

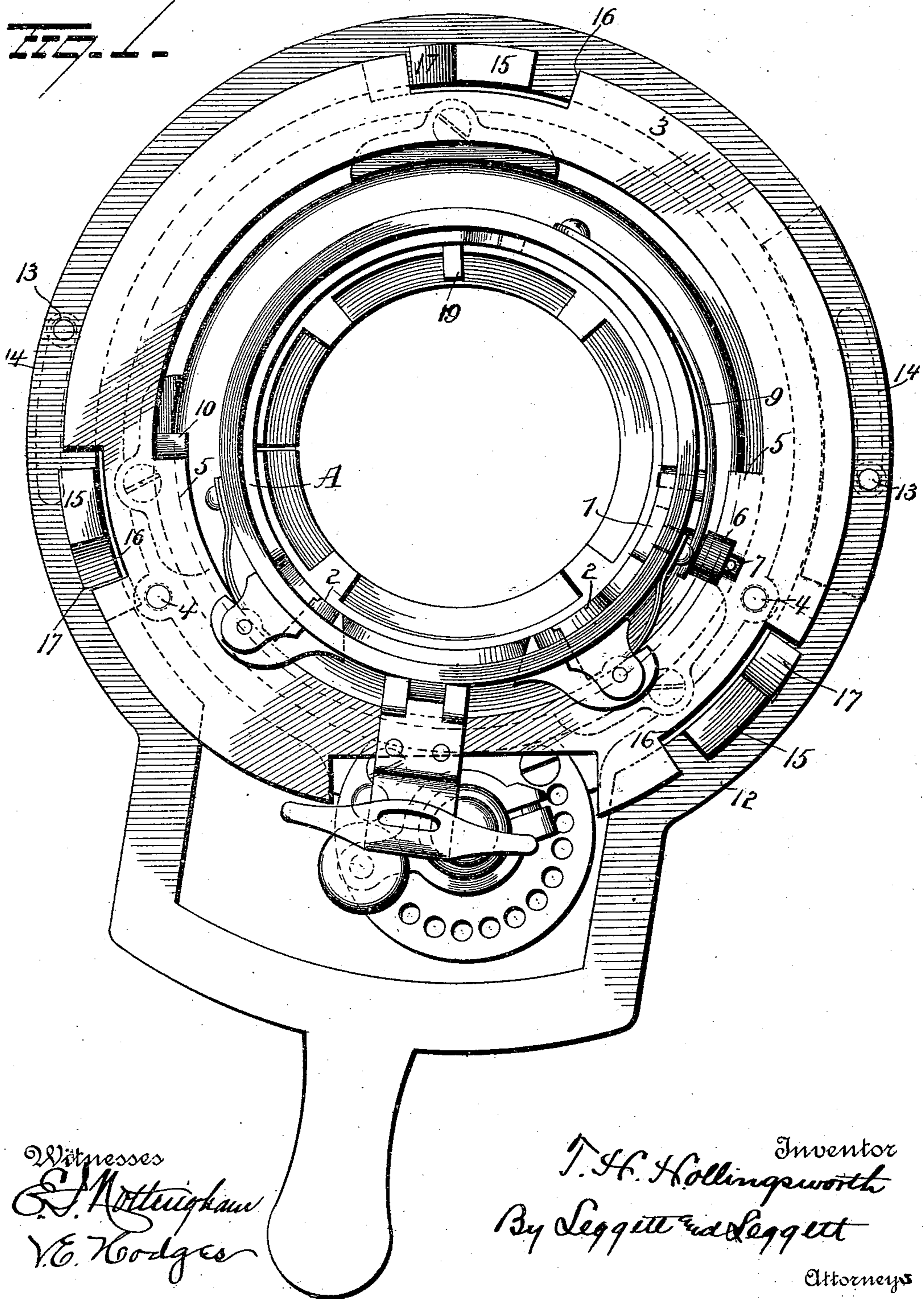
(No Model.)

3 Sheets—Sheet 1.

T. H. HOLLINGSWORTH.  
ATTACHMENT FOR KNITTING MACHINES.

No. 475,113.

Patented May 17, 1892.



Witnesses  
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*V. E. Hodges*

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Attorneys

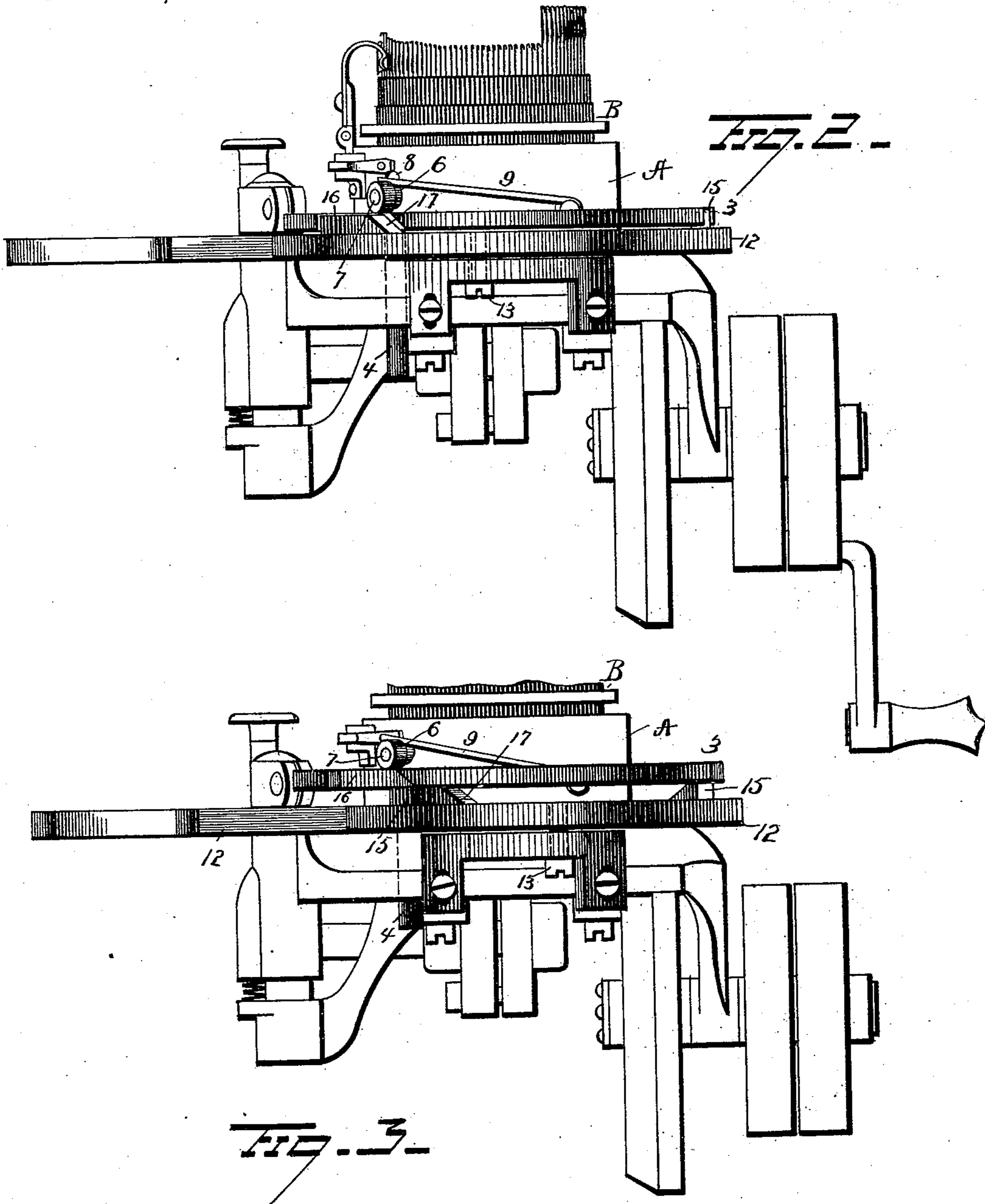
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3 Sheets—Sheet 2.

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Patented May 17, 1892.



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(No Model.)

3 Sheets—Sheet 3.

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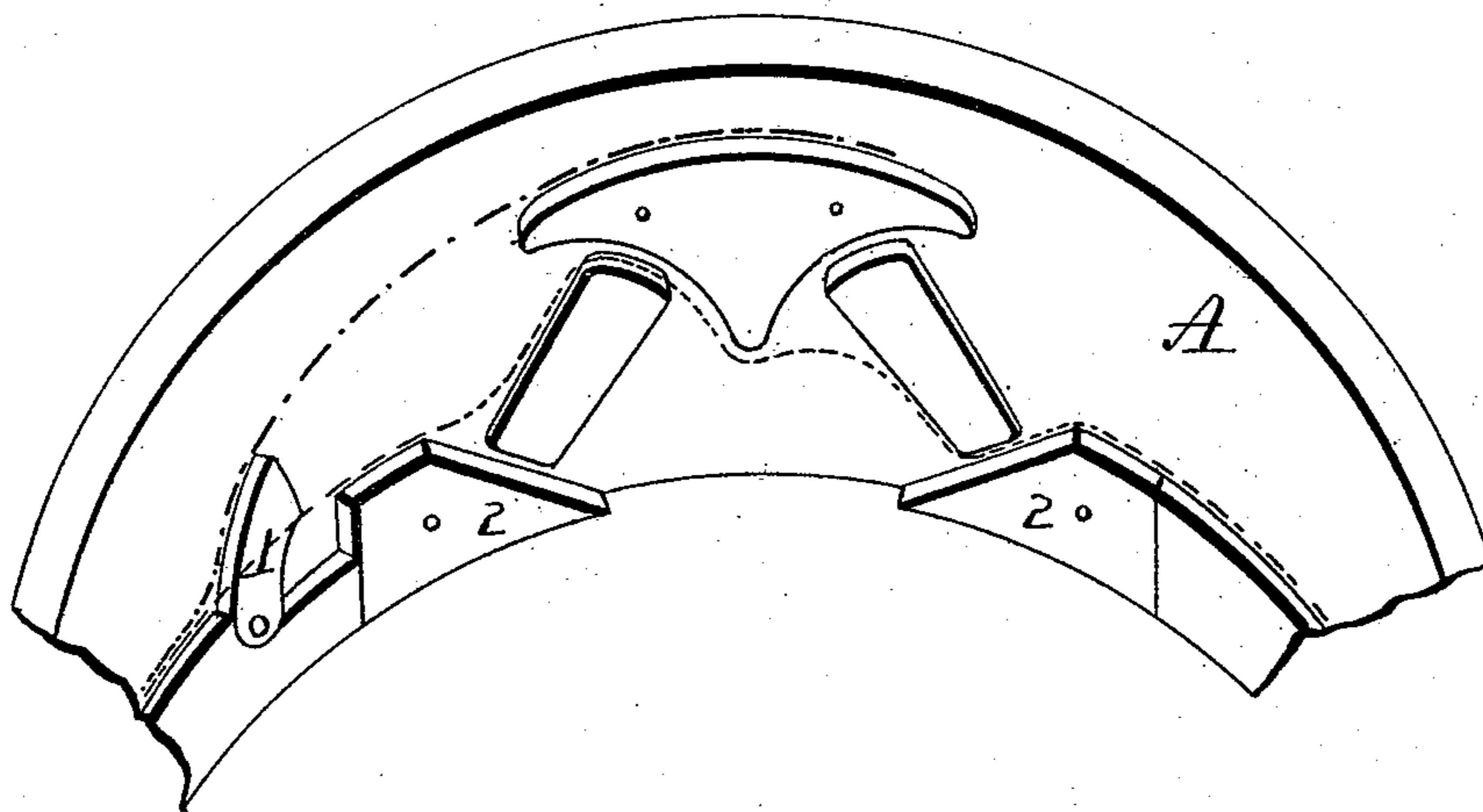


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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ASSIGNOR OF TWO-THIRDS TO NAPOLEON B. JOSEY AND ARCHIBALD  
McDOWELL, OF SAME PLACE.

## ATTACHMENT FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 475,113, dated May 17, 1892.

Application filed July 17, 1891. Serial No. 399,839. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS H. HOLLINGSWORTH, a resident of Scotland Neck, in the county of Halifax and State of North Carolina, have invented certain new and useful Improvements in Attachments for Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in attachments for circular-knitting machines, the object being to provide novel mechanism for throwing the required number of needles out of the way of the switch-cams when they are no longer required in the operation of knitting; and the invention consists in certain novel features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a circular-knitting machine, showing my attachment applied; and Figs. 2 and 3 are vertical sections through the cylinder-frame, and Fig. 4 is a detached view of the cam-cylinder.

A represents the rotary cam-cylinder, and B the needle-cylinder, which latter is secured in the machine in the usual way, and around which the cam-cylinder revolves. In addition to the usual cam-switches the cam-cylinder is provided with a pivoted cam 1, the object of which is to elevate a certain number of the needles at the required time by striking the heels of the needles and raising them out of the path of the switch-cams 2 2. This cam 1 is operated by the mechanism which will now be described. A reciprocating cam-ring 3 surrounds the needle-cylinder, and it is provided with depending pins 4 4, which pass through holes in the body of the machine to guide the ring in its upward and downward movements and also to prevent its turning. A portion—say about a half of the ring—projects inwardly a trifle more than the remainder of the ring, and this portion of the ring acts as a cam. On this portion 5 an anti-friction roller 6 travels as the cam-cylinder rotates. This roller is

mounted on a bearing-pin 7, which projects outwardly from the pivoted cam 1 through a vertical slot 8 in the cam-cylinder A. The pivoted cam is held down normally by a spring 9, which bears on the bearing-pin 7. When the parts are resting in their normal positions, the cam 1 remains stationary and all of the needles are operated upon alike by the cam-switches, and it is not until the cam-ring is raised from its seat that the pivoted cam 1 is raised and the portion of the needles which it strikes are elevated. This elevating of the needles is accomplished by the anti-friction roller 6 following the cam portion 5 of the ring in the latter's elevated plane, and to facilitate this travel the end 10 of the portion 5, which the roller reaches first, is beveled or inclined, as shown at 10 in Fig. 1.

It is of course known to those familiar with these machines that a portion only of the needles has to be raised when the heel or toe of a stocking is knit. Hence the cam portion 5 is made just long enough to raise the required number of needles at one revolution of the cam-cylinder. The cam-ring 3 is conveniently raised by means of the frame 12, although it is obvious that other means might be employed for accomplishing this. This frame is supported on the body of the machine and preferably guided by pins 13 13, which extend into the curved elongated slots 14 14, formed in the body of the machine. This frame is turned by swinging the handle thereon to one side. In this manner a limited rotary motion is possible, and at the same time the frame is prevented from accidental displacement. On this frame are located several cam-blocks 15 15 at suitable distances apart. These blocks are normally in position to enter notches 16 16, cut in the outer edge of the reciprocating cam-ring 3, and these blocks are designed to raise the cam-ring when the frame is turned. To accomplish this the cam-blocks are beveled on their advancing ends 17 17, and the corresponding ends of the notches 16 16 are reversely beveled, so that the ring rides up on the cam-blocks when the frame is turned in the direction of the arrow, and in this way cams 5 and 1 are raised as described. When the

frame 12 is reversed, the cam-ring drops by gravity and the cam 1 is forced down by the spring.

The other parts of the machine, being old, require no further description, except the lug 19 on the body of the machine, which I employ to insure the proper position of the needle-cylinder, the latter having a recess formed in its lower edge to receive the lug.

Slight changes might be resorted to in the construction of details of my invention, and hence I do not wish to limit myself to the exact construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a needle-cylinder and cam-cylinder, of a movable cam supported by the cam-cylinder and adapted to operate against the needles in the needle-cylinder, and a reciprocating ring having cam-surfaces, said ring located in position to operate the movable cam when reciprocated, whereby the latter is thrown into position to operate upon the needles, and means for reciprocating the cam-ring, substantially as set forth.

2. The combination, with a needle-cylinder, cam-cylinder, and movable cam, of cam mechanism located in proximity to the movable cam and comprising a pair of rings having

cam-surfaces thereon, one adapted to be turned and the other adapted to be raised and lowered by the turning of the former, whereby to operate the movable cam, substantially as set forth.

3. The combination, with a needle-cylinder, needles, and cam-cylinder, of a cam pivoted in the latter, a turn-ring having cams thereon, and a reciprocating ring provided with cam-surfaces, said reciprocating ring resting loosely on the turn-ring and located in position to bear against the pivoted cam, whereby to raise the latter, substantially as set forth.

4. The combination, with a frame, a stationary needle-cylinder having needles therein, and a rotary cam-cylinder, of a cam pivoted in the latter and having a projection extending laterally therefrom, and cam mechanism comprising a turn-ring and a reciprocating ring, each having cam-surfaces thereon, and the latter located to move in the path of the projection on the pivoted cam, substantially as set forth.

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

THOMAS H. HOLLINGSWORTH.

Witnesses:

S. G. NOTTINGHAM,  
G. F. DOWNING.