

(No Model.)

2 Sheets—Sheet 1

S. R. SARGENT.

SEWING MACHINE.

No. 287,867.

Patented Nov. 6, 1883.

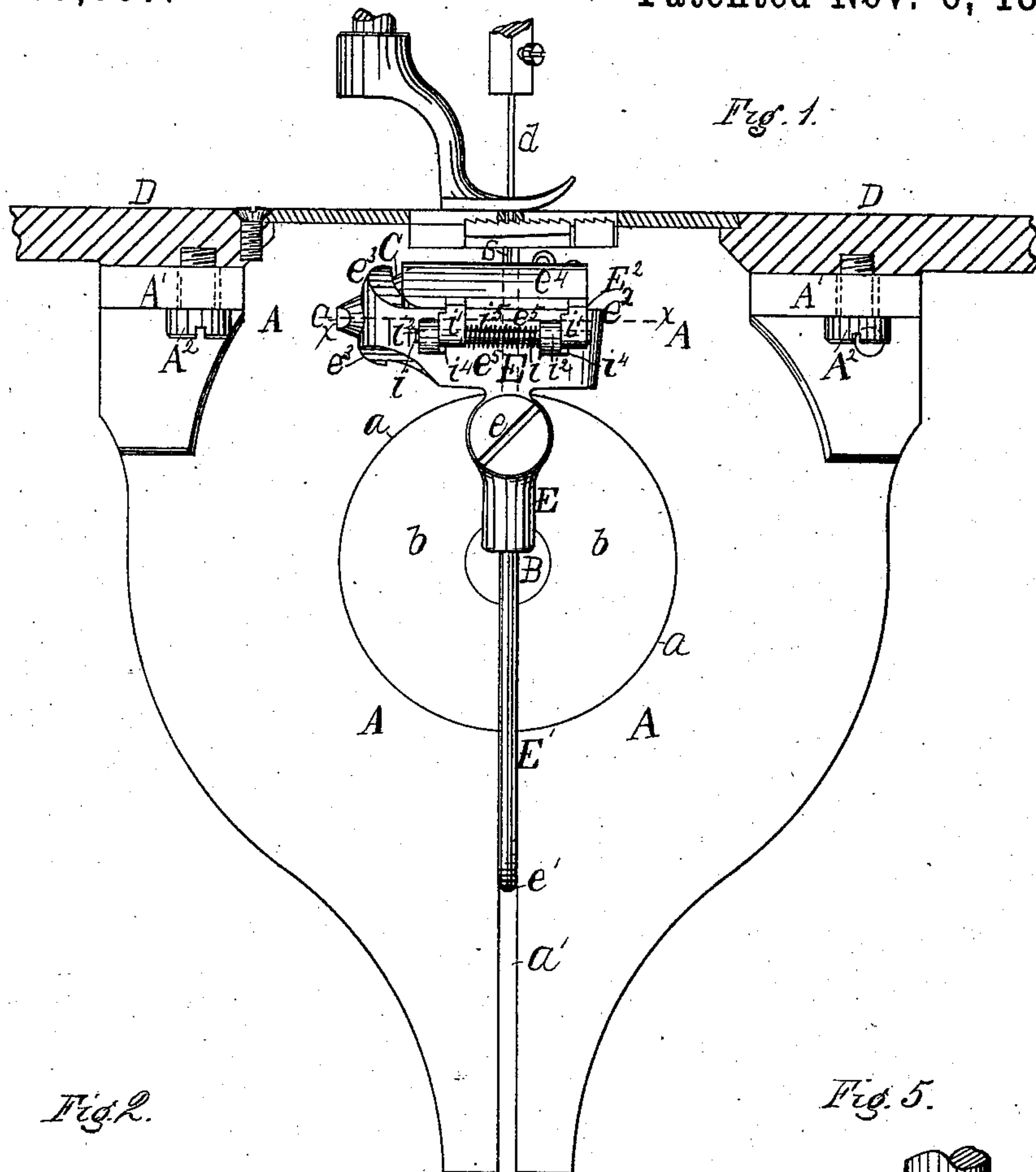


Fig. 1.

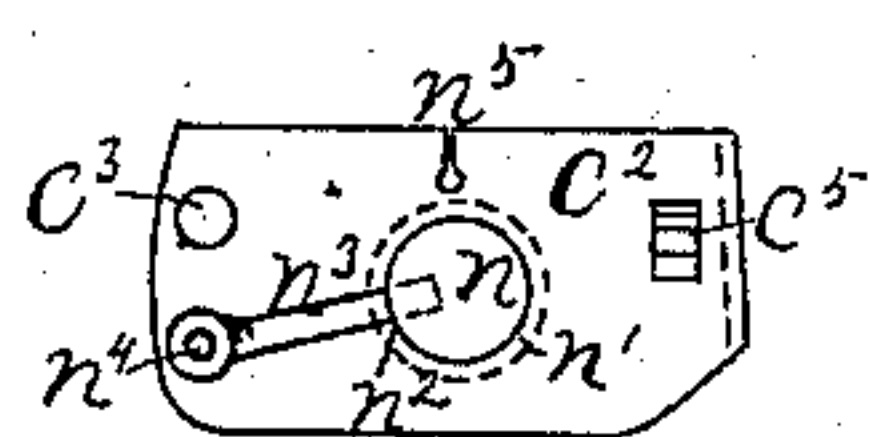


Fig. 2.

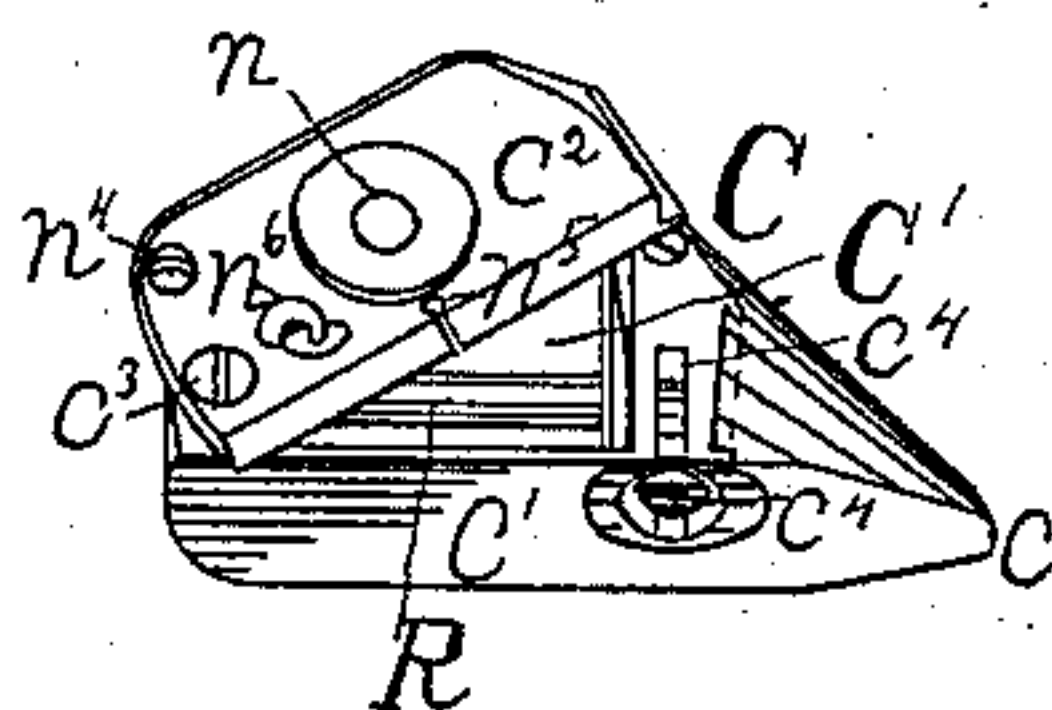


Fig. A.

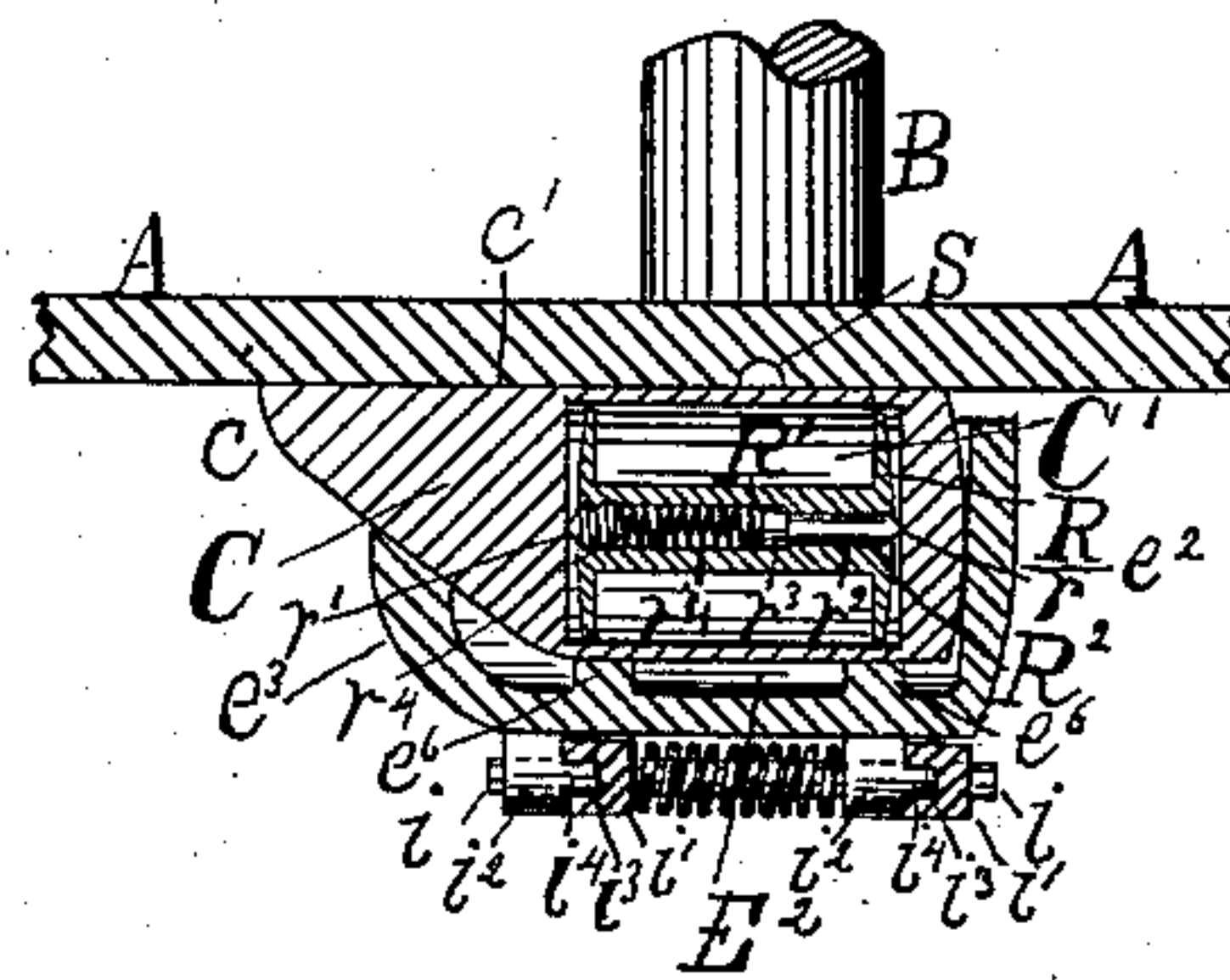


Fig. 5.



Fig. 3.

Witnesses
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(No Model.)

2 Sheets—Sheet 2.

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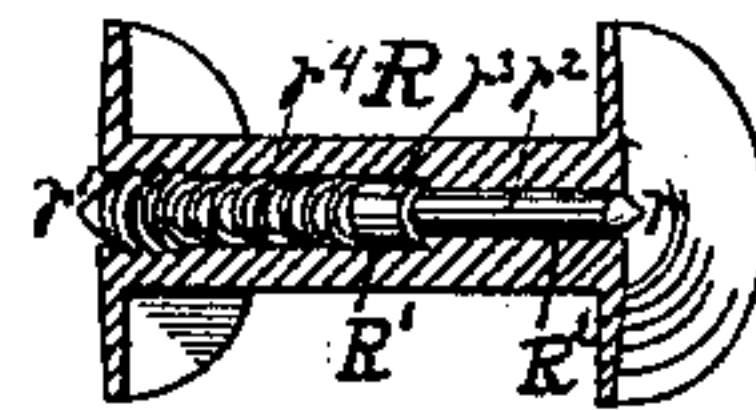
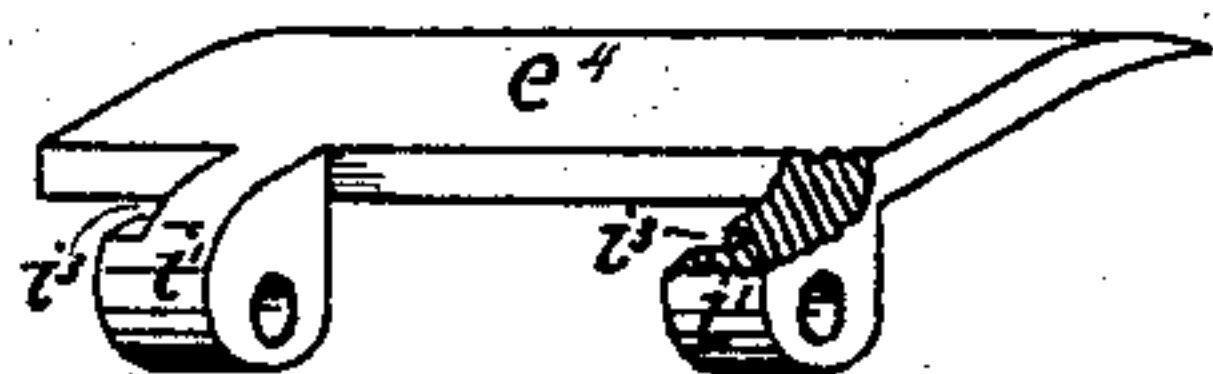


Fig. 8.

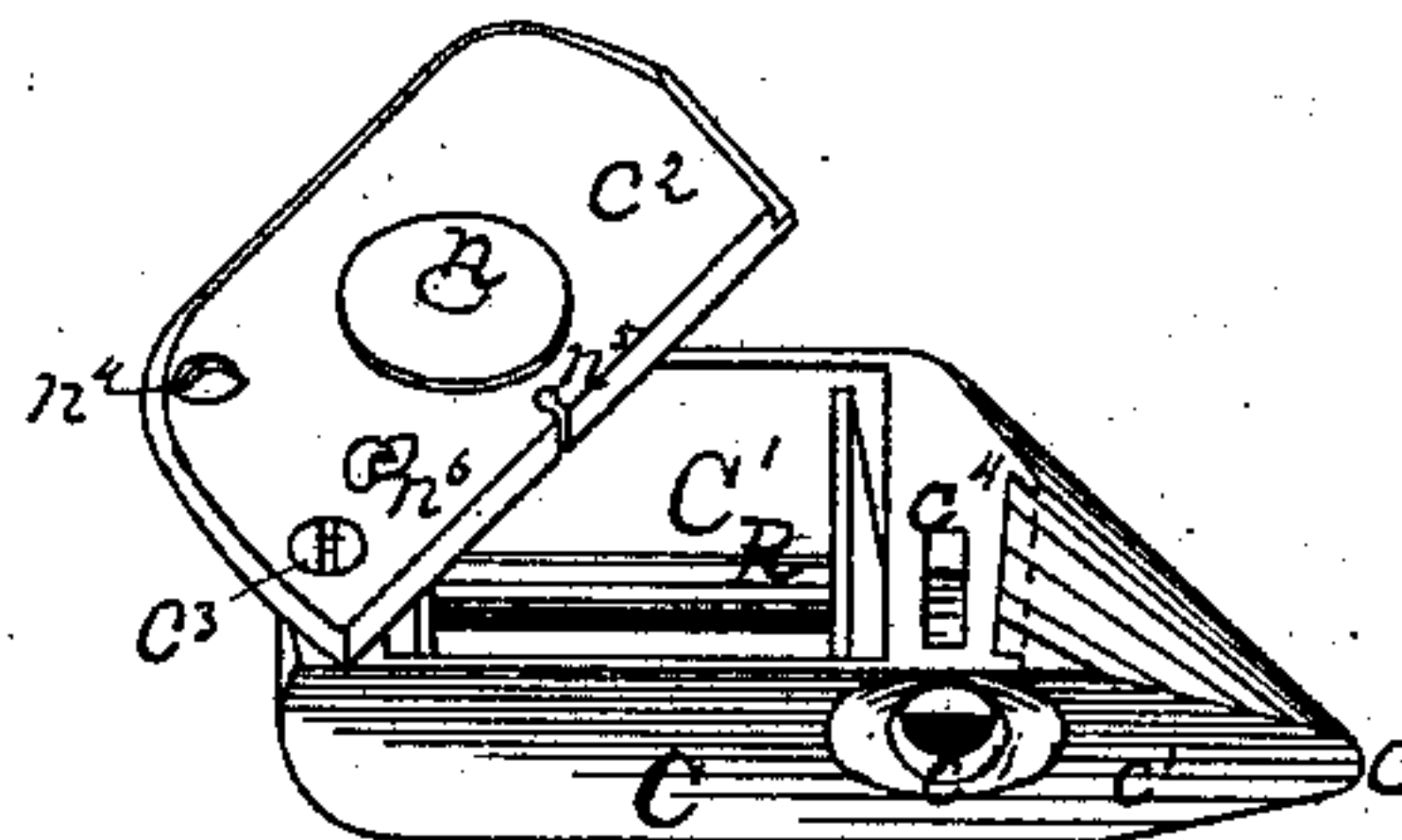
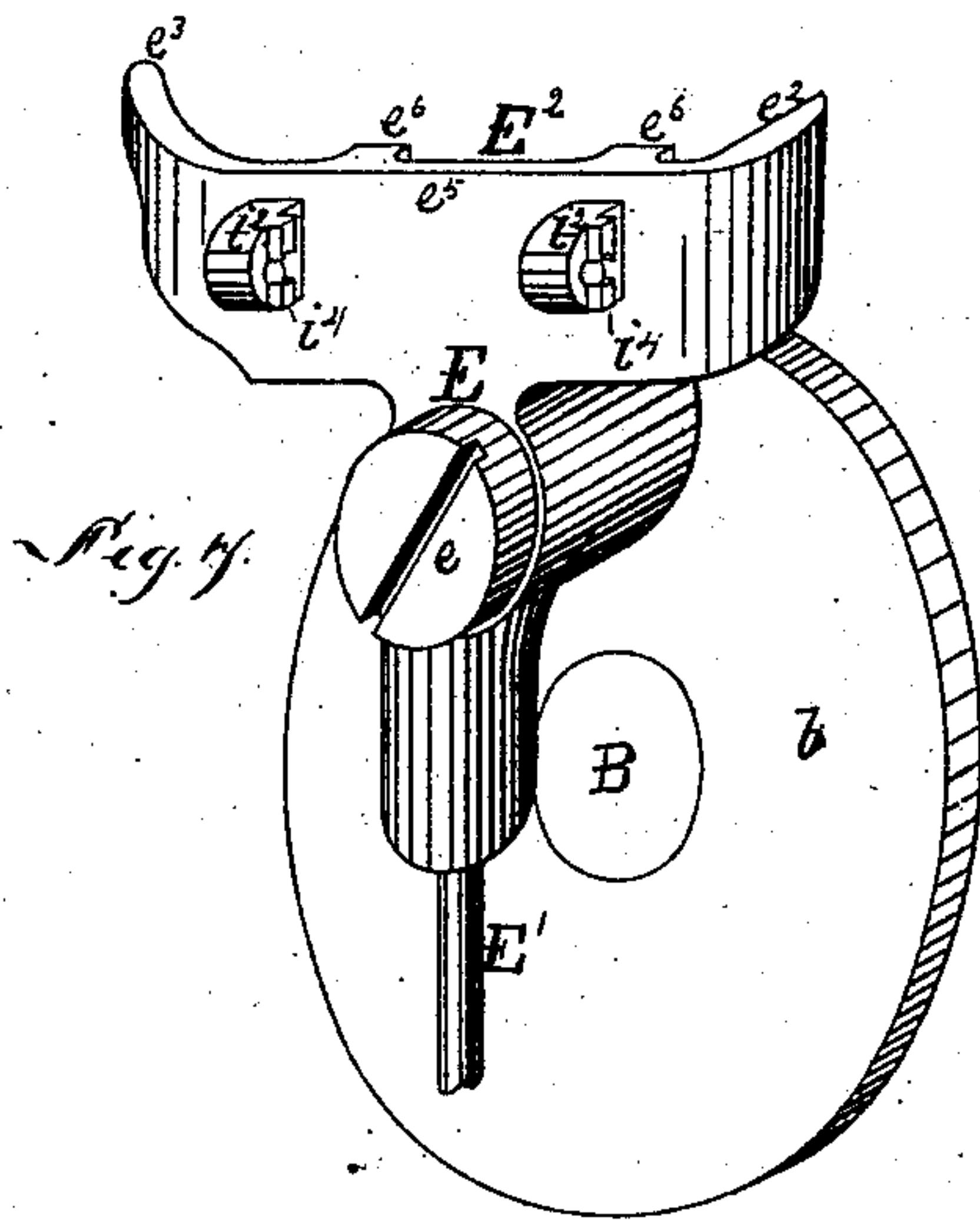


Fig. 9.

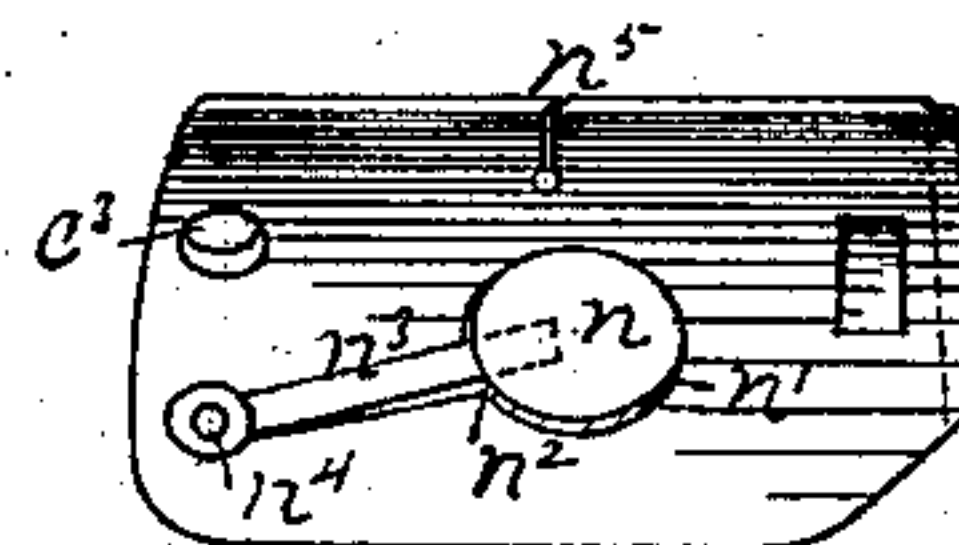


Fig. 10.

Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL R. SARGENT, OF TERRE HAUTE, INDIANA.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 287,867, dated November 6, 1883.

Application filed January 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. SARGENT, of Terre Haute, county of Vigo, State of Indiana, have invented or discovered a new and useful Improvement in Sewing-Machines; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a view in side elevation of my improved shuttle mechanism. Fig. 2 is a plan view of the inner face of the shuttle lid or cover, illustrative of the tension mechanism. Fig. 3 is a sectional view of the parts shown in Fig. 2. Fig. 4 is a perspective view of the shuttle, and Fig. 5 is a horizontal sectional view of the shuttle mechanism, taken in the plane of the line $x x$, Fig. 1, all the figures illustrating the several parts full or working size. Fig. 6, Sheet 2, is a perspective view to an enlarged scale of the gate of the shuttle-box and of the spring and pin for hinging the gate, the parts being detached. Fig. 7 is a similar view of the shuttle-carrier. Fig. 8 is a sectional perspective view of the bobbin. Fig. 9 is a perspective view of the shuttle, partially opened, showing the bobbin in place; and Fig. 10 is a perspective view of the under face of the shuttle-lid, all the figures of Sheet 2 being drawn to the same scale.

My present invention relates to certain improvements in shuttle mechanism for manipulating the under thread of sewing-machines; and it consists, in general terms, of certain combinations of devices for supporting and carrying the shuttle in a rotary race, for securing and releasing the shuttle, and for regulating the tension of the thread, as hereinafter more fully described and claimed.

In the drawings, A represents a metal plate, secured by lugs A^1 and screws A^2 to the under face of bed-plate D, which latter constitutes the main supporting-plate for carrying the principal operative parts of sewing-machines as ordinarily constructed. The position of plate A with relation to the bed D is in a transverse vertical plane under and in or parallel with the plane of the needle d . At right angles to this plate A, below the bed D, is mounted a rotary shaft, B, which may be supported in any suitable journal-bearings

and be driven by any suitable power-connection with the main driving-shaft, usually employed above the bed D for operating the needle d . I have not shown these power devices, nor the mechanism for manipulating the upper thread and needle or for imparting feed, as devices adapted for these purposes are well known in the art. I have, however, shown and described devices adapted for these purposes in the subject-matter of other applications filed even date herewith, Serial Nos. 81,247 and 81,249.

Upon the inner end of shaft B is secured a circular disk or head, b , which is seated within a similarly-shaped opening, a , in plate A, with the front faces of the disk and plate flush or in the same plane. To the face of disk or head b , near its periphery, is pivotally attached the shuttle frame or carrier E by screw-bolt e , whereby such carrier is rotated in circular race about the axis of the shaft.

In order to maintain the frame in upright position or with one side uppermost during such rotation, a tail-guide, E' , is extended downward from such frame or carrier, and its lower end, e' , is bent horizontally into a slot, a' , cut vertically in the plate A, the length of the slot being equal to or a little in excess of the diameter of the rotary path of the shuttle-carrier.

The shuttle C is held in place upon the upper side of the shuttle-carrier and against the plain faces of plate A and disk b by an open-sided box, E^2 , formed by end plate, e^2 , against which the heel of the shuttle rests; a side plate, e^5 , with inner ribs, e^6 , against which the back or short face of the shuttle rests; a forked fore end, e^3 , through the opening in which the point of the shuttle is passed, and by a hinged cover or gate, e^4 . This gate is hinged to the side e^5 of the box by pin i passing through lugs i^1 on the gate, and similar lugs, i^2 , on the side e^5 , both lugs i^1 being placed on the same side (say the right-hand side) of their respective lugs i^2 . In order to lock the gate in closed position, grooves i^3 are cut across the matching faces of one set of lugs—say the lugs i^1 —and corresponding tongues, i^4 , are made on the matching faces of the other set of lugs, i^2 , the line or direction of the tongues and grooves being such that they may register and be inserted one within the other by an endwise movement of

the gate when the latter is closed. This end-wise or locking movement is given by a coiled spring, i^5 , seated around the pin i , and bearing against one fixed lug i^2 and one movable lug i' . By pressure upon the gate against the pressure of spring i^5 , the gate may be unlocked, opened, and the shuttle be removed heel first or be inserted point first. On shutting the gate it will be locked automatically by the action of the spring.

In exterior form the shuttle C is substantially the same as shuttles in common use, having a tapering point, c , and a full flat face, c' , which bears against or moves upon the faces of plates A and B. The upper side or lid, c^2 , of the shuttle is pivoted at or near one corner by pin c^3 , on which the lid may be swung or turned to open or close the shuttle-chamber C'. This lid is locked, when closed, by a spring-catch, c^4 , of the usual or any suitable construction, which takes into a notch, c^5 , cut in the inner face of the lid.

In order to secure the requisite tension of thread, a headed pin, n , is passed through a closely-fitting hole, n' , in the lid, and a hole, n^2 , is made in the stem of the pin at a little distance from the head, into which the end of a small spring, n^3 , is inserted, which spring is seated in a suitably-shaped recess in the inner face of the lid, and is secured therein by a screw, n^4 , passed through the lid and into a tapped hole in the spring, near its heel. By turning this screw the head of pin n may be drawn more or less closely to the outer face of the lid. The thread is led out from the interior of the shuttle through a small hole, n^5 , and is thence passed around pin n , underneath its head, making nearly one circuit, whence it is passed through an eye or guide, n^6 , to the table above, and is there held in starting the machine, as customarily practiced. By simply turning screw n^4 the pressure of pin-head n upon the thread may be increased or diminished, and thus the tension be regulated at pleasure.

The thread is carried within the shuttle upon a bobbin, R, of the usual spool form, which is supported, when in place, upon axial points r r' . One of these points, as r , is made yielding, as follows: A differential tubular passage, R', of two different diameters, is made axially through the bobbin, and the pin R², having a stem, r^2 , of the size of the smaller part of the passage, and a head, r^3 , of the size of the larger part, is inserted stem first in the larger end, with its point r protruding from the smaller end of the passage. A spring, r^4 , is then placed in the larger part of the passage, which latter is closed by the screw-plug r' . By pressure upon point r it will yield and permit the bobbin to be inserted or removed; but when the bobbin is in place the point r will be pressed against the wall of the shuttle-chamber, thereby suspending the bobbin upon points. These point-bearings not only facilitate turning the bobbin to unwind the thread, but also prevent the bobbin from falling out accidentally, and

they thus remove what might become a source of constant annoyance to the operator.

In order to protect the needle d from the shuttle, and to insure the desired form and position of loop in the upper thread, a vertical groove, s , is made in the face of plate A in the path of the needle, by which the needle is covered, except on the open side of the groove. The shuttle in its race may thus pass close to the needle, but is prevented from striking it; also, the walls of the needle-groove s give an outward turn to the thread-loop as the needle rises, and direct it into such position as to insure the proper entry of the shuttle.

It will be observed that in operation the shuttle crosses the needle-groove only in its forward movement, and that in its backward movement it is carried downward, and in so doing the strain on the lower thread in tightening the stitch is nearly in line with the needle and upper thread. In this way the two threads are drawn tight in nearly a direct line, and a more perfect stitch is secured thereby. In this vertical strain upon the lower thread the locked gate c^4 performs an important function in holding the shuttle in place, as against such strain. It also prevents possibility of throwing the shuttle from its box at whatever speed the machine may be run; also, by keeping the shuttle on the upper side of its carrier by means of the guide E' throughout the whole of its circular race, twisting of the thread is prevented.

All the parts of this mechanism are plain and easily formed, thereby enabling them to be made with comparatively small expense. All the moving parts are so formed and connected as to be durable and easily adjusted. Consequently they can be kept in good running order by ordinary users of such machines. These features of construction and advantage are especially important in machines designed for general trade and use.

I claim herein as my invention—

1. The rotary shuttle-carrier E, having a shuttle-box, E², on its upper side, and pivot-lugs i^2 on the side wall of the box, in combination with gate c^4 , having pivot-lugs i' thereon, pivot-pin i , and spring i^5 , the matching faces of the pivot-lugs having tongue and groove thereon, adapted to register and interlock when the gate is closed, substantially as set forth.

2. The shuttle C, having pin-hole n' and thread-hole n^5 in its side, in combination with headed pin n , spring n^3 , adjusting-screw n^4 , and thread-guide n^6 , substantially as and for the purposes set forth.

3. The combination of a shuttle having a pin-hole, n' , therein, a pin, n , having a head thereon larger than the hole, with recess n^2 in its stem, spring n^3 , having a point adapted to enter the recess, and having a tapped hole in its heel, and screw n^4 , substantially as described, for the purpose of holding the thread under tension directly beneath the pin-head.

4. The shuttle-carrier E, having a tail-guide, E', below and a shuttle-box, E², above its rotary center, with pivot-lugs i² thereon, in combination with gate e⁴, having pivot-lugs i' thereon, fitting the lugs i² on the same side of each, pivot-pin i, and spring i⁵, the lugs i' i² having grooves and tongues i³ i⁴ thereon, which are engaged and disengaged by endwise move-

ment of the gate upon the pivot-pin, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SAMUEL R. SARGENT.

Witnesses:

C. L. PARKER,

R. H. WHITTLESEY.