

J. Holler.
Circular Knitting Mach.

N^o 11,995.

Patented Nov. 28, 1854.

Fig. 1

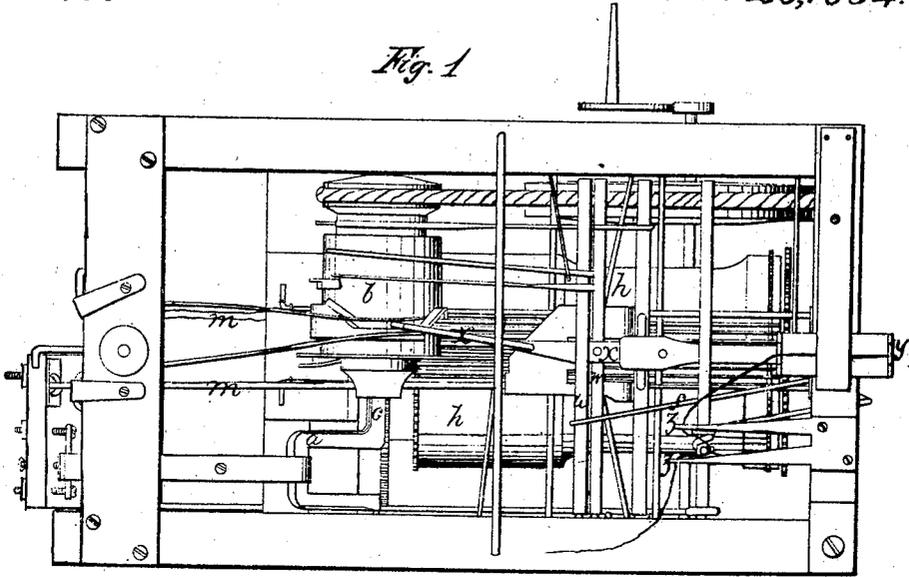


Fig. 2.

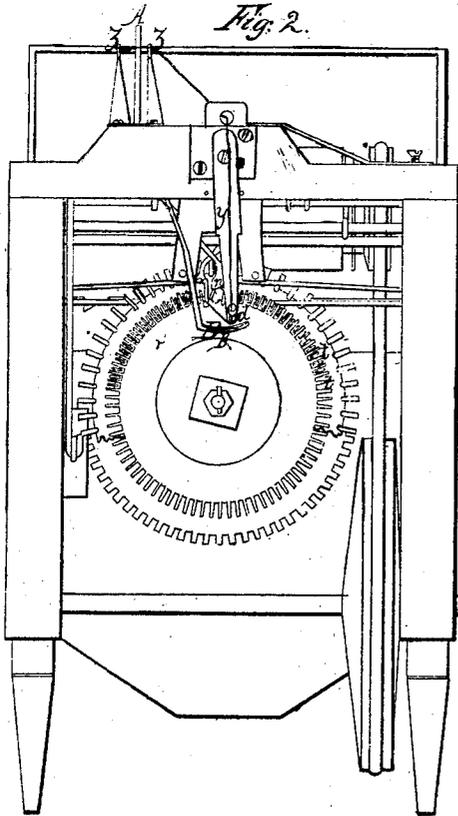


Fig. 3

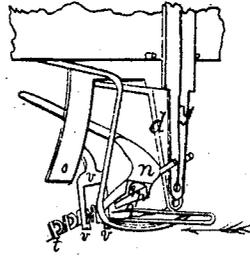


Fig. 5.

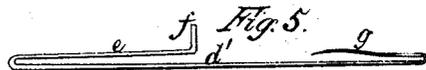


Fig. 4.



UNITED STATES PATENT OFFICE.

JOSEPH HOLLEN, OF WHITE TOWNSHIP, CAMBRIA COUNTY, PENNSYLVANIA.

KNITTING-MACHINE.

Specification of Letters Patent No. 11,995, dated November 28, 1854.

To all whom it may concern:

Be it known that I, JOSEPH HOLLEN, of White township, in the county of Cambria and State of Pennsylvania, have invented
5 certain Improvements on his Knitting-Machine patented July 16, 1850, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before
10 known and of the usual manner of making, modifying, and using the same.

It will not be necessary to describe minutely the parts of the knitting machine except such as are subjects of improvement,
15 the other parts being the same in operation and general arrangement as those shown in the patent granted to me 16th of July 1850, the principal feature of my improvement consisting in the introduction of the toothed
20 plate in front of the needles for producing regularity and evenness in the stitches, which feature was wanting in the machine patented by me as above stated.

The different parts of this machine are set in motion from a crank (*a*) and a cam *b*
25 on shaft *c*. The needles as shown in Figure 5, consist of a rod (*d'*), the back part *e* of which is bent over parallel to it and its end *f* turned upward so as to form a projection upon which operates the vibrating feeder
30 hereafter described. The front end (*g*) of the needle is also bent over parallel to the rod (*d'*) and is made thin enough so as to be elastic. Its point is slightly bent downward and underneath the point there is a
35 little groove in the rod (*d'*) into which the point fits when sufficiently depressed. The needles are arranged around a cylinder *h* parallel to each other and to the axis of the
40 cylinder and are held in three guide ways on both ends and in the middle of the cylinder, so as to allow them free motion in or out parallel with the axis of the cylinder. Grooves in the middle guide way also confine the bent-back, part (*e*) of the needles to this motion, thereby preventing the needles from turning around their longitudinal
45 axis. The feeder consists of a cross piece (*i' i*), the two arms (*i*) of which slide on guide rods *m*. A tongue *k* bends downward from the cross piece *i* a little below the highest point of the upright end *f* of the
50 needles. To the front ends of the arms (*i*) there is attached a cross bar *l* also a little below the upright end of the needle. The
55 breadth of the tongue is about equal to the

distance of each two needles. This feeder is arranged directly above the cylinder, so that the upright part *f* of the needle is confined between the tongue *k* and the cross
60 bar *l*. It receives a horizontal vibrating motion mediately from the crank (*a*) the tongue *k* pushing the needle out during the outward motion of the feeder and the cross
65 bar *l* carrying the needle back during the return motion of the feeder. The feeder always pushes out but one needle at a time as the tongue is not wide enough to catch two or more of them. After the feeder has vibrated one needle the cylinder *h* describes
70 part of a revolution so as to bring the next needle underneath the feeder and so on. In front of the cylinder *h* concentric with and fastened to it there is a toothed disk *n'*, the spaces between each two of the teeth being
75 opposite to the front ends of the needles, so that the needles freely pass through. In front of this disk and at a certain height above the horizontal tangent to the highest point of the elastic part of the needle (the
80 highest one) there is a little bridge *n*, its inner arch *p*, which is turned toward the disk, being smaller than its outer one *q*. An arm *s* connects this rock shaft to the bridge
85 *u*, which receives from the cam shaft the proper motion so as to let the bridge perform the function of a needle depressor in the following manner. As soon as the needle commences its return motion the bridge descends low enough to act with the upper
90 side of its cavity upon the elastic part of the needle and to press the point of the needle toward the groove in the needle rod. The sides of the cavity of the bridge being far enough apart in front will gather up
95 the needle point in case it should vibrate latitudinally or in case of its having become bent out of its proper position. The needle point in passing through the inner narrow arch of the bridge is finally bent
100 straight and pressed down in the groove of the needle rod before it enters between the teeth of the disk. The depressor presses upon the feathering part of the needle and keeps the point down in the groove until the
105 needle point has reached the first guide way, on cylinder *h* behind the disk. Having performed this operation the bridge or needle depressor ascends to its original position to commence the same operation with the
110 commencement of the return motion of the next needle, and so on. Behind the needle de-

pressor and immediately in front of the disk there is a little fork *v* its two prongs pointing downward and their lower ends being bent horizontally toward each other so as to give them somewhat the shape of hooks. An arm *w* pivoted to a rock shaft *w* connects it with the cam shaft which imparts to it the proper motion to act as a thread separator. Before the needle is thrust out, the fork descends until its hooks reach a little below the circumference of the disk from which the teeth project. At the moment the front end of the needle passes the teeth of the disk the fork raises and turns a little to the left of the needle about the distance of two of the teeth, here it remains until the front end of the needle in its return motion passes the teeth of the disk and then it returns to its original position.

In front of the bridge or needle depressor and at the same height with its highest position there is a hole on the lower end of a stationary arm (*y*) a little to the right of the needle's line of motion. Immediately behind it there is a similar hole on an arm *d*, to serve the purpose of a thread depressor. At the moment the needle passes alongside of it in its outward way it descends until the hole is in one horizontal plane with the needle rod *d'*. Here it remains until the needle has commenced its return motion and the bridge begins to descend. Then it returns to its original position and so on.

In front of the disk about half way between its center and its outer circumference there is a horizontal rod B which is connected with a rock shaft and is moved from the cam shaft in such a way that it ascends during the outward movement of the needle and descends during its return motion performing the function of a tramper. Loops having been formed around each one of the needles and all the needles being in the thread passes from the last loop through the space between the corresponding pair of teeth of the disk through the hole of the thread depressor *d* through the hole in the stationary arm *y*, and over the top part of the machine. The needle commencing its outward movement and passing the disk the loop will be prevented

from following the needle by the teeth of the disk. The teeth will keep the loop inside the disk and the needle will slide through the loop and past the teeth through the fork or thread depressor *v*. The needle having been thrust out, the thread separator *v* rises catches the thread with its hook *v'* and moves it to the left of the needle so that the thread lies across the way of the needle. The needle performing its return motion the depressor *d* descends depressing the thread. The needle point passes above the thread and the bridge descending presses the needle point into the groove of the needle rod. The needle point still in the point passes the teeth of the disk and through the loop and finally draws the thread also through the loop thereby forming another loop behind the first one. Meanwhile the tramper B has descended and the stocking being underneath and pressed against it has drawn the first loop outside the disk thereby preventing the stocking as it is being formed from interfering with the stitches.

What I claim as improvements upon my knitting machine patented 16th July 1850— is—

1. The combination of the series of projecting teeth—(*t*) (*t*) (*t*) etc. with the series of needles arranged and operating as set forth, for the purpose of regulating the stitches and making them even.

2. I claim the depressor (*n*), so constructed with its inclined sides as to secure the entrance of the barb into the groove of the needle in case the needle should vibrate or be bent as set forth.

3. I claim the separator arranged and operating as described for holding the thread back out of the way of the stitch.

4. I claim the tramper arranged and operating as described.

5. I claim the thread depressor (*d*) arranged and operating as described in combination with the thrust of the needle.

6. I claim the vibrating feeder arranged and operating as set forth.

JOSEPH HOLLEN.

Witnesses:

T. CAMPBELL,
BENJAMIN FIGART.