3 Sheets--Sheet 1.

H. W. HUTCHINS.

Manufacture of Boxes.

No. 157,473. Patented Dec. 8, 1874.

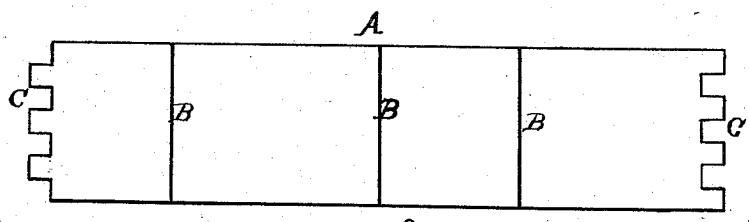
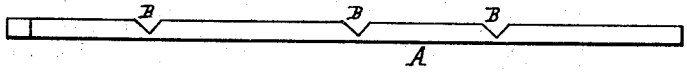


Fig. 1.

Fig. 2.



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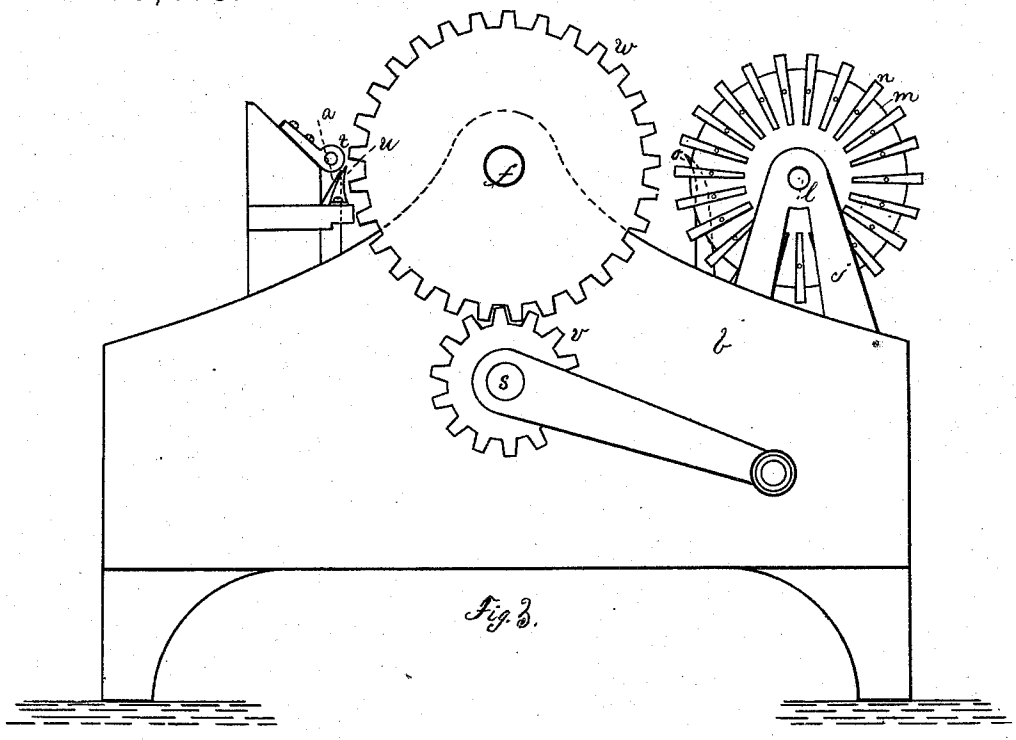

Fig. 3.

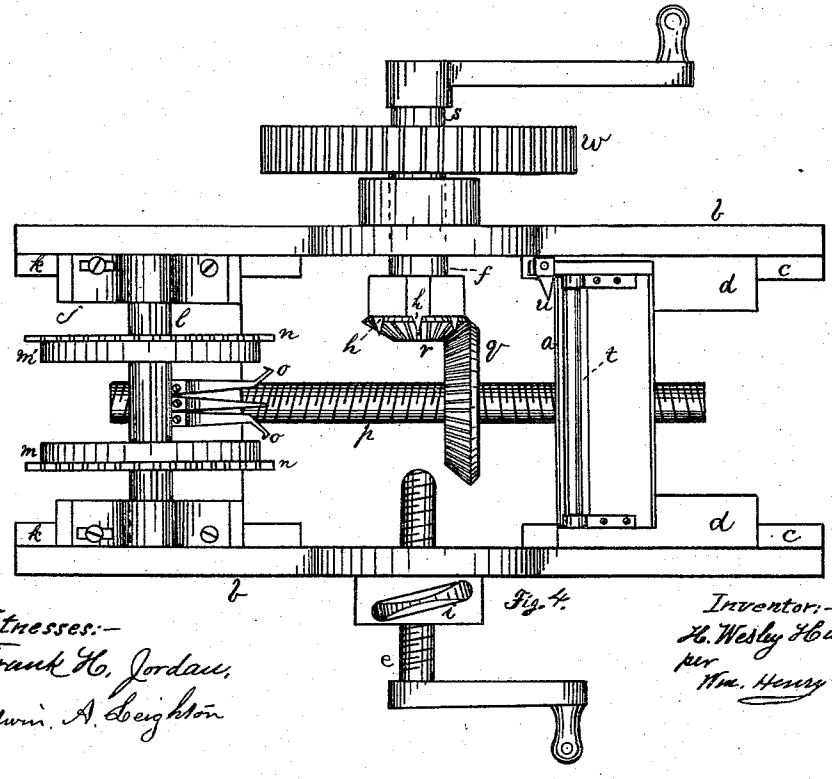

Fig. 4.

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3 Sheets--Sheet 3.

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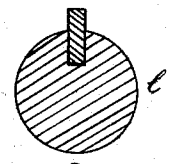

Fig 5

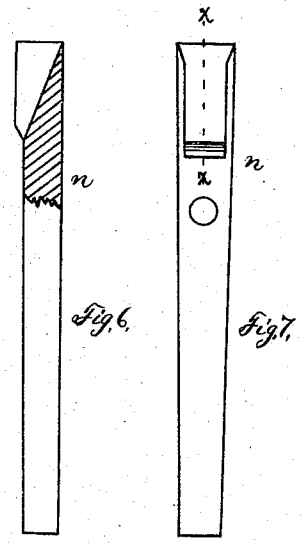

Fig. 6. Fig. 7.

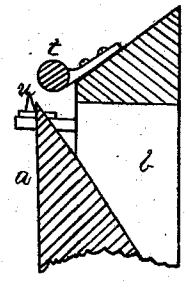

Fig. 8.

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UNITED STATES PATENT OFFICE.

H. WESLEY HUTCHINS, OF LIVERMORE FALLS, ASSIGNOR TO LOUISE HUTCHINS, OF EAST LIVERMORE, MAINE.

IMPROVEMENT IN THE MANUFACTURE OF BOXES.

Specification forming part of Letters Patent No. **157,473**, dated December 8, 1874; application filed September 24, 1873.

To all whom it may concern:

Be it known that I, H. WESLEY HUTCHINS, of Livermore Falls, in the county of Androscoggin and State of Maine, have invented an Improvement in the Manufacture of Boxes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being made to the accompanying drawings forming part of this specification, in which—

Figure 1 is a front view of a piece of scale-board which forms the sides of my improved box. Fig. 2 is an edge view, in section, of the piece which forms either the top or bottom of the box. Fig. 3 is a side elevation of my improved machine for making the scale-board shown in Fig. 1. Fig. 4 is a top-plan view of the same. Fig. 5 is a sectional end view of the shaft carrying the wheels provided with cutters. Figs. 6 and 7 are views of the notching-cutters. Fig. 8 is a detailed view of the scaling-knife, the feed-roll, &c.

Same letters show like parts.

The object of my invention is to produce a method and machine for the manufacture of thin wood strips or scale-board, to be used in the making of boxes for a variety of purposes.

My invention consists in such an arrangement of machinery as that a log of wood can be cut into thin strips, tongued and grooved along the edges of the strip, and scored at the proper points, at one and the same operation of the machine. The tonguing and grooving of the edges of the strip is in order that, when the strip is folded or bent in the shape to form the sides of a box, the tongues and grooves will match each other, and so render their union stronger. The scoring of the strip of scale-board is to render it easy to bend the strip at such points as will form three of the angles of the sides of the box.

A piece or strip of board thus made is illustrated at Fig. 1, A B showing the channels, and C C the tongues and grooves. *a* shows the fixed knife by which the scale-board is cut from the log. It is securely set in a strong frame, *b*, and it moves upon tracks *c*, having shoes *d* to fit the same. The manner and purpose of this movement will be hereinafter described. *e* and *f* show two short shafts. These project through the sides of the frame *b*. The shaft *e* is provided with screw-threads, which work in corresponding screw-threads in the frame. Thus they can be brought nearer to or removed farther from each other within the frame *b*, as desired. Between the ends of these two shafts is placed the log to be operated upon. When so placed, the shaft *e* is turned inward by its crank until it is held firmly griped between the inner ends of the two shafts *e* and *f*. The head of the shaft *f* carries a projecting point, *h*, in order to secure the proper rotation of the log with the shaft. A set-screw, *i*, holds the shaft *e* from being screwed outwardly, and so loosening the log between the ends of the two shafts. *j* shows a carriage, having tracks *k*, with shoes similar to those shown by *d* and *c*, before described. This carriage has a shaft, *l*, set in proper bearings on the carriage, and having rigidly attached to it two rotary disks, *m m'*. These disks carry projections *n*. These two disks are adjustable upon the shaft *l* horizontally, according to the distance apart at which it is desired to place them. Attached to this carriage, also, are the scoring-knives or channel-cutters *o*. These two carriages *j* and *d* move upon their tracks from or toward each other within the frame *b*. Extending from the one to the other of these carriages is the rod *p*, having cut upon its exterior a right and left screw.

It is evident that when rotated in one direction, this screw, fitting corresponding female screws in the carriages, will cause the carriages to approach each other, and the reverse when operated in another direction.

Rotation is given to the screw by means of a beveled gear, *q*, which, being rigidly attached to it, meshes with another beveled gear, *r*, rigidly set on the shaft *s*. Thus, it will be seen, when the shaft *s* is made to rotate the shaft *p* revolves also, causing the carriages *j* and *d* to move in conformity to the direction in which shaft *p* revolves.

The operation is as follows: Place the block of wood between the ends of the shafts *f* and *e*, as described, and tighten it therein, as specified. When the operation begins the diameter of the block or log will just fill the space between the cutter *a* and the devices *n* and *o* upon the carriage *j*. The block is rotated toward

the scale-board cutter *a*. Thus, after a partial revolution, the block is tongued and grooved, as well as scored or channeled, before the scale is cut from the log. In other words, the tonguing and grooving and scoring devices have the solid uncut wood of the log to operate upon. As the scale-board is cut from the log and the log diminished in diameter, the carriages *d* and *j* are constantly drawn toward each other by the rotation of the right-and-left screw-shaft *p*, so that the different devices for making the tongued and grooved and scored board are all at the time kept in proper contact with the lumber. Thus the operation is continued until the block is used up. A guide-roll, *t*, throws the scale-board out between it and the cutter *a*, and also operates as a feed-roll. At each end of the cutter *a* is set a small knife, *u*, which projects slightly into the ends of the log in advance of the cutter *a* and starts the board, and also imparts a bevel or finish to the edges.

The devices to perform the tonguing and grooving are shown, on an enlarged scale, in Figs. 6 and 7. They consist of three sides so shaped as to cut a rectangular recess, and with one open side, out of which the small piece of wood cut from the log may fall.

Fig. 5 shows a section of the shaft *l* with a feather which fits a slot in the disks *m* and *m'*, and by which they are caused to rotate with the shaft.

I desire to specify that the cutters, such as shown in Figs. 6 and 7, can be so shaped as to cut in the wood match points, and also have one of the projecting sides so extended as to slip the card, in order to form the complete match in the card, the cards themselves to be cut to the proper widths as the board leaves the machine.

When the board is cut for the manufacture of boxes, it is evident that, as it leaves the machine, it can be severed into the proper widths for the size of the box desired to be made from it. The different widths then require only to be bent at the points where the scoring is made, the tongues and grooves wet with glue, and matched, in order to be formed into the entire sides of the box.

It should be said that the channels made by the scorers *o* extend only partially through the thickness of the scale-board. These sides thus formed are then placed around a shouldered or rabbeted bottom or top piece of a box properly fastened thereto, and the box is completed.

A view of these bottom and top pieces is shown in Fig. 2.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The cutters *n* upon the rotary disks *m m'*, in connection with the stationary scoring devices *o*, to operate as herein described.

2. In combination with the cutters *n* and scorers *o*, the scale-board cutter *a*, operating as described.

3. The carriages *d* and *j*, moving upon tracks *c k*, and operated simultaneously by the screw-shaft *p*, in combination with the cutters *n*, scorers *o*, and scale-board knife *a*, as herein described.

4. The method of manufacturing wooden boxes by tonguing, grooving, and scoring the wood to form the sides thereof before the same is separated from the log, and then cutting the said sides from a rotating log of wood, then bending the same into proper form, uniting the ends of the sides, and fitting the sides thus formed around a rabbeted bottom piece, as herein described.

H. WESLEY HUTCHINS.

Witnesses:
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