

No. 636,584.

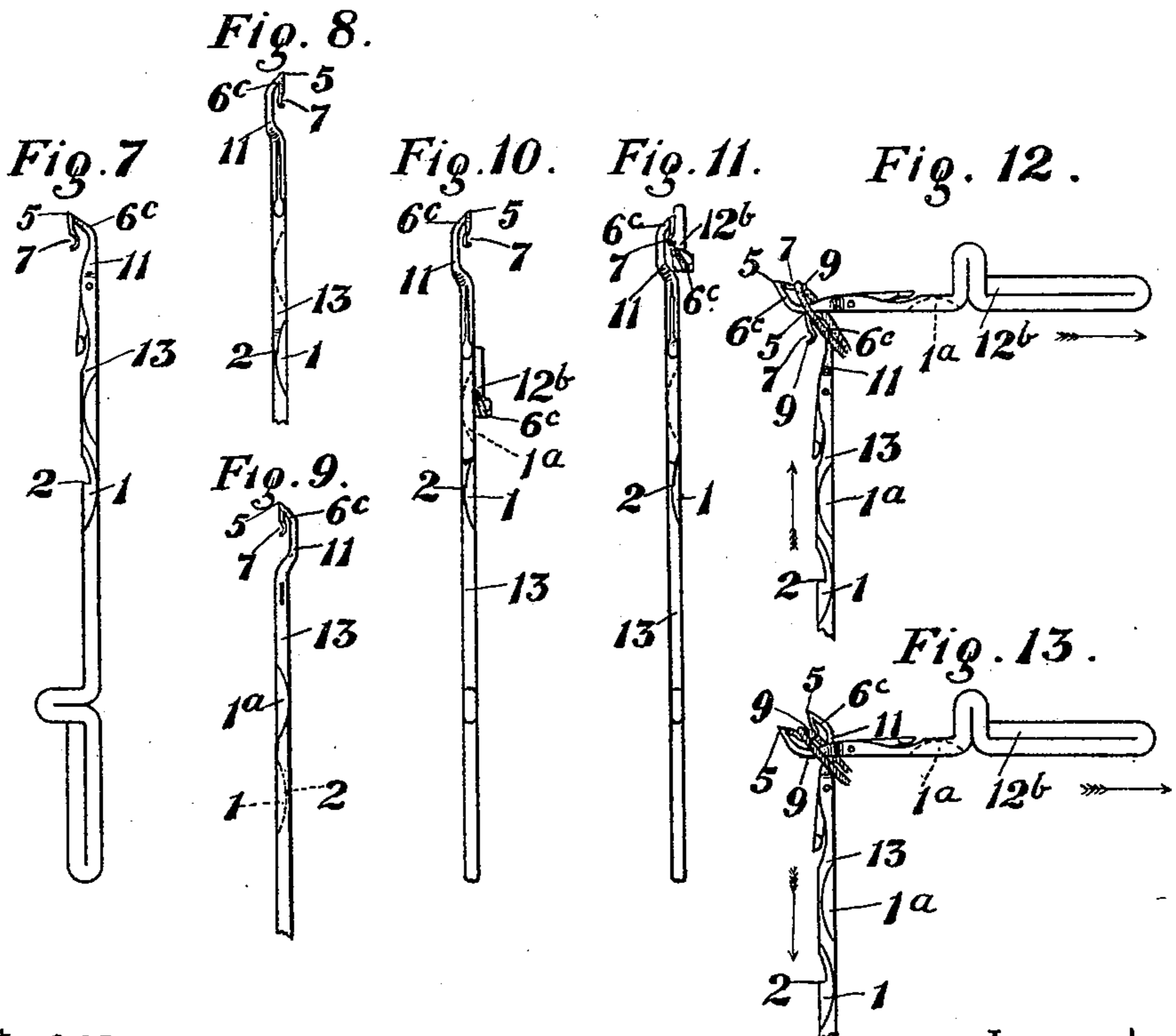
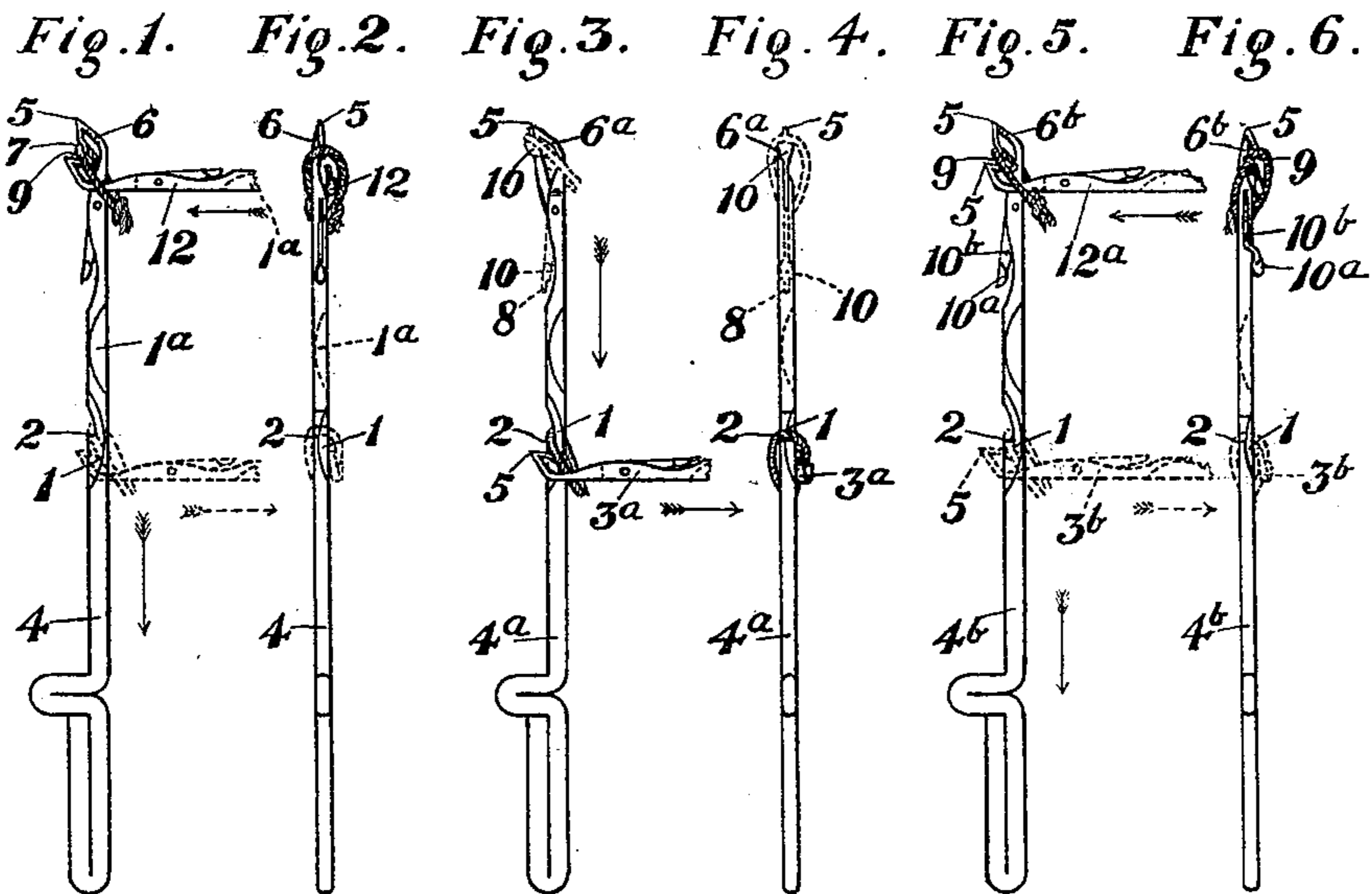
Patented Nov. 7, 1899.

G. F. STURGESS.

NEEDLE FOR KNITTING MACHINES.

(Application filed Jan. 5, 1899.)

(No Model.)



Witnesses.

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NEEDLE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 636,584, dated November 7, 1899.

Application filed January 5, 1899. Serial No. 701,294. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FREDERICK STURGESS, hosier's engineer, a subject of the Queen of England, residing at Ingle-Nook, Leicester, in the county of Leicester, England, have invented new and useful Improvements in Needles for Knitting-Machines, of which the following is a specification.

This invention is an improvement upon the needle for which Patent No. 578,428, dated March 9, 1897, was granted; and its object is to make a loop-linking needle conformable to machines the gage or construction of which makes it inconvenient to have the linking side stem therein shown and in which it is desirable to be able to link a loop either from the hook or from the needle-stem and also to link two loops consecutively from one needle in one complete motion of the needle.

The invention consists of a needle having a combined knitting and loop-delivering head or hook and a loop-delivering stem adapted to give loops to an adjacent needle; and its features consist, chiefly, of a loop-delivery shoulder on the fore part of the knitting-head, preferably located on the front bar of the hook, formed in a manner as to sufficiently spread its loop in the path of the coacting oppositely-posed adjacent needle as to be received thereby, provisions being made to spread the loop more or less, according to the gage of the machine and needles, and also of means to allow the offset terminating end of the hook to engage the stem of the coacting needle for the purpose of linking a loop therefrom without locking with the stem, consisting of beveling the stem of the coacting needle obliquely across the delivery-shoulder to fend off the offset hook, and, furthermore, of spear-pointing the top of the hook on a line with its front bar to facilitate the linking of the loop when the hook enters by way of the top and not by way of the terminating end of the hook.

It will suffice to describe this invention as applied to latch-needles, from which its adaptation to latchless or bearded needles will be obvious.

In the drawings the needles are supposed to be about to move their position in the direction indicated by the arrows.

Figure 1 is a side and Fig. 2 a front ele-

vation of a vertical needle 4 and part of a coacting horizontal needle 12 of similar construction, showing the shoulder-bevel 1 and the loop-shoulder 2 in the front and the usual bevel 1^a in the back of the stem, also showing the hook 6 reduced sidewise from the latch-eye to the spear or needle point 5, the terminating end 9 being formed into a loop-delivery shoulder 7, (better seen in Fig. 7,) and the horizontal needle 12 enters the loop in the forward movement, (indicated by the arrow,) also showing how a horizontal needle (dotted lines) having its hook offset receives in its backward movement (indicated by the dotted arrow) the loop (dotted lines) from the stem of the vertical needle 4 when required so to do. Fig. 3 is a side and Fig. 4 a front elevation of similar needles having a loop-delivery shoulder 8 in the cup part of the latch 10. Fig. 5 is a side and Fig. 6 a front elevation view of similar needles, showing a side twist or offset of the front bar from the line of the back bar 6^b of the hook 5 of the needle 4^b. Fig. 7 is a side view of a needle, and Fig. 8 a front and Fig. 9 a back view of the linking part thereof, showing how the front and back bars of the hook are set out of line by offsetting the back bar 11 to admit large and coarse hooks to engage for loop-linking. Fig. 10 is a front view of two coacting adjacent needles of the form shown in Figs. 7, 8, and 9 adjusted side by side. Fig. 11 is a front view of the needles shown in Fig. 10, showing the offset hooks lying in the common linking-path. Fig. 12 is a side view showing the offset hook of the vertical needle 13 entering the loop of an adjacent horizontal needle 12^b; and Fig. 13 is a side view showing the terminating end 9 of the hook entering the loop before the spear-point 5 in the backward movement, (indicated by the arrow.)

The construction of the needle-beds and operating-cams being so well known, it is not necessary to describe them here.

In the vertical needle of the said several modifications a loop shoulder or stop 2 and a shoulder-bevel 1 are formed in the front part of the stem, whereby a loop advanced on shoulder 2 may be taken by the hook-point of a coacting needle as the said coacting needle withdraws, as clearly shown in Figs. 5 and 6, in which the needle 3^b is taking the loop from

the needle 4^b. The spear-point 5 is located at the head of the hook in line with its front bar, and the rear part of the hook 6^b inclined downwardly and rearwardly to facilitate penetrating the loop carried by the coacting needle when linking up in the forward thrust of the needle. The extremity of the hook 6, Figs. 1 and 2, is abruptly turned inwardly and outwardly, making loop-delivery shoulder 7, when the latch 10 is formed into a loop-delivery shoulder 8. (See Figs. 3 and 4.) The terminating end of the hook-point is turned farther inward to allow the latch-cup to lie as flat as possible.

When the horizontal needle is linking loops from the stem, as seen in Figs. 1, 3, and 5, the front oblique bevel 1 fends off the terminating end 9, and consequently prevents the hook of the coacting needle from locking with the stem when receding to take the loop delivered by the stem loop-shoulder 2. The usual bevel 1^a prevents the hook jamming on the stem when the head of one needle passes the stem of the other.

The operation of the needles in the linking up and complete transference of a loop is as follows: In order to make pearl fabric (two succeeding forwardly-drawn courses of loops delivered from the vertical to the horizontal needles, alternating with one rearwardly-drawn course of loops delivered from the horizontal to the vertical needles) and referring to Figs. 1 and 2, the horizontal needle 12 links up a loop from the stem, as shown in dotted lines, and the vertical needle draws a new loop through the linked loop, which the horizontal needle then links up from the knitting-head, as shown in full lines, after which the horizontal needle draws a loop through the two linked loops and discharges the newly-made loop onto the vertical needle.

Referring to Figs. 1 and 2, to link the loop from the knitting-head of the vertical needle 4 onto the horizontal needle 12 the vertical needle 4 delivers its loop into the path of the horizontal needle 12, and then recedes slightly to relieve the loop of tension, allowing it to bulge out. The horizontal needle then enters the loop in the direction indicated by the arrow; advancing until the loop-shoulder 7 is completely through the loop, when the vertical needle 4 moves out of reach of the horizontal needle 12, casting the loop onto the horizontal needle 12. The vertical needle 4^b, Figs. 5 and 6, delivers or links its loop to the horizontal needle 12^a from the shoulder 7 of the hook 6^b, and the vertical needle 13, Fig. 12, also delivers or links its loop to the horizontal needle 12^b from the knitting-head in a similar manner, the spear-point entering before the hook end without twisting the loop in each case when linked as shown in the figures.

Referring to Fig. 12, in order to deliver the loop in the opposite direction from the horizontal needle 12^b to the vertical needle 13 the horizontal needle 12^b delivers its loop into

the path of the hook 6^c of the vertical needle 13. The vertical needle 13 then enters the loop in the direction indicated by the arrow, advancing until its loop-shoulder 7 is completely through the loop, when the horizontal needle 12^b moves out of reach of the vertical needle 13, casting the loop onto the vertical needle 13. The horizontal needles 12, 3, and 12^a, Figs. 1, 2, 3, 4, 5, and 6, link their loops to the corresponding coacting vertical needle from the knitting-head in the same manner.

In Fig. 13 the needles are adjusted and operated so that the needle 12^b delivers its loop before the needle 13 descends to the position shown, with the result that the terminating end 9 of the hook of needle 13 enters the loop before the spear-point 5, giving the loop a twist or turnover in the act of linking.

When linking from the stem, the loop is linked or delivered from the loop-shoulder 2 of the vertical needle to the coacting horizontal needle 3 or 3^a or 3^b, as seen in Figs. 1, 3, and 5, as follows: Referring particularly to Figs. 1 and 2, the hook of the horizontal needle (dotted lines) was first advanced beyond the stem of the vertical needle 4, while the bevel or shamp 1^a was in line with it. The vertical needle 4 then delivered its loop by the stem loop-shoulder 2 to the position shown, lying in the path of the horizontal needle, the vertical needle receding slightly to remove tension from the loop and allow it to bulge out, as seen in dotted line, Fig. 2. The horizontal needle then recedes (in the direction of the arrow) from the dotted-line position, the hook end 9 gliding across the bevel 1 without locking until its hook engaging the loop is completely at the back of the vertical needle 4. The vertical needle 4 then recedes out of reach of the horizontal needle, (in the direction of the arrow,) casting its loop, which is twisted or turned over in the operation, onto the horizontal needle in the act of receding out of reach of the horizontal needle.

For simple right and left loop-linking, only one of the loop-shoulders to each of the coacting needles is necessary, and in machines in which small dial rib-needles, such as 12^b, Figs. 12 and 13, are used the stem loop-shoulder is necessarily dispensed with for want of needle and cam space, while in the case of the long needle 13, Figs. 12 and 13, in which there is ample cam and needle space for the stem loop-shoulder, the hook loop-shoulder is more conveniently dispensed with, especially so in fine-gaged hooks, in which the hook loop-shoulder is more difficult of accomplishment. It is equally obvious that loop-linking can be more safely accomplished when the loop-shoulder of one needle is on its hook and the loop-shoulder of the coacting needle is on its stem. The hook-shoulder offset may be made in many ways with the same general result as conditions require without departure from my invention.

What I claim is—

1. A loop-linking sliding knitting-needle.

provided with means located upon its hook or head to engage and distend its loop, the said hook or head being offset to engage a co-acting needle, a spear-point at the top on a line with the front bar, and having a stem loop-shoulder obliquely beveled across the front of the stem, substantially as and for the purposes set forth.

2. A loop-linking sliding knitting-needle, provided with means located upon its hook or head to engage and distend its loop, the said hook or head being offset to engage a co-acting needle, a spear-point at the top on a line with the front bar, substantially as and for the purposes set forth.

3. A loop-linking sliding knitting-needle, provided with means located upon its hook or head to engage and distend its loop, the said hook or head being offset to engage a co-acting needle, substantially as and for the purposes set forth.

4. A loop-linking sliding knitting-needle having a hook or head offset to engage a co-acting needle, substantially as and for the purposes set forth.

5. A loop-linking sliding knitting-needle provided with a hook or head having a loop-delivery shoulder, a bar of the said hook or head being offset laterally to engage a co-acting needle, substantially as and for the purposes set forth.

6. A loop-linking sliding knitting-needle provided with a hook or head having a loop-delivery shoulder, a bar of the said hook or head being offset laterally to engage a co-acting needle, and having a spear-pointed hook-

top the point of which comes in line with the front bar of the hook, substantially as and for the purposes set forth.

7. A loop-linking sliding knitting-needle having a loop-shoulder in the stem, and an oblique bevel across the front of the stem for engagement with the offset hook end of a co-acting needle, substantially as and for the purposes set forth.

8. A loop-linking sliding knitting-needle having a spear-pointed hook or head, the point of which comes in line with the front bar of the hook, and to facilitate the reception of a loop delivered by a co-acting needle into line with the spear-point, substantially as and for the purposes set forth.

9. A sliding knitting-needle having its hook or head formed into a loop-delivery shoulder or part, an offset to engage a co-acting needle, and provided with a diagonally-beveled loop-delivery shoulder in the stem, substantially as and for the purposes set forth.

10. A sliding knitting-needle having its hook or head formed into a loop-delivery shoulder or part, and offset to engage a co-acting needle, substantially as and for the purposes set forth.

11. A sliding latch knitting-needle having a combined loop-forming and loop-delivering hook or head, substantially as and for the purposes set forth.

Dated this 9th day of November, 1898.

GEO. F. STURGESS.

Witnesses:

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WALTER EDWIN STURGESS.