

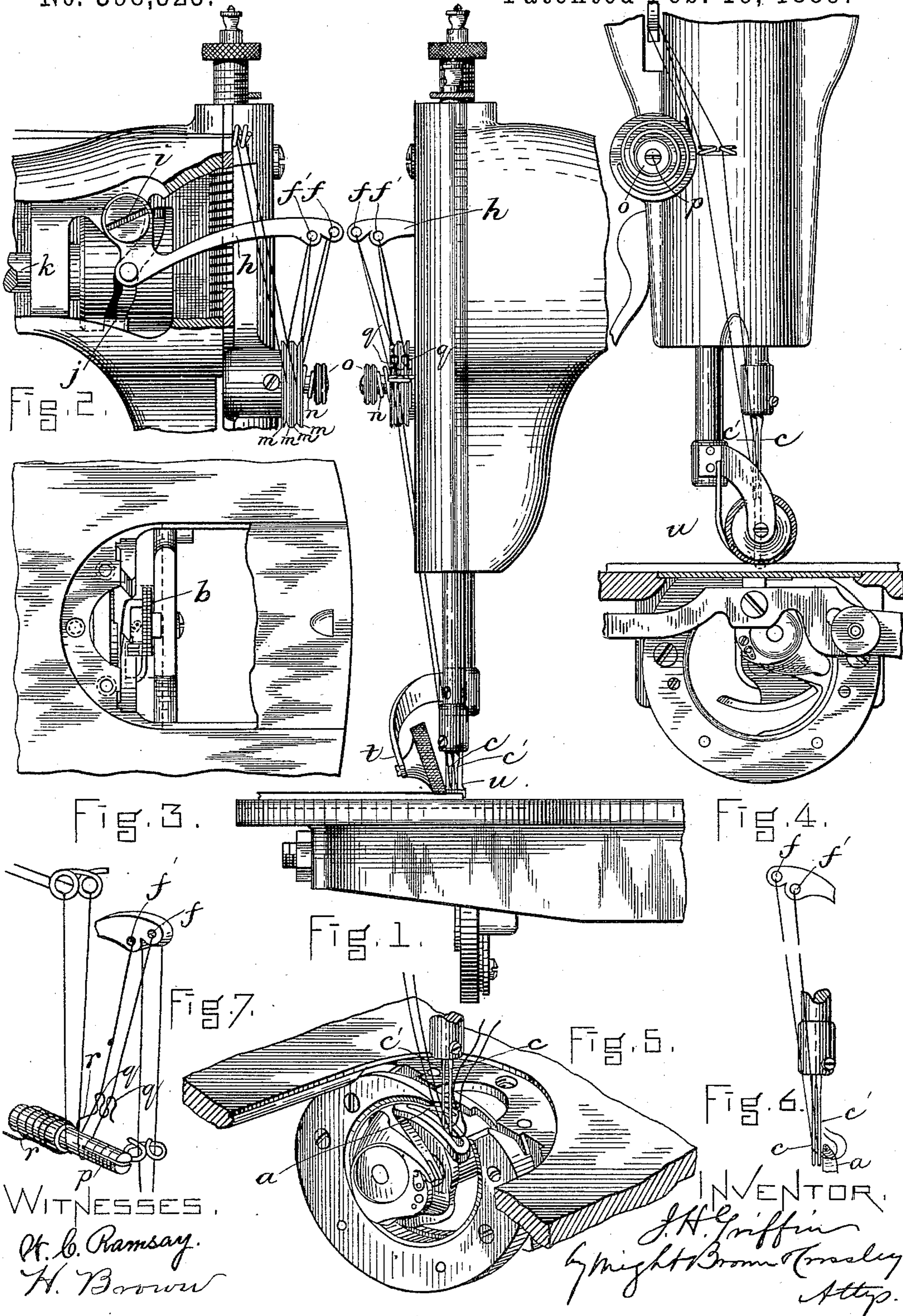
(No Model.)

2 Sheets—Sheet 1.

J. H. GRIFFIN.
SEWING MACHINE.

No. 398,323.

Patented Feb. 19, 1889.



(No Model.)

2 Sheets—Sheet 2.

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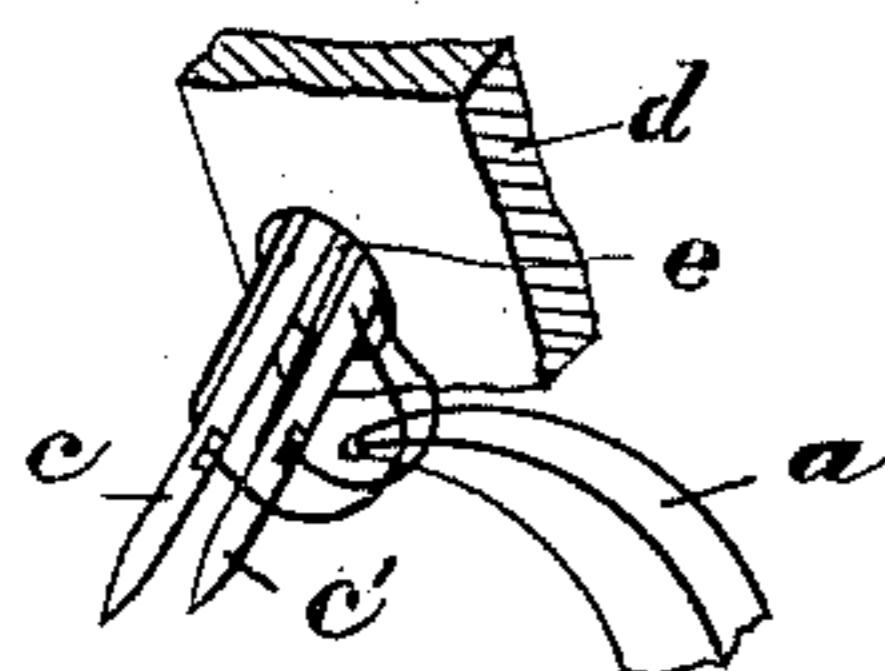


Fig. 8.

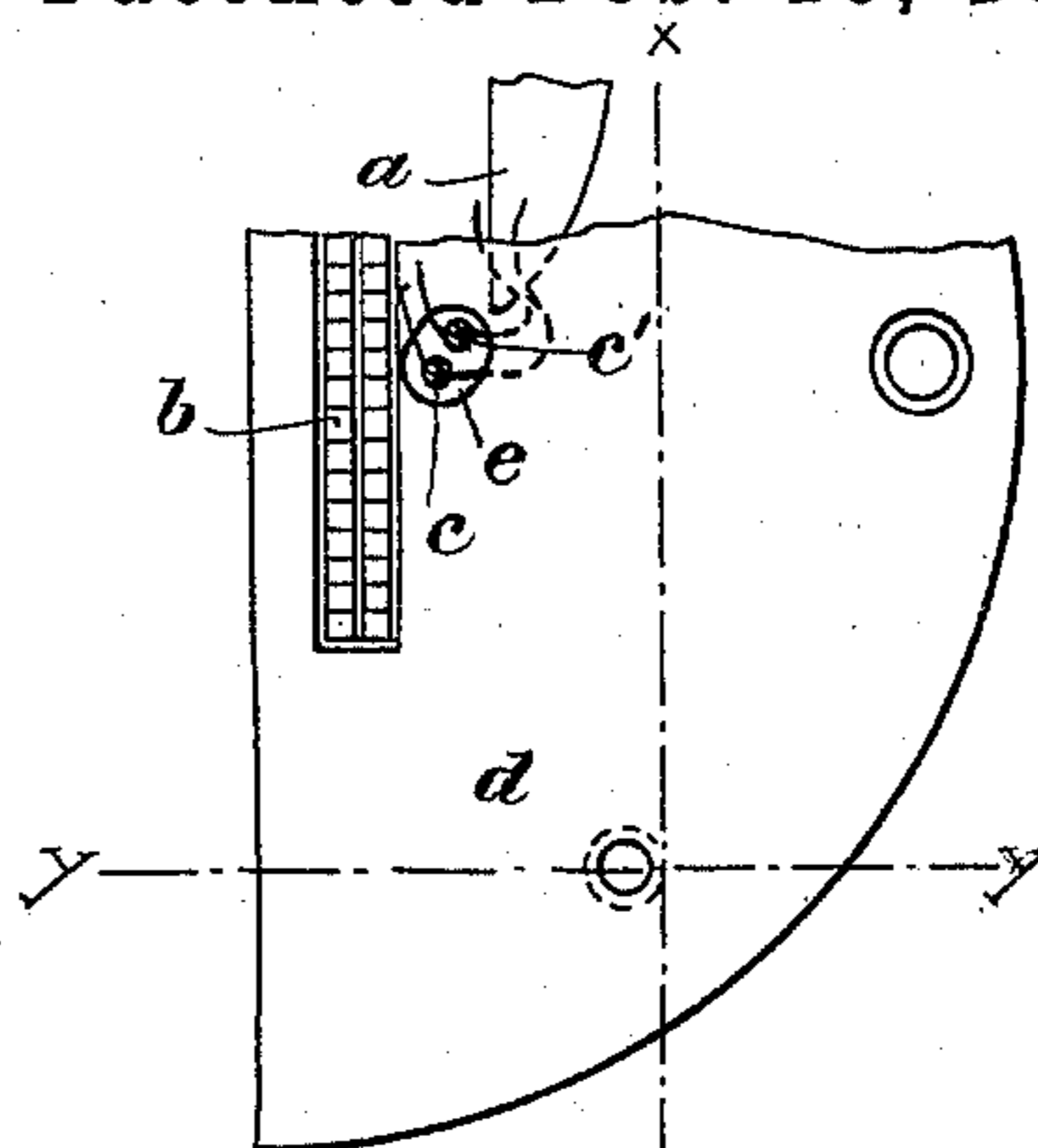


Fig. 9.

Fig. 10.

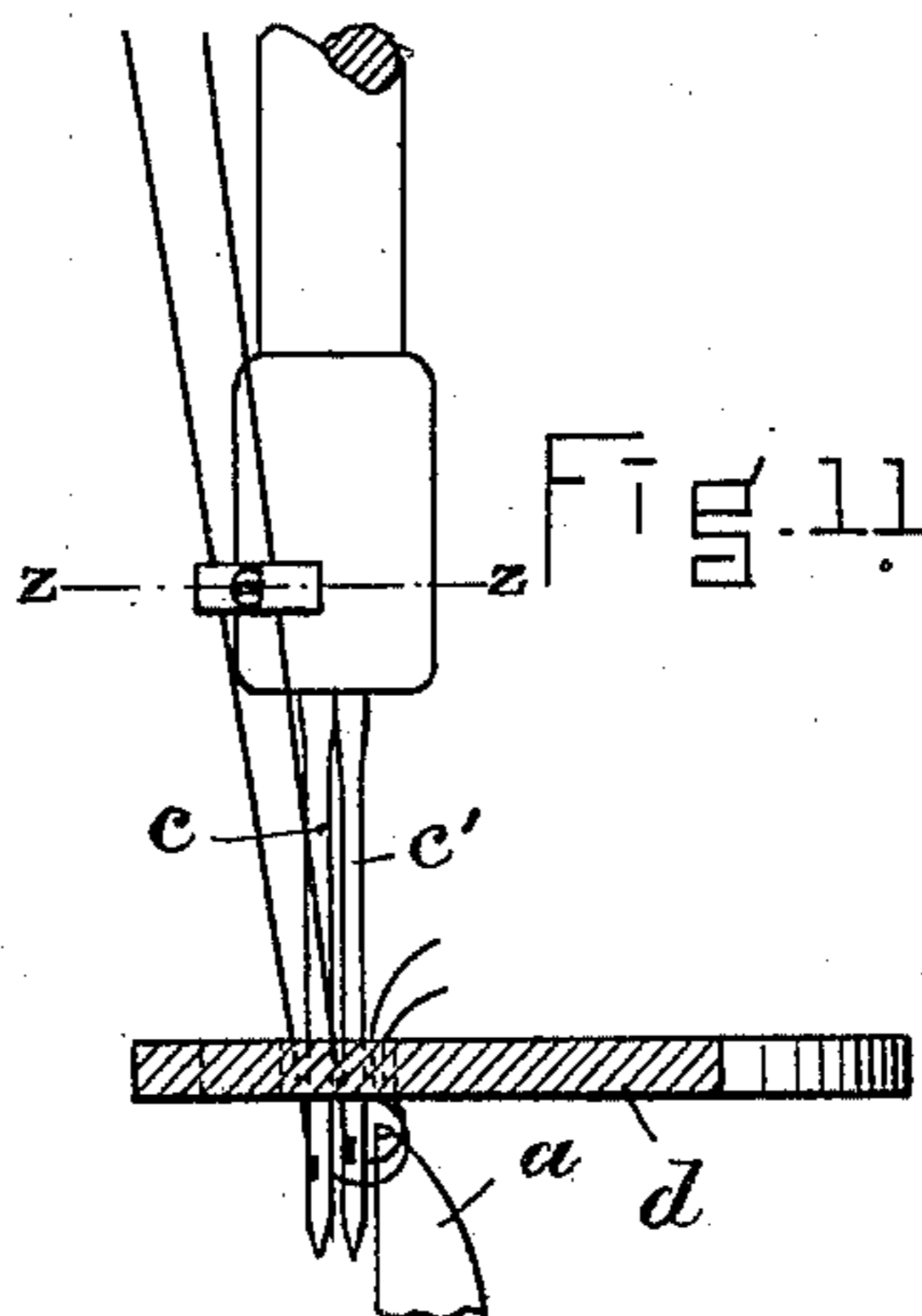
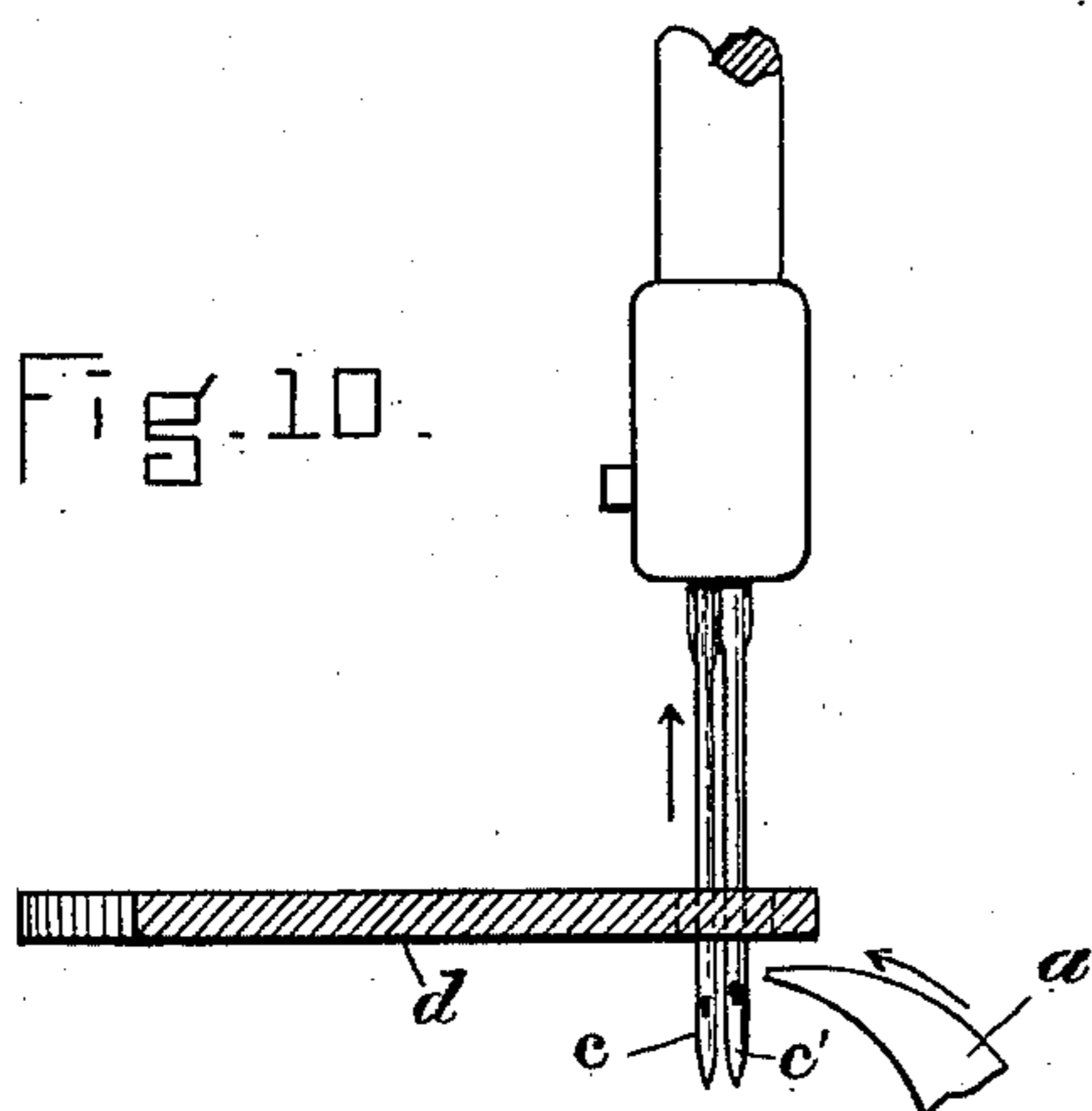


Fig. 11.



Fig. 12.

WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN H. GRIFFIN, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO CHURCHILL & ALDEN, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 398,323, dated February 19, 1889.

Application filed April 9, 1888. Serial No. 270,022. (No model.)

To all whom it may concern:

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

This invention relates to two-needle sewing-machines, the two threads of which are inter-
10 locked by a single lower thread carried by a shuttle.

Heretofore in two-needle machines the needles have usually been arranged abreast of each other, or so that a line from one to the
15 other would be at right angles with the direction of the feed. Needles thus arranged cannot be used in a machine in which the shuttle moves in the general direction of, or substantially parallel with, the feed, because one
20 needle would stand directly between the shuttle and the other needle, so that the shuttle could not obtain access to the loop of upper thread carried by the farther needle. The use of two needles and two upper threads
25 carried thereby, with a single lower thread, has therefore usually been confined to machines in which the shuttle either moves at right angles to the direction of the feed, and therefore is at the same distance from both
30 needles, or oscillates in a horizontal plane. The needles arranged abreast of each other, as heretofore, are open to the following objection—viz., when the line of stitching is curved, the distance between the parallel up-
35 per thread portions of the stitching is less than when the line of stitching is straight, so that there is a lack of uniformity when the line of stitching is partly straight and partly curved.

40 My invention has for its object, first, to enable two needles to be used in a machine having a shuttle moving in the general direction of the feed—that is to say, with the rotary hook-shuttle which oscillates in a plane
45 parallel with the direction of the feed, or with a reciprocating shuttle which moves in a straight line parallel with the feed, or with any of the common types of sewing-machines having a similarly-moving shuttle.

50 The invention has for its object, secondly,

to prevent any perceptible variation between curved and straight lines of stitching as to the distance between the upper-thread portions thereof.

To this end my invention consists in the
55 combinations and arrangements of parts as set forth in the claims at the end of this specification.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents
60 a front elevation of a portion of a sewing-machine of the Singer type provided with my improvements. Fig. 2 represents a view of the opposite side of the portion of the arm of the machine shown in Fig. 1. Fig. 3 repre-
65 sents a top view of a portion of the bed of the machine with the throat-plate removed. Fig. 4 represents an end view of a portion of the machine, showing the bed and throat-plate in section. Fig. 5 represents a perspective view
70 of the two needles, the shuttle-race and shuttle, and a portion of the bed, the throat-plate being removed. Fig. 6 represents a front view of the hook of the shuttle, the needles, and portions of the needle-bar and take-up
75 arm. Fig. 7 represents a perspective view of a portion of the take-up arm, the stud which supports the tension-disks, and the tension-spring on said stud, the tension-disks being removed. Fig. 8 represents a perspective
80 view of the under side of a portion of the throat-plate, the needles, and a portion of the hook of the shuttle. Fig. 9 represents an enlarged top view of a portion of the throat-plate, showing the needles therein. Fig. 10
85 represents a section on line *x x*, Fig. 9. Fig. 11 represents a section on line *y y*, Fig. 9. Fig. 12 represents a section on line *z z*, Fig. 11.

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

I have represented my invention in connection with the Singer machine having the usual rotary hook-shuttle, *a*, which oscillates in a plane substantially parallel with the feed
95 movements of the feed-dog *b*.

c c' represent the needles, which are arranged diagonally, the needle *c* being nearer the front of the machine and farther from the shuttle than the needle *c'*, so that neither
100 needle can prevent the loop of the other needle

from being taken by the shuttle. The throat-plate *d* has an elongated needle-hole, *e*, which is arranged diagonally to conform to the described arrangement of the needles.

5 *f* represents the take-up which supplies thread to the needle *c*, and *f'* represents the take-up which supplies thread to the needle *c'*. Said take-ups are preferably formed on a single arm, *h*, which is pivoted at *i* to the
10 neck of the machine and is oscillated vertically, as usual, by a cam, *j*, on the shaft *k*, which operates the needle and presser-bars. To supply different quantities of thread to the two needles, so that the loop of the needle
15 *c* will be larger than that of the needle *c'*, and will therefore extend across the wider space intervening between the needle *c* and the shuttle, as shown in Figs. 6 and 11, I give the take-up *f* a longer thread-pulling move-
20 ment than the take-up *f'*. This is accomplished by locating the take-up *f* farther from the pivot on which the arm *h* oscillates than the take-up *f'*, as shown in Fig. 2. It will be readily seen, therefore, that more thread is
25 supplied to the needle *c* than to the needle *c'* by each downward movement of the take-up arm.

m m m m represent two pairs of tension disks or plates of the usual form pressed to-
30 gether by a spring, *n*, the pressure of which is adjustable by means of a nut, *o*, on the threaded stud *p*, which supports the tension-disks. The threads pass between said disks to the take-ups *f f'*.

35 *r* represents a tension-spring, which is secured at its inner end to the stud *p* and extends outwardly therefrom, its outer portion being bent to form two loops, *q q*, coinciding with the tension-disks *m m*. The upper threads
40 pass through the loops *q q*, which exert pressure on the threads when the take-up arm is rising. By thus engaging one spring with both threads I secure a uniform tension on both.

45 When the work is turned toward the left while being stitched, the stitching is correspondingly curved; but the parallel upper-thread portions, instead of being crowded or brought nearer together by the turning of the
50 work, as would be the case if the needles were abreast of each other, remain at substantially the same distance apart as when straight stitching is being made, so that there is not a noticeable variation between the curved and
55 straight lines of stitching as to the distance apart of the needle-threads on the upper side of the work, this result, so far as keeping the curved lines of stitching properly separated is concerned, being due to the diagonal ar-
60 rangement of the needles.

For sewing seams which are to be curved to the left (which is the usual manner of sewing seams in sewing "scallops" on boot and shoe work) the needles are diagonally ar-
65 ranged, as represented in Fig. 9, or with the

needle which is nearest the operator also nearest to the path of movement of the shuttle; but if it be desired to sew seams which are to be curved to the right this diagonal arrangement of the needles would be reversed, and
70 the needle which is farthest from the operator would be placed nearest to the path of movement of the shuttle to keep the curved seams separated.

I prefer to make the eye of the forward
75 needle, *c*, somewhat lower than that of the rear needle, *c'*, as shown in Figs. 8 and 10, to additionally insure the engagement of the loop of the forward needle, *c*, with the shuttle by compensating for the upward movement
80 of the needles that takes place while the shuttle is entering the loops and for the curvature of the shuttle when the same is of the rotary hook form here shown.

The presser-foot *t* is preferably provided
85 with a spring-arm, *u*, formed to bear on the outer edge of the work beside the needles to prevent the edge of the work from sticking to and being partially lifted by the needles when they are rising.
90

I claim—

1. The combination, in a sewing-machine, of a shuttle whose movement is substantially parallel with the feed, two undeflected needles arranged diagonally with relation to the move-
95 ment of the said shuttle, one of the said needles being thus always nearer to the path of movement of the shuttle than the other, and suitable auxiliary stitch-forming devices co-operating with the said shuttle and diagonally-arranged needles, as set forth.
100

2. In a sewing-machine, the combination, with a shuttle whose movement is substantially parallel with the direction of the feed and with suitable auxiliary stitch-forming
105 mechanism co-operating therewith, of two undeflected needles diagonally arranged with relation to the movement of the shuttle, and having their eyes arranged at different heights, as set forth.
110

3. In a sewing-machine, the combination of a shuttle whose movement is substantially parallel with the direction of the feed, two needles diagonally arranged, as described, one of said needles being nearer the path of the
115 shuttle than the other, and two take-ups engaging the threads of the respective needles, the eye of the take-up which delivers thread to the needle farthest from the shuttle being farther from the fulcrum of its take-up lever
120 than the other take-up eye, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of April, A. D. 1888.

JOHN H. GRIFFIN.

Witnesses:

F. M. BIXBY,
CHAS. C. BIXBY.