

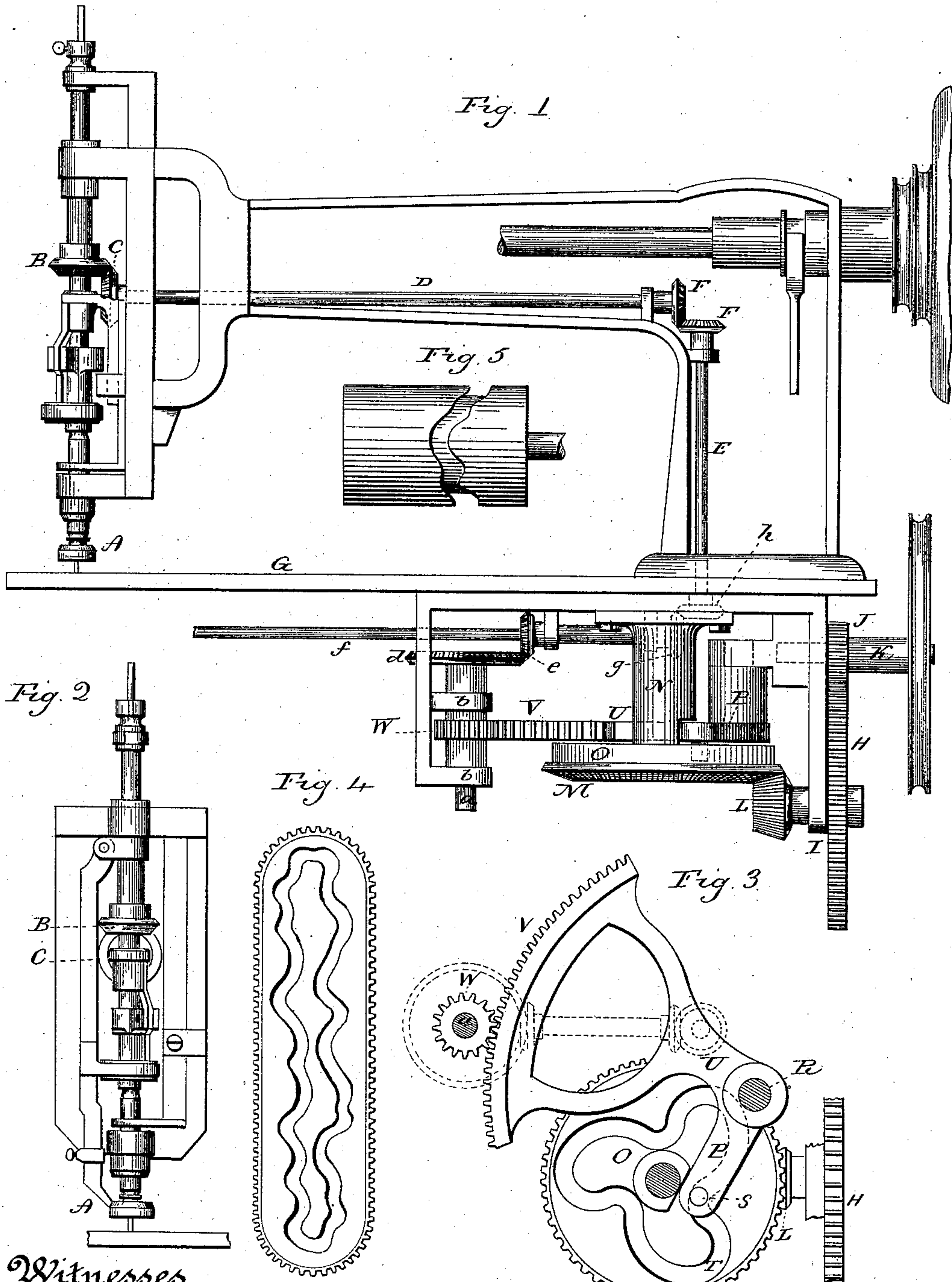
(No Model.)

S. H. ROSENBERG & J. R. BRADLEY.

EMBROIDERING MACHINE.

No. 365,635.

Patented June 28, 1887.



Witnesses,
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UNITED STATES PATENT OFFICE.

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EMBROIDERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,635, dated June 28, 1887.

Application filed June 7, 1886. Serial No. 204,296. (No model.)

To all whom it may concern:

Be it known that we, SEYMOUR H. ROSENBERG and JAMES R. BRADLEY, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Embroidering-Machines; and we do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of our improvement, together with so much of the Bonnaz machine as necessary for its illustration; Fig. 2, a front end view of the Bonnaz machine; Fig. 3, a horizontal section cutting above the lever P U and looking downward; Fig. 4, a top view of the elongated "mangle-rack" pattern-plate; Fig. 5, a modification of the pattern-plate.

This invention relates to an improvement in the sewing-machine well known as the "Bonnaz" machine, patented in the United States, No. 83,910, and to which we make special reference for a detailed description of the machine, the object of which machine is to adapt the sewing-machine to embroidery purposes.

A general description of this well-known machine is unnecessary, further than to say that the feeding of the work is produced by a ring-shaped presser-foot, A, through which the needle carried by the needle-bar passes, the said presser-foot having a reciprocating movement imparted to it in the plane of the work, and so as to serve as the feed for the work, combined with a device for universally changing the direction in which the presser-foot may be moved. The feeding movement of the presser-foot is imparted by a vertically-reciprocating cam, which is also provided with means for rotation, so that the action of the cam may be brought at any point radial to the axis of the presser-foot bar, and impart to the presser-foot a feeding movement in any direction to which the feeding-cam may be so turned.

The feeding-cam is rotated through a bevel-pinion, B, on the cam, into which works a bevel-pinion, C, on a horizontal shaft, D, which shaft in its turn is revolved by means of a vertical shaft, E, and intermediate bevel-pinions, F F', all as in the well-known Bonnaz machine.

The changeable feed is produced by imparting rotation to the shaft E, and the work is moved by the presser-foot according to the direction in which the cam shall act upon the presser-foot, and so that by constantly varying that direction a correspondingly variable line of stitches is run, and this variation of the line of stitches made produces any desired pattern upon the work.

In the Bonnaz machine the vertical shaft E extends down below the bed-plate, and a crank is applied thereto, by means of which the operator imparts any desired rotation to the shaft E to give the variation to the feed; but in producing any given pattern upon the work, the pattern therefor must be first stamped upon the work, or the operator so skillful as to carry out the design of the pattern as the work progresses.

We are aware that attachments have been made to this machine whereby a pattern is employed to automatically impart the requisite rotation to the presser-foot or feeding-cam; but such mechanism is arranged above the machine and naturally in the way of the operator, and is extremely complicated in its nature.

The object of our invention is an automatic attachment for the Bonnaz machine, arranged below the machine and simple in its character; and it consists in the construction as hereinafter described, and particularly recited in the claims.

G is the bed upon which the Bonnaz machine is arranged. H is a gear hung in suitable bearings, I, and which receives constant revolution from a corresponding pinion, J, on the driving-shaft K of the machine. The gear H carries a bevel-pinion, L, which works into a horizontal bevel-wheel, M, hung in a vertical bearing, N, fixed beneath the machine; and upon the back of the said bevel-wheel M is the pattern-plate O, which, with the wheel M, may be round, as seen in Fig. 3, or elongated, as seen in Fig. 4, according to the extent of pattern desired, the said pattern-plate receiving a rotative movement in a horizontal plane.

Above the pattern-plate is one arm, P, of a lever hung upon a pivot, R, beneath the machine and so as to swing in a plane parallel with the pattern-plate O. From this arm P a

stud, S, extends down into the groove T, formed in the upper face of the pattern-wheel. The groove T may be of any desirable shape, according to the pattern of the embroidery to be produced, and so that as the pattern-plate revolves it will, by means of its groove, impart a corresponding horizontal swinging movement to the arm P. The other arm, U, of the lever hung upon the said pivot R, terminates in the form of a toothed segment, V, which works into a pinion, W, on a vertical shaft, *a*, supported in bearings *b b*, and to which shaft rotation is imparted according to the movement of the segment V. On the shaft *a* is a bevel-gear, *d*, which works into a corresponding bevel-pin-
 15 ion, *e*, on a horizontal shaft, *f*. Said shaft *f* carries a pinion, *g*, which in its turn works into a pinion, *h*, on the lower end of the shaft E, so that the rotation imparted to the shaft *a*, as before mentioned, is communicated to the shaft E and thence to the actuating-cam on the presser-foot. Therefore the rotation of the presser-foot feed will be made in accordance with the shape of the groove in the pattern-
 20 plate. One plate may be changed for another, so that the same machine is adapted for various patterns.

In case the wheel M and the pattern it carries is circular, as seen in Fig. 3, it will be understood that the extent of the figure cannot be greater than one revolution of the pattern-plate, and that after one revolution the pattern will be duplicated; but in the case of the elongated pattern-plate, as seen in Fig. 4, the gear is correspondingly elongated to form what is commonly known as a "mangle-rack," and so that it may receive from the pinion L a backward and forward reciprocating movement, rotating at each end. In this case the pattern will extend along one side around the end, returning upon the opposite side and around the other end to the point of beginning. Thus a very long pattern may be employed and a greater variety of work produced. This construction of the pattern-plate is important, as it enables the production of large and extremely-varied figures.

The pattern-plate may be made of a cylindrical shape, as indicated in Fig. 5, the groove being formed in the periphery of the cylinder, and, as there represented, the cylinder is in direct connection with the wheel H, so that as in the preceding construction of the pattern-plate the rotative movement of the pattern-plate will, through the intermediate mechanism, impart to the shaft E an oscillatory rotating movement corresponding to the groove in the pattern-plate.

The mechanism introduced between the driving-shaft and the shaft E is very simple, com-

posed of few parts, and arranged entirely beneath the machine, and in no way interferes with the operator in the working of the machine.

From the foregoing it will be understood that we do not claim, broadly, the introduction of mechanism between the driving-shaft and the presser-foot feed of the Bonnaz machine, whereby the feeding-path of the presser-foot is made automatically variable to correspond to the specific pattern; but

What we do claim as an improvement upon the Bonnaz machine is—

1. The combination of the needle-bar, the universal feed device, the vertical shaft E in gear-connection with said feed device, said shaft extending below the bed of the machine, a pattern-plate arranged beneath the bed and in substantially a horizontal plane, and means, substantially such as described, to impart a rotative movement to said pattern-plate, the said pattern-plate constructed with a groove corresponding to the desired pattern, a lever hung to swing in a plane parallel with the plane of said pattern-plate, one arm of said lever constructed with a stud to engage the groove in the said pattern-plate, the other arm terminating in a toothed segment, and with gear connection between said toothed segment and said vertical shaft E, whereby the swinging or vibratory movement of said lever will impart oscillatory rotation to the said shaft E and thence to the said feed device, substantially as described.

2. The combination of the needle-bar, the universal feed device, the vertical shaft E in gear-connection with said feed device, said shaft extending below the bed of the machine, an elongated pattern-plate arranged beneath the bed and so as to work in substantially a horizontal plane, the said pattern-plate being provided with a mangle-rack, a pinion adapted to work into said mangle-rack, the said pinion in connection with the driving-shaft of the machine and so as to receive rotation therefrom, a lever arranged to swing in a plane parallel with the plane of said pattern-plate, one arm of which is adapted to work in the pattern on said pattern-plate, and a mechanism between said lever and said vertical shaft E, whereby the vibratory movement of said lever will communicate oscillatory rotation to said shaft E and thence to said feeding device, substantially as described.

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