(Model.)

3 Sheets—Sheet 1.

G. W. PINE.

BOSOM PLAITING MACHINE.

No. 322,476. Patented July 21, 1885.

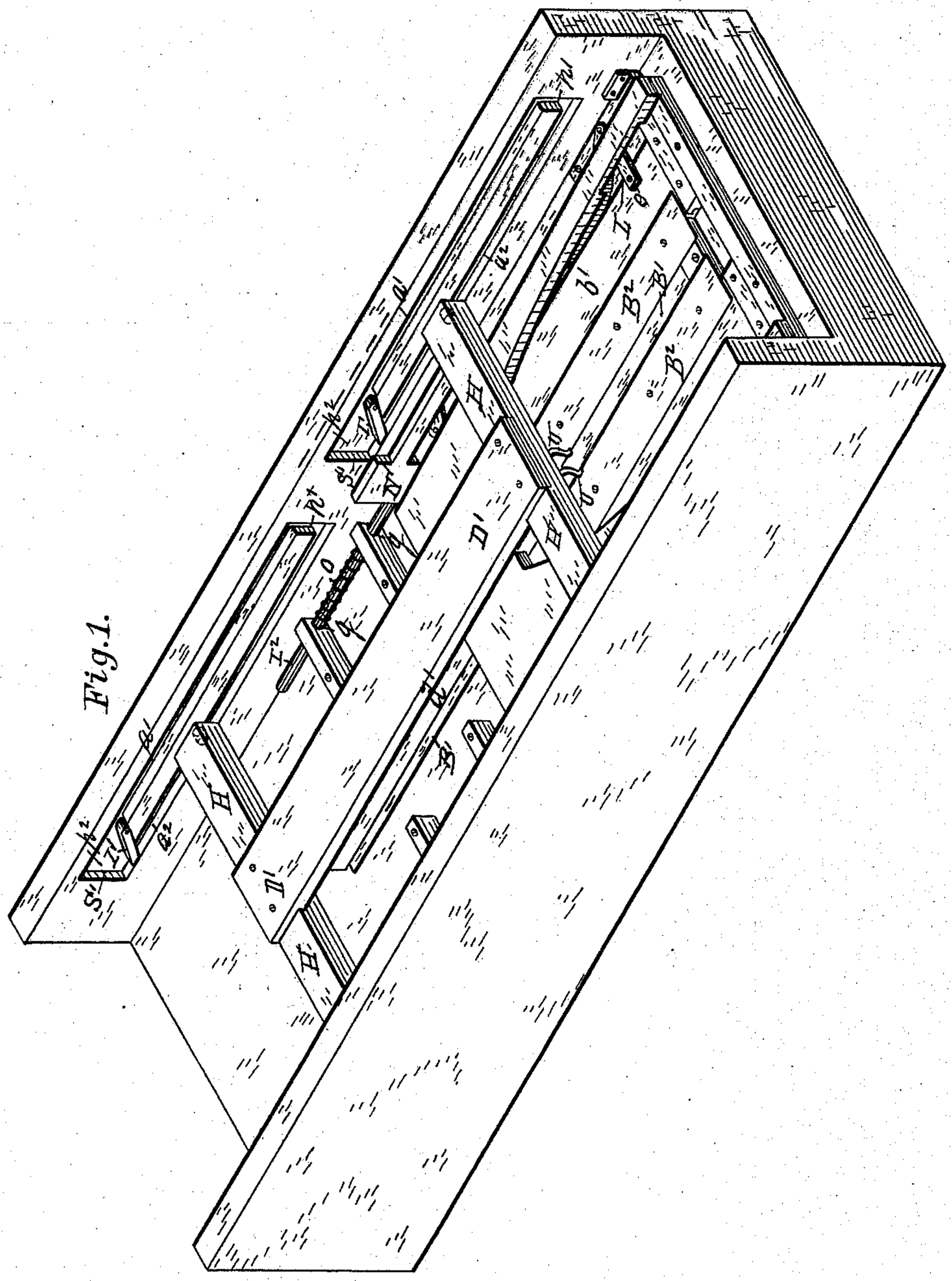

Fig. 1.

Witnesses:

Charles S. Brimhall

Stanley M. Holden

Inventor:

George W Pine

by W. E. Hagan his Atty

(Model.)

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Fig. 2.

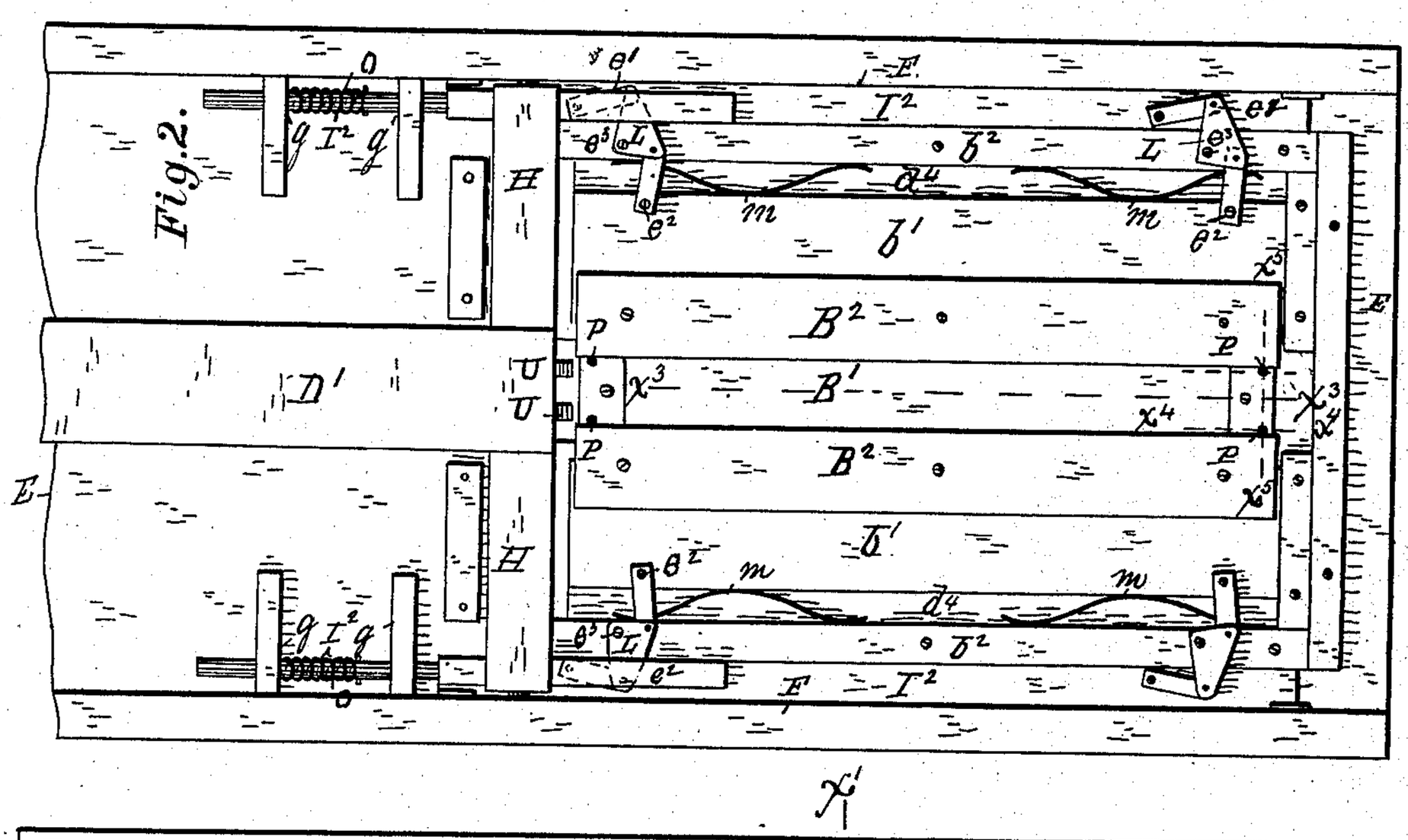
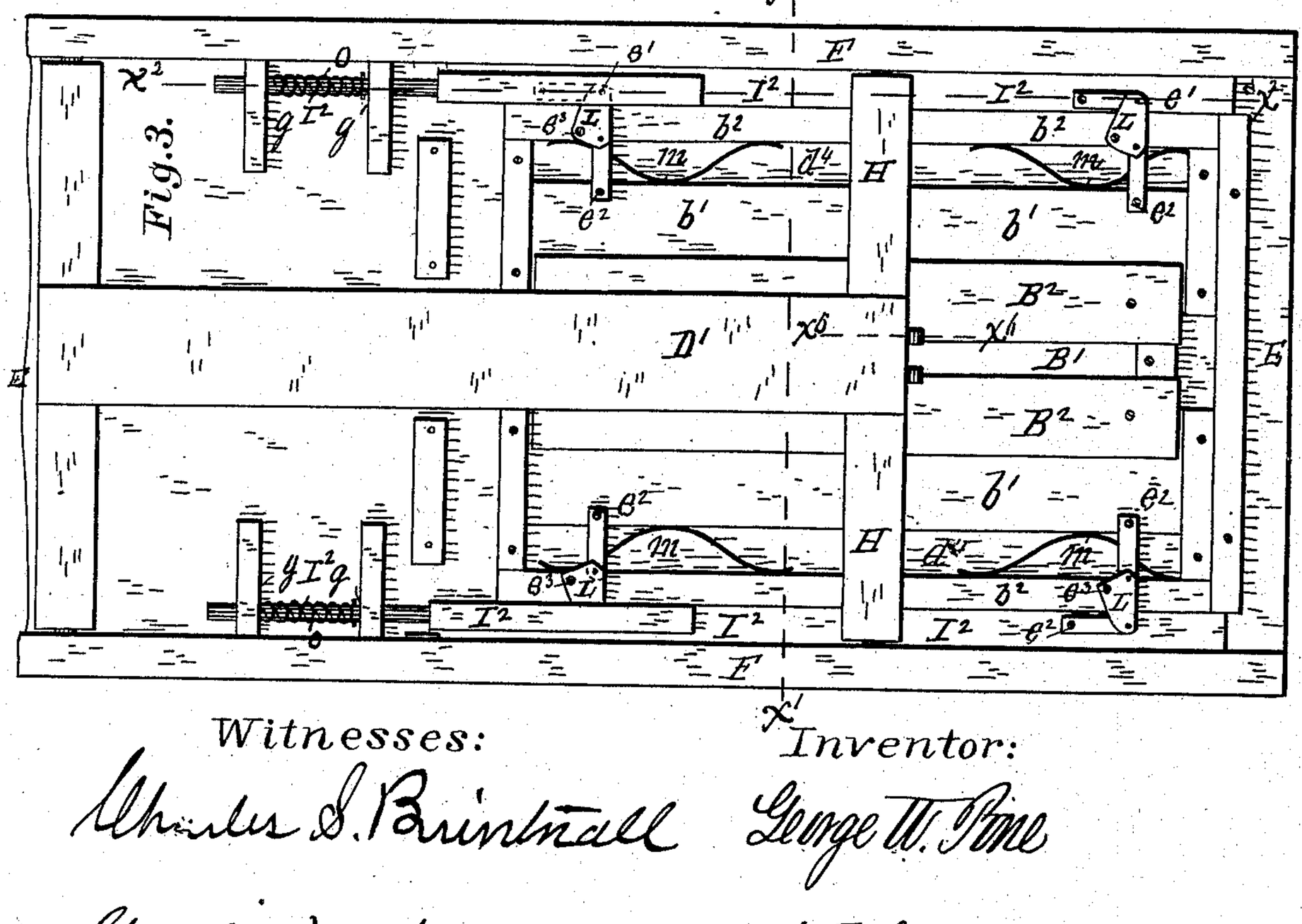


Fig. 3.



Witnesses:

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3 Sheets—Sheet 3.

G. W. PINE.

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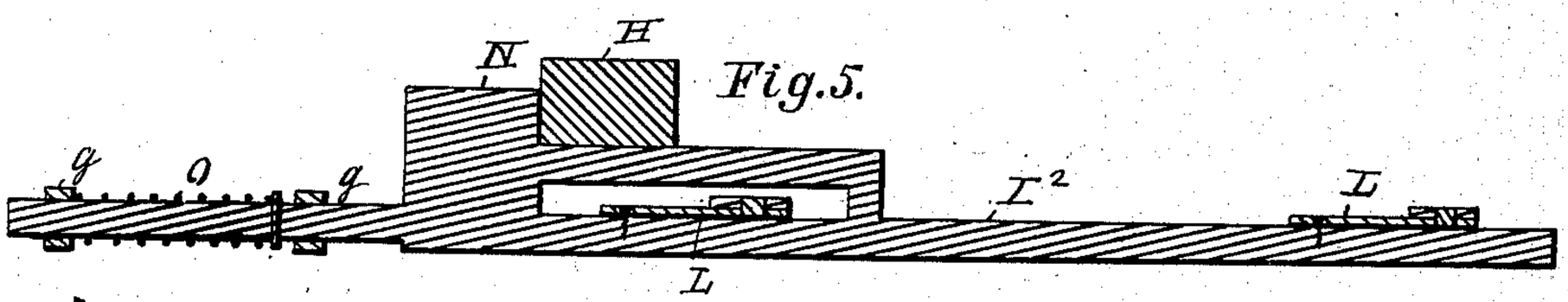

Fig.5.

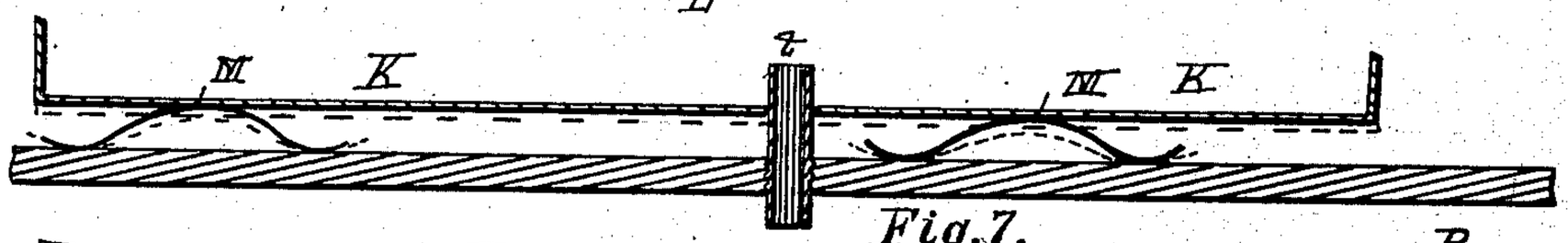

Fig.7.

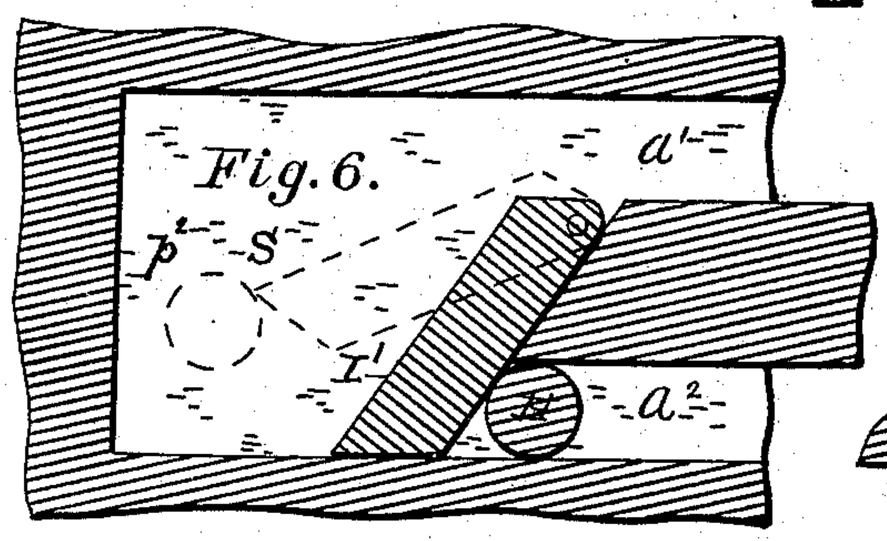

Fig.6.

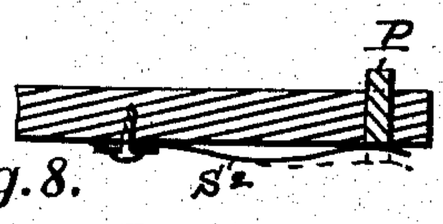

Fig.8.

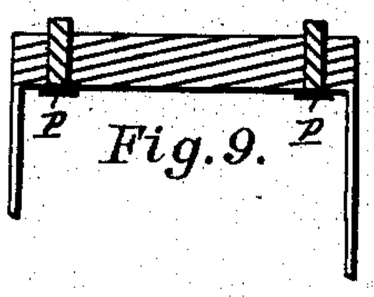

Fig.9.

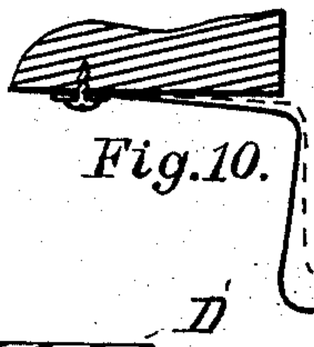

Fig.10.

Fig.4.

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UNITED STATES PATENT OFFICE.

GEORGE W. PINE, OF TROY, NEW YORK.

BOSOM-PLAITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,476, dated July 21, 1885.

Application filed September 26, 1884. (Model.)

To all whom it may concern:

Be it known that I, GEORGE W. PINE, of the city of Troy, county of Rensselaer, State of New York, have invented a new and useful Improvement in Bosom-Plaiting Machines, of which the following is a specification.

My invention relates to mechanism for producing the plait-folds used in shirt-bosoms and other articles; and my invention consists, as will be more fully detailed hereinafter in connection with its illustration, in the combination, with a plait-blade of the width at which the plait is to be folded, said blade being constructed and actuated to descend onto the bosom-blank, of two folding-blades arranged to be parallel with the edges of the said plait-blade and with the folding-blades actuated to slide in over the sides of the plait-blade so as to carry the fabric with them, to there remain stationary while the centrally-placed plait-blade is being drawn longitudinally in and through the plait-fold in the fabric and formed on it, with the side fold-blades actuated to separate and move out laterally and oppositely from the centrally-placed plate-blade after the latter has been drawn through the fold inclosing it.

My invention also consists in the subcombination of the parts of the mechanism, where performing specific function, as will be detailed in the claims.

Accompanying this specification, to form a part of it, there are three plates of drawings containing ten figures illustrating my invention, with the same designation of its parts by letter-reference used in all of them.

Of these illustrations, Figure 1 shows a perspective of the mechanism containing my invention. Fig. 2 shows a top view of the apparatus with the plait-blade frame and central plait-blade shown as drawn back to separate the side blades. Fig. 3 is another top view of the same apparatus with the central plait-blade frame in part drawn back and in position as when the side fold-blades are forced in over the side edges of the central plait-blades. Fig. 4 shows a cross-section taken on the line $x' x'$ of Fig. 3. Fig. 5 shows a section taken on the line $x^2 x^2$ of Fig. 3. Fig. 6 is a side view in part of one of the slideways in which the plait-blade frame moves and descends to return. Fig. 7 is a longitudinal section taken on the line $x^3 x^3$ of Fig. 2, and Fig. 8 is a section taken through one of the spring-pins and its spring, which keep the side folding-blades apart, said illustration being taken on the line $x^4 x^4$ of Fig. 2, and Fig. 9 is a section taken on the line $x^5 x^5$ of Fig. 2. Fig. 10 is a section taken on the line $x^6 x^6$ of Fig. 3.

The several parts of the mechanism thus illustrated are designated by letter-reference, and the function of the parts is described as follows:

The letter F designates the sides of the frame in which the mechanism is placed, and E its ends.

The letters S′ S′ indicate two sets of slideways formed on the interior faces of each of the opposite sides of the frame for the reciprocating traverse of the plait-blade frame, and these slideways are made with an upper and a lower track, the upper track being indicated at a' and the lower part at a^2, with passages at the ends where the upper and lower tracks connect, that one of the end passages of each of the slideways at the front being indicated at p' and that at the rear end at p^2. At the rear end in both sets of these tracks where they connect at p^2 they are constructed with inclined pivoted switches, (indicated at I′,) the use of which will be subsequently described herein.

The letter D′ designates the central plait-blade frame, and this frame has attached to its under surface by means of a longitudinally-arranged central support, d', a flat plait-blade, B′, having the requisite width and length at which it is desired to form the bosom-plait. The cross-heads of this frame, of which there are two, are indicated at H H, and they are each made to form, by means of their oppositely-tongued ends, a grooved connection in one of the two sets of tracks a' and a^2 of the slideways S′, as indicated at Figs. 1 and 4. The plait-blade frame thus made can be drawn rearwardly with the ends of the cross-heads H, each running in the lower tracks, a^2, of each set of said slideways, so as to under run and pass by the pivoted inclines I′, and returning frontwardly to run up on said inclines to the upper tracks, a', as shown at Fig. 6, and at the front ends by means of the end passes p' to again descend to the lower track, a^2.

The letters B^2 indicate twofold blades that

are adapted at their adjacent sides to be moved out laterally toward or from each other. These blades B^2 are longitudinally attached on their outer edges to bars b', so that the inner edges of the blades subtend those of the bars; and the letters b^2 indicate two fixed bars, each of which is arranged outside of one of the said bars b' parallel to it, and on the same level with a space, d^4, between the said bars b' and b^2.

The letters m indicate leaf-springs, one of which at each side of the bar-blades is arranged in said space between the blade-bars B′ and the fixed bars b^2, so that the blades B^2 and the bars to which they attach are moved out laterally from each other against the force of said springs m.

The letters I^2 indicate a draw-bar arranged at each side against the interior of the frame sides below the tracks for the plait-blade frame, and between the fixed bar b^2 and frame which incloses the mechanism. These draw-bars I^2 are arranged to connect with the blade-bars b' by means of double-turn levers L, that at one of their arms e' are pivoted to the draw-bar I^2, with another arm at e^2 pivoted to the plait-bars b', being centrally pivoted at e^3 to the fixed bar b^2, and as thus connected when the draw-bars I^2 are drawn back, the said bar-blades b' and blades B^2 are drawn apart at their inner edges. These draw-bars as they are extended rearwardly are rounded off to pass through guides g g, and between the latter on each of the draw-bars there is arranged a spring, O, and upon the draw-bars I^2, as indicated at N, there is formed a projection, which is in such a position on each of them that when the plait-blade frame D′ is being drawn back, and before reaching the end of its rearward traverse the cross-head H at each side will engage with the stops N on the draw-bars I^2 to pull both the latter back, and by the combined action of the moving plait-blade frame D′, its engagement with the projections N, the draw-bars I^2 are drawn back, and these by means of the turn-levers L pull out laterally the blades B^2 and their bars b'.

The letters P indicate spring-pins, of which there is one at each end of the blades B^2 near their inner edges. These pins are acted upon by springs S^2 on the under side of the table or bed D^2, and which pass up through holes in the latter. When the blades B^2 are spread apart, as before described, these pins P, as acted upon by the spring S^2, rise up inside the inner edges of said blades B^2 to keep them spread apart.

The operation of the combined parts thus described is as follows: The plait-blade frame being drawn back before it reaches the end of its rearward traverse, its cross-head H engages with the projections N on the draw-bars I^2. This engagement operates the plait-blades B^2, by means of the turn-levers L, to spread apart, and so that the spring-pins P at each end rise up and keep them in such a position until released. With the parts thus placed a bosom-blank is laid down longitudinally upon the separated blades B^2 B^2 and the plait-blade frame moved around the switches I′ at the end p^2 of the slideways S′, so as to return frontwardly in the upper track, a', thereof, and then to descend by the end passages, p', onto the lower tracks, a', of each slideway. As the plait-blade B′ descends onto the fabric by an applied pressure it forces in the spring-pins P, and this releases and allows the blades B^2 to slide in toward each other over the sides of the plait-blade B′, the interposed fabric and the relative position of the blades B^2 and B′ being indicated in section at Fig. 4. While the blank is thus held between the folding plait-blades B^2 at each side and the intermediately-placed central plait-blade, B′, the latter and the frame are drawn rearwardly, the said plait-blade passing through the folded bosom-blank, which operation creases into the latter a central longitudinal plait-fold. When the return-traverse of the central plait-blade and frame again engages with the projections N of the draw-bars to pull out over the pins P the side blades, B^2, the blank is removed and another inserted, and the central plait-blade and frame are returned, as before, to repeat the operation.

The letter D^2 indicates the plaiting-bed of the machine, on which the plaiting-blades move. This bed forms the top of a steam-chest, K, to which steam is admitted by a steam-pipe, t; and the letters M indicate springs beneath the steam-chest, against the force of which the latter is forced downwardly. This steam-chest is provided with an outlet-pipe for circulation or a valve for the discharge of the condensation, and the steam-inlet is provided with a flexible connection with a steam-supply pipe.

The letters R designate vertical partitions, between which the steam-chest is placed. The object of using the steam as thus employed is to iron in, by the aid of heat, the plaits folded into the bosom-blanks by the action of the plait-blades B′ and B^2 B^2. While the steam-chest thus acts to iron into the bosom-blanks the plaits formed in them, it has no part as a factor in their production other than the function of forming a bed, on which the plaiting-blades move; and, if desired, the steam-chest may be omitted and an ordinary flat surface be employed in its stead.

The letters U indicate creasing-fingers, that are projected downwardly from the under surface and front end of the central plait-blade frame, and these fingers are elastic, being made of thin spring-metal, with their lower ends slightly turned up. When the frame is moving rearwardly with its cross-heads in the lower track, these creasing-fingers run along over the edge of the fold being made in the bosom-blanks, to crease in the line of the plait-folds sharply.

A plait-folding machine thus made performs its work with accuracy and dispatch, and while I have described it as more particularly applicable for shirt-bosoms it may be

used for making like plait-folds in any kind of apparel articles.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a bosom-plaiting machine, the combination of the fold-blades B^2 B^2, actuated as shown, the spring-pins P, and the central plait-blade, B′, the said parts being constructed and arranged to operate substantially in the manner as and for the purposes set forth.

2. In a bosom-plaiting machine, the combination of the fold-blades B^2 B^2, the spring-pins P, the springs *m m*, the turn-levers L, pivotally connected at each side to one of the aforesaid fold-blades, the draw-bars I^2, pivotally connected to said turn-levers, the central plait-blade, B′, and its frame D′, the said parts being constructed and arranged to operate in the manner substantially as and for the purposes set forth.

3. In a bosom-plaiting machine, the combination of the fold-blades B^2 B^2, the turn-levers L, and the draw-bar I^2, the said parts being constructed and arranged to operate in the manner and for the purposes set forth.

4. In a bosom-plaiting machine, the combination of the central plait-blade frame, D′, the plait-blades B′, arranged on the under side thereof, the cross-heads H, made with groove-fitting ends, as shown, the slideways S′, made with the upper track, *a*′, the lower track, a^2, the end passage-ways, p' p^2, connecting said upper and lower tracks, and the inclined switches I′, the said parts being arranged and constructed to operate in the manner as and for the purposes set forth.

5. In a bosom-plaiting machine, the combination of the plait-blades B^2 B^2, the spring-pins P, the central plait-blade, B′, and the creasing-fingers U, said parts being constructed and arranged to operate substantially in the manner as and for the purposes set forth.

6. In a bosom-plaiting machine, the combination of the fold-blades B^2 B^2, the spring-pins P, the central plait-blade, B′, and the steam-chest K, the said parts being constructed and arranged to operate substantially in the manner as and for the purposes set forth.

7. In a bosom plaiting machine, the combination of the fold-blades B^2 B^2, the spring-pins P, the central plait-blade, B′, and the bed D^2, arranged to operate in the manner as and for the purposes set forth.

Signed at Troy, New York, this 23d day of June, 1884, and in the presence of two witnesses, whose names were by them hereto written.

GEORGE W. PINE.

Witnesses:
L. E. COLLINS,
CHARLES S. BRINTNALL.