

No. 666,416.

Patented Jan. 22, 1901.

T. GARE.
FAIR STITCH SEWING MACHINE.

(Application filed Apr. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

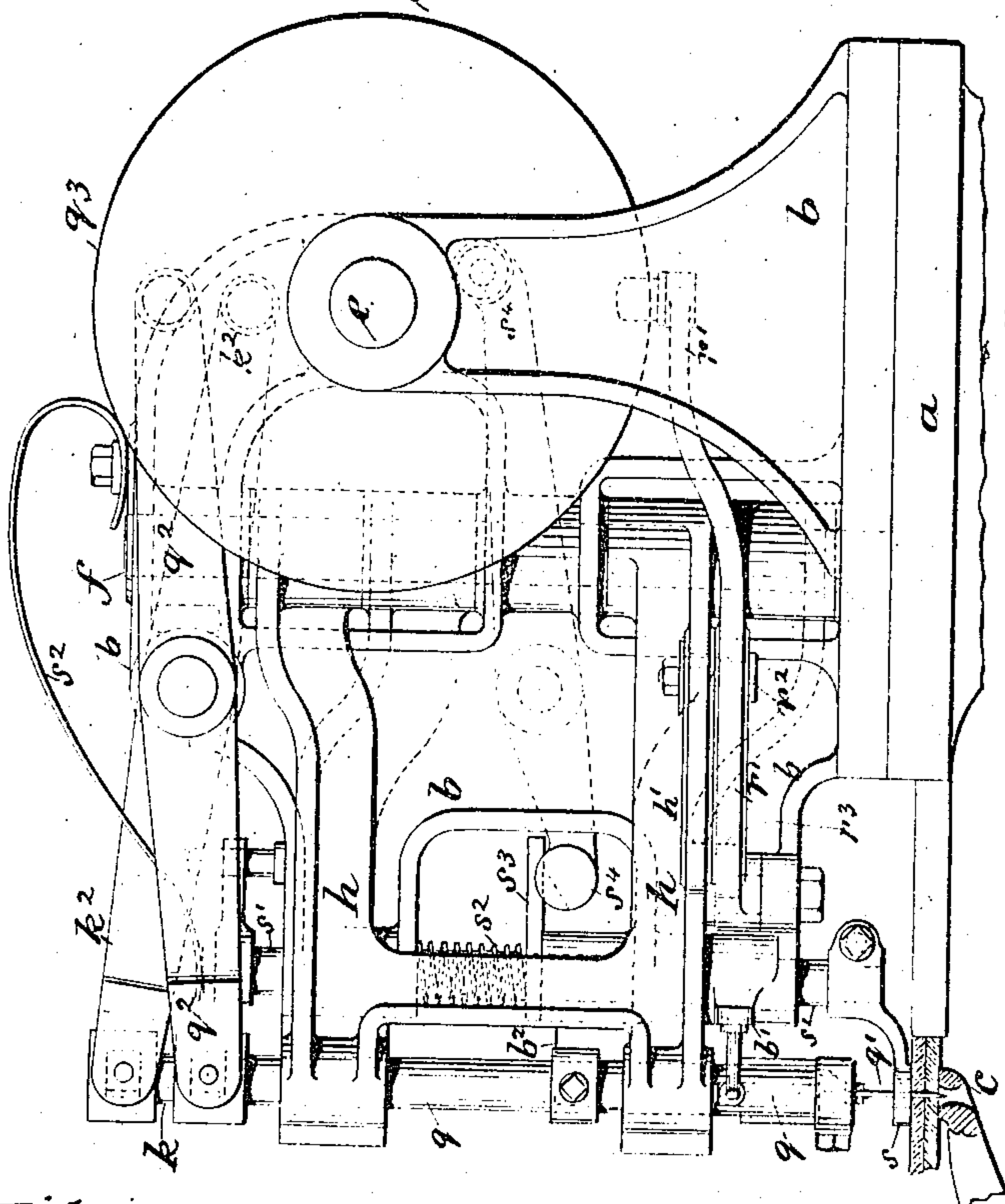


Fig. 2.

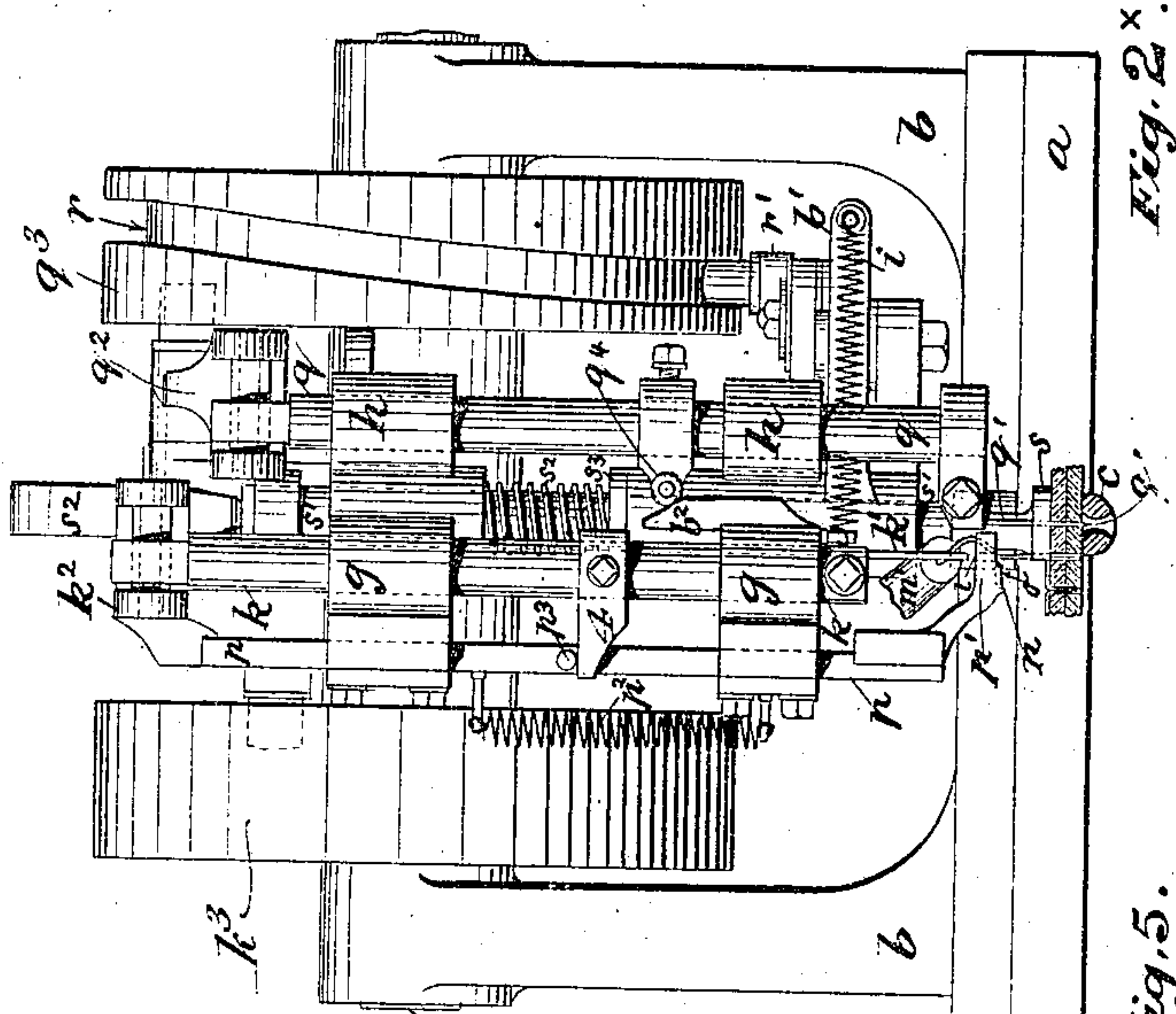


Fig. 2x.

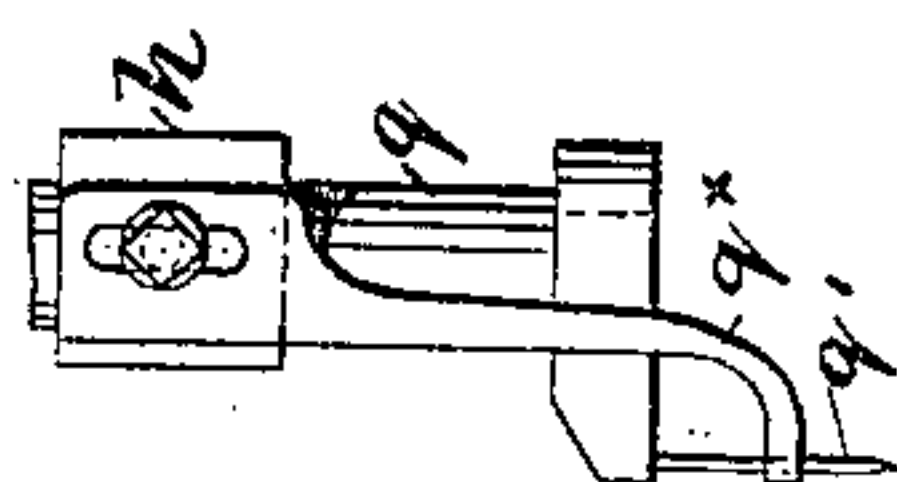


Fig. 3.

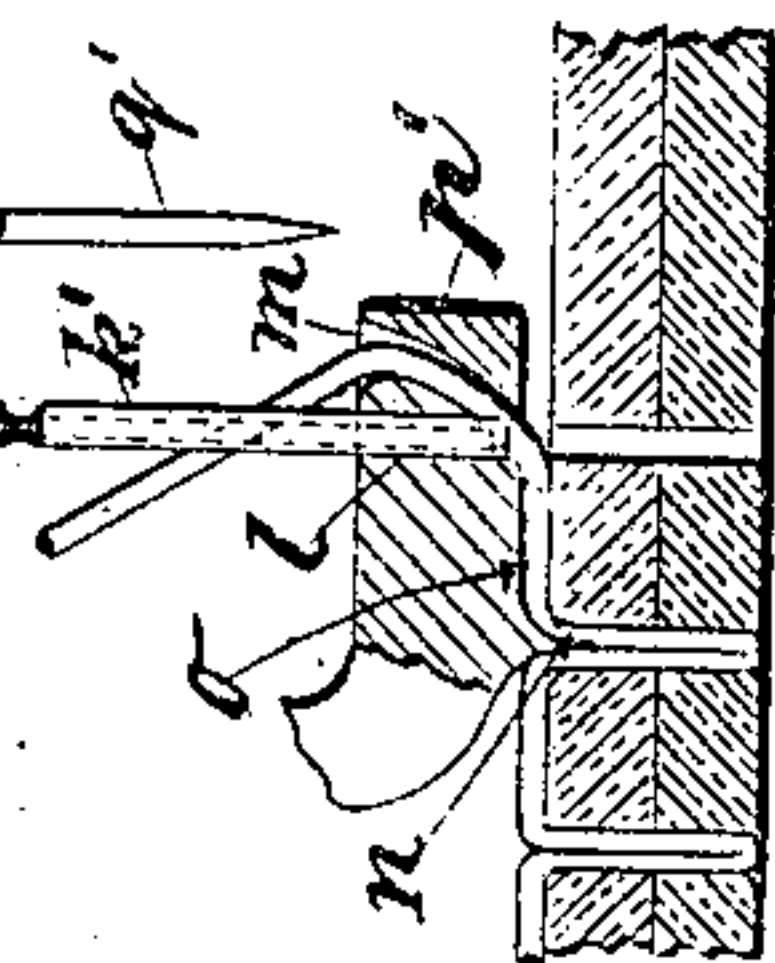


Fig. 4.

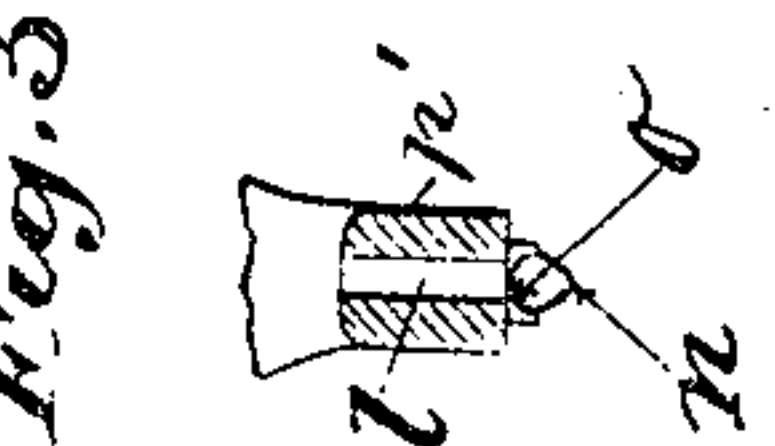


Fig. 5.

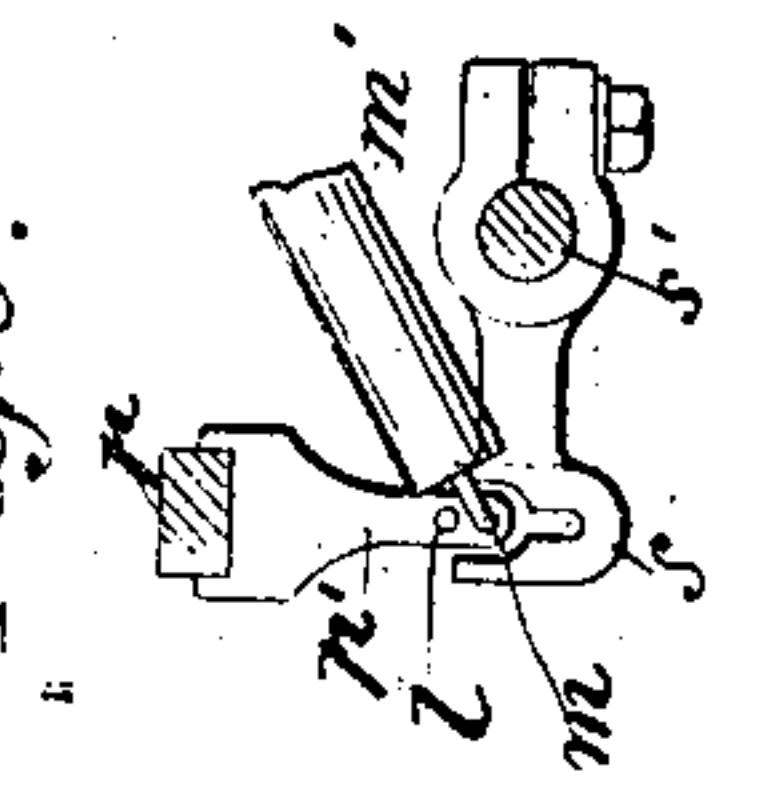


Fig. 6.

Witnesses:
C. R. Bolton
Edmund

Inventor:
Thomas Gare
By [Signature]
His Attorneys

No. 666,416.

Patented Jan. 22, 1901.

T. GARE.
FAIR STITCH SEWING MACHINE.

(Application filed Apr. 29, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 8.

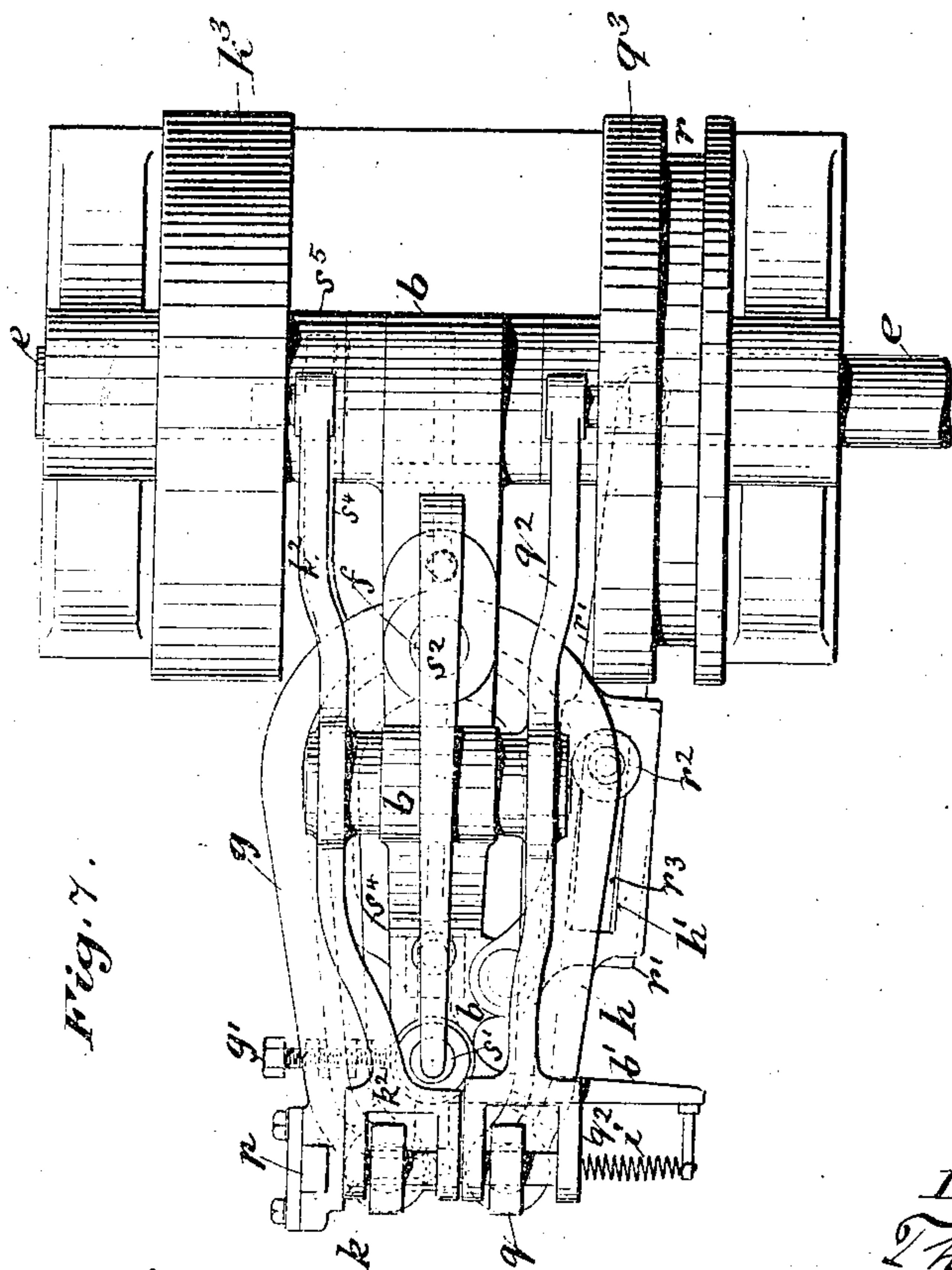
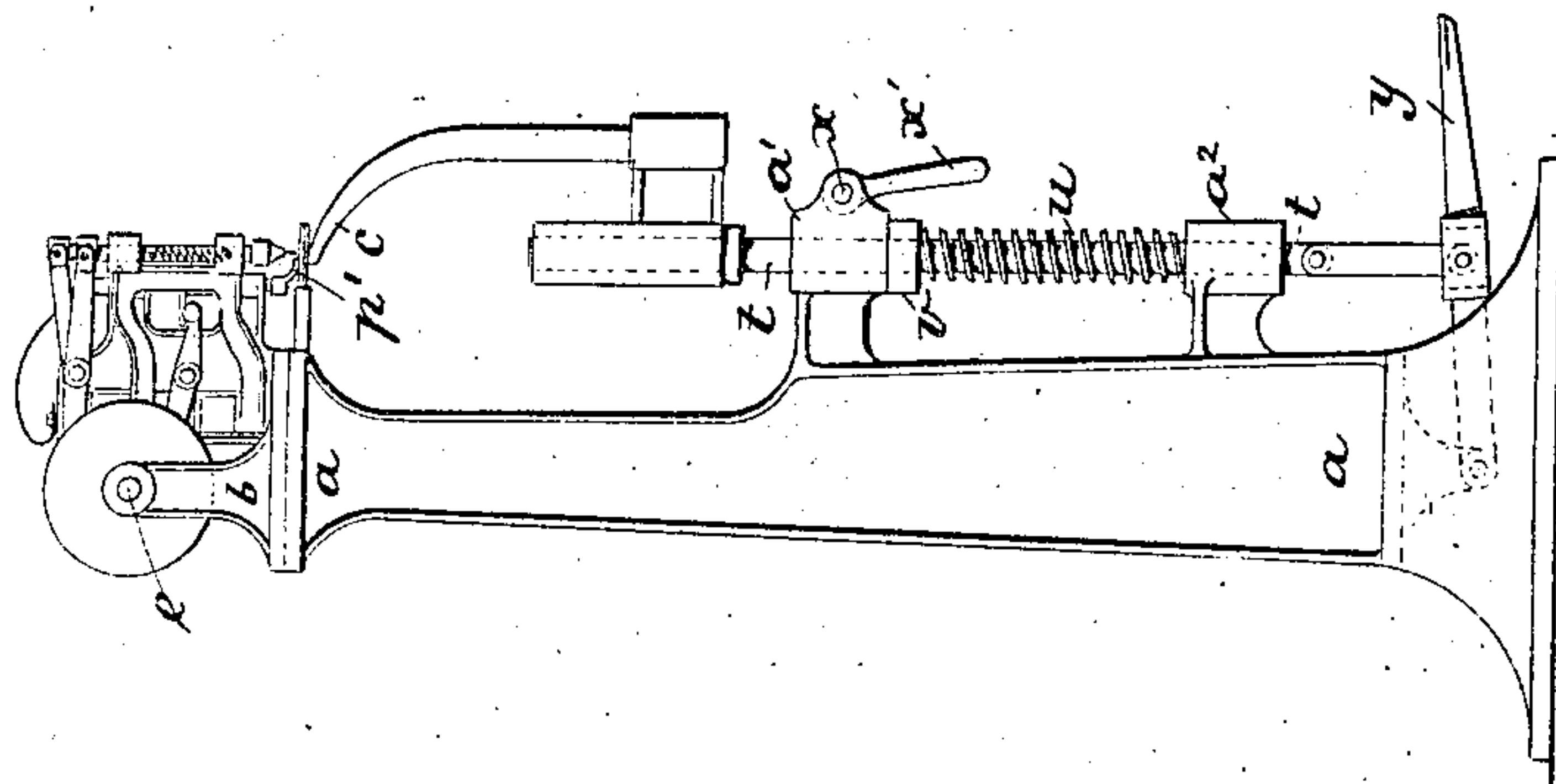


Fig. 7.

Witnesses:

E. R. Bolton

Oliver

Inventor:
Thomas Gare

By *Guinness*

his Attorneys

UNITED STATES PATENT OFFICE.

THOMAS GARE, OF STOCKPORT, ENGLAND.

FAIR-STITCH SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 666,416, dated January 22, 1901.

Application filed April 29, 1898. Serial No. 679,207. (No model.)

To all whom it may concern:

Be it known that I, THOMAS GARE, a subject of the Queen of Great Britain, and a resident of Stockport, in the county of Chester, Kingdom of Great Britain, have invented a new and useful Machine for Stitching Together Pieces of Leather and other Thick Material, (for which I have obtained provisional protection in Great Britain, No. 22,991, bearing date October 7, 1897,) of which the following is a specification.

My invention relates to improvements in that type of machines for stitching together pieces of leather and other thick material in staple fashion in which a vertically-reciprocated awl operates in conjunction with a needle, the objects being to simplify and render such machines more reliable in action and applicable for uniting pieces of material irregular in thickness. I attain these objects by the mechanism illustrated in the accompanying two sheets of drawings, in which—

Figure 1, Sheet I, is a side view, and Fig. 2 a front view, of the head of the machine. Fig. 2^x is a front view of a detail. Figs. 3 and 4 are respectively a cross-section and a longitudinal section, on an enlarged scale, of the work-pricker, thread-retainer, and needle-throat and thread-guide combined, the latter figure showing it in operation upon the work. Fig. 5 is a side view of the needle; and Fig. 6, a plan of the work-pricker, thread-retainer, needle-throat and thread-guide, and detached presser-foot. Fig. 7, Sheet II, is a plan of the head of my improved machine; and Fig. 8, a side view, on a reduced scale, of the whole machine.

Similar letters refer to similar parts throughout the several views.

Referring to Figs. 1, 2, 3, and 4, *a* is the standard, *b* the head carried thereby, and *c* the horn or work-support. In the head *b* is mounted the driving-shaft *e* and in front thereof a vertical shaft *f*, on which are adapted to move intermittently in a horizontal plane two frames *g* and *h*, extending, respectively, along the left and right side to the front of the head *b* of the machine. The head *b* is formed with an arm *b'*, to which is connected a spring *i*, the other end of which is carried by the frame *g* and the latter furnished with an ad-

justable screw *g'*, adapted to abut against the head *b* under the influence of the spring *i*.

In the front end of the frame *g* is mounted, vertically movable, a bar *k*, the lower end of which is furnished with a needle *k'* and its upper end jointed to a lever *k²*, adapted to rock on the head *b* and actuated by a cam *k³* on the driving-shaft *e*. The sides of the needle *k'* are hollow to accommodate the thread, and its end is forked to receive and allow of the thread passing over it in being forced into the hole pierced in the work. (See Figs. 4 and 5.) In order to insure the thread being forced correctly into the hole pierced in the work and to admit of using thick thread in proportion to the hole pierced and thickness of needle used, I employ a footpiece having a throat *l*, which guides and supports the needle laterally, and in the body of this footpiece, having a throat at the side, I form a thread-guide *m*, through which the thread from the thread-guide *m'* is passed across the path of the needle lineal with the stitches to be formed in the work. The thread guided in the manner described obviates slack thread between the stitch to be formed and the previously-formed one, and thus permits of forcing the thread into the hole pierced in the work at a tension which causes the work to be drawn tightly together, and therefore to be stitched more securely. The footpiece is adapted to prick the work and retain the thread of the stitch formed, and thus prevent same being drawn out of the work when forcing in the next succeeding stitch. For this purpose the under side of the said foot is formed with a tooth *n* and with a cavity *o* in front thereof, which cavity is narrower than and is formed in a projection from the under side of said foot and is situated in a vertical plane, with the thread running from stitch-hole to stitch-hole in the work. This cavity is adapted to receive and press the said thread portion upon the face of the work, and thus retain it thereon each time the thread coming from the guide-hole *m* is forced into a stitch-hole by the needle *k'* for the purpose of preventing the previous stitch made from being drawn out of the work, while in the meantime the tooth *n* has entered and pricked the work at each side of the stitch formed. The

pricker and retaining-bar p is placed under the influence of a spring p^2 , which tends to press the foot p' upon the work; but to facilitate the feeding of the work it is raised automatically by means of a projection k^4 , fixed adjustably on the needle-bar k and adapted to contact with a pin p^3 , carried by the pricker and retaining-bar p . In the front end of the other frame h is mounted vertically, intermittently movable, another bar q , the lower end of which is furnished with an awl q' and its upper end jointed to a lever q^2 , adapted to rock on the head b and actuated by a cam q^3 on the driving-shaft e . This awl serves to pierce holes in the work under operation for the reception of the thread which forms the fastening and also to feed the work, and for the latter purpose has imparted a laterally-intermittent movement by means of the cam r on the driving-shaft e and a lever r' , which is fulcrumed to the head b , and by means of a pivot r^2 , connected to the lower part of the frame h . The said lever and frame part are each formed with a slot r^3 and h' , respectively, in which the pivot r^2 is rendered adjustable, and whereby the lateral movement—i. e., the feed by the awl q' , and thus the length of stitches—can be varied at will.

In order to permit of the awl q' descending clear of the end of the needle-throat, the frame g is furnished with a cam-face b^2 , (see Fig. 2,) adapted to act in conjunction with a small roller q^4 , carried by the awl-bar q , so that when the awl descends the frame g , carrying the needle, is pushed to the left by means of the said cam-face and roller.

The awl I use has a flat or slightly-oval sectioned point, which forms slit-like holes in the work, which readily close, and a vertically-adjustable awl-steadier q^x may be used, as shown in Fig. 2^x.

The thread used is well waxed and while passing through the machine is suitably warmed.

In order to keep the work firm upon the horn or work-support c while the awl q' pierces and the thread is forced into the work, a presser-foot s is employed, carried by a bar s' , mounted, vertically movable, in the head b in front of the shaft f . This presser-foot is depressed by a spring s^2 and automatically lifted while the work is fed by a plate s^3 , placed loosely thereon and adapted to nip it through the action of a lever s^4 , pivoted to the head b and operated by a cam s^5 , Fig. 7, on the driving-shaft e . In some cases, however, the aforesaid pricker and thread-retainer may be found sufficient to hold the work upon the horn or support, and thus the said presser-foot may be dispensed with, in which case the needle-throat and thread-guide will be formed separate from the pricker and retainer.

The horn or work-support c is adapted to swivel on a vertical shaft t , mounted in the bearings a' a^2 of the standard a , and is supported by a spring u , arranged between the lower bearing a^2 and a collar u , secured to the

shaft t , the said spring lifting the shaft t until the collar u abuts against the upper bearing a' , and thus raises the horn or work-support c always to one level, at which it remains locked during the whole operation of stitching. This locking is effected by splitting one side of the upper bearing a' and drawing the same tight around the shaft t by a screw x , furnished with a handle x' . In order to facilitate the placing of the work upon the horn or work-support c and the removal therefrom, a foot-lever y is provided, by which the shaft t can be depressed after having previously been unlocked. This arrangement of horn or work-support—i. e., the same remaining stationary during the whole operation of stitching, together with the presser-foot s , which is under the influence of a spring s^2 , or pricker and retainer n o when such serves as a presser-foot—is an important feature of my invention, as such device permits of driving the thread always through the whole thickness of the work irrespective of its varying thickness.

The machine described operates as follows: After the work has been placed upon the horn or support and underneath the presser-foot and pricker and retainer and the horn or work-support has been locked in its position the machine is set in operation, which causes the awl to descend part way into the work. The awl then rises slightly and while still in the work moves laterally and feeds the work forward to the left. When the awl has arrived over the center of the horn or work-support, its lateral movement is interrupted and it is caused to descend further and completely pierce the work. The awl is then raised, and the needle jointly with the work-pricker and thread-retainer and needle-throat and thread-guide are moved to the right again and the throat brought over the hole pierced in the work. The needle then immediately begins to descend and forces the thread in loop fashion into the hole pierced in the work, while in the meantime the pricker has pricked the work at each side of the thread and the retainer has retained the same between the previous stitch and the stitch just formed, as shown in Fig. 4. The needle then rises and the awl descends again, and the operation described is repeated.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for stitching together pieces of leather or other thick material in staple fashion, in combination an awl for piercing and feeding the work, a needle for forcing the thread into the hole pierced and means for actuating the said awl and needle, a foot-piece having a throat with means for moving the same laterally intermittently in line with and supporting the said needle and also having in its side a passage which guides the thread across the path of the said needle, lineal with the stitches in the work, said passage being independent of and in advance of

the throat for the needle, all substantially as set forth.

2. In a machine for stitching together pieces of leather or other thick material in staple fashion, in combination an awl for piercing and feeding the work, a needle for forcing the thread into the hole pierced and means for actuating the said awl and needle, a foot having a throat for supporting the said needle and having a passage independent of the needle-throat for guiding the thread across the path of the said needle lineal with the stitches, said foot also having a tooth and a cavity in front thereof in a vertical plane with the thread running from stitch hole to hole the walls of said cavity projecting from the under side of the said foot, the said tooth being adapted to prick the work and the said cavity to retain the said thread portion while forming a stitch, all substantially as set forth.

3. In a machine for stitching together pieces of leather or other thick material in staple fashion, in combination, an awl for piercing and feeding the work, a needle for forcing the thread into the hole pierced and means for actuating the said awl and needle, a foot having a work-pricker and thread-retainer and formed with a throat which supports the said needle and also having a passage in ad-

vance and independent of the throat for the needle for guiding the thread across the path of the said needle lineal with the stitches in the work, all substantially as and for the purpose set forth.

4. In a machine for stitching together pieces of leather or other thick material in staple fashion, an awl for vertically piercing and feeding the work, a needle for forcing the thread in loop fashion into the said holes, a presser-foot under the influence of a spring and means for actuating the said awl, needle and presser-foot, a horn or work-support resting upon a spring and means for locking the same vertically in position during the stitching operation to allow of forcing the thread into the stitch-holes to the under side of the work, all to exactly one level irrespective of the varying thickness of the said pieces and means for releasing and depressing the said horn or work-support for the purpose of placing into and removing the work from the machine, all substantially as set forth.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

THOMAS GARE.

Witnesses:

ALFRED BOSSHARDT,
STANLEY E. BRAMALL.