

(No Model.)

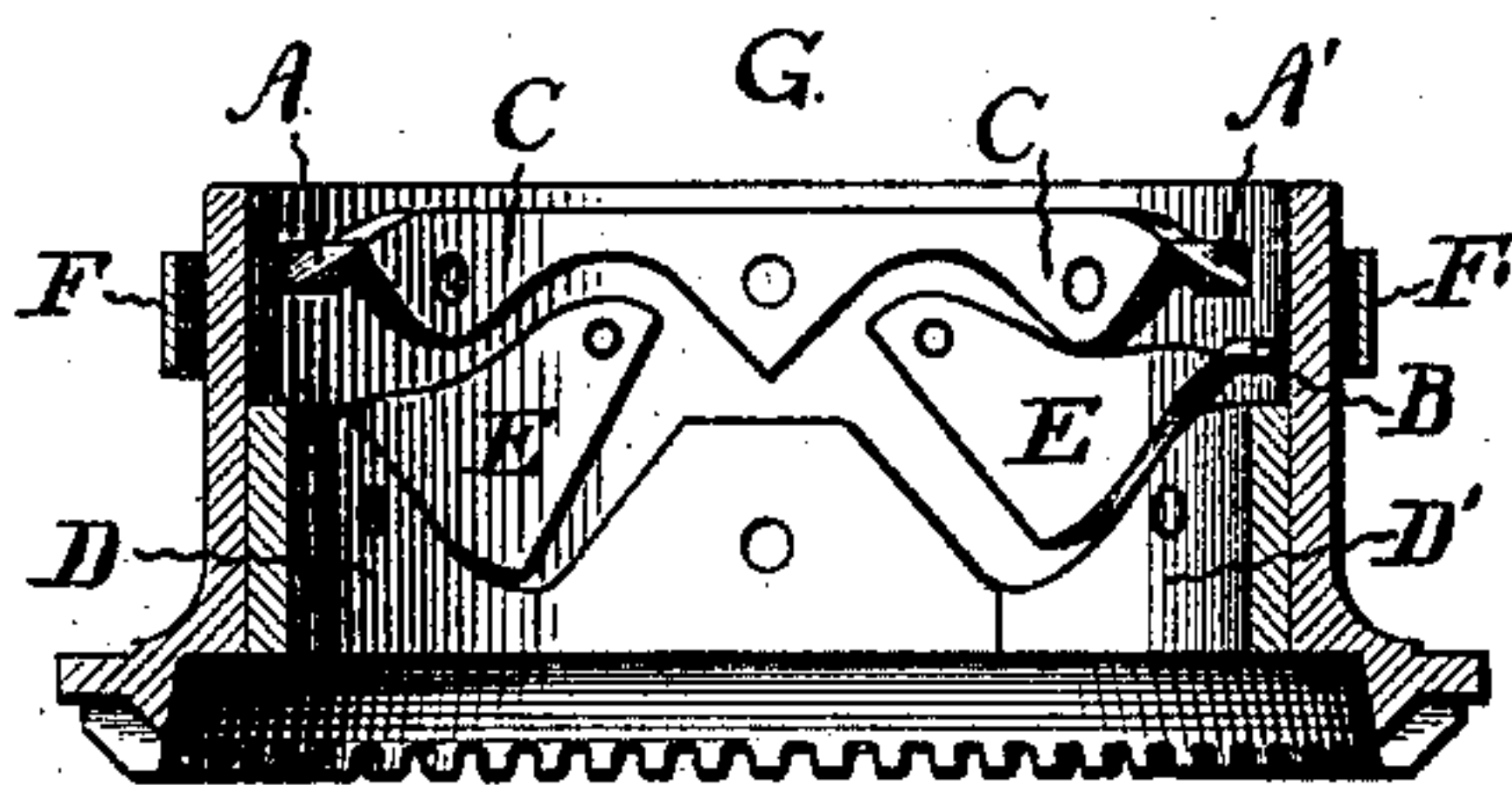
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CAM CYLINDER FOR KNITTING MACHINES.

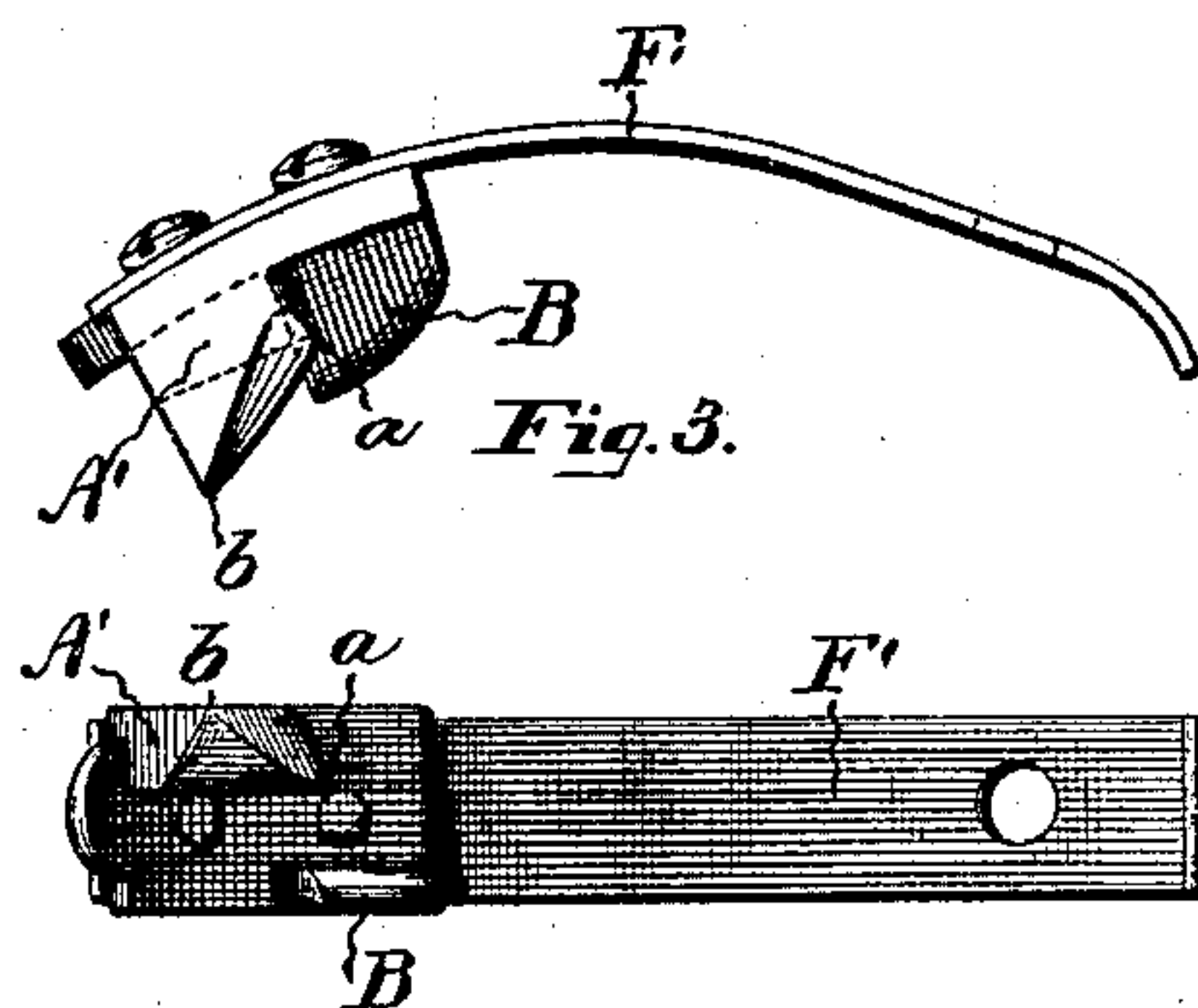
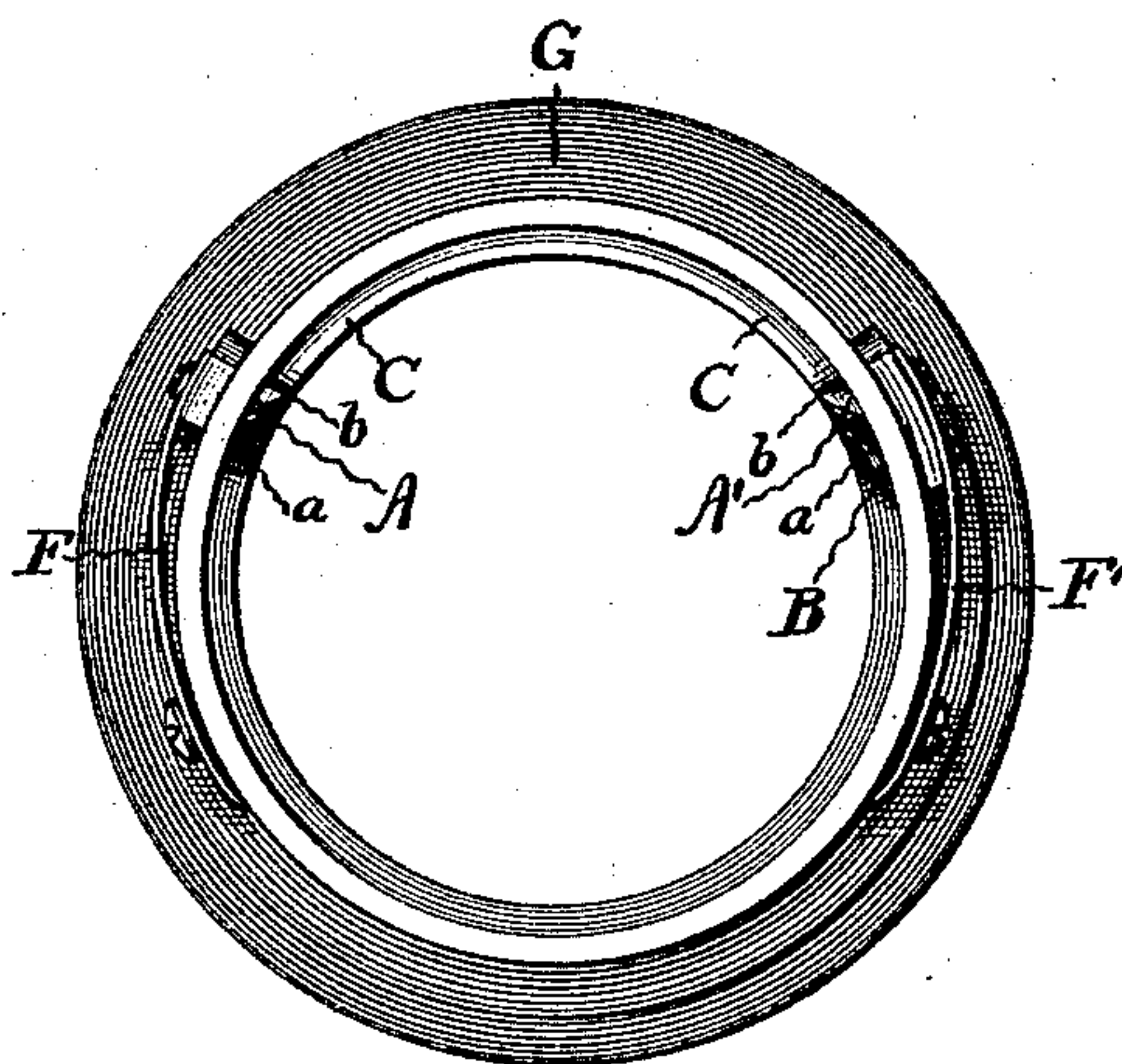
No. 359,325.

Patented Mar. 15, 1887.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN B. PAXTON, OF PHILADELPHIA, PENNSYLVANIA.

## CAM-CYLINDER FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 359,325, dated March 15, 1887.

Application filed July 31, 1886. Serial No. 209,691. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. PAXTON, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Cam-Cylinders for Knitting-Machines, of which the following is a specification.

The object of my invention is to prevent the breaking of needles and machines, to prevent waste caused by dropped stitches, and to produce more work from a machine by running it at a higher speed without risk of breaking machine or needles.

In the accompanying drawings, Figure 1 represents a vertical central section through the cam-cylinder of a knitting-machine to which my improvements have been applied. Fig. 2 is a top or plan view thereof, and Fig. 3 comprises two detail views on an enlarged scale.

In said drawings, G is the cam-cylinder, of usual construction, except as hereinafter stated, and C, D D', and E E are the needle-operating cams, of usual construction, applied thereto. At each end of the top cam, C, I form a slot through the cylinder, as shown, and in these slots place radially-movable cams A A', pressed inwardly by springs F F', attached to the exterior surface of the cam-cylinder, as clearly shown in Fig. 2. The face of each cam A A' which is toward the needle-cylinder is rounded or beveled to an edge, *a b*, which edge is not concentric with the inner curve or surface of the cam-cylinder, but is inclined with relation to the said inner surface, so that while at one end, *a*, it starts at such surface, at the other end, *b*, it projects as far as the inner surface of the cam C, this being shown clearly in Fig. 2. The edge of each of the cams also has a slant or inclination to the plane of revolution, as shown most clearly in Fig. 3. This slant or inclination is shown downward from each end of cam C; but it will be equally effective for the purpose hereinafter described if upward.

A cam, B, similar to the cam A or A', excepting that it may have its beveled edge parallel with the plane of revolution of the cam-cylinder, projects through a slot or opening in the said cylinder near the end of one of the wing-cams E, and slightly above the top of the side cam, D, as shown in Fig. 1.

The operation of the devices described is as follows: In knitting the straight part of a stocking the needles, in passing from 1 to 2 in Fig. 1, frequently receive an impulse which throws them high enough to carry the ends of their latches above the loops upon them, causing stitches to be dropped. This undue elevation is prevented by my cam B, which prevents the needles from rising too high at whatever speed the machine may be run. In knitting the heel of a stocking, one-half of the needles are raised by hand above the top cam, C, and reciprocating semicircular motion is imparted to the cam-cylinder, an additional needle being raised at the end of each turn for the purpose of narrowing. In this operation needles and needle-cylinders are frequently broken, either through the carelessness of the operative in not raising the needles high enough or the spring-band for holding the needles in place being too slack and allowing them to drop down. In either case the heel of the needle, instead of riding over the top cam, is struck by its end, causing breakage. By my improvements, however, an improperly-placed needle is guided above or below the top cam, C, by the beveled sides *a b* of the cams A A'. Should the needle strike a cam, A or A', squarely on the point or edge, the spring F or F' will allow the cam to move outwardly, as the edge passes along the needle, until the slant of the edge leads above the needle, when the spring will force the cam inward again, and will press the needle below the end of the top cam. If the beveled edges of the cams A and A' slant upward, instead of downward, the needle will be thrown above the top cam in the same manner.

The cam B is attached to the spring F, so that should the said cam strike the heel of a needle it will yield similarly to the cams A A', its inner face being inclined, as shown. The heel of the needle will thus be permitted to pass by the cam B without substantial resistance and enter beneath the operating-cam again.

I am aware that the use of spring-cams in a knitting-machine is not, broadly speaking, new; but such cams as heretofore constructed have usually been arranged to yield circumferentially with instead of radially to the

cylinder, or like the latch of a door, and, therefore, when struck squarely upon their ends would, after the limit of their yielding had been reached, present a rigid obstruction to the passage of the needle. In other cases, where radially-yielding cams have been employed, their surfaces have not been inclined to the plane of revolution, so as to deflect the needle upward or downward in the manner before described.

Having thus described my invention, I claim—

1. The combination, with the cam-cylinder and its needle-operating cams, of the radially-movable spring-actuated cam A, having its inner face inclined to both the inner surface of

the cam-cylinder and to the plane of its own rotation, and arranged with reference to the operating-cams, substantially in the manner set forth.

2. The combination, with the cam-cylinder and its needle-operating cams, of the radially-movable spring-actuated cam B, having its edge inclined to the inner surface of the cylinder, and arranged with reference to the operating-cams, substantially in the manner set forth.

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Witnesses:

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