

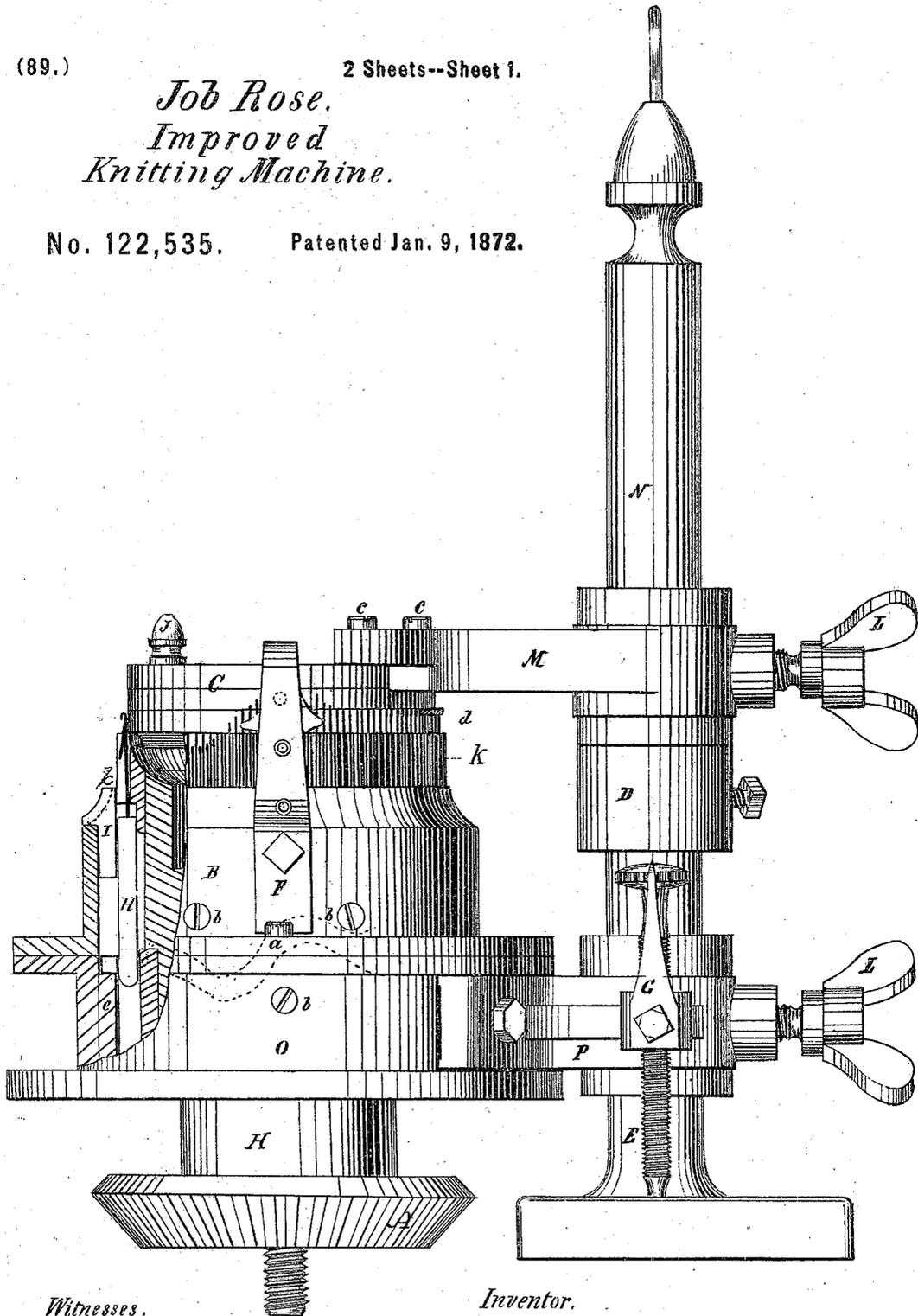
(89.)

2 Sheets--Sheet 1.

*Job Rose.  
Improved  
Knitting Machine.*

No. 122,535.

Patented Jan. 9, 1872.



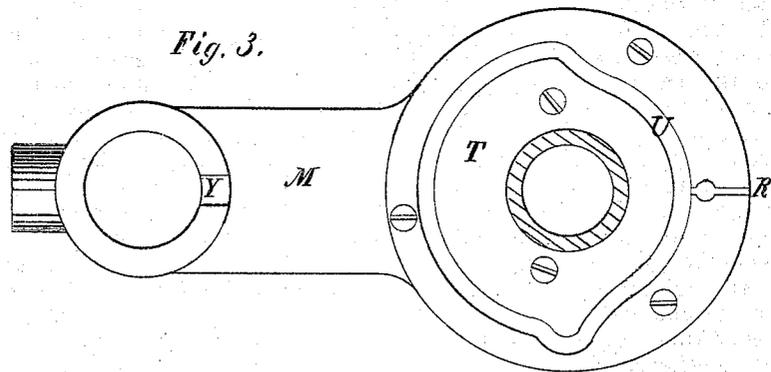
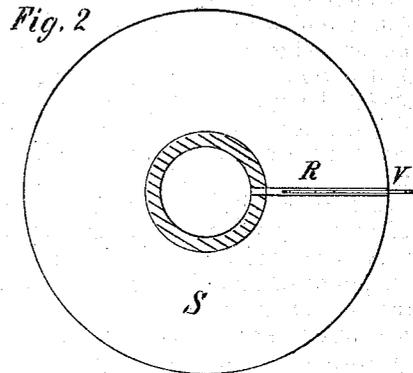
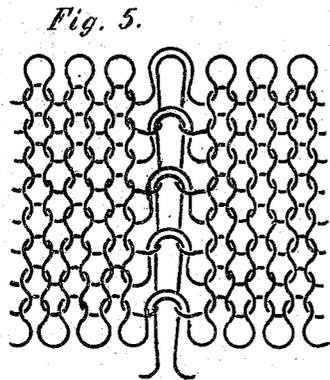
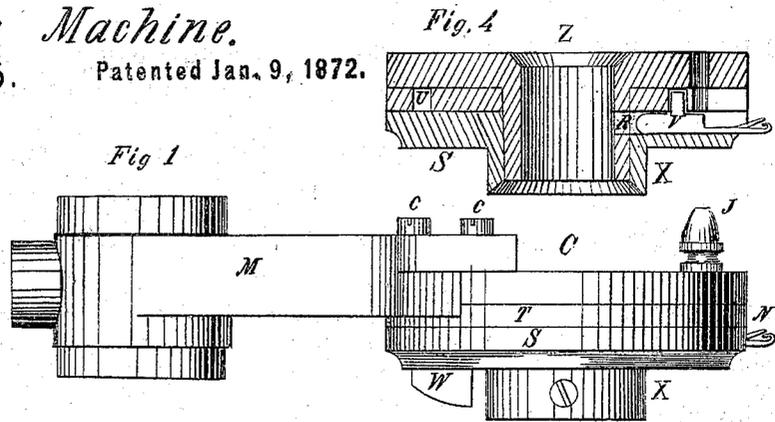
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*Job Rose,  
Improved  
Knitting Machine.*

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*Job Rose, by*  
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*his Attorney.*

# UNITED STATES PATENT OFFICE.

JOB ROSE, OF NOTTINGHAM, ENGLAND, ASSIGNOR OF ONE-HALF HIS RIGHT  
TO WILLIAM F. SALMON, OF LOWELL, MASSACHUSETTS.

## IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 122,535, dated January 9, 1872.

I, JOB ROSE, of Nottingham, England, have invented certain Improvements in Knitting-Machines, of which the following is a specification:

My invention relates to new and useful improvements in machines for knitting cotton, linen, and woolen goods. It consists of certain mechanism whereby the goods are manufactured of a very superior quality, and are made to present the appearance of being seamed or sewed together, while, in fact, the goods are formed without a seam and with an unbroken thread.

Sheet 1 represents a side view of my improved knitting-machine, having a break in the same, showing the relative position of one of the needles with regard to the lower cam, the construction and arrangement of the steel ribs fastened into the brass cylinder, and the seaming apparatus in position for working. Figure 1, Sheet 2, is a side view of the mechanism by which, in connection with the other parts represented on Sheet 1, the knitting-seam is produced. Fig. 2 is a top view of the revolving plate, as represented in Fig. 1, showing an edge view of the seaming-needle in its groove. Fig. 3 is a view of the upper part of Fig. 1, showing the cam-groove by means of which the seaming-needle operates. Fig. 4 is a cross-section of the seaming mechanism, showing the needle in cam-groove. Fig. 5 is a magnified view of the knitted goods, showing the knitted seam.

It is not thought necessary in this application to describe minutely the general operation of the needles around the brass cylinder during the process of knitting, as said operation is similar to that on other machines.

The same letters represent corresponding parts.

A is a driving bevel-gear attached to the needle-cylinder and communicates motion to the operating parts. Said needle-cylinder contains the steel ribs K, and between which operate the needles *l*. B is one of the fixed cylinders containing the cams which work the needles. C is the revolving holder-back containing the cam which operates the seaming-needle. D is a movable collar, containing on its top surface a steady-pin, which takes into the slot Y, Fig. 3, said collar being for the purpose of a stay to support and guide into its

right place the revolving holder-back. E is an index-screw, by means of which the knitted fabric is made more or less open, said index-screw moving the cylinders B and O, containing the cams, upward or downward, as is desired. F is one of two thread-guides exactly alike and disposed on opposite sides of the machine, said thread-guides containing three holes, through which the yarn passes to the needles. G is the index-finger, connected to the support P and operating in connection with the index-screw E. H represents one of the needles for knitting, as shown through the break in Sheet 1, said needle resting upon the lower cam *e*. I is a thumb-key, by means of which any needle upon the needle-cylinder can be easily removed when desired. J is a thumb-key, by means of which the seaming-needle can be taken from the holder-back when desirable. K represents steel ribs of even thickness, said ribs being fastened to the outside of the brass shell of the revolving needle-cylinder. LL are two thumb-nuts, which hold the mechanism containing cams and seaming-needle in their places. M is a support, to which is attached the seaming apparatus. N is a standard, which is attached to a framework and supports the entire mechanism. O is a stationary cylinder containing the lower cam *e*. P is a support, to which the cylinder O is attached. R is the needle-groove in the plate S of the seaming apparatus, said needle moving in said groove by the action of the cam-groove U. T is the plate containing the cam-groove U. V is the needle, by means of which the seam-stitch is made. W is a dog, attached to the under side of the plate S, said dog, when the machine is in motion, coming in contact with a corresponding dog inside of the revolving needle-cylinder. This dog communicates motion to the seaming apparatus. X is a collar, fastened by means of screws to the under side of the tube Z, said collar keeping together the different plates which compose the seaming apparatus. Y is a slot in the hub of the support M, said slot operating in connection with a pin in the collar D, as heretofore described. Z is a tube, through which the finished work passes during the process of knitting. *a* is one of two screws disposed alike on opposite sides of the machine, which confine the two cylinders containing the needle-cam

*e* together. *b b b* are three screws disposed alike on opposite sides of the machine, and fastening the cams *e* to their places. *c c* are two screws, which hold the seaming apparatus to the support *M*. *d* represents the needles surrounding the cylinder. *e* is one of two cams which operate said needles.

Motion is communicated to the machine by means of the bevel-gear *A*. The needle-cylinder by being operated passes the needles over said cams, producing the desired movement of said needles when the knitting process is being carried on. Two single threads pass separately through the two holes, as shown in the thread-guides on Sheet 1, and the two combined then pass through the hole in said thread-guides, shown by the dotted circular line, and are taken up and acted upon by the needles. During each revolution of the needle-cylinder the seaming needle appears and takes the thread at a point immediately after said needle has passed the thread-guide, shown in the drawing, draws said thread into the said needle-groove, forming a stitch, and retains possession of said stitch until said needle has passed the other thread-guide, when it advances, but not far enough to pass the stitch back of the opened latch onto the shank of the needle, and receives on the opened latch a thread from the other guide. As the cylinder continues to revolve the seaming-needle passes around with it, remaining protruded until it arrives at the first guide, when it receives a new thread and reciprocates sufficiently to form a stitch, casting off the one formerly made and the unlooped thread. Each loop at the seamed part thus incloses, besides the loop made from the thread in the second preceding row, a loose unlooped thread from the row immediately preceding, thus forming the seam, shown in Fig. 5, and differing from all other machine-made seams in the fact that my seam will not, upon the breaking of a stitch, come apart. The index-screw is intended, when operated, to make the goods open or close in this manner, viz: By raising the index-screw the cams draw the needles, and, consequently, the thread, a greater distance into the space between said steel ribs, making longer stitches and more open work, and upon lowering the screw the opposite result is obtained. By means of the guide-

collar *D* the seaming apparatus can be adjusted to make either a close or open seam, as follows, viz: By lowering the holder-back the seam is made closer, or more open by raising said holder-back.

In the machines commonly in use, in the place of steel ribs fastened into the brass cylinder the outside surface of said brass cylinder is cut into the form of a gear, having straight teeth all around said surface. As it is difficult to cut said teeth so that there shall be no variation in their thickness, (said variation in the thickness producing a corresponding unevenness in the stitches of the knitted goods,) and as, on account of their softness, said brass teeth are liable to wear on the top edges, the quality of the goods produced is greatly inferior to that produced by the machine which I employ.

When it is desired to make knitted goods without a seam it is only necessary to remove the seaming-needle after taking out the thumb-key *J*, and when any trouble arises in knitting requiring the removal of the holder-back, this is easily accomplished by simply loosening the upper thumb-screw *L* and sliding said holder-back up on the standard *N* out of the way.

By passing two separate threads, one through each of the two front holes of the thread-guides, and passing them together, untwisted, through the single hole, represented by the dotted circle, a perfectly flat appearance is given to the stitch, which is greatly superior to that stitch made by allowing the thread to twist previous to being acted upon by the needles.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the seaming-needle *V* with the plates *S* and *T*, the latter provided with the cam-groove *U*, formed as described, so as to produce the double motions of the needle for making the knot-stitch seam in the fabric, substantially as herein specified.

2. The two-thread guides *F F*, arranged in combination with the seaming-needle *V*, operated substantially as and for the purpose herein set forth.

JOB ROSE.

Witnesses:

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W. F. SALMON.

(89)