

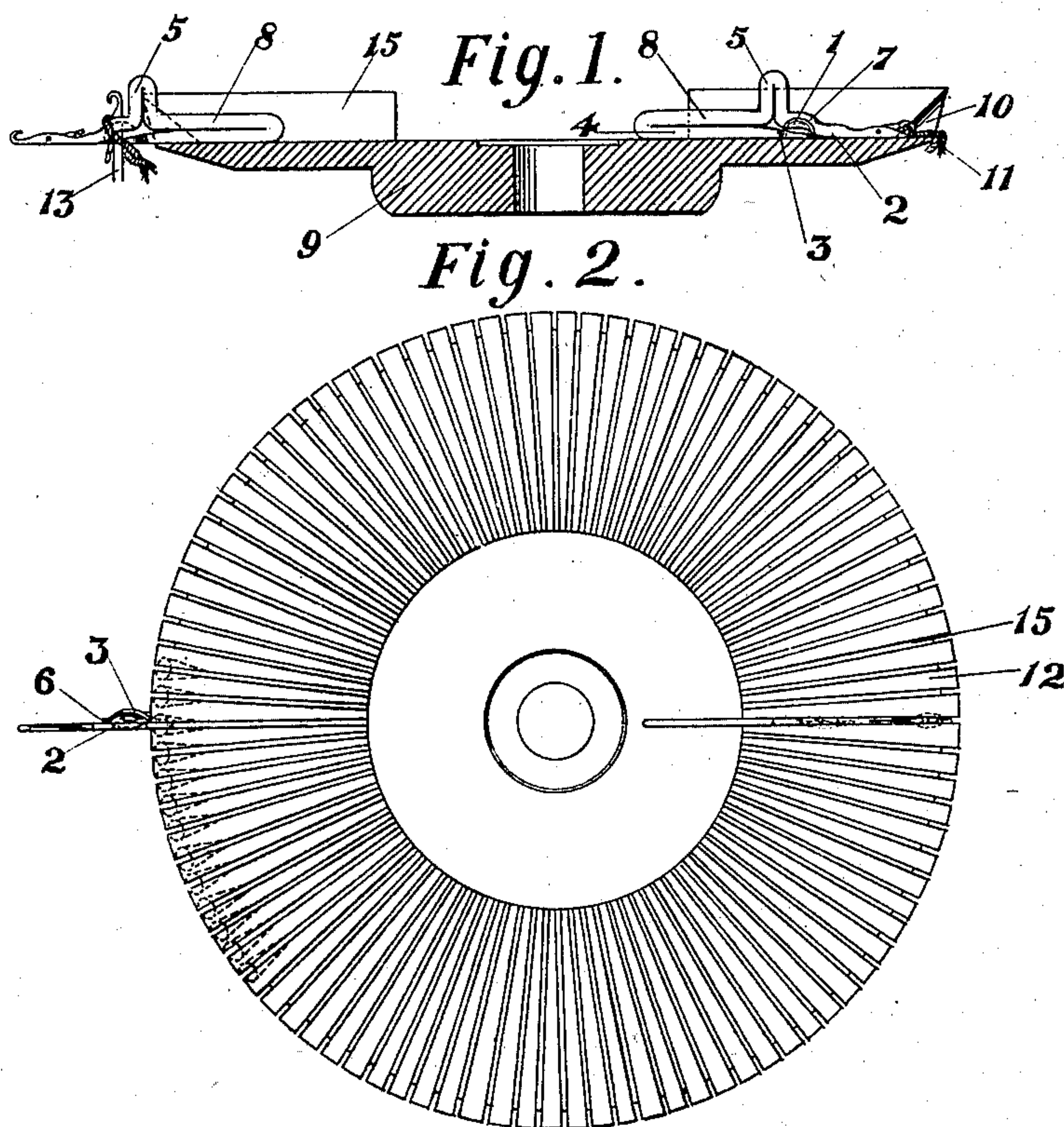
No. 625,856.

Patented May 30, 1899.

G. F. STURGESS.
KNITTING MACHINE.

(Application filed Nov. 14, 1898.)

(No Model.)



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KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,856, dated May 30, 1899.

Application filed November 14, 1898. Serial No. 696,446. (No model.)

To all whom it may concern:

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

The object of this invention is to transfer loops in the simple domestic circular type of stocking-knitting machine, to which, owing to the necessarily-restricted dimensions of the radial needle-bed and limited space for operation, the present cumbersome transfer devices are not adaptable, thereby obtaining a compact and simple transfer device which avoids the disadvantages of existing transfer devices, and, furthermore, applicable to existing fine-gage as well as coarse-gage machines, which has not been heretofore accomplished.

To that end the invention consists of the following improved construction and combination: first, a needle having its flexible end twisted and bent out of line of the needle and hookward into a loop-expanding shoulder and its knitting-stem set down to a loop-stopping shoulder in a manner so as to retain the usual width or gage and dimensions of the needle and needle-groove and also retain the simple form of needle-foot, consequently maintaining the maximum strength of the parts and the simple form of knitting-cams existing in this class of machine; secondly, a needle-bed the grooves of which are integral with the base and are opened out in a manner that sufficient loop-clearance is given at the base of the grooves, while the upper parts of the grooves, extending beyond the base, remain unopened to support the feet of the needles when thrust beyond the knitting-point to the transferring-point, avoiding the compound or built-up bed formerly employed and maintaining the maximum strength of the ordinary needle-bed.

It will suffice to describe my invention as applied to the sliding latch-needle, from which its application to a sliding bearded needle will be obvious.

Figure 1 is a sectional elevation, and Fig. 2 a plan, of the needle-bed of the radial type used in the domestic knitter, containing a

needle in the loop-drawing position on the right side and a needle on the left side linking its loop to a needle of the opposite set. 55

Referring to the drawings, the needle is beveled off at 1 to lead the hook of the opposite needle up between the knitting-stem 2 and the loop-expanding shoulder 3 of the flexible end 4 of the needle, which is folded hookward and bent and twisted to the side of the needle-line into a loop-expanding shoulder 3, terminating in a needle-point 6 forward of the foot 5, which is of the ordinary simple type and level with the knitting-stem, which is set down, forming a loop-stopping shoulder 7, the whole needle except the latch being formed out of one piece of wire. The loop-expanding shoulder is sufficiently flexible to contract to a position beneath the inflexible stem of the needle proper, whereby the needle is not reduced, and consequently weakened, or the needle-grooves enlarged or their supporting-walls consequently weakened, as is the case in existing transfer-needles, where the loop-expanding shoulder closes on the side of the needle. Therefore owing to its construction the needle conforms to the normal dimensions and conditions of ordinary needles and needle-grooves of this type. Shallow openings 10 are cut in the needle-grooves 15, with a V-shaped tool set at an angle to the base of the groove, obtaining adequate clearance for the casting of the loop 11 and leaving the grooves unopened at their upper part and continued or projecting beyond the base of the bed, allowing the needles to be thrust beyond the knitting-point for the purpose of transferring without the needle-feet losing the support of the needle-grooves and keeping the walls 12 stronger in this part than in the ordinary bed even, and the walls of the grooves and the base being integral, avoiding the built-up or compound bed used heretofore. 85

The needle is operated by the foot 5 engaging cams, the construction of which is so well known as not to require repetition here. In operation this transfer-needle 8 knits loops in the ordinary manner, and in order to transfer a loop it is thrust beyond the knitting-point to the transfer-point, (seen on the left side of the drawings,) the point 6 of the tail piercing the loop, which thereupon mounts the loop-expanding shoulder 3 and loop-stop- 100

ping shoulder 7 and is opened out or diverted sidewise to admit the hook of the adjacent needle 13 of the other set, which being timed to so act by the action of cams, the construction of which is well known, slides upward between the knitting-stem 2 and the loop-expanding shoulder 3, penetrating the knitted loop 11. The needle 8 then withdraws, the flexible loop-expanding shoulder yielding to the passage out of the needle 13, the loop of the needle 8 being linked around the needle 13.

I declare that what I claim is—

1. A knitting-machine provided with a needle-bed, the needle-grooves of which are integral with and extend beyond the base of the bed, and have angular openings affording clearance for the loops in the lower part of the grooves, the upper part of the grooves being unopened, affording support for the needle-feet at the transfer-point forward of the knitting-point; and a transfer-needle therefor, having its flexible end bent out of the needle-line to form a loop-expanding shoulder forward of the needle-foot, said loop-expanding shoulder conformable to the normal width of the needle and the needle-groove, substantially as and for the purposes set forth.

2. A slidable knitting-needle, having its

flexible end bent from the needle-line to form a loop-expanding shoulder forward of the needle-foot, said loop-expanding shoulder conformable to the normal width of the needle, whereby the maximum width of the needle and the minimum width of the needle-groove are retained, and the transferring device applied without reducing the strength of the said parts, substantially as and for the purposes set forth.

3. A slidable knitting-needle, having its flexible end bent from the needle-line to form a loop-expanding shoulder forward of the needle-foot, the knitting-stem set down to the line of the loop-expanding shoulder, forming a loop-stopping shoulder, said loop-expanding shoulder conformable to the normal width of the needle, whereby the maximum width of the needle and the minimum width of the needle-groove are retained, and the transferring device applied without reducing the strength of the said parts, substantially as and for the purposes set forth.

Dated this 5th day of November, 1898.

GEO. F. STURGESS.

Witnesses:

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THOMAS SCOTT.