

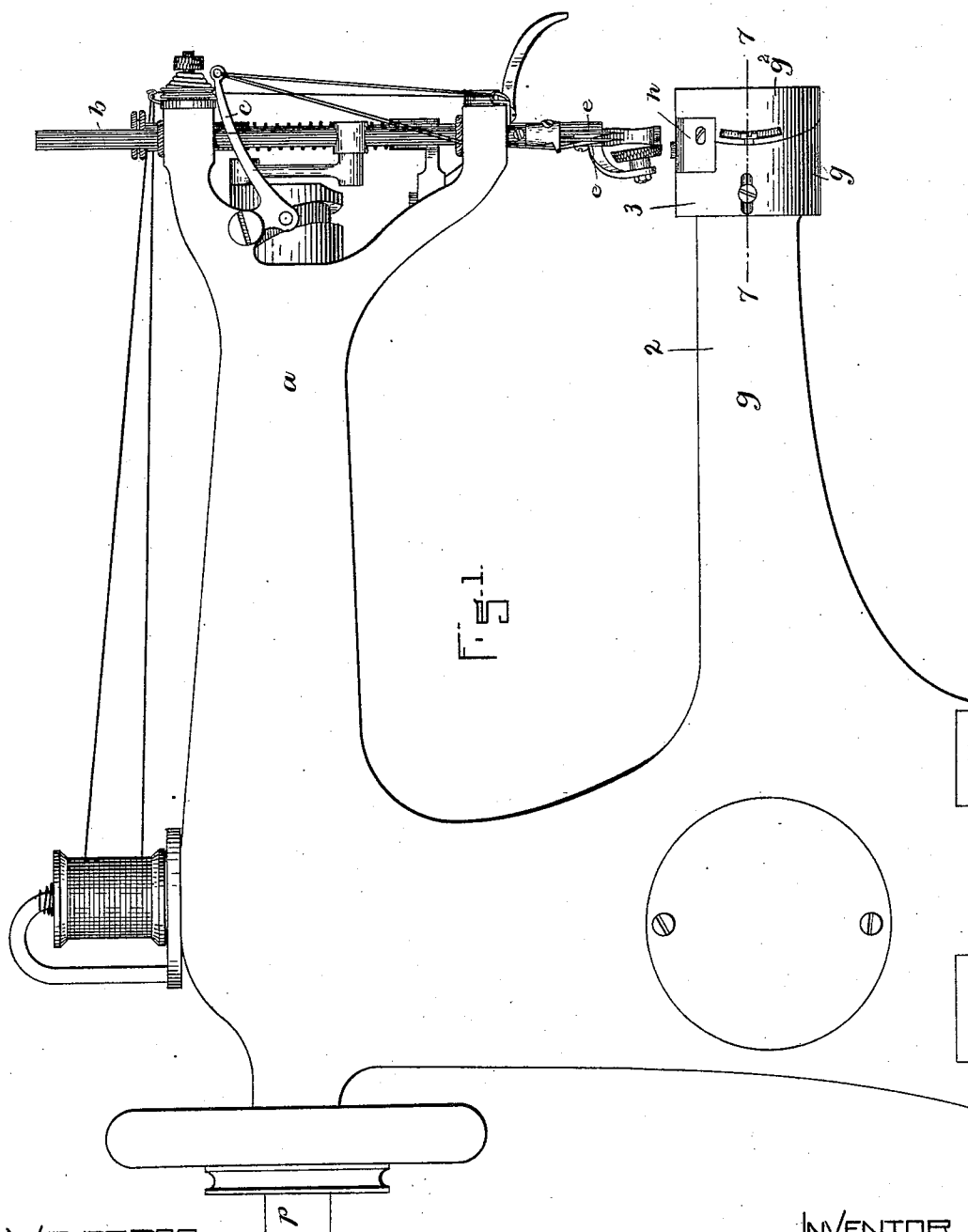
(No Model.)

3 Sheets—Sheet 1.

J. H. GRIFFIN.
SEWING MACHINE.

No. 470,891.

Patented Mar. 15, 1892.



WITNESSES.

C. E. Bartlett
A. D. Harrison

INVENTOR—

J. H. Griffin
by Wright & Brown
Attys.

(No Model.)

3 Sheets—Sheet 2.

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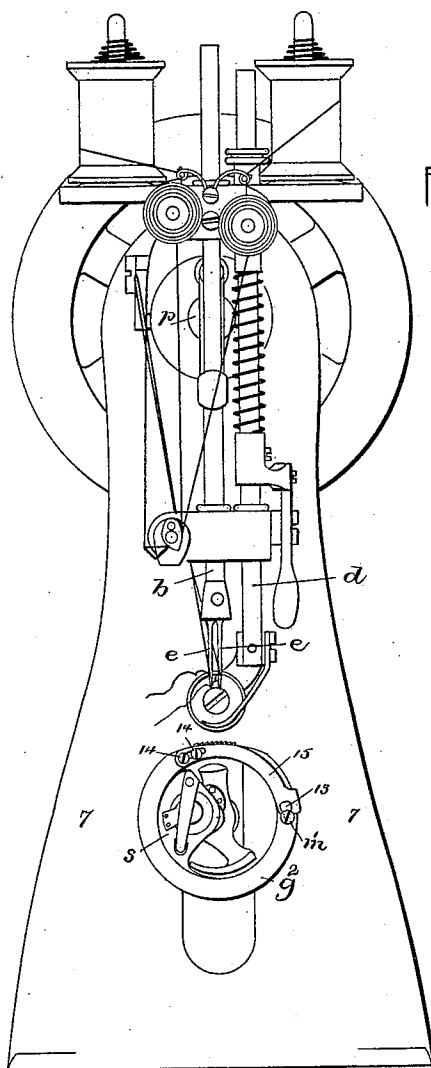


Fig. 2.

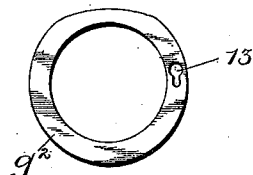


Fig. 2.

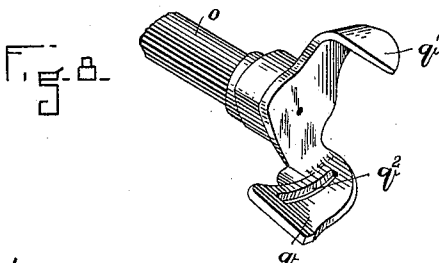


Fig. 3.

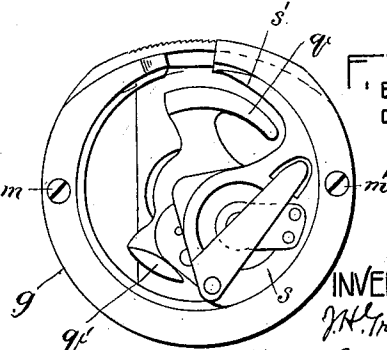


Fig. 4.

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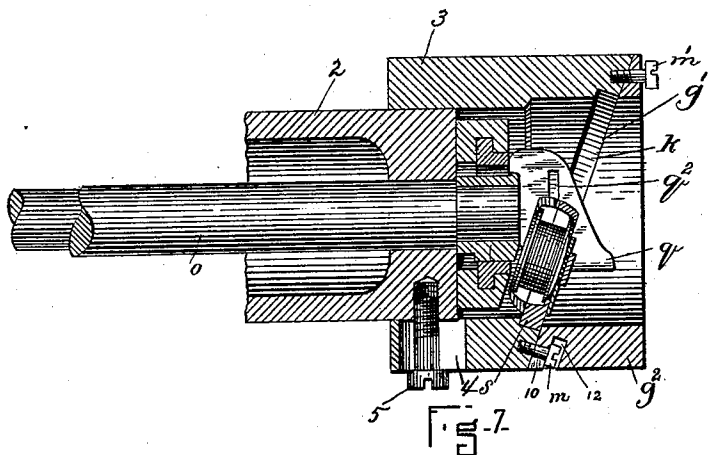
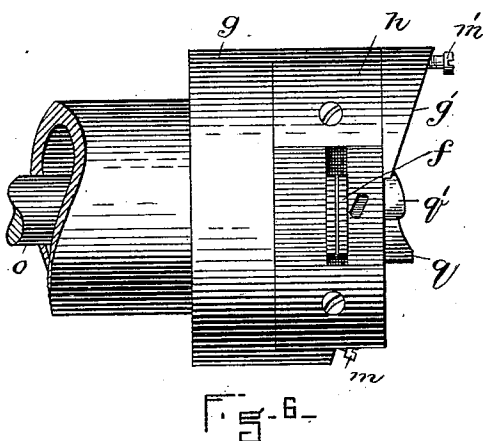
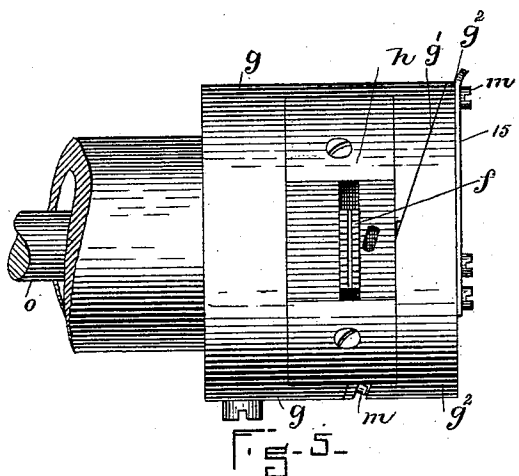
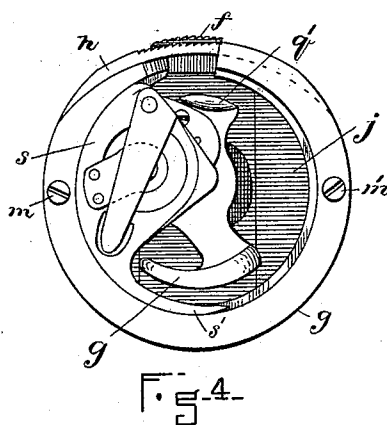
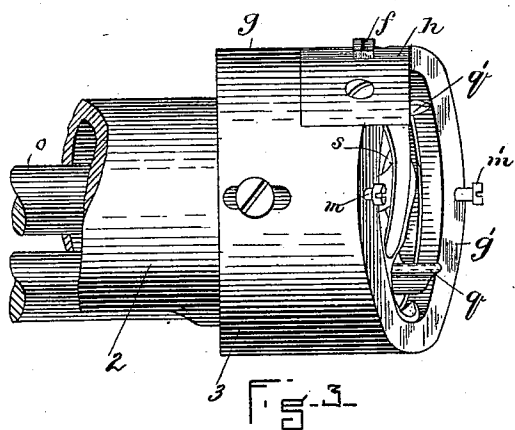
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UNITED STATES PATENT OFFICE.

JOHN H. GRIFFIN, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD
TO C. C. BIXBY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 470,891, dated March 15, 1892.

Application filed November 18, 1890. Serial No. 371,866. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. GRIFFIN, of Brockton, (Campello,) in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Two-Needle Sewing-Machines, of which the following is a specification.

This invention relates to sewing-machines employing two needles arranged diagonally with relation to the path in which the work is moved by the feeding devices of the machine and a single shuttle co-operating with both needles, the machine being adapted to make a double stitch composed of two upper needle threads and a single lower thread interlocked with both upper threads, as shown in Letters Patent No. 398,323 granted to me February 19, 1889.

The present invention has particular reference to the shuttle and means for operating the same; and it has for its object to enable the shuttle to occupy the same relation to each needle in engaging the needle-loop, so that the shuttle will engage each loop with certainty and exactness. To this end my invention consists in the construction and combination of parts as hereinafter described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a sewing-machine provided with my improvements. Fig. 2 represents an end elevation of the same. Fig. 2^a is a detail showing the shape of the key-hole slot in the ring or cap. Fig. 3 represents a side elevation of a portion of the shuttle-holding arm of the machine, the cap which secures the shuttle in said arm being removed. Fig. 4 represents an end view of the arm in the condition represented in Fig. 3. Fig. 5 represents a top view of said arm, showing the said cap in place thereon. Fig. 6 represents a view similar to Fig. 5, the cap being removed from the arm. Fig. 7 represents a horizontal section on the plane of line 7 7, Figs. 1 and 2. Fig. 8 represents a perspective view of the shuttle-driver. Fig. 9 represents an end view of the arm with the cap removed, as shown in Fig. 4, showing the shuttle at the opposite extreme of its movement from that shown in Fig. 4.

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

In the drawings, *a* represents the neck of the machine, containing the shaft which operates the needle-bar *b*, the take-up arm *c*, and the presser-bar *d*, said parts being operated in the usual or any suitable manner and forming no part of my invention. The needle-bar is provided with two needles *ee*, which are arranged diagonally to the path or direction in which the work is moved by the feed-dog *f* of the machine.

g represents the arm of the machine, which supports the throat-plate *h* and contains the oscillating hook-shuttle *s*, said arm having a circular chamber *j*, formed to contain the shuttle and its driver, hereinafter described. The shuttle *s* here shown is of the usual construction employed in the Singer oscillating-shuttle machine, but may be of any other suitable construction, my invention not being limited in this particular.

In the inner surface of the chamber *j* I form a diagonal shuttle race or groove *k*, in which the peripheral portion of the shuttle is fitted to move. Said race is arranged diagonally to the operative movement of the feed device, and is so arranged that it is at substantially the same distance from each of the diagonally-arranged needles *ee*, so that the shuttle in its movement in said race is equidistant from the needles, so that it draws the same amount of thread from each needle in engaging the loops thereof. The main portion of the arm *g* terminates in a diagonal face *g'*, which is parallel with the groove or race *k*, said groove being arranged on said face, as shown in Figs. 3 and 7, so that the shuttle can be freely inserted and removed when said face is unobstructed.

*g*² represents a ring or cap, which is formed to bear upon the diagonal face *g'* and is adapted to be detachably secured to the arm *g*. The inner edge of said ring or cap constitutes a wall at one side of the groove *k*, so that when the cap or ring is in place the shuttle in the groove *k* will be retained therein by said cap or ring, which completes the shuttle-race. The arm *g* is provided with two headed studs *m* and *m'*, projecting outwardly from its diagonal face *g'*. The ring or cap *g*²

has a slot 10, Fig. 7, which receives the shank of the stud m , and a recess 12, formed in one side of said ring, to receive the head of the stud m . The ring is provided at a point opposite the slot 10 and recess 12 with a slot 13, which is key-hole shaped or enlarged at one end, as shown in Fig. 2^a, sufficiently to receive the head of the stud m' , and reduced at its other end so as to fit the shank of said stud m' , but smaller than the head of said stud. To the outer end of the cap or ring g^2 is attached by screws 14 a spring-tongue 15, the free end of which is arranged to engage the head of the stud m' , as shown in Fig. 2, and thus support the ring or cap with the larger end of the slot 13 above the stud m' , as shown in Fig. 2. The cap or ring g^2 is detachably secured to the arm g by first engaging the stud m with the slot 10 and recess 12 in one side of said ring, and then slipping the larger end of the slot 13 over the head of the stud m' and moving the ring upwardly until the shank of said stud is in the smaller end of the slot 13, and then engaging the free end of the tongue 15 with the stud m' , as shown in Fig. 2. By disengaging or springing out said tongue the ring g^2 may be lowered, so that the head of the stud m' will coincide with the larger end of the slot 13, whereupon the ring may be moved outwardly and detached from the arm g . By this device the shuttle s can be readily secured and released, so that it may be quickly removed to replenish the shuttle-thread and readily replaced.

The shuttle-driver is supported by a rock-shaft o , journaled in bearings in the arm g and oscillated by suitable connections with the driving-shaft p , said connections being well known in machines of this class and forming no part of my invention, the shuttle-driver being operated in the usual way and differing only from those in common use in the peculiarities of its form, presently described.

The driver is composed of two arms q and q' , arranged at opposite sides of the axis of the rock-shaft o , and separated by a space of sufficient width to permit the insertion of a portion of the shuttle s between them. The arm q is formed to project into the recess under the hook s' of the shuttle, while the arm q' is formed to bear against the heel portion of the shuttle, as shown clearly in Figs. 4 and 9. The arms q and q' are elongated in the direction of the axis on which they oscillate and are of such length that the shuttle, which oscillates in a path which is diagonal to said axis, will always remain operatively engaged with the arms q and q' . Hence the diagonal movements of the shuttle do not affect its operative connection with the driver. The arm q has a needle-receiving slot p^2 , as shown in Fig. 8.

It will be understood that the operation of the machine in forming the stitch does not differ materially from that of any ordinary sewing-machine having an oscillating hook-

shuttle, the shuttle co-operating with the needles in the same manner that an oscillating shuttle in an ordinary machine co-operates with the single needle thereof. Hence I do not deem it necessary to describe and show the manner of forming the stitch.

I prefer to make the arm g of the machine in two parts or sections 2 3. The part 2 has the bearings for the driver-carrying shaft o and is a part of the casting that comprises the overhanging neck a , while the part 3 is a hollow sleeve fitted upon the outer end of the part 2 and adjustable lengthwise thereon. The part or sleeve 3 has a longitudinal slot 4, and is secured to the part 2 by a screw 5 passing through said slot. When the screw 5 is loosened, the sleeve 3 may be moved endwise, thus varying the position of the raceway, the sleeve being secured in any position to which it may be adjusted by tightening the screw. Provision is thus made for adjusting the raceway so as to compensate for wear of its inner edge and prevent the shuttle from moving inwardly far enough to strike the needles, as it might do when the shuttle becomes worn if no provision were made for adjusting the race. This feature—viz., the adjustable shuttle-race—is not limited to machines employing two needles nor to a diagonally-arranged shuttle-race.

I am aware that it has been proposed, for a purpose similar to that of my invention, to provide in a sewing-machine a needle-bar with two needles set in a line diagonally with relation to the feed, and a loop-taker guide or shuttle-race arranged in a vertical plane oblique to a horizontal line drawn longitudinally through the feed and in which machine the plane of the normal position of the two needles is also oblique to the plane of the loop-taker, and in which two cam-surfaces are employed to deflect the points of the two needles when in their lower position to a position so as to be substantially parallel with the plane of the said loop-taker, and this construction I do not claim.

By my construction there is no occasion for the use of deflecting-cams to enable the loops of the two needles to be taken by the shuttle.

I claim—

1. The combination, in the stitch-forming mechanism of a sewing-machine, of a shuttle-race arranged in a vertical plane oblique to the line of feed and a plurality of needles secured to the needle-bar in a plane normally or at all times substantially parallel with the plane of the shuttle-race, substantially as described.

2. The combination, with the stitch-forming mechanism of a sewing-machine, of the arm having a circular chamber or recess, a smooth face or outer end, a shuttle-receiving groove parallel with said face, and headed studs projecting outwardly from said face, combined with a cap or ring having a slot 10 and a re-

cess 12 to receive the shank and head of one of said studs, a key-hole-shaped slot to receive the other stud, and a spring-plate arranged over the last-named slot to engage the stud inserted therein, as set forth.

5 3. In a sewing-machine, the combination, with the fixed cylindrical arm-section 2, of the movable section or sleeve 3, fitted thereon and having a shuttle-race and the radial
10 and laterally-elongated slot 4, and the screw

5, passing through said slot and into said fixed section, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 6th day of November, A. D. 1890.

JOHN H. GRIFFIN.

Witnesses:

C. F. BROWN,

A. D. HARRISON.