

(No Model.)

J. E. BERTRAND.  
SHUTTLE FOR SEWING MACHINES.

No. 432,010.

Patented July 15, 1890.

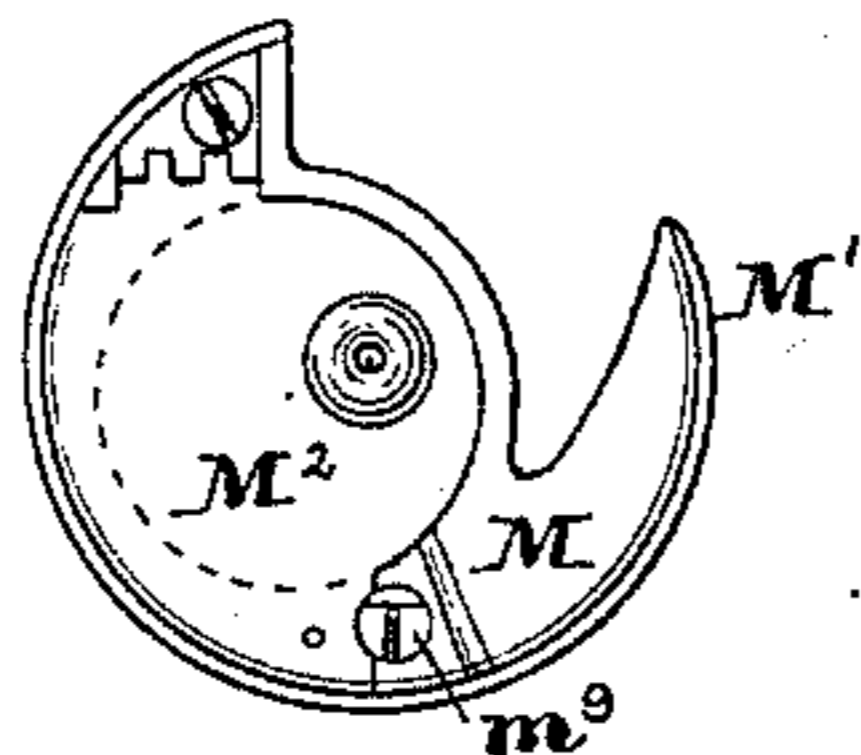


Fig. 1.

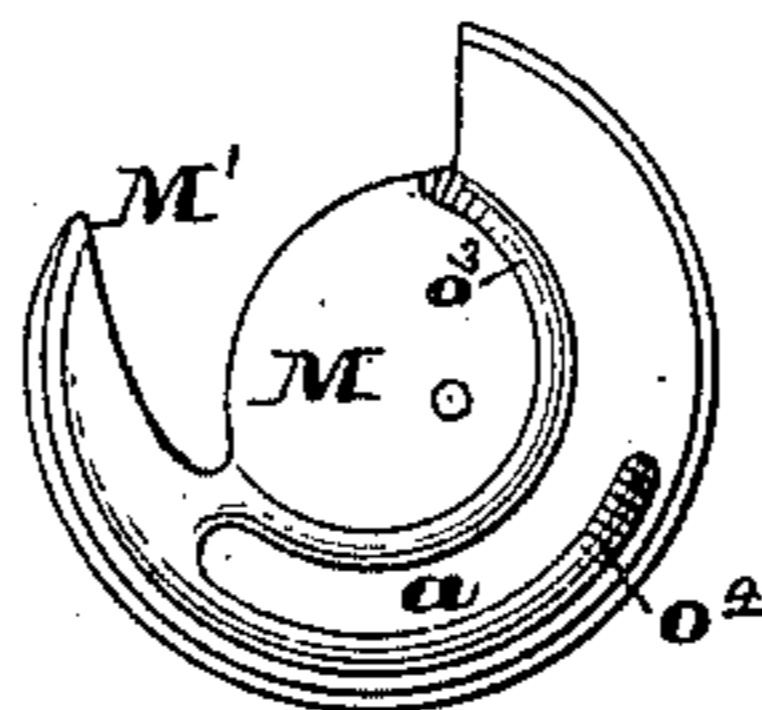


Fig. 2.

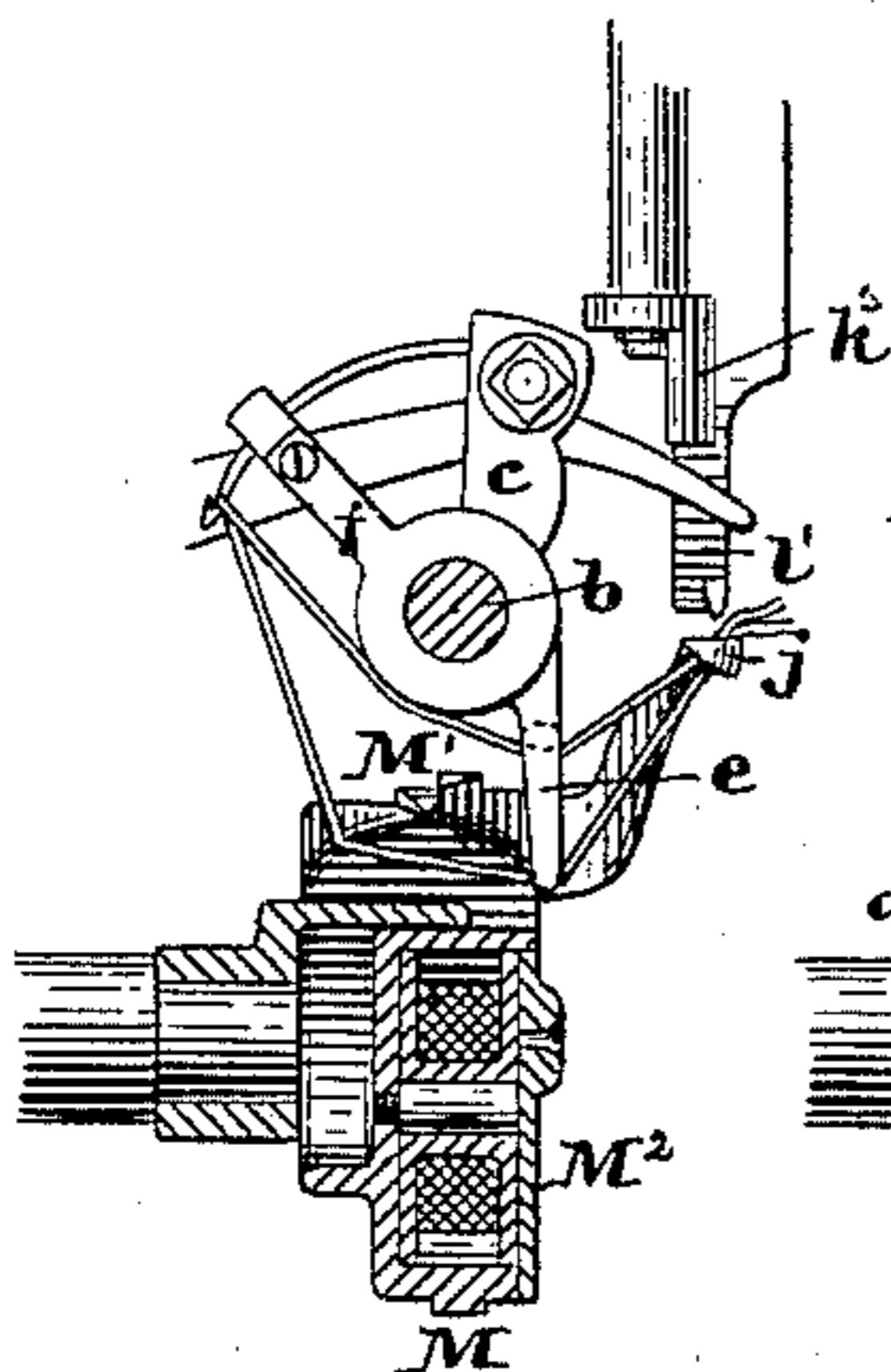


Fig. 3.

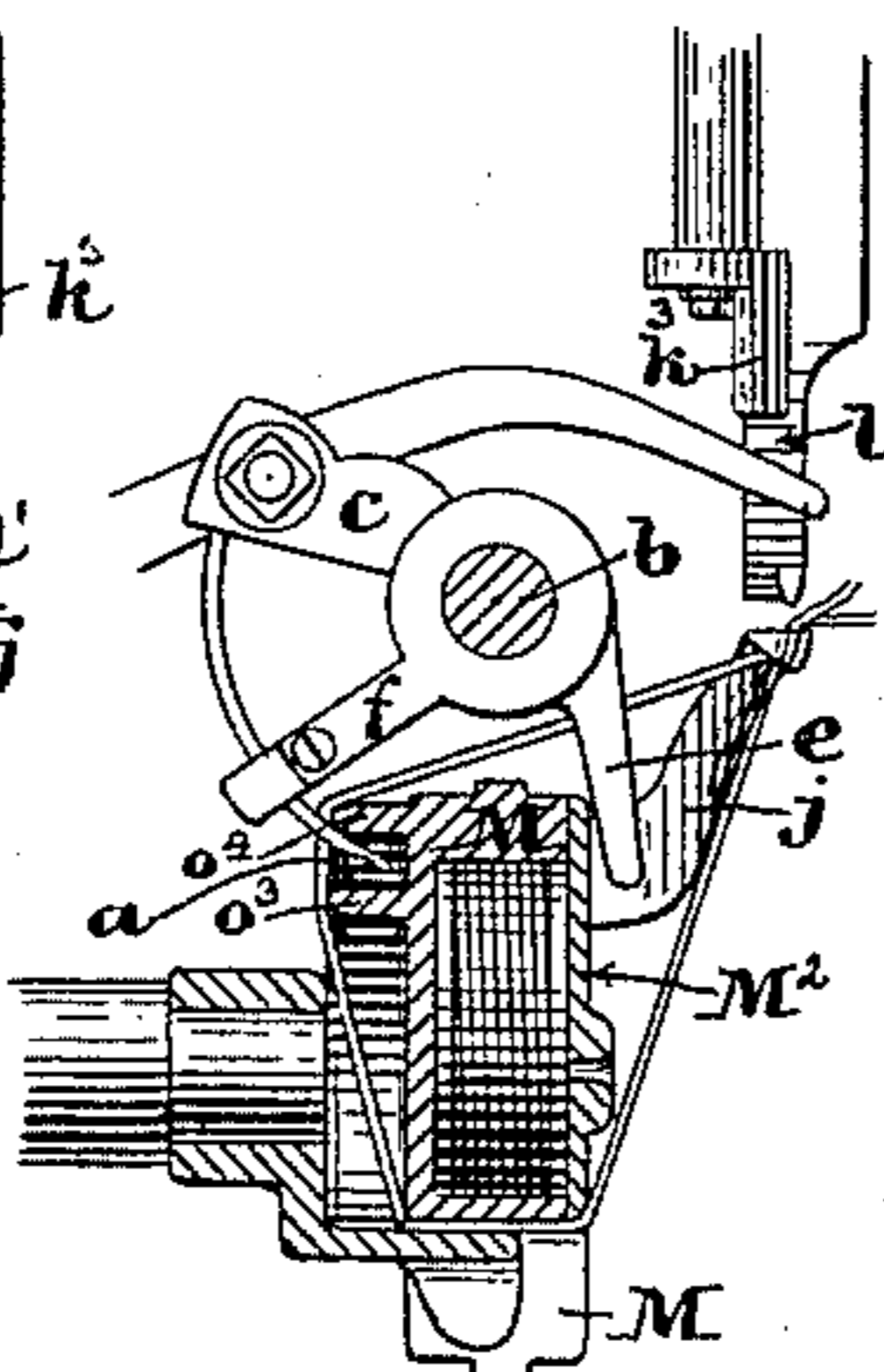


Fig. 4.

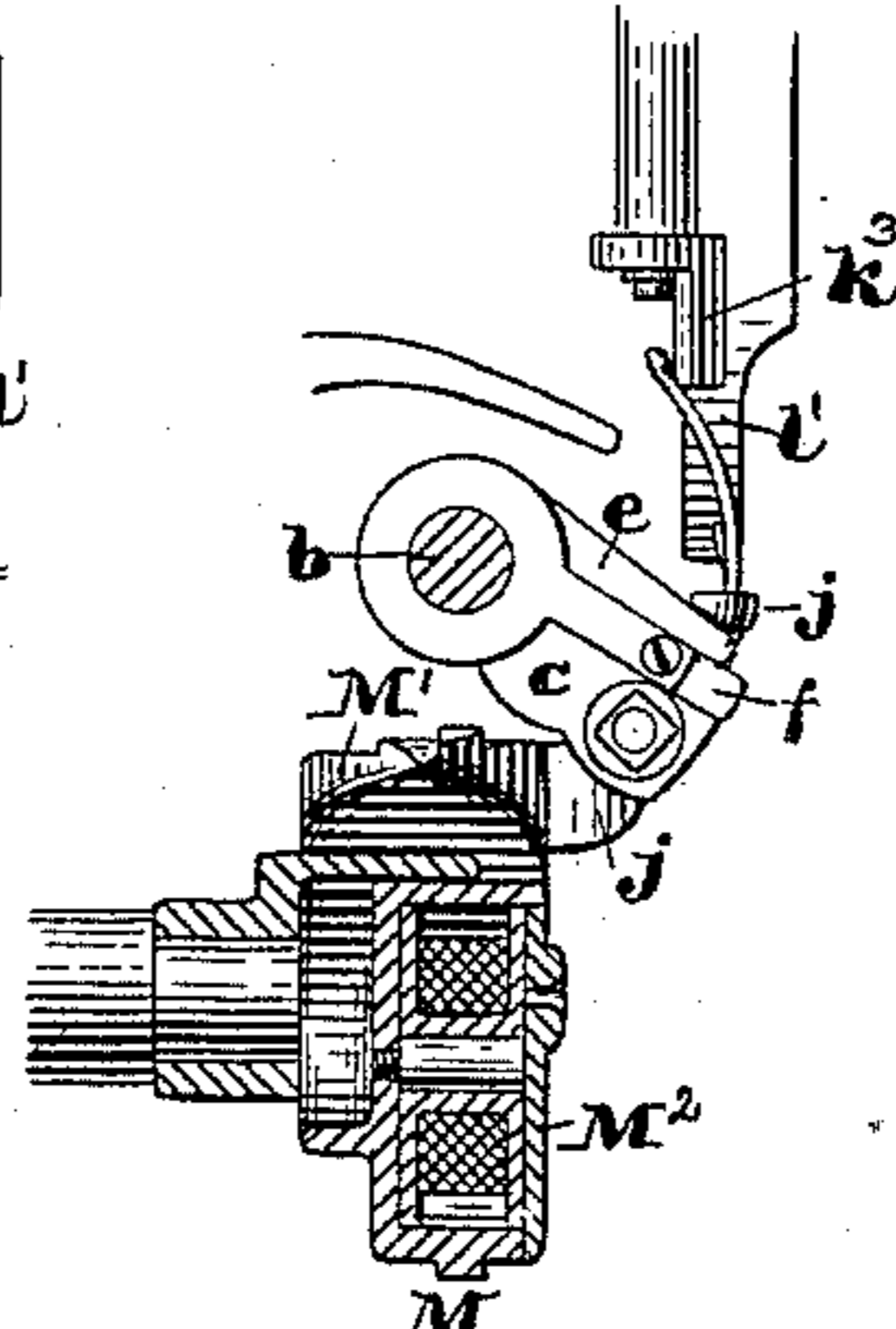


Fig. 5.

**Witnesses:**  
Walter E. Lombard  
Henry H. Kendall.

**Inventor:**  
Joseph E. Bertrand,  
by N. E. Lombard  
Attorney.

# UNITED STATES PATENT OFFICE.

JOSEPH ELI BERTRAND, OF BOSTON, ASSIGNOR OF ONE-HALF TO MELLEN BRAY, OF NEWTON, MASSACHUSETTS.

## SHUTTLE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 432,010, dated July 15, 1890.

Application filed January 18, 1890. Serial No. 337,289. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH ELI BERTRAND, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and  
5 useful Improvement in Sewing-Machine Shuttles, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to sewing-machine  
10 shuttles of the class known as "rotary shuttles;" and it consists in a rotary shuttle for sewing-machines provided with a loop-opening hook narrowed to a point in the direction of the length of its axis and having formed  
15 upon its back or rear face two rearwardly-projecting ribs arranged concentric to the axis of revolution of said shuttle and forming the walls of a groove to receive the barbed end of the needle during the forward revolution of  
20 said shuttle, whereby said ribs are made to cast off the loop from the barb of the needle.

Figure 1 of the drawings is a front elevation of my improved shuttle. Fig. 2 is a rear elevation of the same. Fig. 3 is a vertical section of the shuttle through its axis of revolution in its proper relation to the needle when  
25 said needle is in its rearmost position. Fig. 4 is a similar view with the shuttle in proper relation to the needle when said needle is in its intermediate standstill position and the shuttle has cast off the thread from the barb of the needle, and Fig. 5 is a similar view illustrating the relative position of the parts when  
30 the needle is at the extreme of its forward and upward movement and the shuttle is making its backward movement.

In the drawings, M is the main body of the shuttle, having a portion of its periphery cut away to form the hook M', which has its sides  
40 cut away or narrowed in the direction of the length of its axis to a point located between the front and rear faces of the body of the shuttle, as shown in Figs. 3 and 5, and provided with a circular recess in its front side  
45 to receive a bobbin or spool of thread, said recess being closed by the hinged cover M<sup>2</sup>, which is secured in said closed position by the screw-head m<sup>9</sup>, one side of which is cut away to permit the opening of said cover.

50 So far the shuttle is substantially the same

as that described in another application of mine filed July 29, 1889, Serial No. 319,015.

Upon the back or rear face of the shuttle I form two rearwardly-projecting ribs o<sup>3</sup> and o<sup>4</sup>,  
55 curved concentric to the axis of revolution of the shuttle and parallel to each other, with a curved groove a between them. These ribs are arranged at such distances from the axis of said shuttle that the center of the groove  
60 a as the shuttle revolves shall substantially coincide with the path or be intersected by the point of the needle, so that said ribs shall serve as a cast-off for the needle-thread, instead of  
65 employing an independent cast-off, as heretofore practiced.

This shuttle is shown and described in another application of mine of even date herewith, Serial No. 337,290, but not claimed, except in combination with other operating  
70 parts of the sewing-machine.

The operation of my improved shuttle is very simple, but is also very effective as a means of casting off the thread from the barb of the needle. The shuttle may be revolved  
75 intermittently always in the same direction, as described in my before-cited prior application, or it may be oscillated about its axis by having imparted thereto alternate forward and backward revolutions, as described in my  
80 application of even date herewith, its forward revolution in either case being so timed relatively to the movements of the needle that when the hook of the shuttle has fairly entered the loop of the thread held by the needle the needle moves forward from the position shown in  
85 Fig. 3 to the position shown in Fig. 4, where it remains in a state of rest until the shuttle has passed through the loop of thread and completed its revolution, when the needle completes its forward and upward movement,  
90 as shown in Fig. 5.

Figs. 3, 4, and 5 are shown simply to illustrate the operation of the shuttle relative to the needle in forming the stitch, and particularly in casting off the thread from the barb  
95 of the needle. In said figures b is the needle-carrying shaft, having fixed thereon the needle-carrying radius-arm c, the loop-spreader e, and the needle and awl guiding arm f. j is the work-supporting arm, k<sup>3</sup> the thread-car- 100

rier, and  $l'$  the presser-foot, all constructed, arranged, and operating as shown and described in my other application of even date herewith. When the shuttle and needle are  
5 in the positions indicated in Fig. 4, with the barb of the needle within the groove  $a$  between the ribs  $o^3$  and  $o^4$ , the thread of the loop through which the shuttle is passing comes in contact with the outer edges of the ribs  $o^3$  and  
10  $o^4$ , and is thus disengaged from the barb of the needle, thus dispensing entirely with the use of a separate device and the mechanism for operating it for casting off the loop from the barb of the needle.

15 What I claim as new, and desire to secure by Letters Patent of the United States, is—

A rotary shuttle for sewing-machines provided with a loop-opening hook narrowed to

a point in the direction of the length of its axis and having formed upon its back or rear  
20 face two rearwardly-projecting ribs arranged concentric to the axis of revolution of said shuttle and forming the walls of a groove to receive the barbed end of the needle during  
the forward revolution of said shuttle, where-  
25 by said ribs are made to cast off the loop from the barb of the needle.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of  
30 January, A. D. 1890.

JOSEPH ELI BERTRAND.

Witnesses:

WALTER E. LOMBARD,  
C. A. MCCLURE.