

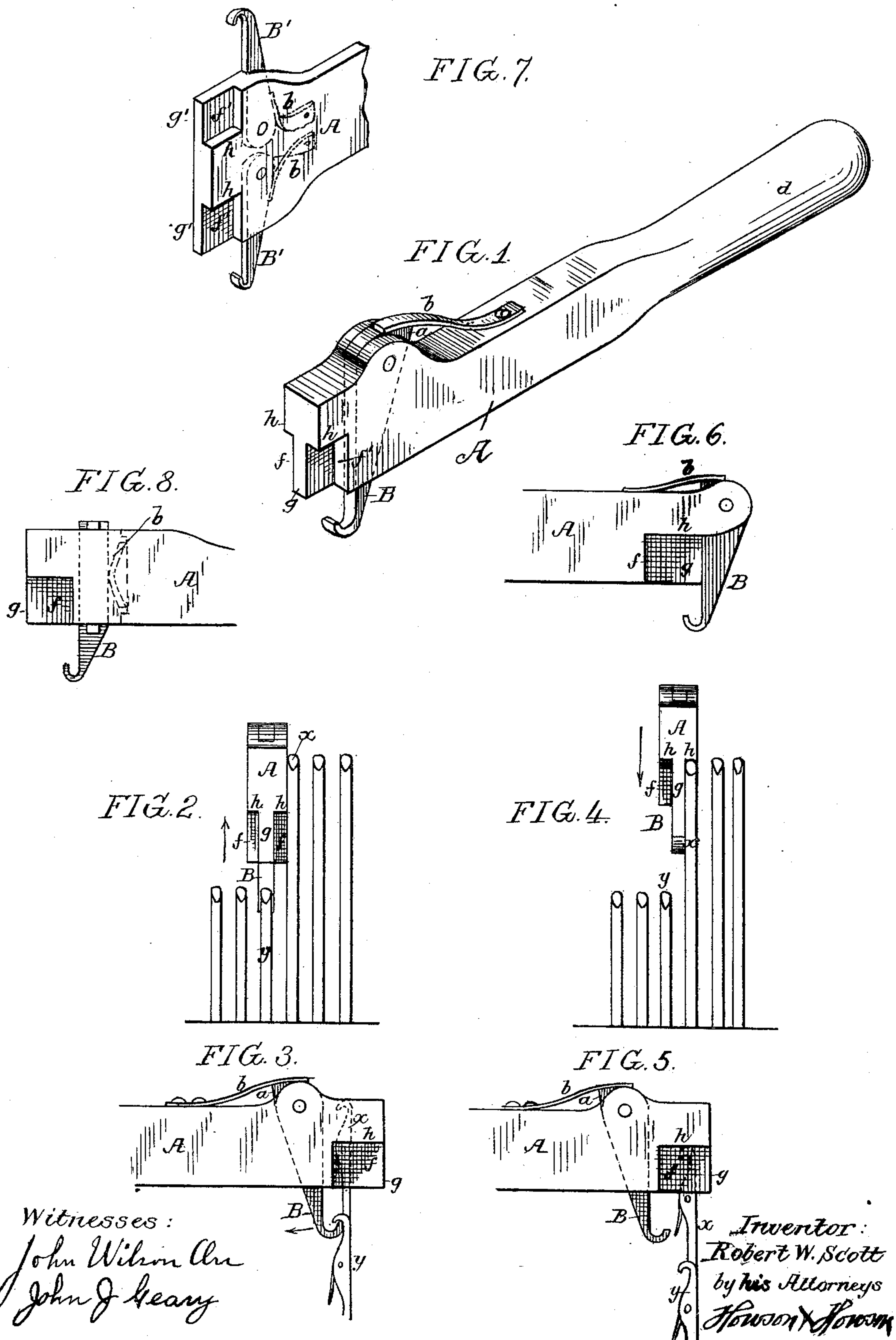
(No Model.)

R. W. SCOTT.

NEEDLE PICKING TOOL FOR KNITTING MACHINES.

No. 407,126.

Patented July 16, 1889.



UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO LOUIS N. D. WILLIAMS, OF SAME PLACE.

NEEDLE-PICKING TOOL FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 407,126, dated July 16, 1889.

Application filed May 16, 1889. Serial No. 310,963. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented
5 an Improved Needle-Picking Tool for Knitting-Machines, of which the following is a specification.

The object of my invention is to provide a simple and efficient device whereby the
10 needles of a knitting-machine may be readily and accurately manipulated to throw them successively out of and into action, as required, in the production of toe or heel pockets or like bulging portions upon a knitted
15 web; and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved needle-operating device. Figs. 2 and
20 3 are diagrams illustrating the operation of the device in picking needles out of action. Figs. 4 and 5 are diagrams illustrating the operation of the device in throwing needles into action. Fig. 6 is a side view of part of
25 the device, illustrating certain modifications in the construction of the same, whereby it is rendered better available for use as part of an automatic machine; and Figs. 7 and 8 are views illustrating further modifications in
30 the construction of the device.

There are many knitting-machines in which the needles are elevated from their normal or operative position, so that their bits are carried beyond the control of the operating-cams
35 and the needles thus rendered inoperative, a subsequent lowering of the needles rendering them again operative. Such machines are intended, mainly, for the production of webs having bulges or pockets thereon, such pockets
40 being formed by lifting out of action a certain number of needles simultaneously without casting off their stitches, and then after each course of stitches on the remaining needles raising out of action a needle of said
45 acting set, first at one end and then at the other end of the set, until the web has been narrowed to the desired extent, the needles thus raised retaining the stitches last formed on them and being afterward successively
50 depressed, so as to be thrown into action

again, until the web has attained the same width as before the narrowing operation began. It is the usual practice to lift the needles out of action and push them down into
action again by hand, and the attendant 55 must exercise considerable care and skill in the performance of these operations, otherwise there is a liability of the wrong needle or more than one needle being acted upon, thus spoiling the work or necessitating delay 60 while the error is being corrected.

The device which forms the subject of my invention has been devised for the purpose of facilitating and rendering certain the proper
lifting of the needles into inoperative position and the proper depression of said needles 65 again into operative position.

The device, as shown in Figs. 1 to 5, consists of a bar A, to which, near the front end, is pivoted a hook B, which is located, preferably, about midway of the width of the bar,
70 this hook having a projecting heel *a*, which is acted upon by a spring *b*, the tendency of which is to maintain the hook in the position shown in the drawings, the hook, however, 75 being free to swing backward, as shown by the arrow in Fig. 3, when such movement is required.

In the hand-tool shown in Fig. 1 the bar A is provided at one end with a handle *d*, where-
80 by it may be readily manipulated, and that portion of the opposite end of the bar which is beyond the hook B is recessed on each side, as shown at *f*, so as to form a central web *g*
85 and opposite shoulders *h*.

The manner of using the tool is illustrated in Figs. 2 to 5. In order to lift a needle from the operative position to the inoperative position, the side of the bar A is caused to bear
90 against the raised needle *x* at the end of the inoperative set of needles, so that the hook may engage with the hook of the first needle *y* of the depressed or acting set, as shown in Figs. 2 and 3, the width of the bar A being
95 so proportioned in respect to the gage of the machine that when one side of the said bar bears against the needle *x* the hook B will be in line with said first needle *y* of the acting set, as shown. By lifting the bar A, there-
fore, this depressed needle will be raised to 100

inoperative position, and in like manner a needle at the opposite end of the acting set may be raised into inoperative position by bringing the opposite side of the bar A to bear against the raised end needle of the inoperative set at that side of the machine.

When it becomes necessary to depress the needles from the raised or inoperative position to the depressed or operative position, the recessed end portion of the bar A comes into play, the contracted web *g* at the end of the bar now constituting the gage, which, by contact with the raised end needle of the inoperative set, effects the proper adjustment of the device for the depression of said needle by bringing one or other of the shoulders *h* of the bar over the head of the needle, as shown, for instance, in Figs. 4 and 5, the hook B in this case being beyond the needles and in line with the space between adjoining needles, as shown in said figures, so that there is no liability of said hook catching in one of the depressed needles and raising it into inoperative position.

In constructing the improved needle-picking device for use in an automatic machine, the lifting-hook B is preferably hung to the bar A at a point outside of or beyond the recessed portion of said bar, as shown in Fig. 6, and the hook is turned in toward the body of the bar instead of outward, as in Fig. 1, for in the automatic machine the bar A is by preference operated from a point inside the circumference of the cylinder instead of being manipulated at a point outside of or beyond the circumference of the cylinder, as in the case of the hand-tool.

Although it is preferable to locate the picking-hook B centrally in respect to the width of the bar A and to form the recesses *f* in the opposite sides of said bar, as shown in Figs. 1 to 5, the device may be modified by forming both recesses in one side of the bar, one at the top and one at the bottom of the bar, and by using two hooks B' hung in a recess in the opposite face of the bar, so as to be in line with the webs *g*, as shown, for instance, in Fig. 7, the tool in this case being reversed after acting upon a needle at the right-hand end of the acting set, so as to be in position for acting upon a needle at the left-hand end of said acting set; nor is it necessary that a pivoted hook should be used in all cases, as the hook may be free to slide in and out on the bar under control of the spring *b'*, as shown in Fig. 8, for instance, or the hook may even be rigid, if desired, reliance being placed upon the yielding of the needles to permit the proper engagement of the hook therewith.

I do not herein claim, broadly, a needle-picking tool consisting of a bar for bearing against the side of a needle and having a shoulder or shoulders for overlapping the head of the needle and engaging with the same as the bar is depressed, as this forms the subject of a

separate application filed by me and bearing date April 29, 1889, No. 308,947.

The tool can also be used in machines in which the operation is the reverse of that which I have described—that is to say, in which the elevated needles are the active needles, and the depressed needles are out of action; and in automatic machines the tool may be constructed to act upon the jacks of the needles at the base of the cylinder, instead of acting upon the tops of the needles.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook occupying such lateral relation to the side of the bar that when said side of the bar is brought into contact with a projected needle of the machine the hook will be in position to engage with an adjacent needle occupying a different vertical plane, substantially as specified.

2. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook midway between the opposite sides of the bar, so that when either side of the bar is pressed against a projected needle of the machine the hook will be in position to engage with an adjacent needle in a different vertical plane, substantially as specified.

3. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook for engaging with a needle of the machine when the side of the bar bears against an adjacent projected needle and having said side of the bar recessed so as to form a shoulder for overlapping the needle when the recessed portion of the bar bears against the same, substantially as specified.

4. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook for engaging with a needle when the side of the bar bears against an adjacent projected needle, and having recesses forming shoulders, one for engaging with needles on the right hand and the other for engaging with needles on the left hand when the recessed portion of the bar is pressed against the sides of said needles, substantially as specified.

5. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook located midway, or thereabout, of its lateral width, and having in opposite sides recesses forming a central contracted portion, with opposite shoulders at the top of the same, substantially as specified.

6. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a projecting hook free to yield on the bar and a spring acting thereon,

the hook occupying such lateral relation to the side of the bar as to engage with one needle of the machine when the side of the bar bears against an adjacent projected needle, substantially as specified.

5 7. The within-described needle-picking device for knitting-machines, the same consisting of a bar having a pivoted hook and a spring acting thereon, the hook bearing such
10 lateral relation to the side of the bar as to

engage with one needle of the machine when the side of the bar bears against an adjacent projected needle, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two sub- 15 scribing witnesses.

ROBERT W. SCOTT.

Witnesses:

WILLIAM D. CONNER,
HARRY SMITH.