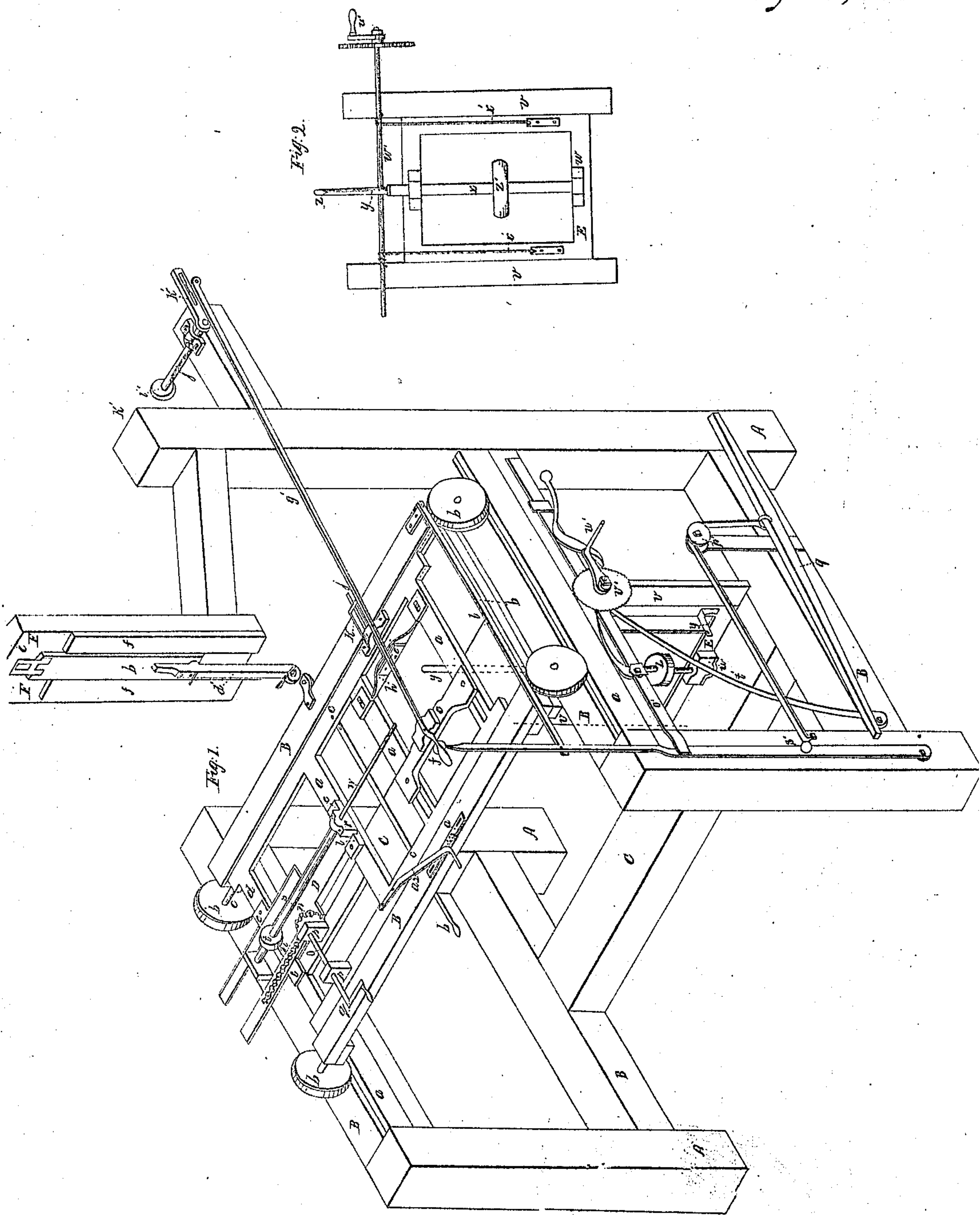


T. Blanchard,
Mortising Machine.

Patented Aug. 10, 186



UNITED STATES PATENT OFFICE.

THOMAS BLANCHARD, OF NEW YORK, N. Y.

MACHINE FOR MORTISING SOLID WOODEN SHELLS OF SHIPS' TACKLE-BLOCKS.

Specification of Letters Patent No. 5, dated August 10, 1836.

To all whom it may concern:

Be it known that I, THOMAS BLANCHARD, late of Springfield, in the county of Hampden and State of Massachusetts, but now of the city, county, and State of New York, have made and adapted to use certain new and useful improvements in machinery for boring and mortising solid wooden shells of ships' tackle-blocks, which machinery is also applicable to other similar purposes, and which machinery and my improvements and the mode of constructing and using the same are correctly and fully set forth in the following description and in the drawing annexed hereunto and making a part of this specification, wherein Figure 1, is an orthographical projection of the whole machine, and Fig. 2, are representations of certain parts, shown detached for the purpose of more clearly elucidating the same, the same letters, and figures of reference being employed to denote the similar or corresponding part in all the several figures.

A, A, A, A, are four vertical posts, B, B, B, B, are four cross timbers, and C, C, are two lengthwise timbers. These form the standard frame on which the whole of the machinery is fixed for work, and are represented as of wood, but may be made of iron. Upon each of the upper pair of cross frame pieces B, is fixed a metal railway A, A, serving as tracks, and guides for four rollers *b, b, b, b*, having flanges on the inner edges to keep them in place. These rollers carry the two longitudinal arbors *c, c*, and upon these arbors the traverse frame B, is mounted so as to be easily moved upon the railway across the machine. The inner longitudinal edges of the frame B, are fitted with a bird beak rebate to receive the outer edges of the interior longitudinal slide frame *c*, in which are four connecting cross bars *d, d, d, d*, the two right hand of these being fitted with slots in the front ends, over these slots is placed the carriage bar *e*, having in it the screw center pivot *f*, with a wide thumb piece for conveniently turning the screw. At the back of the slide frame *c*, is a bearing block *g*, and corresponding with that, and the bar *e*, is the bearer bar *h*, made with flat flanged ends having slots which allow it to be placed at the needful distance, both from the block *g*, and the center bar *e*. The spur plate, and block *i*, are set into the block *g*, so as to overlay, and be supported by the bar *h*, and the position of the spur *i* is regulated by

the back center screw *j*, fixed on the stirrup *k*, at the back of the block *g*, on which a small screw fixes the position of the spur *i*, when once regulated for the purposes hereafter described. 60

On the two bars, *d, d*, at the left hand part of the slide-frame C, is a smaller interior slide frame D, retained in place by the four slide pieces *l, l, l, l*, and having a horizontal motion which is directed, and regulated by the tooth rack M, having geared into it the pinion N, set on the arbor O, which is mounted in the bearings *p, p*, having the crank handle *q*, at the outer end. Upon the frame D, are fixed the two bearings *r, r*, in which the auger mandrel S, is mounted having the drum, or pulley *t*, fitted on it, which may be arranged so as to be connected to a prime mover in any effectual mechanical manner. Upon, or in the nose of the mandril S, is fitted the screw auger U, which may be made to shift so as to fix an auger of any required size. Immediately below the right hand part of the traverse frame B, upon the back part of the two lengthwise timbers C, C, are screwed two vertical slide pieces *v, v*, and in these is the vertical slide frame E, having two cross bars on which are fixed the bearing *w, w*, so as to receive the vertical mandril, or bit stock *x*, working in a pivot on the lower bearing, and having a socket, or female screw to receive the bit *y*, the shaft of which is solid steel, or good case hardened iron the top being so fitted on one side that the steel cutter *z*, may be put in, and held securely by a screw cut in from the opposite side of the bit, and finished with a countersink flush head, having a notch in the manner of a common wood screw used by carpenters, and when thus finished as shown in the detached Fig. 2, the cutting part of this belt is very similar to the bit technically known by the name of the "spoon bit." Upon the bit stock, or mandrel X, is the drum, or pulley Z¹, fitted to communicate a very rapid rotary motion to the bit *y*, by a belt led in any suitable manner from a first mover. Upon each of the two side part of the vertical slide frame E, are fixed brackets Y¹ each having an eye on the outer end, and through these eyes is rove the cord X¹, the ends of which are connected to the horizontal winch W¹, set in gearings hung under the upper frame piece C, and having the ratchet wheel V¹, and crank handle *w*¹, on its outer end, the long pawl *t*, being fixed 80 85 90 95 100 105 110

on the lower cross bearer B, so that by its action through the ratchet wheel V^1 , it always bears the standing weight of the frame E.

5 Upon the side of the right hand post A, is fixed the vertical lever S, connected by the strap r^1 , to the treadle q^1 , over the small pulley P^1 , fixed on a standing bracket, or carriage on the cross frame B; above this is
10 the lower slide bar O^1 , having a ratchet pawl w^1 , above the slide bar fitted on a small carriage having a slot and screw to adjust it for ratching into the upper part of the wheel V^1 , at the proper time of doing so
15 when in motion as hereafter described, and a reversed pawl M^1 , on the other side of the ratchet wheel V^1 , acting below and downward, and fixed with screws in a slot. Above and on the inside of the vertical lever
20 S^1 , is the connecting bar l^1 , made in two parts, one part connected by a pin joint at one end to the lever S^1 , and the other part connected at the opposite end to one corner of the traverse frame B, the required distance
25 between the lever S^1 , and the corner of the frame B, being maintained and regulated by slots in one part through which screws go into the other part so as to hold the two parts to any desired adjustment of
30 their joint length. On the back posts A, A, are two bearings h^1 , k^1 , in which the crank shaft j^1 , revolves, the motion being given by a belt from any first mover to the drum, or pulley i^1 . These in practice may be fixed
35 to any convenient part of the building wherein the machine is fixed for use. On the crank shaft outside the drum i^1 , is a square head in which is a mortise made to receive the shifting crank arm, and pin h^1 ,
40 which is secured at any required radius by a screw, or gibs, and keys, or in any effective mechanical manner.

The walking beam g^1 , is coupled on the pin of the crank arm h^1 , and is made of a
45 length to reach the tenon at the top of the vertical lever s^1 , which enters and is connected with the walking beam at that part by a mortise made for that purpose.

Immediately over the spoon bit Y, are
50 fixed two vertical pieces of timber F, F, shown in the drawing as fixed to the frame, but which in practice for use in a full sized machine may be best hung and braced securely from the floor above the machine, or
55 if made of iron may be fixed steadily in a standard frame rising out of the main body of the machine. Upon these timbers F, F, are fixed two slide guide pieces f^1 , f^1 , and between them is the slide e^1 , having mounted
60 on it at the lower end a metal vertical plane, with a cutter, and mortise d^1 , both stock and cutter formed nearly in the way as the common carpenter's rebate plane, except that the cutter is set square, and near
65 the point in the plane stock which de-

scends some distance below the slide e^1 to the upper end of the slide e^1 . The connecting rod or pitman piece c^1 , is jointed, and is regulated so as to ascend to, and be coupled onto a crank on a horizontal shaft
70 fixed in vertical bearing carriages secured to the frame, or floor above the machine, and having drums or pulleys to connect the working parts last described to a first moving power, which drums, or pulleys to avoid
75 complexity are not shown in the drawings. Underneath the traverse frame B, is the hand lever b^1 , having its fulcrum jointed on a crutch screwed into, and extending beyond the back part of the traverse frame B, and
80 under the corresponding part of the slide frame C, is a stud working into a slot in the lever b^1 . By this lever, and slot the workman can move the slide frame e , longitudinally inside the traverse frame B, and fix it
85 at any required adjustment as follows. The index gage plate a^1 , is screwed on the upper side of the front of the traverse frame B, having holes in its length, and slots near the
90 ends by which it can be screwed in any definite position within the limits of its size, the holes being index gages or numbered joints to denote the distance it is required to move the slide frame C, in the large frame
95 B, to place the block over the bit y , so as to obtain any required number, and distance in mortises. Upon the frame C, is fixed the tail of the index spring a^2 , into any hole in the index gage plate a^1 , and thereby secure the
100 slide frame l , as may be required for the following purposes. When it is desired to make the mortise in a ship's tackle block for the reception of the sheave, and bore it for the pin, the machine as before described
105 is first to be carefully adjusted by measure to the proper position for obtaining the required size, and position of mortise, and pin hole, and also have all the working parts duly connected to a first moving power. A
110 block of the required size having been shaped from the rough wood, and having at the part intended for the head a center mark to be entered by the screw center f , and at the part termed by block makers the
115 "arse." Three spur marks corresponding to the spurs in the spur plate i , is to be placed between these two points in the frame C, and tightly screwed in by the screw center f ; the workman then, by putting his
120 foot on the treadle q^1 , forces the lever S^1 , toward the back of the machine, where the pawl w^1 , taking into the teeth of the ratchet wheel v^1 , forces it around in the same direction carrying the winch w^1 , around, and
125 winding the cord x^1 around it so as to raise the bit frame E, and bring the spoon bit y , up near the block, and returning the lever S^1 , back by hand the reverse pawl m , takes into the ratchet wheel v^1 , and again lifts the
130 spoon bit y , nearer the block, or in a small

machine the workman may accomplish this object by turning the crank handle u^1 , in the same direction.

The walking beam g' having previously
 5 hung out of gear on a hook is now brought down for the upper point of the lever S' to enter the mortise prepared for it, and being moved alternately back and forward by the crank arm h' , operates through the
 10 lower slide bar o' , and the pawls n' , and m' , and ratchet wheel v' , and winch w' , and cord x' , to raise the frame E, and spoon bit y , a certain regulated distance at each alternation of the lever S' . While this is
 15 doing alternations of the lever S' , operating through the connecting bar l' , on the traverse frame B, will carry it back, and forward on the rollers b, b, b, b . The length of the mortise required to be made
 20 in the block by which the spoon bit y , is made to cut horizontally as well as vertically, and thus make a mortise having two round ends through the block, whose length is regulated both by the radius of the shifting crank arm h' , and by two metal gage
 25 stops fixed on the right hand upper cross-frame B, and made with slots through which they can be screwed to, and maintained in any required position. So soon
 30 as the spoon bit y , commences to cut, the workman should set the auger u , to bore the pinhole in the block by turning the crank handle q , and sending the auger up to, and through the block that is being operated on, it being a saving of time to effect
 35 this operation while the spoon bit is cutting the mortise, and before that can come so high as to touch the auger while boring the pinhole. When these operations are thus
 40 far completed, the workman lifts off the walking frame g' , from the upper end of the lever S' , and first securing the frame B, in the proper position with the front arbor C, against the front gage stop, he
 45 lowers the frame E, by the winch w' , and raises it so as to make the bit y , cut a clean round end to the head part of the mortise in the block operated on, and when this is finished he lowers the frame E, so as to
 50 take the spoon bit out of the way, and draws the frame B, forward so as to stop the inside of the back arbor C, against the back gage stop, and holding it there, puts the crank shaft into operation, which sets the
 55 square, or arising chisel d' , into work, and this by a rapid alternation of descent, and ascent cuts out the opposite or as it is technically termed the arse end of the mortise square, and the workman now puts the
 60 chisel d' , out of gear, and removes the block,

whose mortise is now so far finished to make room for others in succession to be mortised in the same way.

And I the said THOMAS BLANCHARD do hereby declare that I do claim as my invention— 65

1. The movable cutter, or lip to the spoon bit as the same is herein specifically described.

2. And I do herein further claim as my 70 invention that hereinbefore specified arrangement of machinery, and tools by which the workman is enabled to bore the hole in a block for the sheave pin at the same time that the mortise is being made for the 75 sheave.

3. And I also claim as my invention the application of a cutter fixed in a metal plane stock similar to the rebate plane in such a way that the lower or "arse" end of 80 a block may be finished with a square end to the mortise for the sheave without being moved from that part of the machine wherein the mortise has been made.

4. I also claim as my invention the application of the index gage plate with numbered holes, and the index spring plates, and stud to regulate the working of the machinery so as to bore at any required 85 distance any number of mortises or blocks 90 so far as the size of the machine will allow.

5. And I do hereby declare that I do not claim as my invention any other of the several parts of the said machine, the same having been long previously well known. 95 But

6. I do further, and finally claim as my invention that entire mechanical arrangement of other well known parts in combination with parts invented, and brought 100 into use by me, that is hereinbefore substantially described, and set forth as my new, and useful improvement in machinery for mortising and boring ships' tackle blocks, which machinery may also be made applica- 105 ble to other useful purposes of a similar kind.

7. And I claim as my invention, and improvement the adaptation and combination of all the parts of the aforesaid machinery 110 as above described so as to produce the above described results in manner aforesaid.

In testimony whereof I have hereunto set my hand.

August 11th, 1835.

THOS. BLANCHARD.

Witnesses:

JOHN N. TAYLOR,
JAS. H. SANFORD.