

(No Model.)

2 Sheets—Sheet 1.

G. H. COLLEY.  
SEWING MACHINE.

No. 508,600.

Patented Nov. 14, 1893.

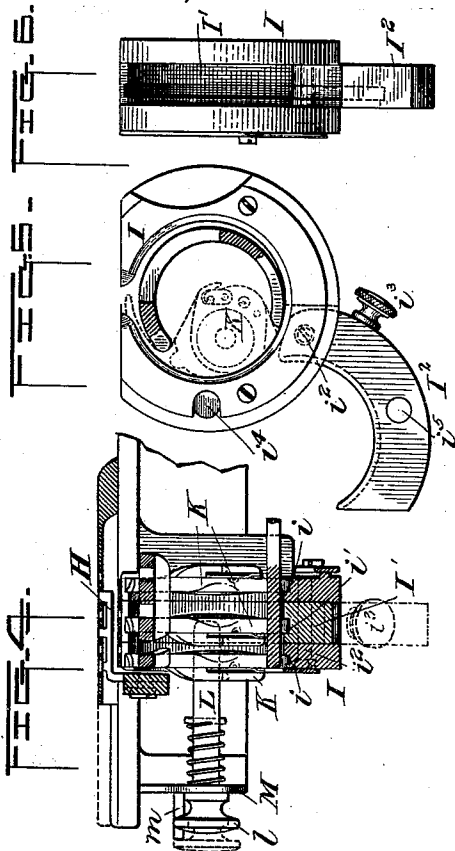
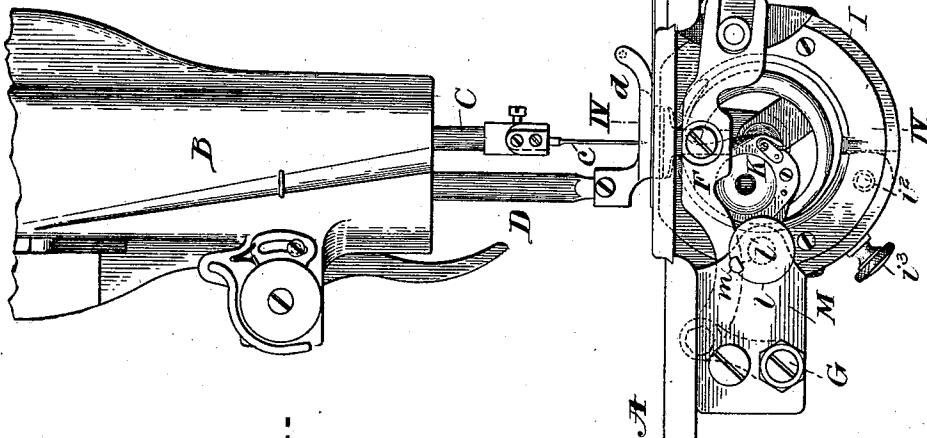
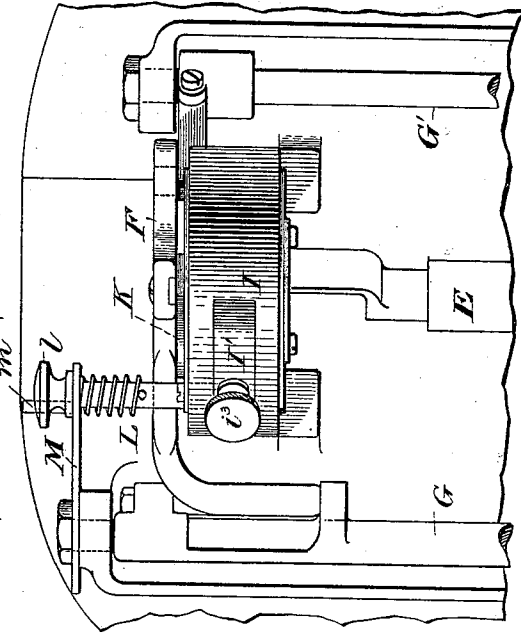


Fig. 2--



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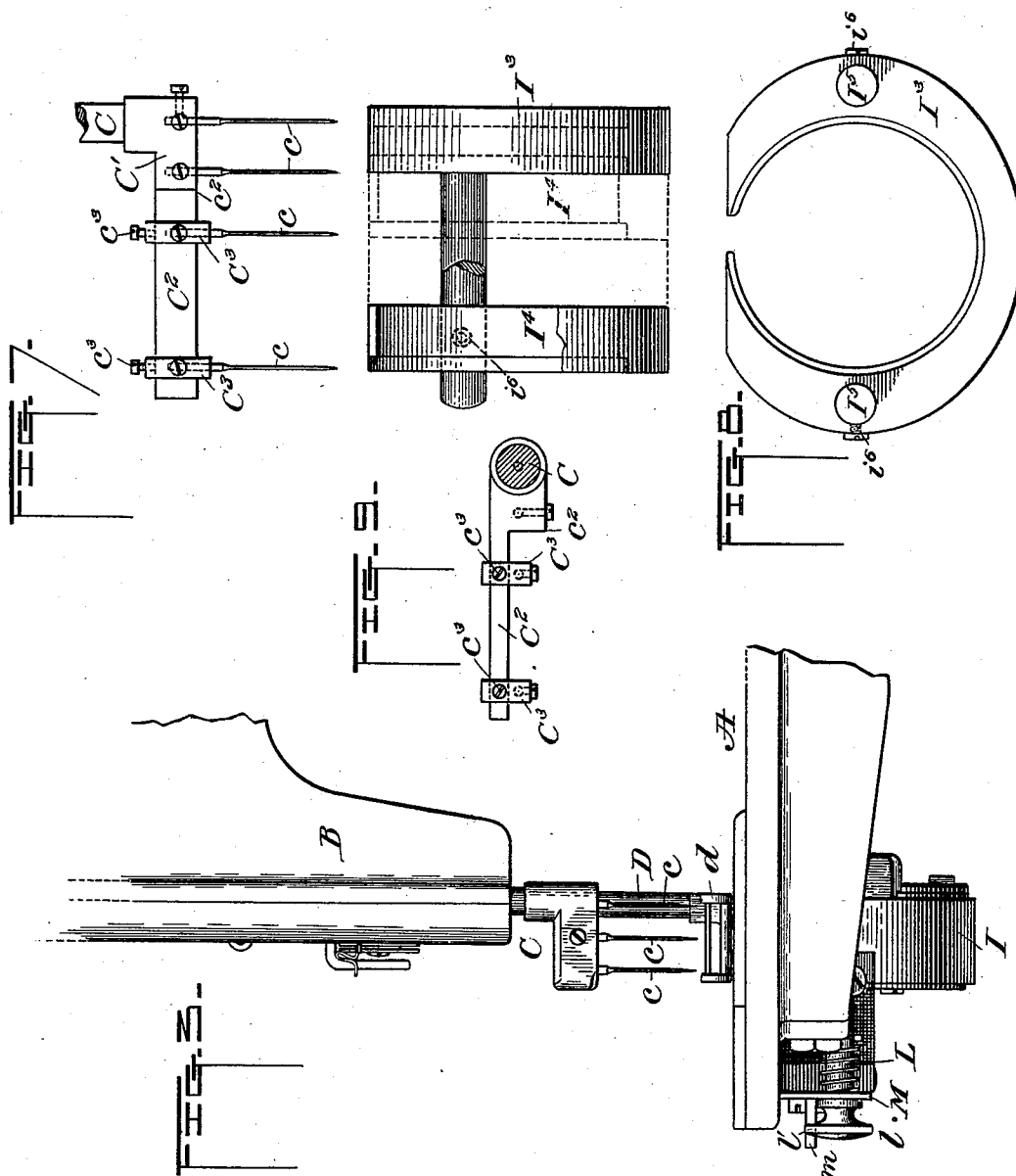
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Witnesses  
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Chas. E. Riordon.

Inventor  
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# UNITED STATES PATENT OFFICE.

GEORGE H. COLLEY, OF JACKSON, MICHIGAN, ASSIGNOR TO THE WEEKS  
COLLEY MANUFACTURING COMPANY, OF SAME PLACE.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 508,600, dated November 14, 1893.

Application filed January 23, 1893. Serial No. 459,350. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. COLLEY, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to sewing machines, but more particularly to two-needle or multiple-needle machines of the rotating shuttle type.

One object of the invention is to provide means for readily introducing an extra needle or needles in an ordinary two-needle or multiple-needle rotating shuttle machine having the usual double or multiple shuttle-race.

Another object is to provide means for multiplying the number of needles that may be actuated by a single driving shaft as ordinarily employed in one and two-needle machines.

A further object is to provide means for combining a plurality of shuttles and needles without circumscribing or limiting the relative positions of the needles or the number that may be employed in a particular machine.

These several objects may be attained by the mechanism illustrated in the accompanying drawings, in which I have shown two species of the invention applied to a Singer two needle machine, and in one of which the shuttle-race for the introduction of the third shuttle is formed in separate arcs with a removable or hinged section and means for securing the same in proper position, while in the other a number of shuttle-races or separable circular sections of a multiple race and needles are combined in such manner as to permit a greater or less number to be employed and the spacings between the shuttles and needles to be adjusted as may be desired. Other forms may, however, be employed and various changes may be made in the construction and arrangement of parts, according to requirements, and to adapt the invention to other types of machines employing rotating shuttles.

The invention will first be described with reference to the accompanying drawings, which form a part of this specification, and then pointed out in the claims at the end of this description.

Referring to the drawings by letters of reference, Figure 1, represents a front end elevation of so much of a sewing machine as is necessary to illustrate the application of my invention. Fig. 2, is a bottom plan of the same. Fig. 3, is a side elevation. Fig. 4, is a detail sectional view, the section being taken on the line IV—IV of Fig. 1, with the shuttle in the position shown in Fig. 5. Fig. 5, is a side view of the shuttle-race detached; and Fig. 6, is a rear view of the same. Fig. 7, is a detail side elevation illustrating a modification of the invention. Fig. 8, is a side view of the race-way shown in Fig. 7; and Fig. 9, is a detail plan of the needle-holder.

A, denotes the work-plate of the sewing machine; B, the overhanging arm of the frame or goose-neck which supports and guides the needle-bar C, and presser-foot bar D.

c, c, are the needles, and d, the presser-foot, carried by the bars C, and D, respectively.

E, denotes the usual shuttle driving shaft; F, the feed rocker-arm; G and G', the feed rocker-shafts; H, the feed-dog; I, a circular interiorly grooved casing forming the race-way, and K, the rotary shuttles working in said grooves or races and carrying the usual bobbins.

The parts as thus far described are of the usual and well known construction in rotating shuttle machines, and may be operated in the usual way, and therefore further description thereof herein is not deemed necessary.

In the ordinary two-needle machine there are two races formed in a single casting or casing and in the multiple-needle machine a series of races in which the shuttles are confined and guided in their movements; a fixed number of needles and shuttles being employed and working in positions which are relatively unchanging; and it is oftentimes desirable to introduce another needle or needles, but this cannot be done with machines as ordinarily constructed. To accomplish

this result in an ordinary two-needle machine I provide an intermediate shuttle-race or races  $i'$ , between the usual races  $i, i'$ , by dividing the race-way casing vertically or forming an elongated circumferential slot  $I'$ , therein to receive a segment  $I^2$ , the curved inner face of which is grooved to coincide with the groove in the stationary portion of the race-way and form a guide or race for a third shuttle. The segment  $I^2$  may be secured in position in any proper manner, but for convenience in opening and closing it so as to permit the insertion or removal of the shuttle, the segment is preferably hinged as at  $i^2$ , and provided with a knob or handle  $i^3$ , for turning it upon its hinge so as to open or close the shuttle-race. When closed the segment  $I^2$  may be locked by a spring-pressed locking pin or bolt  $L$ , which slides in a bracket  $M$ , underneath the work-plate in position to enter an opening  $i^4$ , in the race-way casing, which opening registers with a corresponding opening  $i^5$ , in the segment. The pin  $L$ , is provided with a thumb piece or milled head  $l$ , having a peripheral notch  $l'$ , which is engaged by and slides along a pin or stud  $m$ , projecting from the bracket  $M$ , so that the locking pin is prevented from turning until the notch passes the outer end of the stud, as indicated by the dotted lines in Fig. 4, whereupon, by a slight rotary movement of the locking pin, the notch in the head will be turned out of the path of the stud so as to cause the latter to hold the locking pin disengaged from the segment. Thereupon the segment may be drawn out to the position shown in dotted lines in Fig. 4, and in full lines in Fig. 5, by a pull upon the knob  $i^3$ .

Instead of dividing the race-way into separate arcs as thus far described, with removable or hinged sections for introducing the third or greater number of shuttles, the race-way may consist of two or more separable circular sections or a combination of races  $I^3$ ,  $I^4$ , as illustrated in Figs. 7 and 8. The section or race  $I^3$ , is stationary and provided with pins  $I^5$  which engage openings through the adjustable section  $I^4$ , which may be adjusted along said pins and secured at any desired distance apart thereon or with reference to the stationary section, by means of set screws  $i^6$ , or in any proper manner. To adapt the needles to be correspondingly adjusted, I provide means for securing the needles in any desired position with reference to the positions of the shuttles and shuttle-races, as illustrated in Fig. 7. This may be done in a number of ways, but I preferably provide an arm or needle-holder  $C'$ , having the usual needle-sockets and socketed head to receive the needle-bar with a lateral extension  $C^2$ , offset as at  $c^2$ , so as to set the needles carried thereby in line with the needles in the usual needle-sockets, and secure upon said extension sliding clips  $C^3$ ,  $C^3$ , having sockets and set screws therein as shown for

the attachment of the needles. The clips may be secured at any desired point along the supporting bar by set screws  $c^3$ .

To remove the intermediate shuttle in Figs. 1 to 6, the driving wheel of the machine should be turned toward the operator until the needle-bar is at its lowest point, whereupon the bolt  $L$ , may be drawn out and given a slight turn whereby it will be locked so as to prevent it from being forced inward by the recoil of the spring. Then by a downward pull upon the knob  $i^3$ , the section or segment  $I^2$  of the shuttle-race may be brought to the position shown in dotted and full lines in Figs. 4 and 5, respectively, in which position the shuttle  $K$ , may be easily opened for changing bobbins or removal entirely. Figs. 1, 2 and 4 show the shuttle race closed, and Figs. 5 and 6 show the race opened for refilling. The dotted lines in Fig. 7 show the combination shuttle race closed. The full lines show the race opened by sliding the outer section  $I^4$  along on the bars  $I^5$  to permit easy access to the intermediate shuttle or shuttles either for removal or refilling with bobbins.

It will be understood of course that the invention in either form is not restricted to the use of three needles, but additional needles may be introduced by making similar combinations of shuttle-races and needles corresponding *ad libitum*. Fig. 7 illustrates the adaptability and scope of this plan of multiplying needles and rendering the same adjustable so as to change the spacing of the needles to correspond with the spacing of the shuttles, which is a very desirable feature of the invention.

By providing the needle holder with adjustable needle-sockets, as illustrated in Fig. 7, it is adapted to be used interchangeably with a needle holder of ordinary construction, as illustrated in Fig. 3, and also in connection with multiple shuttles of different widths, requiring the needles to be placed at different distances apart; provision being made for setting the needles to correspond with the distance between the shuttles.

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

1. In a rotating shuttle sewing machine, the combination of a race-way casing provided with a plurality of guide grooves or shuttle races, and a supplementary race and means for opening and closing the latter independently of the other races so as to permit the introduction or removal of a supplementary or additional shuttle without disarranging other parts of the machine, substantially as described.

2. In a rotating shuttle sewing machine, a multiple race comprising a rigid race-way casing having a plurality of circular guide-grooves or races therein to receive a fixed number of shuttles, and a sectional supplementary race and means for opening and closing

ing the same so as to permit the introduction or removal of an additional shuttle at will, substantially as described.

3. In a rotating shuttle sewing machine, a multiple race comprising a race-way casing provided with a plurality of interior circular guide-grooves or races and with an intermediate elongated circumferential slot, a segment fitting said slot and provided with a guide-groove coinciding with an intermediate groove in the casing so as to form a supplementary race, and means for securing said segment in said slot, substantially as described.

4. In a rotating shuttle sewing machine, a multiple race comprising a raceway casing provided with a plurality of interior circular guide-grooves or races and with an intermediate elongated circumferential slot, a hinged segment fitting said slot and provided with a guide-groove coinciding with an intermediate groove in the casing so as to form a supplementary race and means for securing the segment in said slot, substantially as described.

5. In a rotating shuttle sewing machine, a multiple race comprising a raceway casing provided with a plurality of interior circular guide-grooves or races and with an intermediate elongated circumferential slot, a hinged segment fitting said slot and provided with a guide-groove coinciding with an intermediate groove in the casing so as to form a supplementary race, and a spring-pressed pin for locking said segment within the slot, substantially as described.

6. In combination with the raceway casing provided with a plurality of interior circular guide-grooves or races and an elongated circumferential open slot intercepting one of said grooves, the segment fitting said slot and

having a groove therein struck on the arc of the circle described by said intercepted groove, so as to form a sectional supplementary race the latter being adapted to be opened and closed independently of the other races, and means for securing the segment in said slot, substantially as described.

7. In combination with the raceway casing provided with a plurality of interior circular guide-grooves or races and an elongated circumferential open slot intercepting one of said grooves, the hinged segment fitting said slot and having a groove therein struck on the arc of the circle described by said intercepted groove, so as to form a sectional supplementary race, the latter being adapted to be opened and closed independently of the other races to permit the insertion or removal of an additional shuttle, and the sliding pin adapted to lock said segment when closing said slot, substantially as described.

8. In a rotating shuttle sewing machine, the combination of a multiple shuttle race-way casing provided with a supplementary race and means for opening and closing the latter to permit the insertion or removal of an additional shuttle, together with the needle bar and the needle holder supporting the adjustable needle sockets, and means for securing the latter in various positions, whereby the number of needles employed and the spacing of the same may be varied to correspond with the number and spacing of the shuttles, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. COLLEY.

Witnesses:

CHARLES F. LOWE,  
LEWIS S. WINANS.