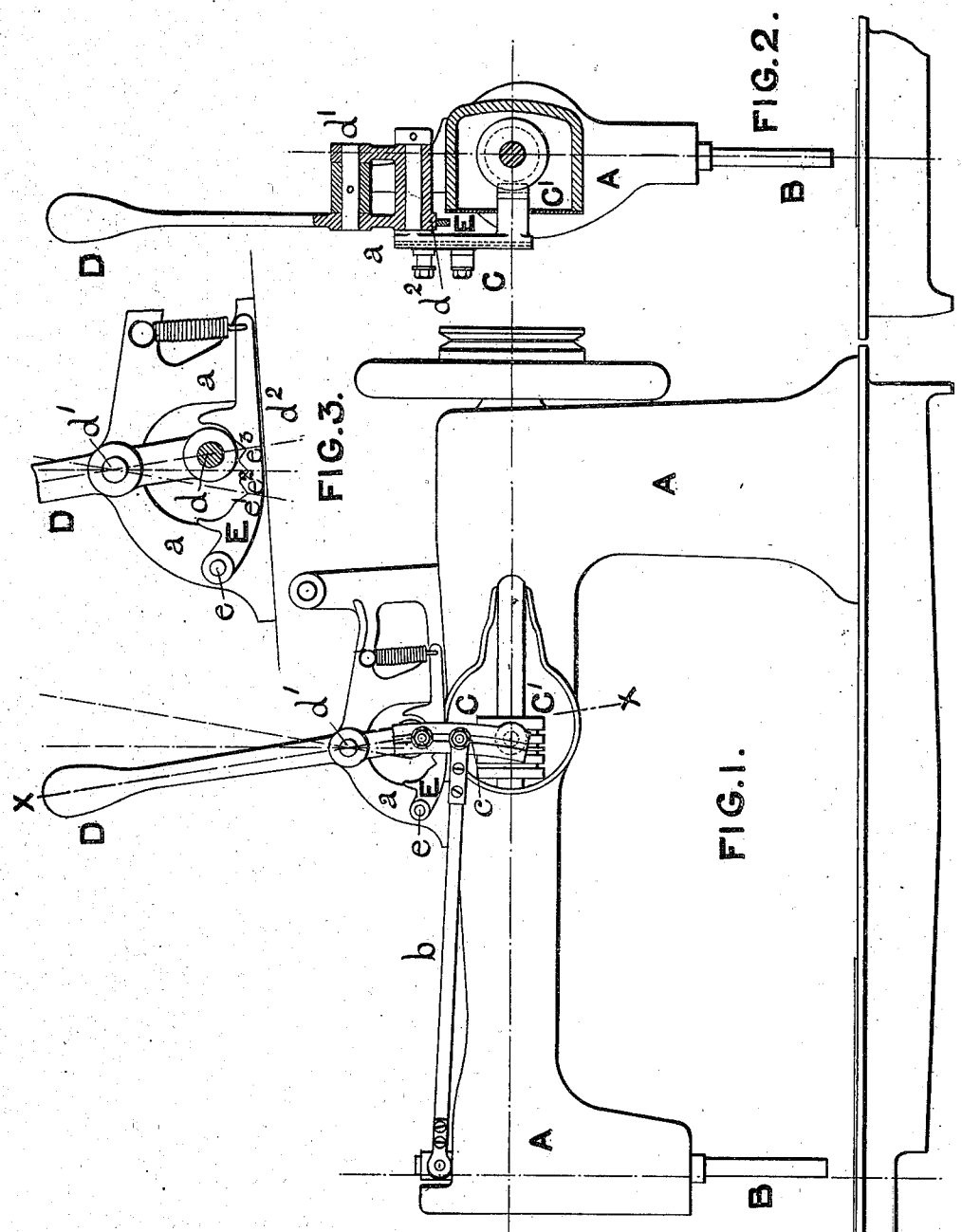
No. 709,310. Patented Sept. 16, 1902.

J. V. EVES.

NEEDLE CONTROLLING MECHANISM FOR SEWING MACHINES.

(Application filed Feb. 7, 1902.)

(No Model.) 3 Sheets—Sheet 1.



WITNESSES.

E. Howard.

Joseph Bates.

INVENTOR

J. V. Eves

by J. Owen O'Brien

atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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FIG. 1b.

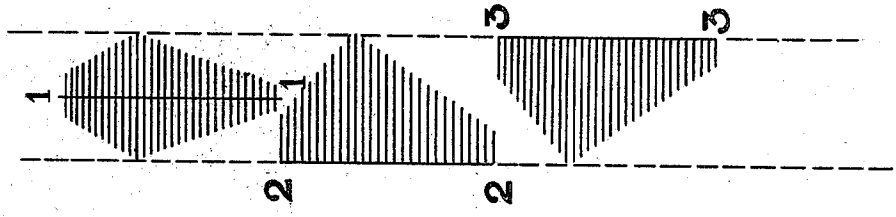
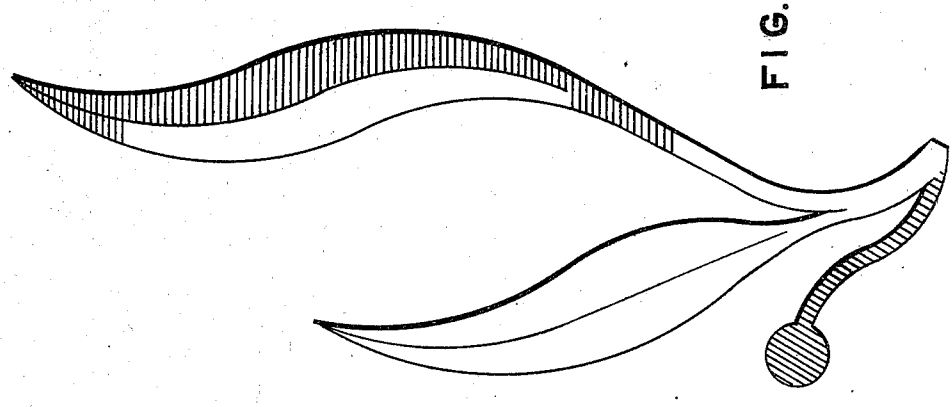


FIG. 1a.



WITNESSES.

C. E. Howard.

Joseph Bates.

INVENTOR

J. V. Eves

by D. Davis & Sons

atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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3 Sheets—Sheet 3.

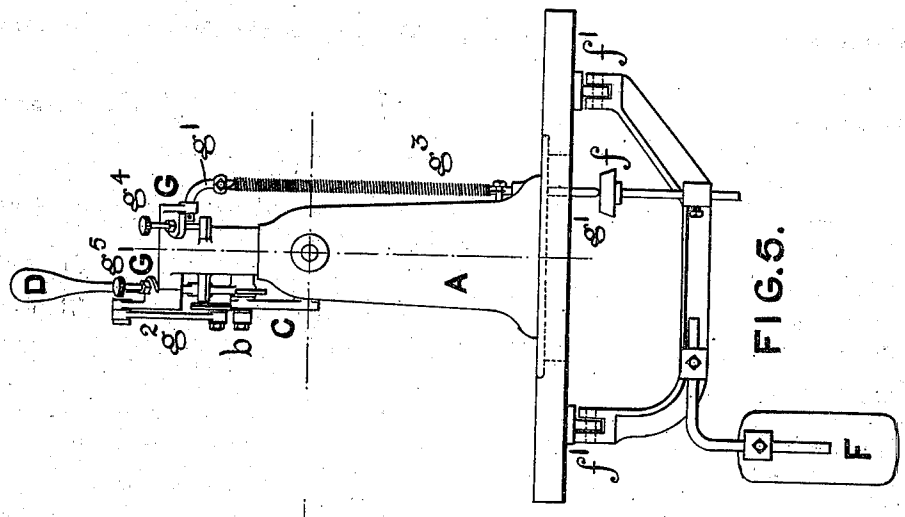


FIG. 5.

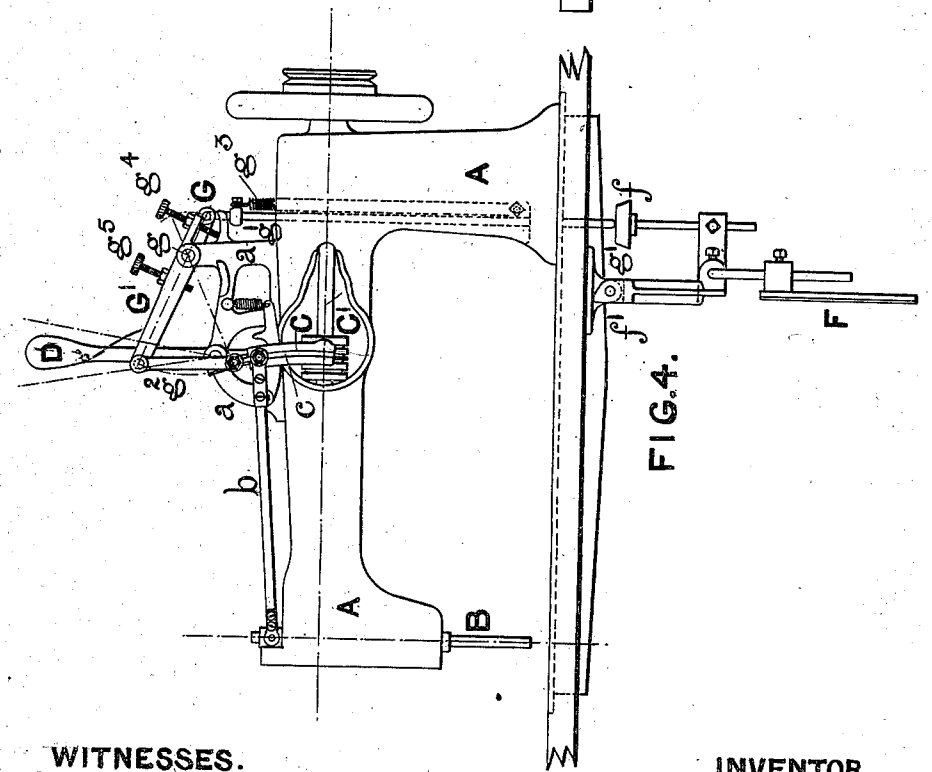


FIG. 4.

WITNESSES.

E. Howard.

Joseph Bates.

INVENTOR.

J. V. Eves

by J. Owens O'Brien

atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSHUA VALENTINE EVES, OF BELFAST, IRELAND.

NEEDLE-CONTROLLING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 709,310, dated September 16, 1902.

Application filed February 7, 1902. Serial No. 93,095. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA VALENTINE EVES, a British subject, and a resident of Belfast, in the county of Antrim, Ireland, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to needle-controlling mechanism for sewing-machines of that class or type in which embroidery-stitching is made by a needle traversing from side to side as the material is fed below it and commonly known as a "zigzag" machine, and it is designed to improve the several parts of the machine to render them more readily controlled, to adjust them to vary the work as required.

The invention comprises mechanism for setting the stitch relatively to a center or zero line and for adjusting the width of the stitch, in combination with mechanism for traversing or feeding the material through the machine to enable certain figures in embroidery-patterns to be made—such, for instance, as leaves and flowers and circular, oval, triangular, and diamond shaped spots.

The invention will be fully described with reference to the accompanying drawings, in which the several parts of the machine are shown more or less detached to enable them to be more clearly illustrated and described, the whole being used in conjunction or in combination to comprise a complete machine for the purposes indicated.

Figure 1^a is a diagram of work performed by the machine. Fig. 1^b is a diagram indicating the position of the stitching in reference to zero-lines 1 1, 2 2, and 3 3; Fig. 1, a side elevation of the mechanism for controlling or operating the needle-bar to give it lateral traverse either across a zero-line 1 1 or to inner side of zero-lines 2 2 3 3, Fig. 1^b; Fig. 2, a transverse sectional elevation of same on line $x\,x$, Fig. 1; Fig. 3, an enlarged detailed elevation of part of Fig. 1; Fig. 4, a side elevation of mechanism for controlling the position of the needle-bar and for altering the length of stitch when the machine is at work; Fig. 5, an end elevation of Fig. 4.

The frame A of the machine, the driving mechanism, and the zigzag or laterally-traversing needle-bar B are all of the ordinary or usual construction in this type of sewing-machine and are partly omitted from the drawings. The needle-bar B is connected to the radius-lever C, by which its throw or traverse is adjusted in the usual way by a link b, one end of which is secured to a slot or groove c in the lever, the lever C being oscillated by the cam C′, of any desired or convenient shape, or its equivalent. The center or pin d, upon which the radius-lever C (see Figs. 1 and 2) is pivoted, is made movable or adjustable, so that it may be placed in one of three positions, as desired. The distance between the two extreme positions is equivalent to the length of traverse of the cam C′, by which the radius-lever C is oscillated. When the pivot d is in the center position, the traverse of the needle-bar B will be across a central or zero line 1 1, Fig. 1^b, when in the outside position at one side the traverse of the needle-bar will be from the zero-line 2 2 to the right of it, and when in the other outside position from the zero-line 3 3 to the left of it. The pivot d is carried at the end of a lever D, fulcrumed upon the stud d', mounted in a bracket a, fixed to the framing A. A lever E, held up by a spring, is pivoted at e and is provided with notches e' e^2 e^3 cut in it corresponding to the three required for positions of the pivot d. A projection d^2 on the lever engages with the notches e' e^2 e^3. Then by moving the lever D the movement of the needle-bar B in relation to the zero-lines 1 1 2 2 3 3 can be altered at will by the operator.

The length of oscillation of the needle-bar B and the consequent length of stitch is determined by the position of the end of the link b in the radial slot c in the oscillating lever C. To enable the operator to vary the length of stitch at will as the work proceeds, a knee presser or lever F is pivoted to the under side of the machine-table, by which the end of the link b can be moved to and fro, as required. (See Figs. 4 and 5.) The knee-presser F is provided with a flat face, against which the knee of the operator engages and is of cranked or L shape, with a knob or projection f, which rises and falls as the lever moves upon its pivots f'. To the frame A are pivoted two levers G G′, affixed to a common center or pin g. The lever G engages with a rod g', by which it is connected with

the knob or projection f of the knee-presser F, and the lever G′ is connected by a link g^2 with the end of the link b. When, therefore, the knee-presser F is moved to the right by the pressure of the knee of the operator, the knob or projection f and the rod g' are raised by the lever G. The same movement depresses the lever G′, the link g^2, and by them the end of the link b in the radial slot c. When the pressure is withdrawn from the presser F, the movement of the levers G G′ is reversed by the action of the spring g^3. Two screws g^4 g^5 are inserted in the levers G G′ to limit the movement of the levers in either direction. In the positions shown in Figs. 4 and 5 the crossover or zigzag stitch is made as narrow as need be, and when by the action of the knee-presser F the end of the link b is moved to the bottom of the slot c the full width of stitch is made.

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

1. In needle-controlling mechanism for sewing-machines, the combination of a traversing needle-bar, a radius-lever, a link connected with the needle-bar and radius-lever, a cam for actuating said radius-lever, a second lever having a pivot for the radius-lever and a projection, and a spring-actuated notched lever, the notches of which are adapted to be engaged by said projection.

2. In needle-controlling mechanism for sewing-machines, the combination of a traversing needle-bar, a radius-lever, a link connected with the needle-bar and radius-lever, a cam for actuating said radius-lever, a second lever having a pivot for the radius-lever and a projection, a spring-actuated notched lever, the notches of which are adapted to be engaged by said projection, and means for changing the position of said link said means including a knee-operated device.

3. In needle-controlling mechanism for sewing-machines, the combination of a traversing needle-bar, a link pivoted to said needle-bar, a radius-lever to which said link is connected, a cam for actuating said radius-lever, a hand-lever having a pivot for said radius-lever and a projection at its lower end, a lever having notches upon its upper side adapted to receive said projection said lever being pivoted at one end to the framing and a coiled spring connected with the other end of said lever.

4. In needle-controlling mechanism for sewing-machines the combination with the traversing needle-bar B, the radius-lever C by which it is oscillated, a cam such as C′ to oscillate the lever, and the link b connected to the needle-bar at one end and to the radius-lever at the other end, of a pivoted lever D carrying at its lower end the pivot upon which the radius-lever oscillates, a secondary lever E provided with three notches, a projection d^2 on the lever D to engage the notches in the lever E to determine the position of the center upon which the radius-lever oscillates, a lever G′ by which the position of the link b can be varied relatively to the radius-lever C, the link g^2 connecting the lever G′ with the link b, the lever G secured to the spindle of the lever G′, the knee-presser F and levers $f f'$ connected to the lever G by the rod g' by which the levers G G′ are operated, substantially as described.

5. In needle-controlling mechanism for sewing-machines the combination with the traversing needle-bar B, the radius-lever C by which it is oscillated, a cam such as C′ to oscillate the lever, and the link b connected to the needle-bar at one end and to the radius-lever at the other end, of a pivoted lever D carrying at its lower end the pivot upon which the radius-lever oscillates, a secondary lever E provided with three notches, a projection d^2 on the lever D to engage the notches in the lever E, the link g^2 connecting the lever G′ with the link b, the lever G secured to the spindle of the lever G′, the knee-presser and levers $f f'$ connected to the lever G by the rod g' by which the levers G G′ are operated and feed mechanism by which the work is carried through the machine, substantially as described.

In witness whereof I have hereunto signed my name, in the presence of two subscribing witnesses, this 22d day of January, 1902.

JOSHUA VALENTINE EVES.

Witnesses:
PETER SHAW,
GEORGE TWEED.