C. B. Hutchinson.

Crozing Staves.

No. 53,982. Patented Apr. 17, 1866.

Fig 3.

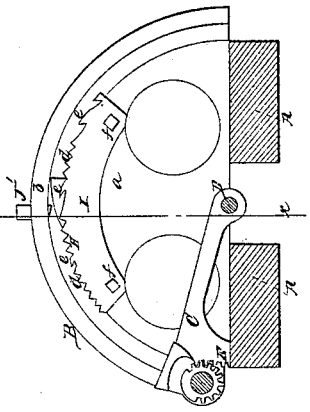


Fig 4.

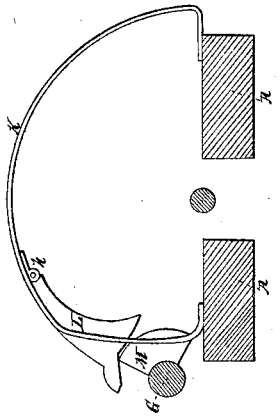


Fig 1.

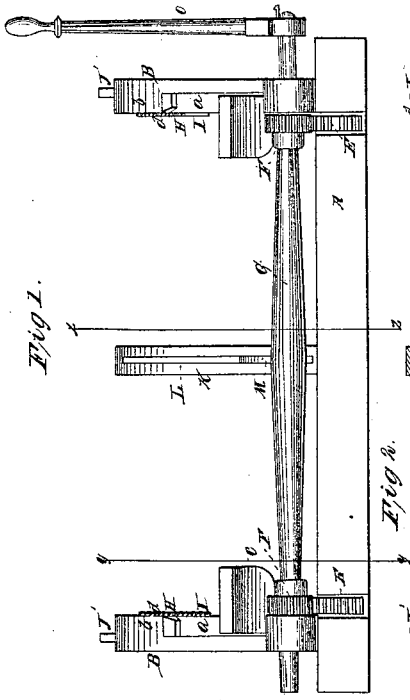
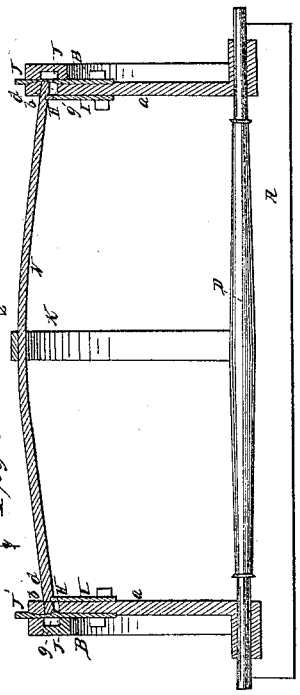


Fig 2.



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IMPROVEMENT IN MACHINES FOR CHAMFERING AND CROZING STAVES.

Specification forming part of Letters Patent No. **53,982**, dated April 17, 1866.

To all whom it may concern:

Be it known that I, CHARLES B. HUTCHINSON, of Auburn, in the county of Cayuga and State of New York, have invented a new and Improved Machine for Chamfering and Crozing Staves; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front view of my invention; Fig. 2, a longitudinal vertical section of the same, taken in the line *x x*, Fig. 3; Fig. 3, a transverse vertical section of the same, taken in the line *y y*, Fig. 1; and Fig. 4, a transverse vertical section of the same, taken in the line *z z*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to obtain a machine whereby staves for casks, barrels, &c., may be chamfered and crozed while bent in proper bilge or bulge form, and occupying the same position in the machine relatively with each other that they have when set up and bound together to form a cask or barrel, the staves being jointed previous to being chamfered and crozed. By this means the staves will all be chamfered and crozed in a uniform and perfect manner, and very expeditiously.

A A represent two parallel bed-pieces, which may be of wood or metal, and of any desired or proper length; and B B are two cast-metal heads of semicircular form, which are firmly bolted to the bed-pieces A A near their ends. These heads B B are cast with semicircular projections *a* at their inner sides, to serve as guides, over which the ends of the staves are forced or pressed while being acted upon by the crozing and chamfering cutters, and the upper edges of the heads B B have each a lip, *b*, projecting laterally over the guides *a*, as shown clearly in Fig. 2.

C C represent two arms, which are fitted loosely on a fixed shaft, D, the ends of the latter being secured in the lower parts of the heads B B. The arms C are provided with segment-racks E at their outer ends, and into these racks pinions F gear, the latter being on a shaft, G, which has its bearings in the heads B B. The outer ends of the arms C C above the racks E are of flat form, as shown at *c*.

H H represent the crozing-cutters, which are composed of a series of fleam-shaped teeth, *d*, and chisels *e*, (see Fig. 3,) said teeth and chisels being formed on a plate, I, attached to the inner sides of the projections *a* by bolts *f* in such a manner as to admit of the cutters being adjusted higher or lower to vary the depth of cut or to compensate for wear.

The teeth *d* and chisels *e* are so arranged or formed as to gradually increase in height from the front to the rear ends of the plates I, in order that the croze may be made with a gradual cut, the first series of teeth, *d*, penetrating the stave a short distance, and the first chisel, *e*, taking out the wood between the fleam-teeth, the second series of teeth penetrating a trifle deeper, and so on.

It will be understood that the teeth *d* are arranged so as to cut parallel slits in the staves, the chisels *e* taking the wood out between the slits.

The chamfering-cutters J J′ are arranged in pairs, one, J′, being over the other, J, as shown in Fig. 2. The lower cutters, J, have a rounded cutting-edge, and are inclined at their inner sides so as to give the necessary bevel or chamfer, *g*, to the ends of the staves, as shown in Fig. 2. The upper cutters, J′, penetrate the outer surfaces of the staves and insure a clean cut being made by the cutters J.

K represents a curved bar, which is secured to the bed-pieces A A centrally between the heads B B. This bar K is slotted and has an arm, L, fitted in the slot and secured by a pivot, *n*, the arm working freely on said pivot. The outer end of the arm L is notched, forming an obtuse angle in which a segment-projection, M, on the shaft G works. (See Fig. 4.)

The operation is as follows: The staves N are fitted upon or against the lower front parts of the projections or guides *a*, the arms C C being depressed or lowered so as to be directly over the pinions F F. The staves are thus fitted in the machine one at a time, and the shaft G, through the medium of a lever, O, is turned so that the pinions F F will move up the racks E E and arms C C, the latter forcing the stave upward to the crozing-cutters, and before the stave reaches said cutters the arm L is raised by the segment-projection M and the central part of the stave forced outward or upward to give it the proper bilge or bulge, if it did not have it previously, and the upper

part of bar K retains the stave in the proper bilge or bulge form. When one stave is thus forced up to the crozing-cutters the arms C C are lowered and a succeeding stave placed in the machine, which is forced upward as the one previously described, and the first stave is forced by the second stave still farther over crozing-cutters. Thus the work progresses, the staves being all forced over the crozing-cutters and past the chamfering-cutters J J′, and while in a proper bilge or bulge form. The staves, in consequence of being operated upon or having their chamfers and crozes cut while in contact, are prevented from being roughened or split at the ends of the crozes by the crozing-cutters—an important feature. as smooth work is insured by one stave holding or retaining the fiber of the ones next adjoining it.

These machines may be made of different sizes so as to suit the diameter of the casks, barrels, &c., for which the staves are designed; but each machine may have its heads B B adjusted at a greater or less distance apart as desired, to suit the length of barrel or cask required. The staves, therefore, may be cut of different lengths with one and the same machine.

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

1. A machine, substantially as herein described, adapted to receive staves successively and force them to the chamfering and crozing knives or cutters while they are guided and held in the relative position they are to occupy in the completed cask or barrel with their joints in close contact, each stave being moved forward by pressure from the succeeding one and discharged from the machine when completed.

2. The arm L, arranged within the curved bar K, and operated as shown, or in any equivalent way, for the purpose of giving the staves the necessary bilge or bulge form prior to the action of the crozing and chamfering cutters upon them, substantially as shown and described.

3. The arms C C, operated substantially as shown, in connection with the heads B B and guides *a a*, for the purpose set forth.

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