J. Wyman.

Mach. for Jointing Staves.

No. 860. Patented Jul. 28. 1838.

Fig: 1.

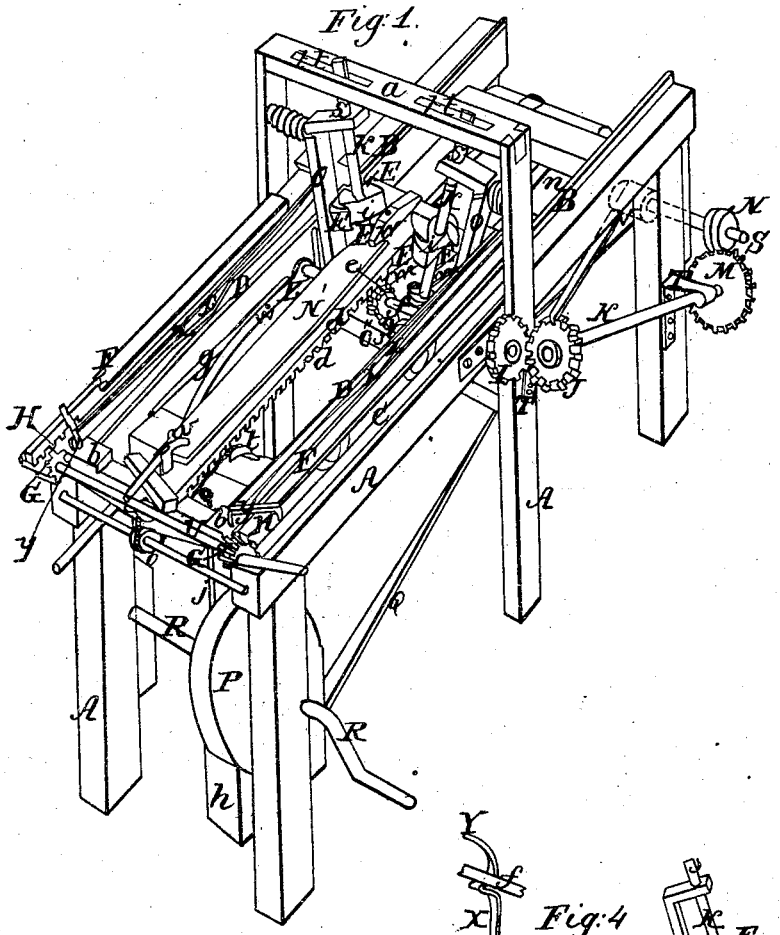

Fig: 2.

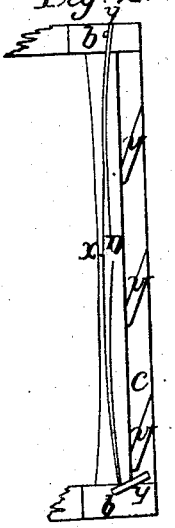

Fig: 3

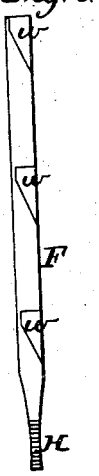

Fig: 7

Fig: 8.

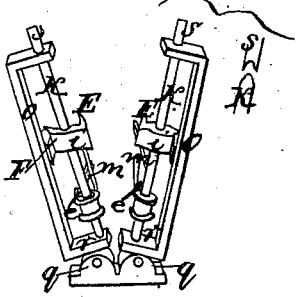

Fig: 4

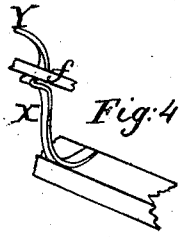

Fig: 6

Fig 5

UNITED STATES PATENT OFFICE.

JAMES WYMAN, OF BOSTON, MASSACHUSETTS.

MACHINE FOR JOINTING STAVES FOR BARRELS, CASKS, &c.

Specification of Letters Patent No. 860, dated July 28, 1838.

To all whom it may concern:

Be it known that I, JAMES WYMAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Machine for Jointing Staves for Barrels, Casks, &c., which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

A Figure 1, represents the frame of the machine, made of sufficient size and strength to contain and support the several parts of the machine, hereafter described, composed of six ports, mortised and tenoned into sills, or a stout rectangular platform, two longitudinal caps, and three cross ties, also mortised and tenoned together. The two center posts rise higher than the top of the frame and are connected together on top by a tranverse cap *a*.

B, B, two parallel ribs or ways fastened on top of the longitudinal caps, at the inner edges thereof, over which the carriage moves.

C, the carriage formed of a rectangular shape being composed of four pieces of timber mortised and tenoned, or ship lapped together, with a longitudinal piece *c*, mortised and tenoned, into the two end pieces in the center thereof and parallel with the two side pieces, having on the under side of said center piece a rack *d*, Fig. 1—into which a pinion *e* works for moving the carriage forward, which is fixed on an horizontal axle *f*, lying across the frame and revolved by certain gearing hereafter described. On the top of this carriage are four blocks *b*—one at each corner of the carriage, having a groove cut on the inside of each, for the ends of guides to slide in hereafter described. Said grooves are formed by cutting the inside of each block obliquely from the upper to the under side. The grooves, however, may be made rectangularly.—See Figs. 1, 2, and 7.

D, D, two guides for moving the cutters to and from the stave in order to give it the required bilge or shape—the stave being fastened by dogs, or other suitable fastenings, on the top of the center piece *c*, of the carriage and the guides arranged parallel to said center piece—with the ends of the guides placed in the grooves of the blocks before described—said ends being shaped to correspond with said grooves. Each guide is made concave on the front, or side toward the stave, and of a corresponding shape therewith, and straight on the opposite side or back.—See D Fig. 2.

E, E, E, E, cutters for shaping the stave—the stave being moved between said cutters. These cutters are made similar to plane irons as at Fig. 6 and are fastened to metallic stocks *i i* by screws—slots being left in the cutters to set them as desired and two or more cutters being secured to each stock. The stocks are fastened on inclined revolving axles *k*, *k*, turned by pulleys *l*, *l*, on said axles and bands *m*, *m*, passing around them to the main drum *n* Fig. 1. Each axle is supported by an oblong frame *o*, *o*, of three sides—the long side resting against the guide by its gravity assisted by a spring *p*, or weight and pulley;—its lower short side moving on a joint *q* in a metallic box *q* resting on the center cross piece c''^3 of the frame, near the center thereof;—said cutter frame having an inclined position the same as the before mentioned axle. See also Fig. 8.

The axle containing the cutters on one side of the stave turns in the frame—the lower end of said axle being brought to a point and made to turn in a cavity formed in the upper surface of the lower side of the frame at *r*—and its upper end in a cavity of a regulating box *s*—screwed into the side of said cutter frame. This regulating box extends above the frame and moves in an oblong mortise *t t* made in the cross cap of the main frame for guiding the frame and cutters. The other frame, axle, and cutters are formed and arranged in a similar manner, on the other side of the stave.

F, Figs. 1 and 3, rack and bar for advancing to or receding from the cutter frame the concave guides in order to recede from or advance the cutters toward the stave according to the width of stave placed thereon to be jointed. This is effected by fastening wedge shaped blocks *w* Fig. 3 on the under side of said bar which blocks as the bar is drawn forward come between inclined stops *v* Fig. 2 fastened on the top of the carriage and behind the concave guide D, and of course cause the concave guide to advance

toward the stave carrying with it the cutter frame and cutters for the purpose of jointing a narrower stave. In order to joint a wider stave—the bar F with the wedge shaped blocks *w* is pushed back by the rack and pinion G and H Figs. 1 and 3 which causes the guide to recede from the stave by means of a long spring L fastened at its center by a pin *x* to the guide having its two ends bearing against stops *y y* in the blocks of the carriage first mentioned—said spring being contracted as the guide is advanced and extended as it is receded; said stops at one end are staples inserted obliquely into the blocks *b b* in which staples the ends of the springs are inserted: those at the other end are pins.

The inclined frame with the cutters resting against the guide will, by its gravity, fall back from the stave and against the guide, aided by its spring. A similar rack-bar F wedge shaped blocks *w*, stops *y* and springs *z* to those just described are arranged on the other side of the carriage for advancing and receding the other guide.

Both bars are drawn forward or pushed back, for causing the wedge shaped blocks on the under side thereof to perform their office, by means of two pinions G, G, on a crank shaft U turning in boxes in the end of the carriage by hand—said pinions working into the racks H of the bars F.

The pinion *e* for advancing the carriage before mentioned is fastened on an axle *f* passing through one of the caps of the frame, on the end of which axle is a bevel wheel I into which works another bevel wheel J on the end of an inclined shaft K having on its other end a cog-wheel M into which works a worm N on the end of the drum shaft S turning in boxes at the end of the frame.

The inclined shaft K turns in apertures or boxes in arms T projecting from the sides of the main frame. The main drum *n* for turning the cutters and advancing the carriage is made of any required diameter and is turned by a band Q passed around a small pulley V on the end of the drum leading to a driving pulley P on a crank axle R at the other end of the frame turned by hand, or any other power.

The other end of the pinion axle *f* on which the bevel wheel is placed turns in the end of a lever L moving on a pin W inserted into the side of the frame for putting the pinion into gear with the rack—it is put into gear by depressing the long end of the lever which raises the short end with the pinion axle and when the pinion is in gear it is thus held by means of a spring rest X Fig. 4 fastened to the main frame which spring rest is pushed from under the axle by the carriage striking against its end Y when advanced as far as it is intended to go and the short end of the lever is pushed down with the axle by a spring *g* Fig. 1 which thus throws the pinion out of gear. The carriage is then brought back by the gravity of a weight *h* attached to a cord *j* fastened to the carriage passing over a pulley *o* at the end of the main frame and then over another pulley *t*.

To joint a stave in this machine it is first to be secured in the center of the carriage *c* by means of the dogs *w w*—the pinions G at the end of the carriage are then turned which move the guides D by means of the racks H, bars F, and wedge shaped blocks *w* and thus set the cutters E in a proper position for jointing the stave. The pinion *e* is then put in gear with the rack *d* of the carriage *c*—the propelling power is then applied to the main axle R which it turns with the main driving pulley P, which, by means of the connecting belt Q turns the main drum *n* and this turns the inclined axles *k k* and cutters E by the bands *m* passing around it and said pulleys *l l* of said axles. The carriage *c* with the stave No. 1 now advances and the cutters being pushed out toward the stave as far as they can go by the convexity of the guides D, begin to cut the stave away at the point, and as the carriage advances the frames O containing the cutters recede from the stave by following the concavity of the guides causing the cutters to cut away the stave in such a manner as to give it the required bilge bevel and taper which of course will correspond with the concavity of the guides; when the carriage has advanced as far as to bring the cutters in the greatest concavity then the greatest bilge will be formed and now the cutters will begin to advance toward the stave and gradually cut away more of it toward the other end by the gradual swelling of the guides toward the stave.

When the carriage has advanced as far as it is intended to go it comes in contact with the spring rest Y pushes it from under the pinion axle *f* which instantly falls and throws the pinion *e* out of gear with the rack *d* by its gravity and the action of the spring *g* above the lever L. The carriage then runs back by the gravity of the weight *h* at the end of the cord *i* fastened to the carriage *c*. The jointed stave is then removed and one not jointed secured in its place. The pinion is again put into gear with the rack of the carriage and the operation is repeated in the manner just described.

The invention claimed by me the said JAMES WYMAN, and which I desire to secure by Letters Patent consists—

1. In the before described mode of jointing staves by passing them between revolving cutters arranged in frames moving on joints which are caused to recede from or advance toward the stave alternately as the

taper and bilge are formed, by guides having a corresponding shape with the intended stave, said guides being also a part of the carriage.

2. In the combination and arrangement of the several parts of the gearing to move the carriage and cutters, whether arranged in the manner herein represented, or in any other substantially the same in principle.

JAMES WYMAN.

Witnesses:
W. P. ELLIOT,
Jo. B. WOOD.