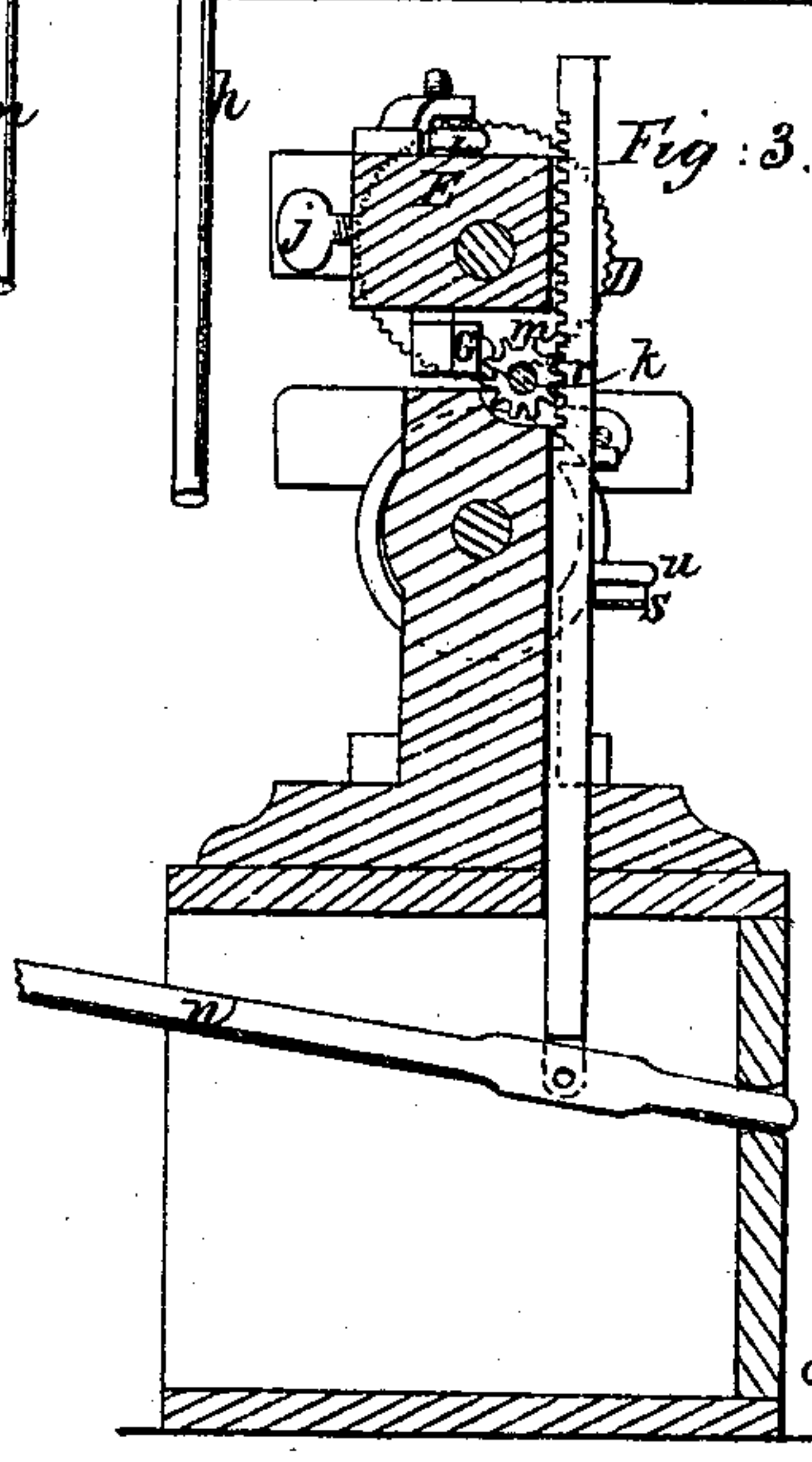
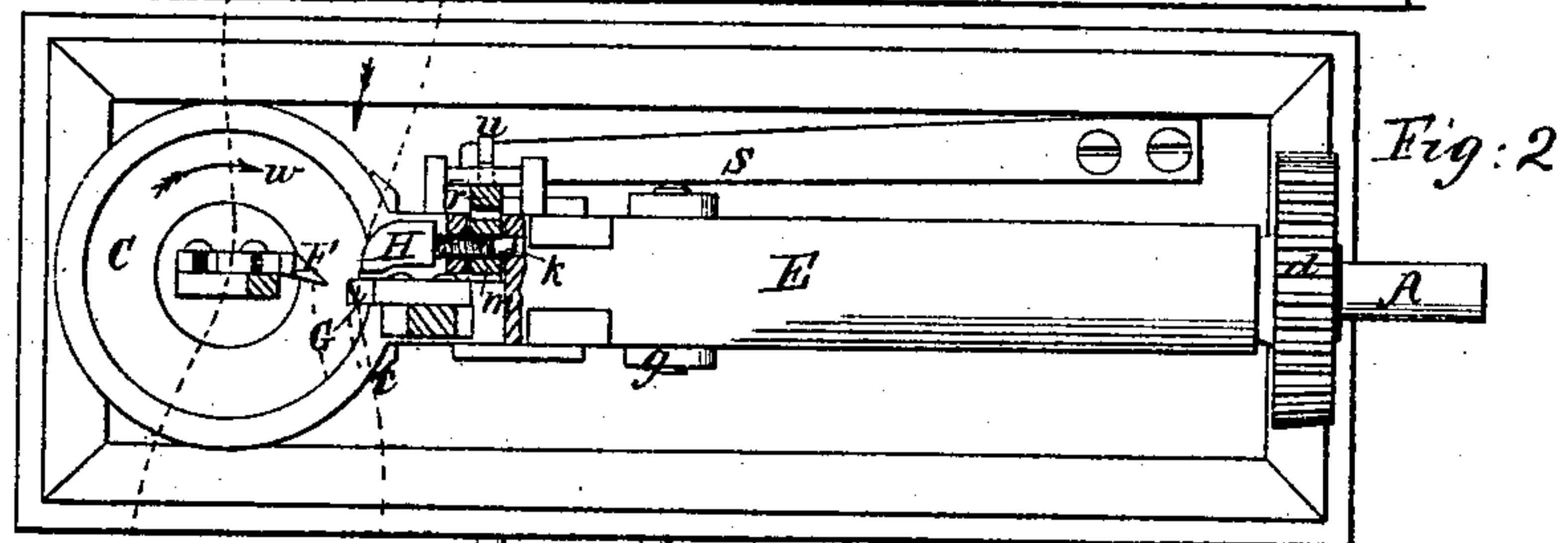
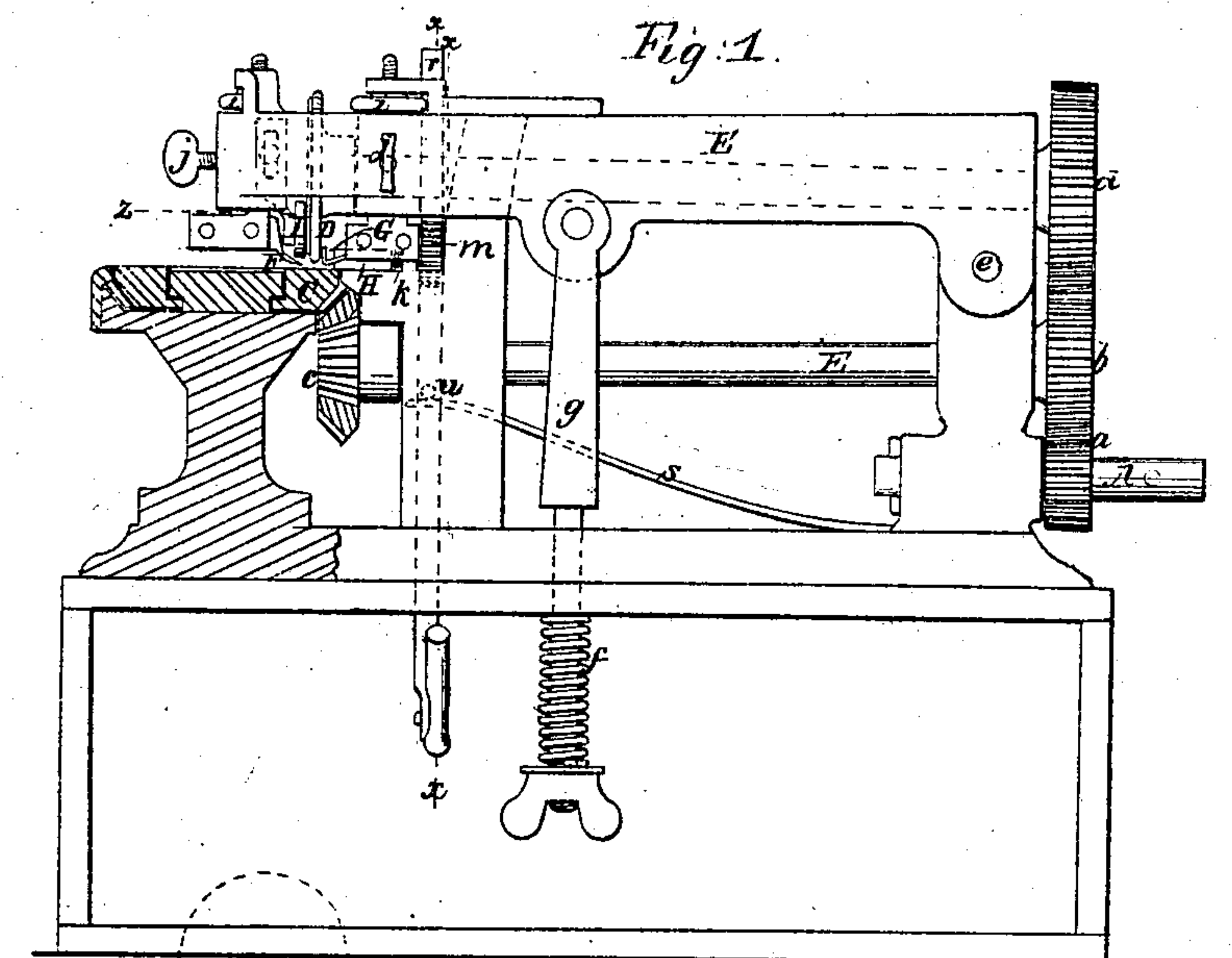


M. J. STEIN.  
MACHINE FOR CHANNELING BOOT OR SHOE SOLES.  
No. 85,486.                      Patented Dec. 29, 1868.



*Witnesses;  
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# UNITED STATES PATENT OFFICE.

MICHAEL JOSEPH STEIN, OF NEW YORK, N. Y.

## IMPROVED MACHINE FOR CHANNELING BOOT AND SHOE SOLES.

Specification forming part of Letters Patent No. 85,486, dated December 29, 1908.

*To all whom it may concern:*

Be it known that I, MICHAEL JOSEPH STEIN, of the city, county, and State of New York, have invented a new and useful Improvement in Machines for Channeling Soles of Boots and Shoes, 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 partly-sectional longitudinal elevation for a sole-channeling machine embracing my improvements; Fig. 2, a transverse section, taken mainly as indicated by the line  $x-x$  in Fig. 1; and Fig. 3, a plan of the same, showing a portion in section, taken mainly as denoted by the line  $z-z$  in Fig. 1.

Similar letters of reference indicate corresponding parts.

Channeling-machines have heretofore been constructed to cut the grooves or channels on the grain side of the sole, so as to enable the manufacturer in putting on the sole to improve the finish of his work by covering up the nails, pegs, screws, or, it may be, stitching, where, as by a certain description of machine, the stitches are run through and through. Such machines are unsuitable for channeling the soles of "turned shoes," an entirely different class of work, for which my improved machine is specially adapted. This class of work requires the channel or channels to be cut on the flesh instead of on the grain side of the leather, and to be so done as not to break or mar the grain, which is the finishing side of the sole. Roughened vertical feeding-rollers, therefore, acting on opposite sides of the sole, as heretofore used, are unsuitable for the purpose, inasmuch as they break or mar the grain, and are generally defective in failing to draw up the sole against the guide in advance of or at the cut, and by reason of the small extent of bearing-surface the lower roller presents for the sole to rest upon, and roughened character of its edge, also as the leather varies in consistency or firmness, cause the channels to be cut of irregular depth. These and other difficulties are obviated by my machine, and certain other special advantages obtained.

My invention consists, first, in a combination, with channeling knives or cutters and

with a guide to direct the edge of the sole, of an upper roughened feed roller or wheel and a lower smooth, or nearly smooth, revolving table, located at right angles, or thereabout, to the upper feed-roller, whereby the objections hereinbefore referred to are obviated.

Second, my invention consists in a combination, with the channeling-knives, upper feed-roller, and lower revolving table, of a guide-roller arranged to bear on the sole immediately in advance of the knives, or thereabout, for the double purpose of guiding and keeping the sole down on the table and of preventing the roughened periphery of the upper feed-roller from sinking too deep or irregularly into the leather.

Third, the invention consists in a combination of mechanism or devices with the guide which directs the edge of the sole relatively to the knives, in such manner as that while the machine is running said guide may be gradually adjusted to and from the knives, to increase the distance of the channels from the edge of the sole at the shank and heel, or either, for the purpose of facilitating paring of the sole at those parts without cutting the stitches, and to provide for introduction of the counter or stiffening at the heel.

Referring to the accompanying drawing, A represents a main or driving shaft, carrying a pinion,  $a$ , which gears with a spur-wheel,  $b$ , on a shaft, B, that carries on its front end a bevel-pinion,  $c$ , which gives revolving motion to a horizontal table, C.

Arranged at right angles to this table, over the back edge of it, is an upper feed roller or wheel, D, formed with projections, or of a roughened character, on its periphery, and set in motion or rotated by or through a wheel,  $d$ , on its shaft, arranged to gear with the spur-wheel  $b$ . Said feed-roller shaft, also channeling-knives, guide or guides, and pertaining devices, as hereinafter described, are all hung to or connected with an upper frame or arm, E, hinged, as at  $e$ , and held down by a spring,  $f$ , acting on an extension of a connecting-strap,  $g$ , but capable of being raised by a treadle or lever,  $h$ , when necessary to introduce and take out the sole to and from the machine.

F is the inner channeling-knife, and G the outer channeling-cutter, adjustable relatively



to each other and to the edge-guide II, to vary the distance of the channels apart, and of their uniform distance from the edge of the sole. Said knives or cutters are also adjustable vertically in relation to the revolving table C by nuts or disks *i i*, fitting screw-threads on the shanks of their holders to regulate the depth of cut, locking thumb-screws *j j* serving to firmly secure the holders when set, and thereby to steady the knives. These knives or cutters F and G, which are located on opposite sides of the feed-wheel D, are so shaped and set as that when the sole is fed up to them by the rotation of the table C, as indicated by the arrow *w*, and suitable travel of the feed-wheel D, the inner channeling-knife F makes a drawing cut or gash in the sole, of uniform width and depth all around the sole, which cut constitutes the inside channel, while the cutter G simultaneously scoops out the outside groove or channel lying between the inside channel and outer edge of the sole, which grooving is preferable to beveling the edge of the sole for uniting by stitching the sole to the vamp or upper.

In addition to the guide II, which serves to direct the edge of the sole in its way to and past the cutters, the frame or arm E carries a guide and pressing roller, I, arranged in close proximity to the feed-wheel D on its one side or face, and so as to bear upon the sole a little in advance of the action of the cutters. This roller not only serves to keep the sole down on the table C and to guide it, and should be adjustably connected in a vertical direction with the arm E, to adapt it to different thicknesses of soles, but also acts to regulate, according to the quality of the leather and other circumstances, and to make uniform, the depth of bite or gripe of the feed-wheel D in or on the sole, thus insuring uniformity in the depth of the channels cut by the knives.

As the grain or finishing side of the sole rests on the revolving table C, which, by reason of the broad flat surface it presents, may be smooth, without fear of slip of the sole on it, and gives a solid and extended bearing-surface or basis to the sole as it is being channeled, there is no breaking or marring of the grain or finishing side of the sole which is channeled on its flesh side, that during the channeling operation lies uppermost. The revolving table C, also, being driven, as indicated by the arrow *w*, exerts a tendency to draw or work in the sole against its edge-guide H, and thus keeps the work up to its proper run or position, to secure a correct direction for the channels all around the sole, and prevent the running out from such course of the knives or cutters, or, rather, of the sole relatively to the latter.

As it is desirable, for the purpose of facilitating, without cutting the stitches, the usual paring off of the sole at the shank and heel in after-finishing the boot or shoe, and to pro-

vide increased room for introduction of the counter or stiffening in the heel of the vamp over in preference to beyond the sole, to gradually run or arrange the channels so that they lie at an increased distance at the shank and heel from the edge of the sole, I make the guide II, which operates as a gage, adjustable at pleasure while the machine is running, so that while said guide remains firm and stationary, to direct the edge of the sole so as to secure a uniform distance of the channels from said edge during the greater portion of the channeling action around the sole, the same is or may be made to increase, in a gradual manner, its distance from the knives or cutters when the shank and heel portions of the sole, or either of them, are passing the cutters, thus throwing farther inward from the edge of the sole, and in uniform relationship to each other at the shank and heel, both the inner and outer channels. This may be done by cutting a screw-thread on the shank or stem K of the guide II, and causing the same to fit a female thread or box in a pinion, *m*, so that on turning the latter it is made to work the guide II farther in or out from the line of cut. This action may be effected by a lever or treadle, *n*, arranged to operate a rack, *r*, which gears with the pinion *m*, said rack and treadle being held in their raised positions, so as to secure a fixed general action to the guide, by a spring, *s*, bearing under a stud, *u*, on the rack. Thus when the shank or heel portions of the sole, in or during the feed of the latter, reach the knives F G, the foot is temporarily applied to the treadle *n* to depress it, and afterward gradually to let it up again under the action of the spring *s*. This gradual working in and out, or backward and forward, of the guide II relatively to the cutters causes the sole to be so guided or directed as that both channels in it are thrown or run farther inward from the edge of the sole, preserving, however, the same relative distance from each other, and such deviation from their regular course relatively to the edge of the sole made gradual both in entering and leaving.

The lever or treadle *n* may be operated by foot, simultaneously with the operation by hand, through a crank or otherwise of the main shaft A, which actuates the sole feeding and carrying devices.

No special description of the frame of the machine for carrying its working parts is here deemed necessary, as such may be varied and of any suitable construction.

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

1. The combination, with the channeling-knives and with a guide to direct the edge of the sole, of a revolving table and an upper feed roller or wheel arranged at right angles to the table, or thereabout, substantially as specified.

2. The combination, with the channeling knife or knives, the revolving table, and the



upper feed - wheel, of a guide and pressing roller arranged to work in close proximity to the feed-wheel and relatively to the knife or knives, essentially as herein set forth.

3. In combination with the channeling knife or knives, the guide H, made adjustable by mechanism under the control of the operator to gradually vary the distance of the channel

or channels from the edge of the sole while the machine is running and the sole being fed across or through it, substantially as specified.

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Witnesses:

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