

J. BRADLEY.

TUCK MECHANISM FOR KNITTING MACHINES.

No. 538,652.

Patented May 7, 1895.

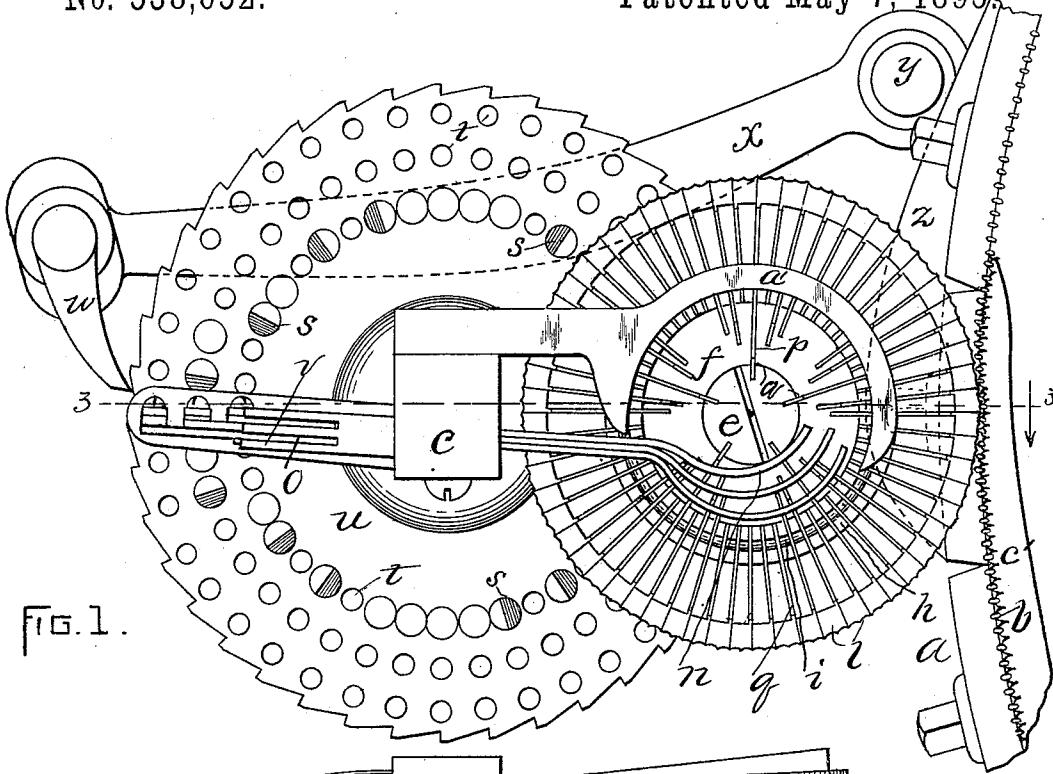


FIG. 1.

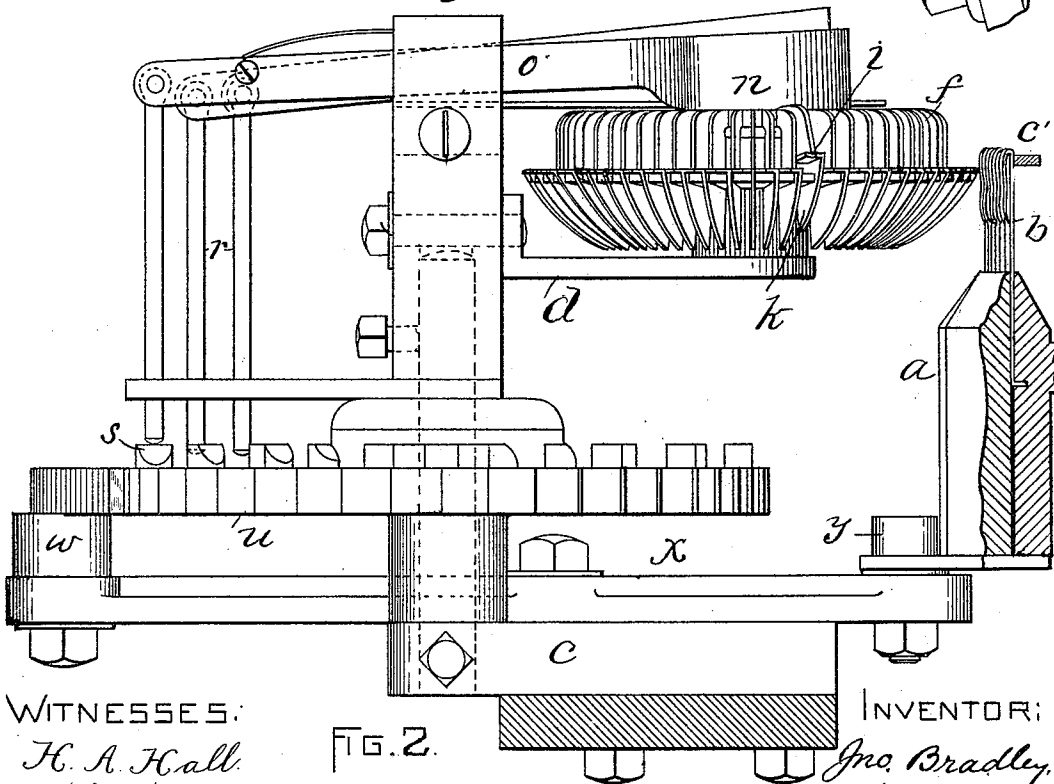


FIG. 2.

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(No Model.)

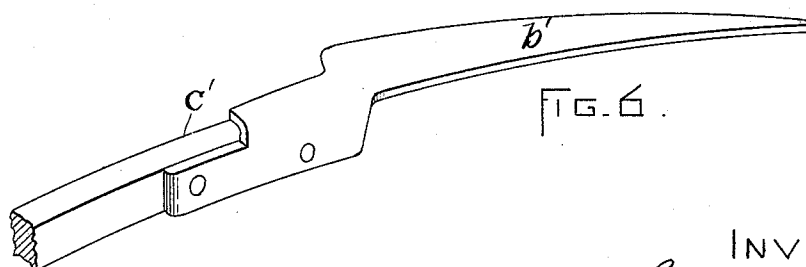
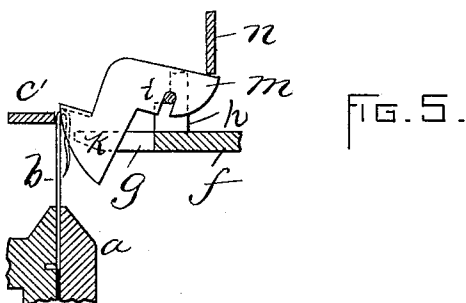
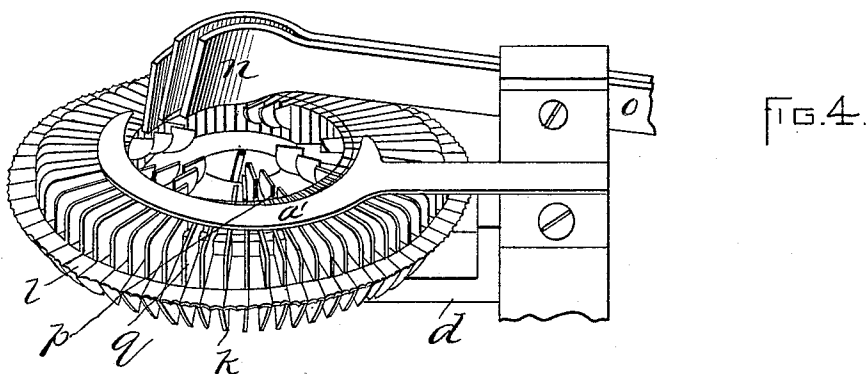
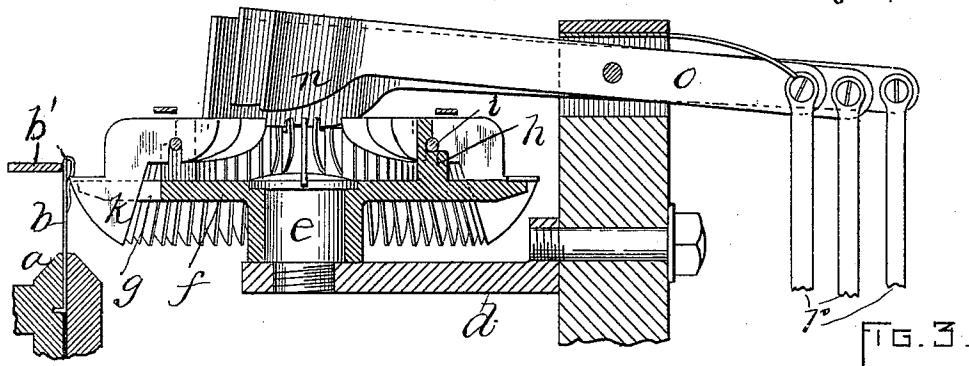
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

JOHN BRADLEY, OF CHELMSFORD, MASSACHUSETTS.

TUCK MECHANISM FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 538,652, dated May 7, 1895.

Application filed January 13, 1894. Serial No. 496,708. (No model.)

To all whom it may concern:

Be it known that I, JOHN BRADLEY, of North Chelmsford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tuck Mechanisms for Knitting-Machines, of which the following is a specification.

This invention has relation to spring-beard needleknitting machines, adapted to perform tuck work; and it is the object of the invention to provide means of simple structural character, yet certain in their operation, whereby substantially any desired tuck pattern may be knit.

To these ends the invention consists of the improvements which I will proceed first to describe in detail, and subsequently point out in the appended claims.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a plan view of the invention and so much of a needle-head co-operating therewith as it is necessary to show in order to give a clear understanding of the same. Fig. 2 is a side elevation of the parts shown in Fig. 1. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a perspective view of the tuck-presser wheel and its immediately coacting parts. Fig. 5 is a sectional detail view showing the manner in which the presser-bits are moved to render them inactive with respect to the needles. Fig. 6 is a perspective view of the device for holding up the newly-made loops on the needles.

In the drawings, *a* designates the rotary needle-head in which is arranged a circular series of spring-beard needles, *b*, in the well-known manner.

c is a bracket which may be sustained by the base or stationary frame of the machine. On an attachment, *d*, of said bracket the truck-presser wheel is supported so as to turn on a stud *e*. The said tuck-presser wheel consists of a wheel proper, *f*, provided in its outer part with radial slots *g*, and on its upper side with a slotted annular rib, *h*, having its upper part offset, as shown, so as to form a bearing for, and hold in place, an annular wire, *i*, upon

which are fulcrumed presser-bits, arranged in the slots of the annular rib *h*. The said presser-bits are provided on their outer ends with vertical parts *k*, which are arranged in the slots *g* of the wheel *f* to assist in guiding the movements of said bits as hereinafter described, and with laterally extending parts *l* which, when the outer ends of the bits are down in normal position, as shown in Figs. 3 and 4, serve to press the beards of the needles, as would a plain presser, but when the outer ends of said bits are raised, as shown in Fig. 5, they will escape the needle beards and fail to press the same. As shown, the pressing points of the bits extend beyond the periphery of the wheel *f*, and the latter does not act upon the needles.

Certain of the bits are provided with tails *m*, which extend inward from their fulcrum points, and are adapted to be acted upon by the semi-circular cam parts *n* formed on the lower faces or edges of the levers *o*, fulcrumed on a standard or part of the bracket *c*, when the said inner ends of the said levers are depressed, and so raise the outer ends of the bits so that they will not press the needle beards.

Notches *p* are formed at points on the upper edges of the tails of certain of the presser-bits, corresponding with the lines upon which the semi-circular cam parts *n* are arranged, so that as the presser-wheel is rotated each said cam parts *n* will act to raise such of the presser-bits as have long tails not provided with notches, which in their travel will fall in line with the said cam part in operation, and fail to raise such bits as are provided with such notches in line with the cams.

q designates presser-bits unprovided with tails which may be acted upon by the cam parts of the said levers *o*, so that the said bits will always be in action.

It will now be seen that by varying the order of arrangement of the bits, and by bringing the cam parts *n* of the levers *o* into, and throwing the same out of, action in varying order, an almost infinite variety of tuck patterns may be knit.

The presser-bits, it will be seen, may be readily taken out and replaced by hand; and the cam parts of the said levers may be thrown into and out of action in any desired order, by the means next to be described.

To the outer ends of the levers *o* there are pivoted at their upper ends vertical rods, *r*, the lower ends of which are arranged to be acted upon by pins *s*, arranged in particular order in the circular holes *t* of the pattern disk *u*, and when the said rods are so acted upon they will be raised, raising the outer end of the lever, and throwing the inner end down into action; and when the pins pass from under the rods *r* the outer ends of the levers will be depressed by the springs *v* bearing thereon, raising their inner cam-provided ends out of action.

The pattern disk *u* is constructed with ratchet teeth on its periphery with which a pawl, *w*, engages, the said pawl being pivoted upon the outer end of a lever, *x*, fulcrumed on the bracket *c*, and provided at its inner end with a roller, *y*, (or it may be a simple stud,) arranged in the path of travel of the cam *z* on the knitting head *a*—one of said cams being provided for each group of knitting devices on a head, so that the pattern disk will be turned to the extent of one of the ratchet teeth each time that the cam *z* passes a group of knitting devices. A line of holes, *t*, is arranged radially with each ratchet tooth, so that pins *s* may be arranged therein to operate upon any of the rods *r* at each movement of the pattern disk.

With this explanation it will be understood without further description that the levers *o* may be actuated in any desired order to assist in varying the tuck pattern.

a' designates a guard arranged over the presser-bits to prevent them from being thrown out of place by their momentum when acted upon by the cam parts *n* of the levers *o*. The said guard may be attached at its outer end to the bracket *c*.

b' designates a stitch-supporter, the same being shown as connected with the end of the push-back *c'*. The said stitch-supporter is constructed as a curved finger, arranged on the inside of the circle of the needles in close proximity to their upper ends, so that without bearing upon the needles when in normal condition it will nevertheless hold in raised position the new line of stitches thereon, that is to say, the stitch supporter is so constructed and arranged that it will maintain the stitches placed under the beards of the needles in place under the beards from the time they are fed into the needles until the presser, landing and knocking over wheels act on the stitches on the stems of the needles so as to cast off the latter stitches and form new stitches. If the new stitches laid into the needles by the stitch wheel are not in some manner supported under the needle beards, they are likely to drop down out of place, and such happening is avoided by the stitch supporter, *b'*. This stitch supporter is located inside the circle of needles and between the stitch wheel and presser wheel. In a machine of this kind, where spring beard needles are used, the stitch when formed by

the stitch wheel leans toward the inside of the needle. Hence, by locating the stitch supporter inside the circle of needles between the stitch wheel and the presser wheel the stitches rest on the supporter and are prevented from falling. When the supporter is outside the line of the needles as is the ordinary way, in order to keep the stitches from falling it is necessary to have the stitch supporter press against the needles, which is a decided objection.

It is to be noted that my improved tuck-presser mechanism is very simple in construction, certain in mode of operation, and readily changed so as to knit any desired pattern. It is also to be observed that changes in the form and arrangement of parts may be made without departing from the nature or spirit of the invention.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all the forms in which it may be made or all the modes of its use, it is declared that what is claimed is—

1. A tuck-presser mechanism comprising in its construction a wheel, movable presser-bits fulcrumed thereon and having notched tails, movable cam-parts for acting upon the tails of the presser-bits, and a pattern-device for controlling the movement of the said cam-parts, as set forth.

2. A tuck-presser mechanism comprising in its construction a wheel, movable presser-bits fulcrumed thereon and having tails extending inward beyond their fulcrum points, levers provided with cam-parts for acting upon the tails of the said presser-bits, and a pattern-device for acting upon the said levers, as set forth.

3. A tuck-presser mechanism comprising in its construction a wheel, movable presser-bits fulcrumed thereon and having tails extending inward beyond their fulcrum points, levers provided with cam-parts for acting upon the tails of the said presser-bits, rods connected with said levers, and a pattern-wheel for acting upon the said rods.

4. In an automatic spring beard knitting machine, the combination of a cylinder provided with needles, and a presser wheel with a stitch supporter arranged inside the circle of needles and opposite the presser wheel, substantially as and for the purpose described.

5. A tuck-presser mechanism comprising in its construction a wheel, presser bits movable thereon and provided with notched tails, levers provided with curved cam parts, each cam part being located in the line of travel of the notches in the tails of the bits which it is not to operate, and out of the line of travel of the notches in the tails of the bits which it is to operate, and a pattern device for controlling the movements of said levers, substantially as described.

6. A tuck presser mechanism comprising in its construction a wheel, movable presser bits

fulcrumed thereon provided with laterally extending parts and having tails extending inward beyond their fulcrum points, levers provided with cam parts for acting upon the tails
5 of the presser bits, rods connected with said levers, and a pattern wheel for acting upon said rods, substantially as and for the purpose described.

7. In combination, a needle cylinder or head
10 provided with a cam, a wheel located adjacent said head, movable presser bits fulcrumed on said wheel and having tails extending inward beyond their fulcrum points, levers provided with cam parts for acting upon the tails of
15 said presser bits, rods connected with said levers, a toothed pattern wheel provided with

interchangeable pins for acting upon said rods, a pivoted lever having at one end a dog for engaging the teeth in said wheel and at its opposite ends provided with a roller located 20 in the path of movement of the said cam on the needle head, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of 25 two subscribing witnesses, this 2d day of January, A. D. 1894.

JOHN BRADLEY.

Witnesses:

ARTHUR W. CROSSLEY,
A. D. HARRISON.