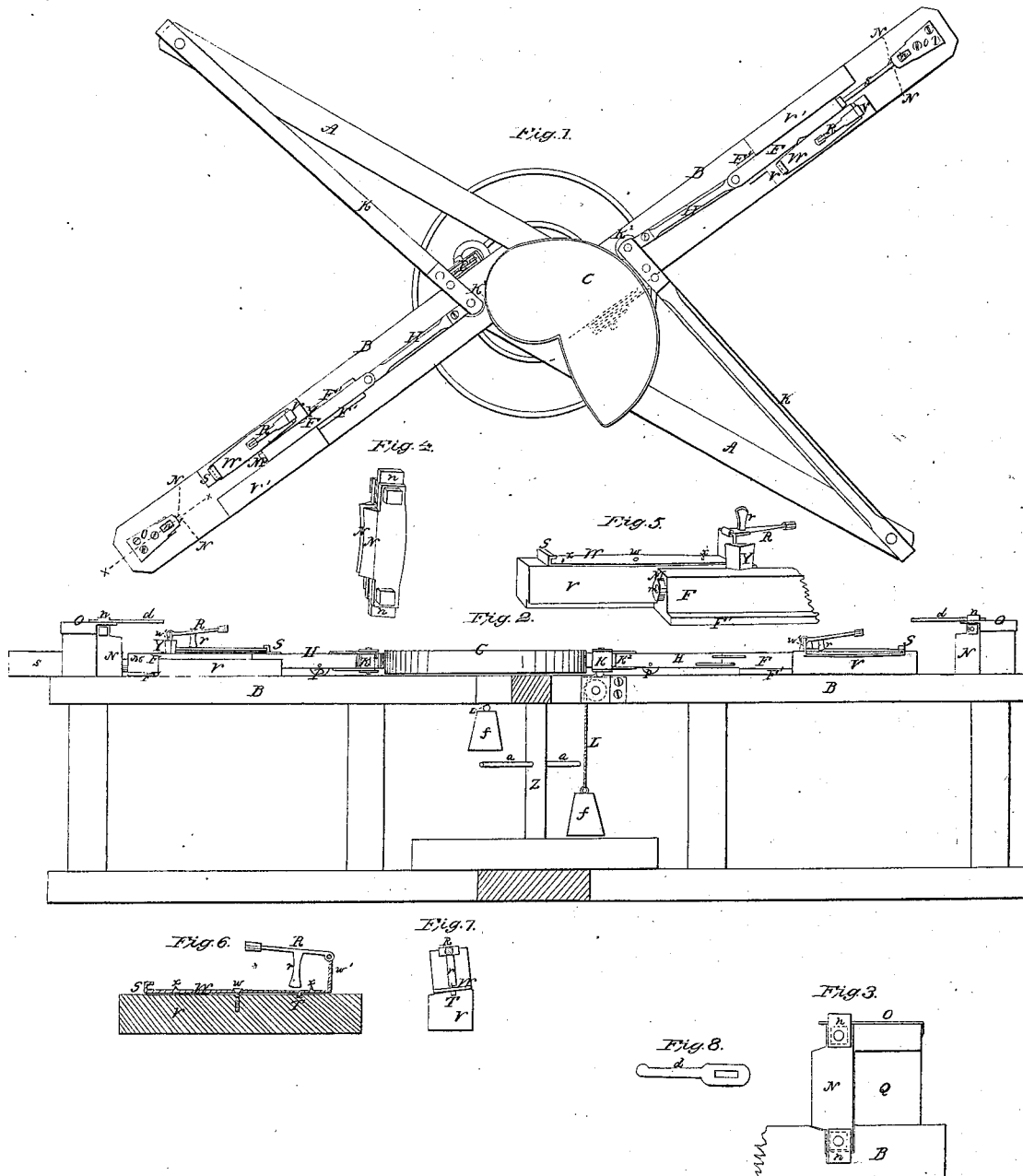


*H. Benson,
Jointing Stares.*

N^o 5,799.

Patented Sept. 26, 1848.



UNITED STATES PATENT OFFICE.

HOSEA BENSON, OF JACKSON TOWNSHIP, SUSQUEHANNA COUNTY, PENNSYLVANIA.

MACHINERY FOR DRESSING STAVES.

Specification of Letters Patent No. 5,799, dated September 26, 1848.

To all whom it may concern:

Be it known that I, HOSEA BENSON, of Jackson township, in the county of Susquehanna and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Dressing and Listing Rived Staves for Barrels, Casks, &c., which is described as follows, reference being had to the annexed drawings of the same, making
5 part of this specification.

Figure 1, is a plan or bird's-eye view, of the machine showing one of the drivers in the act of forcing the stave between the shaves, and the opposite driver drawn back by the weight ready to receive the action of the snail cam wheel. Fig. 2, is an elevation of ditto. Fig. 3, is a section through one of the posts, shaves &c. attached thereto,—on the line *xx* of Fig. 1. Fig. 4, is a perspective
15 view of one set of the staves or cutters. Fig. 5, is a perspective view of the driver showing the listing cutter, adjustive roller and vibrating pattern. Fig. 6, is a vertical longitudinal section of the vibrating pattern block. Fig. 7, is a transverse section of ditto. Fig. 8, is a plan of one of the handles for turning the cutters to the right or left.

The same letters in the several figures refer to corresponding parts.

The nature of this invention consists in a novel arrangement and combination of drivers and arms connected together by joint pins to which is imparted a horizontal motion, by means of a horizontal revolving
30 snail cam wheel—by which the stave is forced between vertical shaves or cutters of the usual concave and convex forms and by which the stave is dressed on its sides to the required form and thickness, and also the combination of certain other parts by which
40 the stave after being dressed on its flat sides, is listed on its edges to its required taper from the center to the ends to form the bilge and at the same time beveled on the edges to correspond with the curvature of the barrel for which they are designed to form part. The back or return movement of the drivers being effected by the gravity of weights attached to cords fastened to jointed arms attached to the drivers and running over chan-
50 neled pulleys.

To enable others to understand more fully my invention I will proceed to give a more

particular description of the construction and operation of the several parts of the 55 combination.

A B is the frame composed of four or more horizontal timbers A A, B, B mortised and tenoned together so as to form a cross having two acute angles and two obtuse
60 angles. These timbers A A, B, B rest upon the tops of posts of uniform length mortised and tenoned into foundation timbers similarly arranged with the top timbers and perpendicularly under them.

C is the eccentric or snail cam wheel for propelling the drivers toward the shaves or cutters, and with them the staves to be dressed, in succession.

F are the drivers supported by and moved 70 upon the rails B B having ribs or tongues F' on the sides which fit in grooves formed in parallel blocks V secured to the rails B for guiding them in their back and forward movements. These drivers are connected to
75 short arms H by bolts, which short arms are connected to long arms K at which connection there is an antifriction roller K² K² whose axle is the vertical bolt that passes through the ends of the arms, for connect-
80 ing the same.

The cam wheel C acts against said rollers in imparting motion to the drivers.

The arms K turn on bolts at their outer ends secured in the rails A by which jointed
85 connection the drivers are caused to approach the shaves N and recede from them in straight lines.

P are antifriction rollers secured in the short arms H and turning upon the rails for
90 lessening the friction of the arms upon the rails.

L are cords fastened to the arms K and passing over pulleys fixed to the rails having weights *f* attached to their ends, by the
95 gravity of which the drivers and arms are caused to recede and with them listers Y from the shaves when relieved from the pressure of the cam after the stave has been dressed.

M, M, are rollers attached to the ends of the drivers F which press against the stave while being dressed each of said rollers having a circular motion on its axis *m* to allow
100 the stave in passing through or between the shaves N to turn with the twist or wind in

the same to prevent the edges being cut too thin, which would otherwise take place, without this change of position of the stave, at the same time the shaves or cutters have sufficient horizontal play by being arranged loosely in a plate O at the top of the post, and nesting in a mortise in the rail so that they shall accommodate themselves or turn with any crook or bend in the stave. Thus the horizontal play of the shaves and circular motion of the roller (which is governed by the twist or wind in the stave as it passes through the cutters) will cause a stave with crooks and winds to be dressed of an equal thickness throughout its length.

N, N, are the concave and convex shaves or cutters, composed of two plates of cast steel secured together at their ends by screw bolts. Plates *n* are placed between the ends of the shaves through which the bolts also pass to form the spaces between their cutting edges the thickness of the stave, said cutters gradually flaring outward on their inner sides from the cutting edges to the backs to prevent the stave binding. The shaves increase in thickness from the edge to the back.

When it is desired to increase or diminish the space between the shaves to suit the various thicknesses of staves, the plates *n* are removed and others of greater or less thickness secured in their places, according to the required thickness of the stave. These plates project beyond the ends of the shaves, the upper ones playing loosely in a mortise in the plate O secured horizontally to the top of the post, the lower ends of the shaves being placed in a mortise in the rail and the central plate between the shaves resting on the bottom of the mortise by which the said shaves or cutters are allowed to play horizontally while a stave with crooks is being dressed.

Q are oblong mortises in the posts corresponding with the spaces between the cutters through which the stave passes.

V V' are the parallel blocks of wood secured on either side of the driver F having grooves on their inner sides into which the tongues or ribs of the driver move back and forth—the upper surfaces of two of the blocks V incline from the drivers at an angle of about 2, or 3, degrees from a horizontal plane—the highest edge being next the cutters as seen in Fig. 5, for the purpose of causing the cutters to form the edges at the required bevel so that the joints will all point to the center of the cask.

W, W, are vibrating plates or patterns which are made the shape of the required stave and having the same inclination as the top of the blocks V, said patterns being attached to the blocks by pins or bolts *w* passed through their centers upon which they vibrate; they are turned up at right

angles at one end to which turned up portion *w'* is secured a hinged clamp lever R provided with an arm or clamp bar *r* projecting from its underside for pressing on the stave. The opposite ends of the patterns are also turned up vertically and then horizontally forming square hooks into which the ends of the staves are inserted to be listed on their edges—one end being secured in the hook S of the pattern and the hinged clamp lever R with the arm *r* is brought down the arm *r* pressing upon the stave at the opposite end which forces or presses the stave onto spurs or pins *x* projecting from the pattern, or plate, by which the stave is held firmly during the operation of listing.

T, T, are stops or projections on the underside the plates or patterns, which govern the distance of its alternation in presenting the edges of the stave to the cutter. Said stop or projection moves in a groove made transversely in the top of the blocks the length of the groove being equal to the required distance of the movement of the pattern. The stave is placed upon the plates or patterns with its concave side down, inclining from the cutter the same degree of inclination as the upper surface of the block so that the edges of the stave will be cut inclining toward the concave side which will correspond with the radial lines of the joints of the barrel, so that when formed into barrels, &c., their edges will form tight joints.

Y Y are the cutters for listing the stave; they are made of steel with two cutting edges and thick in the middle and bolted to the sides of the drivers by screw bolts. These cutters move back and forth with the drivers and list the stave from the middle or bilge to the ends. The hinged clamp lever R is then raised and the stave reversed in position its opposite edge is then dressed in a similar manner from the middle or bilge to the ends at each successive movement of the cutters.

Z is the propelling shaft, to the upper end of which the eccentric cam wheel C is fixed, its lower end turning in a step.

a a are the sweeps or arms of the shaft to which the power is applied whether manual or animal.

d are handles applied to the upper plates *n* for changing the position of the cutters in dressing crooked staves; one of these handles is shown more clearly in Fig. 8. It contains an oblong mortise that receives the plate *n* to which the cutters are fastened.

This machine requires two attendants one at each set of cutters to supply and adjust the pieces of wood to be formed into staves. The shaft Z being put in motion by any adequate power the cam C, is kept constantly turning horizontally, and this motion in combination with the gravity of the weight *f* attached to the arms K by the cords L cause

the drivers and listers to move back and forth in succession driving the staves edge-wise through the cutters and listing the edges of other staves secured to the vibrating patterns as above described—the attendants taking the staves after being forced through the vertical shaves and clamping them to the patterns and then turning the patterns on their centers so as to cause the double edged knives Y to list them from the center toward the ends at each successive movement of the driver and when one edge is dressed which is done at the back and forward movement of the driver the position of the stave is changed so as to bring the opposite edge of the stave on a line with the knife when this edge is listed in the same way.

I do not claim shaving and listing staves for bilge casks by driving them between steel cutters or shaves and listing them from the

bilge toward the ends as I believe this has been heretofore done, but,

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

1. The combination of the driver F—adjustive roller M and loose cutters or shaves N for shaving crooked or winding staves as described.

2. I claim the employment of the vibrating patterns W in combination with the inclined blocks V upon which they are placed and the double edged cutters Y for listing bilge staves as described.

In testimony whereof I have hereunto signed my name before two subscribing witnesses this 30th day of August 1848.

HOSEA BENSON.

Witnesses:

WM. P. ELLIOT,
DAN PEASE, Jr.