# L. Eames,

## Mortising Machine.

No. 20,197. Patented May 11, 1858.

Fig. 1.

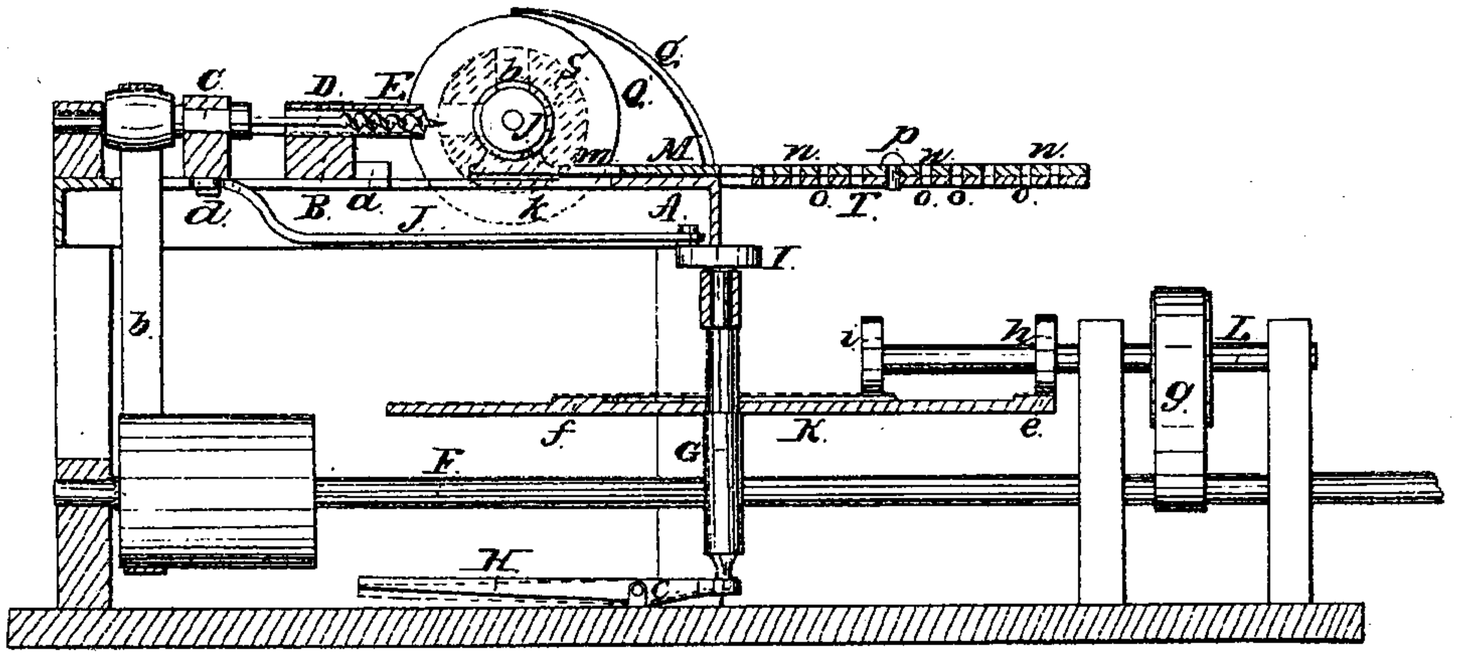
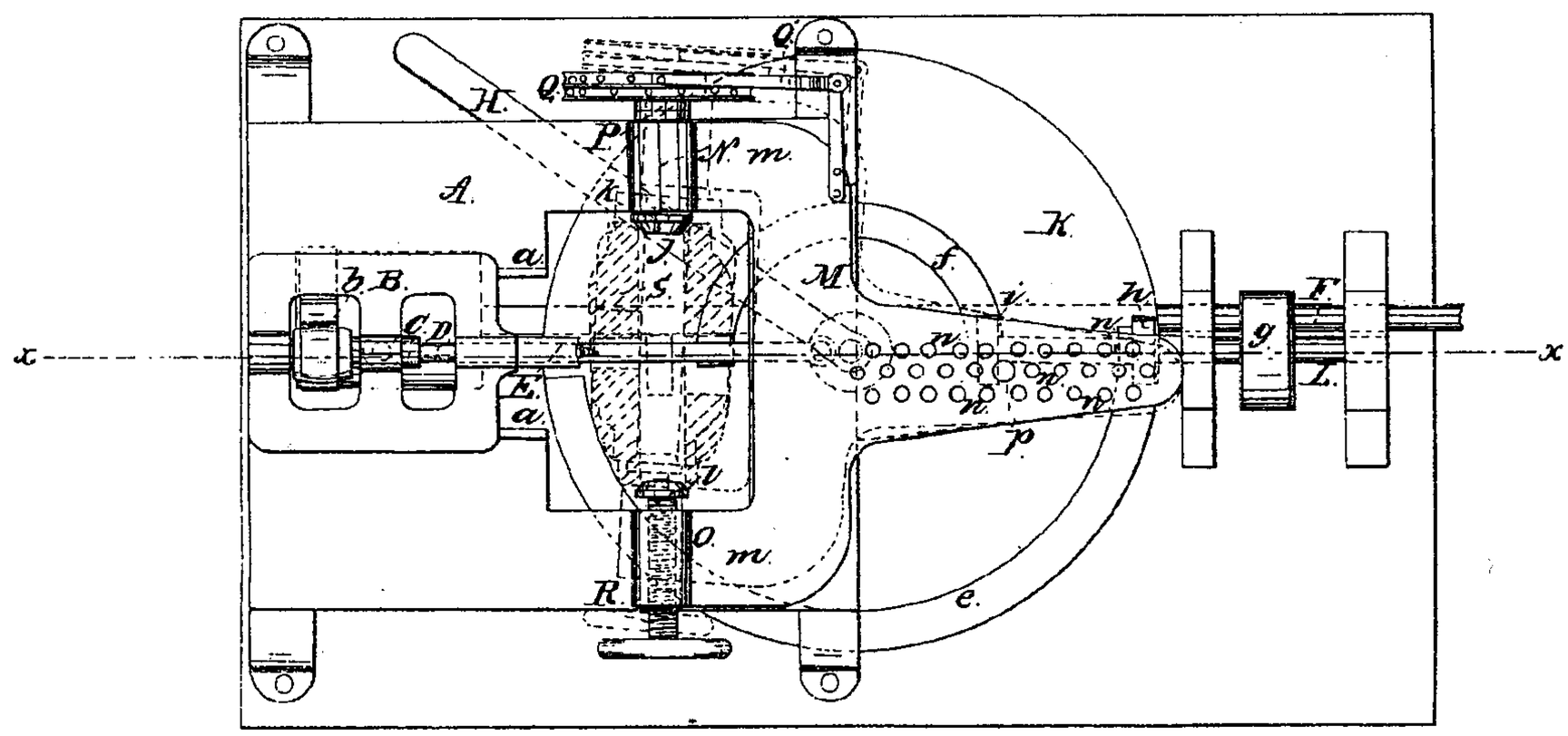



Fig. 2.



# UNITED STATES PATENT OFFICE.

L. EAMES, OF KALAMAZOO, MICHIGAN.

## HUB-MACHINE.

Specification of Letters Patent No. 20,197, dated May 11, 1858.

*To all whom it may concern:*

Be it known that I, LOVETT EAMES, of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and Improved Machine for Mortising Hubs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical longitudinal section of my improvement taken in the line (*x*), (*x*), Fig. 2. Fig. 2, is a plan or top view of ditto.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in a peculiar means employed for feeding the mortising tool to its work whereby the tool may be fed with a variable speed commensurate with its cutting capacity.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a metal bed or platform which is supported at a proper height by pedestals or any suitable framing. On the bed A, there are formed or placed two ways (*a*). (*a*), on which a carriage B is fitted and works. The carriage B, is simply a metal frame or plate in which an arbor C, is placed horizontally, said arbor having an auger D fitted in one end. To the inner end of the carriage B, a hollow rectangular chisel E, is attached, and the auger D, is fitted within said chisel its end projecting a short distance beyond the cutting edge of the chisel. The auger D, is rotated by a belt (*b*) from the driving shaft F, below the bed A.

G represents a vertical shaft placed below the bed A, and having its lower end stepped in the inner end of a treadle H, which has its fulcrum at (*c*). The upper end of the shaft G, has a crank pulley I, placed on it, and one end of a connecting rod J, is attached to said pulley, the opposite end being attached to the carriage B, at its under side as shown at (*d*) Fig. 1. On the shaft G, at about its center, a circular disk K, is placed. This disk is provided on its upper surface with two semi-circular concentric ledges (*e*). (*f*), one of which (*e*) is a portion of a larger circle than the other (*f*), the ledge (*e*) being at the edge of the disk and the other (*f*) near its center. The ledges (*e*), (*f*), are placed in reverse positions on the disk K, as shown clearly in Fig. 2.

L, is a shaft which is placed above the driving shaft F, and is driven from it by a belt (*g*). This shaft L projects over the disk K and has two rollers (*h*) (*i*) attached permanently to it, one roller (*h*) being over and in line with the ledge (*e*) and the other over the smaller ledge (*f*) as shown clearly in Fig. 1.

On the bed A. a plate M, is placed. This plate is provided with heads N, O, at its inner end, in one of which N, an arbor P is placed having a dividing wheel Q, on its outer end, and a conical button (*j*) provided with two spurs (*k*), (*k*). The other head O has a screw R. fitted in it, said screw having a button (*l*) on its inner end, said button being fitted loosely on the screw rod and having its inner part of conical form. The plate M, is of T-form, the heads N, O, being attached to plates (*m*). (*m*), which are sufficiently far apart to allow the hub S, to be placed between the buttons (*j*), (*l*). The outer part of the plate M, is provided with three series or rows of holes (*n*) which are placed over corresponding holes (*o*) in a projecting plate T, attached to the bed A. A pin (*p*) passes through either of the holes (*n*) (*o*) and serves as a fulcrum for the plate M.

U. is a pawl attached to the plate M, and catching into the wheel Q.

The operation is as follows: The hub S is centered between the two buttons (*j*) (*l*) and the pin (*p*) placed nearer to or farther from the hub S, according to the desired taper intended to be given the ends of the mortise, for instance if a "quick" taper is required the pin (*p*) is placed nearer the hub than when a long or gradual taper is required. The variation of the taper depending chiefly on the varying size of the hubs to be mortised. Suppose the pin (*p*) to be inserted in the central row of holes (*n*) (*o*) the plate M is first secured in such a position that the chisel E, will be in line with the row of holes at the right side of the central row as shown in black Fig. 2. Motion is then given the shaft F, in any proper manner and the operator depresses the outer end of the treadle H, with his foot so as to raise the shaft G, and disk K, and cause the ledge (*e*) on the disk K, to be pressed against the roller (*h*) on the shaft

L, sufficiently hard to rotate the disk K, and cause the carriage B, to move toward the hub S, the auger D, boring into the hub at right angles with its axis and the chisel E following the augur and squaring the hole made by it, the auger being rotated by the belt (*b*). By the time the hole is made in the hub the ledge (*e*) will have passed from underneath the roller (*h*) and the ledge (*f*) will pass underneath the roller (*i*) giving an increased motion to the disk in consequence of being smaller or nearer the center of the disk. The carriage B, is therefore moved back with a quick return motion. The plate M, when the tool or chisel is moved back is adjusted farther to the right as shown in red Fig. 2. This latter adjustment places the hub, also shown in red, in a proper relative position with the chisel E, so that the latter, as it is again fed to its work will cut the front part of the mortise obliquely giving the desired taper to the mortise so that the tenons of the spokes may be firmly driven in and securely held or retained by the mortises, and also causing the spokes to have an oblique position relatively with the hub, thereby giving the dish-form to the wheel. The front and back holes of the mortise being made, the tool or chisel is again "gigged back" and the central portion removed at the succeeding cut. When the mortise is finished the wheel Q, is turned the distance of one division and retained by a pawl Q′ until the succeeding mortise is cut, and so on until all the mortises are made. The periphery of the wheel Q, may be provided with two or more series of holes ($a^x$) so that mortises may be cut at varying distances apart according to the size of the hub.

The three rows or series of holes (*n*), (*o*), are made so that the plate M, may be shifted laterally and bodily to a certain extent so that hubs of varying lengths may all be placed in a proper relative position with the mortising tool. The placing of the pin (*p*) also in either of the side rows when the plate M is not moved or shifted laterally will increase the taper of the mortises.

By operating or feeding the mortising tool as herein shown a variable movement may be given it according to the speed with which it cuts. If the wood is of equal density throughout the tool may be fed with an equal movement, but if the tool comes in contact with a knot or portion denser or harder than the other portion the operator by relieving the pressure of the disk on the roller (*e*) may retard the movement of said disk more or less as desired and thereby feed the tool to its work with a slower movement equal to its diminished cutting capacity.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is—

Operating or giving the feed movement to the carriage B, in which the mortising tool is fitted or placed, by means of the horizontal rotating disk K, provided with the ledges (*e*) (*f*), and having its shaft G, stepped in the treadle H, in connection with the rollers (*i*), (*h*), on the shaft L which is rotated from the driving shaft F, the parts being arranged as shown or in an equivalent way to operate as herein described.

LOVETT EAMES.

Witnesses:
FRED. B. PORTER,
HORATIO C. HUNT.