S. W. Howland.

Circular Knitting Mach.

No. 1,291.
32,295.

Patented May 14, 1861.

Fig. 2.

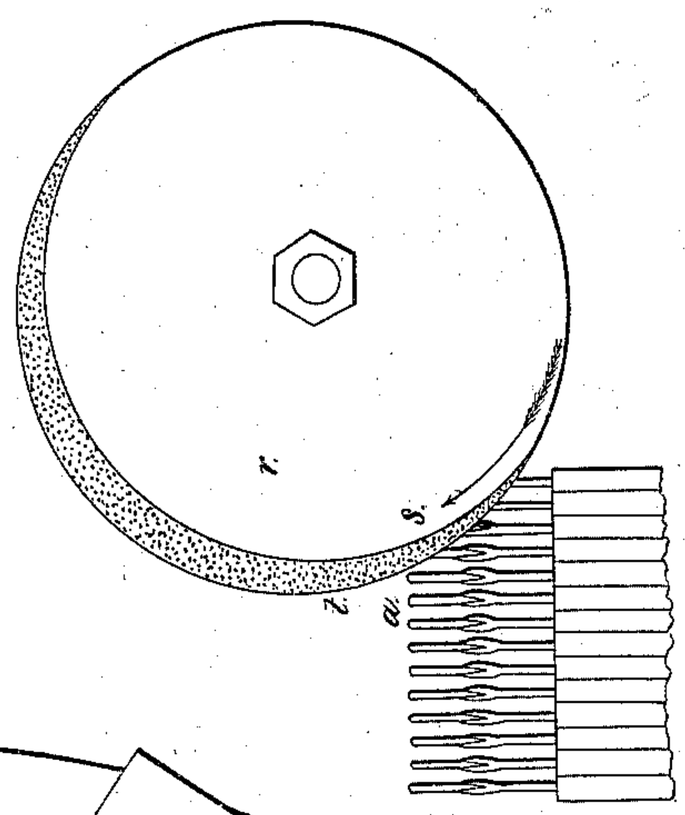


Fig. 3.

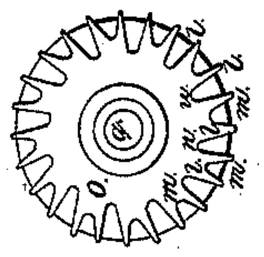
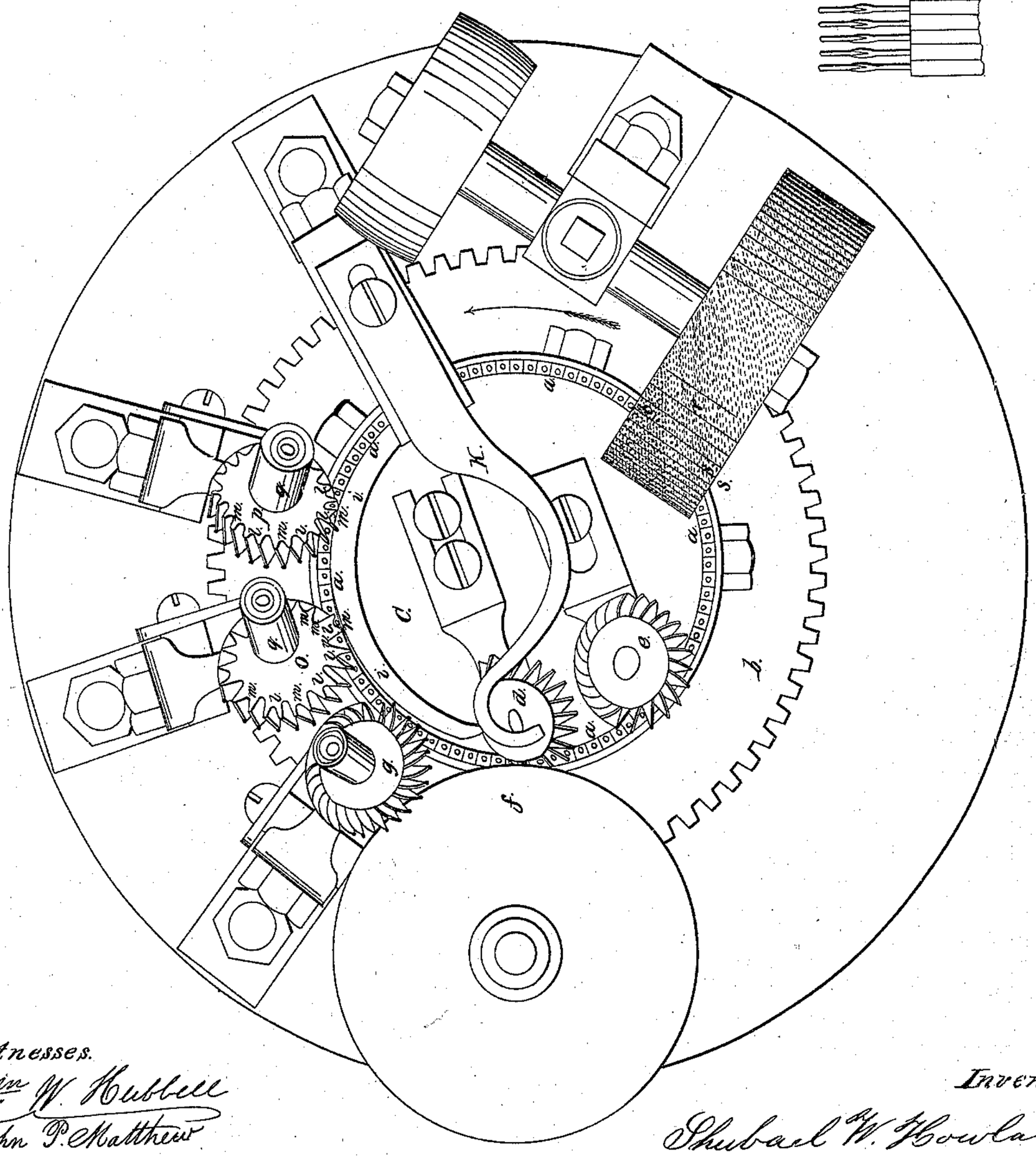


Fig. 1.



Witnesses.
Wm. W. Hubbell
John P. Matthews

Inventor.
Shubael W. Howland

UNITED STATES PATENT OFFICE.

SHUBAEL W. HOWLAND, OF ADAMS, MASSACHUSETTS.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **32,295**, dated May 14, 1861.

To all whom it may concern:

Be it known that I, SHUBAEL W. HOWLAND, of the town of Adams, county of Berkshire, State of Massachusetts, have invented a new and useful Improvement in Knitting-Machines; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, making part hereof, and in which—

Figure 1 is a top view of the improvements in their proper positions. Fig. 2 is a side view of the napping-wheel in its relation to the needles. Fig. 3 is a ground plan of the new pressing sinker-wheel.

The nature of my invention consists in constructing what I call a "pressing sinker-wheel," to operate as hereinafter described.

In Fig. 1, the circular series of barbed needles *a* rotate by means of the cog-wheel *b* in the usual manner, the central plate *c* holding the two inner wheels *d e*, which raise and throw off the work. The presser-wheel *f* presses the barbs and closes them, and the sinker-wheel *g* carries the thread between and under the barbs of the needles in the usual manner.

The circular series of needles *a* and their barbs are in common use. The slide *i i*, to carry down the work, and the guard *k* are constructed as usual.

My new pressing sinker-wheel, Fig. 3, consists of a series of oblique wings notched or grooved on the face to carry the thread, as usual; but instead of making all of these wings of about the same depth to sink the thread under every barb of the needles I make these wings *l l l l* of different depths, one or more alternately, on that side of the wheel which comes opposite the barbs of the needles by means of a plate about one-tenth of an inch thick, notched to these different depths, set on a plate with the usual depth of wings, so that this pressing sinker-plate may be changed for another to press one, two, or more needles or barbs alternately, as it may be desired, to shorten or lengthen the stitch, or the pressing sinker-wheel may be made in one plate or piece, and always so that the base between the wings of least depth *m m m* shall press against and close the barb or barbs of the needle or needles which it is intended the yarn shall skip, and thereby prevent the yarn from going under the barb, and so as to allow the wings with a deeper space between them to sink the yarn between and under the barb or barbs of those needles which are intended to take a knitting-hold of the yarn. This skipping operation forms long stitches of the same or different color, or of the same or different material from that used in the sinker-wheel *g* to form the body. This pressing sinker-wheel O, as shown in Fig. 1, is used in combination or connection with with the sinker-wheel *g* and with the pressing-wheel *f*, as well as with the needles, so that the pressing sinker-wheel may form the facing of long stitches, while the sinker-wheel and the pressing-wheel *f* knit or form the more solid knitting or body, Two of these pressing sinker-wheels *o p* are employed on the needles, one after the other, as shown in the drawings, Fig. 1, so as to press and to skip alternate needles, each wheel carrying its own yarn, of the same or different color or material as the other, and thereby form a thicker coating of long stitches or double pile on the knit body, and the ordinary sinker-wheel *g* may be employed after them, as shown, or between them or before them, as may be desired. When the sinker-wheel is placed after them, as shown in the drawings, and carrying the hard or body yarn, the long stitches will be formed on one side of the body. When this sinker-wheel *g* is placed before them, the body-yarn will form nearer the middle of the cloth, with a facing on both sides.

By dispensing with the sinker-wheel *g* long stitches will be formed on a more open body of cloth.

The new pressing sinker-wheel *o* is placed on an inclined axle *q* and works upward toward the barbs of the needles, and the pressing-face *m* between the deep spaces *n n*, instead of being notched, may be smooth or plain, on the same principle of alternate pressing and sinking; and, also, the alternate pressing and sinking faces or wings may be applied to the needles by other forms of machinery than a wheel without changing the essential principle, such as a lever or plunger to press and recede. After the cloth has been knit with this long-stitch facing this stitching comes around to the napping-wheel *r*, Fig. 1, to have the nap raised on the stitches at one operation. To effect this result, the long

stitches may be made of wool and the body may be made of cotton yarn. The cloth is held and carried by the needles *a*, (see Figs. 1 and 2,) which needles present the work in a curved form to the napping-wheel *r*, which also is set on an angle to the needles. That side *s* of the wheel toward the approaching needles or stitches is farthest from them, and the opposite side *t* of the wheel is close to them. This gives a space to allow the stitches to enter gradually to the face of the revolving napping-wheel, which is made of wires, set in leather, as usual, and which moves or revolves upward and catches the fibers of the threads and raises a nap, forming a soft coating to the cloth.

By means of these improvements in the knitting-machine I produce a better or improved manufacture of piled knit cloth adapted to stockings, shirts, drawers, and other articles, and to goods in the piece for a variety of useful purposes, also an open work of knitting and double-faced or piled goods.

What I claim as my invention is—

The changeable pressing sinker-plate on the wheel, so as to be able to skip one or more needles and press the other simply by changing this plate without changing the whole wheel.

Witness my hand this 19th day of November, A. D. 1860.

SHUBAEL W. HOWLAND.

Witnesses:

WM. W. HUBBELL,

JOHN P. MATTHEW.