(No Model.)

3 Sheets—Sheet 1.

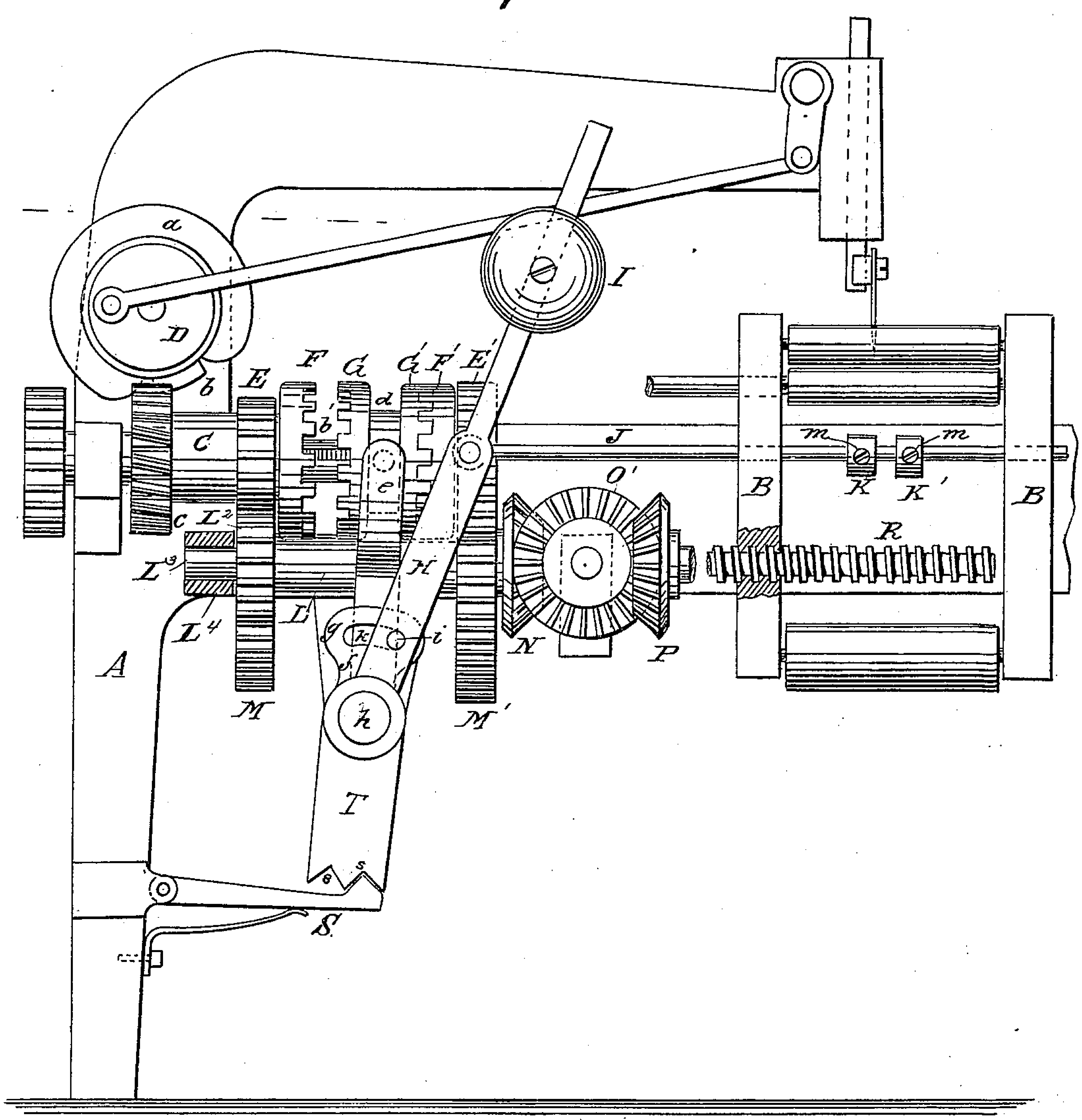
W. KOCH.

QUILTING MACHINE.

No. 271,475.

Patented Jan. 30, 1883.

Fig: 1.



WITNESSES:

Chas. Nida

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(No Model.)

3 Sheets—Sheet 2

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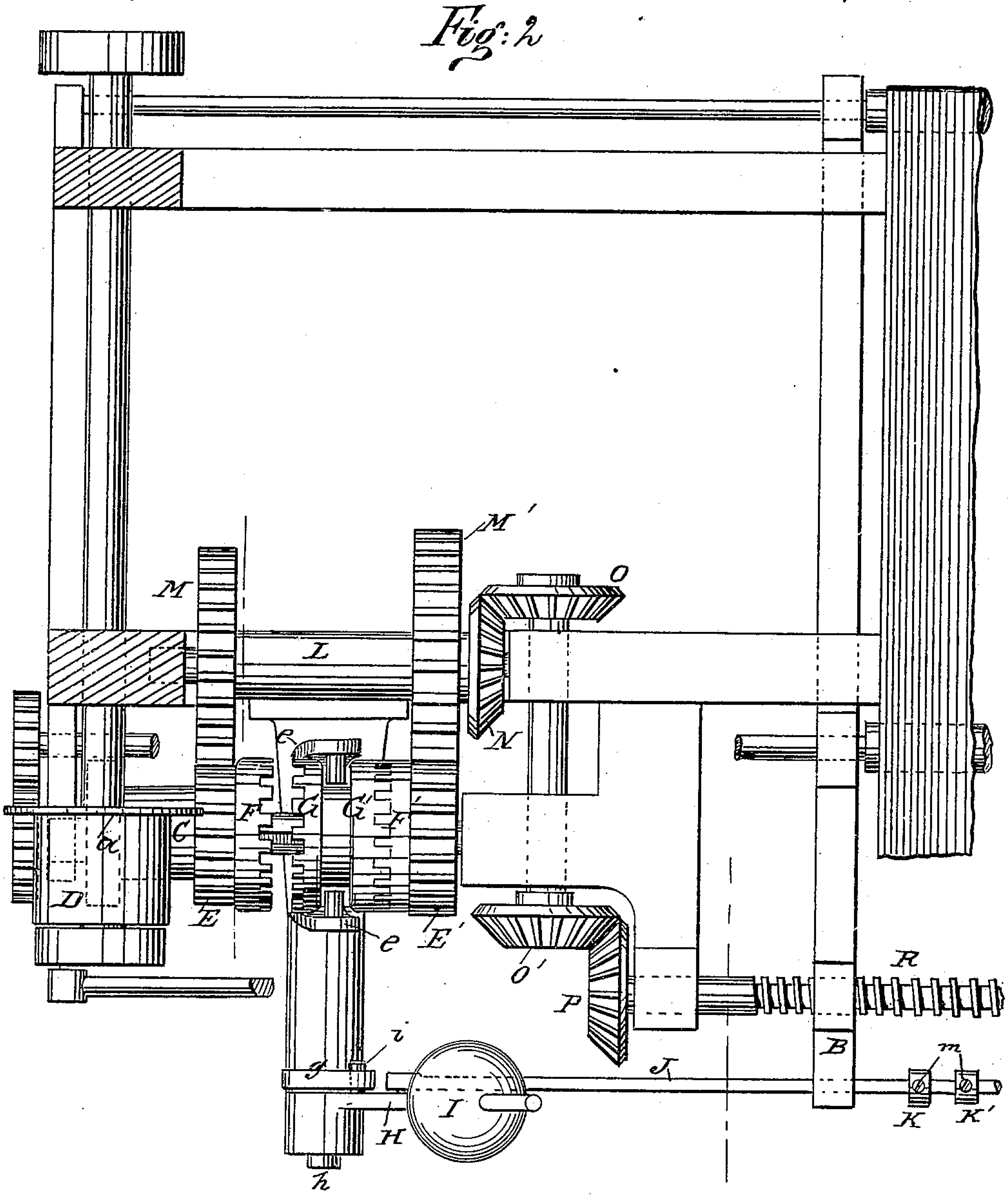
Fig: 2



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(No Model.) 3 Sheets—Sheet 3.

W. KOCH.

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Fig: 3.

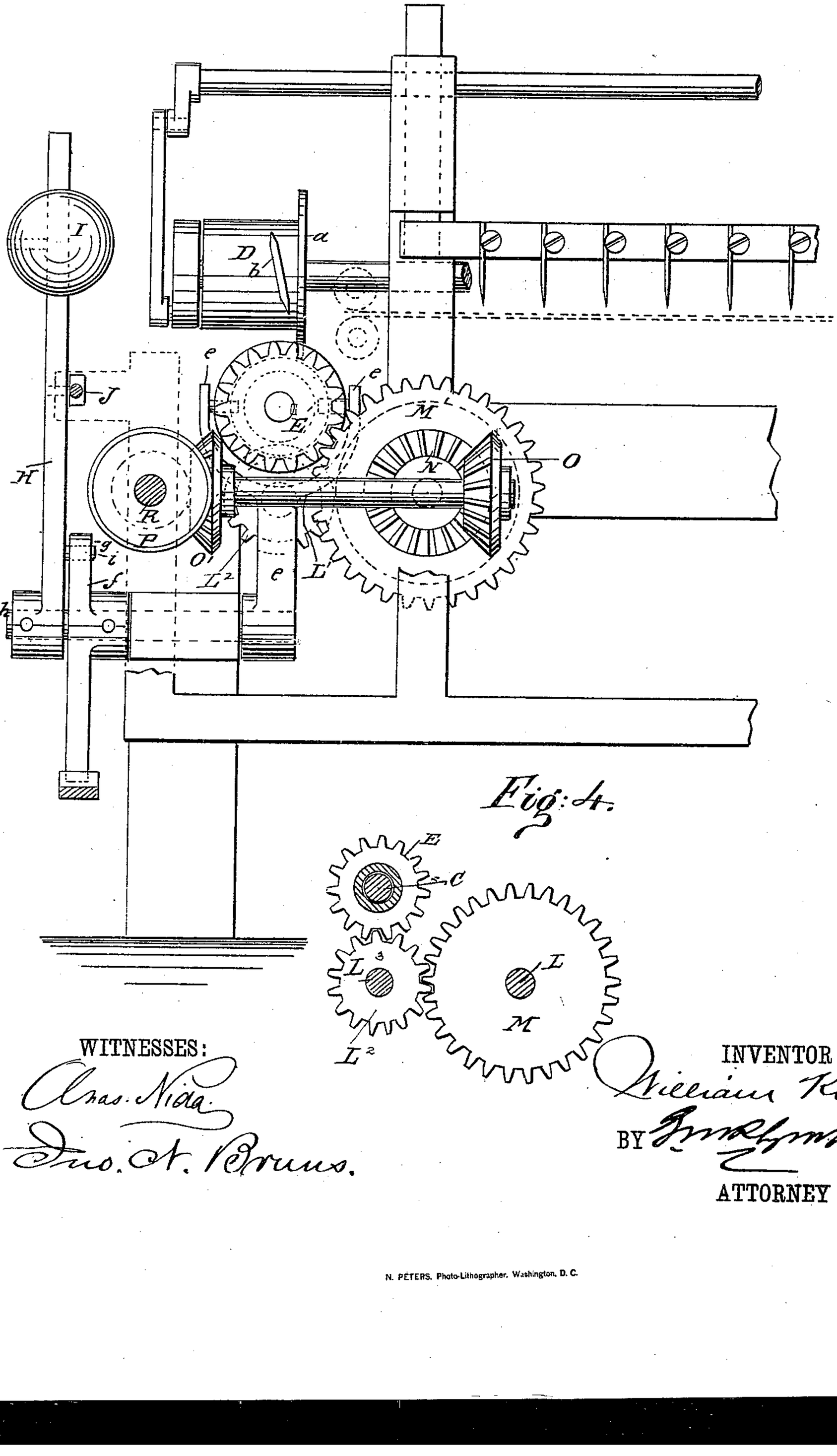

Fig: 4.

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UNITED STATES PATENT OFFICE.

WILLIAM KOCH, OF NEW YORK, N. Y.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 271,475, dated January 30, 1883.

Application filed October 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KOCH, of the city, county, and State of New York, have invented a new and useful Improvement in Quilting-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying sheets of drawings, making part of this specification.

This invention is in the nature of an improvement in quilting-machines; and the invention consists in a quilting-machine having the following elements in combination: a horizontal sliding shaft with two or more adjustable collars, two or more sliding clutches, two or more loosely-fitted clutches, and two or more loosely-fitted gear-wheels, all secured to said shaft; a clutch-fork and weighted lever connected therewith and arranged to operate the aforesaid clutches; a counter-shaft with gear-wheels fixed thereon and meshing into said loose gear-wheels, and a bevel-gear wheel on said counter-shaft meshing into an intermediate gear-wheel; and a screw-shaft with a beveled-gear wheel secured thereto, receiving motion from said intermediate gear-wheel, and a horizontally-reciprocating carriage of a quilting-machine, all constructed, arranged, and combined for the purpose hereinafter described.

In the accompanying sheets of drawings, Figure 1 represents a side elevation of my quilting-machine; Fig. 2, a plan or top view of same; Fig. 3, a front end view, and Fig. 4 a detail view of loose wheel on horizontal sliding shaft, bevel-wheel on counter-shaft, and the intermediate gear-wheel.

Similar letters of reference indicate like parts in the several figures.

This invention has for its object an improvement on the quilting-machine which is shown and described in Letters Patent which were granted to me on the 11th day of July, 1882, and numbered 260,994. In a quilting-machine so described and patented the reciprocating motion of the frame of the machine was effected by a differential screw. Such construction, however, necessitated a different length of said screw for each material change in the width of the goods that were to be quilted on that machine.

The purpose of the present invention, as before stated, is an improvement on the machine so patented to me; and it consists in providing a ready means for adjusting or regulating the travel of the sliding frame of the machine with little trouble and without removing any of its parts for that purpose. To that end I construct my machine with the ordinary frame, A, and a reciprocating carriage or frame, B.

Power being imparted to the machine by a driving-shaft, D, a drum, *a*, with a segmental worm, *b*, fixed thereon, gives, through a worm-wheel, *c*, an intermittent rotary motion to a shaft, C, which is supported in suitable bearings on the frame of the machine. Onto this shaft C are placed loosely-fitting gear-wheels E and E′. To these loose gear-wheels are fixed the backs of clutches F and F′, which are also loosely fitted on the shaft C. Also, on the shaft C, but revolving therewith by reason of a feather or spline, *b*′, and located between the clutches F and F′, are two other clutches, G and G′, with a recess, *d*, between them. Into this recess *d* is placed a clutch-fork, *e*. Fixed to the shaft *f* of this clutch-fork is a plate, *g*, having a slot, *k*, formed in it. Immediately below this plate, at *h*, is pivoted the lower end of a lever, H, having a pin, *i*, fixed to it, which pin projects through the slot *k* in the plate *g*. The upper end of this lever H is provided with a counter-weight, I, and to the lever H, about midway of its length, is pivoted a horizontal rod, J. This rod passes loosely through the sides of the reciprocating frame B, and to it are secured, by means of set-screws *m*, collars K and K′. Also, to the frame of the machine, suitably supported in bearings therein, is a counter-shaft, L, onto which counter-shaft are fixed gear-wheels M and M′. These gear-wheels mesh into the loosely-fitting gear-wheels E and E′. Also, onto the counter-shaft L, at its inner end, is secured a bevel-wheel, N. This bevel-wheel N meshes into an intermediate gear-wheel, O, on a counter-shaft, L′, which has at its other end a second intermediate gear-wheel, O′, meshing with a bevel-wheel, P, which is secured to one end of a screw-shaft, R. This screw-shaft passes through a suitable screw-nut fixed to one side of the reciprocating frame B. Between the gear-wheels E and M is arranged a gear-wheel or idler, L^2, this idler

revolving on or with a stud, L^3, having a bearing in a bracket, L^4, of the main frame, (see Fig. 1,) and by means whereof the reversal of the motion is rendered possible upon the shifting of the clutches.

Now, having described the construction of my quilting-machine, its operation is substantially as follows: The driving-shaft D, by any suitable power, is revolved, and as it revolves the drum *a* and the segmental worm *b* turn with it; and since this segmental worm is not continuous around the drum *a*, it is clear that the worm-wheel *c*, which it actuates, revolves only when this segment is engaged with it, producing thereby an intermittent revolving motion to the shaft C. If, when the shaft is in this way turned, one of the loose clutches—F, for instance — is interlocked with one of the clutches G, the clutch F is then enabled to turn with the shaft C, as does also the gear-wheel E, causing them both to revolve, and as this gear-wheel E is meshed through the intermediate or idler L^2 with the gear-wheel M, that gear-wheel is likewise revolved, giving motion to the counter-shaft L and the bevel-wheel N, fixed thereon, imparting thereby motion to the intermediate wheel, O, which motion is conveyed to the bevel-wheel P through shaft L′ by the wheel O′, thereby operating the screw-shaft R, causing, as it turns, the reciprocating frame B to advance in one direction until one of the sides of this frame is brought in contact with the collar K on the rod J, when the continued action of the shaft R causes the side of the reciprocating frame to thrust inward the rod J, which in turn throws the lever H inward, bringing the pin *i* in contact with the inner end of the slot *k* in the plate *g*, causing thereby the clutch-fork *e* to slide the clutch G′ until it is interlocked with the clutch F′, making fast thereby the gear-wheel E′, and enabling this gear-wheel to revolve with the shaft C and impart motion to the gear-wheel M′, and thereby, through the intermediate wheels, O and O′, and the absence of an idler between the gear-wheels E′ and M′, reversing the direction of revolution of the bevel-wheel P and screw-shaft R, causing the reciprocating frame B to reverse its movement or travel in a reverse direction until the collar K′ is brought in contact with the side of the frame B, when the rod J is forced outward and the lever H thrown over, causing the clutch G to again interlock with the loose clutch F, in the manner hereinbefore described. By this means the frame B is caused to have an automatic reciprocating motion. As is obvious, when either one of the gear-wheels E or E′ is caused to revolve with the shaft C by reason of their respective clutches interlocking in the manner described, the other of said gear-wheels is idle on the shaft C until it in turn is caused to revolve with that shaft by the interlocking of its clutch. Now, in order to adjust the throw or extent of the sliding of the frame B, so as to adapt it to any width of goods that may be quilted upon the machine, it is simply necessary to slacken the set-screws *m* and slip the collars K and K′ to such a position on the rod J as will cause the sides of the reciprocating frame B to come in contact with these collars and regulate the sliding of the frame B, as hereinbefore stated, to correspond with the width of the goods to be quilted. By this adjustment of these collars this regulating or limiting the extent of the sliding motion of the reciprocating frame in either direction is easily accomplished. To facilitate the throwing over of the lever H, the weight I is placed thereon, so that by its gravity the engagement of the clutches with each other is more positively insured. The locking of the clutches when they are brought together is effected by forcing alternately the notches *s* in the lower end of the arm T of the clutch-fork *e* to engage with a spring-catch, S.

Instead of having one screw-shaft R, two of such shafts may be employed—one at each side of the frame B. This construction will tend to produce a steadier motion than when one screw-shaft is only employed.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A quilting-machine having the following elements in combination: an intermittent revolving shaft, C, with loose clutches F and F′, loose gear-wheels E and E′, sliding clutches G and G′, placed thereon, a counter-shaft, L, with gear-wheels M and M′, and a bevel-wheel, N, fixed thereon, idler-pinion L^2, intermediate gear-wheels, O and O′, bevel-wheel P, screw-shaft R, sliding carriage B, sliding rod J, with adjustable collars K and K′ secured thereon, a weighted pivoted lever, H, and a clutch-fork, *e*, as and for the purpose described.

2. In a quilting-machine, the reciprocating frame thereof, in combination with a sliding rod having adjustable collars thereon, whereby the sliding of said reciprocating frame may be regulated, as and for the purpose described.

3. In a quilting-machine, the combination of two or more loose clutches and gear-wheels, two or more sliding clutches, a clutch-fork, and weighted lever with a screw-shaft, a reciprocating frame, and connecting-gearing, as described.

4. In a quilting-machine, the combination of two or more loosely-turning gear-wheels with two or more gear-wheels fixed to a counter-shaft having a bevel-gear wheel on the end thereof, an intermediate gear-wheel, a bevel-wheel fixed to a screw-shaft, and a reciprocating frame, substantially as shown and described.

5. In a quilting-machine, the combination of a lever, H, pin *i*, slot *k*, plate *g*, notches *s*, and spring-catch S, as and for the purpose described.

6. In a quilting-machine, the combination of an operating-worm, *b*, a shaft, C, having loosely-turning clutches F and F′, loosely-turn-

ing gear-wheels E and E′, and sliding clutches G and G′, placed thereon, with a screw-shaft, a reciprocating frame, and connecting-gearing, as and for the purpose described.

7. In a quilting-machine, the combination of a sliding frame with a sliding rod having adjustable collars fixed thereon, with one or more revolving screw-shafts, substantially as is shown and described.

WILLIAM KOCH.

Witnesses:
G. M. PLYMPTON,
JNO. N. BRUNS.