C. Morry,
Making Stares,

No. 6,419, Patented May 1, 1849.

Fig. 1

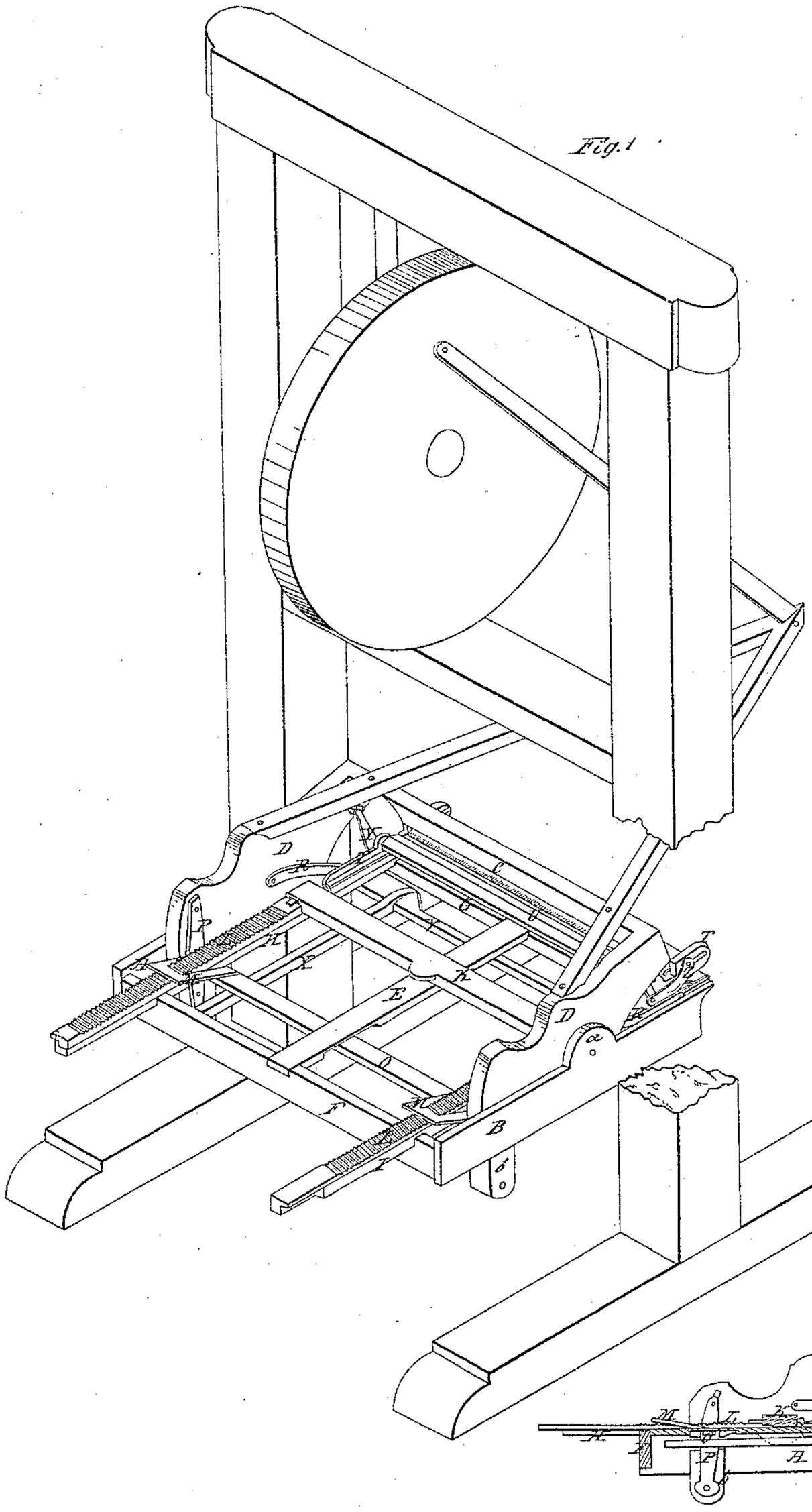


Fig. 3

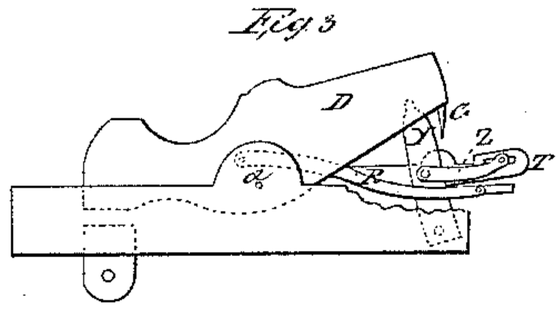
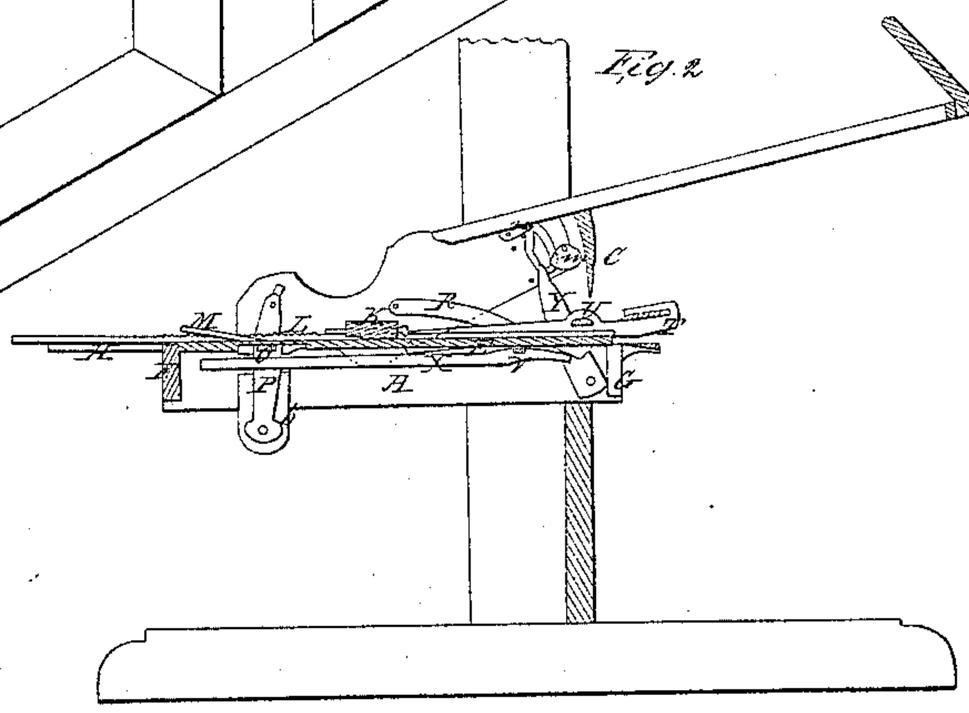


Fig. 2



UNITED STATES PATENT OFFICE.

CHARLES MOWREY, OF ELBRIDGE, NEW YORK.

MACHINERY FOR JOINTING AND CUTTING STAVES.

Specification of Letters Patent No. 6,419, dated May 1, 1849.

To all whom it may concern:

Be it known that I, CHARLES MOWREY, of the town of Elbridge, in the county of Onondaga and State of New York, have invented a new and useful Machine for Cutting Staves, heading, shingles, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, in which—

Figure 1, is a perspective view; Fig. 2, a vertical longitudinal section and Fig. 3, a side elevation of some of the parts detached. The lettering in this specification referring to the lettering in Fig. 1, exception noticed.

I construct my machine as follows: I make a cast iron open frame work, about four feet square—the side pieces A, and B, being made and shaped as follows: At their centers, or their upper edges, are elevations, with holes *a*, *a*, for the passage of the gudgeons of the arms D, of the main knife C, below described:—said holes are so placed that the centers of said gudgeons shall be on a line with the upper edges of the sides A, B, of the framework. On the opposite and lower edges of said side pieces A, and B, and about half way from said elevations to the back ends of said side pieces are other projections *b*, *b*, for the pinions of the pitmen below described for acting on the ratchets below mentioned. A bar or cross piece E, passes from the center of the back end piece F, to the center of the front end piece G, with its upper side slightly elevated from the upper edges of the ends F and G, of the frame-work. Two other cross pieces H, and I, pass from the front to the back end pieces, parallel with the cross piece E, with their upper sides on the same plane with that bar (E,) and grooved on their upper edges to match the ratchets below mentioned. The two cross-pieces H, and I, are as near the side pieces A, and B, as they can be placed and give room for the action of the arms of the main knife C, below described.

On the front end of the frame-work G, I fasten by bolts a gum, formed of blocks of wood, with the grain running up and down, in such a position that the edge of the main knife below mentioned will, after cutting off the staves &c. as below mentioned, strike into and rest upon said gum. The upper edge of said gum is on the same plan with the three cross-pieces E, H, and I, above described, which form a bed on which the block from which staves, &c., are to be cut, rests while the machine is in operation. The head-block K, which follows and feeds the timber up to the knives below mentioned I make a straight heavy block of iron, nearly as long as said knives, with ratchets, L′, L, running back at right angles from each end, said ratchets L′, L, have a flange on their under sides adapted to run in the grooves on the upper sides of the cross-pieces H, and I, and are calculated to be of such size and form that each tooth shall feed up the block the thickness of a stave, &c., at each motion it makes.

A hand M, M works on each ratchet, which hands are fastened to a wallower O, attached to the arms D, D, of the main knife, below described, and the frame-work, by means of two vibrating posts P′, P, or pitmen, which vibratory posts or pitmen P′, P, at their lower ends are fastened by pins to the projections *b*, *b*, above described on the lower edges of the side pieces A, and B, of the framework, and at their upper ends are other pins with friction rolls in their extremities, which last mentioned pins run in slots cut into the rear ends of the arms, D, D, below described. The form of said slots, and the mode of their action on said vibrating posts or pitmen are below more fully shown.

The lower jointer or knife I make of the usual length of a stave, circling (downward) from end to end to give the usual bilge to a stave as shown in Fig. 2, and is hung in grooves attached to the front ends of the side pieces A, and B. This jointer or knife is connected by means of rods R′, R, with the arms D, D, of the main knife below described, at points S,′ S, so far in the rear of and above the gudgeons *a*, *a*, of said arms as to give to said rods a longitudinal motion of about one fourth of an inch (forward and back) while said arms and the main knife are making their entire operation. This jointer or knife is drawn toward the block to be cut and joints its under side at the same time that the main knife below described is passing up, and is carried back as said main knife descends. At the same time that the said lower jointer or knife is drawn in toward and acts upon the block or timber to be cut the hand block K, in the rear of

said timber acts upon said timber and forces the same against the said lower jointer or knife; which action is produced as follows: In the rear ends of the arms D, D, of the main knife are the slots hereinbefore referred to; the upper portions of which are arcs of circles having the gudgeons of said arms for their centers; the lower portions of said slots are cut farther back into said arms, and so far downward toward their lower corners that when the main knife rests on its bed or gum above described, the pins (containing the friction rollers above described as placed in the tops of the vibrating posts or pitmen R′, R, are in the extreme lower portion of the slots; as the said arms are elevated the pins in the vibrating posts or pitmen are forced forward and the hands M′, M, acting on the ratchets carry them forward in the direction of the knives—the pins then pass into the circular portion of the slot, and hold the ratchets firmly to their places, while the knives all perform their offices, the head block K bearing firmly against the block to be cut, prevents the same from sliding back while the knives are being forced into it.

The main knife C, is also of the usual length of a stave, slightly curved on the inside to suit the radius of its arms, and is strongly bolted into a cast iron frame; at its ends it is attached to the arms D, D, which arms (also of cast iron) turns on gudgeons running in the holes *a*, *a*, in the elevations on the upper edges of the side-pins A, and B of the frame work. Levers are attached to said arms, to which the power is applied giving to said arms a vibratory motion. The levers may be operated upon by a pitman above or a shaft below. As said levers are forced downward the main knife severs the staves &c (already jointed) from the block or timber.

The upper knife or jointer is similar in size, shape and curve to the lower jointer—its curvature being upward while that of the lower jointer is downward. It is like the main knife firmly bolted between two strips of cast iron, in which are screws to gage the edge of the knife, and is hung in shoes or in grooves in the ends of elevating guides T′, T, the rear ends of which guides run back to the gudgeons of the arms D, D, of the main knife, to which they are attached or to the cross pieces H, and I, immediately opposite said gudgeons. Said elevating guides T′, T, contain also a follower U, or bar a few inches in the rear of the upper jointer and parallel with it, for the purpose of resting on the top of the timber to be cut, to hold it to its place (perpendicularly) by the combined weight of the upper jointer, follower, elevating guides, and such additional weights as may be necessary for that purpose, attached to the outer ends of said elevating guides. The follower also serves to direct the motion of the upper jointer—its lower edge resting on the top of the block or timber to be cut being on the same plane very nearly as the center of the upper jointer.

The upper jointer with its frame &c is more fully shown in the figure marked 2. A bar V, with a gudgeon at each end turning in holes in the bottom of the frame work is placed directly under the main knife—a lever X, is attached to said bar V, running out under one of the ratchets. By bearing down on said lever X, projections on the side of said bar V, on the sides next the knives act against the under sides of the elevating guides T′, T, and raises the same sufficiently high to introduce a new block or timber under the follower U,—the head block K, being first shoved backward.

On the inner sides of the arms D, D, of the main knife and a few inches in the rear of said knife, are two eccentrics which I make of steel—stationary in all their parts, and firmly attached to said arms D, D, and placed directly opposite, facing each other, which eccentrics are more fully shown in the figure marked 2, connected with each of said eccentrics is a pitman Y, the lower end of which is pinned to the lower edges of the side-pieces A, and B. The top of each pitman is curved and contains a friction roller to act against the above mentioned eccentrics as follows:

As the arms D, D, of the main knife are at their lowest point of depression the curved points of the pitmen containing the friction rollers stand at the apex of the central part of the eccentric and the upper jointer is at its greatest distance from the block or timber to be cut; at this position a fly *n*, attached to the outer part of the eccentric falls in behind said curved points of the pitmen, that is on the side opposite the knives; as said arms D, D, are elevated, the curved points of the pitmen follow down on the side of the eccentric next to the knives; which side of the eccentric for half its arc is of the same radius as the circle in which the main knife moves; the remaining half is of a less radius, and as the curved points of the pitmen reach the last half of the eccentric it passes over to the other side of the groove surrounding the central stationary eccentric and is drawn by said side of of the groove in a direction away from the knives. Connecting rods Z′, Z, attached to the end of the upper jointer are fastened to the above described pitmen at such positions that the points of attachment to the jointers—to the pitman—and gudgeons of the arms D, D, of the main knife shall be as nearly as possible in a direct line. As the curved points of the pitmen pass down the last half of the inner eccentric and are

carried back from the knives the connecting rods Z′, Z, of the upper jointer are drawn in the same direction and the upper jointer is brought in contact with the timber to be cut; at this point another fly *m*, attached to the outer portion of the eccentric falls in against the curved points of the pitmen, forcing the same, as the arms C, and D, of the main knife descend to pass up on the opposite side of the eccentric.

The side of the eccentric most distant from the knives has two faces:—the first is such an angle of elevation that as the eccentric is depressed the curved points of the pitmen shall be forced sufficiently far backward from the main knife as to draw the upper jointer far enough toward and under the main knife to joint the stave (still in the block). After leaving the above described first face of the eccentrics the curved points of the pitmen pass to the opposite side of the groove surrounding the steel central portion of the eccentric and pass up on said opposite sides, being forced back thereby in the direction of the knives and carrying back the upper jointer with them until it is away from under the main knife and at this point the fly *n*, first mentioned falls in behind the said curved points.

The operation of the machine is as follows. The timber to be cut into staves, heading, shingles, &c., must be sawed into plank of the required thickness and length. The timber is to be placed upon the guides of the rackets H, and I, and the cross-piece E, first above mentioned. The head-block K is then carried forward to it and the timber is fastened to said head-block by means of dogs in the ends of said head block. By depressing the lever X attached to the bar Y under the ratchet, the follower U, described as located behind the upper jointer is elevated and the timber is passed under it, its front edge resting on the gum above described and the follower is let down on to it and the machine is ready for operation. The block to be cut lying in this position is met by the lower jointer and its lower edge is jointed on the same plane as the upper surface of the framework.

The main knife, working in a circle with the gudgeons of its arms for a center, leaves the block, after the first stave is cut from it with an edge in a circular form, that is an arc of the same circle. Both jointers acting in toward the same center with the main knife, give the same bevel to the edges of the stave,—and being of the same curvature give them the same bilge and joint, the main knife giving the surfaces of the stave and all the dressing and finish required.

The head block may be fed up in the rear of the block or plank to be cut by means of screws operating in the place of the above described ratchets, said screws being operated upon by gearing attached to the rear ends of the arms of the main knife in lieu of the slots and vibrating posts. The upper jointer may also be operated by dispensing with the above described eccentrics and pitmen and substituting therefor two hammers suspended over the ends of the upper jointer by springs attached to a bar running across above the levers to the arms of the main knife, and so arranged with catches that the raising of the said levers would carry said hammers away from the block or plank to be cut—allow them to fall back and strike the upper jointer and again elevate them before the main knife comes in contact with the block or plank—the upper jointer sliding in grooves so arranged that the same could not be driven into the block or plank than to joint the staves &c., the upper jointer being carried back from the block or plank by connecting rods as above described.

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

The combination of the main (stave cutting) knife C, with the two jointing knives and with feeding apparatus, in such a manner that the staves will be jointed immediately before they are cut from the block, and then the block moved forward into the proper position to be again acted upon by the jointing and stave cutting knives, substantially in the manner herein set forth.

CHARLES MOWREY.

Witnesses:

A. G. Goodsell,

R. S. Perkins.