

C. F. MACK.  
MACHINE EMBROIDERY NEEDLE.  
APPLICATION FILED JUNE 10, 1908.

914,664.

Patented Mar. 9, 1909.

Fig. 1.

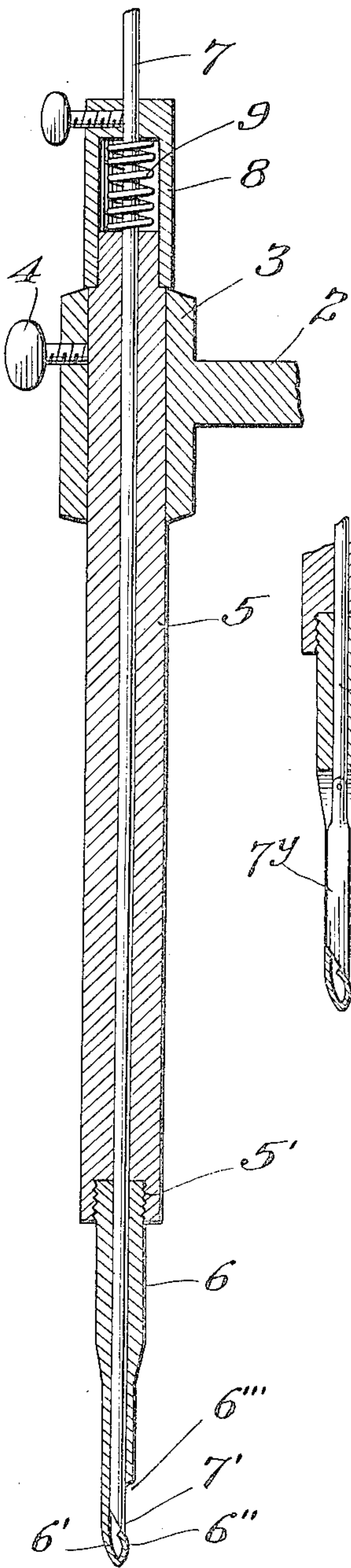


Fig. 2.

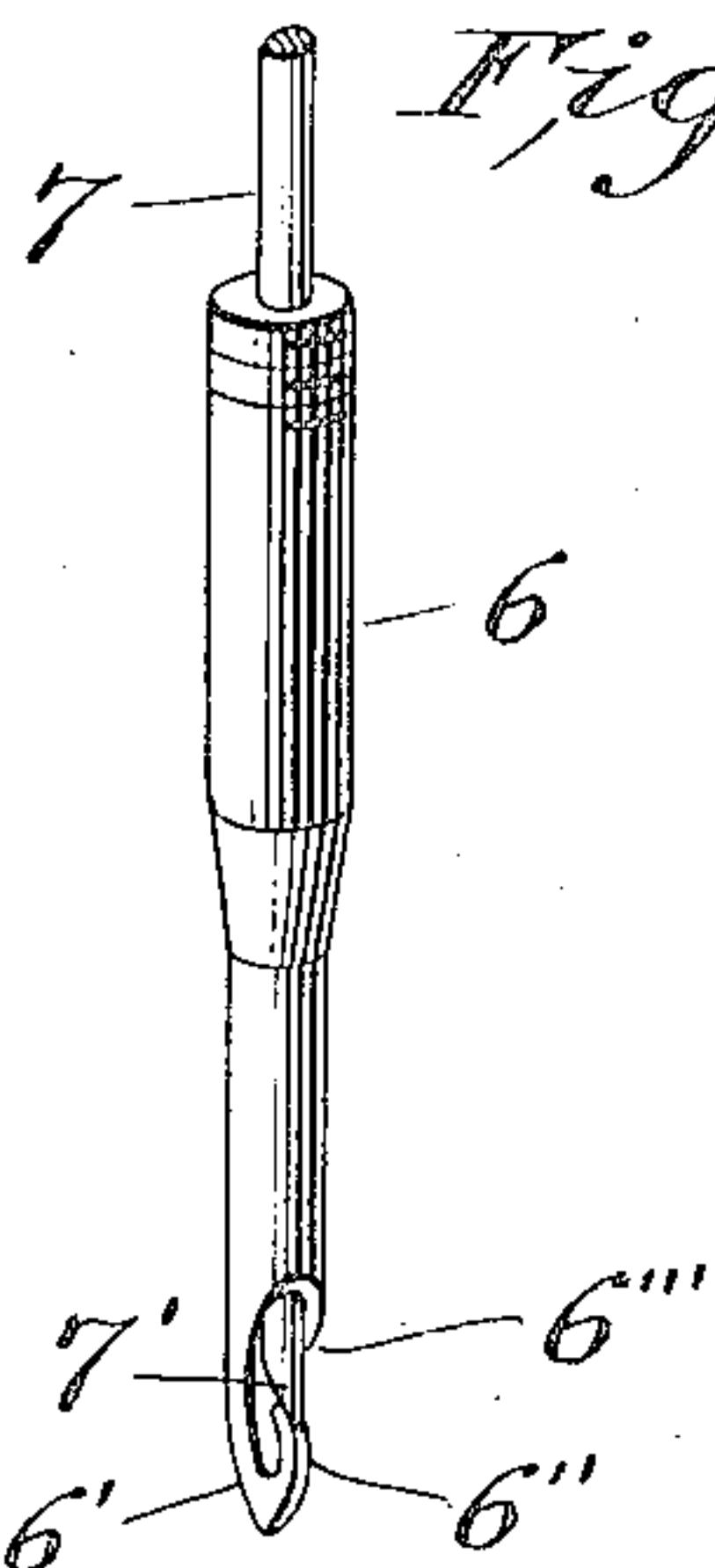


Fig. 4.

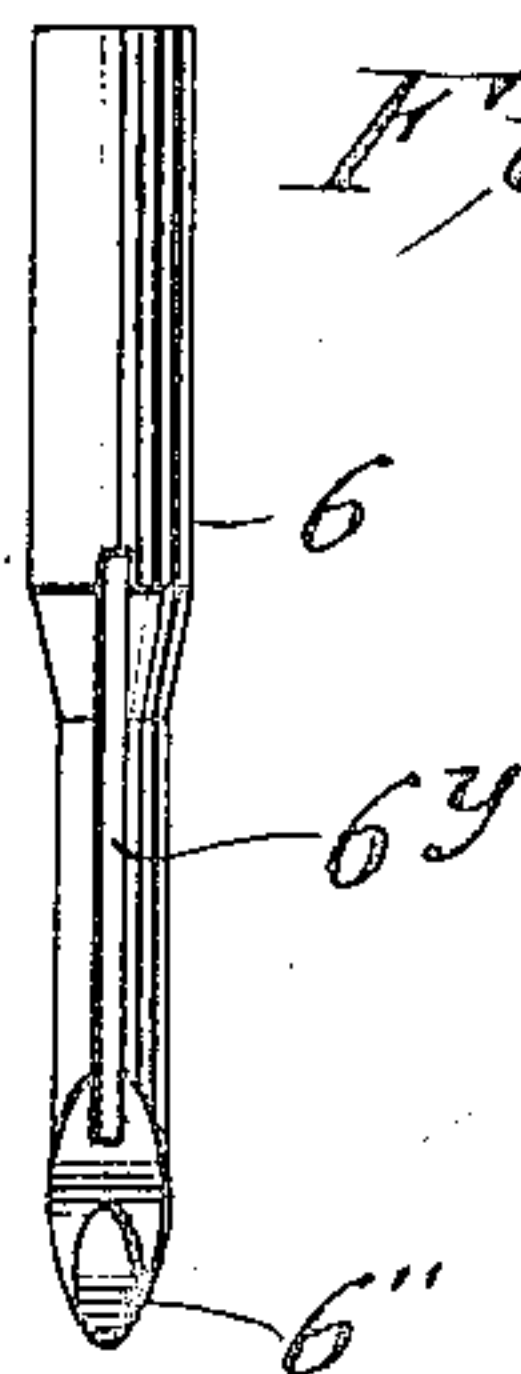


Fig. 5.

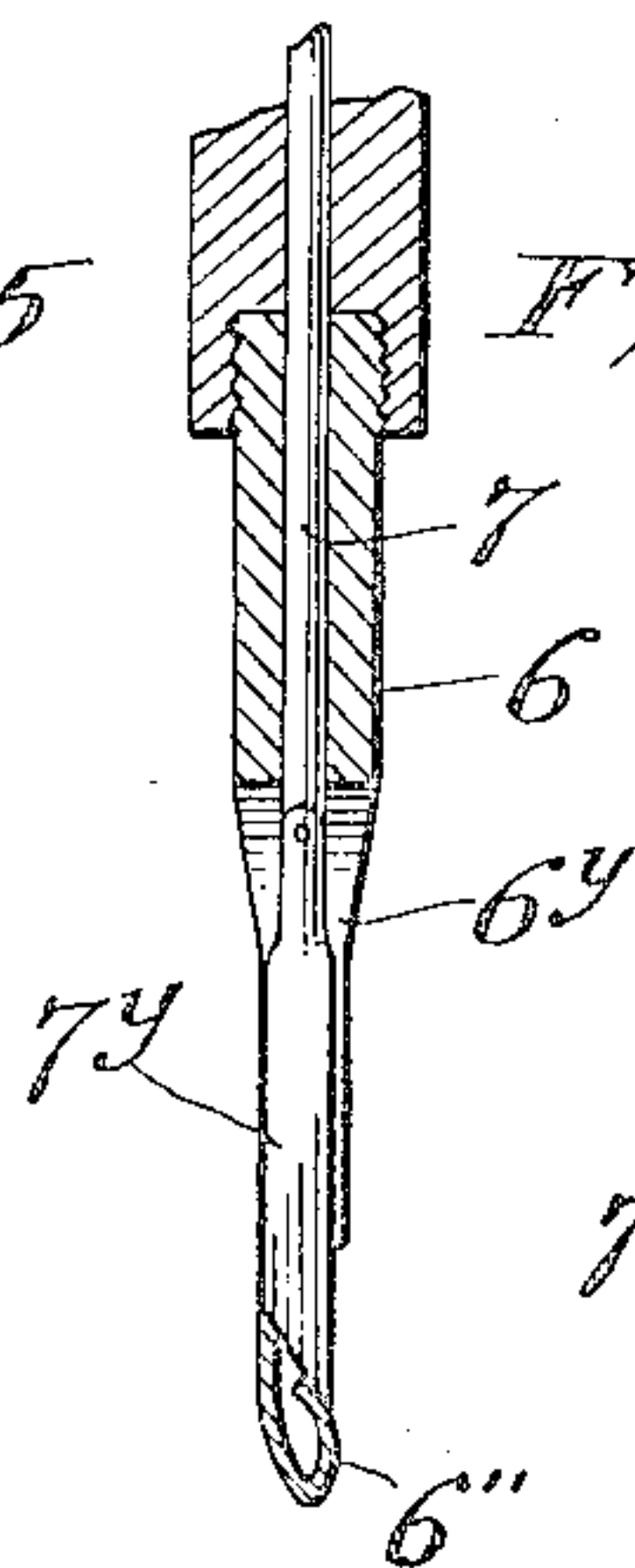


Fig. 3.

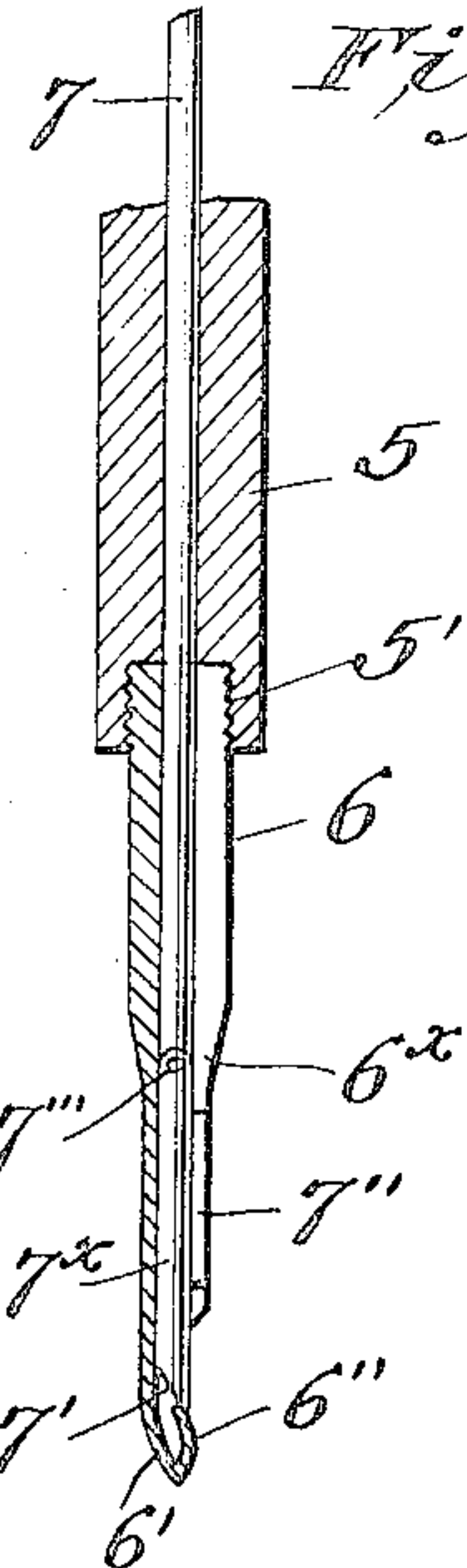


Fig. 6.

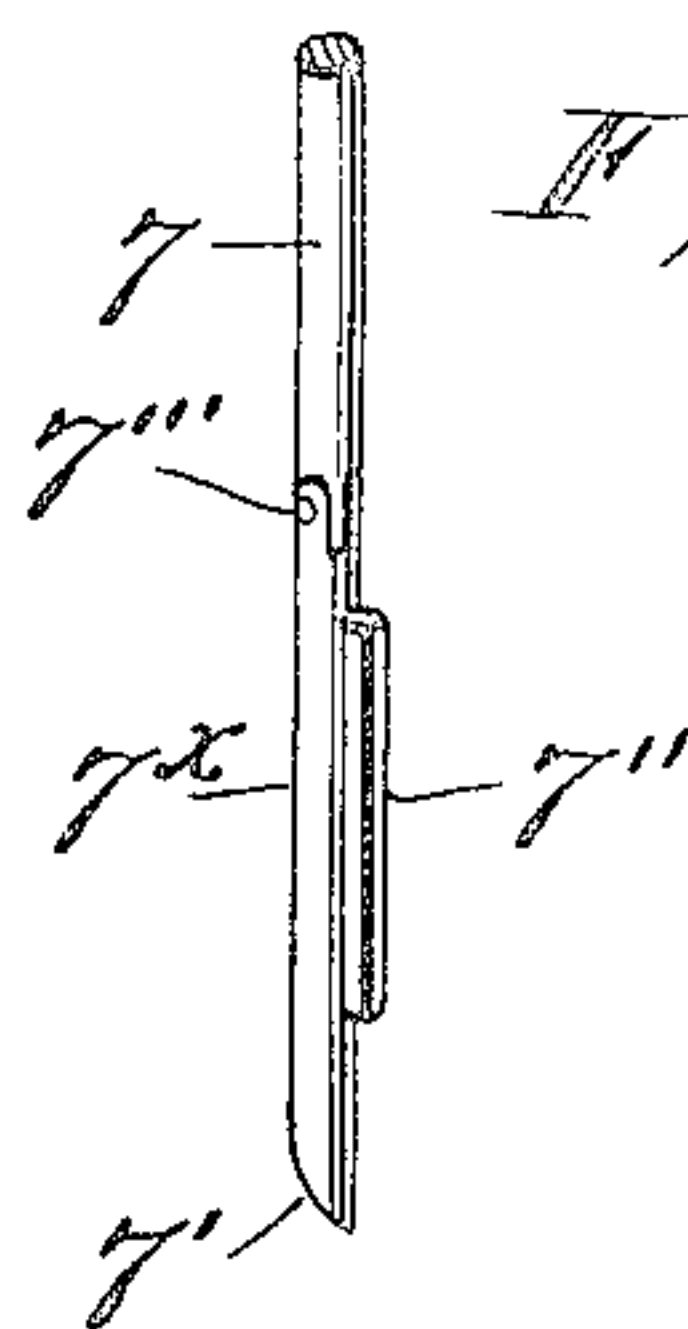
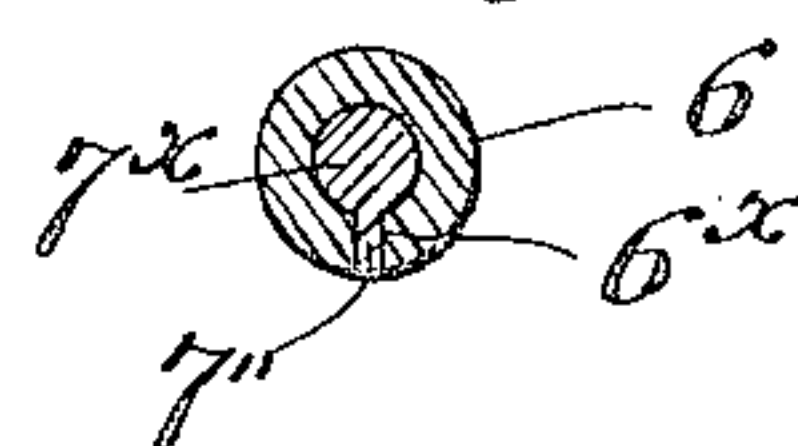


Fig. 7.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## MACHINE EMBROIDERY-NEEDLE.

No. 914,664.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed June 10, 1908. Serial No. 437,622.

*To all whom it may concern:*

Be it known that I, CARL F. MACK, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Machine Embroidery-Needles, of which the following is a specification.

My invention relates to needles for embroidery machines, and while I do not wish to limit myself to this class alone, the invention particularly relates to a needle for such machines as are provided with a single needle reciprocating vertically in the head of the machine arm and coacting with a shuttle beneath the work.

The ordinary needle as used upon embroidering machines is provided with a hook at its lower end, and this hook when the needle is raised is liable to catch in the threads of the material being embroidered and to thereby tear said material or cut the threads.

The object of this invention is to overcome this objection by providing a needle which shall not hook into and tear the material when, after picking up a stitch, it is raised through the cloth.

To this end my invention consists in an embroidery needle having a hook at one end, said needle being hollow and having a sliding pin or rod carried therein, which is so arranged as to close the open hook of the needle immediately upon the needle commencing its rising movement, thus preventing the barb of the hook from catching in the threads of the cloth.

I have shown in the figures three embodiments of my invention.

Figure 1, is a longitudinal section of a needle and its supporting mechanism. Fig. 2, is a perspective view of the needle point proper and its interior rod. Fig. 3, is a section of the lower end of the needle body and needle point, the needle being modified from that shown in Fig. 1. Fig. 4, is a side view of the form shown in Fig. 5. Fig. 5, is a longitudinal section of the lower end of the point shown in Fig. 4, the central closing pin being shown in position. Fig. 6, is a fragmentary perspective of the lower end of the interior rod shown in Fig. 3. Fig. 7, is a transverse section of the needle point shown in Fig. 3.

Like reference characters throughout the several views designate like parts.

In the drawings 2 designates the reciprocating arm on which the needle is mounted, provided with a sleeve 3 surrounding the needle, the needle being fastened within the sleeve by the set screw 4. The body of the needle 5 is tubular and at its lower end the tubular portion is enlarged as at 5', and the walls thereof are interiorly screw-threaded for engagement with the needle point proper 6. This point or lower end of the needle is tapered toward its extremity and is tubular in section in the form shown in Figs. 1 and 2. At its lower end it is provided with the usual hook 6' curved upwardly and inwardly as at 6''. At the front of course, the material of the needle is cut away as at 6''' in Fig. 2.

Passing longitudinally through the tubular body 5 and through the tubular needle point 6 is a rod or pin 7 which acts to close the otherwise open loop of the hook 6. This rod is connected to mechanism whereby when the needle rises after engaging with the thread underneath the cloth, the rod will be forced downward to a sufficient extent to bring the point of the rod 7 against the point of the hook 6', thus closing the hook and preventing its catching on the cloth as the needle passes upward through the same.

While I may use any suitable mechanism to this end, I have shown the rod 7 as attached to a hollow cap 8 into which the upper end of the body portion 5 of the needle projects. The cap 8 has therefore a sliding engagement with the body 5. Means are provided whereby the cap shall be held stationary through a portion of the upward stroke of the needle. Between the upper end of the body 5 and the upper end of the cap 8, I provide the spring 9 which thus tends to prevent the cap from following the body 5 downwardly. This of course, prevents the rod 7 from following downward with the needle body and needle, and therefore on its downward movement after it has passed the cloth the needle continues its movement below the end of the rod 7, and thus the hook is opened for engagement with the loop formed by the thread carrier.

It is to be understood of course, that my invention does not extend to the auxiliary



mechanism whereby the motion of the needle takes place, but relates entirely to the needle itself and the closing device.

In Figs. 4 and 5, I have shown a tubular needle point the lower portion whereof is bifurcated, or slotted from one point of its diameter to an opposite point straight across the needle. The central rod is flattened at its lower end, the flattened sides of the rod engaging with the inside faces of the bifurcated or slotted portion 6<sup>v</sup>. The flattened portion of the rod is indicated by the character 7<sup>v</sup>. This form of my invention permits the lower end of the needle to be very easily formed, the flattened sides preventing the rod from turning within the tubular needle, and the lower end of the rod may be made removable so that a new end may be substituted in the manner shown in Fig. 6.

In Figs. 3 and 7, I show a tubular needle point which is slotted on one side for its entire length as at 6<sup>x</sup>. The central rod 7 being provided with a fin or rib 7'', which engages in this slot and thus limits the motion of the rod 7 and prevents its turning within the needle point. I have also shown in Fig. 6, the rod 7 as being formed in two parts, the lower part thereof 7<sup>x</sup> being joined to the upper part by a pin 7''', whereby the lower end of the rod 7 when it becomes worn may be easily renewed without the necessity of providing an entirely new rod.

The advantages of my invention have been heretofore set forth and it is to be understood that while I have designed this needle for use in embroidering machines, I do not wish to be limited thereto, as it may be used in any situation wherein needles of this kind would be advantageous and be operated by any suitable means.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A needle for embroidering machines consisting of a continuously tubular needle body, a longitudinally hollow hooked needle point detachably secured to the lower end of said tubular body, and a longitudinally

movable rod extending entirely through and reciprocating in the tubular body and the said point, adapted to contact at its lower end with the hook of the needle to close the same.

2. A needle for embroidering machines consisting of a continuously tubular body and a longitudinally hollow hooked needle point screw threaded into the lower end of the tubular body and detachable therefrom, said point being tubular at its upper end and slotted toward its lower end, and a longitudinally movable rod extending entirely through the hollow body and point and adapted to contact at its lower end with the hook of the needle.

3. A needle for embroidering machines consisting of a tubular body and a longitudinally hollow needle point tubular at its upper end and slotted at its lower end and there provided with a hook, and a rod passing through the hollow body and point and contacting with the end of the hook to close the same, said rod being formed in two parts, the lower end thereof being detachable from the upper portion whereby the end of the rod may be renewed when worn.

4. A needle for embroidering machines consisting of a tubular body and a longitudinally hollow, hooked needle point carried on the lower extremity thereof, a longitudinally movable rod passing through the hollow body and point and adapted to contact at its lower end with the hook of the needle, the upper end of said body being provided with a longitudinally movable cap, means for rigidly fastening the cap to the said interior rod, and a spring surrounding the rod bearing at one end against the upper end of the needle body and at its other end against the inside of the cap.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL FRED MACK.

Witnesses:

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GEORGE S. DELLINGER.