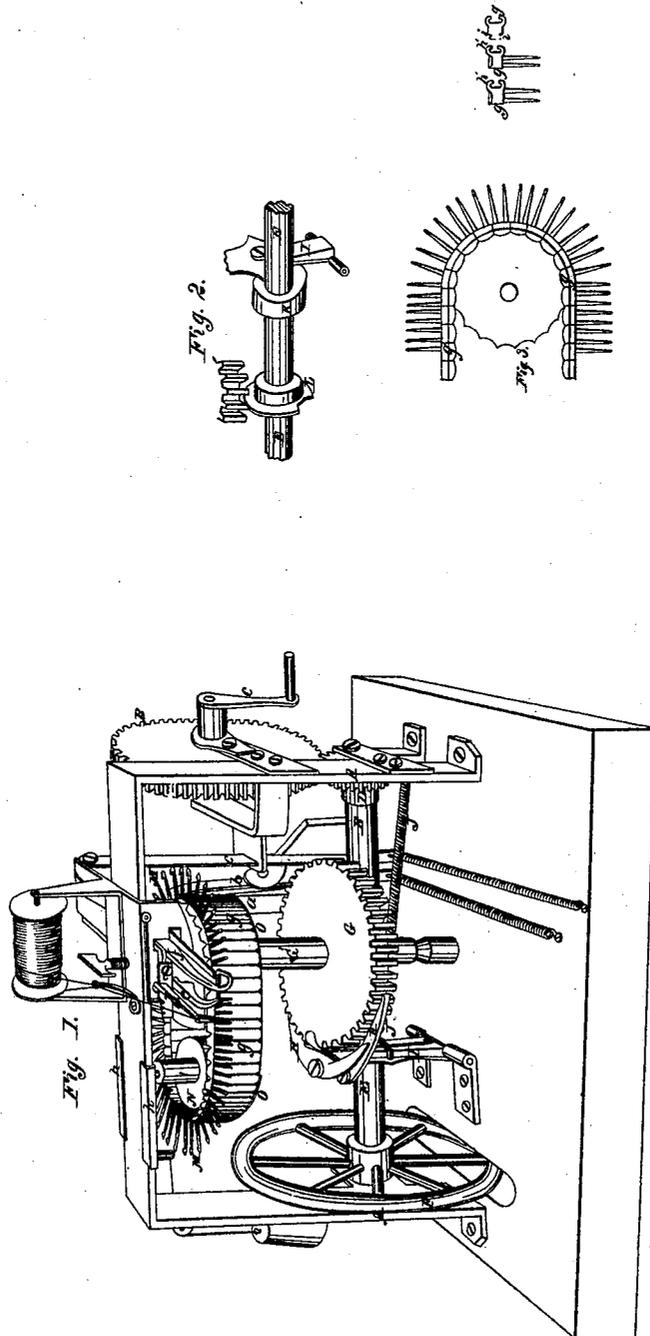


B. HUTCHINSON, Jr.
KNITTING MACHINE.

No. 1,834.

Patented Oct. 22, 1840.



UNITED STATES PATENT OFFICE.

BENJN. HUTCHINSON, OF SPRINGFIELD, MASSACHUSETTS.

MANNER OF CONSTRUCTING MACHINES FOR KNITTING STOCKINGS.

Specification of Letters Patent No. 1,834, dated October 22, 1840.

To all whom it may concern:

Be it known that I, BENJAMIN HUTCHINSON, of Springfield, in the county of Hampden and State of Massachusetts have invented an Improvement in Machines for Knitting Stockings, by means of which improved machine they are knit all around without seam, and the requisite widening and narrowing may be readily effected; and I do hereby declare that the following is a full and exact description thereof.

In the accompanying drawing Figure 1 is a perspective view of the whole machine, A, A, being the frame, which sustains a driving wheel B, turned by a winch C. The wheel B, takes into a pinion D, on the horizontal shaft E, having on its opposite end the fly wheel F.

G, is a ratchet wheel which is to be moved a single tooth between every stitch taken in the operation of knitting, but which remains stationary during the time of taking the stitch; this ratchet wheel is fixed to the vertical shaft G.

H, H, are two pawls, either of which may be made to engage with the ratchet wheel G, and according as the one or the other of these pawls is made to act upon it, the direction in which it will move will be determined.

I, is the standard of the ratchets which vibrates on joint pins at its lower end, and is drawn forward by means of the spiral spring J. The standard I, is operated upon by a cam on the shaft E, as shown in Fig. 2, in which a part only of this shaft and its appurtenances is represented.

K, is the cam, in the form of a collar, surrounding the shaft, and having that face, or end, of it which bears against the standard I, formed obliquely, so as to operate duly upon the standard and pawls.

During the time of taking the stitch, the ratchet wheel G, must be held stationary, and I effect this by means of the circular plate L, fixed upon the shaft E, which plate takes into the spaces between the teeth of the ratchet wheel, said teeth being, for this purpose, continued down on the under side of the wheel, so as to constitute it a crown wheel. A notch in this plate allows the ratchet wheel to escape at the time the pawl is to act upon it. Upon the shaft E, are also placed the cams which act upon the levers *a*, *b*, and *c*, Fig. 1, which levers operate the conductor *d*, the needle *e*, and the

tramper *f*, in a manner substantially the same with the working of these parts in other knitting machines, and to the arrangement and operation of which I do not make any claim.

The characteristic, and most important, part of my invention consists in the employment of an endless chain of hooks, or turning needles, M, M, which chain is made to revolve by the turning of the wheel G; the chain is composed of separate pieces *g*, *g*, *g*, each of which carries, at its upper end, a pair of hooks, or turning needles; and the separate pieces *g*, *g*, are so constructed that one, or more, of them may be readily unhooked, or slid out of place, or one, or more, may be added, so as to shorten, or to lengthen, the chain, and thereby to widen, or to narrow, in the operation of knitting. This chain passes around two whirls, or small drums, one of which is seen at N, and the other is on the shaft G', and has its periphery notched, or fluted, as shown in Fig. 3, by which device the chain is carried with regularity. The shaft of the whirl N, is affixed to a slide *h*, *h*, and this being acted upon by a weight passing over a pulley, always preserves a proper degree of tension in the chain under any required alteration of its length. The pieces *g*, *g*, may be connected together in various ways; they may, for example, be united in the manner of clasps, or hooks and eyes. Sometimes I so form them as to constitute sliding grooves and tongues, in the manner shown at Fig. 4, where I have given a top view of what may be denominated two links, separated from each other, where *h'*, *h'* may represent sockets, or grooves, and *i*, *i*, tongues, capable of sliding into them; the pieces *g*, *g*, Fig. 1, were drawn from a chain, so connected.

O, O, Fig. 1, are plates of metal below the lower ends of the pieces *g*, *g*, to prevent their sinking down, should they tend so to do.

Having thus fully described the manner in which I construct my knitting machine, what I claim therein as constituting my invention, and desire to secure by Letters Patent, is—

The employment of an endless chain of hooks, or turning needles, upon which the loops, or stitches, are to be received; which chain is so constructed as that it may be lengthened, or shortened, at pleasure, for the purpose of widening, or narrowing, in

the process of knitting. The hooks, or turning needles, used by me are grooved on their upper surfaces, and are otherwise constructed in a manner similar to those used
5 in the machines where the stockings are knit open; I do not, therefore, make any claim to these, or to the apparatus by which the yarn is lifted, tramped, or otherwise oper-

ated upon, but confine my claim to the endless chain, constructed, and operating, in
10 the manner, and for the purpose, herein set forth.

BENJ. HUTCHINSON.

Witnesses:

I. B. MERRICK,

H. G. HALE.