

(No Model.)

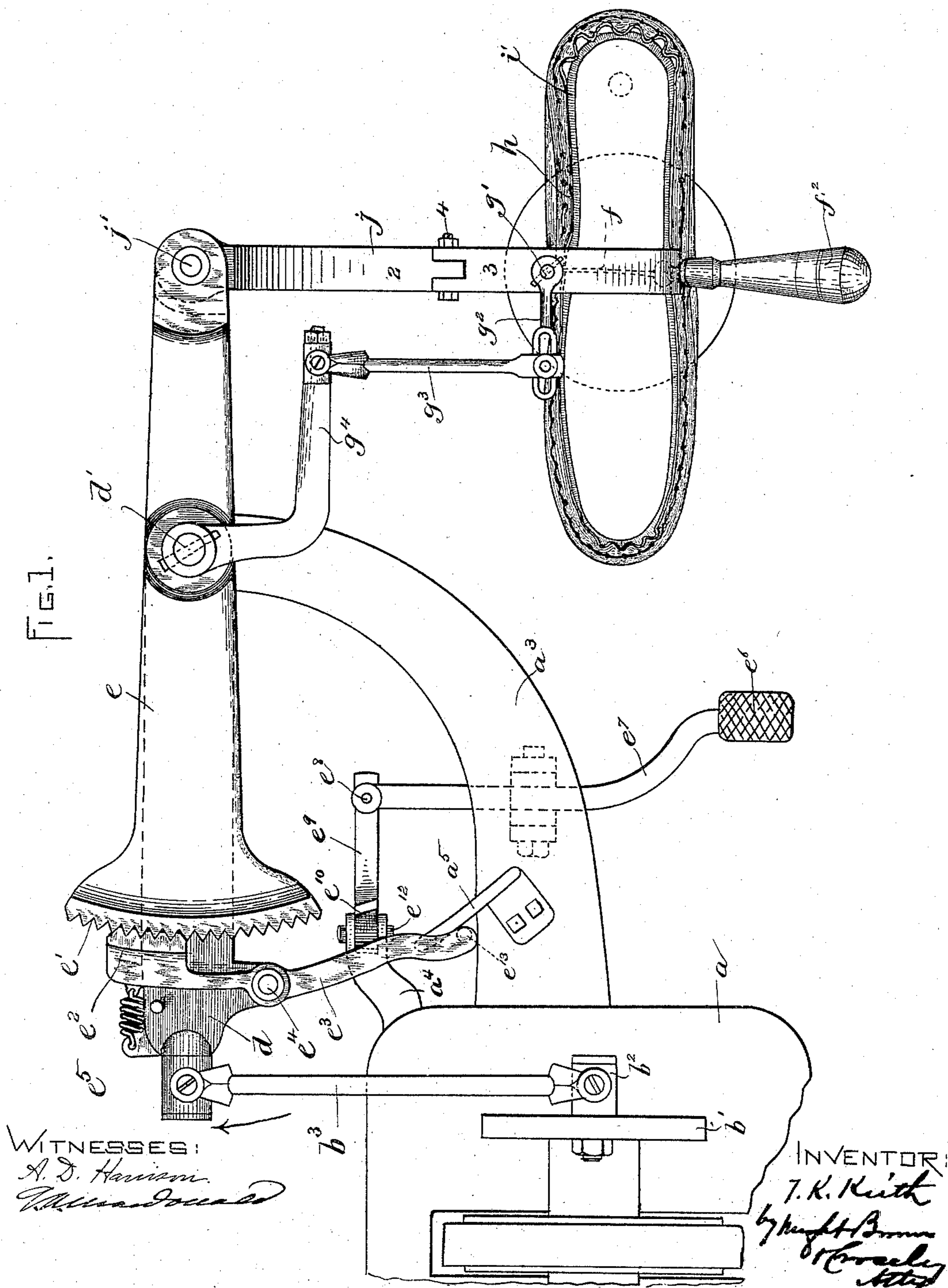
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T. K. KEITH.

SEWING MACHINE FOR LASTING BOOTS OR SHOES.

No. 488,279.

Patented Dec. 20, 1892.



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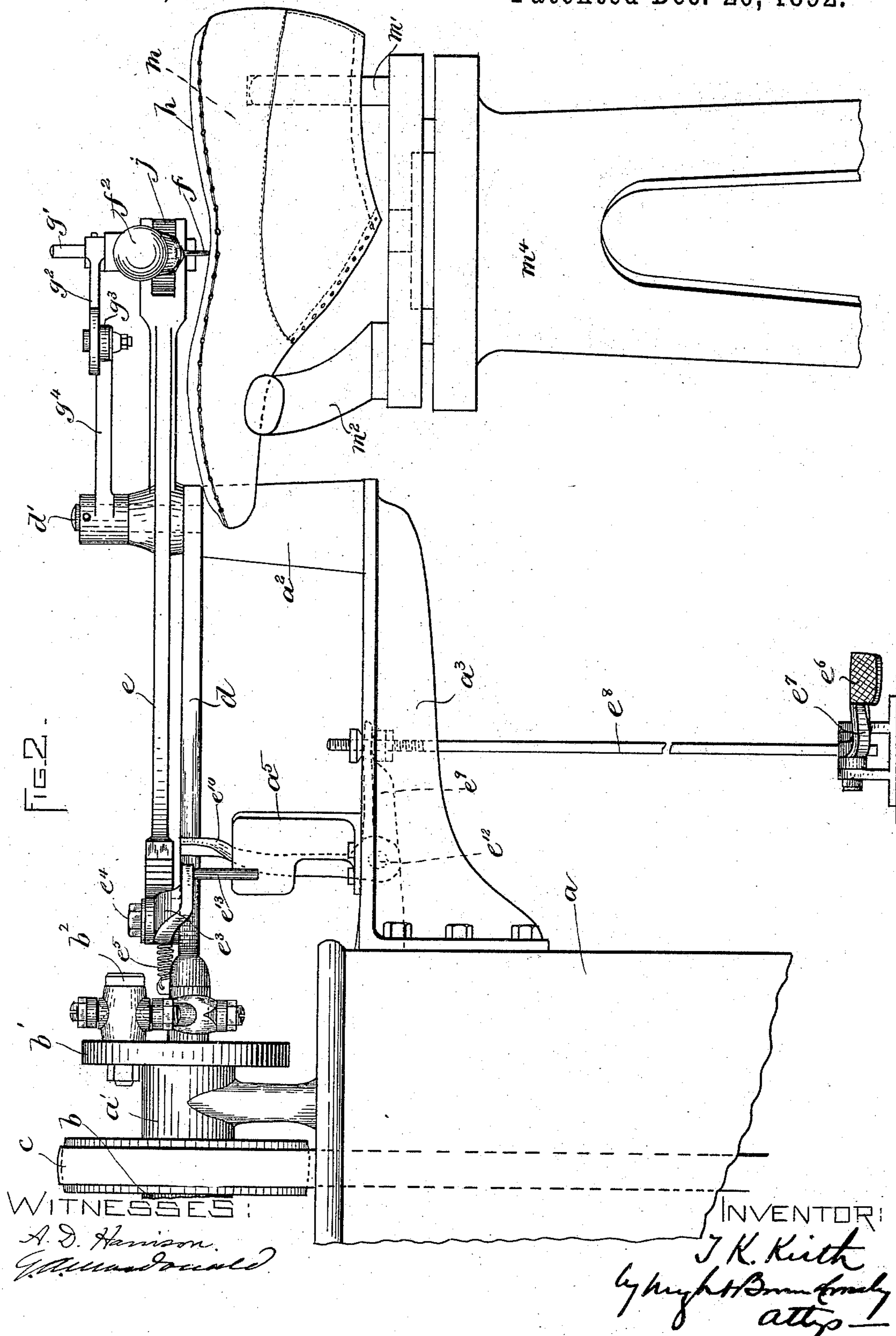
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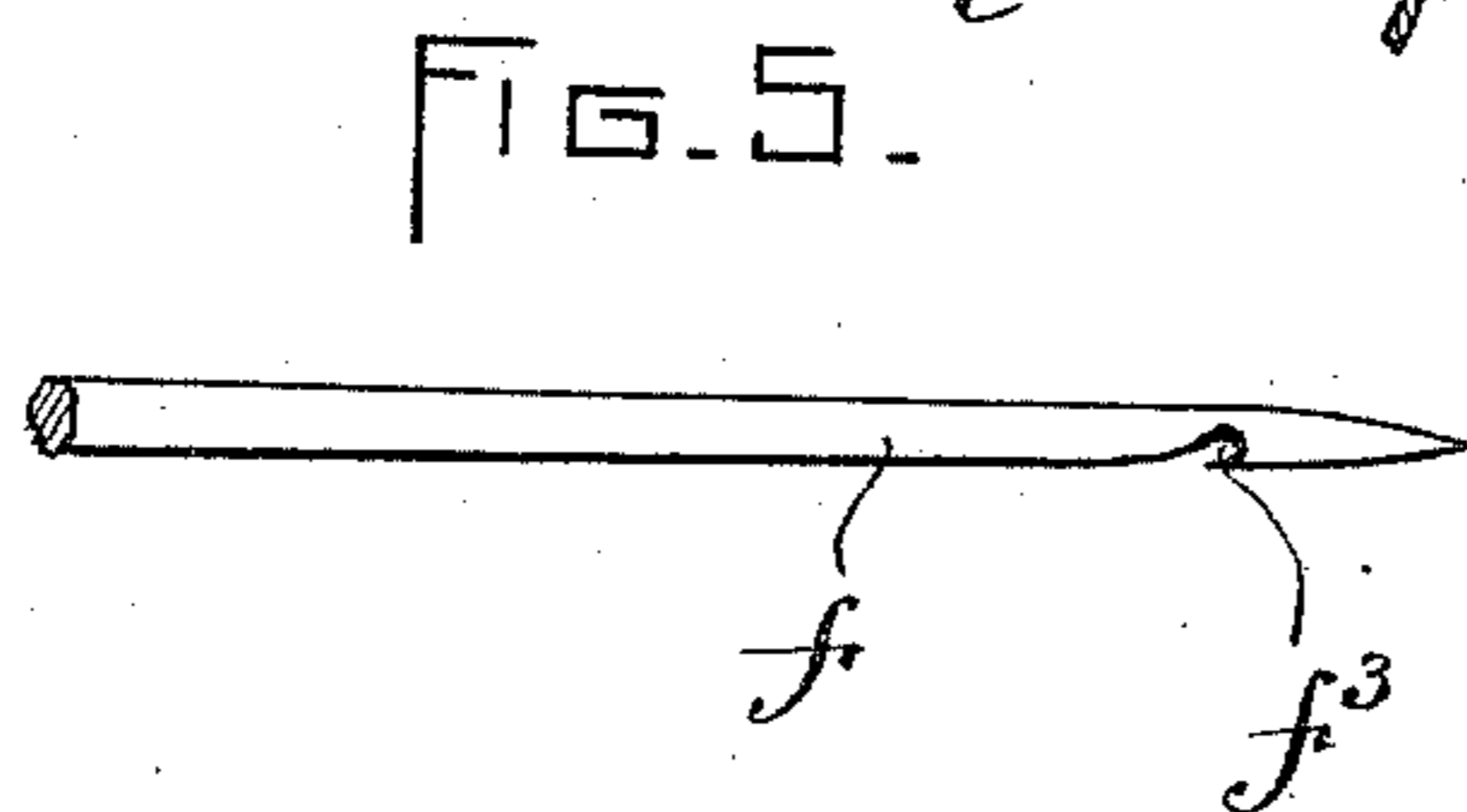
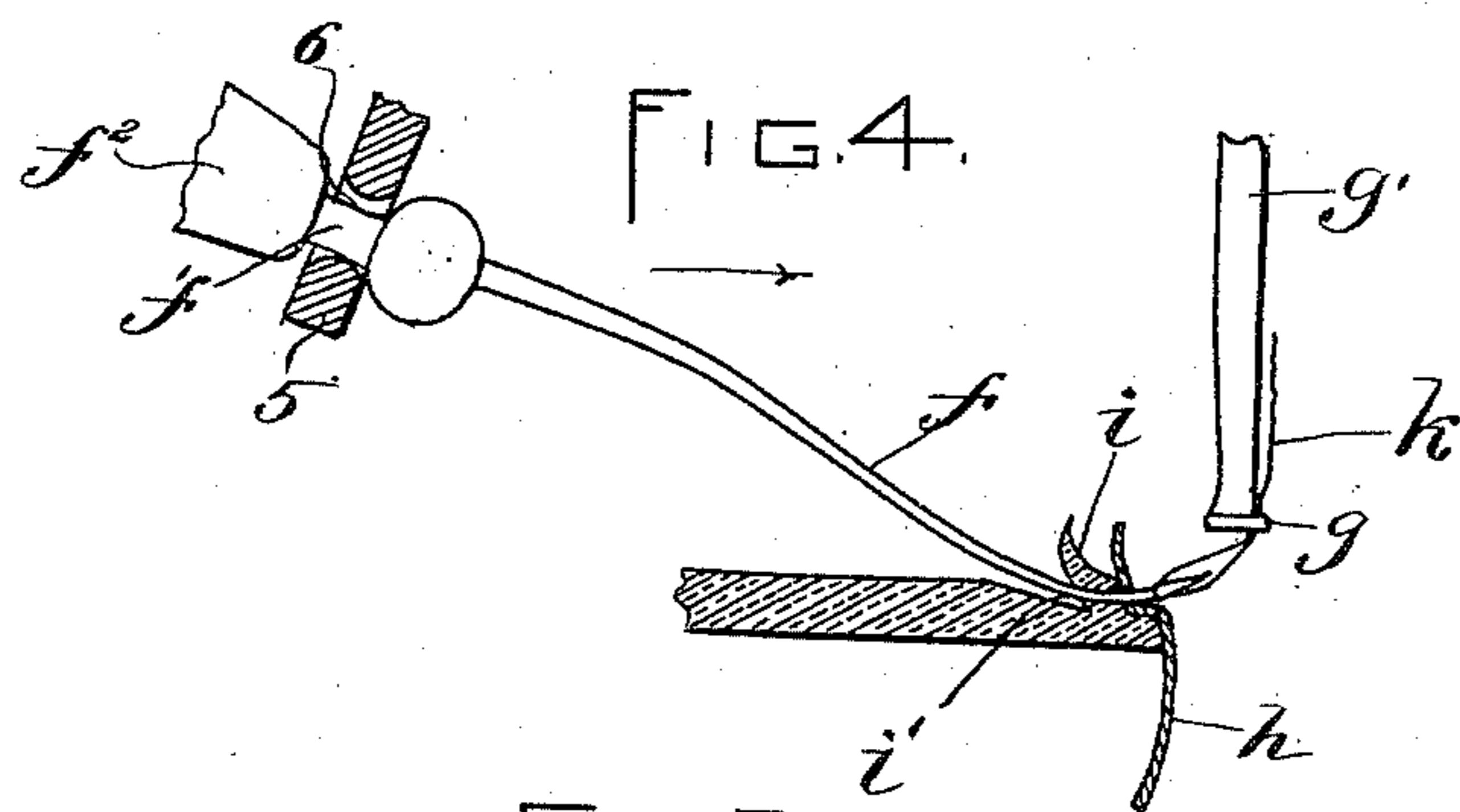
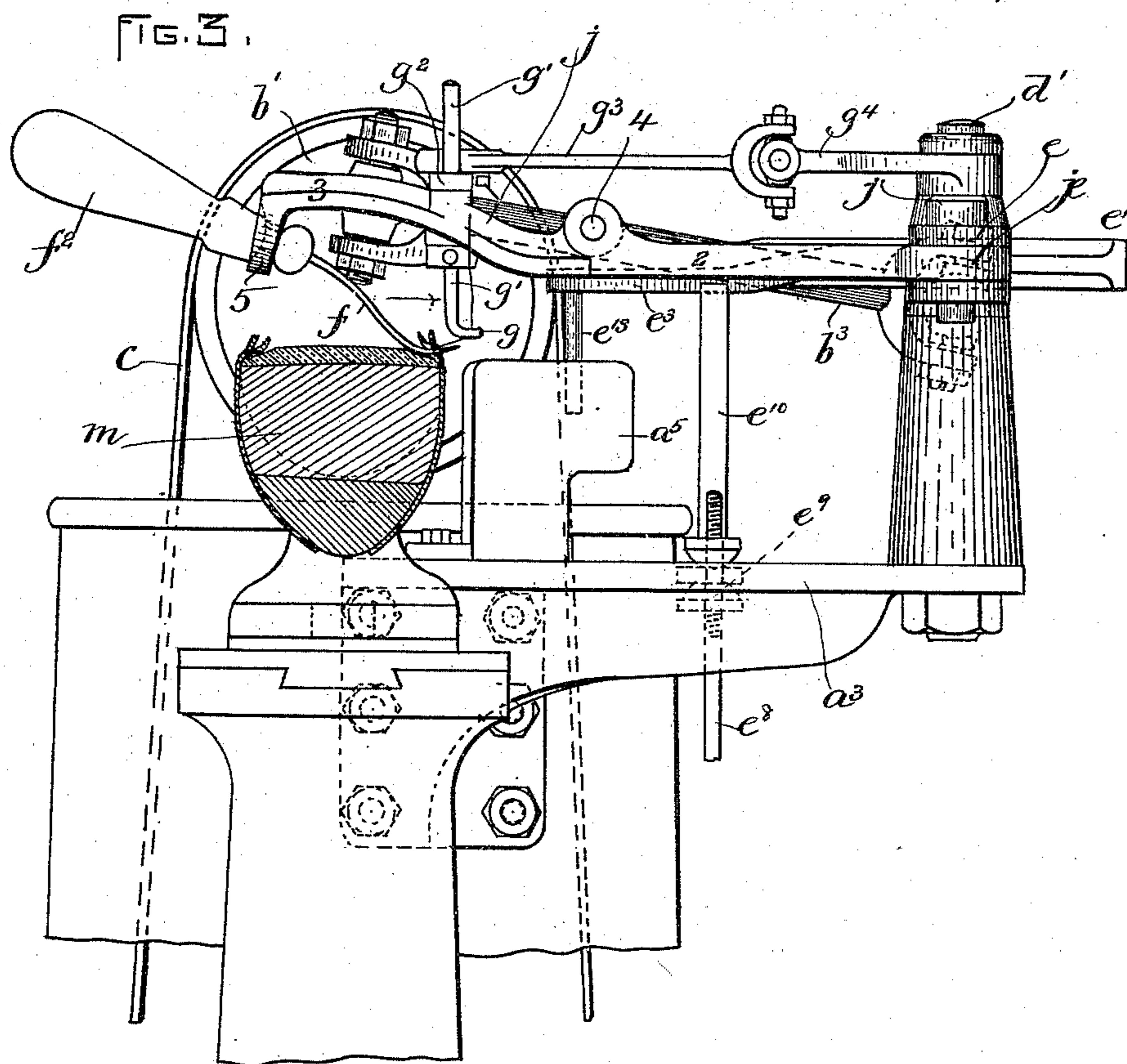
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No. 488,279.

Patented Dec. 20, 1892.



WITNESSES:

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INVENTOR:

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Atty's.

UNITED STATES PATENT OFFICE.

THOMAS K. KEITH, OF BOSTON, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO CHARLES F. BROWN, TRUSTEE, OF READING, MASSACHUSETTS.

SEWING-MACHINE FOR LASTING BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 488,279, dated December 20, 1892.

Application filed February 16, 1892. Serial No. 421,695. (No model.)

To all whom it may concern:

Be it known that I, THOMAS K. KEITH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines for Lasting Boots or Shoes, of which the following is a specification.

This invention has for its object to provide a simple machine whereby an operator may stitch the upper of a boot or shoe to the lip or channel of the inner sole by the use of one hand, the other hand being free to operate the lasting pinchers in stretching and drawing the upper over upon the bottom of the last.

The invention consists in the improved appliances which I will now proceed to describe and claim.

Of the accompanying drawings, forming part of this specification: Figure 1 represents a top view of a lasting machine provided with my improvements. Fig. 2 represents a side elevation of the same. Fig. 3 represents an end elevation showing the last and the upper and inner sole thereon in section. Fig. 4 represents a side view of the lasting needle and of the looper which supplies it with thread, and a sectional view of a part of the needle carrier and of a part of the inner sole and upper. Fig. 5 represents a top view of the needle.

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

In the drawings: *a* represents a supporting-frame, upon which is a bearing *a'*, in which is journaled a shaft *b*. Said shaft is rotated by power applied in any suitable way, such as by a belt *c*, running from a driving-shaft (not shown). The shaft *b* is provided with a disk *b'*, having a wrist-pin *b²*, to which is connected a pitman *b³*, which communicates an oscillating motion to a lever *d*. Said lever is mounted to swing horizontally upon a stud or pivot *d'* affixed to a post or standard *a²* affixed to a bracket *a³* on the supporting-frame.

e represents a lever, which is mounted to oscillate upon a pivot *d'* above the lever *d* and substantially parallel therewith. Means are provided for operatively connecting or coupling the lever *d* to the lever *e*, so that the two levers may oscillate together, and for disconnecting said levers so that the continuous

oscillation of the lever *d* will not oscillate the lever *e*, the said lever *e* being connected as hereinafter described with a hand-controlled stitching needle *f* and with a looper *g*, so that, when the lever *e* is oscillated, the needle *f* and looper *g* are caused to co-operate in forming stitches to connect the upper *h* with the lip *i* of the inner sole of the boot or shoe, as presently described.

j represents a jointed arm, which is pivotally connected at *j'* to the lever *e*, and is composed of two sections, 2 and 3, which are connected at 4 by a hinged joint, which permits the section 3 to swing vertically. The outer end of the section 3 is provided with a downwardly projecting lip or flange 5, having a socket 6 (Fig. 4), that receives the contracted or neck portion *f'* of a handle *f²* to which the needle *f* is attached. The arm *j* is given a longitudinal reciprocating motion by the oscillating movement of the lever *e*, and is thus caused to move the needle *f* longitudinally. The neck *f'* has sufficient play in the socket 6 to enable the operator, by grasping the handle *f²*, to direct the course of the needle to a considerable extent. The operator is therefore enabled to cause the needle, which is curved, as shown in Figs. 3 and 4, to enter the channel *i'* of the inner sole and pass through the between-substance of said sole and the upper *h*, as indicated in Fig. 4, while the needle is being moved by the arm *j* in the direction indicated by the arrows in Figs. 3 and 4. The needle is provided with a hook or barb *f³*, which is located at one side of the needle, as shown in Fig. 5. The looper *g*, which guides the needle-thread *k*, is caused to oscillate by means hereinafter described, in such manner as to engage the thread with the barb of the needle when the needle is projected through the work, as shown in Fig. 4, so that when the needle is reciprocated or moved in the direction opposite to that indicated by the arrows in Figs. 3 and 4, the barb will draw a loop of thread through the upper and between-substance, the last-described movement being effected by the backward movement of the arm *j*, as will be readily understood.

From the foregoing it will be seen that the power which is required to carry the needle

f back and forth through the work is furnished by the machine through the lever *e* and arm *j*. The hinged or jointed construction of the arm *j*, and its pivotal connection to the lever *e*, as well as the loose connection between the handle *f*² and the arm *j*, enable the operator to guide the needle in these directions, and to raise and lower it as may be required by the varying curvatures of the bottom of the boot or shoe. When the needle has been retracted and has drawn a loop through the upper and between-substance, the operator casts off the loop and moves the needle laterally to cause it to re-enter the between-substance at a suitable point to give the stitch the desired length, the movements of the needle required in performing these operations being permitted by the described freedom of movement which the needle possesses, the whole arrangement being such that the operator can form a series of chain stitches similar to those usually made by a machine. The upper and inner sole are supported during the operation upon a last *m*, which is mounted upon a jack comprising a suitable spindle *m*¹, toe-rest *m*² and base-plate *m*³, the latter being pivotally connected to a supporting standard *m*⁴, so that the last can be turned horizontally to present either side or end to the point where the stitches are formed.

As already stated, means are employed for connecting the lever *e* with and disconnecting it from the continuously oscillating lever *d*. Said means are preferably organized so that the levers *e* and *d* may be connected by an act of the operator until the needle has been given one forward and one backward movement, and then automatically disconnected, so that the needle will not again move forward to make another stitch until the operator desires. To this end, I provide the lever *e* with a segmental end, having clutch teeth *e*¹, with which similarly formed teeth *e*² on a lever *e*³ are adapted to engage. The lever *e*³ is pivoted at *e*⁴ to the lever *d*, and continuously oscillates with the latter.

*e*⁵ represents a spring, which is arranged to normally separate the teeth *e*² from the teeth *e*¹, and thus make the connection between the levers *d* and *e* normally inoperative.

*e*⁶ represents a treadle, attached to a lever *e*⁷, and arranged to be depressed by the operator's foot. The opposite end of the lever *e*⁷ is connected by a rod *e*⁸ with a bell-crank lever, composed of two arms *e*⁹ *e*¹⁰, pivoted at *e*¹² to a fixed ear or bracket *a*⁴ on the supporting-frame *a*. The arrangement of the lever *e*⁷, rod *e*⁸ and lever *e*⁹ *e*¹⁰ is such that, when the treadle *e*⁶ is depressed, the arm *e*¹⁰ is forced against the lever *e*³, and caused to throw the teeth *e*² of said lever into engagement with the teeth *e*¹ of the lever *e*, thus establishing a connection between the levers *d* and *e* and causing the lever *e* to oscillate with the lever *d*. The lever *e*³ is provided with a downwardly projecting stud *e*¹³, which,

when the lever *e*³ is connected with the lever *e*, as shown in Fig. 1, bears upon one side of a fixed segmental flange *a*⁵, affixed to the bracket *a*³, said flange being in the arc of a circle which is concentric with the axis or pivot *d*¹, so that the lever *e*³ is prevented by said flange from being moved by the spring *e*⁵ to separate the teeth *e*² from the teeth *e*¹ so long as the stud *e*¹³ bears upon the flange. When the movement of the lever *d* in the direction indicated by the arrow in Fig. 1 carries the stud *e*¹³ away from the flange *a*⁵, the lever *e*³, being no longer held by said flange, is moved by the spring *e*⁵ and its teeth *e*² are thus separated from the teeth *e*¹ of the lever *e*. It will be seen, therefore, that, if the operator removes his foot from the treadle *e*⁶, the needle will stop at the end of its backward movement, or after it has drawn a loop through the upper and the between-substance, and will not be moved again until the operator depresses the treadle; so that, if the operator wishes time after the formation of each stitch to stretch and adjust the upper by means of the pinchers which he holds in one hand,—the needle handle being held in the other hand,—he can cause the needle to stop at the conclusion of each stitch. If he desires the needle to operate without stopping after each stitch, he can secure this result by keeping the treadle *e*⁶ depressed.

The lever *g* is an arm or finger, having a thread-guiding eye, and formed upon a vertical shaft *g*¹, which is journaled in a bearing in the arm *j*. The upper end of the lever-shaft *g*¹ is provided with an arm *g*², which is connected by a rod *g*³ with an arm *g*⁴ affixed to the lever *e*, the arrangement of said parts being such that, when the lever *e* is oscillated, it will, through the arm *g*⁴, rod *g*³, arm *g*² and shaft *g*¹, impart an oscillating movement to the lever *g*, said movement being timed to cause the lever *g* to throw the thread into engagement with the barb of the needle when the latter is projected, as shown in Fig. 4.

It will be seen that the described machine enables the operator to control the movements of the needle without exerting any power in impelling or moving it, and that he can readily manipulate the needle with one hand so as to form chain stitches of any desired length, uniting the upper to the inner sole.

The arm *j*, pivotally connected with the lever *e*, is permitted by its pivotal connection to swing horizontally, and its needle-carrying end is permitted by the hinge 4 to swing vertically, hence said arm is a needle-carrier adapted to be reciprocated, and having movements in two directions in addition to its reciprocating movements. This freedom of movement of the needle-carrier and the loose connection of the needle handle to the carrier enable the operator to manipulate or guide the needle at will.

I am the first to combine a reciprocating car-

rier driven by power, with a needle having a handle and loosely connected with the carrier so that the operator, grasping the handle, can guide or control the movements imparted to the needle by the carrier. I do not limit myself, therefore, to the described construction of the carrier, nor to the means shown for operating the same and for connecting it loosely with the needle, as all these may be variously modified without departing from the spirit of my invention.

The lever *d* constitutes a continuously operating driver or motor for the needle-carrier, and the lever *e* and the drivers for disconnecting it from the lever *d* constitute normally operative connections between the needle-carrier and the continuously operating driver. The treadle *e*⁶ and the devices moved by it to connect the lever *e* with the driver *d* constitute a coupling device controlled by the operator. Believing this combination of elements to be new, I do not limit myself to the specific construction and arrangement here described.

I claim:

1. A sewing machine, comprising in its construction a barbed needle having a handle, and a reciprocating carrier with which said needle is loosely connected, whereby the operator is enabled to guide the movements of the needle caused by said carrier, as set forth.

2. A sewing machine, comprising in its construction a reciprocating carrier adapted to move freely in two directions in addition to its reciprocating movement, and a barbed needle having a handle connected with said carrier, the described movability of the carrier

enabling the needle to conform to the curvatures of the sole, as set forth.

3. In a sewing machine, a carrier composed of a jointed arm and an oscillatory lever to which said arm is pivoted, the outer end of said arm being adapted to swing laterally in two directions independently of the lever, combined with a barbed needle having a handle loosely connected with the outer end of said arm, and adapted to be guided by the operator as set forth.

4. In a sewing machine, the combination of a barbed needle having a handle, a reciprocating carrier with which said handle is loosely connected, a looper arranged to engage thread with the barb of the needle, and mechanism for operating the said carrier and looper, as set forth.

5. In a sewing machine, the combination of a barbed needle having a handle, a reciprocating carrier with which said handle is loosely connected, a looper arranged to engage thread with the barb of the needle, a continuously operating driver, normally inoperative connections between said driver and carrier, and a coupling device controlled by the operator whereby the driver and carrier may be operatively connected, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 10th day of February, A. D. 1892.

THOMAS K. KEITH.

Witnesses:

C. F. BROWN,
A. D. HARRISON.