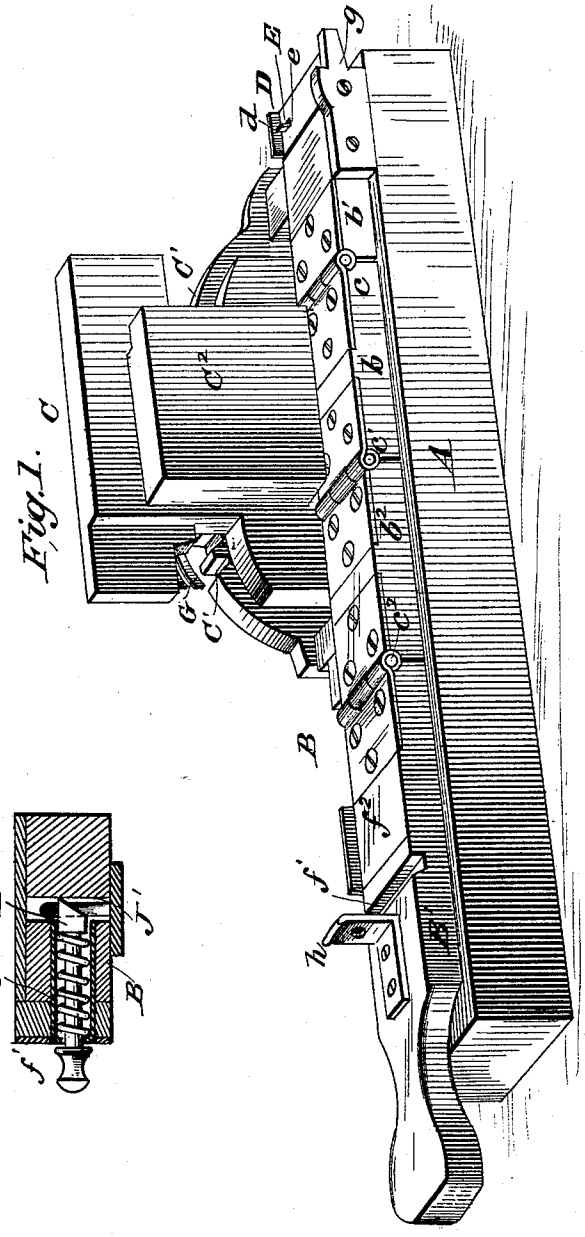
(No Model.) 2 Sheets—Sheet 1.

S. VALENTINE.

BOX FRAME BENDING MACHINE.

No. 395,094. Patented Dec. 25, 1888.



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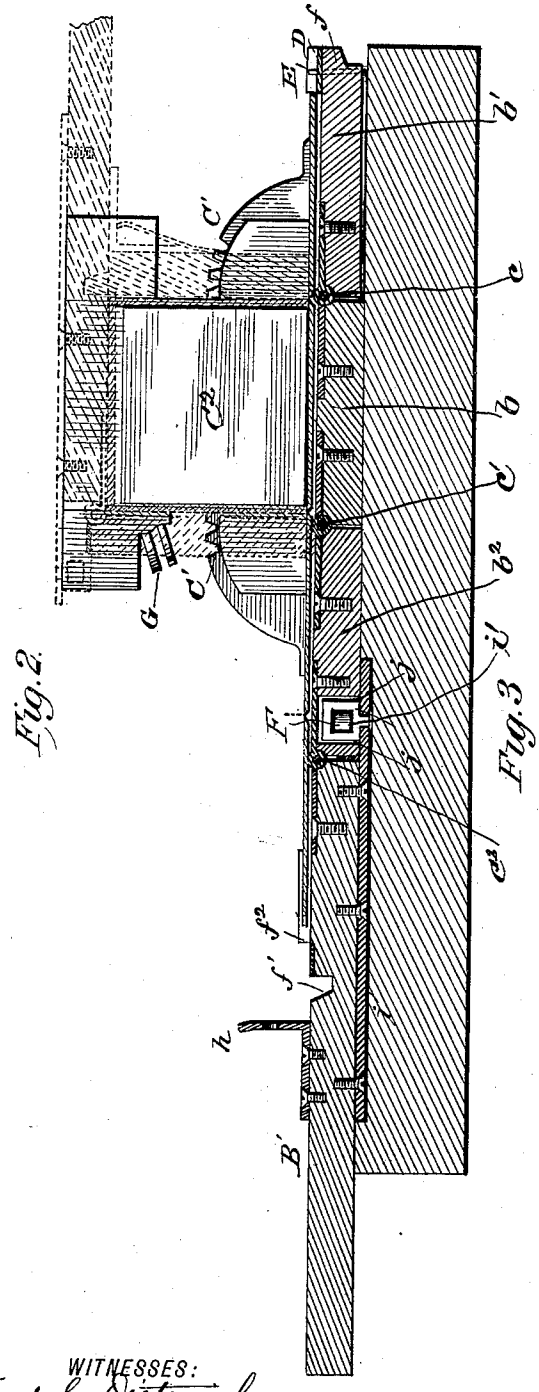


Fig. 2.

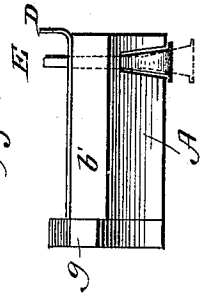


Fig. 4.

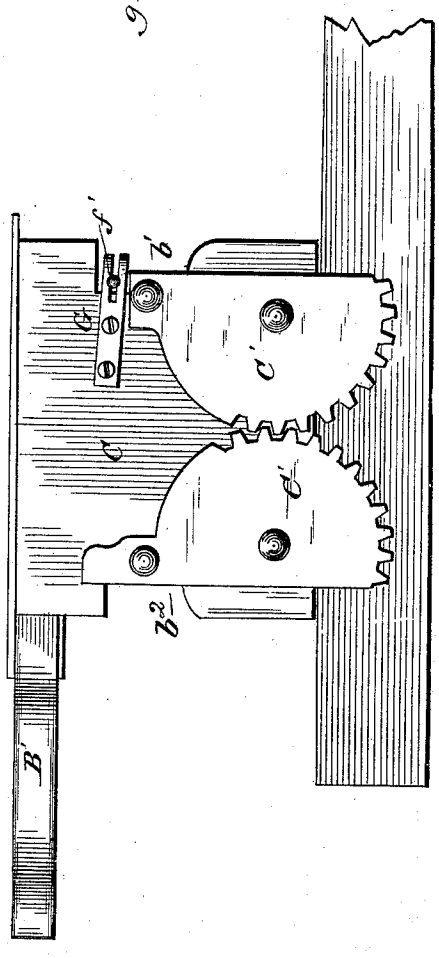


Fig. 3

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UNITED STATES PATENT OFFICE.

SYLVESTER VALENTINE, OF HAGERSTOWN, MARYLAND.

BOX-FRAME-BENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 395,094, dated December 25, 1888.

Application filed May 5, 1888. Serial No. 272,988. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER VALENTINE, a citizen of the United States, residing at Hagerstown, in the county of Washington and State of Maryland, have invented certain new and useful Improvements in Box-Frame-Bending Machines, of which the following is a specification.

This invention contemplates certain improvements in machines specially designed for bending into shape previously-prepared material for forming, for instance, honey-comb frames as used in bee-hives, cigar-boxes, fruit-baskets, peach-crates, and such like wherever a joint or bend is required to be made in wood to effect the disposition of the sides of the article at right angles to each other, which, however, require previous treatment or preparation; and to these ends the nature of the invention consists of a work bed or support comprising a fixed or stationary section and a series of articulated or folding sections actuated by a lever, so as to dispose said folding or articulated bed-sections at right angles to each other.

It also consists of means for automatically locking the lever in and taking it out of alignment with the adjoining bed-section, of an automatically retracted gage, and of means combined with the articulated or folding bed-sections and the lever for effecting the individual movement of said sections, substantially as hereinafter more fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of my invention. Fig. 2 is a sectional elevation thereof, with its section shown in dotted lines in its folded position; and Fig. 3 is an enlarged rear detailed view thereof, showing more fully the intermeshing toothed segments for simultaneously actuating the side folding bed-sections with the movement into its folded position of the other folding section. Fig. 4 is also an enlarged detailed view of that end of the work-bed having the work guide and gage; and Fig. 5 is a detailed sectional view, also enlarged, showing more fully the disengaging-latch of the work-bed-operating lever.

In carrying out my invention I suitably dispose upon a bench or table, A, a bed, B, which has its fixed or stationary portion or section *b* bolted or otherwise secured to the bench or table, and to this fixed bed-section is secured an upright support, C, which will be further referred to hereinafter. The bed B also comprises the sections or portions b' and b^2 and the lever B', the section b' being pivoted or articulated, as at *c*, to one end of the fixed section *b*, while the section b^2 is articulated or pivoted, as at c', to the opposite end of the section *b*, the lever or section B' being pivoted or articulated, as at c^2, to the section b^2. The bed-section b' has applied thereto upon its upper or inner surface at the outer end a plate or guide, D, having its inner end provided with an upward projection, *d*, standing in alignment with the inner side edge of the said bed-section. At the same end of the bed-section b' is disposed a gage, E, which consists of a spring-metal plate fastened at its inner end to the outer or lower side of the bed-section and bent downward and outward and then extended at its outer end up through an aperture, *e*, in the bed-section, being reduced thereat, as shown, and projecting a suitable distance above or from the bed-section to form a stop or gage for the abutment of one end of the material against the same.

C' are intermeshing toothed segments or gears journaled or mounted at the rear side of the support C, one being fixed to each of the bed-sections b' and b^2 and uniting with the action of the lever B' to effect the simultaneous movement of the said bed-sections.

With the bed-section b' resting flat upon the bench A, the spring plate or gage E, coming in contact therewith, will be caused to project at its free end from the bed-section. Upon elevating said bed-section the free end of the gage will be retracted below or out of alignment with the inner or upper surface of the bed-section, the purpose of which is to remove or take it out of the way of the work when the latter is being operated upon. This end of the bed-section b' is also rabbeted, forming a tenon, *f*, thereon, which is outwardly and downwardly flared and received in a correspondingly-shaped groove or gain, f', formed in the lever B'. The bed-section b' has applied to the outer side, at the same end, a cleat, *g*, which, when the lever is folded thereon,

extends up alongside of the lever, holding the latter snugly to its place. Applied to the upper side of the lever B′ is an angle-plate, *h*, one arm of which projects therefrom, and which, when the lever is folded or brought down upon the bed-section *b′*, fits against the latter, firmly binding the lever and bed-sections *b′* b^2 against the work, as will more fully appear farther on.

The lever B′ has applied to its lower or outer side a plate, *i*, which is bolted thereto and projects beyond the pivoted or articulated end thereof, being provided upon its projecting portion with a staple or eye, *i′*, adapted to enter a socket or cavity, *j*, in the lower or outer side of the bed-section b^2. Seated in the bed-section b^2 upon a spring, *k*, is a bolt or catch, F, having an inner beveled end, which normally stands in alignment and automatically engages with the eye or staple *i′* as the latter enters the socket or cavity *j*, which it does when the lever B′ is in alignment with the bed-sections proper, and thus effects the locking of the lever thereto.

The bolt or catch F projects beyond or outward from the bed-section b^2, as at *f′*, and its projecting portion *f′* is flattened at the sides and provided with a head. A work-guide in the form of a plate, f^2, is applied to the lever B′ at its outer side.

G is a slotted or forked plate bolted to the rear or outer side of the support C and projecting beyond the edge thereof contiguously to the lever B′. The plate G is curved inward, so as to bring the slot between its prongs in the path of the projecting portion *f′* of the bolt or catch F as the lever B′ is elevated or folded, and thus effect the retraction or disengagement of the bolt or catch F from the eye or staple *i′* of the lever B′, which will more fully appear hereinafter.

The inner side of the support C forms an angular former, C^2, being in the present instance shown in rectangular form, while it is obvious it may have any other desired angular form, according to the intended shape of the box the frame or body portion of which it is designed to produce thereon.

In operation it will be seen that with the previously-prepared material placed upon the bed, the same with the lever being in an extended or horizontal position and the distant or outer end of the material abutting against the gage or stop, by grasping and moving the lever upward, carrying with it the adjoining bed-section b^2 and moving upwardly the bed-section *b′*, the bending operation will be effected, the bed-sections *b′* and b^2 carrying upwardly the corresponding sections of the material. When the bed-sections *b′* and b^2 have reached a perpendicular position, accordingly disposing the corresponding sections of the material against the vertical sides of the former C^2, the lever, by the engagement of the stem of the bolt or catch F of the lever with the forward or slotted plate, G, disengaging the catch from the bed-section b^2, will be permitted to be folded or carried down to a horizontal position. During this latter movement of the lever, when it is folded upon and caused to receive in its groove or gain the tenon or upper end of the bed-section *b′*, the remaining section of the material needing bending is accordingly carried into a horizontal position and its dovetailed tenons caused to interlock with those of the section of material held between the bed-sections *b′* and the former C^2, thus completing the bending operation and the shaping or formation of the frame or body of the box. The parts can be readily extended or returned to their former position simply by lifting the lever and carrying it backward, the catch or bolt, as its projecting stem is released from the slotted or forked plate, automatically engaging with the socket in the adjoining bed-section b^2, thus interlocking the lever and the latter for a repetition of the former action of the parts.

From the foregoing it will be seen that by simply two strokes or movements of the lever is effected the bending into shape of the material, whereby great expedition and facility are secured in the manufacture of the articles.

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

1. The combination, with a fixed or stationary former, of a sectional work-bed comprising a lever adapted to effect the folding of the bed, which bed and lever conform to the planes or sides of the former, substantially as specified.

2. The combination, with a former, of the work-bed comprising articulated or pivoted sections and a lever provided with a groove or gain to receive the upper end or edge of one of said sections, substantially as specified.

3. The combination, with the former, of the sectional work-bed and an actuating-lever, one of said bed-sections having a spring-gage with its free end extending through said bed-sections and normally occupying a retracted position, but being projected therefrom as the bed-section lies horizontally, substantially as set forth.

4. The combination, with the former, of the sectional work-bed comprising a lever automatically connected to and disengaged from the adjoining bed-section, substantially as and for the purpose specified.

5. The combination, with the former, of the sectional work-bed comprising a lever provided with a spring catch or bolt engaging with the adjoining bed-section and with a curved, forked, or slotted plate or cam disposed in the path of the movement of said catch or bolt, effecting the disengagement of the catch or bolt from said bed-section, substantially as set forth.

6. The combination, with the sectional work-bed comprising a lever, of the intermeshing toothed segments or gears, one applied to each of the bed-sections, substantially as specified.

7. The bending-machine consisting of the

former, the bed comprising articulated or pivoted sections, and a lever provided with a spring bolt or catch engaging with the adjoining bed-section, and a curved, forked, or slotted plate or cam disposed in the path of the movement of said catch or bolt, and the intermeshing toothed segments or gears, one applied to each of two of said bed-sections, substantially as set forth.

8. In a bending-machine, the combination, with the former, of the sectional bed comprising a lever actuating the articulated or pivoted sections of said bed and provided with a plate or pendant fitting against the side of one bed-section and effecting the binding of the lever and the work against said former, substantially as specified.

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Witnesses:
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