(No Model.) 3 Sheets—Sheet 1.

D. C. PUTNAM.

STAVE CROZING MACHINE.

No. 543,893. Patented Aug. 6, 1895.

Fig. 1.

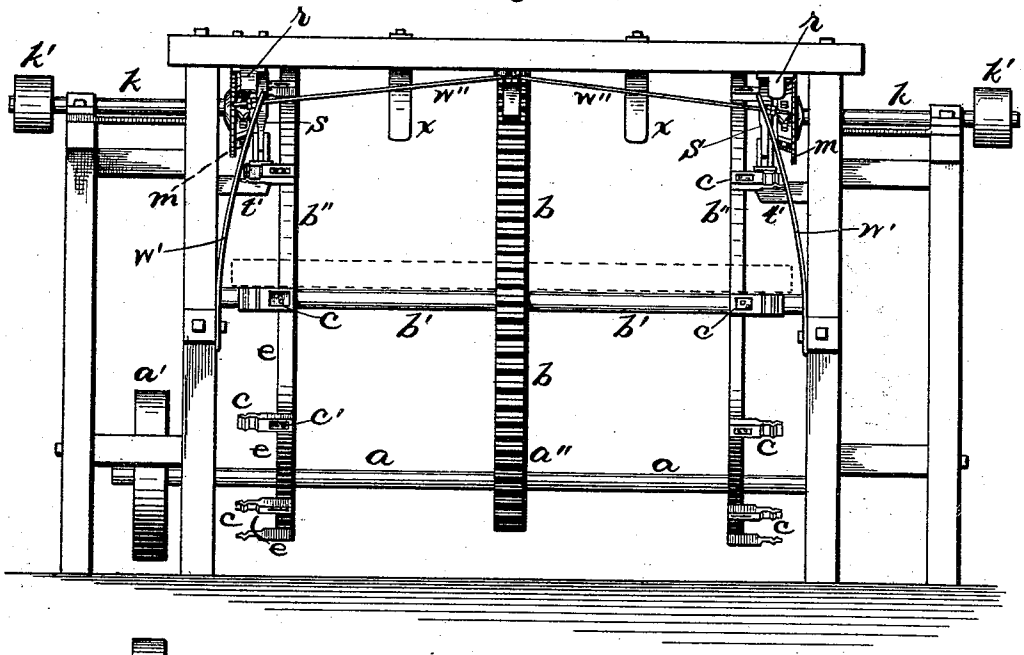
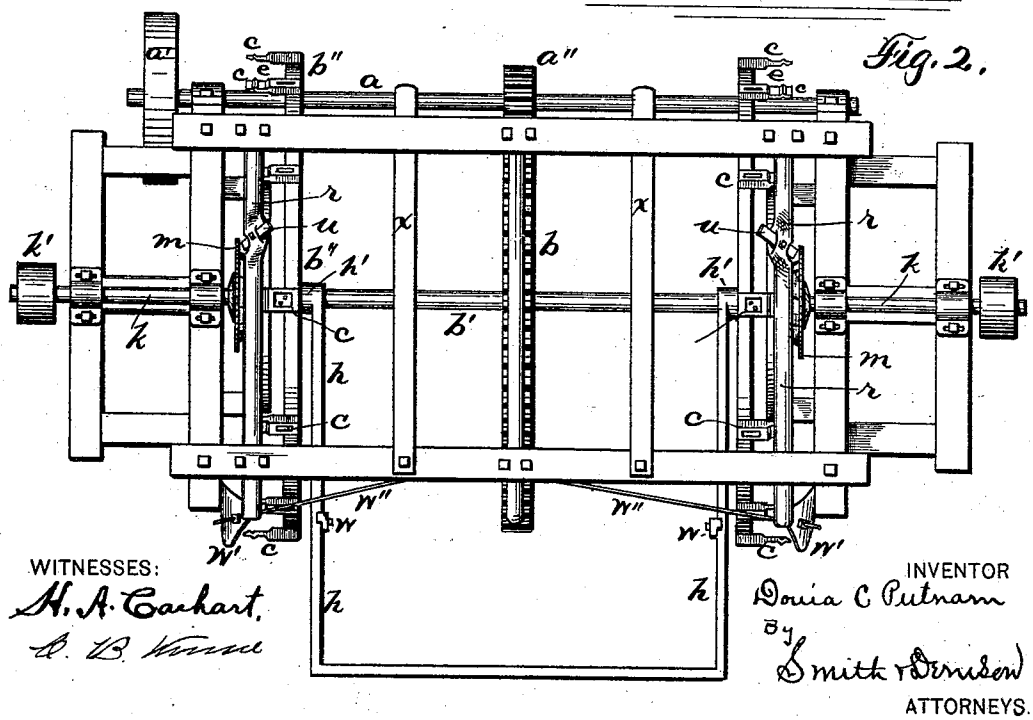


Fig. 2.



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A. B. Kinsel

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(No Model.) 3 Sheets—Sheet 2.

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STAVE CROZING MACHINE.

No. 543,893. Patented Aug. 6, 1895.

Fig. 3.

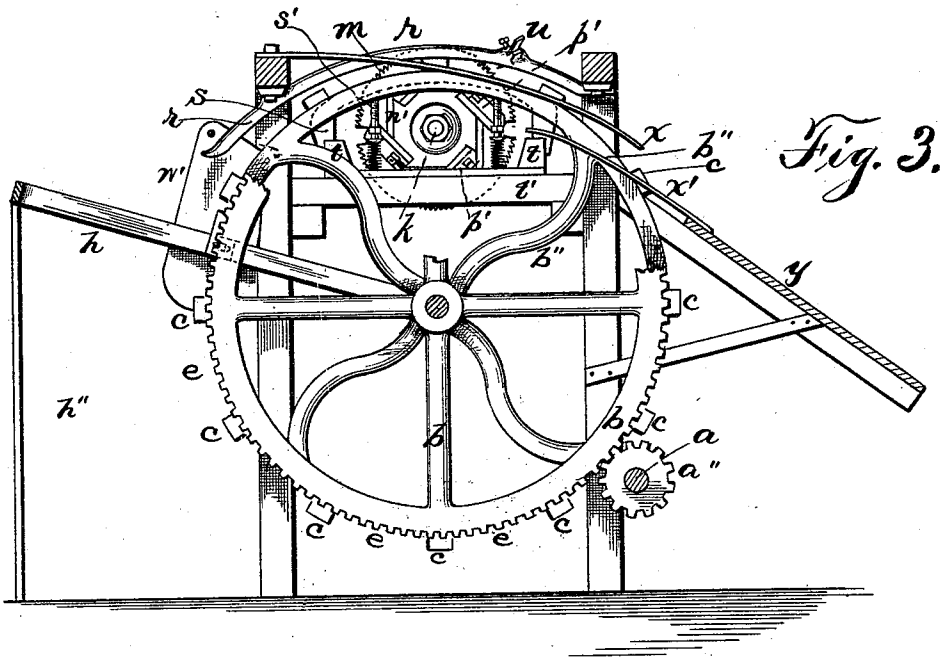


Fig. 4.

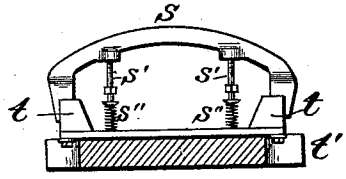


Fig. 5.

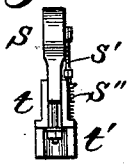


Fig. 6

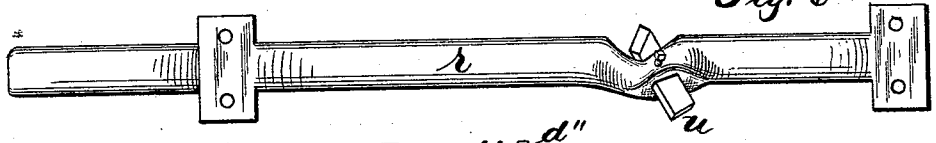


Fig. 7.

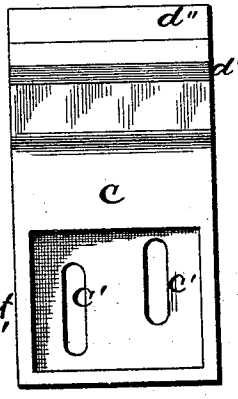
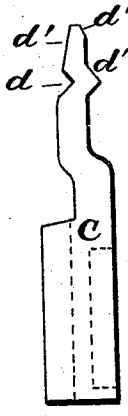


Fig. 8.



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(No Model.) 3 Sheets—Sheet 3.

D. C. PUTNAM.

STAVE CROZING MACHINE.

No. 543,893. Patented Aug. 6, 1895.

Fig. 9.

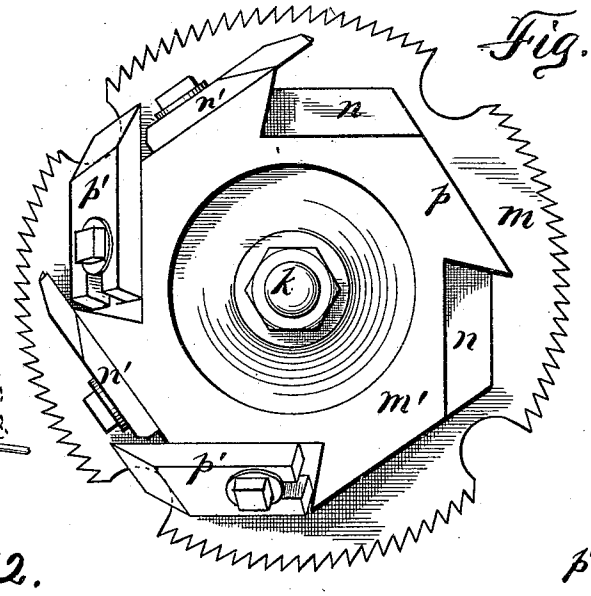

Fig. 15

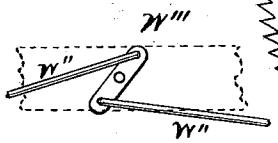

Fig. 10.

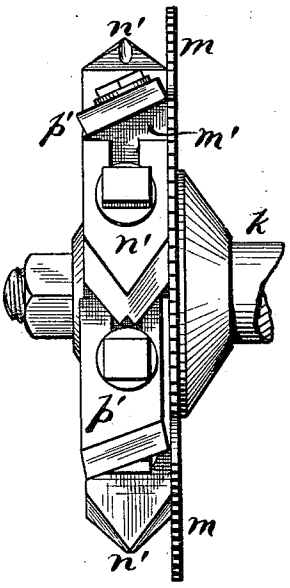

Fig. 12.

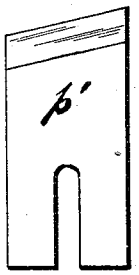

Fig. 11

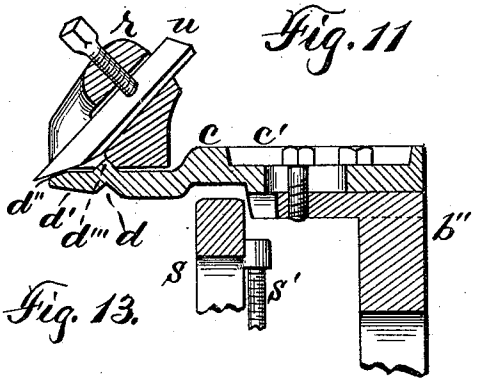

Fig. 13.

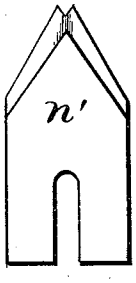

Fig. 14.

WITNESSES:
H. A. Earhart.
E. B. Kinnie

INVENTOR
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

DOUIA C. PUTNAM, OF WAYNE CENTRE, NEW YORK.

STAVE-CROZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,893, dated August 6, 1895.

Application filed February 3, 1893. Serial No. 460,872. (No model.)

To all whom it may concern:

Be it known that I, DOUIA C. PUTNAM, of Wayne Centre, in the county of Wayne, in the State of New York, have invented new and useful Improvements in Stave-Crozing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to stave-crozing machines which operate on jointed staves to edge them, croze them, chamfer their inner faces, and bevel the outer face, the whole being done without the use of any of the ordinary cooper's tools and by a single passage of the blank through the machine.

Figure 1 is a front elevation of the machine for crozing, chamfering, and beveling the staves, the dotted lines indicating the feed-table. Fig. 2 is a top plan view of the machine, omitting the discharge table or chute. Fig. 3 is a transverse vertical sectional elevation of the machine complete. Fig. 4 is a side elevation of one of the yielding tables, its mounting being in section. Fig. 5 is a front elevation of the same. Fig. 6 is a top plan of the arching-top presser-bar detached and enlarged and showing the outside-chamfering cutter mounted therein. Fig. 7 is a like view of one of the fingers upon the drum. Fig. 8 is an edge view of the same. Fig. 9 is a front elevation of the cut-off saw and the crozing and inside-chamfering cutters mounted upon a single arbor ready for use. Fig. 10 is a top plan of the same. Fig. 11 is a sectional elevation of part of the drum, the finger thereon, the top presser-bar, and the outside-chamfering knife. Fig. 12 is a plan view of the outside-chamfering cutter. Fig. 13 is a like view of the crozing-cutter. Fig. 14 is an edge view of the stave as crozed, chamfered, and beveled by the machine. Fig. 15 is a plan view of the equalizing-bar by which the staves are centered longitudinally.

A suitable frame is erected in which the shaft a is suitably journaled, provided with a drive-pulley a' and a drive-pinion a'', which drives the gear b, secured upon the axle b', suitably journaled in the frame, said axle also carrying the heads b'', said gear, axle, and heads constituting the drum of the machine. At equal distances apart the fingers c are adjustably secured to said heads by means of bolts inserted through the slots c' and project outwardly therefrom, their outer ends being provided with a croze-groove d, Fig. 11, and inside-chamfer bevel d', an outside-chamfer bevel d'', and a transverse rib d''', the bases of said fingers projecting radially beyond said heads, substantially as shown, and creating pockets e between them, which receive the staves and in which they are carried by the rotation of the drum, being first set upon edge upon the rails h, which constitute the sides of the feed-table, and fed inward thereon into the pockets in succession as the drum rotates, said fingers picking them one at a time off from the bunch. These table-rails are pivoted upon the drum-arbor, as at h', Fig. 2, and are adjustable as to the pitch of their inclination by means of the support h'' and the means shown for adjustment or their equivalent.

Upon each end of the frame an arbor k is journaled, provided with a drive-pulley k', and m is a saw mounted upon said arbor, while m' is a head also mounted thereon, provided upon its periphery with flat faces n, upon which the inside-chamfering cutters p' are secured, standing at the angle of the chamfer to be cut.

When a stave is picked up in a pocket in the drum and carried around under the curved-top presser-bar r they are also carried at each end onto and over the top of the curved table s, mounted upon the rods s' and having the springs s'', which yieldingly support the table, the ends of the table fitting between guides t, erected upon the board t', secured upon the frame, said table being yielding according to the varying thickness of the staves and holding them in sliding contact with the presser-bar while the cutters are crozing and inside-chamfering each stave, said presser-bar holding the stave against vertical movement and insuring perfect crozing and chamfering.

In the presser-bar the outside-chamfering knife or cutter u is adjustably secured in such manner that it will chamfer or bevel off the outside of the stave B, as at u', as an aid in putting on the hoops, the croze being marked v and the inside-chamfer v' in Fig. 14.

When the staves are placed on edge on the feed-table the inner one bears against the stops w, Fig. 2, on the table-rails, and if a stave is out of line longitudinally one of its

ends will strike one of the vertical and inwardly-inclined spring-plates w', which are mounted upon the frame, and w'' are rods connected to the free ends of said plates and to a rocker w''', Fig. 15, pivoted upon the top rail of the frame, so that by the joint action of these plates and equalizing-rods and rocker each and every stave is centered longitudinally and each end is cut off alike when they are brought into contact with the saws and the staves are cut of equal length. The saws are shown as provided with clearance-notches of ordinary construction, which may be omitted when desired. At the same time while the ends are being trimmed off the crozing-cutter is crozing the stave and the chamfering-knife is chamfering it, and also substantially simultaneously therewith the beveling knife is beveling off the outer face of each end of the stave as an aid in putting on the chine hoop or hoops.

The chamfering, crozing, and beveling of the fingers on the drum is such that none of the cutters will strike them as the drum carries them around, though they are close thereto.

When upon the drum, the staves have a center-bearing upon the main gear.

Upon the frame and on each side spring-fingers x, Fig. 3, are secured, in such relation that their free ends will bear frictionally upon the staves after they pass the cutters and retain them in the pockets without permitting any shifting until the staves come into contact with the bars x', which pick the staves out of the pockets, so that they will then slide down the discharge-table or chute y finished and ready to be set up and fired.

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

1. The feed table, provided with stops, and the vertical and inwardly inclined springs which extend across the inner end of the table, the outer ends of the springs being rigidly held, while their inner ends are connected to an equalizing rocker, combined with the feed drum, provided with pockets, and means to revolve the drum, substantially as shown.

2. In a machine for making staves for barrels, a table upon which the staves are placed, equalizing springs which extend across the inner end of the table, a revolving feed drum provided with pockets, the curved top presser bars, each provided with a cutter, curved yielding tables placed below the presser bars, the bars for taking the staves from the pockets, and mechanisms at each end of the frame, for cutting off and finishing the ends of the staves, all combined to operate substantially as described.

3. The feed table, provided with a stop on each edge, the vertical and inwardly inclined spring plates, secured to suitable supports at their outer ends, and the pivoted rocking rod, mounted on the frame and to which the inner ends of the spring plates are fastened, all combined and arranged to operate, substantially as set forth.

4. A mechanism at each end of the frame for sawing off and finishing the ends of the staves, and a feed drum, provided with pockets, combined with the curved top presser bars, each provided with an adjustable cutter, substantially as specified.

5. A mechanism at each end of the frame for sawing off and finishing the ends of the staves, and a feed drum provided with pockets, combined with the curved top presser bars, each one of which is provided with an adjustable cutter, and each one having its outer end to extend out over the feed table, so as to guide the staves as they are carried upwardly by the feed roller, substantially as shown.

6. In a stave machine, a revolving drum, provided with pockets; and curved stationary presser bars, each one provided with a cutter; combined with curved spring actuated tables, placed below the presser bars, a rod to hold the staves down upon the drum, and a rod for removing the staves from the pockets of the drum, substantially as set forth.

7. A mechanism at each end of the frame for sawing off and finishing the ends of the staves, a feed drum provided with pockets, and the curved top presser bars, each provided with a stationary adjustable cutter, combined with the curved adjusting tables, having rods and springs applied to their inner sides, and the supporting boards provided with guides for the ends of the tables, substantially as specified.

8. The drum heads b'', and the slotted fingers secured thereto and provided with the croze grooves d, inside chamfer bevels d'', and transverse ribs d''', combined with the curved presser bars provided with the cutters u, substantially as shown.

9. The drum heads b'', the slotted fingers secured thereto and provided with the croze groove d, inside chamfer bevels d'', and transverse ribs d''', and the curved presser bars provided with cutters u, combined with the curved tables, the rods, and springs applied thereto; and the supporting boards provided with guides between which the ends of the tables move, substantially as described.

In testimony whereof I have hereunto set my hand this 8th day of December, 1892.

DOUIA C. PUTNAM.

In presence of—
C. B. KINNE,
HOWARD P. DENISON.