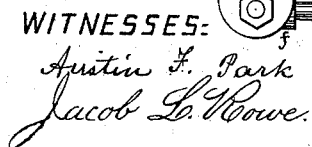


2 Sheets—Sheet 1.

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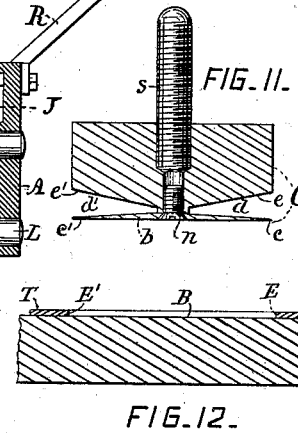
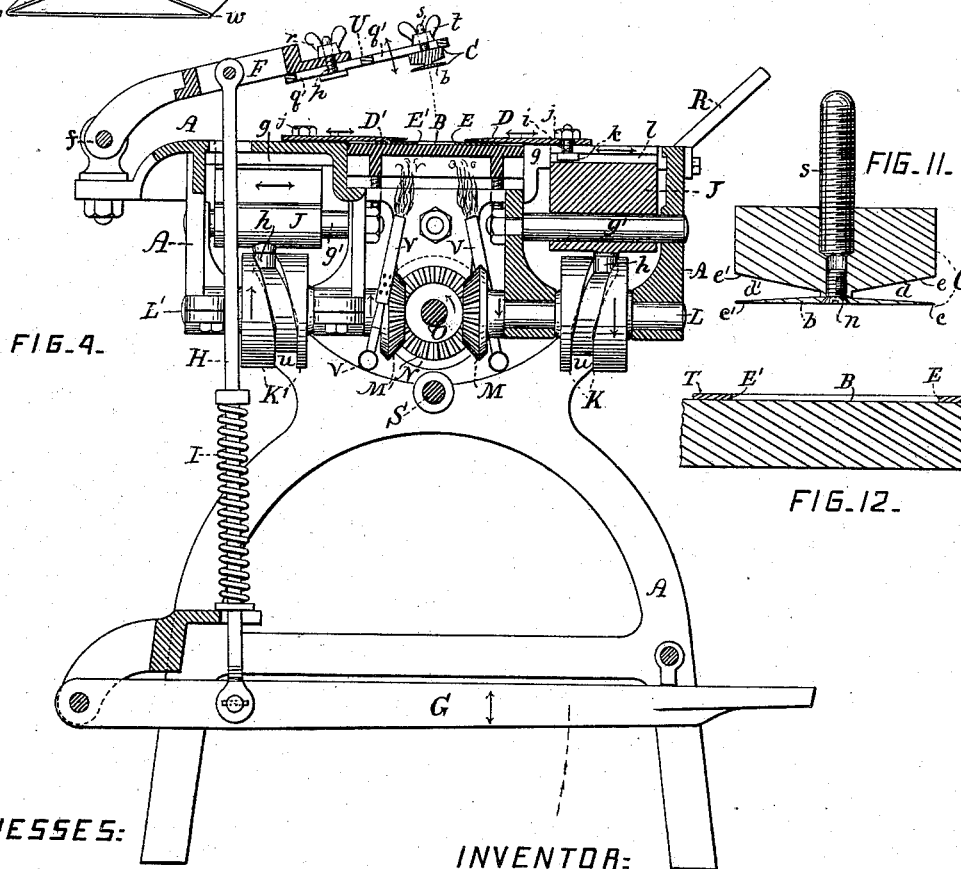
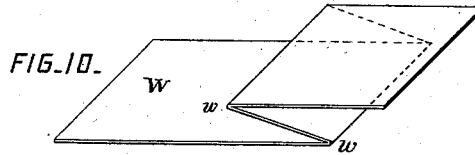
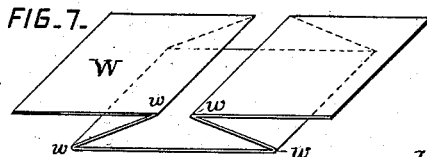
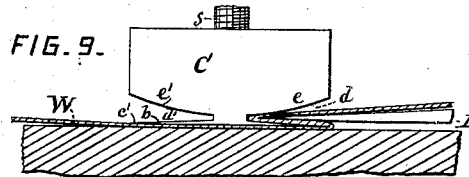
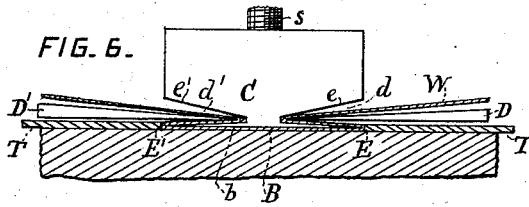
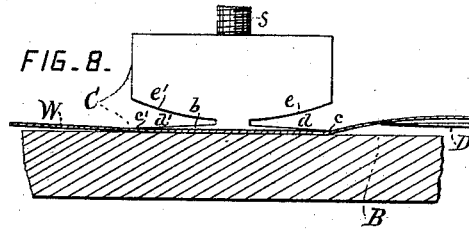
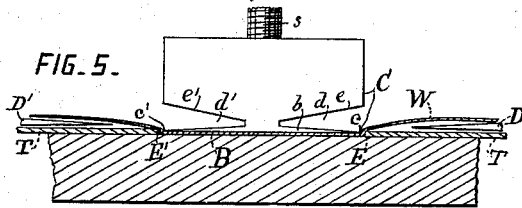


INVENTOR:  
George Boyley

G. BOXLEY.  
PLAITING MACHINE.

No. 263,014.

Patented Aug. 22, 1882.



WITNESSES:

Austin F. Park,  
Jacob L. Howe

INVENTOR:

George Boxley

# UNITED STATES PATENT OFFICE.

GEORGE BOXLEY, OF TROY, NEW YORK, ASSIGNOR OF ONE-HALF TO  
GEORGE P. IDE, OF SAME PLACE.

## PLAITING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 263,014, dated August 22, 1882.

Application filed March 29, 1882. (No model.)

### *To all whom it may concern:*

Be it known that I, GEORGE BOXLEY, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Plaiting-Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to apparatus or mechanism for plaiting blanks for shirt-bosoms and similar articles; and the general object of my improvements is to produce mechanism by which a person can easily plait such blanks accurately and with greater rapidity and less expense than heretofore. I attain that object by the mechanism illustrated in the aforesaid drawings, in which—

Figure 1 is a plan of a machine for plaiting blanks for shirt-bosoms, viewed from above, a part being shown in section. Fig. 2 is a plan of the upper portion of the same machine viewed from below, some parts being represented in section and some removed. Fig. 3 is a partial section at the line  $z z$  in Fig. 1. Fig. 4 is an elevation of a section at about the line  $y y'$   $y^2 y^3$  in Figs. 1 and 2, viewed in the direction indicated by the arrow  $x$ . Figs. 5 and 6 are partial sections of the plaiting devices of the same machine on a larger scale and illustrating their action in forming a box-plait such as is shown in Fig. 7. Figs. 8 and 9 are partial sections, illustrating the action of the plaiting devices in forming a plain plait, represented in Fig. 10. Fig. 11 is a sectional elevation of the plait-former, and Fig. 12 is a section of the plait-bed of the machine illustrated by Figs. 1, 2, and 4.

Similar parts are marked by like letters in the different figures, and the directions in which some of the parts move are indicated by adjacent arrows.

A is a stationary frame supporting the other parts.

B is a bed-plate or surface, against which the blank fabric W, Figs. 5, 6, 8, 9, is pressed and held by the former C in plaiting the fabric. The former C is shown pressed against the bed B in Fig. 1 and upon the fabric W on the bed in Figs. 5, 6, 8, and 9, and removed from the bed in Figs. 4 and 11. The former has,

the portion  $b$ , which presses the fabric against the bed, in the shape of a thin plate having a lengthwise blade-like edge,  $c$ , or two such edges,  $c c'$ , opposite to each other, as shown in Fig. 11. The said former also has a narrow tapering longitudinal recess,  $d$ , or two such recesses,  $d d'$ , formed by and between the pressing-plate  $b$  and the overhanging part  $e$  or parts  $e e'$  of the former.

D is a plaiting-blade adapted and arranged for folding the fabric W over and against the blade-edge  $c$  of the former and for folding and forcing the fabric into the recess  $d$  in the former, as indicated in Figs. 6 and 9; and  $D'$  is a plaiting-blade adapted and arranged for folding the fabric over the blade-edge  $c'$  and into the recess  $d'$  of said former, as shown in Fig. 6, the fabric W being first placed on the bed B and pressed thereon by the former C, as illustrated in Figs. 5 and 8.

To facilitate the plaiting of fabrics that are thick, stiff, or difficult to fold, I furnish the bed-plate B with the stationary low ledge E or ledges E E', Figs. 1 and 12, parallel to and a little apart from the edge  $c$  or edges  $c c'$  of the former when depressed upon the bed-plate, so that the fabric will be somewhat bent upward by and between said ledge or ledges and edge or edges, respectively, when the former C shall be pressed upon the fabric on the bed, as illustrated in Fig. 5. In plaiting bosom blanks or fabrics that are easy to fold over a blade-like or sharp edge the ledge E or ledges E E' can be dispensed with, as shown in Figs. 8 and 9.

To provide means whereby a person can easily and repeatedly depress the former C into exactly the same position upon the bed B and remove the same from the bed, I secure said former to an arm, F, which is hinged or pivoted at  $f f'$  to the frame A, and connect the arm F to a treadle, G, by a rod, H, that is furnished with a spring, I, Fig. 4, so that by depressing the treadle the spring I is compressed and the former C is pressed upon the bed or fabric on the bed, and that by releasing the treadle the spring will elevate the treadle and the arm F with the former, as shown in Fig. 4.

To provide means whereby a person can directly by hand accurately force the blades D

D', or either of them, into and out of the tapering recesses  $d d'$ , respectively, and thereby plait the fabric when the former C is pressed upon the fabric on the bed, I secure each plaiting-blade to a slide or slides, J, Figs. 1, 3, and 4, fitting suitable stationary ways,  $g g'$ , on the frame.

To provide means whereby a person can instantly apply power from a rotating pulley, wheel, or shaft to force the plaiting-blades D D', or either of them, into and out of the corresponding recess or recesses,  $d d'$ , in the former C, and thereby plait the fabric when said former is pressed upon the fabric on the bed, I furnish each of the slides J, that carry the blades D D', with a follower,  $h$ , Fig. 4, which engages with a separate grooved cam, K or K', Figs. 2 and 4, fast on a rotary shaft, L or L', having a bevel-gear, M or M', engaging with a bevel-gear, N or N', fast on a shaft, O, having a sliding friction-clutch pulley, P, Fig. 1, which can be instantly engaged with and disengaged from the rotating driving-pulley Q by a hand-lever, R, to which a retracting-spring, S, Fig. 2, is connected by a rod, S', to assist in disengaging the clutch-pulley P from said driving-pulley. The pairs of cams K K and K' K' are similar, and are geared to rotate simultaneously in equal times, and are arranged to move the two pairs of slides J J and the plaiting-blades D D' a certain uniform distance to and fro into and out of the corresponding recesses,  $d d'$ , in the former C, when the latter is depressed upon the fabric on the bed. In Figs. 2 and 4 the cams K K' are represented as holding the blades D D' away from the former, as shown in Figs. 1 and 4.

To provide means for altering the depths of the uniform to-and-fro movements of the blades D D' into the corresponding recesses,  $d d'$ , in the former C, to make different widths of the parts  $w w$ , Figs. 7 and 10, in the plaits, each blade is adjustably secured to the slide J by screw-bolts  $i$ , Figs. 1, 3, and 4, extending through perforations in the blades, and having screw-nuts  $j$  and heads  $k$  fitting in and adjustable along recessed grooves  $l$ , Fig. 3, in the slides, or by having the screw-bolts stationary on the slides and extending through slots in the blades, as indicated by dotted lines at  $m$  in Fig. 1.

J' J', Fig. 1, are slides with screw-bolts  $i'$ , similar to the slides J, and operated by cams K<sup>2</sup>, Fig. 2, that are like the cams K K', and are secured to and operated by the shaft O; and the slides J' can have plaiting-blades or folders secured thereto by the screw-bolts  $i'$ , for use in plaiting or folding in the ends of bosom-blanks or other articles of cloth when pressed on the bed B by a suitable former.

V V, Fig. 4, represent Bunsen burners for moderately heating the bed-plate B by the combustion of a mixture of gas or hydrocarbon vapor and air, to increase the stability of the plaits formed by the apparatus in slightly-damp fabrics.

For convenience in constructing the former C and in changing its press-plate  $b$  for others of different widths to produce box-plaits of corresponding various breadths, the part  $b$  is made separate from the other portion and secured thereto by screws  $n$ , Fig. 11, or by other suitable means.

For convenience in applying and securing the ledges E E' to the bed B, and in arranging them to fit the press-plates  $b$  of different widths and forms, I commonly make each ledge or both ledges on a plate, T, and secure the same to the bed by removable screws  $o$ , and have a separate plate T for each different width and form of press-plate  $b$ .

For convenience in securing and adjusting various sizes of the former C on the arm F, and in respect to the ledges E E' or to the plaiting-blades D D', or either of them, I mount the former on the arm by means of extension-fingers U, Figs. 1 and 4, which are adjustably secured at one end part to the arm by screw-bolts  $p$ , Fig. 4, extending through slots  $q$  in the fingers and perforations in the arms, and furnished with clamping-nuts  $r$ , and which fingers are adjustably secured at their other end parts to the former C by screws  $s$ , extending from the former through slots  $q'$  in the fingers, and having clamping-nuts  $t$ ; but any other suitable or equivalent means can be used for adjustably securing the fingers U to said arm and former.

In using the mechanism illustrated by Figs. 1, 2, and 4, a person first places the blank fabric W in proper position upon the bed B when the former C is elevated, as in Fig. 4, and the blades D D' are drawn back from the bed and ledges E E', as in Figs. 4 and 1. The person next depresses the treadle G, and thus, through the rod H and arm F, depresses and retains the former upon the bed, as indicated in Figs. 5 and 8. Then the person, by moving the lever R, engages the clutch-pulley P with the revolving pulley Q, which then rotates the cams K K', which in one revolution move the blades D D' so as to cause the blades to first force the fabric into the recesses  $d d'$  in the depressed former, as indicated in Fig. 6, and then retain the fabric in the recesses, while the followers  $h$  are in the dwells  $u u$ , Figs. 2 and 4, in the cams, and then withdraw from the recesses and leave the fabric folded thereon, whereupon the person stops and retains the blades in such withdrawn position (shown in Figs. 1 and 4) by timely disengaging the clutch P from the pulley Q by the lever R, and then releases the treadle G, and thereby causes the elevation of the former C with the plaited fabric, which latter is then slid off by hand from the former endwise if a box-plait is made, or sidewise if a plain plait is produced. In making box-plaits both of the blades D D' are used, as shown in Fig. 6; but in producing plain plaits only one of said blades is employed, as represented in Fig. 9.

The mechanism hereinbefore described, and represented in the accompanying drawings, embraces some parts and combinations of parts

that are similar to some of those embodied in the mechanism shown and described in my drawings and specification of United States Patent No. 199,615, and I do not herein claim  
 5 any parts or combinations of parts described or shown in said patent. My present invention may be considered in some respects an improvement upon some portion of that patented mechanism, which latter was not capable  
 10 of producing a box-plait like that shown in Fig. 7 nor a plain plait like that represented in Fig. 10.

What I claim as my invention is—

1. In a plaiting apparatus, the former C,  
 15 having the pressing plate *b*, with opposite blade-like edges, *c c'*, and the tapering opposite recesses, *d d'*, formed by and between said pressing-plate and the overhanging parts *e e'*, substantially as described.

2. The combination, with a bed, B, and a  
 20 former having a pressing-plate with a blade-like edge, *c*, and a tapering recess, *d*, of a plaiting-blade, D, all adapted and arranged together for conjoint action in forming a plait, substantially as described.

3. The combination, with the bed B and the  
 25 former C, having the tapering opposite recesses, *d d'*, and the pressing-plate *b*, with opposite blade-like edges, *c c'*, of the two opposite plaiting-blades, D D', all adapted and arranged for  
 30 conjoint action in producing a box-plait, substantially as described.

4. The combination, with bed B and the ledge  
 35 E along one side of the bed, of a former having a pressing-plate with a blade-like edge, *c*, and tapering recess *d*, and the plaiting-blade D, all adapted and arranged for conjoint action in forming a plait, substantially as described.

5. The combination, with the bed B and the  
 40 ledges E E' along opposite sides of the bed, of the former C, having the press-plate *b*, with opposite blade-like edges, *c c'*, and tapering recesses *d d'*, and the opposite plaiting-blades, D D', all adapted and arranged for conjoint action  
 45 in forming box-plait's, substantially as described.

6. The combination, with the bed B, former  
 50 having a press-plate with a tapering blade-like edge, *c*, and tapering recess *d*, and the plaiting-blade D, of means for depressing said form-

er upon and removing it from the bed, substantially as described, and means for inserting said plaiting-blade into and withdrawing it from said tapering recess, substantially as set forth.

7. The combination, with the bed B, former  
 55 C, having the press-plate *b*, with opposite blade-like edges, *c c'*, and opposite tapering recesses, *d d'*, and the opposite plaiting-blades, D D', of means for depressing and retaining said former  
 60 upon and removing it from the bed, substantially as described, and mechanism for simultaneously inserting said opposite plaiting-blades into and withdrawing them from said tapering recesses in the depressed former, sub-  
 65 stantially as set forth.

8. The combination, with the bed B, former  
 having the tapering recess *d* and a press-plate with a blade-like edge, *c*, and means for depressing and retaining said former upon and  
 70 removing it from the bed, substantially as described, of the plaiting-blade D and mechanism for moving the plaiting-blade a certain uniform limited distance to and fro into and out of said tapering recess in the depressed  
 75 former, substantially as set forth.

9. The combination, with the bed B, former  
 having the tapering recess *d* and press-plate with blade-like edge *c*, means for depressing and retaining the former accurately upon and  
 80 removing it from the bed, plaiting-blade D, and mechanism for repeatedly moving the plaiting-blade a certain uniform limited distance to and fro into and out of said recess in the former, substantially as described, of ad-  
 85 justing devices for altering the depth of said uniform to-and-fro movement of the plaiting-blade into said recess in the former, as set forth.

10. The combination, with the bed B, plaiting-blade D, and means for operating the lat-  
 90 ter, of the former C, hinged arm F, and extension-fingers U, adjustably secured to said arm and former, substantially as described.

In testimony whereof I hereunto set my hand, in the presence of two subscribing witnesses, 95 this 25th day of March, 1882.

GEORGE BOXLEY.

Witnesses:

FRANK B. TWINING,  
 JOHN H. BALKEN.