

2 Sheets—Sheet 1.

No. 502,320.

Patented Aug. 1, 1893.



William S. Rice

WITNESSES:

Harpington
Geol. Poulton.

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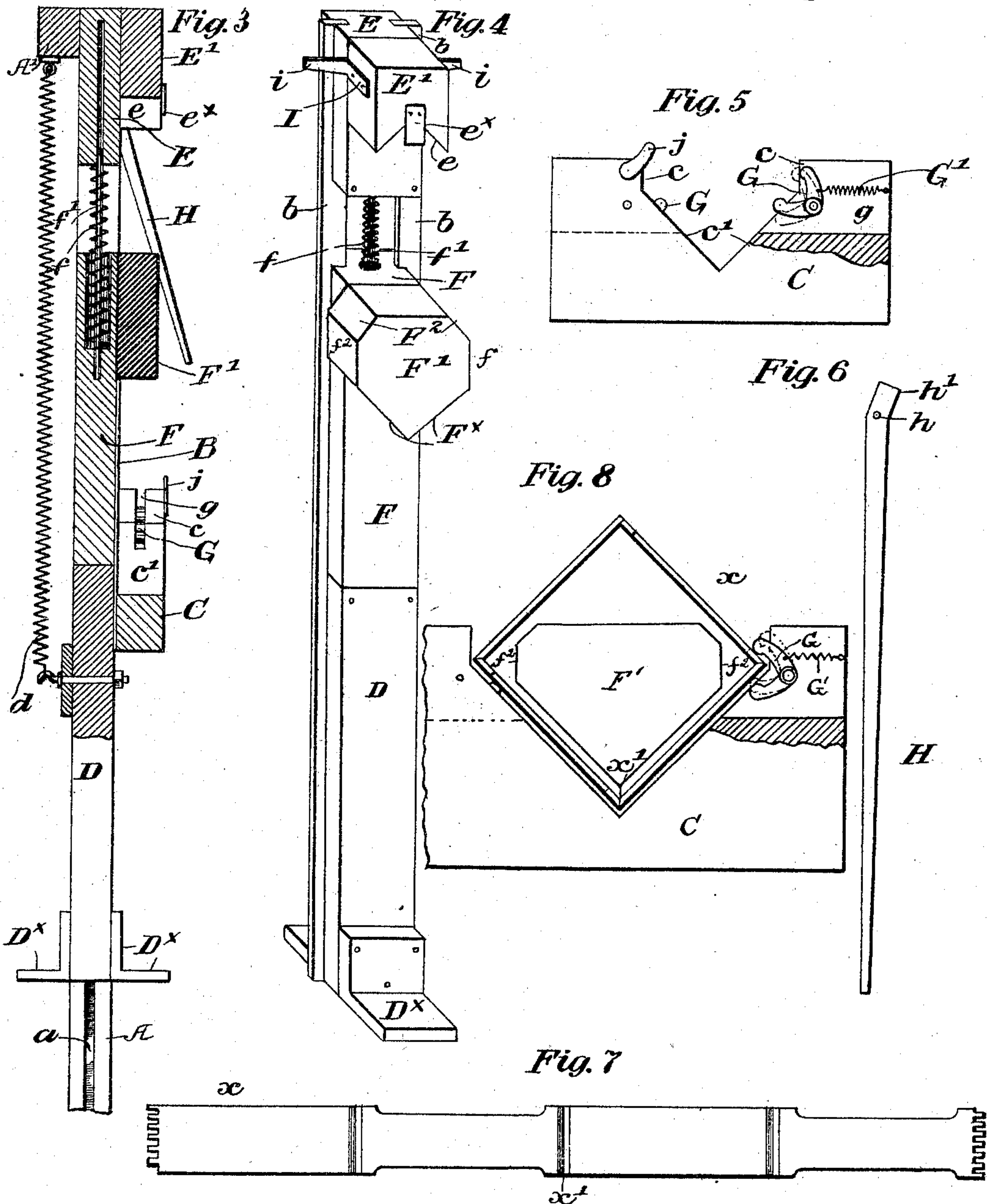
(No Model.)

2 Sheets—Sheet 2.

W. S. RICE.
BOX FORMING MACHINE.

No. 502,320.

Patented Aug. 1, 1893.



WITNESSES:

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WILLIAM S. RICE, OF ELVIRA, IOWA.

BOX-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,320, dated August 1, 1893.

Application filed March 3, 1892. Serial No. 423,681. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. RICE, a citizen of the United States, residing at Elvira, in the county of Clinton and State of Iowa, have invented a new and useful Section-Press, of which the following is a specification.

My invention relates to improvements in that class of box machines which are employed to make up or bend up from a previously formed blank, square or angular frames or sections, such as are employed for holding honey, &c., and the object of my invention is to provide a simple and effective machine which shall, at one operation, bend up and form from a previously cut blank provided with registering dovetails in its opposite ends, a frame of this character, said dovetailed ends being interlocked automatically during the operation.

My invention will be hereinafter fully described and its novel features carefully defined in the claims.

In order that my invention may be the better understood I have illustrated in the accompanying drawings a machine of this character embodying my improvements, in which drawings—

Figure 1 is a perspective view of the front of a machine made according to my invention, showing a blank in place on the blank platform and the several parts of the machine in their inoperative position, and Fig. 2 is a similar perspective view of the rear of the machine, showing the parts in the same position. Fig. 3 is a vertical, axial section showing the parts of the machine in the position seen in Figs. 1 and 2. Fig. 4 is a perspective view of the upright plunger, detached. Fig. 5 is a detail perspective view of the blank platform broken away at its side to show the folder for the opposite corners of the blank, and Fig. 6 is an enlarged view of the tripper for automatically discharging the blank after each operation of the machine. Fig. 7 is a view of the blank, as creased and dovetailed ready for folding, and Fig. 8 is a broken plan view of the platform with a section in position within the notch of the platform, and also with the folding block within the section.

A represents the upright posts two in number, joined at the top by a cross piece A' and

provided with feet A^x, forming the frame work of the machine. The inner faces of the uprights A, A, are provided with longitudinal grooves or guide ways *a, a*. Mounted on the front face of each of said uprights A, are face plates B, which extend out on either side of said uprights forming wings, and leaving a guide way or space equal in width to the space between the uprights, between them as clearly seen in the drawings, and across the front of these face plates is mounted the blank platform C, consisting of a prismatic block of proper width to receive the blank *x*, laid across it, as seen in Fig. 1, and having a cavity or recess formed therein at or near its center. This cavity has perpendicular side walls *c, c*, and is wide enough to receive the frame when bent as seen in dotted lines in Fig. 1, and its bottom is formed of two sloping sides *c', c'*, meeting at a right angle, so as to conform to the angle of the corner of the frame when bent.

Mounted to play in the vertical space between the uprights A, is a sectional plunger composed of three parts, the two end sections of which I call plungers D, and E, and the other one or middle section or portion I call a slide block F. One of the plungers, D is provided with side guides *b, b*, engaging and playing vertically in the slots *a*, in said uprights. Secured to this plunger at or near its bottom are two foot rests or steps D^x, D^x, one on either face of the machine, whereby the same is adapted to be operated from either side or face.

Guides *b, b*, extend up beyond the plunger D, and are secured at their upper ends to a second plunger E, which forms the folder or striker for locking the free dovetailed ends of the blank and is provided with a bevel recessed lower face *e*, conforming in shape to the angle of the corner of the frame when folded. Said plungers D and E are fixed to the guides *b, b*, at their sides and move together and with the same, and guided on said guides *b, b*, between said plungers is a slide block F, fitting loosely between the uprights A, and resting upon the upper end or head of the lower plunger D. This slide block F forms the folder for the central angle or crease *x'*, of the blank *x* (see Fig. 7) and is kept pressed down, normally against the plunger

D, by a spring f , working on a pin f' , secured to slide block F, and playing through a hole in plunger B, as clearly seen in Fig. 3. In order to secure the proper length for said spring a recess is formed in the upper end of slide block F, wherein the spring works as will be readily understood.

A spiral spring d , secured at one end to plunger D and at its other end to the cross piece A', serves to keep said plunger together with plunger E and block F, normally elevated to the position seen in the drawings.

On the face of the slide block F at the top thereof, as shown herein, is formed or secured the folder F', which has, as seen an angular lower face F^x , corresponding to the inside lower angle of the frame or section when formed, and a plain flat upper face, with a correspondingly beveled face on either side, conforming to the two upper inner faces of the folded frame.

Mounted in recesses g, g , in the respective inner side walls of the recess in the blank platform C, are the corner folders G, more clearly seen in Fig. 5. These guides are formed of two thin metal plates of an L-shape pivoted at or near the meeting angle of their branches at the joint between the respective faces c , and c' , of said recess. As shown the upper arms of these plates G are provided with retracting springs G', G' , whereby they are normally drawn back into the recesses g protruding the lower arms out from said recesses beyond the walls of the recess in the blank platform, as seen in the drawings (Fig. 5).

The operation of the device, so far as described is as follows: A blank having been placed across the blank platform the operator depresses the plunger D, by pressing down on the rest D^x with the foot, drawing down the slide block F, by reason of the pressure of the spring f , thereon, until the central angle F^x , of the block F' strikes the central crease x' of the blank x . Further movement of said plunger bends said blank down into the recess of the blank platform, taking into the angle formed by the lower faces c', c' , of said recess. As the blank is pressed down, it is obvious that the lower arm of plate G will be pressed back into the recess g , distending spring G' and protruding the upper arm of said plate out of said recess against the sides of the blank, as indicated in dotted lines in Fig. 5, whereby the second angle or corner of the frame will be bent over inward. The former or folding plate F' has, as before stated, a flat, upper portion and on either side of this flattened part a beveled incline F^2 , the angle of which corresponds with the angle of the inner side or face of the frame, when bent, and the spacing and length of the respective arms of plate or lever G, are such that, when said blank is pressed firmly down against the lower bevels c' , of the recess in the blank platform, pressing the lower arms of the respective levers G in flush with said

surfaces C' the upper arms of said levers will be thrown out sufficiently to press the upper arms or plies of the blank over almost against the beveled surfaces F^2 of plate F', until the upper dovetailed edges of the folded blank rest against one another but do not interlock by reason of the tightness of fit necessary in the dovetails. The pressure of the foot on rest D^x being continued, and plunger D being drawn down still farther, after the blank has been squarely and firmly pressed down by block F' against the lower beveled face of the cavity in the blank platform, beyond which point the said block F' cannot descend, the spring f is compressed and the two plungers D and E connected by their guides, descend together until the beveled recess in the lower face of the block or striker E' on plunger E strikes sharply against the upper dovetailed edges of the blank held together by the pressure of the springs communicated through block F' and plates G. The inclined surface e of the block E' being at an angle a little greater than that of the ends of the block, the dovetails in said ends are forced into one another, and interlock as will be readily understood, whereby the rectangular frame or section is formed, as seen in dotted lines in Fig. 7. The pressure is now relaxed on the rest D^x , and the springs f, G' and d , retract the parts to their former positions, the block F' in its upward movement carrying the frame with it.

In order to automatically discharge or throw the newly formed frame from the block F', I provide the mechanism I will now describe, reference being had more particularly to Figs. 1, 3, 4 and 6, for illustration. Mounted in longitudinal slots a', a' , formed in the front faces of the uprights A, and extending through the face plates B, are two elongated flat trippers H, pivoted near their upper ends by pins h , set in said uprights, and adapted when not in use to lie down in said grooves a' , flush with the faces of said uprights. These trippers are of the form seen in Fig. 6, and have an ear h' near the upper end which when the tripper is in its inoperative position, protrudes from the groove a' . Fixed to the side of the block E' are two operating fingers I, one on each side of the same, which consist each of a bent L-shaped metal plate having its long end i , projecting out sideways across the face of upright A, in position to strike the ear h' , as the said block is moved upward by the spring d , throwing the tripper out of its groove as seen in Fig. 1. Said fingers I will be so set with reference to the ear h' , that the plunger will have moved almost its whole travel before said parts engage, and the ends of said fingers will be, by preference, arranged slightly below the opposite corners of the blank when lifted by the said block F', to the position in which said block is seen in Fig. 1, so that said trippers shall properly strike the frame and throw it off the block. In order to provide further assurance that the trippers shall properly engage the frame I cut

off the opposite angles or corners of the block E' as seen, and set the grooves for the trippers somewhat inside the point at which the corners of the blank rest.

5 In order to insure that the plunger E' shall strike fairly upon the folded blank to prevent the splitting of the same, as well as to serve as a guide in placing the blanks on the platform, I prefer to provide said platform with
10 light clips *j, j*, as seen, which hold the blank up close against the face plate B. And on the block E', I provide a second clip *e^x*, as seen in Figs. 1, 3 and 4, which as the plunger descends, takes over the upper angle of
15 the folded blank and insures the proper engagement of the dovetailing.

It will be seen that my invention as above described, is capable of considerable modification as to arrangement and construction
20 without departing materially therefrom, and I do not, therefore, limit myself to the particular construction shown. Nor is my invention limited in its application to the making of honey frames, for it may with very little
25 alteration, be used for making boxes or frames for other purposes as well.

Having thus described my invention, I claim—

30 1. In a section press, the combination with a blank platform provided with an angular notch in its upper surface, of an automatic folder pivotally secured at each side of said notch and a plunger for forcing the blanks into said notch, substantially as set forth.

35 2. In a section press, the combination with a blank platform, provided with an angular notch in its upper surface, of an angular folder pivotally secured at each side of said notch one end of which normally projects
40 into the same, and a plunger for forcing the blanks into said notch, substantially as set forth.

3. In a section press, the combination with a blank platform provided with an angular
45 notch in its upper surface the walls of said platform being provided with recesses at each side, intersecting said notch, of a folder pivoted in each of said recesses, and having an arm projecting into the notch, and a plunger
50 for forcing the blanks into said notch, substantially as set forth.

4. In a section press, the combination with the blank platform, provided with an angular notch in its upper surface, of a folder at
55 each side of said notch, a plunger for forcing the blanks into said notch and a striker, having on its lower side two striking surfaces, whereby the dovetailed ends of said blanks are interlocked, substantially as set forth.

5. In a section press, the combination with 60 the blank platform, provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the blanks into said notch and an automatic tripper for discharging the folded sections, 65 substantially as set forth.

6. In a section press, the combination with a blank platform provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the 70 blanks into said notch, and a tripper on each side of said notch behind said plunger and having a projection arranged in the path thereof, whereby the folded sections are discharged, substantially as set forth. 75

7. In a section press, the combination with the blank platform provided with an angular notch in its upper surface, of a folder at each side of said notch, a plunger for forcing the blanks into said notch and a striker having 80 a beveled recess in its lower face, substantially as set forth.

8. In a section press, the combination with the frame having vertical guide ways therein, of the blank platform secured thereto and provided with an angular notch in its upper surface, a plunger mounted in said guide ways in the frame, the middle portion of which is provided with a former for forcing the blanks into said notch and is spring actuated and 85 moves upon the connections of the other two parts, substantially as set forth. 90

9. In a section press, the combination with the longitudinally grooved standards provided with a blank platform of a sectional 95 plunger mounted therein the end sections being connected by means of two strips the edges of which project beyond the sides of the sections and fit within the grooves of the standards, and the middle section is grooved 100 at its sides and fits upon the guide ways and means for operating the plunger, substantially as set forth.

10. In a section press, the combination, with a blank platform provided with an automatic 105 folder, one portion of which folder normally lies within the plane of movement of the object to be folded, below the joint to be formed, and is movable out of said plane, and another portion of said folder is automatically movable into the plane of movement of said object to be folded, above said joint, and a plunger for engaging with the object, substantially as set forth. 110

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Witnesses:

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