No Printed Specification Available

7605X

2 Sheets-Sheet 1.

B. Kugler,

Wood Planing Machine.

Patented June 3, 1833:

Fig:1

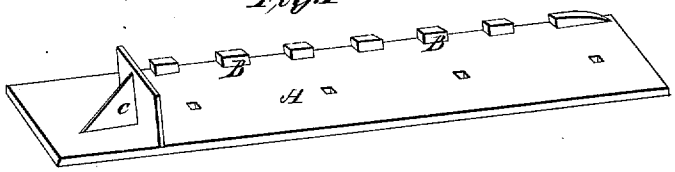


Fig:8.

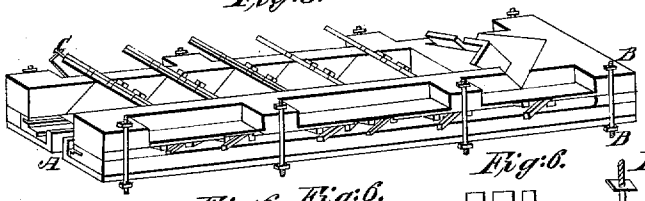


Fig:6. Fig:7.

Fig:6 Fig:6.

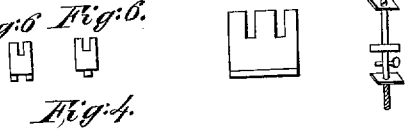


Fig:4.

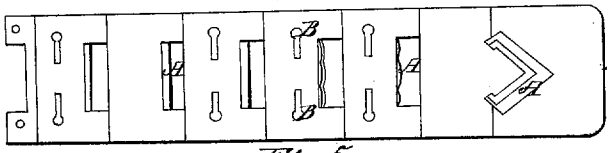


Fig:5

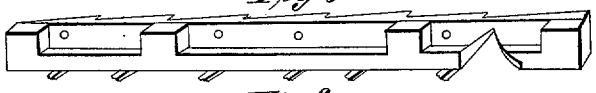


Fig:3.



Fig:2.



AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

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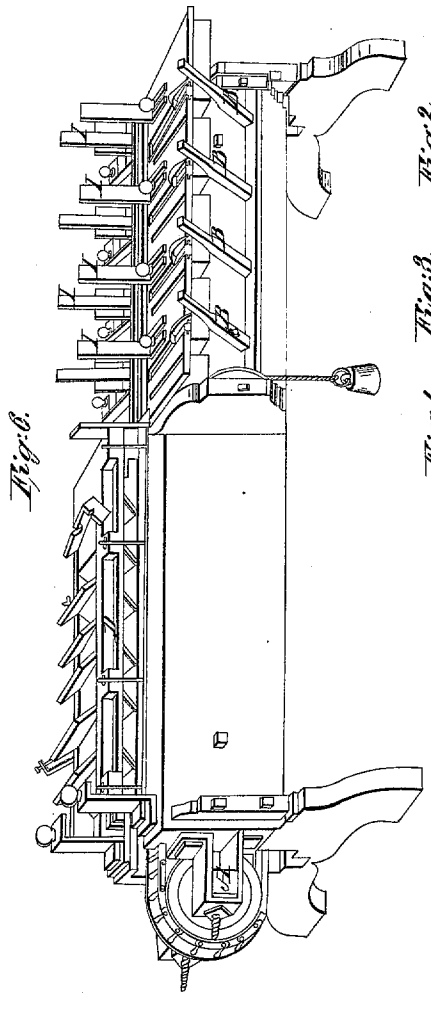


Fig. 6.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

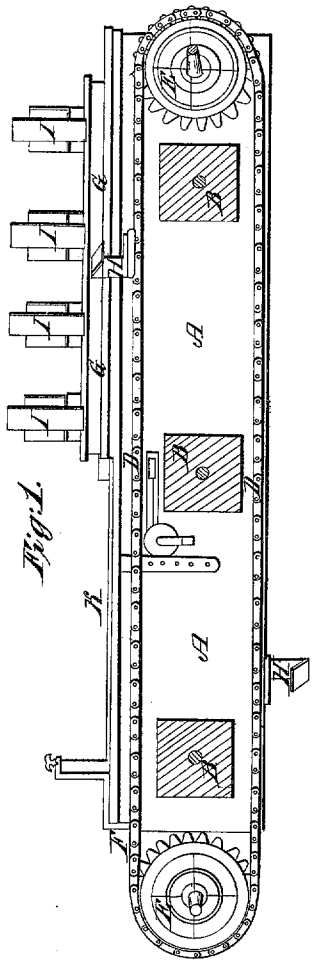


Fig. 1.

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

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June 5 1630

Benjamin Hugles Pat. Penn
Letters Patent

The Schedule referred to in these Letters Patent and enrolment of the same Containing a description of the nature of the said Benjamin Hugles Invention & of his Improvement Called "Hugles's planing machine."

To all persons to whom these presents shall come. Benjamin Hugles of the City of Philadelphia and State of Pennsylvania sends greeting.

Be it known that I Benjamin Hugles have invented a certain Machine and applied it to a new and useful improvement in the Method of planing tongueing and grooving and cutting into mouldings either plank boards or any other material and so reducing the same to an equal thickness at a new and useful Machine called Hugles planing Machine specified in the annexed following bill. This improvement and Machine is thus described. .....

The pieces of timber (called the timbers) from twelve to fourteen inches square and about forty feet long are to be placed horizontally and parallel to each other about nine inches apart and shall be confined from rising (Pl. 1. Fig 1 AA) they are kept at the proper distance by blocks (Pl. 1 Fig 1 BBB).

In the manufacture of such timbers and at the distance of about three inches from the top is to be cut a groove two inches wide and one in depth running horizontally the whole length of the timber and called the groove (in which it may be desirable) the groove as above described may be made of cast iron or other metal and let into the timber (Pl. 1 Fig 1 CCC)

On the top of the timbers and well secured thereto by screw bolts is placed horizontally the Holding box of a rectangular shape open at both ends and large enough long enough to contain and admit of a free passage for the largest piece and thickest board intended to be planed (Pl. 1 Fig 1 D) through the centre of the bottom of the Holding Box (which must be made by one of the sides of the space between the timbers) there must be a long rectangular opening called the "Rack Slot," about two inches wide running the whole length of the box so as to leave a free passage for the Teeth of the Rack

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hereinafter described. The holding Box must be as long as the longest board intended to be planed and capable of being adapted (by means of moveable and lateral gauges, Pl 1 Fig 1 & C. III) to the different widths of the board intended to be planed. The top of the Holding Box may be left open in which case the Boy must be fast through the top, and the board must abut the one end against the Box till some stop of the top of the Holding Box be not left open the side must be so left in which case the Boy must be fast through the side. Both these modes of fasting the Boy are hereinafter described.

In the bottom of the end of and contiguous to the Holding Box is placed the Planing Box, Pl 1 Fig 6 D) of a rectangular shape open at both ends about three feet long wide enough to admit the boards as hereinafter described and having a longitudinal opening (called the neck slit Pl 2. Fig 5 A) through the centre of the bottom extending the whole length of the Planing Box and of the same width as the neck slit in the Holding Box. The Planing Box is to be so placed that the upper surface of the bottom thereof shall be in a horizontal line with the upper surface of the Holding Box and that the neck slits of the two Boxes shall form one straight line. The bottom and sides of the Planing Box are thus made. Upon them is a rectangular plate of cast iron (called a bottom plate Pl 2 Fig 1 A) three feet long one foot wide and one inch thick perfectly flat on the under surface and having on the upper surface perpendicular thereto and exactly fitted with the power to slide thereon four rectangular blocks (called bottom blocks Pl 2 Fig 1 B B B B) as shown and to be planing Bottom Index) each four inches long extending lengthwise along the bottom plate three-quarters of an inch wide and one inch high with a space or interval of five inches between each at the position ends of the bottom plate is placed a Stay (Pl 2 Fig 1 C) to prevent the side and top plates from moving backwards.

The bottom plates and bottom blocks and stay to be cast in one piece. The plate to be securely fixed by screw bolts in one of the positions that the bottom blocks shall form one side of the neck slit so that the upper surface may form part of the upper surface of the bottom of the planing box. Another and corresponding bottom plate and blocks to be placed in the other end. There must be two other rectangular plates of cast iron (called side Plates Pl 2 Fig 2 A)

Each of these Side Plates being six inches wide and one inch thick respectively Must on the Under Surface and having on the upper Surface as many Triangular Blocks (called Side Blocks A 2 Fig 2 & 3) as there are to be planing Bolts to the Bars of each to be from Inches Long respectively Lengthwise along the Side Plates and the ends of each to leave the Inside edge of the Side Plate Inches Spaces Internal of the Inches between the respective Ends of the Bars of each corresponding with the Internals between the Bolts & Blocks The Anterior end of the Bars of each Side Block is to be at the distance of one quarter of an Inch from the Inner edge of the Side Plate and the Posterior end of the Bars of each Side Block is to be at the distance of five Sixteenths of an Inch from the Inner edge of the Side Plate.

The Anterior Side of each Side Block is to be at an angle of forty five degrees with the Line of the Inner edge of the Side Plate. The first Side Block A 2 Fig 2. & 4 C) (viz. the one which is nearest to the Rabbeting Iron) is to be at the Anterior corner of the Thickness of the Board when the Planing Box and the last Side Block is to be at the Anterior corner exactly of the Thickness to which the Board is to be reduced by the plane. The intermediate Side Blocks are to be graduated between these two extremes. Each Side Block is to be one Sixteenth of an Inch thicker at its Posterior than at its Anterior corner the Upper Surface of each A 2 Fig 2 & 3 B) thus forming a plane at an angle with the Inclined and Sitting exactly the under Surface of the top of the Planing Box to be hereinafter described on the Anterior Sides of the four first Blocks on each Side Plate are screwed Screw Bits on the remaining eight Side Blocks one of the Side Plates are screwed Tongueing Bits and on the other Grooving Bits. Each Side Plate with its Side Blocks might be cast in one piece all the castings however mentioned are of course supposed to be retained & the necessary accuracy must both by the file.

When the Side Plates are laid upon the Bedding Plates the Side and Bottom Blocks will correspond with each other respectively. The Side Plates are to be placed upon the Bottom Plates the Bars of the Side Blocks forming the Sides of the Planing Box the Side Plates are moveable on the Bottom Plates so as to be adapted to the different Widths of the Boards to be planed they are to be placed so as to converge towards the Posterior End according to the proposed reduction of the Width of the Board and they are secured in the proper positions by screws passing through the Bolt Holes hereinafter described for fastening down the top of the Planing Box

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The top of the Planing Box is a rectangular plate of cast iron (called the top Plate, Nº 2 Fig 4 & 6) seven feet long about sixteen inches wide one & one inches thick having longitudinal opening through the centre Six feet long and six inches wide as the widest part and tapered like the planes to save expence in casting. The top plate may be cast thinner between the planes through which the screw bolts pass as in the planing Fig 6.

In this opening are placed as many triangular blocks (called top blocks) as there are to be planing bits the bases of the top blocks to be four and a quarter inches wide and as long as the opening in the top plate is wide and the two sides of each top block to form an angle of forty five degrees with the base the bases of the top blocks being part of the under surface of the top plate between the ends of the bases of the respective top blocks intervals or spaces one half of one & three quarters inch on the contrary sides of the top blocks are placed the cutting bits to be fastened by screws or otherwise as hereinafter described. The cutting bits may of course be of any kind polished or plain and be made as obliquely (Nº 2 Fig 4 A A) the top blocks and top plates are to be cast in one piece. The under surface of the top plate is to be first filed perfectly true then from the first cutting bit (viz the one nearest the Planing Box) to the second next to it from each cutting bit to the one next behind it the under surface of the top plate is filed at such an angle as to correspond with and exactly fit into the upper surfaces of the three blocks herein before described

The top plate rests on the upper surfaces of the side blocks and is fastened down by two large screw bolts (Nº 2 Fig 4 & Fig 6 B) one each side passing through the flanches and bottom plates but outside of the side plates so as to bind all the parts of the planing box firmly together the ends of these screw bolts are to be admitted screws which pass through horizontally and regulate laterally the position of the side plates (Nº 2 Fig 4 B B B) through which the screw bolts working pass through the side plates and flanches these the bolts being immovable in the sides so as to admit of the position of the side plates being altered laterally

The cutting bits may be secured by long bit or blade having a spring at the bottom to push the bit up where it

to the top, on the top at each side a piece of iron (R 2 Fig 4 C) turning on a pivot and having in a rectangular joint in an Triangle, which a Screw-stop When the arms formed so as to lay along over the Slotting bit the screws bite against steadily on the Iron and clamp it in its proper place. On the upper part of the cutting bit there are the holes into which a hook may be screwed to draw out the bit.

The Heads (R 1 Fig 1 EE) are to be placed one at each end of the Timber on which are pivotion screws and may be tapped the other is attached to the Sawing frame and must be tapped so as to work upon an Iron plate Chain (R 1 Fig 1 DDD) of nine Inches pivoted in length passing over the two Heads and on which they freely pivot so as more deeply to equal interests.

To either end of the dogs are the respective links of the Chain to which they are attached. The friction Head must be on Sliding frames so as to lighten or loosen the Chain. The dogs (R 1 Fig) are three inches. The lower part (called the foot. R 1 Fig 4) is about two inches thick eighteen inches long and three inches wide so that when passing between the timber it will fit and run easily in the grooves. The foot must be case-hardened along the inside of the bottom part, so as to allow the edge of the steel to darken the links of the Chain under the dog. At right angles from the Centre of the foot the neck (R 1 Fig 2 + 3) about five inches long and two inches wide so as to fit and run easily in the neck. This runs to such a length as to be level with the upper surface of the bottom of the Holding Box. The Head (R 1 Fig 2 + 3) is fixed at right angles on the top of the neck long about three quarters of an inch high two inches wide and half an inch in length less than the width of the board intended to be planed The Head may be screwed and pinned on in front of the neck or by having a neck piece coming down in front of the neck and pinned thereto by two screws. The Heads must be placed that when the Chain and dogs are placed round them and the machine set in motion the dogs may pass horizontally between the timbers fitting in the grooves the neck passing through the neck slit and the head in the cavity of such just along the upper surface of the bottom of the Holding and Raising Boxes (R 1 Fig 1).

The Machine may be fed in either of the ways viz by the feeders by the top of the Holding Box in the first case

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one side of the Holding Box so as to admit of the insertion of the boards a number of boards are placed transversely along side of the opening thus left which are kept in their proper position by upright guages of a suitable height (Fig 6 III) & transverse pieces of wire (Fig 6 BBB) one of which has upon a pivot and the end of which is placed that the dog immediately on leaving the Holding Box shall grasp the board and by means of a rope fastening around and under (Fig 6 BB) to advance the pushers (Fig 3) which act upon the board in the pile so as to push it into the cavity of the Holding Box ready to be taken by the next dog. This being effected a weight as more fully (Fig 6) attached to the wires causes them to fall back and the board are then in original position.

The better mode of feeding is believed to be through the top in which case the Holding Box is open at the top instead of one of the sides. Upright guages being carried to proper height the boards to be planed are placed directly in front of the cavity of the Holding Box. The lowest board in the pile will of course be in the Holding Box ready to be taken by the dog. The board must always come from the top of the box, and when the two lower the box will in time fall into the cavity thereof. The pile must always be composed of a sufficient number of boards to keep the lowest board by their vertical pressure from leaving the hands in consequence of the force applied at one end to push it into and through the plane.

The ground sides and top plates are placed at the entrance and the first bottom block is also placed so as to admit easily and guide the inclined chains and feet and heads of the dogs respectively and the boards. The dogs being attached to them are lowered gradually so as to keep the pieces at proper height, of course the Holding box may be fed through either the top or side by hand by pushing one board at a time into it. The dogs are intended to push the boards through the Holding and planing box. The Holding box is the purpose of holding and guiding the board while it is pushed into and through the planes, the sides keeping it in the true position laterally and the top and bottom preventing it therein that direction as well as preventing it from bending or breaking when it is pushed into and through the planing box.

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In the planeing by the desired object is to reduce the board to the required thickness and breadth and at the same time plane, tongue and groove it by taking off successive shavings each so thin as not to occasion or subject to difficulty or breakage or which may endanger the bits or other part of the machinery or require them to be made of greater strength than may be done with convenience. There can of course be no necessity for giving the precise thickness of each shaving. In practice so far I have found it convenient to reduce the board by passing it through the planing by one quarter of an inch in thickness and the same in breadth and the description given above of a machine calculated for such reduction each cutting bit therefore will take off about one forty eighth of an inch in thickness; each jointer bit will cut one twenty seventh of an inch in width the tongueing and grooveing bits of course make the tongue and groove merely without reducing the absolute width of the board.

The bottom of the planeing bed lay horizontal while the last cutting bit is one quarter of an inch lower than the first it follows that the general inclination of the top plate is downwards from the centres to the portions and therefore the under surfaces of the top plate form a plane, it would follow that in passing from each cutting bit to the next on the board would be forced through a diminishing cavity not equal to one thickness and through it would therefore it would not pass without very great friction and difficulty and being actually compressed to avoid this inconvenience the under surface of the top plate is cut upwards and backwards from each cutting bit to the one next behind it as hereinbefore described so that the part of the surface between any cutting bit forms an obtuse angle & the one formed with the horizon by the general inclination of the top plate. The consequence of this advice. Since an expedient applied to the side Hooks is that the board passes through the planing bed with the least possible friction and without touching any part except the bottom tongue and the edges of the lateral bits the wheels and endless chain being put in motion it is evident that the first dog will act upon the end of the board in the bottom bed and push it clear through that and the planing beds as soon as the board has left

the Feeding Leg Wheeler Frame is supplied and ready for the next Log which is then about to enter the Feeding box. The Saw Mandrel is Circular shaped with proper accuracy when properly constructed and used; it is however important that a Frame is run the risk of breaking any part of the Machinery, sometimes the Head of the dog may get under the End of the board in consequence of its being Split or otherwise defective in which case if the Planing Leg be fastened down it is evident that either the Machine must stop or that some part of it must give way. It may frequently happen that a board will not require to be more reduced in Width or Thickness & in this case is prepared to come by once passing through the Planing Leg. It is my intention therefore first to pass the board through the Machine without fastening down the top Plate and without the tongueing or grooveing fits and when the end of the board shall have been thus tested and the Frame duly adjusted to within one quarter of an Inch of the desired Width and Thickness then to pass it through with the top plate fastened by Screws Springs & Weights and the Machine arranged as hereinafter described.

The references herein are to the drawings annexed hereto. I claim as new and my original invention ---

1st The Mode of constructing the Feeding Leg and the Machine by which the board is thereon pressed for the feeding or breaking & drawing from it proper direction and pressure given to it while the Planing Leg while the force of pushing it through is applied by the Leg at the end of the board.

2 The construction of the Planing Leg and the combination and arrangement of the Iron Frame and the Mode in which friction is diminished by the arrangement of the various angles as above described and I do not claim as new and my original invention any other part of the Machine above described. In testimony that the above is a true Specification of my said Improvement as above described I have here to set my hand and Seal the Twenty fifth day of May in the Year of our Lord one thousand eight hundred and thirty three.

Wm. Taylor

Witness
Wm. H. Meredith
Benja. Bonsall

(Gratis June 25 1833)