

H. Law,
Making Matches,
N^o 3,719, *Patented Aug. 28, 1844.*

Fig. 1.

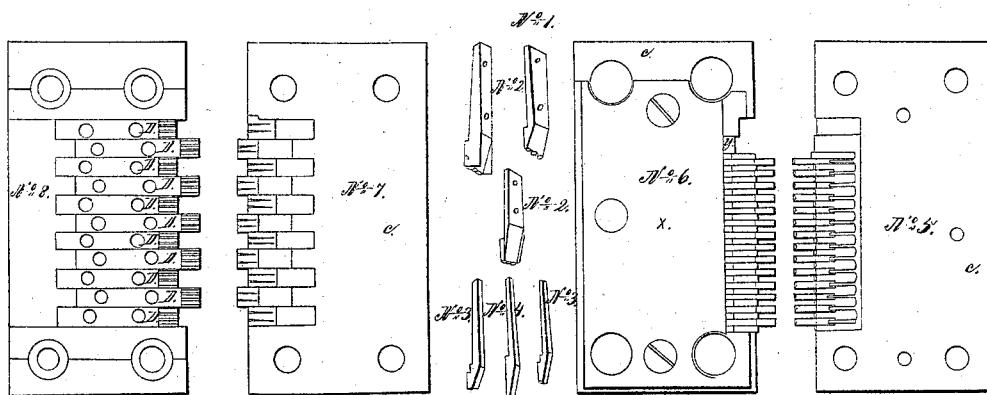
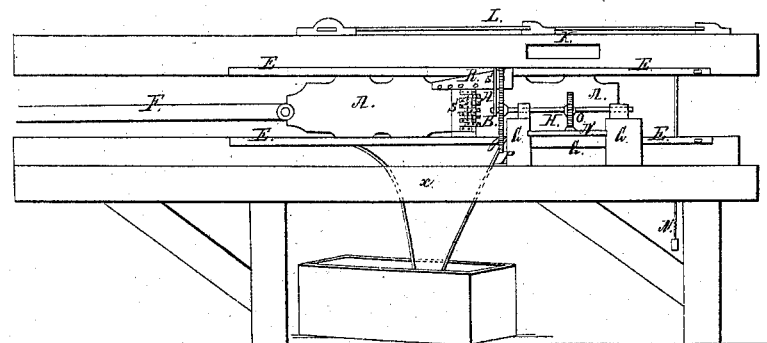


Fig. 2.

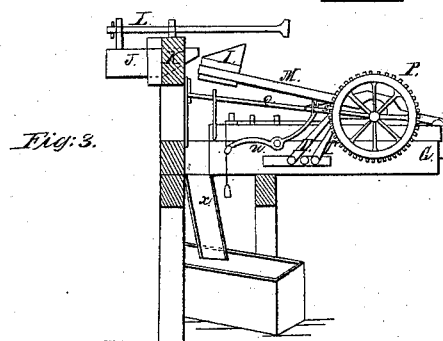


Fig. 3.

UNITED STATES PATENT OFFICE.

HERVEY LAW, OF WILMINGTON, NORTH CAROLINA.

MACHINE FOR CUTTING MATCH-SPLINTS.

Specification of Letters Patent No. 3,719, dated August 28, 1844; Antedated February 28, 1844.

To all whom it may concern:

Be it known that I, HERVEY LAW, of Wilmington, in the county of New Hanover and State of North Carolina, have invented a
5 new and useful Machine for Making Round Splints or Sticks for Matches; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference
10 being had to annexed drawing, making part of this specification, in which—

Figure 1 is the front view or elevation; Fig. 2, the plan or perpendicular view looking down upon it; Fig. 3, the section and
15 side elevation.

I have a cast iron plane or plane stock A, A, about 4 feet long and 5 inches wide, near the center of which is an opening B, to receive the bed of tools and to allow the
20 shavings to pass through on the other side. The bed C, containing the tools is a piece of iron about 5 inches long by 2 inches wide, let into the opening as seen at B, so as to be flush with the face of the plane A A and
25 secured to it by screws. The tubes or cutting tools D are formed from small square bars of steel cut away on one side so as to form an offset the whole depth of the cylinder or cutting part of the tools and leaving
30 a projection on one end of the piece the length of the tube. The cutting parts are holes or cylinders drilled through the projecting part of the steel lengthwise with the bar, and filed so as to form cutting edges,
35 the back being filed away so as to form a basis or bevel assembling the bevel of a plane iron as seen in Nos. 1, 2, 3, and 4. I make the tools in sets of three tubes in a set. There may be more or less. I secure them
40 to the bed C by means of screws passing through the necks of the tubes. There are several objections to placing the tubes so that all will strike the wood at the same time. In that case they are apt to split out
45 the wood and do their work imperfectly. They must also spread more and waste wood and it is difficult if not impossible to prevent the lodgment of wood between them. It is therefore of vital importance
50 that one set should be placed forward and the next set back or somewhat behind the first set alternately as seen in Nos. 7 and 8. All of the tubes are of course even or flush on the face toward the wood to be worked.
55 The front set of tubes may be plain, but the hinder set must have flanges or wings on

each outer side of the set at right angles with the set, in a line lengthwise the tubes as seen in No. 2, one of the No. 2 showing the flange somewhat reduced either of which
60 may be used. The flanges fit up close to the necks of the projecting set and fill up the very objectionable openings that would otherwise be formed between the two sets in their alternating positions, which open-
65 ings would form a lodging place for the loose shavings and prevent the operation of the machine. The flanges not only fill up their openings, but they catch the loose shavings made by the projecting set and carry
70 them out with the other shavings through the opening in the plane stock to the other side, and are therefore of vital importance to the machine. All experimenters in splint machines have met with the difficulty of
75 getting rid of the shavings, and if they have tried sets have been obliged to abandon them and resort to single tubes and those connected with the plane stocks by extremely thin necks to present the smallest
80 obstruction possible to the wood and requiring that after one operation a plane iron should go over the face of the wood to smooth and prepare it for the next operation of the tubes. Mine makes clean work
85 as it goes and without any other tool throwing the shavings out on one side of the machine and the splints on the other by the same operation. The least obstruction in the wood will knock off all of the thin neck
90 tubes that come in contact with it. Mine as I have very frequently done will cut through a pine knot as large as a man's finger without injury to the tubes.

The plane with the bed of tools is supported edgewise by a frame and pair of
95 ways E E—E E one below and the other above, and traverses back and forth by means of the connecting rod F.

To secure and feed up the timber to be
100 worked I have a frame G, G, G, 3 feet long and wide enough to receive with facility the longest lengths to be worked. This frame is secured to the timbers supporting the machine directly in front of the plane, and a
105 bed or floor H is laid in it reaching up or nearly up to the plane and this floor is dropped down below the top of the frame, so that the timbers of the frame on each side will stand above the bed or floor about
110 2 inches, thus forming a groove or channel wide enough to receive the whole length of

the wood to be worked, into which channel the wood is to be dropped. In order to hold down the wood and secure it for working I bring down upon it a movable piece or lip I in such a manner as to adjust itself to any thickness and I secure it down by a wedge J which passes through the timber K that supports the upper way on to the top of the lip I, the top of the lip having a wedge like form to correspond with the wedge J. When a thick piece of wood is worked the wedge will pass but partially onto the lip and when a thin piece is put in the wedge will pass farther over and secure the piece whether thick or thin, or if there be several pieces, one on top of the other, it will hold them equally well.

This arrangement for feeding, affords me many decided advantages over any other machines now in use. It enables me to make splints of long lengths, greatly increasing the quantity, and diminishing the cost of making. I can work split wood as well as sawed plank of various shapes or of several thicknesses and I can readily shift a piece of work around knots, or to change the position of the grain of the wood. I work the wedge by attaching it to a jointed lever L one end of which passes over the machine to within reach of the man that tends it by which means he can pull the wedge on to the top of the lip or throw it out at pleasure or the wedge may be thrown in by a weight attached to the jointed lever by a cord. I do not consider this weight as necessarily belonging to the machine, but as it is shown in the model and some notice is taken of it in the drawing at Z I will say that I have used it by fastening a cord to the jointed lever where it connects with the wedge and passing the cord round a pulley on the timber K directly over the wedge and then along the top of the timber to near the farther end of the same, and then down through the timber toward the floor. I there attach a weight to the cord which operates to throw the wedge in. The lip I support by two arms M attached to the lip, one at each end, passing from it to the extreme end of the feeding frame, and these secured by pins or journals to allow the lip to rise and fall as required. After thus securing the plank to be worked sufficiently tight to answer the required purpose I force it forward the necessary distance at each vibration of the plane by means of a follower N working on the bed H, running in grooves at each side and coming up behind the plank or wood and thus forcing it forward against the cutting irons while the lip holds it down upon the bed. The follower is carried forward by the common contrivance of a rack and pinion wheel O, to one end of the shaft for which is attached a ratchet wheel P and a lever Q, the lever loose upon the shaft and reaching on

to a triangular piece of iron R forming on its upper surface an inclined plane, which piece is secured to the reciprocating plane in a position to lift the lever on the withdrawal of the plane stock and after the cutting tools are withdrawn from the wood. A pawl S is attached to this lever which strikes into the ratchets of the driving wheel and as the lever is lifted by the inclined plane gives motion to the shaft. The rack is attached to the follower N. as the pinion wheel fits into this rack, the motion of the shaft must of necessity give motion to the follower. As the lever is loose upon the shaft it necessarily descends again and allows the pawl to take another hold during the forward motion of the plane. I have also stationary pawls T operating upon the ratchet wheel, to prevent its returning again when the pawl on the lever is loosened by descent of the lever. I have a weighted lever U with a fork at one end coming up under the pawl on the loose lever to throw the feed off when the wood is worked up. This is done by a latch V secured by a cord to the weighted end of the lever and when the feed is on the weighted end of the lever is held up by the latch hooked on to a pin in the frame. A button W on the follower throws off this latch at the proper time and the weighted lever throws off the feeding pawl. The splints fall into a chute X and from that into a box on the floor.

No. 1 gives a view of the sets of plane tubes detached from the bed and No. 2 a view of the flanged or winged tubes in like manner detached. No. 3 are flanged single tubes and No. 4 plain single tubes.

When single tubes are used I secure them by a cap X laid over them and screwed down to the bed and bearing upon the necks of the tubes and by a wedge Y at the side as seen in No. 6, the tubes having a notch in the neck coming up against the cap to prevent their being driven back. I have however used the tubes in sets and only give the view in Nos. 5 and 6 to show how the same principle may be carried out with single tubes as well as in sets. As I do not make any claim for the arrangement of the bed of single tubes any further than the flanged form of the tubes is concerned I have not deemed it important to be very minute in my description or drawings of them.

Having thus fully described the manner in which I construct my machine for making round splints for matches and having also explained the operation thereof what I claim as new and as constituting my invention is—

1. Combining with the tube cutters the flange or wing for the purpose and in the manner herein described whether the tubes are made in sets or in single tubes.

2. And also the combination of the movable lip with the follower, the wedge and

tube cutters in the manner and for the purpose herein set forth, and I do hereby declare that I do not intend by the description herein given to confine myself in the second
5 claim to the precise shape or form or manner of arranging and connecting the auxiliary parts of the feeding apparatus or to the peculiar form or arrangement of the tube cutters, but to vary them as I may find expedient while the general construction and op-

eration of the feeding apparatus is substantially the same with that herein set forth and while it is made to retain those features which distinguish it, from all other machines which have heretofore been constructed for the same purpose.

HERVEY LAW.

Witnesses:

OWEN FENNELL,
JERE NICHOLS.