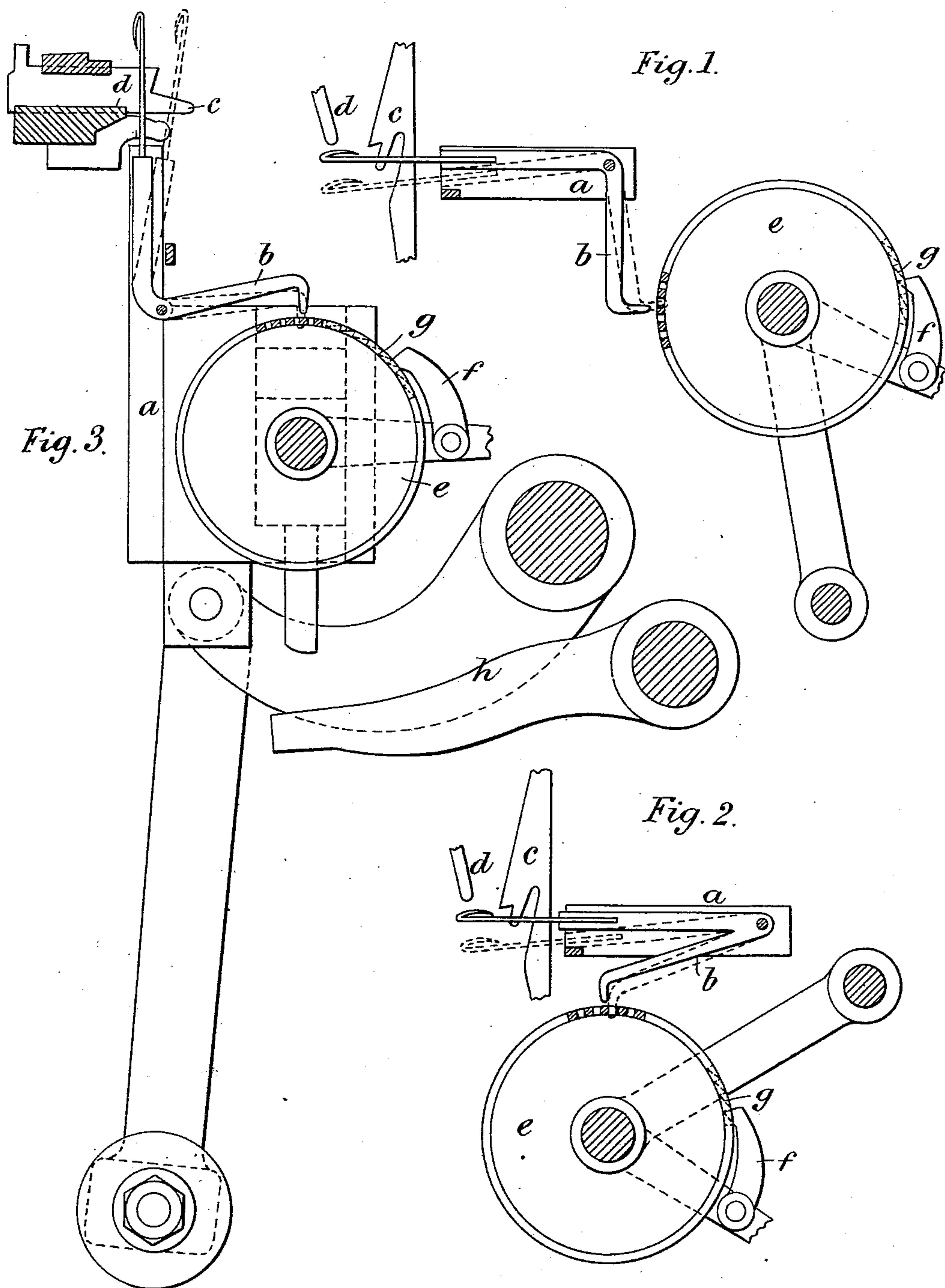


(No Model.)

J. JOHNSON.  
KNITTING MACHINE.

No. 563,233.

Patented June 30, 1896.



Witnesses  
*C. H. Miller*  
*E. A. Bellock*

Inventor  
*Josiah Johnson*  
By *His Attorneys*  
*Paulson Davidson Wright*



# UNITED STATES PATENT OFFICE.

JOSIAH JOHNSON, OF LEICESTER, ENGLAND, ASSIGNOR OF ONE-HALF TO  
JOHN ARTHUR ALLEN BARFOOT, OF SAME PLACE.

## KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 563,233, dated June 30, 1896.

Application filed April 6, 1896. Serial No. 586,375. (No model.) Patented in England November 3, 1894, No. 21,129, and in France November 20, 1895, No. 251,862.

*To all whom it may concern:*

Be it known that I, JOSIAH JOHNSON, foreman, a subject of the Queen of Great Britain, residing at Canning Place, Leicester, England, have invented certain new and useful Improvements in or Relating to Knitting-Machines, (for which I have obtained Letters Patent in Great Britain, No. 21,129, dated November 3, 1894, and in France, No. 251,862, dated November 20, 1895,) of which the following is a specification.

Heretofore various-colored patterns have been produced in knitted fabrics by causing (at each course of work) some only of the needles to be brought into position to take thread and have work produced upon them, while the other needles remain idle and out of work until, at the next or some subsequent course, work is to be produced with a thread of a different color or material.

To allow of work being produced in this way on straight-bar knitting-machines the needles have been arranged so that they can be slid endwise to and fro in grooves in the needle-bar, one independently of the other, and at each course those needles which were not to have work formed upon them have been drawn back out of work by the action of a Jacquard barrel. The Jacquard barrel had therefore to have a considerable length of to-and-fro movement given to it and to perform a considerable amount of work, as a long traverse had to be given to the needles, while the movement of the needles was opposed by the friction between the needles and their slides and between the needles and the loops of work hanging on them.

The object of my invention is to enable knitted colored patterns of the above kind to be produced more expeditiously and with less movement of the needles than was heretofore requisite. To effect this, in place of making each needle to be capable of sliding endwise to and fro in a groove in the needle-bar, I joint the stem or "jack" of each needle by a pin-joint to the needle-bar, so that by turning on these joints some needles may be turned back out of line with the others and out of position for having work produced upon them, and by means of a Jacquard barrel

I control which needles shall be held in position to have work formed upon them.

The needle-bar may, as in Figures 1 and 2, be a fixed needle-bar, while the presser-bar used for closing the beards of the needles is movable, or the needle-bar may, as in Fig. 3, be one that has to have an up-and-down as well as a horizontal to-and-fro movement given to it, while the presser-bar is fixed, as in the well-known "Cotton" machine.

Fig. 1 is a vertical section of a fixed needle-bar having needles jointed to it, and of a Jacquard barrel acting on the needles. Fig. 2 is a similar view of a modified arrangement, and Fig. 3 is a modified arrangement in which the needle-bar is a movable one.

In the figures, *a* is the needle-bar; *b*, the stem or jack of each needle; *c*, the sinker; *d*, the presser-bar, and *e* the Jacquard barrel.

In Fig. 1 the Jacquard barrel is shown to be capable of having a to-and-fro movement given to it, while in Fig. 2 it receives a vertical movement. The axes of the barrels are carried by lever-arms, which are rocked to and fro by the action of cams on the cam-shaft. In Fig. 3 the axis of the barrel can be moved up and down between guides which are fast with the needle-bar. It is therefore carried to and fro with the needle-bar and can, in addition, have a slight upward motion given to it by a lever-arm *h*, actuated by a cam on the cam-shaft.

The pull of the work upon the needles tends to turn the needles into the positions shown by dotted lines. When the Jacquard barrel is moved toward the ends of the needle bits or jacks *b* and a hole in the barrel is opposite to the end of any jack, that jack and the needle which it carries remains in the position shown by dotted lines and work cannot be made upon it; but if no hole is opposite to the end of the needle bit or jack, then the needle bit or jack is turned into the position shown by full lines, and it is held by the Jacquard barrel in this position until a course of work has been completed, or nearly completed, upon it. Afterward the barrel is moved away from the ends of the jacks and has a partial turn given to it by the action of a pawl *f*, engaging with a ratchet-wheel *g*,

which is fast with the barrel, and is then ready to be again moved toward the ends of the needle-jacks during the next course of work.

5 What I claim is—

A knitting-machine for producing fancy patterns in which the needles are jointed to the needle-bar and are acted upon by a Jacquard barrel so as at any course of work  
10 either to be held in position to receive thread

and have a course of work made upon them or else to be allowed to be drawn back by the pull of the work upon them so as to be out of position for receiving thread and having work formed upon them substantially as described. 15

JOSIAH JOHNSON.

Witnesses:

ALBERT CHAMBERLAIN,  
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