

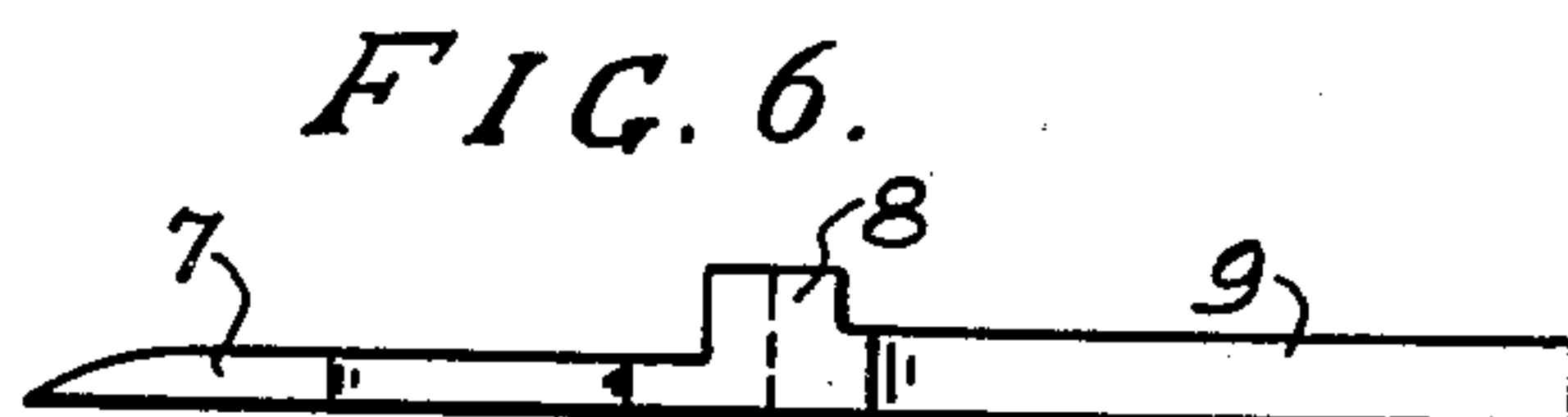
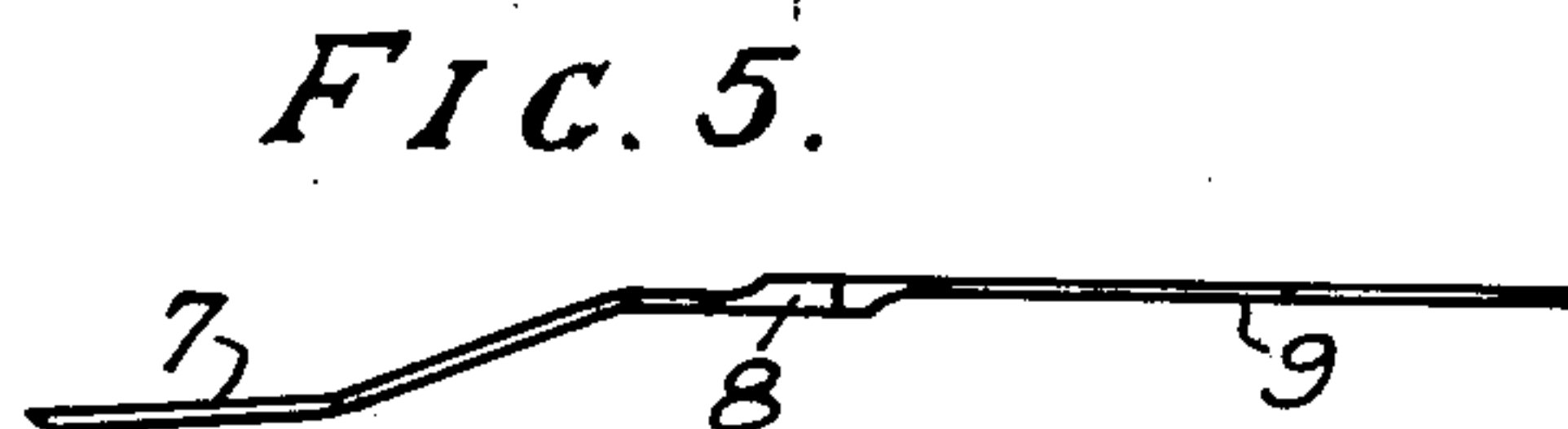
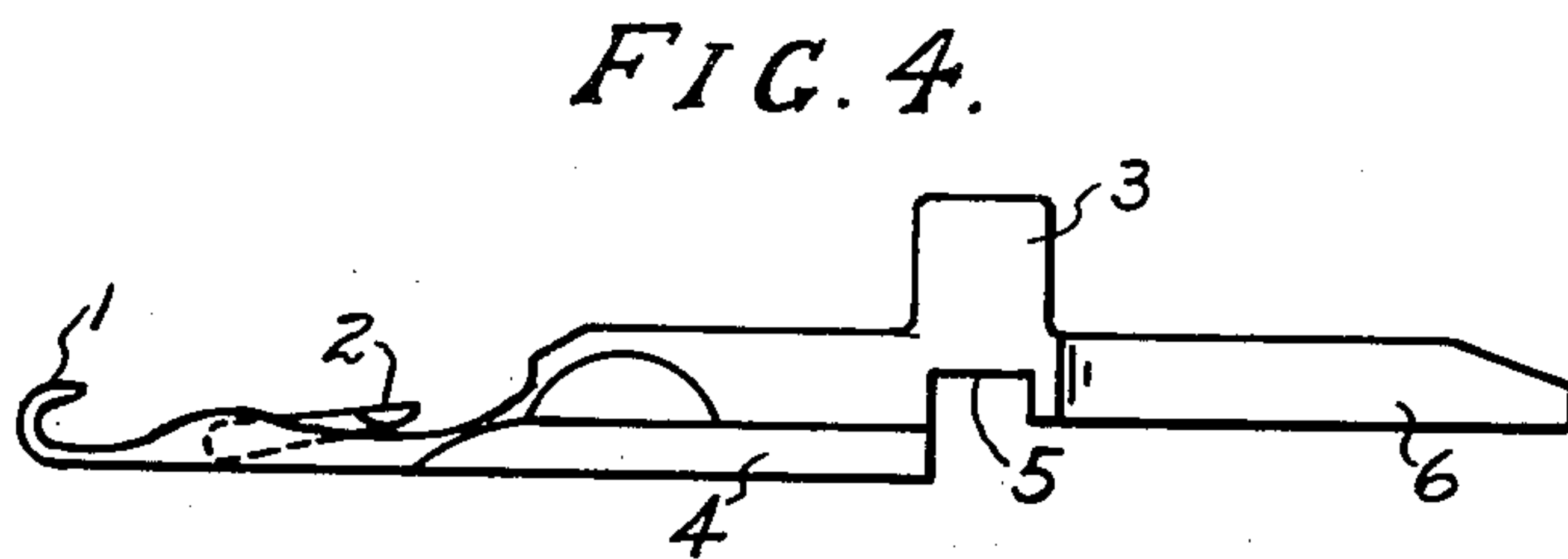
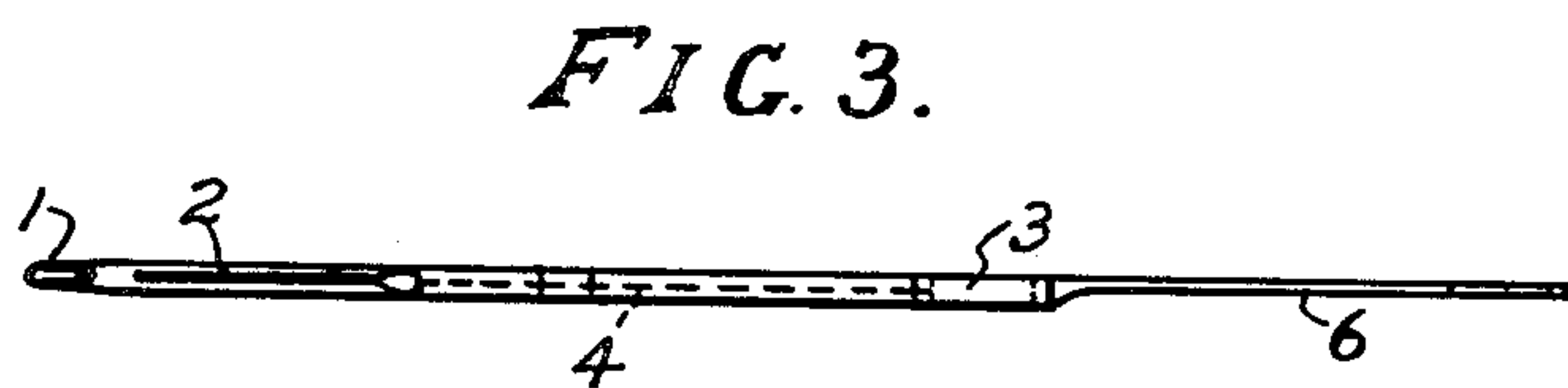
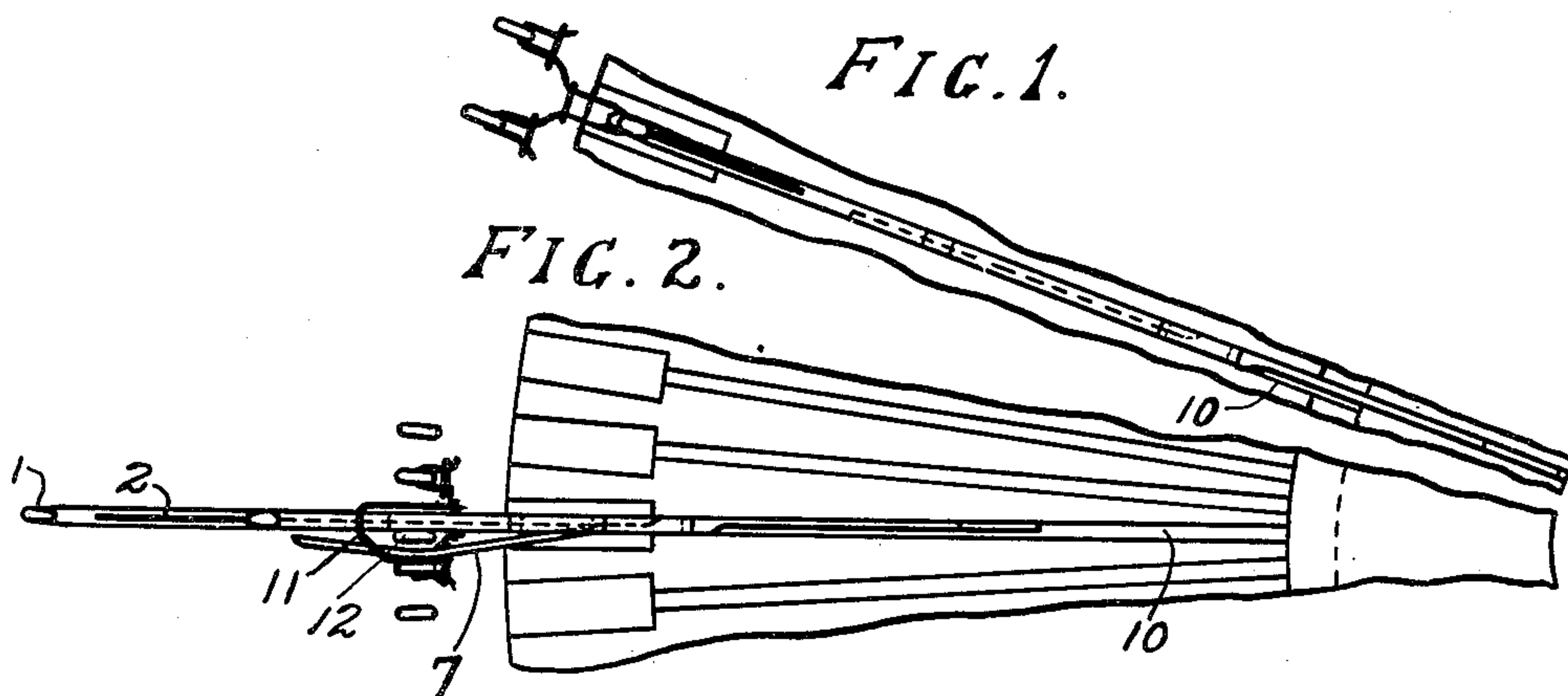
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2,626,515

KNITTING NEEDLE AND TRANSFER BIT

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UNITED STATES PATENT OFFICE

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KNITTING NEEDLE AND TRANSFER BIT

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3 Claims. (Cl. 66—95)

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This invention relates to the novel combination of knitting needle and transfer bit primarily intended for use in circular, independent needle, knitting machines of the dial and cylinder type adapted to knit true rib fabric as in the top of a stocking and to then effect the automatic transfer of dial needle loops to cylinder needles for the knitting of a plain leg, for example.

The principles and methods of knitting true rib fabric on dial and cylinder machines are well known and, consequently, require no explanation. Also, the general principles of transferring from rib knitting on both the dial and cylinder to plain knitting on the cylinder alone are equally well known. The most difficult mechanical operation in transferring from rib knitting to plain knitting is to cause the cylinder needles to register so accurately with the dial needles that the dial loops will be transferred to cylinder needles without fail. The object of this invention is to reduce as much as possible the mechanical accuracy required for making perfect transfer of all the dial loops.

One form of the invention is shown in the drawing of which:

Fig. 1 is a diagrammatic illustration of a part of a dial for a circular, independent needle, knitting machine in which the combination needle and transfer bit of this invention is shown in a knitting position;

Fig. 2 is a similar view showing a needle transfer bit in transferring position;

Fig. 3 is a plan view of the needle;

Fig. 4 is a side elevation of the needle; and

Figs. 5 and 6 are, respectively, a plan view and a side elevation of the transfer bit.

As best shown in Figs. 3 and 4, the needle selected for description herein is a latch dial needle having the usual hook 1, latch 2 and butt 3 by which it is operated by a suitable dial cam or cams. The lower part of the shank of this needle is longitudinally recessed as shown at 4. It is also provided with a rectangular cut-out 5 behind which is a thin guiding tail 6. The transfer bit associated with this needle is shown in Figs. 5 and 6. It consists of a normally offset blade 7, an operating butt 8 of substantially the same thickness as the needle adjacent the recess 5 and a guiding tail 9.

As shown in Fig. 1, the transfer bit is adapted to be seated in a dial needle slot such as 10 below the dial needle with its tail below the tail of the needle and its butt 8 filling the recess 5 of the needle so that the needle and transfer bit will be moved as a unit by the action of the dial cam

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or cams upon needle butt 3. Also, the tail of the transfer bit supports the tail of the needle and the tail of the needle holds down the tail of the transfer bit so that no appreciable vertical movement by either the needle or the transfer bit is possible but only longitudinal reciprocatory motion. The offset blade 7 of the transfer bit is flexible so that when the needle is drawn into the dial as shown in Fig. 1, it will fit into the recess 4 of the needle which is at least as deep as the thickness of the blade 7.

During the knitting of rib fabric by the dial and cylinder needles, the transfer bit remains within the needle slot as just described and will not emerge sufficiently to permit the blade to leave recess 4. When the transfer of dial needle loops to cylinder needles is made, the dial needles are projected outwardly much further than when knitting as shown in Fig. 2 so that the blade 7 of the transfer bit can expand as shown and correspondingly expand the enveloping dial loop 11 so that the cylinder needle 12 can readily pass through it. The fact that the sides of the dial loop are thus widely separated, comparatively speaking, insures that the transfer of the loop to the desired cylinder needle will be definitely and properly made. Furthermore, the needle and transfer bit are separate elements which permits of simple manufacture, assembly and replacement. The arrangement is also economical because a defective needle or bit can be replaced without replacing the other. As is well known, this is a matter of importance to knitting mills.

I claim:

1. For a knitting machine having a dial with needle slots, a dial needle having an operating butt, a shank the width of the upper part of which is such that it will make a sliding fit with the walls of a slot when inserted therein and the lower part of which is longitudinally recessed on one side, said needle also having a cut out portion behind said shank, a tail behind said cut out portion the bottom of which is above the bottom of said shank, a separate transfer bit having a butt adapted to fit within the cut out portion of said needle, and also having a tail adapted to underlie the tail of said needle, said tail having such vertical width that, when assembled with said needle, the lower edge of said transfer bit will be in alignment with the bottom of said shank, said transfer bit also having a resilient blade adapted to be seated within said recess of said shank so that said needle and said transfer bit may be drawn into said needle slot and also being adapted to separate laterally from said shank when said

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needle and transfer bit project from said slot sufficiently to effect transfer.

2. For a knitting machine having a dial with needle slots, the combination of a dial needle and a separate transfer bit adapted to reciprocate in a dial slot, means on said needle and cooperating means on said bit of substantially the same thickness as said means on said needle whereby they may be caused to reciprocate together in said slot, said needle being adapted to be supported within the slot in part by its bottom edge and in part by said transfer bit.

3. For a knitting machine having a dial with needle slots, the combination of a dial needle and a separate transfer bit adapted to reciprocate in a dial slot, means on said needle and cooperating means on said bit of substantially the same thickness as said means on said needle whereby they

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may be caused to reciprocate together in said slot, said needle being adapted to be supported within the slot in part by its bottom edge and in part by said transfer bit, said part of said needle which is supported by said transfer bit also serving as means for preventing any appreciable vertical motion by said transfer bit.

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