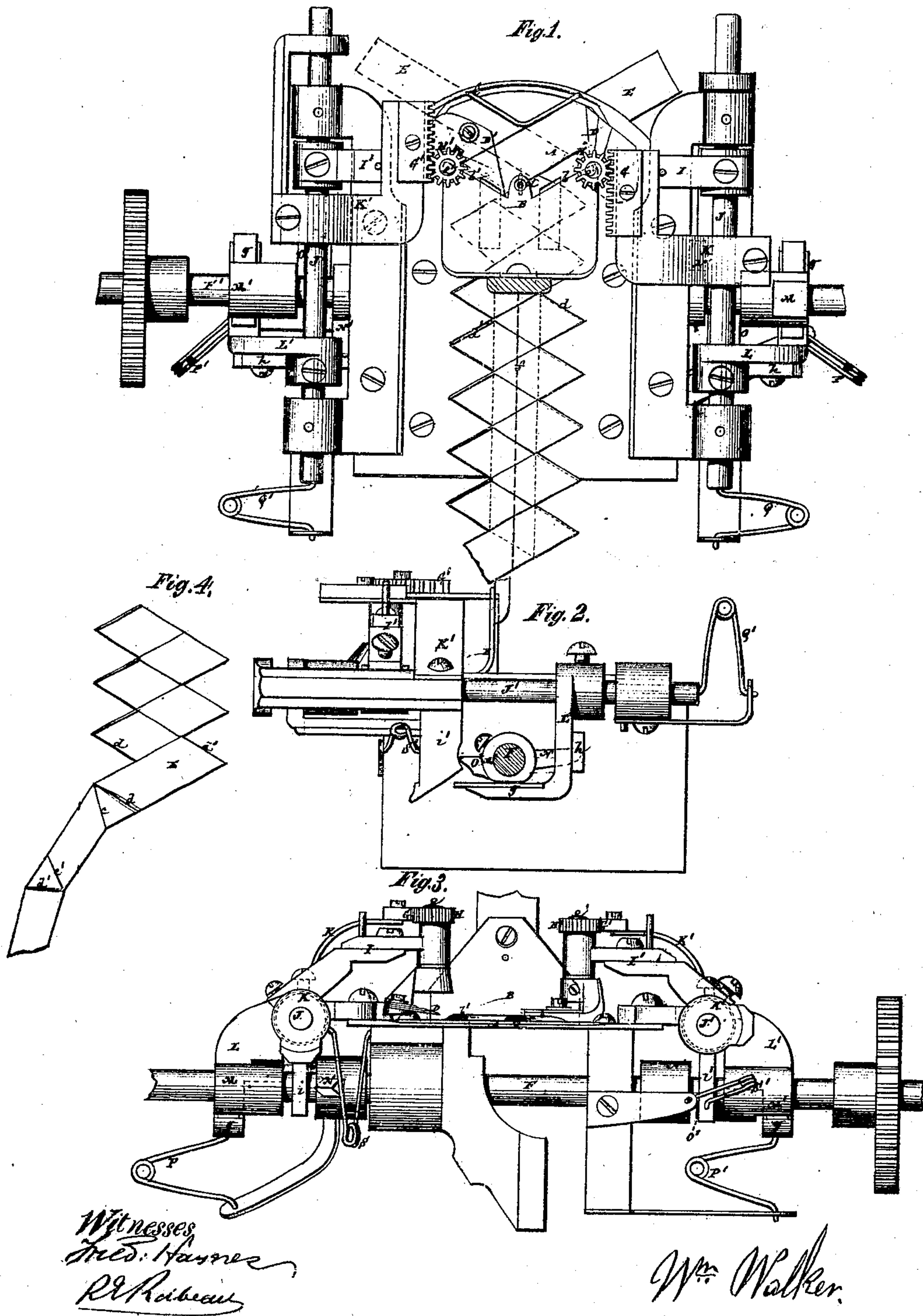


W. Walker,
Plaiting Device.

No. 108,854.

Patented Nov. 1. 1870.



UNITED STATES PATENT OFFICE

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IMPROVEMENT IN PLAITING DEVICES.

Specification forming part of Letters Patent No. 108,854, dated November 1, 1870.

To all whom it may concern:

Be it known that I, WILLIAM WALKER, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Plaiting Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a plan of a sewing-machine, in part, with my improved plaiting device or mechanism applied thereto; Fig. 2, a side view of the same, and Fig. 3 a front view thereof. Fig. 4 is a view of an unraveled piece of trimming made by the machine, in illustration of the folds made to produce it.

Similar letters of reference indicate corresponding parts.

My invention relates to a plaiting device or mechanism, mainly designed to be used in connection with a sewing-machine for making plaited pointed trimming, which is formed of tape, ribbon, or other suitable material, in folds arranged to present a succession of points.

The device, as here represented, includes two plaiting knives or blades, and a duplication of accompanying parts, for the purpose of producing a double-pointed plaited trimming; but a single knife or different arrangement of knives, similarly operating, may be used for making a different form of trimming to that here shown.

A peculiar feature of the invention consists in a plaiting knife or blade, to which is given a compound movement, or series of movements—namely, a rocking action to and from the face of the material, a circular motion over or against it, and a straightforward movement to conform to the feed of the material as it is folded or plaited.

The invention also embraces a combination of knives, operating as described and in reciprocal relation to each other, to produce a double-pointed plaited trimming, which may have its character more or less changed by varying the stroke of the knives.

The invention likewise includes certain combinations of details by which the several motions, hereinbefore specified, are communicated to the plaiting knife or knives.

Referring to the accompanying drawing, A represents the bed-plate of a sewing-machine, and B its presser-foot, provided with a needle-aperture, *a*, and formed with reversely-inclined front edges, *b b'*. C is a wire guard, under which the strip to be plaited is passed in introducing it onto the table. D D' are plaiting knives or blades, arranged to have a curvilinear reciprocating action intermittently and alternately in relation to each other over the bed A, in front of the presser-foot B, on either side of the line of feed. These knives, in sweeping alternately over the bed A, have, first, or as they make their folding movement, a gradual downward pressure or action and advance motion toward their respective presser-foot face or edge *b* or *b'*, whereby each knife, in its travel on or over the tape or material E, as the latter is held down by the presser-foot, forms an oblique crease, *c* or *c'*, in the tape, some little distance in advance of the presser-foot, and, as the knife completes its stroke toward said foot, the latter is raised by the action of the feed, and the knife, moving in concert with the general feed, tucks such creased portion under the toe of the presser-foot edge *b* or *b'*, thereby forming, in connection with the presser-foot, an upper or outer crease or fold, *d* or *d'*, which lies in line with the edge of the tape, either knife, in thus operating on the material, sliding the free or front and uncreased portion of the latter diagonally or to one side over the bed A, and along or under the guard C, toward the opposite knife, in the back position of the latter. This swing or play of the tape over the front portion of the bed takes place in reverse directions—that is, first to the one side and then to the other—by the advance or folding movement of each knife in succession, said knives forming, by their intermittent and alternate action on the tape, as thus adjusted to opposite sides, each successive crease *c* or *c'* in reverse diagonal directions to each other, and producing the folds *d* or *d'* to correspond, thereby causing a plaited trimming with double points, substantially as represented in Fig. 1, to be produced.

Toward the completion of the curvilinear play of either knife D or D', on or in connection with its upright spindle *e* or *e'*, in the forward or folding stroke of the knife, a

straightforward feed of the material is produced by the knives, in concert with the general feed of the machine—that is, either knife in succession thus operating, which completes the tucking of the creased portion and forming of the fold d or d' , and passage of such folded portion under the presser-foot B. To accomplish this, the knives have given them, at the conclusion of their forward curvilinear stroke, a straight line of motion, to conform with the feed, toward or under the presser-foot, or edges b b' thereof. After either knife D or D' has completed its forward stroke it rises from the material and recedes, first, in the straight line or course given it toward the completion of its plaiting movement, and subsequently in a curvilinear direction through the turning of its spindle e or e' .

The general feed of the material or trimming, as made, may be effected by any suitable feeding mechanism, operating in connection with the presser-foot, which is made to yield, or rise and fall at intervals, by the action of the feed, as required.

The folds or plaits as made in the trimming by the tucking of the creased portions alternately from opposite sides, and in reverse directions under each other in succession, are secured by a continuous line of stitches, f , running across all the plaits and uniting them firmly together. This trimming I make the subject of a separate application for Letters Patent, and the trimming itself, or sewing of it as made, forms no part of this invention, as the securing of its plaits by sewing may be effected after the trimming leaves the machine, which may be confined to forming and laying down the plaits.

The mechanism for giving to the plaiting-knives their several hereinbefore-specified movements may be variously constructed and arranged, but the following means will be found to effect the desired results in a very advantageous manner.

F is a revolving shaft, arranged crosswise of the bed-plate A and beneath it. This shaft, in connection with springs, as hereinafter described, serves to communicate to the knives their several movements.

The plaiting-knives D D', which occupy a cranked or eccentric position relatively to their axes, have their intermittent and alternate curvilinear motions given to them by means of sliding racks G G', acting on pinions H H', fast on the spindles e e' of the knives. These spindles are carried by arms I I', fast on rocking and longitudinally-sliding side shafts J J', while the racks G G' are carried by independent frames K K', which are made capable of sliding along the shafts J J' and of rocking with them and the arms I I'.

On the rocking and sliding shafts J J' are fast arms L L', each of which has a toe-piece, g , and wing h , against which cams M M' and N N', secured to the shaft F, respectively operate. Said shaft F also carries revolving toes or cams O O', that operate under or

against the sloping lower ends of legs i i' , arranged to project from the sliding frames K K'.

The cams M M', N N', and O O' are so pitched or set on the shaft F as to act alternately on the sliding frames K K' and shafts J J', for the purpose of securing to the knives D D' their alternate actions.

The downward pressure or action of the knives during their forward curvilinear or folding stroke is secured by springs P P' when the reduced portions of the cams M M' come over the toe-pieces g of the arms L L', said springs then serving to press upon said arms, so as to tilt or rock the shafts J J' in a direction that will cause the arms I I' to depress the knives. While this motion is taking place the cams O O' act upon the inclined bottoms of the legs i i' of the sliding frames K K', which moves the racks G G' to secure to the knives their forward curvilinear movement. Toward the completion of this latter action, or, rather, as said action is completed, the cams N N' act upon the wings h of the arms L L', to slide the shafts J J', for the purpose of giving to the knives, through the arms I I', fast on said shafts, their straightforward or feeding motion, as hereinbefore referred to. This done, springs Q Q' serve to throw the shafts J J' back again, the cams M M' come round to act upon the arms L L', so that the knives are lifted and springs S S' act upon the sliding frames K K', to work, through the racks G G' and pinions H H', the knives D D' back to their original positions. It should be understood, however, that these several actions as produced by the cams and springs take place alternately on opposite sides of the machine, so that the one knife first advances and retires, and then the other.

What is here claimed, and desired to be secured by Letters Patent, is—

1. A plaiting knife or blade having a compound movement or series of movements, which consist of a rocking or rising-and-falling motion, a curvilinear sweep or action, and a straightforward movement in the line of feed, essentially as described.

2. The combination, for the production of a double-pointed plaited trimming, of the two knives D D', constructed and operating, in relation to each other, substantially as specified.

3. The combination of the rocking and sliding frame K or K' with the shaft J or J', the arm I or I', the rack G or G', and the pinion H or H' on the spindle e or e' of the knife D or D', essentially as described.

4. The combination of the cams M, N, and O, or M', N', and O', and the springs P, Q, and S, or P', Q', and S', with the sliding and rocking frame K or K' and the rocking and sliding shaft J or J', substantially as specified.

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Witnesses:

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R. E. RABEAU.