

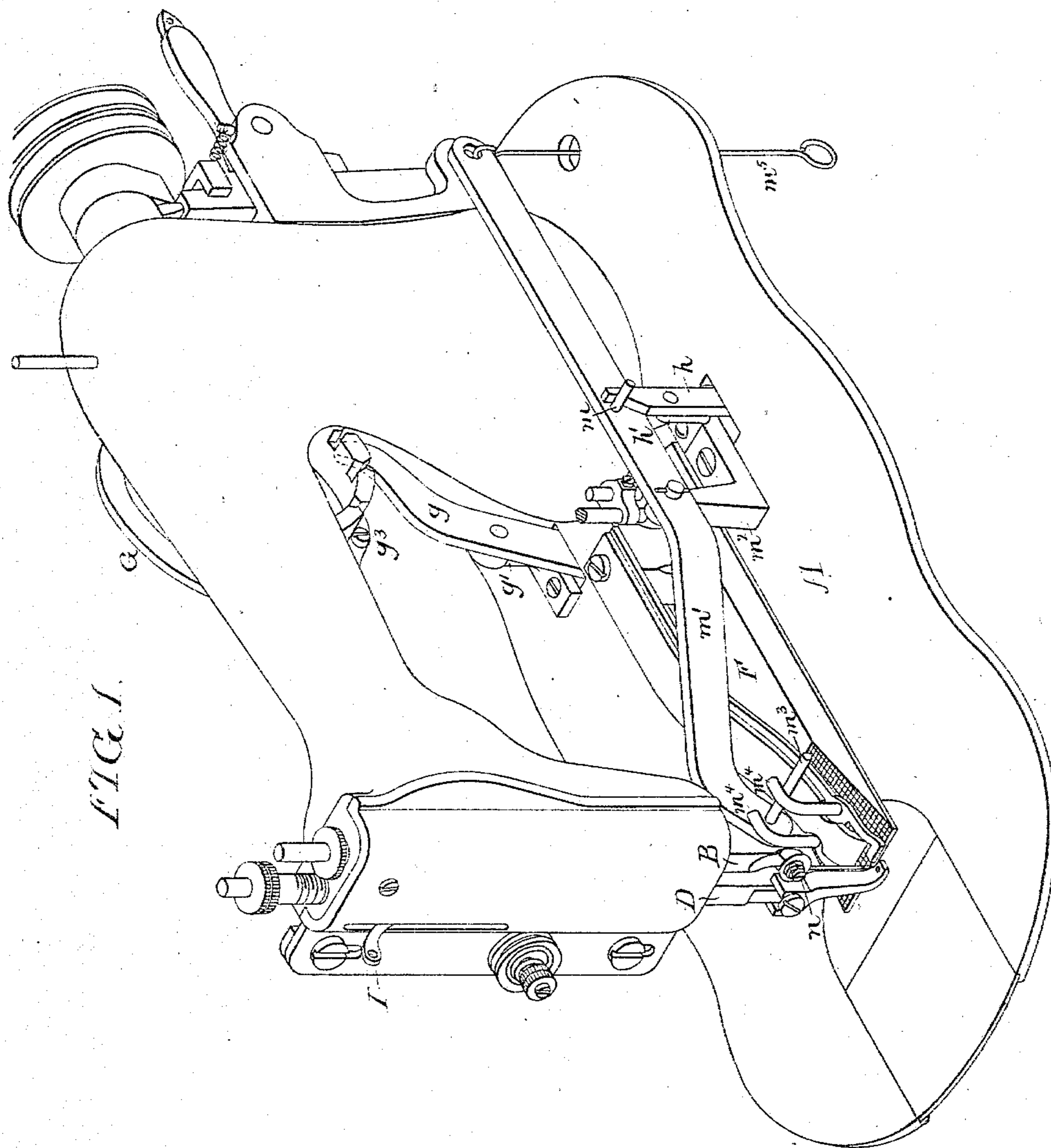
(No Model.)

3 Sheets—Sheet 1.

R. W. THOMSON.
SEWING MACHINE.

No. 545,391.

Patented Aug. 27, 1895.



Witnesses:
R. Schleicher
William A. Barr-

Inventor
Robert W. Thomson
By his Attorneys
Howson & Howson

(No Model.)

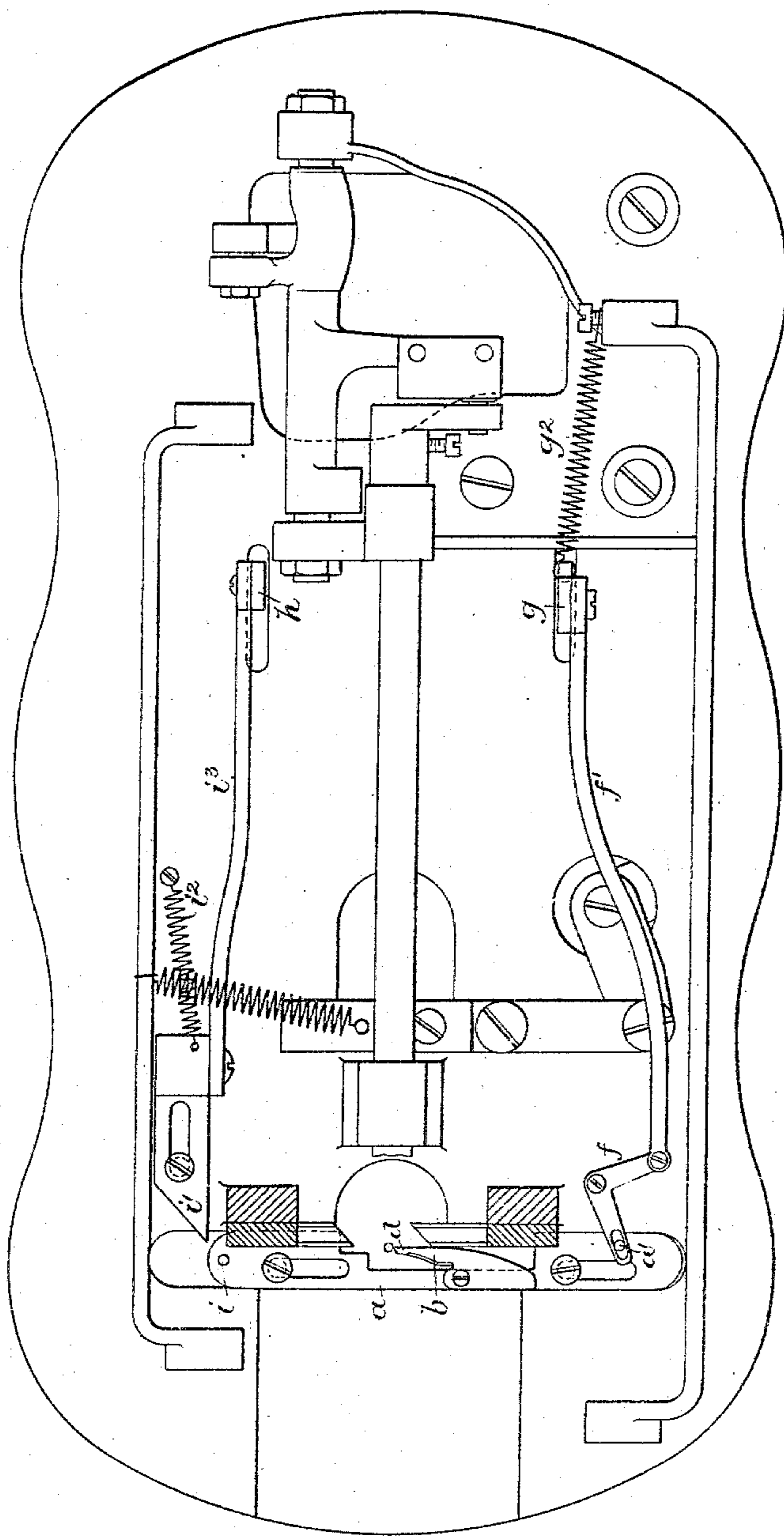
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FIG. 2.



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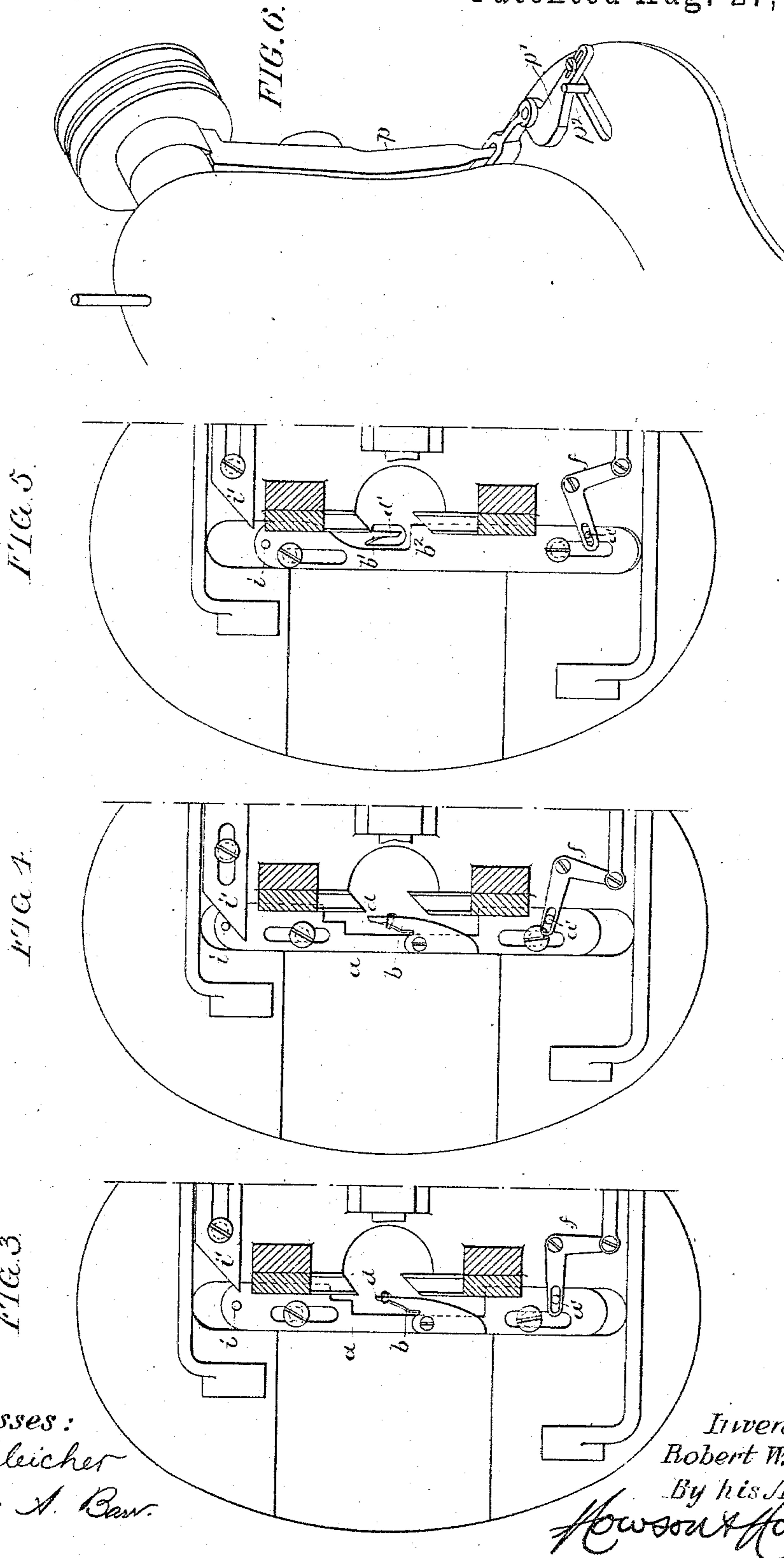
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3 Sheets—Sheet 3.

R. W. THOMSON.
SEWING MACHINE.

No. 545,391.

Patented Aug. 27, 1895.



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UNITED STATES PATENT OFFICE.

ROBERT W. THOMSON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE
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SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 545,391, dated August 27, 1895.

Application filed July 30, 1894. Serial No. 519,019. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. THOMSON, a citizen of the United States, and a resident of Lynn, Massachusetts, have invented certain Improvements in Sewing-Machines, of which the following is a specification.

My invention relates to sewing-machines of that class in which successive groups of stitches are formed at intervals upon the fabric, an ordinary button hole-barring machine being an example of a machine of this class; and the object of my invention is to prevent the laying of the needle-thread on the surface of the fabric from one group of stitches to the other to be afterward trimmed off. This object I attain by severing the needle-thread beneath the fabric after each group of stitches has been completed, so that in starting each fresh course of stitches the needle-thread will have a loose end, which will be drawn down through the fabric to the under side of the same by the action of the shuttle, looper, or other under-thread mechanism in completing the first stitch of the new group.

In the accompanying drawings I have illustrated my invention as applied to a barring or tacking machine of the character represented by H. L. Kemp's patent, No. 466,607; but it will of course be understood that the invention is not limited to a machine of this type, but is applicable generally to machines of the class above referred to.

In the accompanying drawings, Figure 1 is a perspective view of sufficient of the machine to illustrate my invention. Fig. 2 is a view of the under side of the machine with the under-thread mechanism removed in order to illustrate devices constituting part of my invention, and which would otherwise be hidden by said under-thread mechanism. Figs. 3 and 4 are views illustrating the thread-severing mechanism in different positions from that represented in Fig. 2. Fig. 5 is a view illustrating a modification of the thread-severing device, and Fig. 6 is a view illustrating a modified form of mechanism for operating the thread-severing device.

A represents the bed-plate; B, the needle-bar; D, the presser-bar; F, the movable clamping device for carrying the fabric, and G the cam-disk for operating the same, as in the

aforesaid Kemp patent, the lever mechanism, whereby the cam acts upon the clamping device to impart the desired movements thereto, not being shown in my drawings, as it forms no part of my invention and would, if illustrated, interfere with the proper showing of parts to which my invention does relate.

Suitably guided on the under side of the machine is a slide *a*, carrying a knife *b*, which has a projecting finger *d*, preferably unsharpened and contracted in width, this finger during the operation of the machine occupying a position adjacent to the needle-opening of the work-plate, as shown in Fig. 2. The knife-slide *a* has a pin *a'*, which is engaged by the slotted arm of a bell-crank lever *f*, hung to the under side of the machine, the other arm of said lever being connected by a rod *f'* to the lower end of a lever *g*, which projects through an opening in the bed-plate A of the machine and is hung to a suitable bracket *g'* on said bed-plate, as shown in Fig. 1, a spring *g²* serving to draw the lower end of the lever *g* rearward in order to retain the knife-slide *a* in the retracted position shown in Fig. 2. The upper end of the lever *g* projects into the path of a lug *g³* on the cam-disk G, this lug being so disposed that it will act upon the lever *g* just before the completion of the last stitch of the group and before the action of the automatic stop mechanism with which machines of this class are usually provided.

Upon the knife-slide *a* is a pin *i*, which is adapted to be acted upon by the beveled end of a sliding cam *i'*, mounted upon the under side of the bed-plate and normally retracted by means of a spring *i²*, said cam-slide being, however, connected by a rod *i³* to the lower end of a lever *h*, which projects through an opening in the bed-plate and is hung to a bracket *h'* above said plate. The upper end of the lever *h* is beveled, as shown in Fig. 1, for the action of a pin *m*, which is carried by a lever *m'*, hung to a bracket *m²* on the bed-plate, and having another pin *m³*, which acts upon hooked fingers *m⁴* on the upper plate of the work-holding clamp, the rear end of the lever *m'* being connected by a rod *m⁵* to suitable treadle mechanism, whereby when the formation of a group of stitches is completed the upper plate of the clamp can be raised

and the work readjusted therein to the position necessary for the formation of the next group of stitches. This lever m' forms a part of the ordinary barring or tacking machine.

5 While the machine is forming the group of stitches the devices for effecting the severing of the thread occupy the inoperative position shown in Fig. 2; but as the last stitch is being formed the action of the lug g^8 of the cam-disk G upon the lever g causes the latter to project the knife-slide a to the position shown in Fig. 3—that is to say, so that the contracted forward end or finger d of the knife-blade will enter the loop of needle thread—
15 whereby, as the needle continues to rise, said loop will be drawn tight around said contracted finger before the automatic stop motion before mentioned comes into play to stop the needle and feeding devices. The same movement of the knife-slide a which thus projected the knife-blade brought the pin i into the path of the beveled cam-slide i' , as shown in Fig. 3, and when the lever m' is operated so as to raise the top bar of the clamp, in order to release the work, the pin m of said lever m' will act upon the beveled upper end of the lever h , so as to cause vibration of said lever and a projection of the cam-slide i' , the beveled front end of said slide acting upon the pin i of the knife-slide a so as to effect a still further projection of the knife and a severing of the loop of needle-thread which has been formed upon the same, as shown in Fig. 4. As soon as the lever m' has been permitted to assume its normal position the cam-slide i' is withdrawn and the knife-slide a permitted to return to the position shown in Fig. 3, and the first movement of the machine, in starting to form a new group of stitches, carries the lug g^8 of the cam-disk G away from the upper end of the lever g , so as to permit of the further retraction of the knife-slide to its normal or inoperative position, as represented in Fig. 2. When
45 the needle-thread is cut, a loose end is left hanging from the eye of the needle as the latter rises, but in starting a new group of stitches the loose end of needle-thread is drawn down through the fabric by the action of the under-thread mechanism, so that no needle-thread appears upon the face of the fabric between the successive groups of stitches formed thereon, and the usual subsequent trimming operation is thus rendered
55 unnecessary.

In order to prevent the loose end of the needle-thread from being accidentally withdrawn from the eye of the needle after the completion of one group of stitches and before starting the next group, I find it advisable to provide the needle-bar B of the machine with a frictional thread-retainer n independent of the usual tension device, through which retainer the thread passes after leaving the take-up arm I of the machine and before passing through the needle-eye, this thread-retainer being so close to the needle-

eye that there is very little slack in the thread between the two, and hence very little tendency to withdraw the loose end of the thread from the eye. 70

Although in carrying out my invention I prefer to adopt the construction of cutting-knife shown in Figs. 1 to 4, other constructions embodying the essential features of my invention may be resorted to. For instance, in Fig. 5 I have shown one such modification in which a loop-receiving finger d' and knife b' are formed upon the work-plate of the machine, the knife-plate b in this case being replaced by a simple pusher-plate b^2 , whereby the loop of needle-thread is pushed onto the finger d' and against the knife b' , and other equally obvious modifications of the cutting mechanism are permissible within the general scope of my invention. The cutting movement of the knife may also, if desired, be due to the swinging movement of the stop-motion lever instead of to the movement of the clamp-releasing lever. Thus in Fig. 6 I have illustrated a construction in which the lower end of the stop-motion lever p carries a beveled slide p' , which acts upon a pin p^2 , intended to be carried by the rear end of the rod i^8 , whereby the stopping of the machine will effect the automatic projection of the cam-slide i' , so as to complete the movement of the knife-slide. It will be evident, therefore, that my invention in its broadest form is independent of the special construction of the knife and of the mere mechanical devices for effecting the movement of the knife or pusher plate, whereby the severing of the needle-thread beneath the fabric is effected. If the knife is too dull to cut the thread, the same will be severed, as the strain upon the loop where the wedge-shaped portion of the blade is pushed into the same will break the thread, and a machine might, in accordance with the main feature of my invention, be constructed with the view of purposely breaking instead of cutting the needle-thread. The cutting device may also, if desired, sever the under thread, as well as the needle-thread; but in this case, the blade should be so wide that sufficient slack will be formed in said under thread to permit it to engage with the fabric when the next group of stitches is begun. 105

Having thus described my invention, I claim and desire to secure by Letters Patent— 120

1. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices, with mechanism for severing the thread beneath the work, said mechanism comprising a device for entering the loop of the last stitch of the group before the same is drawn tight and a cutting blade or knife for severing the thread after the same is tightened, substantially as described. 125

2. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices, with cutting mechanism 130

for severing the needle thread beneath the work after the formation of each group of stitches, one of the elements of said cutting mechanism being a contracted blunt finger, projecting from a blade or knife, for entering the loop of needle thread before the same is drawn tight to complete the last stitch of the group.

3. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices with mechanism for severing the needle thread beneath the work before the completion of the last stitch of the group, said severing mechanism comprising a finger for entering the loop of needle thread before the same is drawn tight to complete the last stitch, a knife and reciprocating mechanism therefor, said mechanism comprising two independent sets of operating devices, the first causing a primary stage of the movement and the second causing the final stage of the same.

4. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices, with mechanism for severing the needle threads beneath the work on the completion of a group of stitches, a device for entering the loop of the last stitch of the group before the same is drawn tight, the cam which controls the operation of the feeding device, and connections between said cam and severing mechanism, whereby the said cam causes the severing mechanism to cut the thread beneath the work after the last stitch of each group has been completed, substantially as described.

5. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices, with a severing device having a two-stage movement, whereby it is

caused to sever the needle thread beneath the work on the completion of the last stitch of each group, the cam which controls the operation of the feeding devices, the lever which effects the opening of the clamp of the work holder, mechanism whereby the feed controlling cam is caused to impart to the severing device the first stage of its movement, and mechanism whereby the clamp opening lever is caused to impart to said severing device the final stage of its movement, substantially as described.

6. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices, with a device adapted to sever the needle thread beneath the work on the completion of each group of stitches, a slide carrying said severing device and having a pin or projection, a cam slide, means for reciprocating the same, and means for imparting to the severing slide movement whereby its pin or projection will be brought into the path of said reciprocating cam slide, substantially as specified.

7. In a machine for forming successive groups of stitches with intervening spaces, the combination of the stitch forming and work feeding devices, mechanism whereby the needle thread is severed beneath the work on the completion of each group of stitches, and a frictional retaining device for the needle thread independent of the usual tension device and mounted upon the needle bar, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT W. THOMSON.

Witnesses:

JACOB M. LEWIS,

MELVILLE P. NICKERSON.