratching-cylinder constructed according to my invention. Fig. 2 represents a longitudinal section of the same. Fig. 3 represents an end elevation of a machine embodying my invention. Fig. 4, a transverse section taken on the line *x x*, Fig. 5. Fig. 5 represents a front view. Fig. 6 represents a modification of the cylinder. Fig. 7 represents a longitudinal section of the same. Fig. 8 represents a section on line *x x*, Fig. 7.

The same letters of reference indicate the same parts in all the figures.

In the drawings, A represents a cylinder, which constitutes a support for a strip of leather, *s*, studded with wire teeth *t*, preferably like the teeth of ordinary card-clothing, said strip being shown in full lines with its teeth in Figs. 2 and 5, and in dotted lines without its teeth in Figs. 6 and 7. The cylinder A is located on an arbor, *b*, which is journaled in suitable bearings in a frame, *c*, hereinafter referred to. The cylinder is composed of two sections, 1 and 2, both of which are supported by plates or collars L L' rigidly attached to the arbor *b*, as shown in Fig. 2, and are adapted to rotate independently of each other on said plates or collars.

One end of the strip *s* is secured at *n* to the section 1, and said strip is wound spirally upon the periphery of the cylinder, and is secured at *n'* to the section 2, the strip being unattached to the cylinder, except at its ends.

Locking devices are provided to temporarily make each section of the cylinder fast to the arbor *b*, said devices consisting in the present instance of internal gears or ratchets, M M, formed on the sections 1 2, near their outer ends, and spring-dogs K K, pivoted to the plates or collars L L, the dogs engaging with the gears or ratchets M, as shown in Fig. 1, and permitting the section 2 to rotate only in the direction indicated by the arrow in Fig. 1, and the section 1 to rotate only in the opposite direction.

It will be seen that by rotating the section 1 in the direction indicated by the arrow in Fig. 1, the section 2 being prevented from rotating in the same direction by its locking device, the portion of the strip *s* lying upon the section 1 will be tightly drawn upon the periphery of said section, and any slack existing in said portion will be taken up. To a certain extent the portion of the strip on the section 2 will also be tightened by the rotation of the section 1; but the friction of the strip on the periphery of the section 2 will prevent it from being as thoroughly tightened as is desirable, and the section 2 is preferably rotated in the opposite direction, to complete the tightening of the strip, the section 1 being at the same time locked to its arbor. After the strip has been tightened both sections are locked to the arbor to hold their respective portions of the strip *s* in its tightened condition.

We do not limit ourselves, however, to making both sections independently rotatable, it being obvious that the rotation of one of the sections has a useful result in tightening the strip; hence one of the sections may have a permanent attachment to the arbor *b*, as shown in the modification hereinafter described, instead of the temporary rigid connection above described, without departing from the spirit of our invention.

The section or sections of the cylinder may be rotated by any desired means. We preferably rotate the sections by means of pins *NN* pivoted to the plates or collars *L* on the arbor and meshing with the gears or ratchets *MM* of the sections, as shown in Figs. 1 and 2. The pinions *N* are provided with heads *O*, adapted to be grasped and turned by a suitable wrench. The rotation of the pinions *NN* causes the rotation of the sections 1 2, and said pinions enable the strip *s* to be very tightly drawn on the cylinder. The pinions *N* being supported by the collars *L*, rigidly attached to the arbor *b*, the latter does not require to be held while either of the sections is being rotated.

In the modification shown in Figs. 6, 7, and 8 the section 1 is rigidly attached to the arbor and the section 2 is loose upon the arbor and adapted to rotate thereon, excepting when locked or held, as hereinafter described. The toothed strip *s* is secured at one end to the fixed section 1 by fastenings *w*, and is wound spirally upon the cylinder and secured at its other end by similar fastenings to the loose section 2, as shown in dotted lines in Fig. 6. The strip *s* is tightened by rotating the loose section 2 in the direction indicated by the arrow, Fig. 6, and at the same time holding the arbor and the fixed section 1. The section 2 is rotated by a spanner or lever inserted into an orifice, *o*, formed near the end of the section, and the arbor and the section 1 are held, while the section 2 is being rotated, by a locking device consisting preferably of a ratchet, *c*, rigidly attached to the arbor, and a pawl, *f*, pivoted to the frame *c* and adapted to engage with the ratchet, as shown in Fig. 3, the pawl being thrown back from the ratchet when the scratching device is in operation.

To hold the section 2 and maintain the tension on the strip *s* produced by the described rotation of said section, a locking device is provided consisting preferably of a disk, 3, adapted to slide on the arbor toward and from the section 2, connected to the arbor by a feather or key, *i*, so that the disk and arbor will necessarily rotate together, and provided with teeth *j*, adapted to engage with similar teeth *k* formed on the end of the section 2, as shown in Figs. 5 and 6. While the section 2 is being rotated to tighten the strips the disk 3 is moved away from the section 2, as shown in dotted lines in Fig. 6, and when the strip *s* has been sufficiently tightened the disk 3 is moved up until its teeth engage the end of the section 2. The disk is then secured to the arbor by a screw or pin, *m*, (seen in Fig. 7,) and the section 2 is thus securely locked or held.

If desired, the disk 3 may be pressed by a spring against the end of the section 2, the screw or pin *m* being omitted. This would enable the section 2 to be rotated to tighten the strip *s* without previously freeing the disk 3, the teeth *j k* being formed so that they will slip by each other when the section 2 is being rotated to tighten the strip.

It will be seen that by our invention the toothed strip can be readily kept in operative condition upon the periphery of the cylinder, and in case it becomes slack by expansion of the leather the slack can be readily taken up. It is obvious that the strip *s* may be made of any suitable flexible material beside leather.

In Figs. 3, 4, and 5 is shown an organized machine having a cylinder, *A*, provided with scratching-teeth in the manner described or in any suitable manner. The cylinder *A* is covered by a casing, *B*, from which extends a flue, *C*, having an exhaust-fan, *D*, to remove from the machine the fine particles scratched from the leather. The arbor of the cylinder *A* is belted to a driving-shaft.

E represents a bed under the cylinder *A* to support the leather while it is being scratched. This bed is supported by springs *F F* at its ends, and is free to move toward and from the cylinder *A* in suitable guides or slots formed in the frame of the machine. The springs, which constitute the only support for the bed, press the bed toward the cylinder, and enable it to yield along its entire length or at one end only, so that it may be parallel with the cylinder *A* or inclined relatively thereto. The bed is thus enabled to conform to the surface of the leather, so that the machine will work equally well on sheets of leather of different thickness or on all parts of a single sheet which is thicker at or near one edge than at the other. The bed *E* is connected by a rod, *H*, with a pedal-lever, *I*, or other suitable device, whereby the bed *E* may be conveniently depressed and separated from the cylinder *A* when a piece of leather is being inserted between the bed and cylinder.

Having thus described our invention, what we claim is—

1. A cylinder composed of two independent sections supporting a spirally-wound toothed strip secured at its opposite ends to the two sections, one of said sections having a suitable rigid connection to an arbor, and the other adapted to be rotated on the arbor to tighten the toothed strip, and provided with a locking device to hold the strip when tightened, as set forth.

2. A sectional cylinder composed of two independent sections supporting a spirally-wound toothed strip secured at its opposite ends to said sections, each section being adapted to rotate independently on the arbor to tighten the end of the toothed strip secured to it, and provided with a locking device to hold its end of the strip when tightened, as set forth.

3. The combination of an arbor, a sectional cylinder composed of two independent sec-

5 tions supporting a spirally - wound toothed strip secured at its ends to said sections and adapted to rotate independently on the arbor, and locking devices adapted to lock the sections to the arbor, as set forth.

10 4. The combination of an arbor, a sectional cylinder composed of two independent sections supporting a spirally - wound toothed strip secured at its ends to said sections and adapted to rotate independently on the arbor, internal gears, M M, formed on the sections, pinions N N, pivoted to collars or plates on the arbor and adapted to rotate the sections, and dogs K K, also pivoted to collars or plates on
15 the arbor and adapted to lock the sections to the arbor, as set forth.

5. In a leather-scratching machine, the com-

bination of the rotary scratching-cylinder, the bed located under the cylinder and movable toward and from the cylinder in suitable guides, 20 and the springs F F, adapted to press said bed toward the scratching-cylinder, said springs constituting the only support for the bed, and enabling the latter to yield along its entire length or at one end only, as and for the purpose set forth. 25

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

THOMAS J. GIFFORD.

THOMAS H. GIFFORD.

Witnesses:

THOMAS M. DEVLIN,
JOHN E. KIMBALL.