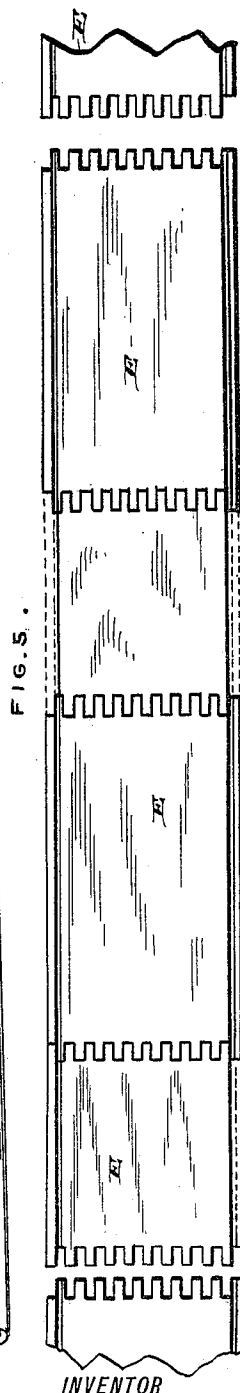
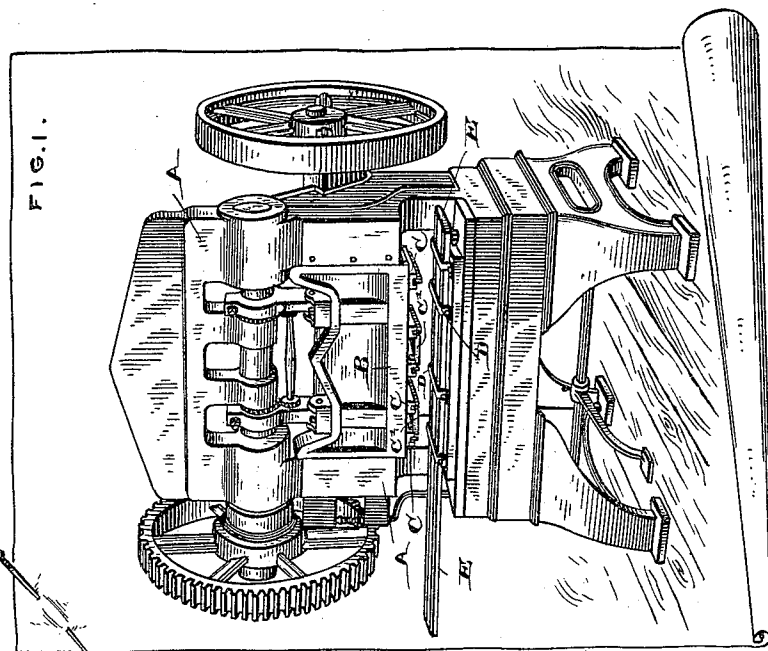
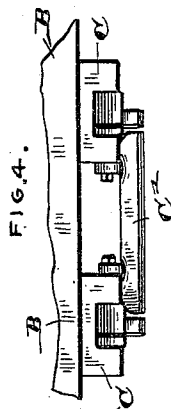
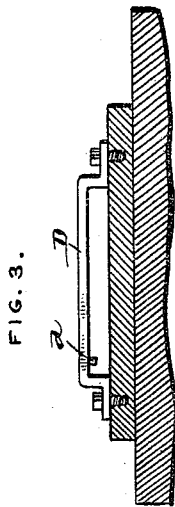
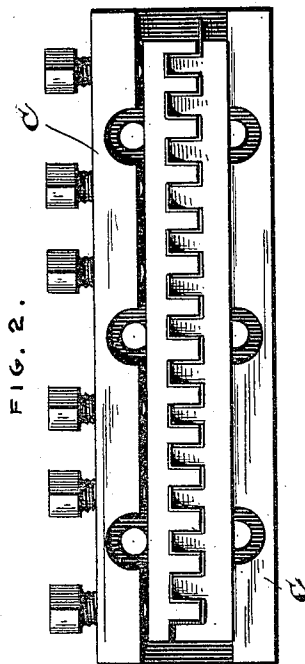


(No Model.)

J. F. GILLILAND.
BOX MAKING MACHINE.

No. 463,861.

Patented Nov. 24, 1891.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES F. GILLILAND, OF ADRIAN, MICHIGAN.

BOX-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,861, dated November 24, 1891.

Application filed January 7, 1891. Serial No. 376,983. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. GILLILAND, a citizen of the United States, residing at Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Box-Making Machines, of which the following is a specification.

My said invention relates to the manufacture of that class of boxes which are connected at the corners by matching projections and other articles in which there are intermatching parts, and which have heretofore been most commonly made by first cutting the lumber up into the required lengths and sawing into the ends with gangs of saws, whereby the matching projections were produced.

In my invention I cut the lumber into the required lengths and form the matching projections thereon at one operation by means of appropriately-formed dies, thus not only saving time in the operation, but also a considerable percentage of the lumber itself, varying according to the size of the boxes to be made.

Said invention will first be fully described, and then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters of reference indicate similar parts, Figure 1 is a perspective view of a press suitable to be used in carrying out my invention; Fig. 2, a view of the cutting-face of one of the dies; Fig. 3, a detail transverse sectional view showing the arrangement and relative location of the several operating parts just before the dies descend upon the wood during the operation of the machine, and illustrating particularly one of the "strippers" and a guide thereon; Fig. 4, a detail elevation showing one of the "shearing-dies" more plainly, and Fig. 5 a plan view of the several pieces of wood necessary to make up a box after the dies have operated thereon.

In said drawings the portions marked A represent the frame-work of the press; B, the plunger carrying the dies; C, the dies; D, the strippers, and E the lumber which is being cut into boxes.

The press, including the frame-work A and the plunger B, may be of any suitable construction which is adapted for the work re-

quired to be done, and need not be specially described herein. The plunger is of course suitably formed to hold the die or dies to be used. A "dovetail" way, into which a correspondingly-formed flange on the head of each die may enter, is a desirable construction.

The dies C are of a width equal to the length of the matching projections and of a length sufficient to extend entirely across the lumber to be operated upon. They are formed with cutters or cutting-edges arranged in right-angular relation, adapted to split the lumber into the required number of matching projections and to cut off said matching projections alternately at opposite ends. In practice I prefer to use four of these dies, so that the lumber for the four sides of a box will be cut out at a single operation. Said dies are preferably to be arranged so that the cross-cutting edges of one will be intermediate the cross-cutting edges of those nearest to it upon either side. By this means a regularity in the relation of the parts when assembled is assured, bringing the sides of the box to the same plane. This arrangement of dies is illustrated in Fig. 4 by the specimen of their work there represented. The dies themselves may be constructed in any of several ways, a preferred construction being shown. Extending between two of these dies I prefer to arrange a plain straight cutting or shearing die or cutter C', which is adapted to cut or shear off a portion of wood on one of the ends above the groove, which is preferably formed therein to make room for the entrance of a sliding cover, such as is commonly used on boxes of this character, and I may arrange two such cutting or shearing dies so as to shear off both ends on the other side, thus providing for the attachment of the bottom in substantially the same manner, except that the ends of the bottom would in such a case be commonly secured by small nails. As will be readily understood, either or both of these operations may be performed at one time by a proper arrangement of these straight cutting or shearing dies. In Fig. 5 the parts are shown as when all these shearing-dies are used, the parts cut away by them being shown by dotted lines.

The strippers D are for the purpose of holding the lumber down to position and prevent-

ing the dies from pulling it out of place as they rise, or, in other words, for the purpose of stripping the wood off the dies. That this may be accomplished in the best manner, a
 5 stripper should be placed alongside or on both sides of each die. As shown in Fig. 3, they are of a height from the bed-plate of the machine corresponding substantially to the thickness of the lumber to be operated upon,
 10 and may be secured to said bed-plate in any desired manner. They are shown as held thereto by ordinary machine-screws. As will be presently described, the lumber is commonly grooved before it is cut up by my improved machine. The strippers have projec-
 15 tions *d*, which extend down and enter said grooves, and the lumber is therefore guided with exactness in passing through the machine, so that when the parts are assembled
 20 the sides of the pieces shall not vary from a uniform plane.

In Fig. 5 is illustrated a piece of lumber *E* after it has been operated upon by my improved machine and cut into a sufficient number of parts to constitute the four sides of a
 25 box which it is adapted to form. As will be noticed, the matching projections on the ends of these parts have been formed without waste at any point where the lumber is cut
 30 in two, thus saving all that has heretofore been wasted in cutting the lumber into pieces, and in making the longitudinal kerfs in the ends of the pieces between the matching projections. In ordinary box-making, in the sizes
 35 of boxes usually constructed in this manner the saving varies from five to ten per cent. of the entire quantity of lumber used in forming these sides, the shorter the sides are, of course the greater being the per cent. of saving.
 40

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

1. A machine for preparing material for
 45 boxes, consisting of a press provided with thin sharp cutting-dies the cutting-edges of which run at right angles with each other, a part of the cutting-edges being arranged longitudinally of the feed of the material, and
 50 thus adapted to split the lumber into the required number of matching projections, and the other arranged transversely of the feed of the material and alternately at the ends of the longitudinal cutting-edges, and thus

adapted to cut said projections off alternately, thus at the same time severing the
 55 lumber into parts and forming a series of matching projections on each part, substantially as shown and described.

2. A machine for preparing material for
 60 boxes, in the general form of a press, arranged substantially in line across the feed of the machine, said dies being secured to the movable portion of such press, sufficient in number to produce the four sides of the box
 65 simultaneously, each die having a series of cutting-edges arranged in right-angular relation with each other, and thus adapted to form matching projections while separating the lumber, thus cutting the lumber neces-
 70 sary to form the four sides of the box at one operation and saving all waste, substantially as set forth.

3. In a box-making machine, the combination, with dies formed to cut the lumber into
 75 pieces and at the same time form matching projections upon the ends of the pieces, of strippers secured to the bed-plate and extending over the lumber and provided with small projections arranged to enter grooves formed
 80 in the face of the lumber operated upon, and thus guide said lumber accurately in its passage through the machine.

4. The combination, in a box-making machine, of the dies for cutting the lumber into
 85 pieces, said dies being each formed of a series of sharp thin cutting-edges arranged in right-angular relation, and strippers *D*, arranged alongside said dies, all substantially as described, and for the purposes specified.
 90

5. The combination, in a box-making machine, of a series of dies arranged to cut the
 95 lumber into pieces and form matching projections on the ends of said pieces, and a plain cutting or shearing die extending between certain of said cross-cutting dies and adapted to shear off the portion from the edge of one or more of the parts, thus providing an entrance for a cover or bottom when said parts are assembled, substantially as set forth.
 100

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 3d day of January, A. D. 1891.

JAMES F. GILLILAND. [L. S.]

Witnesses:

CHESTER BRADFORD,
 GEORGE S. SHIRES.