R. VOLLSCHWITZ.

Embroidering Attachment for Sewing-Machines.

No. 211,279. Patented Jan. 7, 1879.

Fig. 1.

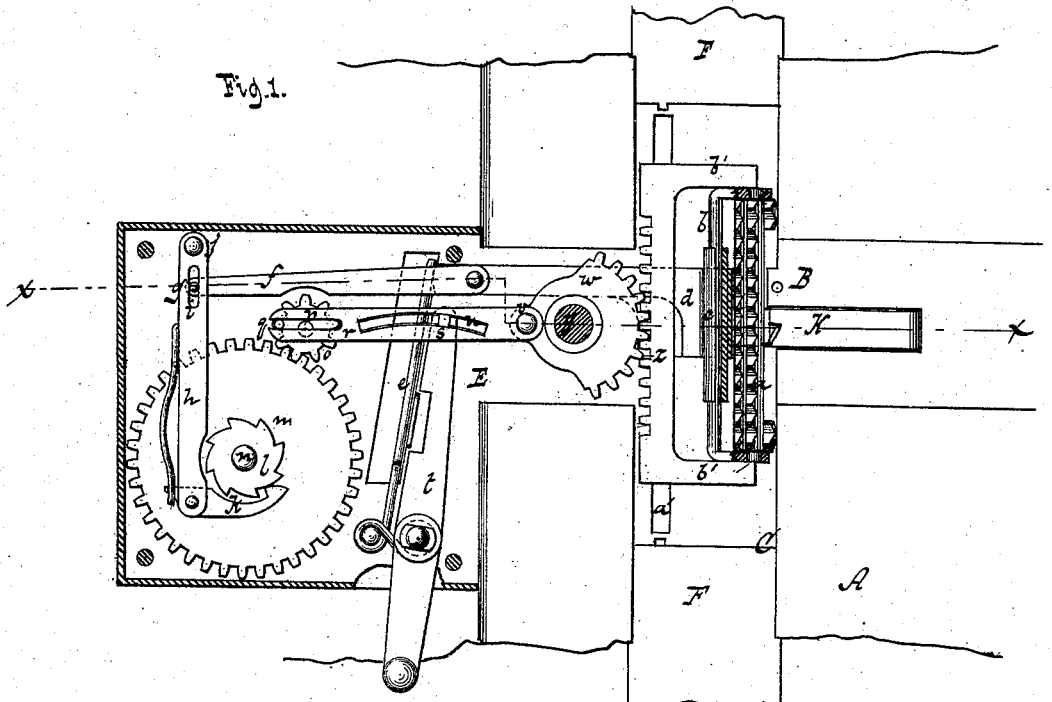


Fig. 2.

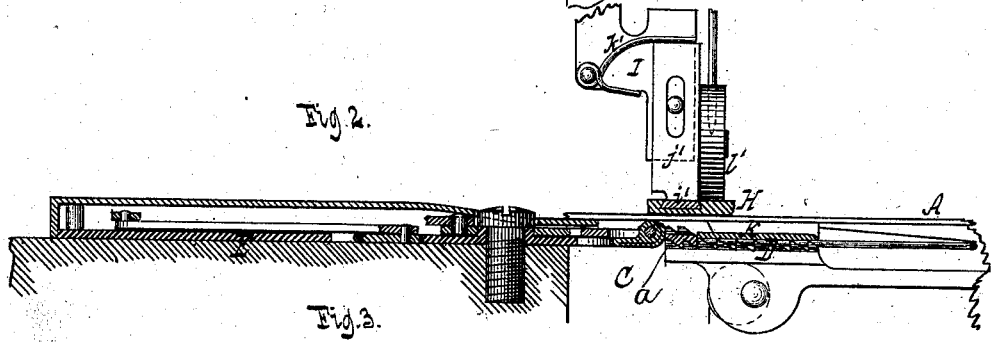


Fig. 3.

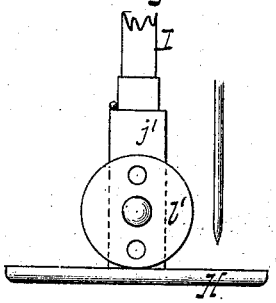


Fig. 4.

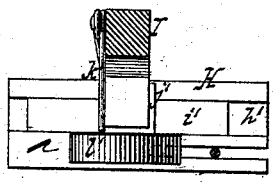
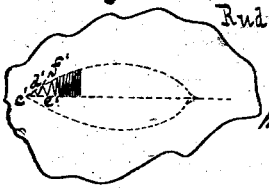


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

RUDOLPH VOLLSCHWITZ, OF ELIZABETH, NEW JERSEY.

IMPROVEMENT IN EMBROIDERING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **211,279**, dated January 7, 1879; application filed August 1, 1878.

To all whom it may concern:

Be it known that I, RUDOLPH VOLLSCHWITZ, of Elizabeth, in the county of Union and State of New Jersey, have invented a new and Improved Attachment to Sewing-Machines, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a plan or top view, some parts having been removed to expose the parts below. Fig. 2 is a longitudinal vertical section in the plane *x x*, Fig. 1. Fig. 3 is a front view of the presser-foot. Fig. 4 is a sectional plan of the same.

Similar letters indicate corresponding parts.

This invention consists in the combination, with the feed-dog which serves to impart to the work in a sewing-machine the requisite step-by-step movement, of a secondary feed-dog, which rests upon and is actuated by the main feed-dog, and of mechanism which is actuated by the main feed-dog, and is adapted to impart to the secondary feed-dog a lateral movement at right angles to the regular feed motion. With the secondary feed-dog is combined a presser-foot, adapted to slide in a lateral direction, so that the work can readily follow the lateral movements of the secondary feed-dog.

In the drawing, the letter A designates the cloth-plate of a sewing-machine, in which is secured the throat-plate B, the machine being provided with a shuttle-race, C. In the throat-plate is an opening, through which acts the ordinary feed-dog D, the movements of which are produced by the well-known four-motion mechanism.

The mechanism which constitutes my embroidery attachment is mounted on a plate, E, which is fastened on the cloth-plate A, the slides F F, which cover the shuttle-race, being partially drawn back, as shown in Fig. 1. Said mechanism consists of the secondary feed-dog *a*, which is provided at its end with gudgeons, that have their bearings in a yoke, *b*. This yoke swings in an eye, *c*, which is secured to a slide, *d*, so that the secondary feed-dog *a*, which rests on the main feed-dog D, can follow the rising and falling motion of said main feed-dog.

The slide *d* is fitted in a guide-groove in the plate E, and it stands opposite to the main feed-dog D, being subjected to the action of a spring, *e*, which has a tendency to force the same toward the main feed-dog. When the main feed-dog moves forward it strikes the end of the slide *d*, and thereby the forward motion of the main feed-dog is transmitted to the secondary feed-dog *a*.

To the slide *d* is pivoted a rod, *f*, which engages, by means of a pin, *g*, with the lever *h*, the pin *g* being made to work in a slot, *i*, so that the same can be moved toward and from the fulcrum *j* of the lever *h*, and thereby the throw of said lever can be regulated.

To the outer end of the lever *h* is pivoted a spring-pawl, *k*, which engages with a ratchet-wheel, *l*, secured to a cog-wheel, *m*, both the cog-wheel and the ratchet-wheel being mounted on a stud, *n*, on which they revolve freely. The cog-wheel *m* engages with the pinion *o*, which revolves on a stud, *p*, and from which projects an eccentric wrist-pin, *q*, which engages with the slotted end of a lever, *r*. This lever has its fulcrum on a stud, *s*, which projects from the end of a lever, *t*, said stud being made to engage with a segmental slot, *u*, in the lever *r*, so that by turning the lever *t* the position of the fulcrum *s* can be changed. The lever *r* connects by a pivot, *v*, with the segmental gear *w*, which is mounted on a stud, *y*, and engages with the rack Z. This rack slides in a slot, *a'*, in the plate E, and from its ends extend arms *b'*, which straddle the yoke *b*.

When the main feed-dog D strikes the slide *d* the cog-wheel *m* receives a revolving motion proportionate to the stroke of the lever *h*, and this motion is transmitted, by means of the pinion *o*, lever *r*, and segment *w*, to the sliding rack Z, so that the secondary feed-dog *a*, while being pushed forward to produce the regular feed motion of the work, receives a lateral movement at right angles to the regular feed motion. This lateral motion takes place once for every stroke of the needle, first in one direction and then in the other, the pinion *o* being so proportioned in relation to the cog-wheel *m* that it receives at least one-half a revolution for each stroke of the slide *d*.

In embroidering a leaf, such as shown in Fig. 5, the needle is caused to pierce the work

at the point c', and as it rises the work is fed forward by the regular feed motion, the lateral motion of the secondary feed-dog a being reduced to a minimum by means of the lever t. At the next downstroke the needle pierces the work at the point d', and at its subsequent downstroke at the point e', the lateral movement of the secondary feed-dog being adjusted at every stroke of the needle to conform to the contours of the leaf, thus producing a series of zigzag stitches, which, however, lie quite close together, so that the surface of the leaf, when finished, will be completely covered by the embroidering-thread.

In order to allow the work to follow freely the motion of the secondary feed-dog, I employ a presser-foot, H, provided with a groove, h', which engages with a guide, i', secured to a U-shaped bracket, j', which slides up and down on the lower end of the presser-slide I, being subjected to the action of a spring, k', so that the presser-foot is free to adapt itself to inequalities in the thickness of the work.

On the U-shaped bracket j' is secured an anti-friction roller, l', which bears upon the presser-foot H, so that this presser-foot moves easily on its guide i'.

The main feed-dog D is protected by a covering-plate, K, so that its teeth are prevented from catching in the work when my embroidery attachment is used.

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

1. The combination, with the feed-dog which serves to impart to the work in a sewing-machine the requisite step-by-step movement, of a secondary feed-dog, which rests upon and is actuated by the main feed-dog, and of mechanism which is actuated by the main feed-dog, and adapted to impart to the secondary feed-dog a lateral movement at right angles to the regular feed motion, substantially in the manner and for the purpose herein shown and described.

2. The combination, with the main feed-dog D, of a yoke, b, a secondary feed-dog a, mounted in said yoke, a slide d, having an eye, c, in which the yoke is adapted to swing, and a spring, e, acting on the slide for forcing the same with the yoke and secondary feed toward the main feed-dog, both of said dogs being on substantially the same horizontal plane, as and for the objects set forth.

3. The combination, with the main feed-dog D, secondary feed-dog a, yoke b, and slide d, of rack Z, having arms b', a pivoted segmental gear, w, meshing with the rack, and mechanism, substantially as described, for operating the segmental gear to reciprocate the rack, as and for the objects set forth.

4. The combination, with the main feed-dog D, secondary feed-dog a, yoke b, slide d, rack Z, having arms b', segmental gear w, lever r, rod f, lever h, pawl k, ratchet l, and gears m and o, of a regulating-lever, t, adjustably connected with the lever r, substantially as and for the purposes set forth.

5. The bracket j', provided at its lower end with a guide, i', in combination with a presser-foot, H, having a longitudinal groove, h', engaging the guide i', whereby the presser-foot is adapted to slide on said guide, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 24th day of July, 1878.

RUDOLPH VOLLSCHWITZ. [L. S.]

Witnesses:

W. HAUFF,

OTTO HUFELAND.