

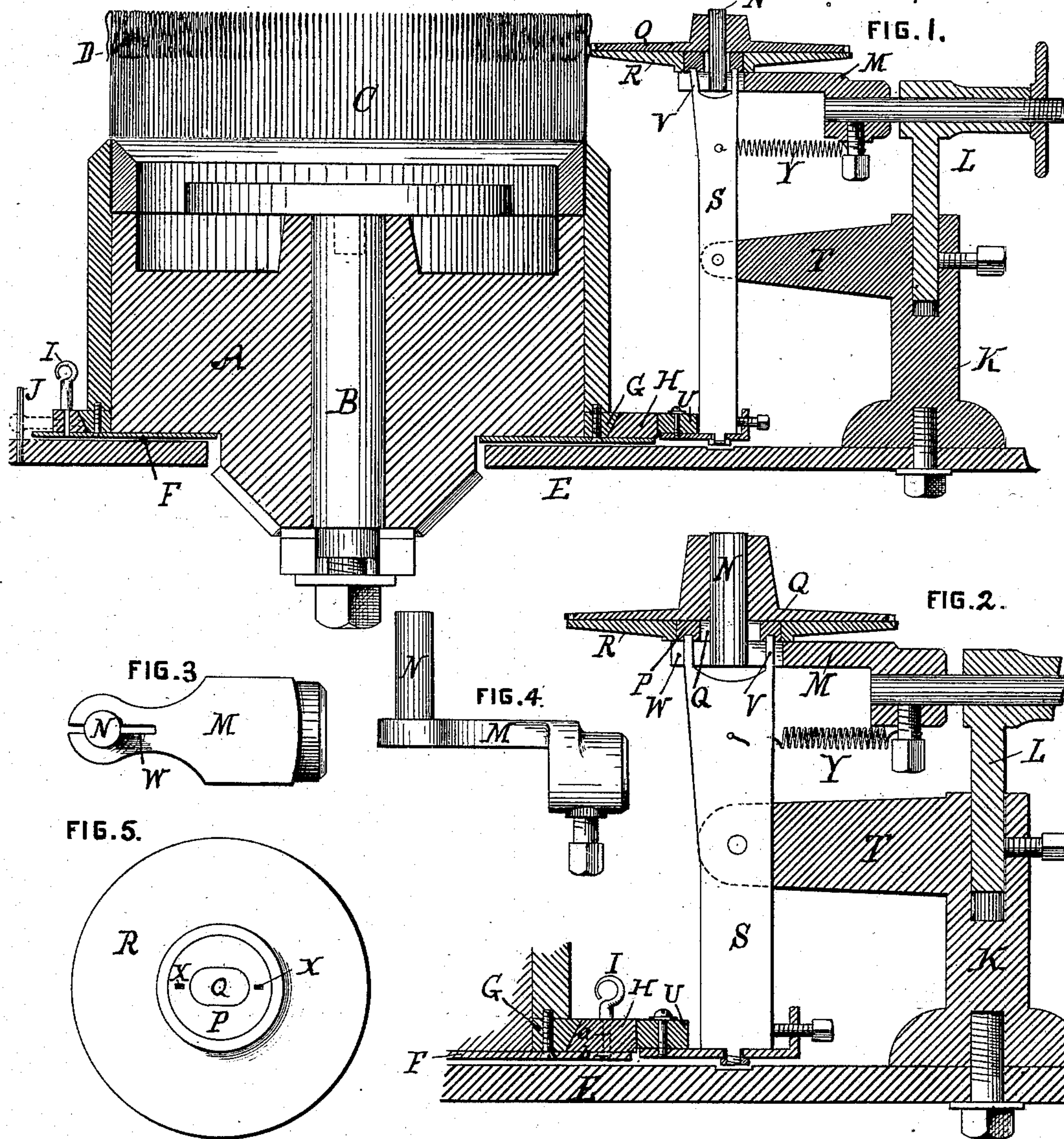
(No Model.)

2 Sheets—Sheet 1.

J. ADAMS.
KNITTING MACHINE.

No. 270,275.

Patented Jan. 9, 1883.



WITNESSES:

A. H. Culver

John D. Kelley

Joseph Adams,

INVENTOR

*By his Attorneys,
Wm. C. Lawrence,
J. B. Small Taylor.*

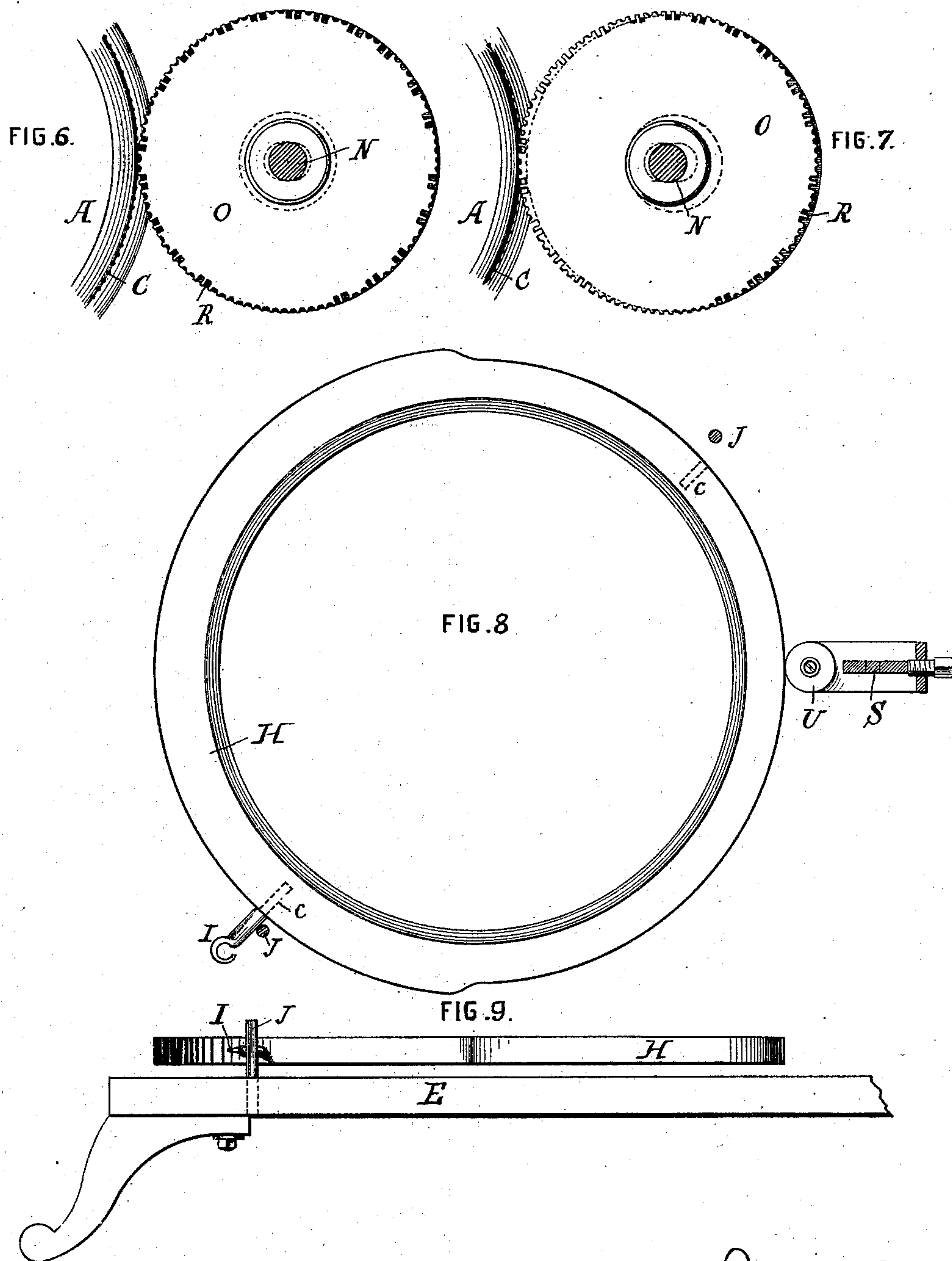
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UNITED STATES PATENT OFFICE.

JOSEPH ADAMS, OF PHILADELPHIA, PENNSYLVANIA.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 270,275, dated January 9, 1883.

Application filed April 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ADAMS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Knitting-Machines, of which the following is a specification.

My invention relates to knitting-machines in general, being applicable either to the class which employs a circular system of needles or to the machines which employ straight rows of needles.

Knitting, as is well known, consists in making a fabric by enchaining a single thread.

My machine is herein described as applied to machines of the ordinary circular kind which produce a tubular fabric. In these machines, as is well known, the needles are bearded and fixed in a vertical position around the periphery of a rotating cylinder. They have no endwise motion, and the stitch is formed in the following manner: It being assumed that there has been set up upon the needles near their lower ends a row of loops, the fresh yarn is then delivered or fed through an eye in the end of a fixed guide or yarn-carrier to a loop-wheel suitably located with reference to the needles, and is taken and pushed by the notched wings on said loop-wheel up under the beards of the needles. A loop-wheel, sometimes known as a "knitting-burr," is a wheel having wings arranged radially and diagonally across its face, which is adapted to operate upon the yarn and the fabric. The wings of a sinker-wheel then press the yarn in between the needles and insure that there shall be a sufficient quantity to form loops of the proper size. The needle-beards are then pressed in by a presser-wheel, so that their points enter depressions in the stems, the yarn fed by the loop-wheel being thus inclosed between the beard and the stem. The old loops are then raised by a landing-wheel a short distance above and outside of the points of the beards. A stripping or knocking-over wheel or other device then throws the old loops entirely over the points of the needles, and the fabric, with the newly-formed row of loops, is pressed down to the lower ends of the needles by a curved cloth-presser.

The above is the method of forming a plain tubular fabric in which the web is identical in weave throughout all parts.

The presser-wheel employed in the above method of knitting is a smooth-edged disk, horizontally placed and located in such relation to the beards of the needles as to press each beard as the latter revolves into contact with the wheel's periphery into the depression in its needle's stem. The presser-wheels are removable from off the presser-bars which support them.

When it is desired to make what is technically known as "tuck-work" the plain presser-wheels are either removed or withdrawn from action, and what are known as "tuck-pressers" brought into action.

Tuck-pressers are flat disks of the same diameter as the presser-wheels, or "plain pressers," as the latter are sometimes called, around the periphery of which are radially-disposed notches or indentations of varying depth, and so alternately or otherwise placed each with its neighbor as to leave portions of the periphery untouched—that is, of full diameter, and adapted to encounter the beards of the needles in a manner similar to that of the plain pressers. When a tuck-presser is applied to the machine its operation upon the beards of the needles is irregular and dependent upon its peripheral notches, so that when a notch registers in line with a beard the beard is of course not depressed, while whenever a portion of the periphery between the notches encounters a beard it depresses it and locks in the yarn in the same manner that the plain presser does.

My invention consists in a knitting-machine which is provided with both a tuck-presser and a plain presser, and is constructed and operated substantially in the manner hereinafter set forth.

In the accompanying drawings, Figure 1 represents in longitudinal vertical central section a knitting-machine embodying my improvements. Fig. 2 is an enlarged detail similar to Fig. 1, and especially illustrative of the pressers and their attachments. Fig. 3 is a top plan view, and Fig. 4 a side elevation, of a convenient form of presser-bar or support for the pressers. Fig. 5 is a bottom view of the plain presser and the collar upon which it rotates. Figs. 6 and 7 are top plan views of a portion of the needles and needle-cylinder and of the

plain and tuck pressers in opposite positions, in Fig. 6 the plain presser being in operation and in Fig. 7 the tuck-presser. Fig. 8 is a top plan detail of the plain-presser-operating cam-way. Fig. 9 is a side elevation of the same represented as locked to the bed-plate.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a needle-cylinder of any preferred construction, supported upon a stem, B, and provided with a circular series of needles, C, the beards of which are indicated by the letter D. The needle-cylinder is erected in suitable relation to a bed-plate, E, which may be of any desired and usual form. Affixed to the under surface of the needle-cylinder is an annular plate, F, adapted to revolve with the cylinder. Above the annular plate, and between it and the lower edge of the exterior face-plate of the needle-cylinder, is a camway-ring, G, whose exterior face is beveled from above inwardly and downwardly. Resting upon the annular plate, and fitted snugly against the ring G, is an annular camway, being an annulus of metal whose interior face is beveled oppositely and correspondingly to the bevel of the ring G, so that the camway, when in place upon the annular plate, cannot be lifted therefrom. The periphery of the camway is of varying contour, as indicated in Fig. 8, having segmental portions of different radii. According to the shape of the camway will be the throw of the presser-lever, as hereinafter set forth.

I is a pin, which, when in the position represented in Figs. 1 and 2, passes through a hole, a, in the camway and into a hole, b, in the annular plate adapted to receive it. When this pin is placed in the above manner the camway is locked to the annular plate and revolves fixedly with said plate and the needle-cylinder.

J is a fixed stop upon the bed-plate exterior to the camway, but so close thereto that the camway in its revolution barely clears it.

If the pin I be removed from its vertical seat in the holes a and b, as shown in Figs. 1 and 2, and introduced horizontally into a horizontal hole, c, formed in the side of the camway, as in Fig. 8, or in dotted lines in Fig. 1, it will encounter the fixed stop upon the bed-plate, and while in such position will prevent the revolution of the camway with the needle-cylinder and will hold the camway fixed, so that the annular plate will slide beneath it. Any number of holes may be formed horizontally in the side of the camway, so that the camway may be locked in any desired position with respect to the bed-plate.

K is a standard affixed to the bed-plate of the machine, from which is erected any suitable adjustable housing or fitting, L, to which is connected the presser-bar M, which projects horizontally toward and radially with respect to the needle-cylinder.

N is a stem vertically erected from the forward extremity of the presser-bar, upon which

is supported the tuck-presser O, which is fitted to closely encircle said stem and revolve fixedly with respect thereto and without any lateral play. Surrounding the stem, and resting direct upon the upper surface of the presser-bar, is a sliding collar, P, the periphery of which is circular and which is centrally provided with an elliptic slot, Q. Around the collar is fitted a plain presser, or presser-wheel, strictly as such, which is free to revolve around said collar and upon the upper face of the presser-bar upon which it rests. The tuck-presser rests and revolves upon the plain presser, as will be readily understood by reference to the drawings.

From the above relationship of parts it will be obvious that while the tuck-presser is incapable of lateral movement and must revolve fixedly with reference to the stem, the plain presser, while compelled to revolve around the periphery of the collar as an axis, is yet capable of lateral movement upon the movement of the collar, which, through the medium of the elliptic slot in the center thereof, is enabled to move with respect to the stem. I place the collar in such relation to the stem that the major axis of its elliptic slot is radial to the needle-cylinder, in which position, as is evident, the only motion of the collar is to or from the needle-cylinder in the direction of a projected radius thereof.

S is a lever pivoted at or near its center to a projecting arm, T, of the standard K, equipped, as to its lower extremity, with a friction-roller, U, (which, in the set of the machine, should come in line with the exterior face of the camway, and which, if desired, is made adjustable by a set-screw, as represented, in order to enable with precision such setting in line,) and at its upper extremity bifurcated into two prongs, V, which respectively pass through a longitudinal slot, W, in the presser-bar and enter seats X in the under face of the collar.

Y is a spiral spring connected with the lever above its fulcrum, and also connected with the fixed stock of the presser-bar or other portion of the standard or its fitting.

In connection with the pressers are of course employed the loop, sinker, and stripper wheels, usual in these machines. In the drawings they have for clearness of illustration been omitted. A series of these combined tuck and plain pressers and attachments, corresponding in number to the number of the loop-wheels, may be employed.

Such being a convenient construction of an apparatus embodying my invention, its operation is as follows: In the set of the machine the lever S is designed to be perpendicular, or nearly so, and to have its friction-roller so set with respect to the camway as to be operated upon by the latter to occasion the oscillation of the lever. The presser-bar and tuck-presser are so set that the latter is always in engagement with the beards of the needles in the ordinary set and operation of the machine. When it is desired that the tuck-presser shall

alone operate, the camway is pinned to the bed-plate in such position that the friction-roller rests in the depressed surface thereof, in which position the spiral spring draws the upper extremity of the lever and the plain presser away from the beards of the needles. When it is desired to throw the tuck-presser partially out of operation and the plain presser into operation, so as to do plain and tuck work, the camway is pinned to the annular plate and caused thereby to revolve with the needle-cylinder, so that it operates upon the friction-roller to occasion the oscillation of the lever and the consequent movement of the plain presser into and out of engagement with the beards.

By a regulation of the contour of the operative face of the camway and of the position of the notches in the tuck-presser and of the set of the latter with respect to the set of the camway, the apparatus may be caused to do altogether tuck-work or altogether plain work.

When desired to hold the plain presser constantly in operation against the beards the camway may be locked to the bed-plate so that its larger diameter or face is in contact with the friction-roller and is in the opposite position to that represented in Fig. 8.

I have represented in the drawings various adjusting devices whereby the set of the presser-bar may be either vertically or horizontally adjusted, whereby the set of the friction-roller may be controlled, and the various operative parts of the device adjusted at will. Other devices than the pin and stud may be employed to lock the camway to the needle-cylinder or hold it fixed and out of the control of the revolution of the latter. I simply represent the above devices as convenient for the purpose.

I regard the collar with the elliptic bore and the forked lever locked therewith as well adapted in connection with the camway to effectu-

ate the movement of the plain presser; but mechanics will readily understand that equivalent devices or kindred contrivances modified as to mechanical structure can be substituted therefor.

Having thus described my invention, I claim—

1. In a knitting-machine, the following instrumentalities in combination: first, a needle-cylinder provided with a series of vertically-placed bearded needles and mechanism for revolving said cylinder; second, a tuck-presser situated in such relation to said cylinder as to be always in mesh with the beards on the needles; third, a plain presser placed concentrically with the tuck-presser but adapted to be moved toward and from the needles in a direction radial to their cylinder; fourth, a lever connected with the plain presser; and, fifth, a camway upon the needle-cylinder adapted to encounter the lever and occasion the throw both of said lever and with it of the plain presser, substantially as described.

2. In combination with the presser-bar provided with a fixed stem, a tuck-presser revolving fixedly upon said fixed stem, a collar having an elliptic slot and placed upon said stem, a plain presser revolving around the collar, a lever engaged as to its upper extremity with the collar and in line as to its lower extremity with a camway, a camway upon a needle-cylinder, and a needle-cylinder, substantially as described.

3. In combination with the needle cylinder, a camway, and means for locking the camway to said needle-cylinder, substantially as set forth.

In testimony whereof I have hereunto signed my name this 8th day of April, A. D. 1882.

JOSEPH ADAMS.

In presence of—

J. BONSALE TAYLOR,
LEWIS GROSS.