UNITED STATES PATENT OFFICE.

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KNITTING-MACHINE.


To all whom it may concern:

Be it known that I, Joseph Hollen, of Fostoria, in the county of Blair and State
of Pennsylvania, have invented a new and
useful Improvement in Knitting Machines;
and I do hereby declare that the following is
a full, clear, and exact description of the
construction and operation of the same, refer-
ence being had to the annexed drawings,
making a part of this specification, in
which—

Figure 1, represents a sectional, end eleva-
tion of a knitting machine having the im-
provement applied thereto; Fig. 2, a side-
view of the improved needle, and Figs. 3
and 4, sectional representations of the latter
in combination with the thread carrier; like
letters in the different figures indicating the
same parts.

Letters Patent of the United States hav-
ing been granted to me for certain im-
provements in knitting machines, which
letters are dated, respectively, the 16th day
of July, 1850, and the 25th day of Novem-
ber, 1854, and the present invention being a
further improvement in the same, it will not
be necessary to describe such parts thereof
as have no immediate relation to the present
invention, which (invention) consists in the
combination of a needle the barb of which is
pressed by its own spring into its own
groove, with a thread-carrier and a needle
supporter, arranged to operate together sub-
stantially as hereinafter described, whereby
I am enabled to greatly simplify, and there-
fore to lessen, the cost of constructing and
keeping in order such machines; to obviate
the heretofore, difficulty arising from roots
or lumps in the thread—the open needles
being apt to run into them—and also to
"cast on" and to knit either plain or ribbed
fabrics therewith, as occasion may require,
by simply throwing out, in the one case, or
reversing in the other, the feed motion of the
machine.

In the drawings, A, represents the usual
frame of the machine; B, the operating cy-
inder carrying the "snail" and carriage where-
yever is given to the needles and thread
carrier; C, the needle cylinder; D, the
"jack" and D', its rock shaft; E, the slid-
ing frame which operates the needles singly,
and F—F, its supports; G, the thread car-
rrier, and H, the slide whereby its oscillating
motion is given; I, the needles; and K, a
supporting guide for the outer ends of the
needles when they are respectively being entered by the thread carrier, in knitting.

The general form of the needles (I) is
substantially the same as in those shown in
my former patents, but instead of leaving
an open space between their, respective, ex-
treme points and shanks, as hitherto, I bend
the said points, I, downward into contact
with the bottom of a shallow groove which
is made along in the shank, at m, substan-
tially as shown in Figs. 2 and 4, so that, in
their normal state they shall each form a
close or shut needle, capable of being opened
by the thread carrier, to receive the thread
for a stitch, and of shutting, automatically,
so as to pass out of the preceding loop or
stitch, on its return motion.

The thread carrier (G) has its lower end
formed into a thin, double edged, semicir-
cular plate, n, which has a hole o, through
it, for the thread, p, and is so placed in rela-
tion to the stem of the carrier as to be caus-
ed to approach, force apart, and pass
between the point (l) and the shank of each
needle (I), as the latter are successively
thrust out, and, on its return, to pass the
outer ends of the same, carrying the thread
(p) with it, into position for another like
vibration.

As the entrance of the plate (n), with the
thread (p), between the points and shanks
of the respective needles has a tendency to
force the said projecting parts of the needles
in the same direction, the supporting guide
(K) is devised to prevent it. It is simply a
bar (K) bent, grooved, and fixed so as to re-
ceive the lower side of the shank of the
needle, within its groove, g, as the same is forced
out in the operation of the machine, substan-
tially as shown in Figs. 1, 3 and 4.

Operation: Suppose the thread carrier (G)
to be in motion, and feeding in the direction
of the arrow thereon—Fig. 1. It having
just returned across the outer end of the
withdrawn needle (I'), it is ready to enter
between the point and shank of the next nee-
dle (I') as the latter will become thrust out
by the forward motion of the slide (E).

Fig. 3, shows the plate (n) of the thread
carrier, as passing between the point (l) and
the shank of the needle (I'), carrying the thread (p) with it; and Fig. 4, the same,
after it has passed through, and the needle
as on its return, taking the new supply of
thread in, to form a new loop or stitch in the same manner, and as is indicated in the needle (I") in the same figure. This motion in feeding produces the plain fabric; but by simply reversing the direction of the feed (by changing the lever which operates the slide (H), the cylinder of needles (C) rotating in the same direction as before) the loop will have a twisted form imparted to it, and so produce a ribbed fabric of a peculiar and very neat and durable character.

To adapt the machine for "casting on" stitches, it is only necessary to throw out of motion the thread carrier (G)—which is done by simply first lifting, and then lowering, the slide (H) so as to disconnect its operating lever from its notch therein.

It will readily be perceived that the needle (I), in consequence of its elastic point being closed down upon its shank, will readily pass through and release the prior loop or stitch thereon, on its return motion, and will form a new loop with the thread (just previously carried through it); and that, for the same reason, the said point cannot run into any knot or lump which may be in the thread; that the thread carrier, from the peculiar construction and mode of operation of its lower end upon the needles, will effectually thread the same by entering between their points and shanks, respectively, from either side, as either the plain or ribbed fabrics may be required; and that the devices are much more simple and inexpensive than those heretofore used to effect the same or similar results.

Another advantage arising, consists in the fact that as the cylinder of needles (C) can be operated in either rotary direction, the required variations in the forms of different garments—as the feet of stockings for instance—can be given and the knitting completed without removing the same from the machine.

Having thus fully described my improved knitting machine, and pointed out its (superior) utility, I proceed to state that I am aware that a reciprocating thread carrier has been in combination with a latched needle in knitting machines, for the purpose of laying the thread to form the loops within the needle, and therefore I make no claim thereto; but—

What I do claim as my invention and desire to secure by Letters Patent of the United States is,

The combination of a needle the barb of which is pressed by its own spring into its own groove, with a thread-carrier to release the barb and lay the thread therein, and a supporting guide to sustain the needles when arranged and operated substantially in the manner and for the purpose described.

JOSEPH HOLLEN.

Witnesses:
MARK S. ROBERTS,
JOHN CAMPBELL.