

(No Model.)

2 Sheets—Sheet 1.

G. E. WARREN.
SEWING MACHINE.

No. 583,522.

Patented June 1, 1897.

Fig. 1.

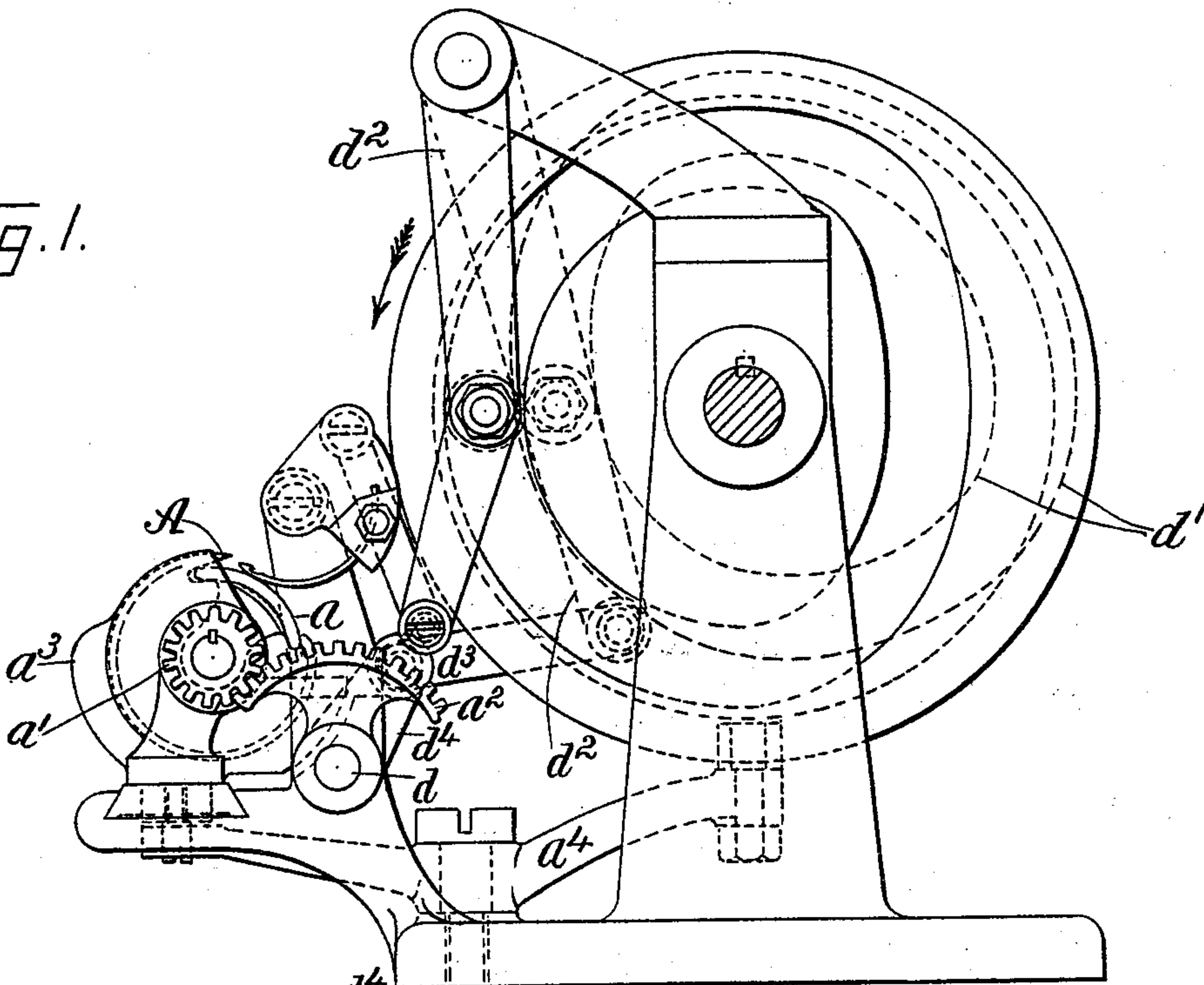
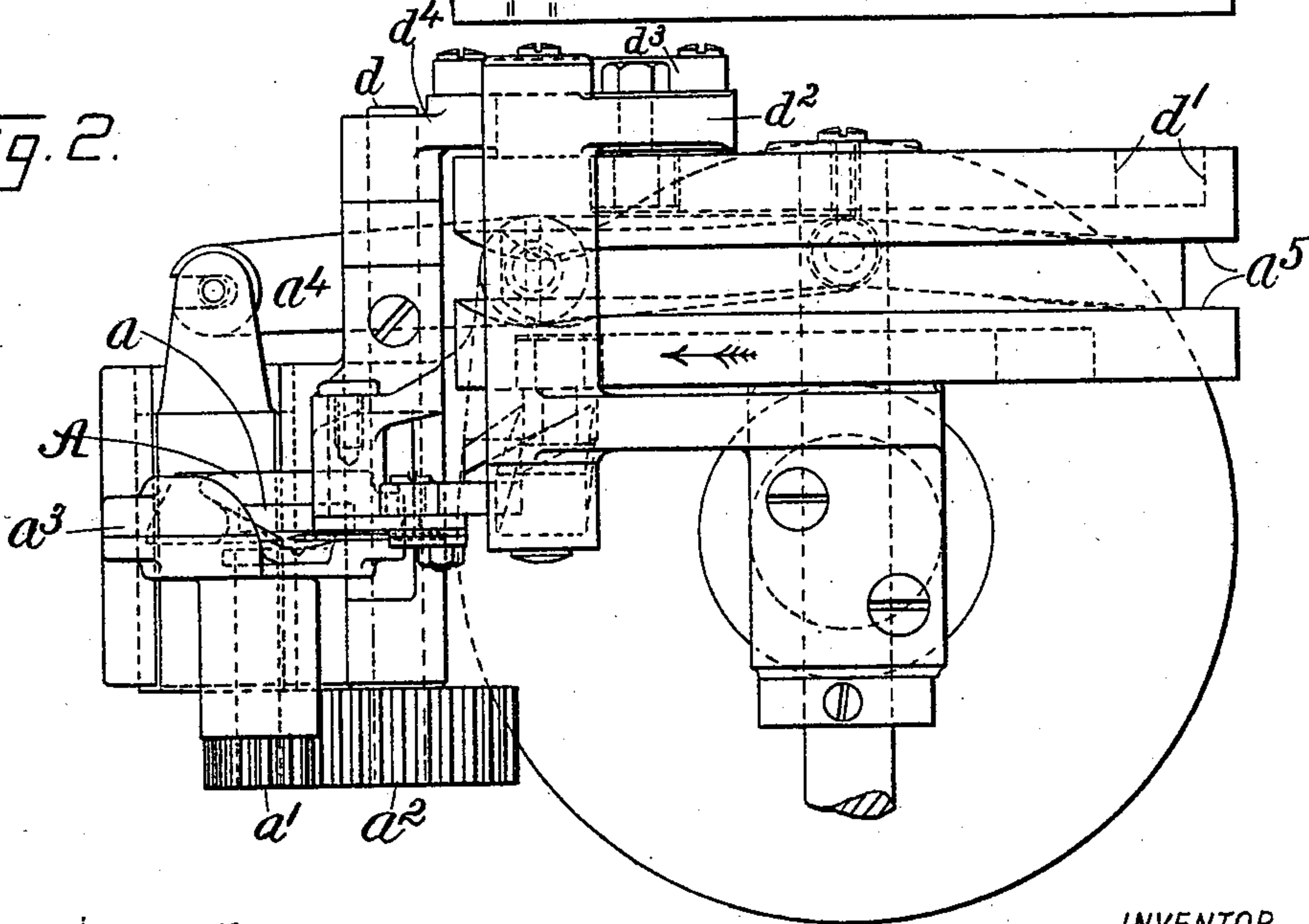


Fig. 2.



WITNESSES:

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INVENTOR

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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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SEWING MACHINE.

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Fig. 3.

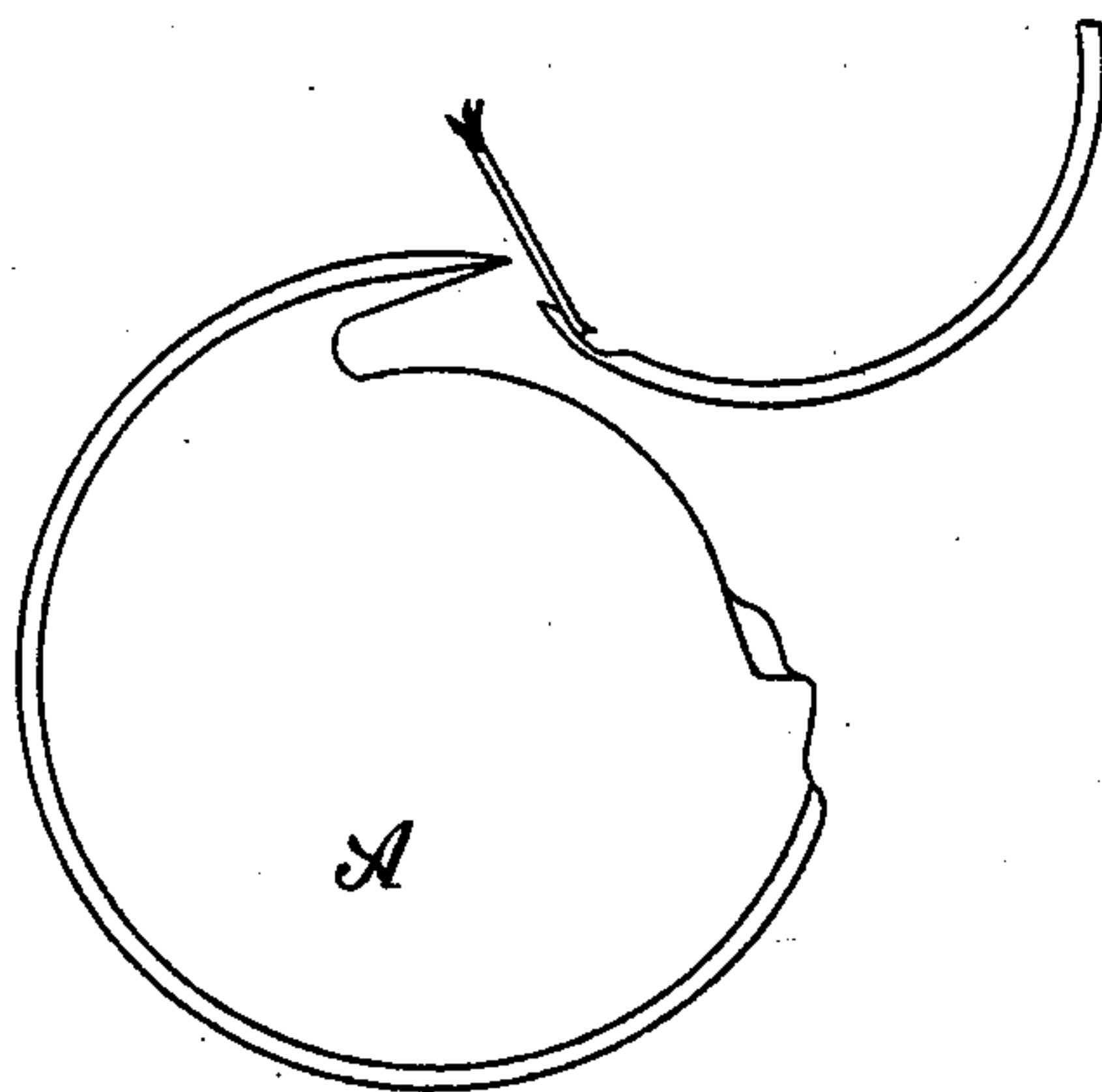


Fig. 4.



Fig. 7.

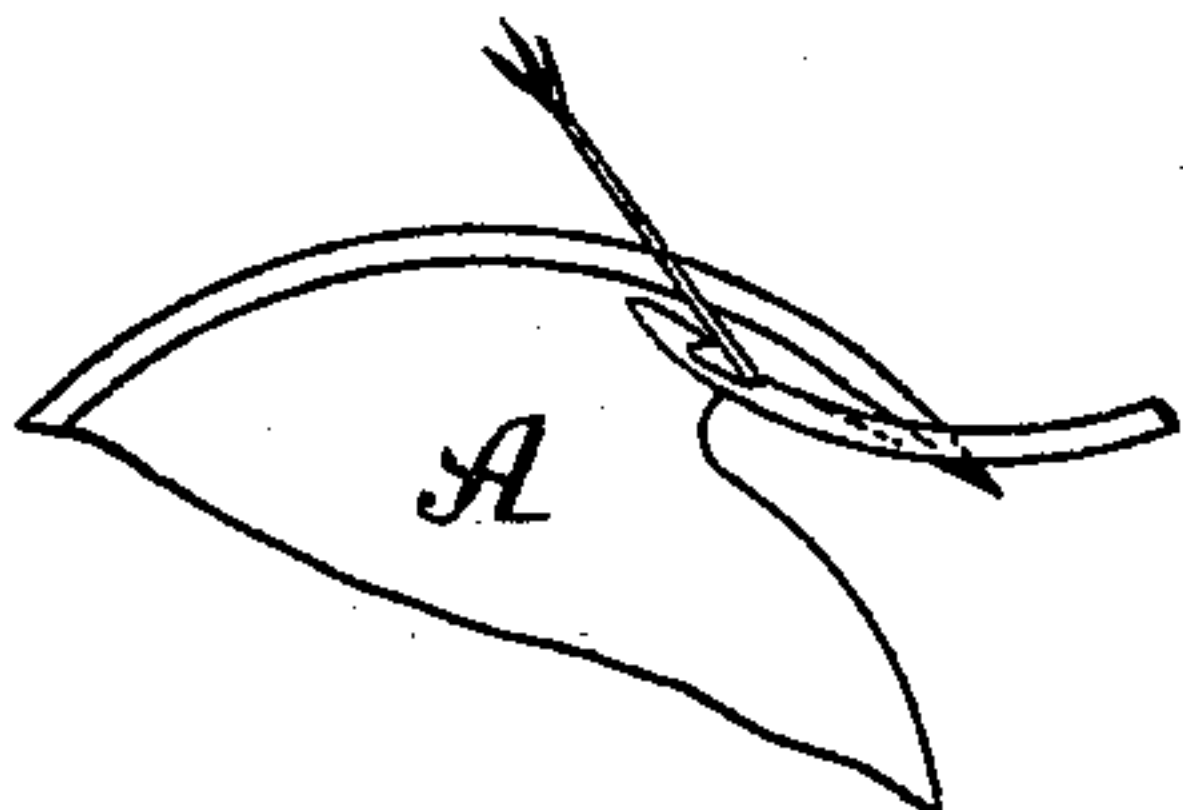


Fig. 8.



Fig. 5.

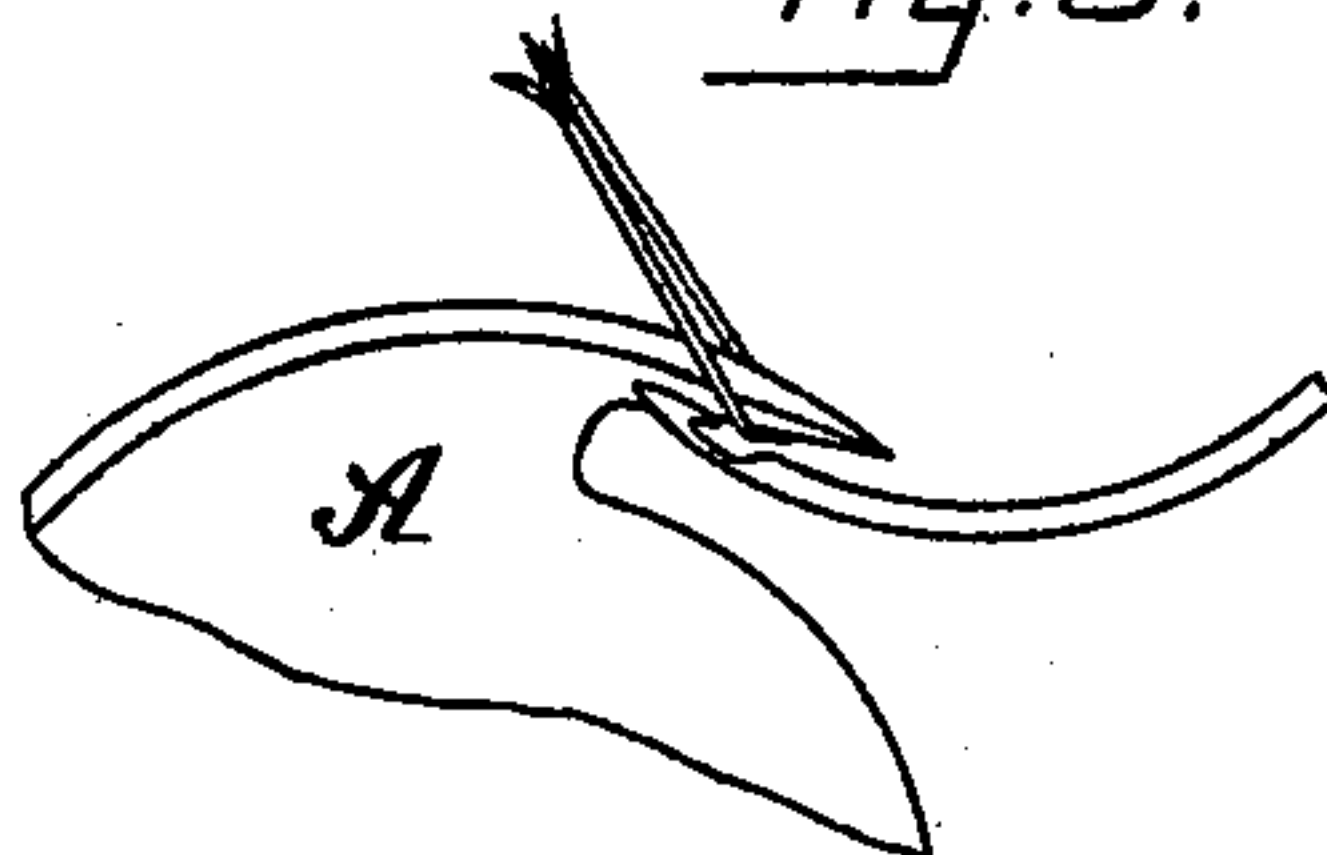
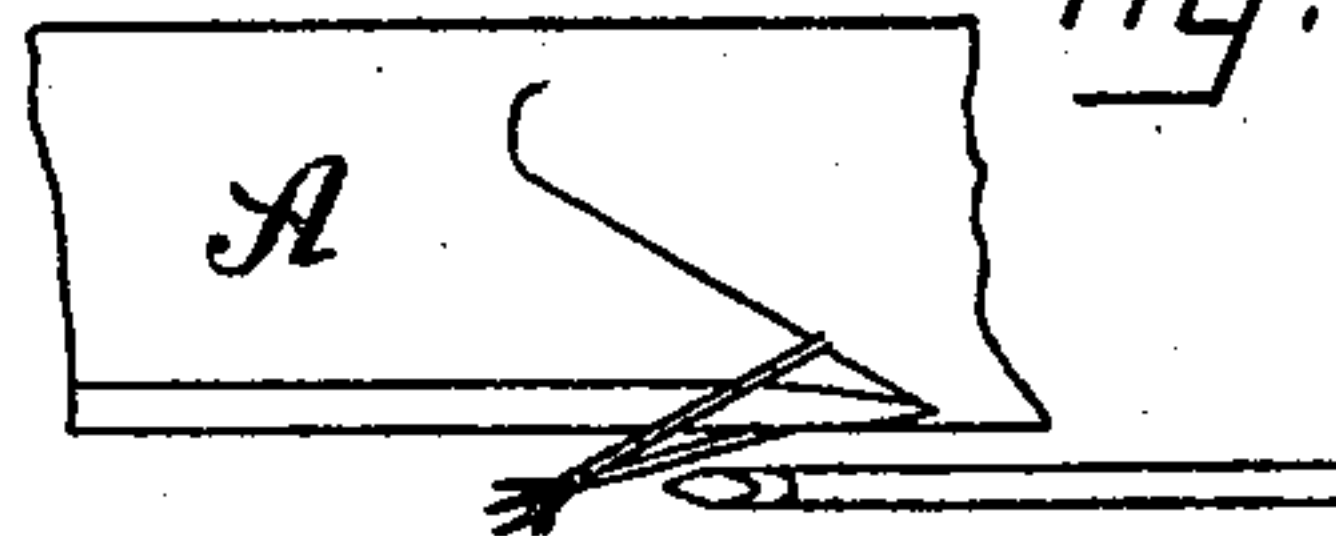


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE E. WARREN, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO THE CAMPBELL MACHINE COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 583,522, dated June 1, 1897.

Application filed December 16, 1895. Serial No. 572,344. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. WARREN, of Pawtucket, in the county of Providence and State of Rhode Island, have invented a new and useful Shuttle Mechanism for Hook-Needle Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is an elevation, and Fig. 2 a plan, of so much of a sewing-machine as is needed to illustrate my invention. Fig. 3 is an elevation, and Fig. 4 a plan on a larger scale than Figs. 1 and 2, illustrating the relative positions of the hook-needle and shuttle; and Figs. 5, 6, 7, and 8 are like views, but each pair showing a different position.

My invention relates to the relative movements of the needle and shuttle; and it consists in the combination of a hook-needle, a shuttle-holder, a shuttle in that holder, and actuating mechanism to rotate the shuttle in the holder and to move the holder. In other machines of this class parts of the shuttle are in the way of the hook-needle, except at certain positions of the shuttle, and therefore the needle cannot make its piercing stroke except when the shuttle is in a certain position in its holder, and the result is that time is lost while the needle waits for the shuttle to get into that position, and practically this lost time is nearly one-quarter of the time occupied in making a stitch. After the nose of the shuttle has entered the loop of needle-thread I move the holder, and with it the shuttle, out of the way of the needle, thereby permitting the piercing stroke of the needle to begin at any time after the thread has left the hook of the needle, thereby materially increasing the speed of the machine.

In the drawings I have shown a well-known form of shuttle A and driver a , and the actuating mechanism, consisting of the pinion a' , fast to the shaft of driver a , and segmental gear a^2 , is also well known, except that the segmental gear a^2 is widened, as shown in Fig. 2, to admit of the pinion a' moving with the sliding shuttle-holder a^3 without getting out

of mesh with gear a^2 . The segmental gear a^2 is mounted on a rock-shaft d , which is oscillated by a cam d' and connections $d^2 d^3 d^4$, as will be clear without description.

The shuttle-holder a^3 is mounted in ways, as clearly shown in the drawings, and is moved at the proper time by the lever a^4 and its cam-groove a^5 .

The operation is as follows: When the needle is retracted to the position shown in Figs. 1, 3, and 4, the shuttle-holder a^3 occupies the position shown in Fig. 3, with the nose of the shuttle ready to enter the loop of needle-thread then held by the hook of the needle, and the shuttle is then moved on its axis to cause its nose to enter that loop, and the continued movement of the shuttle spreads the loop and frees it from the hook of the needle, all this being as usual in machines of this class; but in my machine as soon as the shuttle has fairly entered the loop the shuttle-holder moves and carries the shuttle out of the plane in which the needle moves, (see Figs. 5, 6, 7, and 8,) and the needle may then be advanced to take a new loop of thread, and this stroke of the needle is free to take place during the time occupied by the shuttle in shedding the loop and getting into position to take a new loop from the needle, which is a principle wholly new with me.

What I claim as my invention is—

In a sewing-machine a hook-needle; a shuttle-race; a shuttle in that race and mechanism to rotate the shuttle in the race and to move the race to bring the shuttle into the plane of the path of movement of the needle; in order that the nose of the shuttle may enter the loop of thread drawn out by the needle; and to move the race out of the plane of the path of movement of the needle in order that the shuttle may pass through the loop without interfering with the needle, all substantially as described.

GEORGE E. WARREN.

Witnesses:

ARTHUR H. METCALF,
PETER J. QUINN.