No. 836,250. PATENTED NOV. 20, 1906.

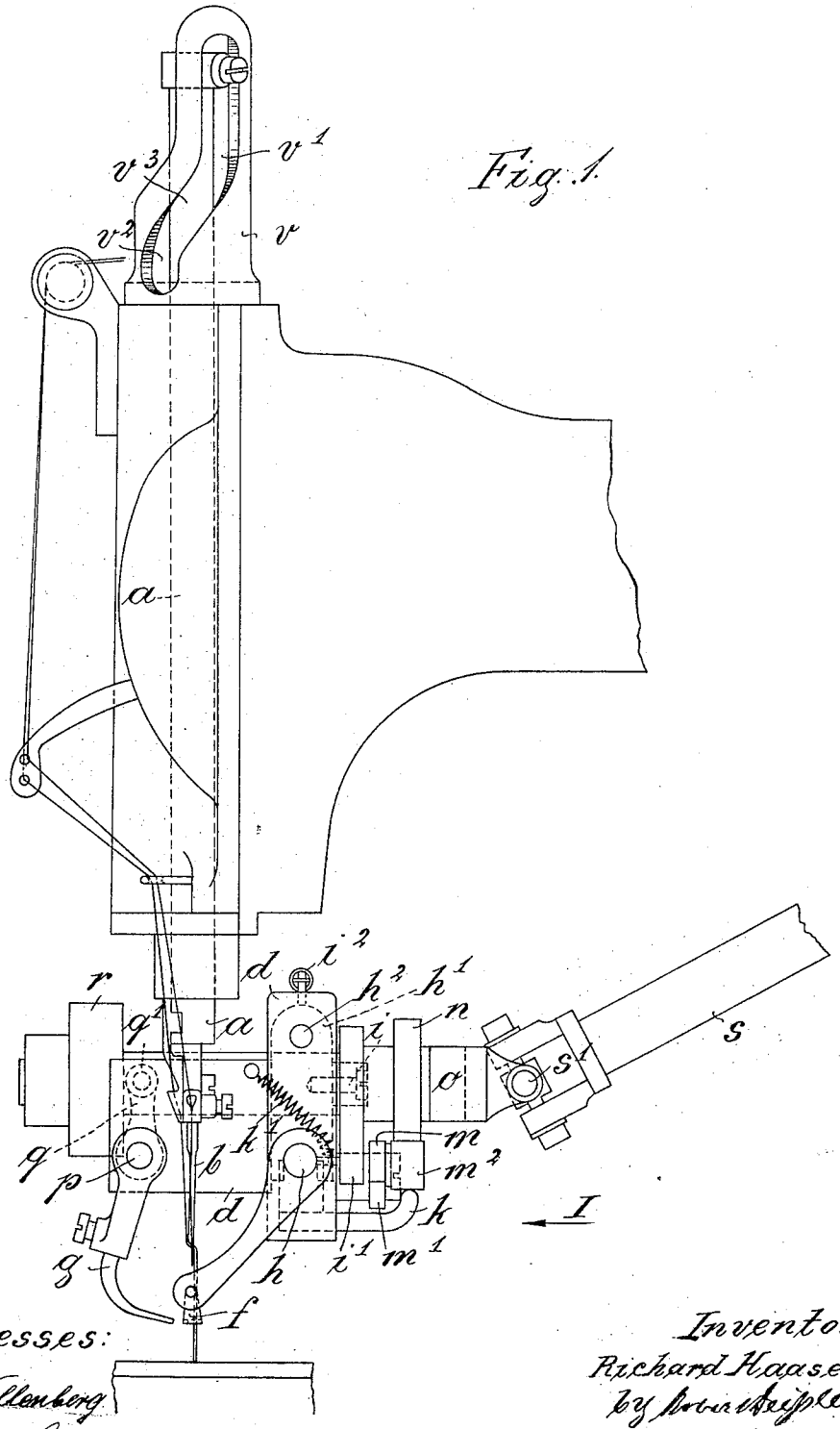
R. HAASE.

TWO NEEDLE SEWING MACHINE.

APPLICATION FILED FEB. 13, 1905.

4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 2.

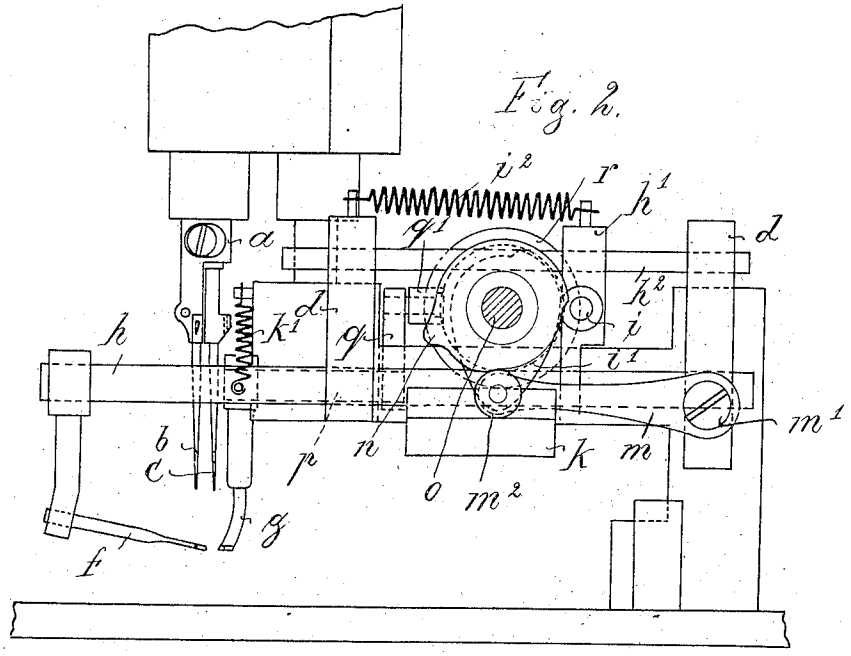
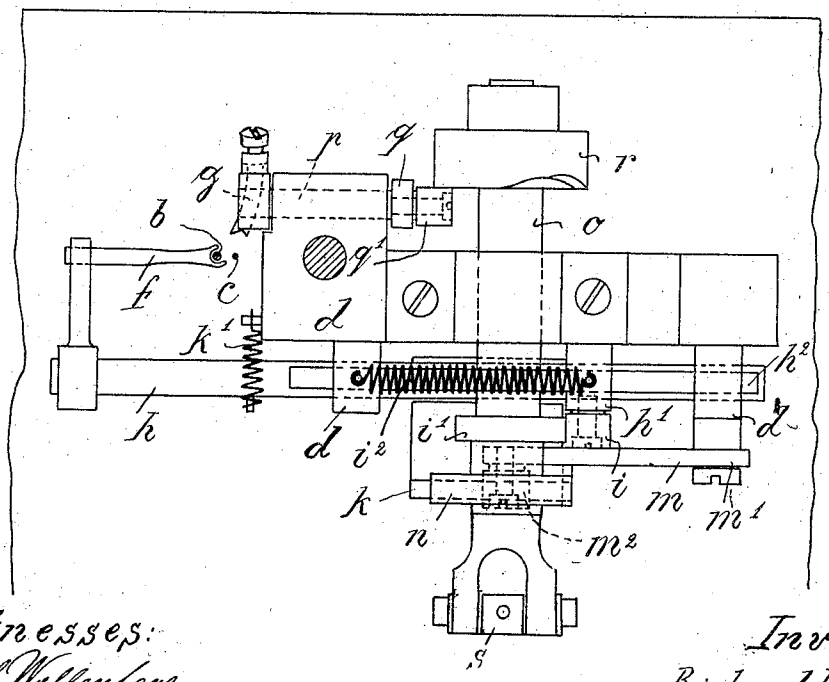


Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 4

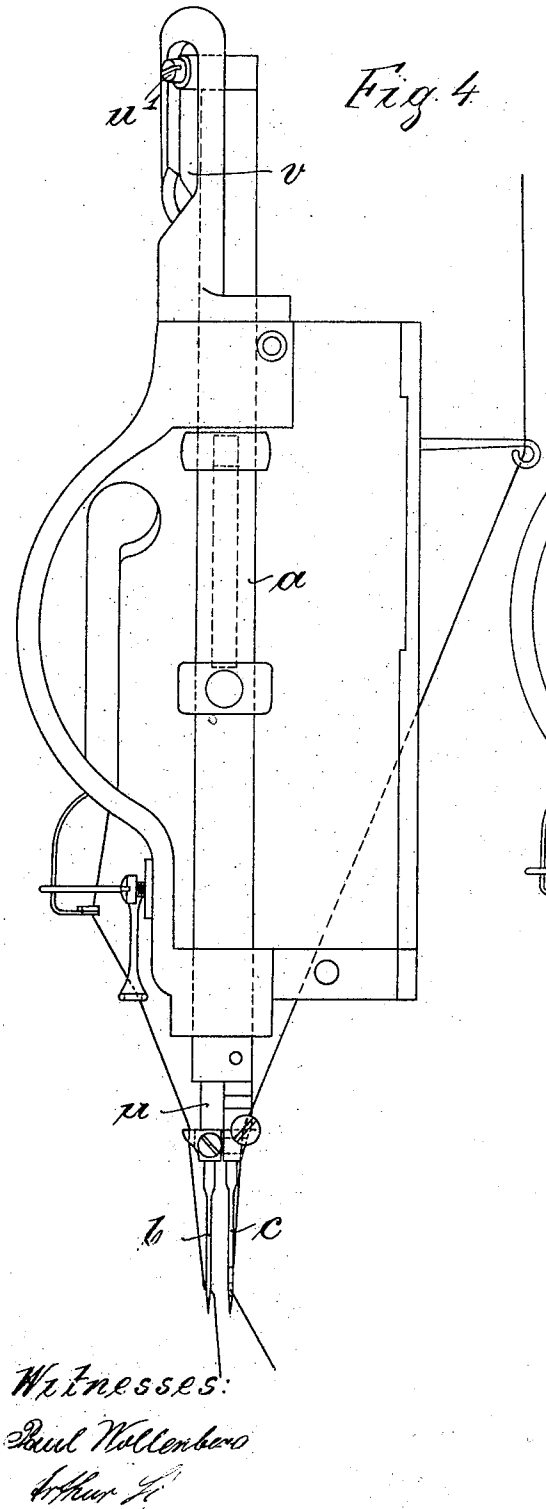
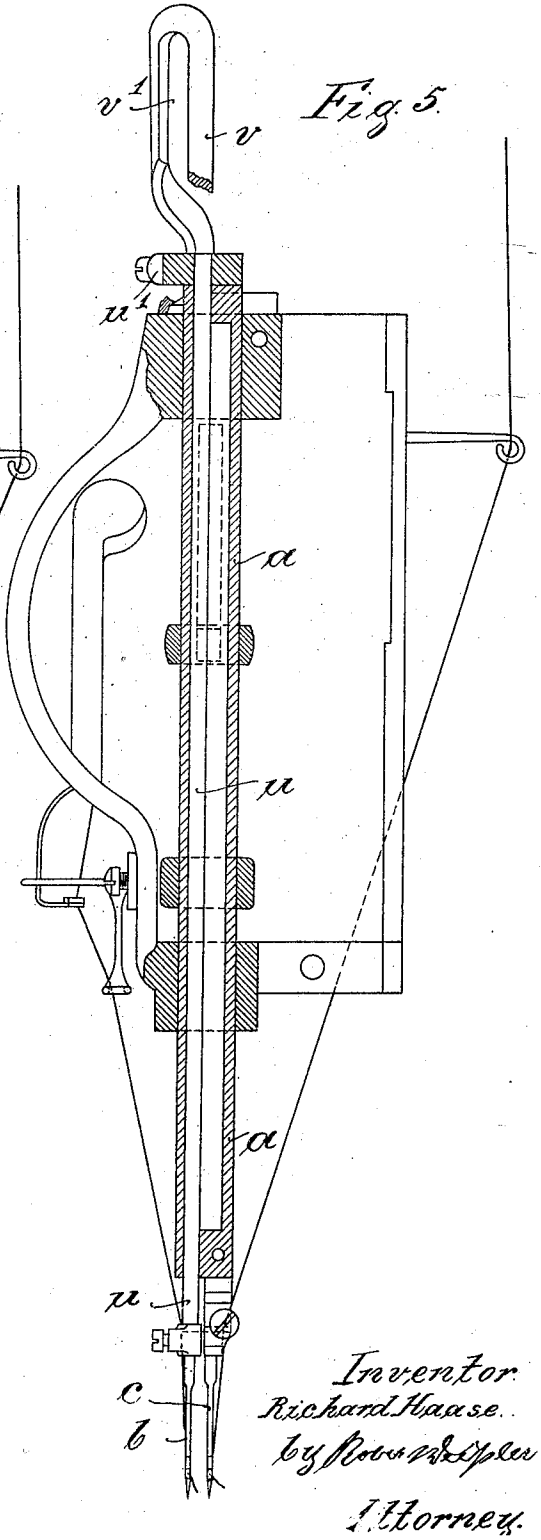


Fig. 5



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No. 836,250. PATENTED NOV. 20, 1906.

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TWO NEEDLE SEWING MACHINE.

APPLICATION FILED FEB. 13, 1905.

4 SHEETS—SHEET 4.

Fig. 6

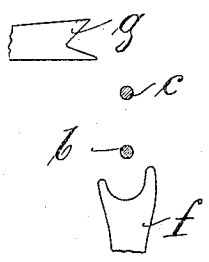


Fig. 7

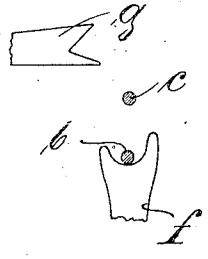


Fig. 8.

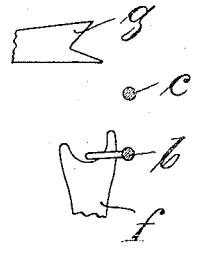


Fig. 9.

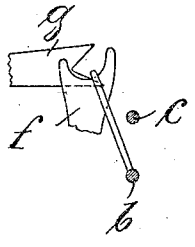
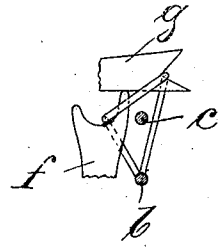


Fig. 10.



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UNITED STATES PATENT OFFICE.

RICHARD HAASE, OF PARIS, FRANCE, ASSIGNOR OF ONE-HALF TO HERMANN DROSSNER, OF PARIS, FRANCE.

TWO-NEEDLE SEWING-MACHINE.

No. 836,250. Specification of Letters Patent. Patented Nov. 20, 1906.

Application filed February 13, 1905. Serial No. 245,425.

To all whom it may concern:

Be it known that I, RICHARD HAASE, a subject of the King of Prussia, German Emperor, and a resident of 24 Rue de Rambuteau, Paris, France, have invented certain new and useful Improvements in Two-Needle Sewing-Machines, of which the following is an exact specification.

My invention relates to a two-needle machine for forming broad ornamental seams by interlacing two upper threads; and the main feature of my invention consists therein that one of the two needle-bars is adapted to be turned and the thread of the turning needle is engaged and drawn out by two grippers, whereby said thread is disposed in a triangular loop in the path of the second needle stitching through this loop. The turning of the needle has the purpose of preventing its thread from being torn when the loop is formed.

As known, the sewing-machines hitherto used have needles the eyes of which lie in alinement with the longitudinal axis of the machine. In order to enable the second needle to stitch through the loop, the thread must be sharply bent sidewise in the path of this needle and there takes place very easily a tearing of the thread by friction at the edges of the needle-eyes hitherto not turning. Due to the turning of the one needle-bar in forming the loop the thread is caused to run off in the direction of the needle-eye, thus avoiding a tearing or friction of the thread.

The employment of two grippers prevents the two needles from being bent toward each other, and the prescribed distance of the same can always be maintained. After the triangular loop is formed the second needle has entered the same, the grippers are moved backward, whereby the thread is loosened, and a lateral strain on the needles cannot be exerted by the thread.

In order to make my invention more clear, I refer to the accompanying drawings, in which—

Figure 1 shows a side view of the head part of the machine. Fig. 2 is a view in the direction of arrow I of Fig. 1. Fig. 3 is a plan view. Fig. 4 shows the interior of the head-plate of the machine-head. Fig. 5 is a view similar to that of Fig. 4, but several parts being cut through. Figs. 6 to 10 illustrate diagrammatically the formation of stitches and the different positions of the grippers.

In the drawings, *a* is the needle-bar of any type of sewing-machine.

b and *c* are two needles carried by the needle-bar and each working with a separate upper thread, the needles *b* and *c* being reciprocated in any convenient manner.

d, Figs. 2 and 3, is a frame in which a bar *h* is so mounted as to allow a longitudinal and a rotary movement thereof, which movement is transferred to the gripper *f*, fastened to one end of bar *h*.

h' is a cross-piece so fastened to bar *h* as to allow a rotary movement, but not a longitudinal movement, in relation to each other. The upper end of cross-piece *h'* is guided by rod h^2, mounted in frame *d*.

o is an axle rotated, for instance, by means of a cross-joint *s*, which is actuated in any convenient manner by the sewing-machine. This axle *o* carries a cam-disk *i'*, whereas the cross-piece *h'* is provided with a roller *i*, always kept in contact with the cam-disk *i'* by means of a spring i^2, fastened to the upper end of cross-piece *h'*.

Bar *h* carries a broad lever *k*.

n is a second cam-disk secured to shaft *o*.

m is a lever pivotally mounted on frame *d* in *m'*. Lever *m* carries on its outside end a roller m^2, situated between lever *k* and cam-disk *n*, the roller m^2 being always kept in contact with both by means of a spring *k'*, which always tends to turn the bar *h*, together with its lever *k*, in a corresponding direction.

The second gripper *g* is carried by axle *p*, mounted in frame *d*. To the axle *p* an arm *q* is fastened, which carries on its upper end a roller *q'*, the latter being always drawn by a spring (not shown) against a curved disk *r*, mounted on axle *o*.

The disks *n i' r* are so shaped that by the rotation of the axle *o* the grippers *f* and *g* are so moved as to form a triangular loop by taking up the positions indicated in Figs. 6 to 10, in which the needles *b* and *c* are indicated by small circles. In the relative position of the different parts shown in Fig. 6 the needles *b* and *c* are moving upward after having formed a stitch. The gripper *f* stands before the needles, the gripper *g*, however, behind the same somewhat to the side. The thread of the needle *b* shall now be so placed as to form

a loop below needle *c*, so that the latter can stitch through the loop. For this purpose the gripper advances at the upward movement of the needles toward the needles, so as to arrive in the position shown in Fig. 7. Then the gripper *f* moves to the position shown in Fig. 8 in swinging somewhat to the left of needle *b*, at the same time drawing the thread of needle *b* to the left. The gripper *f* then advances again, so as to be above the end of gripper *g*, which now moves to the right, whereas gripper *f* moves somewhat backward, so as to form at least the triangular loop, as shown in Fig. 10. As soon as the needle *c* has entered the loop the grippers *f* and *g* move farther and farther backward, thereby avoiding any detrimental tension of the thread whereby the needle *b* would be bent. By moving the grippers in such a manner that *f* first draws the thread of needle *b* to the left-hand side of the needles it is with certainty avoided that the thread-loop takes up a false position below needle *c*. The thread is not moved to the right by the gripper *g* before being securely kept in position by gripper *f*, thereby securing a correct formation of the stitches.

For facilitating the formation of the stitches and for avoiding a bending of the needle *b* the following arrangement may be made use of: To the needle-bar *a* the needle *c* only is fastened, whereas the second needle *b* is secured to a bar *u*, so connected with bar *a* as to prevent a movement longitudinal to each other, but allowing a rotary movement of bar *u*. The upper end of needle-bar *u* is provided with a cross-arm *u'*, the outside end of which is projecting into the slotted guide-piece *v*. The slot of this piece *v* consists of two vertical parts $v' v^2$, which are connected with each other by the helical slot part v^3. By reciprocating the needle-bars *a* and *u* in any convenient manner the cross-arm *u'*, and thereby the needle *b*, is turned about ninety degrees. In the uppermost position of both needles the axis of the needle-eyes are at right angles, as shown in Fig. 4. If the needles have arrived at their lowest position, the needle *b* has made a turn of about ninety degrees, so that both needle-eyes are parallel to each other, as shown in Fig. 5. This causes the thread part, which is drawn out by the grippers to a loop, to have a direction toward the second needle *c*, which prevents the thread breaking at the point where it leaves the needle-eye *b*, and it cannot be injured at the lateral edge of the needle-eye.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

1. A two-needle sewing-machine comprising in combination two needle-bars, needles carried thereby, means for reciprocating the same, means for turning one of said needle-bars, two grippers, means for moving said grippers to engage and draw out the thread of said turning needle whereby said thread is disposed in a triangular loop in the path of the other needle substantially as described.

2. A two-needle sewing-machine, comprising in combination two needle-bars, needles carried thereby, means for reciprocating the same, means for turning one of the needle-bars, two grippers, means for moving one of the grippers in two directions substantially vertical to each other and to reciprocate the other gripper as to engage and draw out the threads of said turning needle whereby said thread is disposed in a triangular loop in the path of the other needle, substantially as described.

3. A two-needle sewing-machine, comprising in combination two needle-bars, needles carried thereby, means for reciprocating the same, means for turning one of said needle-bars around its axis to and fro for about ninety degrees, two grippers, means for moving the said grippers to engage and draw out the thread of said turning needle whereby said thread is disposed in a triangular loop in the path of the other needle, substantially as described.

4. In a two-needle sewing-machine, a turning needle-bar, a second needle-bar combined with the first bar, means for turning said first needle-bar, a stationary frame, an axle mounted therein, a gripper mounted thereon, a lever fastened to the gripper-axle, a shaft carrying two cam-disks, two rollers engaging therewith, one oscillating the gripper-axle to and fro, the other roller longitudinally reciprocating this axle, a second gripper fastened to an axle and carrying a roller, a cam-disk carried by said shaft and engaging with this disk so as to reciprocate this second gripper, means for rotating said shaft, thereby engaging and drawing out the thread of said turning needle and disposing it in a triangular loop in the path of the other needle, substantially as described.

5. In a two-needle sewing-machine, a machine-head, two needle-bars, one bar being adapted to be turned, a curved guide, a projection fastened to the turning needle-bar and engaged from that guide so as to turn said needle-bar to and fro for about ninety degrees, a stationary frame, two grippers mounted therein, and means for moving these grippers to engage and draw out the thread of the turning needle whereby said thread is disposed in a triangular loop in the path of the second needle, substantially as described.

6. In a two-needle sewing-machine, a machine-head, two needle-bars, one bar being adapted to be turned, a curved guide, a projection fastened to said turning needle-bar and sliding in that guide, so as to turn said needle-bar to and fro for about ninety degrees, a stationary frame, an axle mounted therein, a gripper mounted thereon, a lever

fastened to the gripper-axle, a shaft carrying two cam-disks, two rollers engaging therewith one oscillating the gripper-axle to and fro, the other roller longitudinally reciprocating this axle, a second gripper fastened to an axle and carrying a roller, a cam-disk carried by said shaft and engaging this disk so as to reciprocate this second gripper, means for rotating said shaft, thereby engaging and drawing out the thread of said turning needle in a triangular loop in the path of the second needle, substantially as described.

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

RICHARD HAASE.

Witnesses:

BRONISLUS VEISBLAT,

HANSON C. COXE.