

E. HERSEY.

MACHINES FOR MAKING HEADS OF WOODEN BOXES.

No. 169,700.

Patented Nov. 9, 1875.

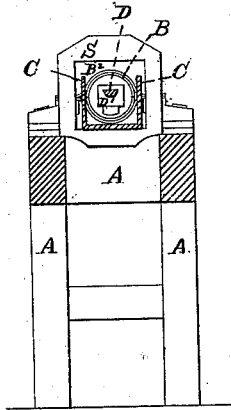


FIG. 4.

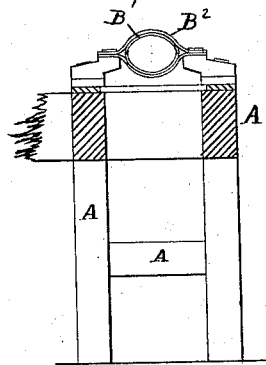


FIG. 3.

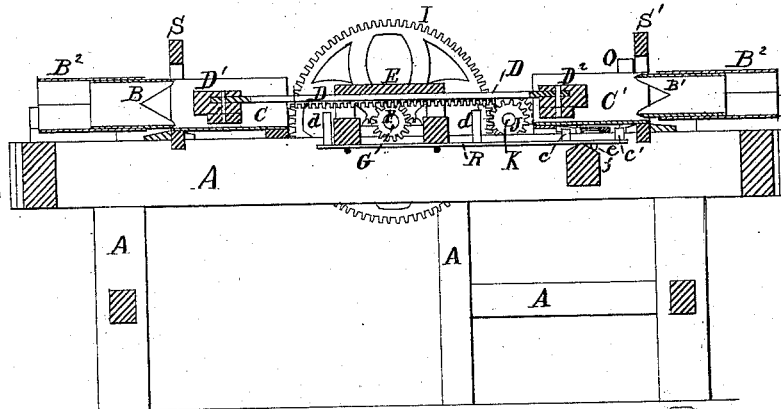


FIG. 2.

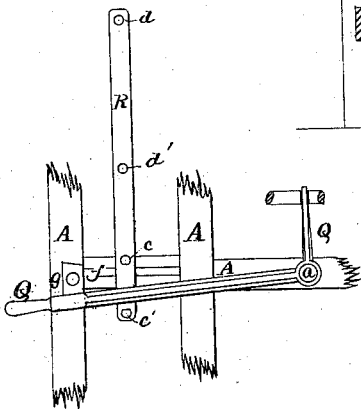


FIG. 5.

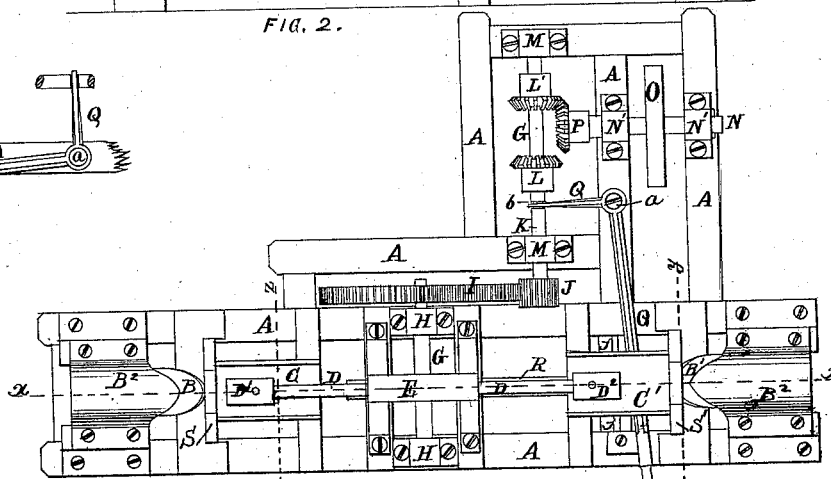


FIG. 1.

WITNESSES.

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IMPROVEMENT IN MACHINES FOR MAKING HEADS OF WOODEN BOXES.

Specification forming part of Letters Patent No. 169,700, dated November 9, 1875; application filed September 22, 1874.

To all whom it may concern:

Be it known that I, EDMUND HERSEY, of Hingham, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Machines for Cutting Wooden Heads and Bottoms for Boxes, and for other articles, of which the following, taken in connection with the accompanying drawings, is a specification:

My invention relates to a machine for cutting the bottoms and heads of wooden boxes, the bottoms of wooden pails, barrel-heads, and various articles too numerous to mention here; and it is an improvement upon the machine patented to me March 12, 1867, and numbered 62,846.

My invention relates, more especially, to the arrangement of the cutters, and to the means employed to operate the reciprocating plungers and control their action; and it consists, first, in securing said plungers to the opposite ends of a toothed rack, fitted to slide in a suitable bearing formed for the purpose in a stand, bolted or otherwise secured to the frame, in the center of its length, and suitable gearing to impart to said rack a reciprocating motion, and a shipper-lever, acting upon a clutch or sliding gears, for the purpose of reversing the motion of said rack and plungers. It further consists in combining with said toothed rack and plungers a shipper rod or bar, arranged to be moved endwise in either direction by said plungers, and provided with pins or shoulders upon either side of the shipper-handle, as a means of automatically moving said shipper-handle, to disengage the gearing and stop the motion of the plungers. It further consists in the use upon said shipper-bar of a pointed pin or lug projecting downward therefrom, in combination with a stationary double incline, over which said point travels at each motion of said bar, and thereby raises the shipper-handle, and disengages it from the locking device. My invention further consists in the use of a safety-guard, placed slightly in front of the extreme point of the cutting-edge of the knife, to prevent the operator from getting his hands against the cutters.

In the drawings, Figure 1 is a plan view of

my improved machine. Fig. 2 is a longitudinal section on line *xx*. Fig. 3 is a transverse section on line *yy* on Fig. 1. Fig. 4 is a transverse section on line *zz* on Fig. 1, and Fig. 5 is a detail illustrating the shipping device.

A A is the frame of the machine, and B B¹ are two knives or cutters, made in the form of hollow tubes, and held in fixed positions at opposite ends of the frame A, to which they are secured by the clamps B². Said cutters may be cylindrical, oval, or of other desirable form in cross-section, and have their front or cutting ends ground to a circular or oval shape, (see Fig. 1,) with an exterior bevel, so that the cutting-tube is considerably shorter on the two sides than upon the top or bottom, so that when a blank is presented to the cutter, the cutter will first strike the blank at the top and bottom, and as the blank is fed along the cutter will cut away the surplus wood, by a drawing cut, in four different directions, in the same manner as in the case of the machine patented to me, as before referred to. C C' are two guide-boxes or chutes, into which a pile of blanks or square pieces of boards, of suitable thickness to make box bottoms or covers, may be placed, each blank resting upon its edge on the bottom of the chute C or C', with the grain of the wood in a horizontal direction, and at right angles to the line of motion of the plungers. D is a toothed rack fitted to move endwise in a dove-tailed bearing formed in the stand E, secured to the frame A in the center of its length, and D¹ and D² are blocks of wood, secured one to each end of the rack D, and serve as plungers to force the pile of blanks through the cutters. F is a pinion mounted on the middle of the shaft G, in position to engage with the rack D, said shaft G being mounted in the bearings H H, and having secured to its other end the large spur-gear wheel I, which engages with and is driven by the pinion J, secured upon the end of the shaft K, which also has secured thereon the two bevel-gear wheels L and L', and is so mounted in the bearings M M that it is free to revolve therein, and at the same time it may be moved endwise therein.

N is the main driving-shaft, mounted in the bearings N' N', with its axis at right angles

to the shaft K, and having secured thereon the driving-pulley O and the bevel-gear wheel P, in position to be engaged with either of the gears L or L', at will, by means of the shipper-lever Q, pivoted to the frame at *a*, and embracing the shaft K in the groove *b*, formed therein for the purpose. R is a shipper rod or bar, fitted to suitable bearings directly under, and parallel to, the toothed rack D, and provided with the pins *e* and *e'*, and *d* and *d'*, projecting upward therefrom, as seen in Fig. 2. The pins *e* and *e'* are placed one upon either side of the handle or long arm of the shipper-lever Q, and by contact therewith, when the bar R is moved endwise, said shipper-handle is moved in the same direction the bar is being moved, and thereby disengaging the gears L or L' from the gear P, and stopping the motion of the plungers D¹ and D². The pins *d* and *d'* extend upward so far that their upper ends are directly in the path of the plungers D and D¹, which, respectively, strike said pins *d* and *d'* alternately just before they reach the extreme of their backward stroke, and thus cause the bar R to move endwise until one of the pins *e* or *e'* strikes the shipper-handle, as above described. The bar R is also provided with a beveled or pointed lug, *e*, projecting downward from its under side about equidistant from the pins *e* and *e'*, which comes in contact with, and rises over, the double-inclined surface of the girt *f*, which causes the end of the bar R, and through it the shipper-handle Q, to be raised sufficiently to disengage said shipper-handle from the holding-catch *g* before the pin *e* or *e'* comes in contact therewith to move it forward.

The operation of my improved machine is as follows: Suppose the rack D and the plungers D¹ and D² to be at the extreme end of their motion to the right, when the guide-box C will be clear, and may be filled with blanks, set on edge, say to the number of fifty, more or less. Now, if the shipper-handle be moved into the position shown in the drawings, where it is held by the catch *g*, the bevel-gear L' will be engaged with the gear P, and the rack D will be moved endwise, carrying the plunger D¹ toward the left-hand end of the machine, and forcing the pile of blanks, previously placed in the guide-box C, toward and against the cutting edge of the tubular knife B, which cuts away the surplus wood, reducing each blank in succession to a uniform symmetrical shape, exactly conforming to the interior shape of the knife, through which they are forced and delivered from its outer end. This motion continues until the plunger D² strikes the pin *d'*, and moves the shipper-bar R endwise until the pointed lug *e*, moving up the inclined surface of the girt *f*, raises the shipper-handle Q from the catch *g*, and the pin *e'* comes in contact with said shipper-handle and moves it

far enough to disengage the gears P and L', when the motion of the machine will cease, with the plunger D² in a position to admit of the guide-box C' being filled with blanks. This being done, the shipper-handle Q is moved by hand to the left, so as to engage the gears L and P, where said lever is held by the opposite end of the catch *g*, when the machinery is again set in motion to move the rack D and its plunger D² from the left to the right, forcing the pile of blanks through the cutting-tube B¹, and delivering them at its outer end, said motion continuing until the plunger D¹ strikes the pin *d* and moves the shipper-bar R endwise in the same direction that the plunger is moving, until the pointed lug *e* is moved up the other inclined surface of the girt *f*, raising the end of the bar R and the shipper-handle Q, and disengaging it from the catch *g*, when the pin *e* will strike the shipper-handle and move it to the right until the gears L and P are disengaged, when the motion of the mechanism will cease.

S and S' are guards to prevent accident by the operator's hand coming in contact with the knife.

Instead of the guide-boxes C and C', plain tables may be used with a gage-bar, said table answering to the bottom of said boxes, and the gage-bar answering to the back upright side of said box.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination and arrangement of the knives B and B¹, the toothed rack D, having secured to its opposite ends the plungers D¹ and D², and the pinion F, arranged to be intermittently rotated in opposite directions, and thereby impart a reciprocating motion to the rack D and plungers D¹ and D², as and for the purposes described.

2. The combination of the knives B and B¹, formed as set forth, the plungers D¹ and D², rack D, pinion F, gear I, pinion J, sliding shaft K, bevel-wheels L, L', and P, and shipper-lever Q, all arranged to operate substantially as described.

3. The combination of the reciprocating plungers D¹ and D², the shipper-lever Q, catch *g*, the shipper-bar R, provided with the pins *e*, *e'*, *d*, and *d'*, and the pointed lug *e*, and the double-inclined upper surface of the girt *f*, arranged to operate substantially as described.

4. In combination with the knives B and B¹, one or both, the safety-guards S or S', arranged substantially as described, for the purposes specified.

Executed at Boston this 14th day of September, 1874.

EDMUND HERSEY.

Witnesses:

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