

No. 762,559.

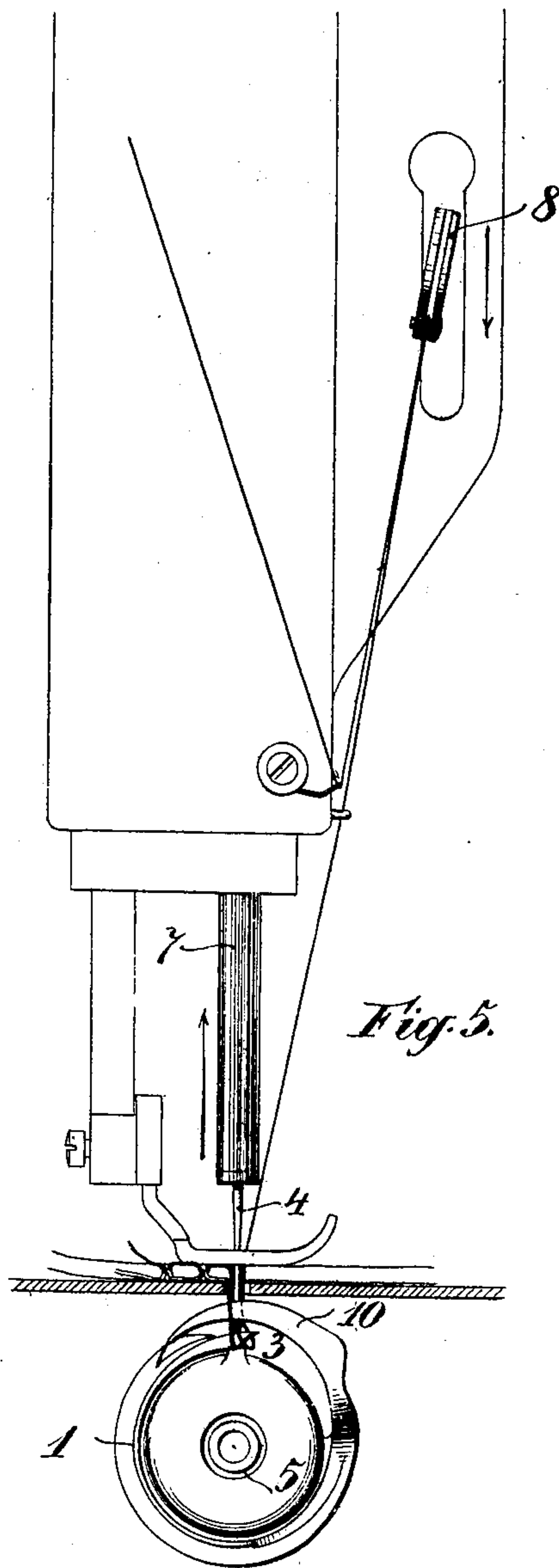
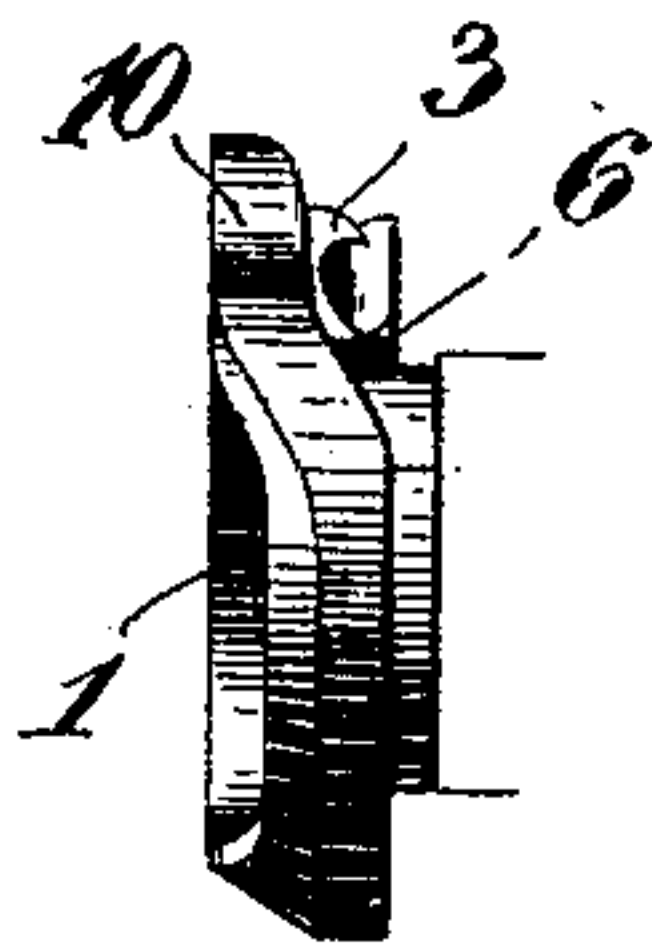
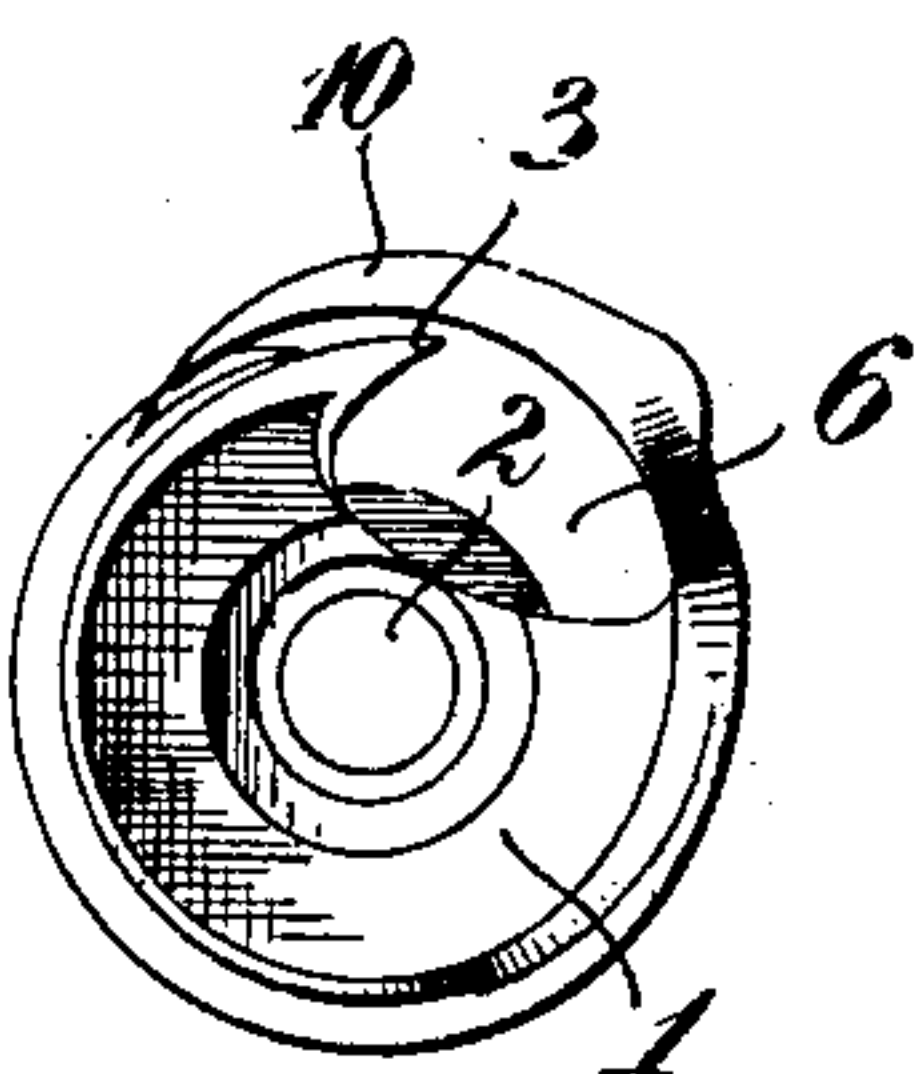
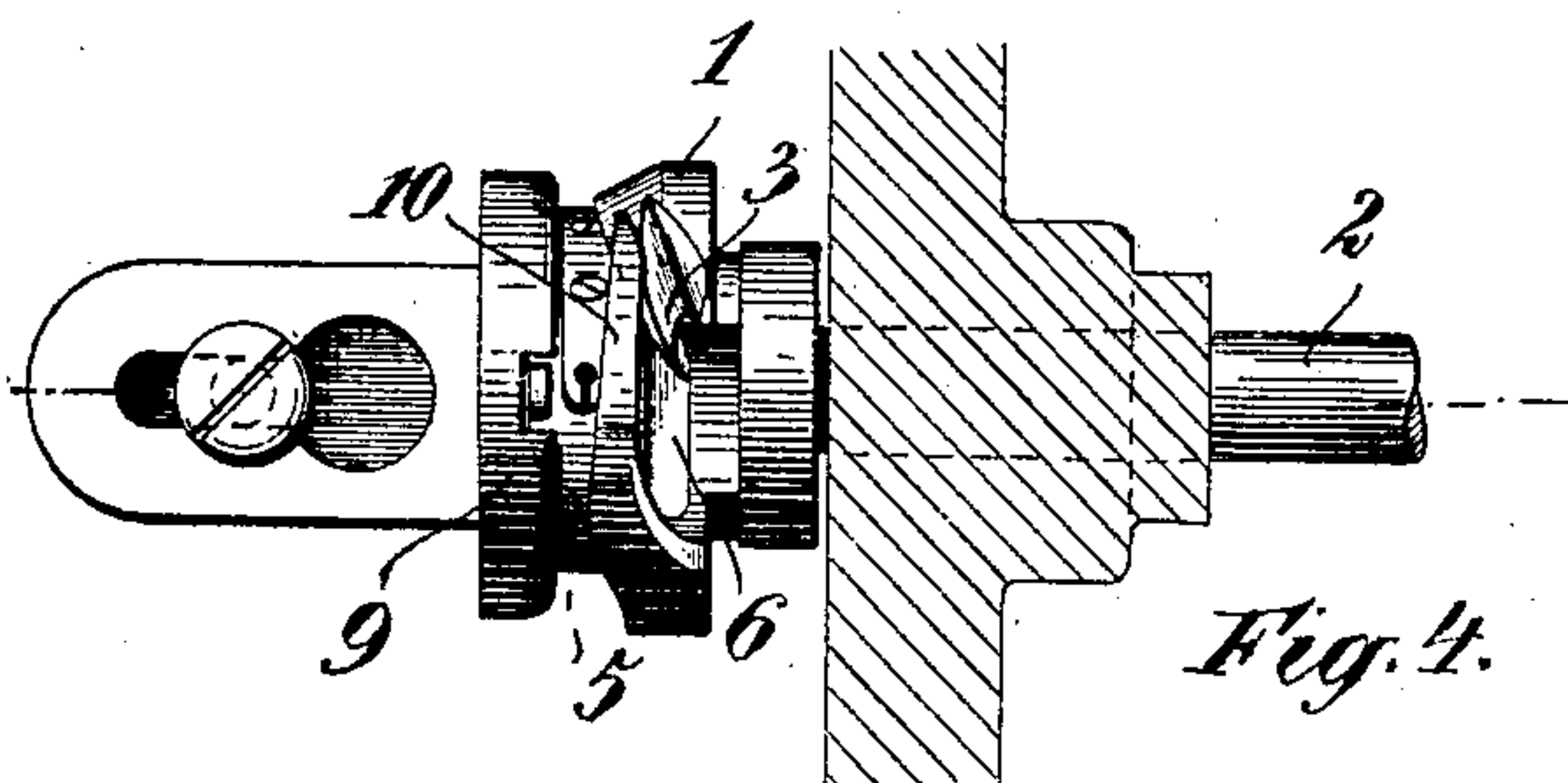
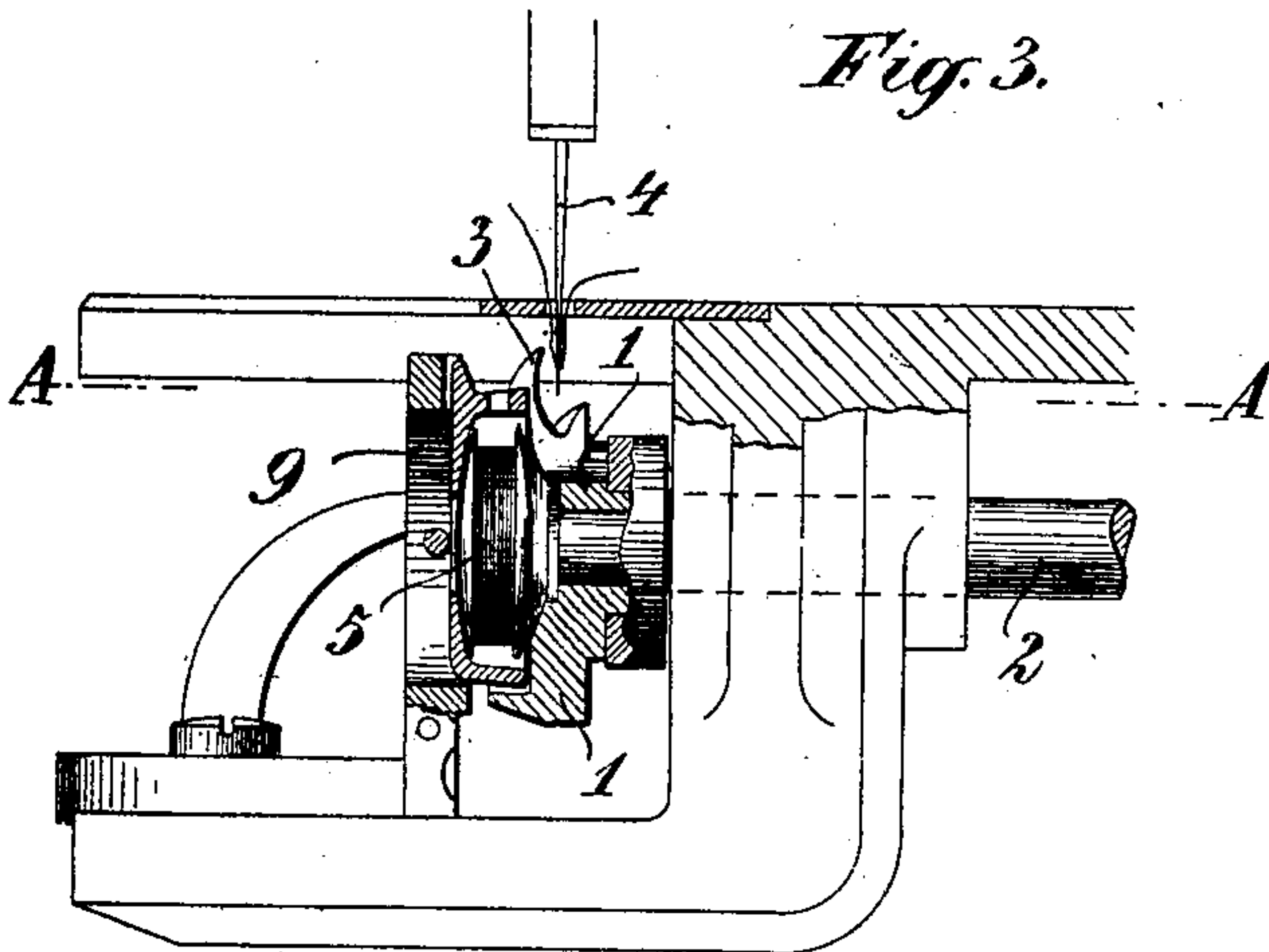
PATENTED JUNE 14, 1904.

R. SCHARNBERG.  
ROTATING HOOK FOR SEWING MACHINES.

APPLICATION FILED OCT. 21, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Isabella Maldron  
Adelaide Claire Mason

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Rudolf Scharnberg  
BY  
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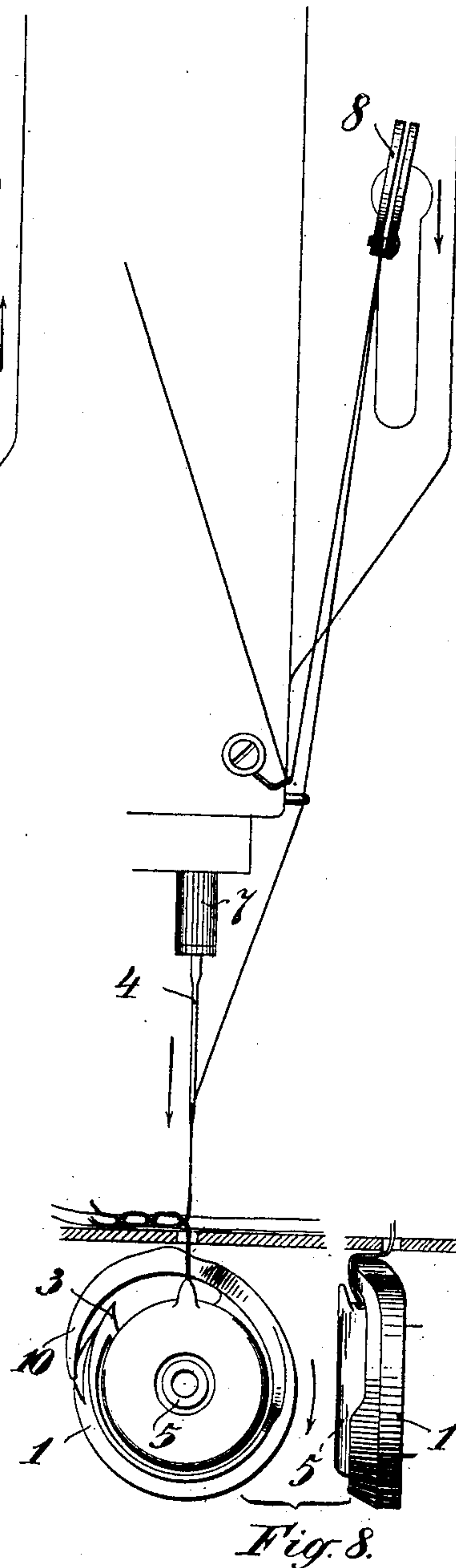
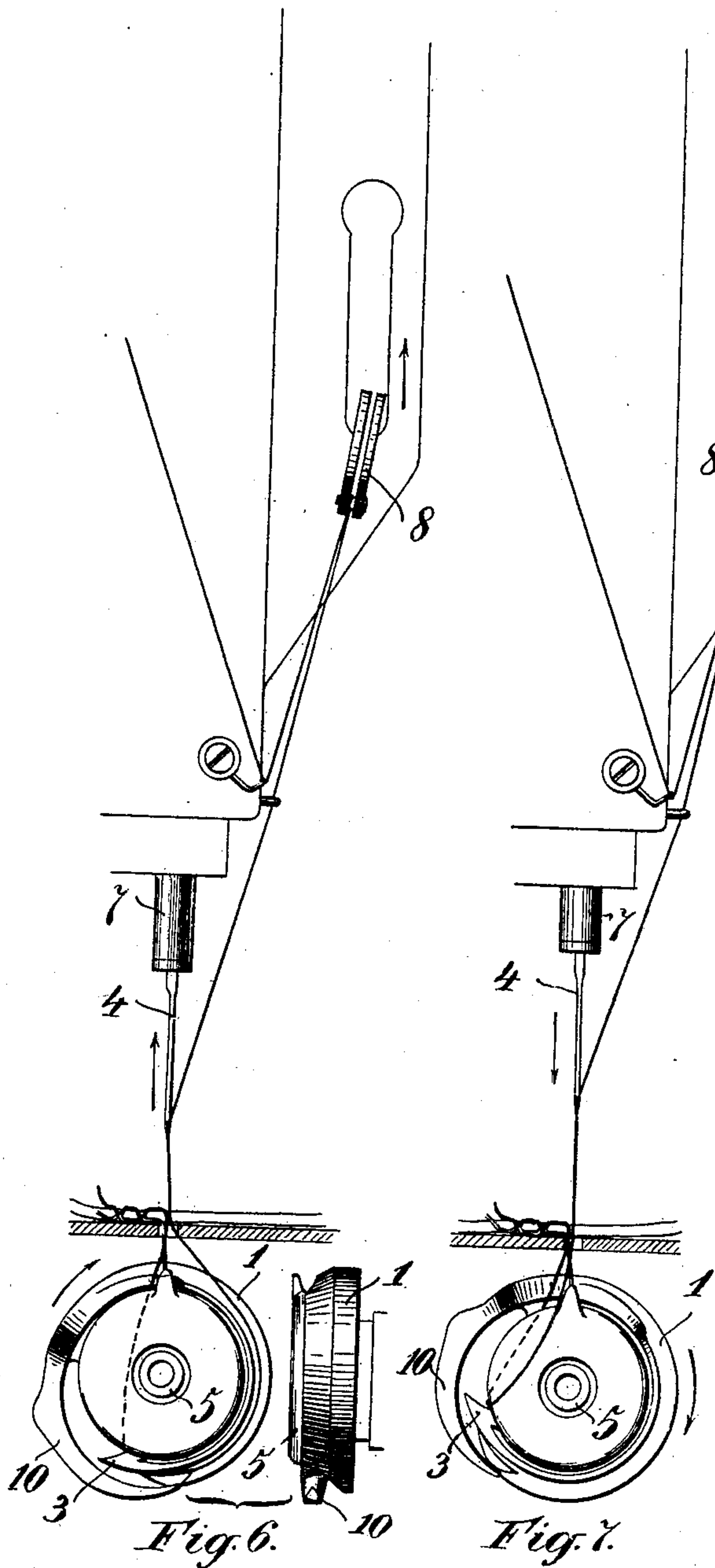
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2 SHEETS—SHEET 2.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

RUDOLF SCHARNBERG, OF BERLIN, GERMANY.

## ROTATING HOOK FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 762,559, dated June 14, 1904.

Application filed October 21, 1901. Serial No. 79,362. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLF SCHARNBERG, mechanician, a citizen of the Kingdom of Prussia, residing at Brunnenstrasse 141, Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Rotating Hooks for Sewing-Machines, of which the following is a specification.

My present invention relates to an improvement in sewing-machines employing a rotating hook for forming the stitches, and has for its purpose to lock the upper and lower threads exactly in the middle of the fabric, so that no loops will be formed in the lower or upper sides of same.

In sewing-machines hitherto used with freely-rotating looper-hooks the lower thread after the loop of the upper thread has been passed round the lower thread-bobbin and the said lower thread gripped was drawn by means of the upper thread into the material on the take-up ascending. On further rotation the point of the hook enters the loop of the upper thread and the inclined front edge of the hook causes the lower thread required for the formation of stitches to be wound off its bobbin. If the tension of the lower thread was somewhat tight, the stitch just formed was in this case passed through on the lower side of the material, since the take-up has been lowered in the meantime and the upper thread is no longer kept stretched. The result is that the upper and lower threads are all twisted or looped on the lower side of the material instead of being twisted in the middle, in consequence of which a bad or unequal seam is produced. To this must be added the further disadvantage that the lower thread at the moment the loop of the upper thread slides off the hook and is raised is tightly stretched over the front edge of the hook, so that the upper thread has to be forced between the stretched lower thread and the front edge of the hook in order to go around and embrace the lower thread, which frequently causes the thread to break.

The hook constructed according to my present invention completely avoids the above-mentioned drawbacks and permits of the production of a perfect seam even when the ten-

sion of the lower thread is very tight. In order to obtain that result, the hook is so shaped that the length of the lower thread necessary for the formation of the succeeding stitch is drawn off from the bobbin just in the moment when the upper thread is tightly stretched by the take-up, and this drawing off is effected by means of a bow extending over the cut-out part of the hook and turned opposite to the direction of revolution of the latter, said bow lying entirely within the two vertical planes the hook rotates between and projecting radially beyond the circumference of the latter, so as to give to same the shape of an eccentric.

A further object of my invention is to prevent the lower thread (bobbin-thread) from being broken by rotating the hook backward—that is to say, in the direction of the bowl—as hereinafter more fully described.

In the annexed drawings the new hook is shown. Figures 1 and 2 are front and side views, respectively, of the same. Fig. 3 is a vertical section through the needle-plate of a machine and the hook. Fig. 4 is a section on line A A of Fig. 3. Figs. 5 to 8 show the relative positions of the parts of the machine.

1 is the hook, mounted on a shaft 2, operated in the known manner. During rotation the point 3 of the said hook passes into the loop of the thread which is formed when the needle begins to rise and draws the loop downward and round the bobbin 5, containing the lower thread. The bobbin is kept in position by means of the collar 9. The hook is, as usual, cut out at 6, and its circumference is somewhat chamfered toward the bobbin in order to facilitate the sliding off of the loop.

7 is the needle-rod, and 8 the take-up.

All parts hitherto described do not essentially differ from known constructions.

The essential feature of the present invention is a bow 10, which is so arranged on the hook 1 that it extends over the cut-away part 6 in a direction opposite to the direction of revolution. The said bow lies entirely within the two vertical planes the hook 1 rotates between, Fig. 2, and its point extends cross-wise over the pointed part 3 of the latter, Fig. 4. The effect of this arrangement is that whenever the hook 1 is rotated backward—



that is to say, in the direction of the bow 10—the bobbin-thread is prevented from engaging between the bow 10 and the hook proper, and there is therefore no chance of its being  
5 broken. The outer surface of the bow 10 is so curved that it projects beyond the circumference of the hook 1, giving to the latter the shape of an eccentric.

The action of the bow 10 will be understood from the following description of the co-  
10 operation of the hook 1 and the take-up 8. On the needle-bar 7 beginning to move upward from its lowest position the point 3 of the hook enters the loop of the upper thread,  
15 Fig. 5. Since the take-up 8 moves downward in this moment, the upper thread is completely slack, and the loop may be drawn downward and around the bobbin 5, containing the lower thread, as shown in Fig. 6. The upper thread  
20 is now tightened by the upward motion of the take-up 8, and thereby the lower thread, which has been caught by the loop of the upper thread, Fig. 7, is drawn into the fabric. As soon as this has been done and the take-up 8  
25 occupies its highest position—that is to say, the upper thread is stretched perfectly tight—the outer surface of the bow 10 passes below the lower thread, which during the whole preceding operation lay perfectly loose on the  
30 front part of the hook 1, and keeps it stretched at a right angle to the stitch-plate, as shown in Fig. 8, (side elevation.) Since the upper thread during this operation is kept stretched by the take-up 8, the difference in length of  
35 the lower thread before and after the bow 10 passes it can only be equalized by the fact that a corresponding quantity of lower thread is drawn off the bobbin 5.

The proportions are so chosen that the quantity of thread drawn off is just sufficient to allow the loop of the upper thread passing easily below the lower thread at the succeeding stitch, since the lower thread lies loosely on the front part of the hook 1.

Since the lower thread is held laterally away  
45 from the stitch-hole by means of the bow 10, as shown in Fig. 8, when the loop of the succeeding stitch is formed it cannot prevent the formation of the loop. On the other hand this takes place exactly as required at the point  
50 where the point 3 of the hook can enter the loop. Consequently a dropping or missing of stitches need not be feared even with the most rapid sewing.

What I claim is—

In a rotating looper-hook for sewing-machines the combination with the rotating body  
55 1 having a pointed part 3 and a cut-away portion 6, of a bow 10 integral with said rotating body and extending over the cut-away portion  
60 6 in a direction opposite to the direction of rotation, said bow 10 lying entirely within the two vertical planes the body 1 rotates between and having its point lying crosswise  
65 over the pointed part 3, the outer surface of said bow extending out beyond the circumferential line of the rotating body 1, thus giving to the latter an eccentric form, substantially as described.

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

RUDOLF SCHARNBERG.

Witnesses:

WOLDEMAR HAUPT,  
HENRY HASPER.