

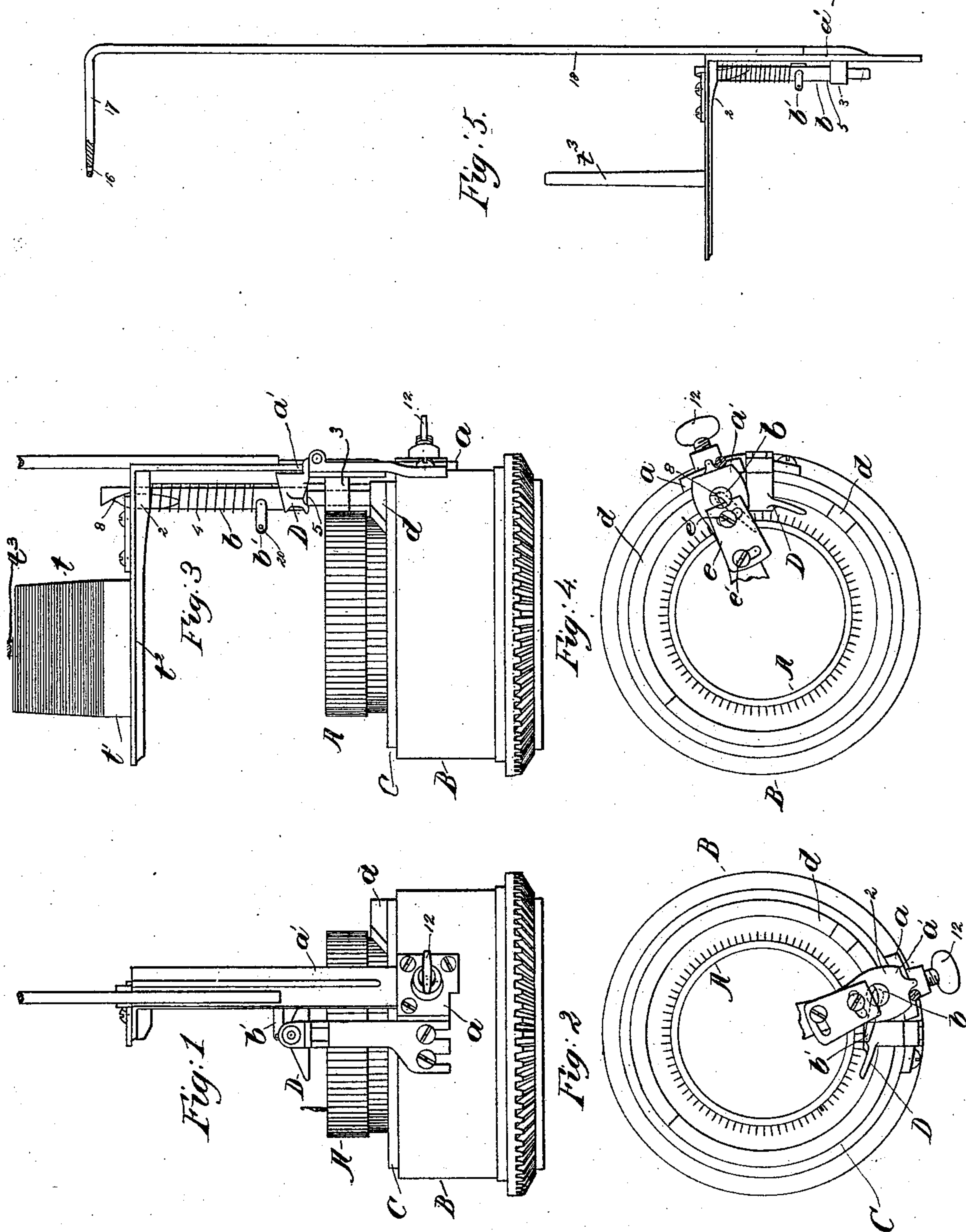
(No Model.)

G. D. MAYO.

FEEDING DEVICE FOR CIRCULAR KNITTING MACHINES.

No. 414,865.

Patented Nov. 12, 1889.



Witnesses.

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UNITED STATES PATENT OFFICE.

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FEEDING DEVICE FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 414,865, dated November 12, 1889.

Application filed June 18, 1889. Serial No. 314,706. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. MAYO, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Feeding
5 Devices for Circular-Knitting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object to improve circular-knitting machines in such manner that an extra thread may be introduced for a part of any one or a series of circular courses, to thus thicken one side or part of a circular
15 web where the same is to be subjected to the greatest wear—as, for instance, at the knee, the bottom of the foot, or other part.

In accordance with my invention I have provided a machine of the class referred to
20 with an auxiliary thread-guide, which may readily be placed in operative position, and thereafter by or through a cam or controlling device be reciprocated vertically to deliver its extra thread for a part only of any one or
25 more circular courses.

My invention consists, essentially, in the combination, with a needle-cylinder, a rotary cam-cylinder, and a series of needles, and a
30 thread-guide, of a vertically-movable auxiliary thread-guide and a cam or controller to actuate the same and cause it to deliver its thread to but a portion of the needles during circular knitting for any desired number of continuous courses, substantially as will be
35 described.

Figure 1 in elevation represents a sufficient portion of a circular-knitting machine with my improvements added to enable the same to be understood. Fig. 2 is a top or plan view
40 of the machine shown in Fig. 1. Fig. 3 is an elevation of the machine shown in Fig. 1, but with the cam-cylinder moved ninety degrees and part of the spool for the extra thread added. Fig. 4 is a top or plan view of the
45 machine shown in Fig. 3; and Fig. 5, on a smaller scale, shows the standard a' and the parts carried by it removed.

The needle-cylinder A, properly grooved to receive usual latched needles, but one of which
50 is shown, the cam-cylinder B, the skeleton cylinder-ring C, and the main thread-guide D

are and may be all as shown in United States Patents Nos. 363,528 and 319,000, or may be as of usual construction common to circular-knitting machines.

55 Herein I have shown the cam-cylinder as provided with a socket or holder a , which holds a standard, as a' , which supports an auxiliary thread-guide, the latter being composed of a vertically-reciprocating rod b , hav-
60 ing an arm or projection, as b' , provided with an eye, through which may be led the extra thread t on the bobbin t' , supported on the standard a' , said thread being delivered at suitable intervals to the needles when the ma-
65 chine is being actuated to knit circular courses. The said rod b is shown as having bearings at 2 3 in the standard a' , and is surrounded by a spring, as 4, which normally acts to keep a suitable shoulder or projection at 5 of
70 the said rod down upon the bearing 3; but the lower end of the said rod, in the rotation of the cam-cylinder B, is acted upon by a cam or controller d , shown as extended more or
75 less about the needle-cylinder below the said rod, so that the latter will raise the same and place the delivery-arm b' above the needles, so that when the said rod is lifted the extra
80 thread will not be delivered to the needles; but at all times during the rotation of the cam-cylinder with the auxiliary thread-guide, when the said rod is not elevated by the said
85 cam or controller, the delivery-arm b' delivers its extra thread to the needles, and the said thread is knitted into more or less of each circular course, thus enabling a circular web,
90 as a stocking, to be thickened at the knee or at the bottom of the foot, or in the calf, or where desired. The rod b is slotted off at its upper end spirally, as at 8, and co-operat-
95 ing with the said spiral surface is a plate e , preferably made adjustable on the standard a' by suitable screws e' , extended through slots (shown in Figs. 2 and 4) of the said plate, adjustment of the plate causing the rod b to
100 be rotated more or less as it is lifted in its bearings by the cam. The partial rotation of the said rod aids in enabling the delivery-eye of the delivery-arm b' to be thrown inside the position occupied by the circular series of
needles, so that the extra thread carried by the auxiliary thread-guide will at such time

be delivered at the back of the needles, and will not be knitted in at each stitch, but will extend across the inner side of the tube.

By altering the length of the cam or controller the number of needles in the circular series of needles which will have the extra thread delivered to them to be knitted into the fabric for a part of each circular course may be varied at will, and, as herein shown, the longer the said cam the fewer the number of needles which will have the extra thread supplied to them during each circular course, and vice versa.

To use my invention as herein provided for, the standard a' will be placed in the holder a whenever it is desired to insert an extra thread into a part of the circular web as the latter is being knitted, and preferably the said standard will be retained in position by a locking device 12, which may be a set-screw, so long as it is desired to thicken a part of each course of knitting made in the production of the circular web. When not to be used, the standard may either be removed or the thread in the delivery-arm b' be broken off. The arm b' will preferably be threaded and screwed into the rod b , so that the said arm may be adjusted longitudinally to enable its delivery-eye to be placed properly with relation to the needles.

I have shown the cam or controller as fixed to the skeleton cylinder-ring C, common to the said patent; but I should consider it within the scope of my invention, should the said cam or controller be applied to any other part of a circular-knitting machine outside of and to partially surround the needle-cylinder in position to act for a part of the time during the knitting of a circular course or courses, to apply an extra thread to but a portion of the circular series of needles in a succession of courses to thus thicken one side of a circular web.

The cam-cylinder in practice may and will contain usual cams and means for reciprocating the needles.

I am aware that it is not novel to introduce an extra thread into parts of a knitted fabric; but such introduction has been done by devices very differently constructed, and, in my judgment, more complex than as represented in this my invention.

The standard a' , herein shown, is provided

with an extension t^2 , on which is erected a pin or stud t^3 , on which, in practice, will be placed a bobbin t' , of usual construction, it containing the extra thread to be used, the said extra thread being carried from the said bobbin to an eye 16 in an arm 17, (see Fig. 5,) forming part of the rod 18, secured to the standard a' , the said thread passing thence to the eye 20 of the delivery-arm b' .

I claim—

1. The combination, with the needle-cylinder, the cam-cylinder, a series of needles, and a thread-guide, of the auxiliary thread-guide composed of the vertically-movable rod b , its arm b' , and a guide for the said rod, and a cam or controller d , located outside of and partially encircling the needle-cylinder, to actuate the said auxiliary thread-guide and enable it to deliver its thread to but a portion of the needles during circular knitting for any desired number of continuous courses, substantially as described.

2. The needle-cylinder, the surrounding skeleton ring, the cam-cylinder, a series of needles, and a main thread-guide, combined with an auxiliary thread-guide, and a cam or controller attached to the said skeleton ring to actuate the said auxiliary thread-guide and cause it to deliver its thread to but a portion of the needles during circular knitting for any desired number of continuous courses, substantially as described.

3. The combination, with the needle-cylinder, a cam-cylinder, a series of needles, a main thread-guide, and a cam or controller partially surrounding the needle-cylinder, as d , and means to support it, of the standard a' , the vertically-reciprocating rod b , having a delivery-arm b' , to deliver an extra thread, and means to oscillate the said arm during its vertical reciprocations to enable it to at times present the thread carried by it in front of the series of needles and at other times back of the series of needles, as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE D. MAYO.

Witnesses:

GEO. W. GREGORY,
B. DEWAR.