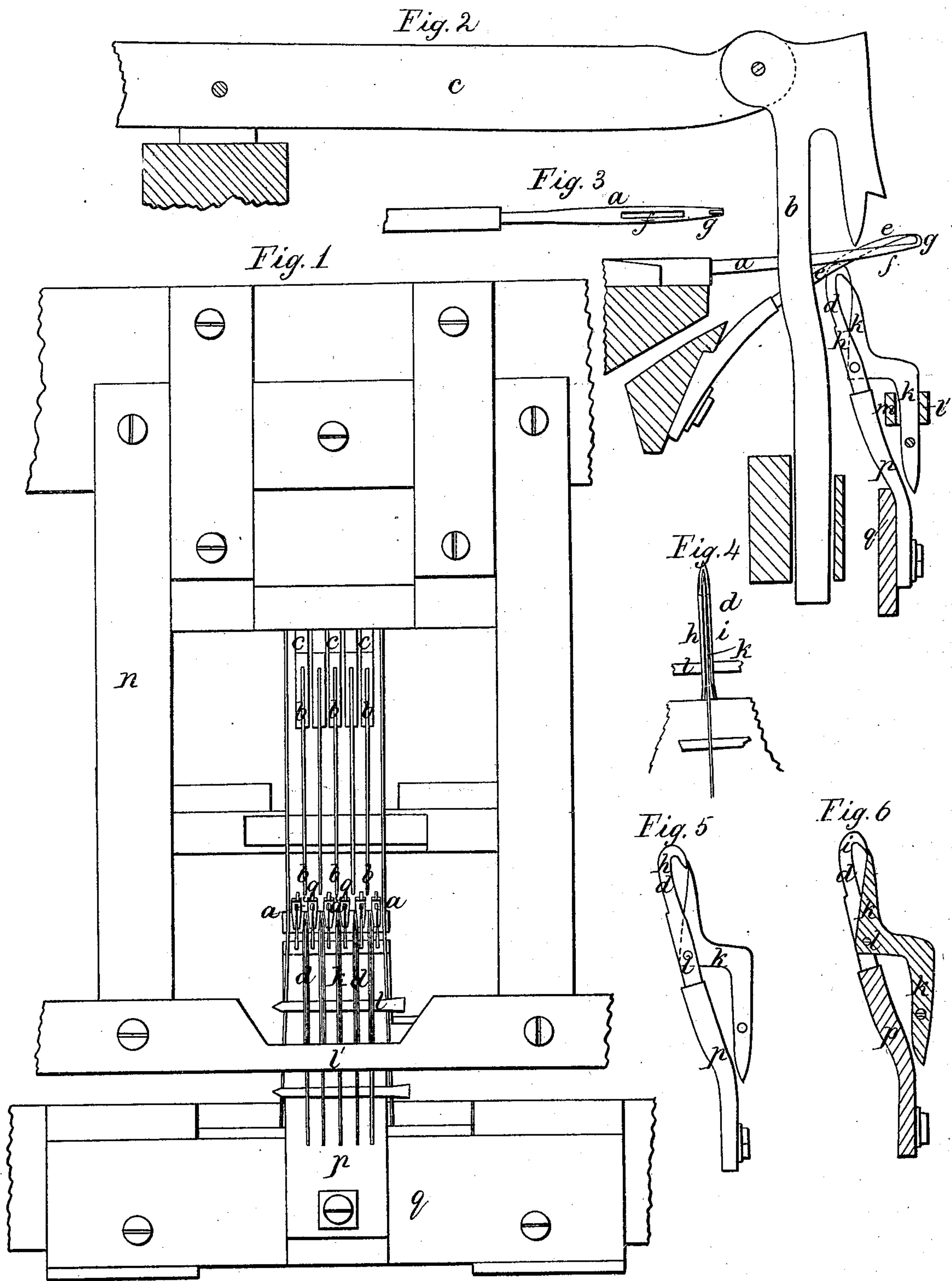


# W. Bamford. Knitting Mach.

N<sup>o</sup> 5,761.

Patented Sept. 12, 1848.





# UNITED STATES PATENT OFFICE.

WM. BAMFORD, OF IPSWICH, MASSACHUSETTS.

## NEEDLE OF KNITTING-LOOMS.

Specification of Letters Patent No. 5,761, dated September 12, 1848.

*To all whom it may concern:*

Be it known that I, WILLIAM BAMFORD, of Ipswich, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Stocking-Looms; and I do hereby declare that the same are fully described and represented in the following specification and accompanying drawings, figures, and references thereof.

Of the said drawings, Figure 1, exhibits a front elevation of several needles and sinkers of a rib stocking loom, having my improvements applied to them. Fig. 2 is a vertical section taken through one of the sinkers, and jacks, and made to exhibit the positions of the rib needles or hooks, and the conductors of both the plain stitch and rib needles. Fig. 3, denotes a top view of one of the plain stitch needles. Fig. 4, is a front view of one of the rib stitch hooks and its conductor. Fig. 5, is a side elevation of the same. Fig. 6 is a vertical section thereof.

In Figs. 1 and 2, *a, a, a, &c.*, denote a series of plain stitch needles, arranged together as they usually are in the common hand stocking loom. *b, b, b, &c.*, are the movable sinkers, each of which is suspended to a jack *c*, as seen in Fig. 2. The rib stitch hooks or needles, are seen at *d, d, &c.*, the series being disposed underneath the plain stitch hooks, and so as to be capable of being moved up between them, in the same manner as the rib needles and plain stitch needles are made to operate together in other machines heretofore in use.

My improvements consist in the application and use of a conductor to each of the plain stitch and rib stitch needles, in such manner as to enable me to carry on the process of knitting either plain or ribbed work, without the use of needles with long beards or points, and a presser or pressers, such as are generally used in the common plain and ribbed hand or power looms. My improvements are also applicable to what are denominated warp net machines, whether automatic or moved by hand. The conductor which I apply to each of the plain stitch needles, is seen at *e*, in Fig. 2. It consists of a pointed wire or needle which is disposed under the needle *a*, and made to pass through it, or through a long slot or passage *f*, made vertically through it as seen in Fig. 3. In front of the said passage

the needle is made with a small hook *g*, as represented in the drawings.

In the operation of knitting the conductor, *e*, is brought forward and upward, through the back stitch on the needle *a*, and over the loop made just in rear of the hook, *g*, by the sinkers on both sides of the needle when they are depressed. The extreme or pointed end of the conductor is brought in contact with or over the point of the hook *g*, in such manner that when the work is brought or moved forward on the needles in order to cast the stitches over the loops, the stitch on the needle *a*, will ride over or slide upon the conductor and needle, and be directed by the former over the hook *g*. I thus avoid the use of any presser (such as commonly used) and the treadle or apparatus usually employed to operate it. By doing away with the presser the wear and tear of the machine is very much reduced. The liability of getting out of order, and requiring the loss of much time every day, to repair damage of the needles is obviated.

The next part of my invention consists in the manner in which I make each of the rib needles or hooks, and apply to it, a conductor for the purpose of conducting the rib stitch over the hook and loop. For this purpose each rib needle *d*, is made of two thin plates of metal, as seen at *h, i*, in Fig. 4. They are disposed at a distance apart, suitable to receive a thin bent lever *K*, between them, the said lever being made to turn upon a pin or fulcrum *l*, passed through it and both plates *h, i*. The upper arm of said lever is what I term the conductor of the rib needle or hook. It is made to extend upward to or above the point of the hook of the needle, and when brought forward on its fulcrum, to enter between the plates at the point of the hook, or to touch or nearly touch the point of the hook as occasion may require. When moved back on its fulcrum, the conductor arm is made to shut or close into the space between the plates composing the needle.

The lower arm of the lever *k*, is bent in such manner, as to pass downward between a bar *l'*, which extends in front of it, and a bar *m*, disposed in rear of it. The said two bars *l'* and *m*, are to be connected together, so that when moved forward, or backward, they will give a counter movement of the conductor, on its fulcrum. The bars *l'* and



*m*, are suspended to swing or spring bars *n*, *o*, seen in Fig. 1.

The lower or ribbed hooks are supported by a bar *p*, which is attached to the movable hand bar or leaf *q*, by which the sinkers are moved backward and forward, the said hand bar making part of the frame which depresses the sinkers. Consequently when the said frame and hand bar is elevated in order to admit of the elevation of the sinkers above the loops, the rib stitch hooks are carried up with it, and back of and above the loops, on the previously formed or horizontal needles, and when brought forward receive said loops, as in the common rib stocking frame. The conductors of the several rib needles, are at this time thrown back into their needles. When the rib needles are made to descend and carry the loops with them, the conductors are thrown outward in such manner as to conduct the rib stitches on the rib needles over the loops as the needles descend. The slide usually employed to carry the stitches over the rib needles may or may not be eased as circumstances may require.

I have not considered it necessary to describe various other parts of a stocking loom

that are well known to stocking weavers, and mechanics, as they form no portion of my improvements, but are used by me in a manner similar to that in which they have been heretofore employed. I have endeavored to confine myself to a description of my particular and most important improvements, which having accomplished, I shall now proceed to point out what I claim as my invention.

I claim—

1. The perforated hook or needle *a*, and the conductor *e*, in combination with one another and made to operate together substantially as above specified.

2. I also claim the conductor *k'* in combination with the hooked rib needle *d*, the whole being constructed and made to operate together substantially as herebefore explained.

In testimony whereof I have hereto set my signature this sixteenth day of September, A. D. 1847.

WILLIAM BAMFORD.

Witnesses:

WILLIAM BAMFORD, Junior,  
CHARLES KIMBALL.