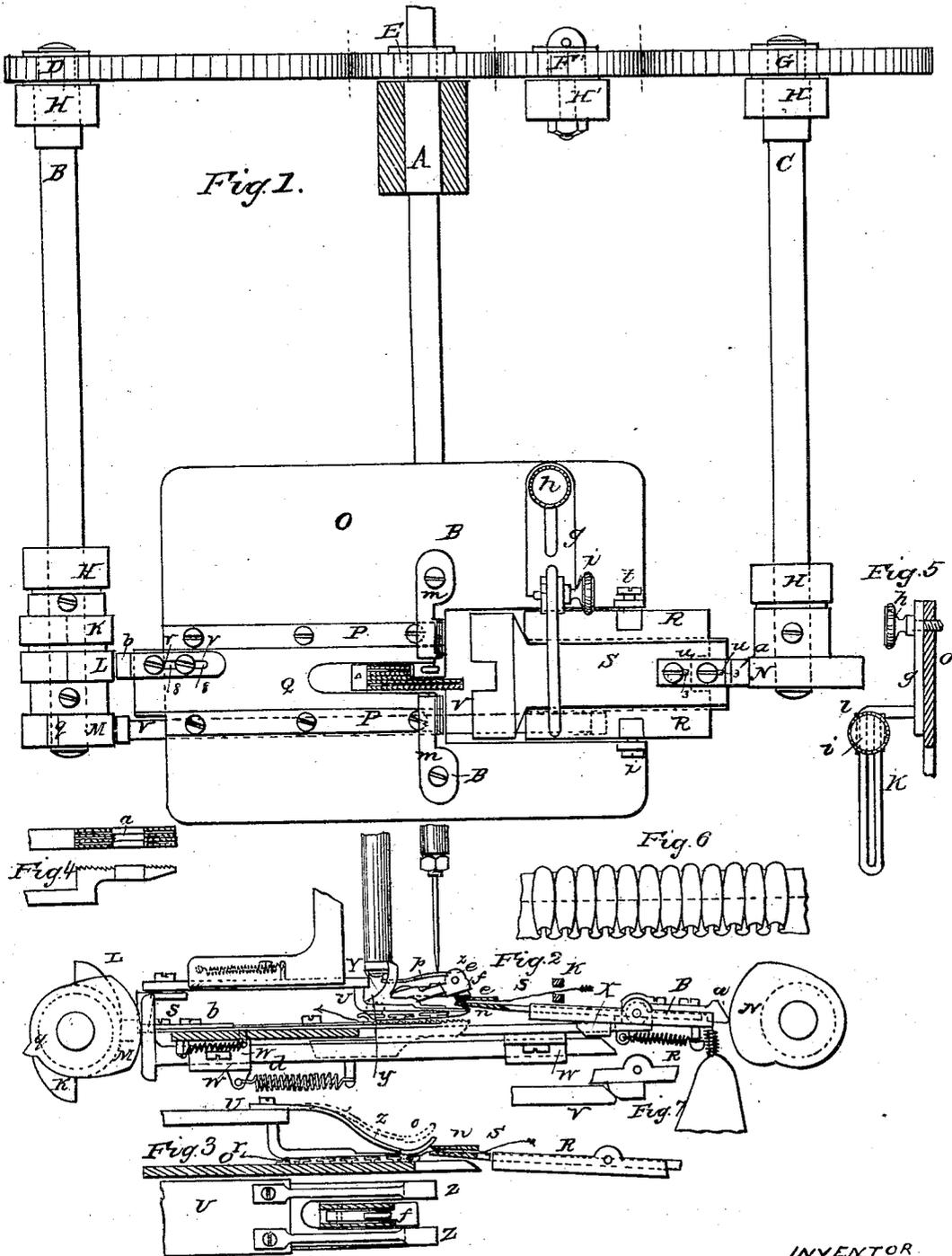


A. HECHT.

Box Plaiting Attachment for Sewing Machines.

No. 50,473.

Patented Oct. 17, 1865.



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## IMPROVEMENT IN BOX-PLAITING ATTACHMENT FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 50,473, dated October 17, 1865.

*To all whom it may concern:*

Be it known that I, ANSEL HECHT, of the city, county, and State of New York, have invented a new and useful Improvement for Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings and the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 represents a top view of the sewing-machine with the arm which carries the needle and presser-foot removed. Fig. 2 represents a sectional side view of the box-plaiting attachment. Fig. 3 represents a side view of a modified form of devices for laying down the folds on both sides of the feeder, and of the top of the feeder, needle-orifice, and upper plaiting-sides. Fig. 4 represents a top and side view of the feeder. Fig. 5 represents a side view of the guide. Fig. 6 represents a perspective view of the mode of box-plaiting with the line of stitch. Fig. 7 represents a sectional view of the projections under the plaiter.

To enable others skilled in the art to make and use the improvement, I will now describe its construction and operation.

The improvement is designed to accomplish box-plaiting by means of any of the known chain-stitch sewing-machines now in existence with the plaits of any width or dimension, or of any textile materials, such as silk, wool, cotton, &c.

The improvement herein described is represented as attached to the Willcox & Gibbs sewing-machine.

By means of the part herein shown the seam may be effected near the edges of the material or in the middle thereof, as represented in Fig. 6. The four frames H, Fig. 1, are journals for the axis B and C. The four frames H and the journal H' are fixed upon the table-plate of the machine.

To the axis A, Fig. 1, is attached the spur-wheel E, and the shaft B bears the cog-wheel D, and on the other end of said shaft the eccentrics K L M. The spur-wheel F', on the shaft in frame H, is a pinion like the wheel E. The axis C carries the cog-wheel G, and on the other end the eccentric end. The sizes of the wheels E and D are in proportion as one to four, and the wheels E and G in proportion as one to two.

The plate O, Fig. 1, represents the table of

the sewing-machine, upon which the rails or metallic strips P P are screwed. Between these the pusher or lower plaiter, Q, may slide forward and backward.

R is a device or frame-work which oscillates up and down and is held by journals or pins *t t*, as shown in Fig. II.

I construct the plaiter S with a horizontal flat mouth in the front. (See sectional views *n*, Figs. II and III.) The upper plaiter, U, moves in the frame-work T, Fig. II. Each plaiter S Q U is provided with an incline (marked, respectively, *a b c*), each of which is held against its respective eccentric N L K by a spring. In this manner the plaiters are moved positively in and out or forward and backward. The shifter V, Fig. II, moves in the frame blocks or slides W W, which are securely attached to the under side of the table-plate O by means of screws, as shown in Fig. II, and is pressed by the spring *d* against the eccentric M. This shifter being pushed forward, (see Fig. II,) raises the under projection, X, of the frame-work R, the mouth-plaiter S being enabled by this means to push over the upper plaiter, U. When the eccentric M has ceased to move the shifter and it has resumed its former position the mouth-plaiter S will sink and the end of the shifter V will appear close to the projection X, as seen in Fig. VII. During this performance the lower plaiter advances and the mouth-plaiter S moves forward and under it, and when this is accomplished the lower plaiter, Q, moves backward. Now the shifter V is forced by the small projection *q* on the eccentric M, Fig. II, in order to advance it a little and to raise the projection X, which thus elevates the frame R to such height as to raise up the lower edge of the mouth-plaiter S, when the feeder of the sewing-machine will draw in the material.

The feeding-pedal Y and *f'* of the sewing-machine is composed of two parts. (See Y, Fig. II.) The presser-foot Y is slotted, so as to receive the movable part or lever *f'*, and which is pivoted to it by the pin *y*. When the upper plaiter is pushed forward, as seen in Fig. II, the projection or lever *e* (which is a part belonging or is fastened to the upper plaiter, U) raises the part *f'* by means of a small pin, Z, which projects on the side thereof, and upon which the spring *p* presses, so as to allow the mouth-plaiter S, with the material, to move inwardly, as seen in Fig. II.

For the purpose of plaiting wide or narrow

ribbons different feeding devices may be used, the device represented in Fig. I being designed to plait material of one-half inch, and the device in Fig. IV to plait material two inches wide or more. This latter device or feeder is of uniform shape, with a large longitudinal orifice, L, the sides of which present smooth surfaces. I construct a guide, *g*, in the form shown in Figs. I and V. The same is placed over the mouth-plaiter S, which allows the ribbons or other material to move forward and in a straight direction. This guide is movable by means of the thumb-screw *h*. The slot *k*, Fig. V, admits of the contraction or enlargement of the opening by means of the slide *l* and the thumb-screw *i*, and agreeably to the size of the ribbons or material, as shown in Figs. I and V.

The metallic plates *m m*, Fig. I, have their inner edges curled upward, somewhat similar to the metallic springs *Z Z* in Fig. III, and are permanently fastened on the sewing-machine by screws *B B*, and under which both plaiters *Q* and *U* move backward and forward. The purpose of these metallic plates *m m* is to lay down the folds on both sides of the feeder.

Fig. III represents another device for plaiting, providing two brass springs, *Z Z*, securely attached to the frame *U*, the springs holding the fold in the position, as seen at *r*, ready to be drawn in, and when the upper plaiter has attained its position forward, and the mouth-plaiter *S* has entered the material upon the feeder, we perceive then the new position of the metallic springs *Z Z* in the dotted lines *O*. The mouth-plaiter *S* slides along the sloping sides of the upturned springs *Z Z*. When the upper plaiter retires the metallic springs *Z Z* go downward momentarily and compress the folds, as seen at *r*, Fig. III. With this arrangement the projection *e*, Fig. II, and the springs *p* will have to be placed behind the needle, (the needle may pierce through an opening in the lever *f*,) but necessarily through the feeder and the orifice *L*, as seen in Fig. IV. To explain more fully its operation, I introduce the material through the slot *k* in the guide *g*, thence through the mouth-plaiter *S* until it has reached a sufficient distance under the feeding device *Y*. Upon giving motion to the machine the lower plaiter, *Q*, will move forward or toward the operator. The plaiters, however, are so arranged as to admit of their making small or larger plaits—*i. e.*, by moving the screws *u u* and *v v*, as shown in Fig. I, which move in slots *r r s s*. The mouth-plaiter *S* readily moves under the lower plaiter, *Q*, and then forms the plait or fold. After this the feeder will move upward and hold the formed plait until the lower plaiter, *Q*, recedes, and the mouth-plaiter *S* moves upward or parallel with the upward motion of the feeder. The feeding apparatus *A* will draw in the plait or fold, after which the needle will descend through it to stitch or secure the same. During the returning of the mouth-plaiter *S* and

the advancing of the upper plaiter, *U*, the feeder *A* takes up once more a plait and another stitch is made. In each single plait are two stitches. The upper plaiter, *V*, being pushed forward raises the lever *f*, in order that the mouth-plaiter may push forward and form another plait or fold, as shows in Figs. II and VI. This being accomplished the feeder returns, and the upper plaiter moves backward momentarily, the lever-jaw *f'* descends and keeps the fold steady, after which the feeder closes in and the needle descends for the purpose of forming the stitch. During the return movement of the mouth-plaiter *S* and the approaching of the lower plaiter, *Q*, the needle descends again. Thus every double fold receives four distinct stitches. All these motions are performed in this manner by means of the different shapes of the eccentrics, the most important features of which are the positions of the projections on them. First, the projection on *L* acts, pushing forward the lower plaiter, *Q*. Then the projection *g* on *M* pushes the shifter *V*, and the upper plaiter, *U*, is pushed by the projection on *K*.

The size of the wheel *D*, Fig. I, is in the proportion to the size of the wheel *G*, as two to one—*i. e.*, the wheel *G* performs two revolutions during a single revolution of *D*. This has the effect of actuating mouth-plaiter *S*, which is moved by means of wheel *G*, and the eccentric *N* makes two advances for a single advance of each of the other plaiters, the first below the lower plaiter, *Q*, the second over the upper plaiter, *U*, thus forming the two parts of the plait. Meanwhile the shifter *V* is working also, effecting the lifting of the frame-work *R*, in which the mouth-plaiter *S* is sliding, so as to raise the mouth-plaiter over the upper plaiter, *U*.

I do not claim, broadly, the sewing-machine herein represented; but

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

1. The lower and upper plaiter, *Q* and *U*, operating substantially as described, and for the purposes herein set forth.
2. The mouth-plaiter *S*, acting in connection with the lower and upper plaiter, *Q* and *U*, as and for the purpose described.
3. The lever *f'*, operating as described, in combination with the upper and lower plaiters.
4. The metallic springs *Z Z*, Fig. III, or plates *m m*, Fig. I, expressly for the uses and purposes set forth.
5. The guide *g*, in connection with the mouth-plaiter *S*; as and for the purpose described.
6. The cog-wheels *D E F G*, arranged and proportioned to operate with the lower, upper, and mouth plaiters, *Q U S*, so that every double fold may obtain four stitches, substantially as described and set forth herein.

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Witnesses:

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