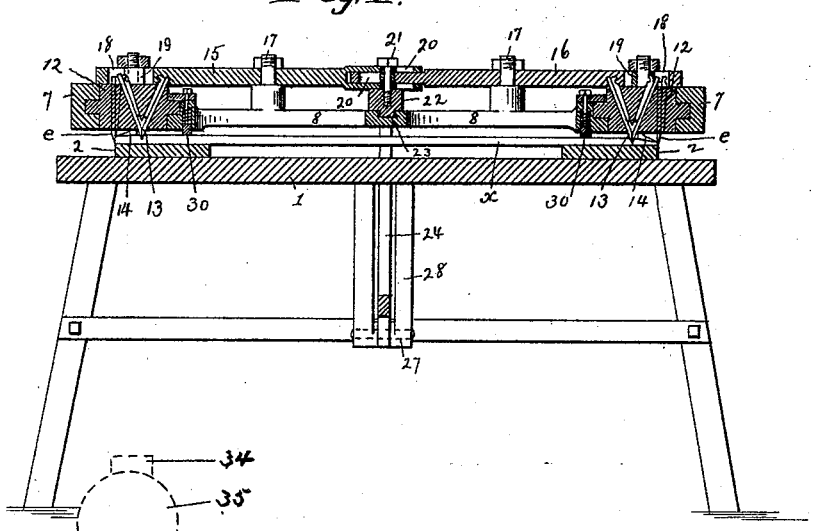
(No Model.) 2 Sheets—Sheet 1.

H. CAMPBELL.

STAVE CROZING MACHINE.

No. 492,138. Patented Feb. 21, 1893.

Fig. 1.



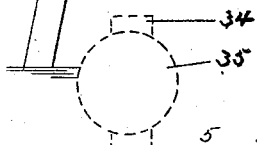


Fig. 2.

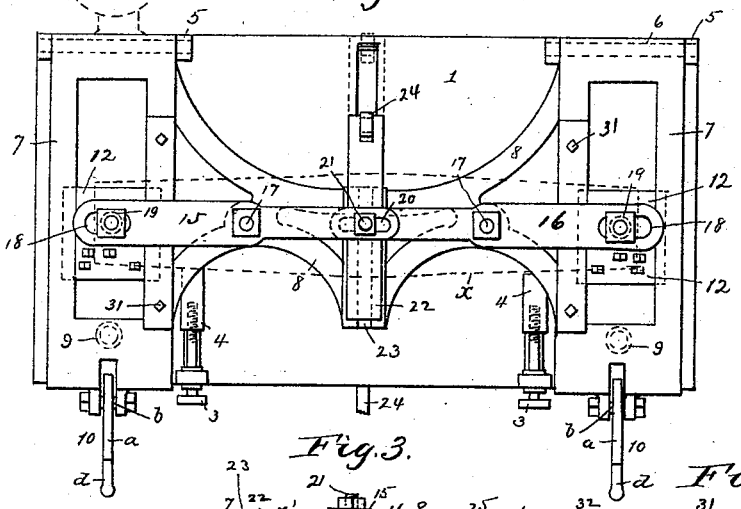


Fig. 3.

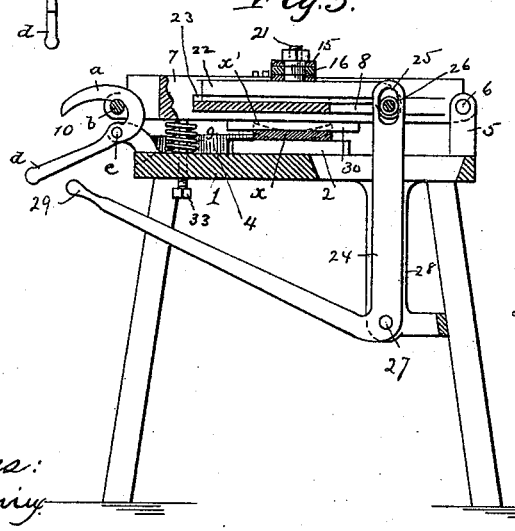


Fig. 4.

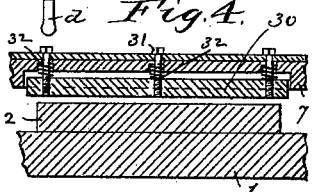
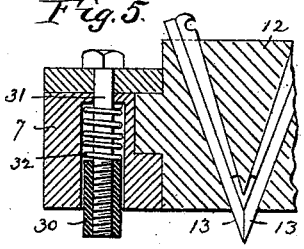


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

H. CAMPBELL.

STAVE CROZING MACHINE.

No. 492,138. Patented Feb. 21, 1893.

Fig. 6.

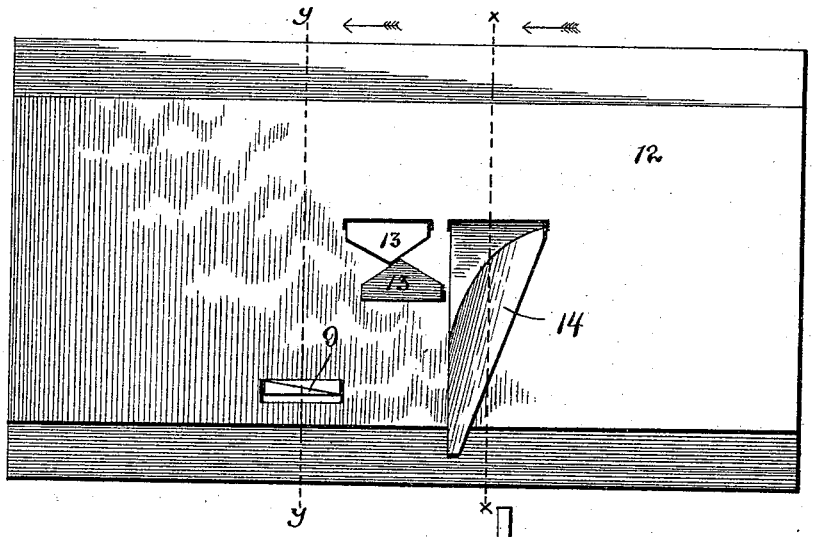


Fig. 7.

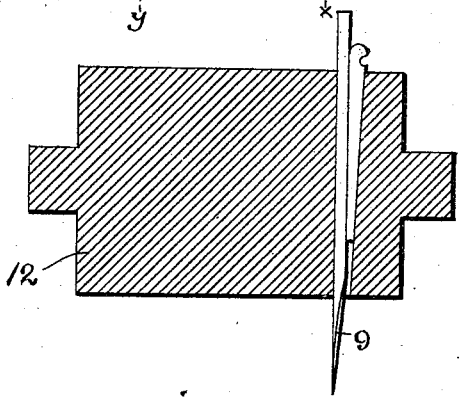
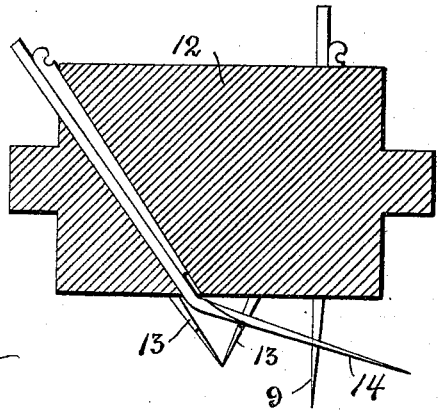


Fig. 8.



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UNITED STATES PATENT OFFICE.

HENRY CAMPBELL, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE CAMPBELL BARREL MACHINE COMPANY, OF SAME PLACE.

STAVE-CROZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,138, dated February 21, 1893.

Application filed October 26, 1891. Serial No. 409,869. (No model.)

To all whom it may concern:

Be it known that I, HENRY CAMPBELL, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Stave-Crozing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My present improvement relates to that class of crozing machines by which the staves are operated upon individually, before they are combined together in the form of the barrel, keg, or other article to be produced.

By my invention I am enabled to utilize unskilled and cheap labor and to expeditiously form in the stave a croze or crozes of perfect and uniform character and of greater or less depth according to the thickness of the stave.

The special objects of my invention are to obviate the difficulties heretofore encountered by reason of the varying thicknesses of staves and of their transverse curvature, which render it almost impossible to produce a finished barrel in which the exterior surfaces of the staves are flush with each other without a planing operation.

With such objects in view my invention consists in the parts and combinations thereof hereinafter more particularly set forth and claimed.

In order to make the improvements more clearly understood I have shown in the accompanying drawings means for carrying them into practical effect, without however intending to limit the application of the invention to the particular construction which, for the sake of illustration, I have delineated.

In said drawings.—Figure 1 is a longitudinal vertical sectional view of a crozing machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a transverse vertical section. Fig. 4 is a sectional view on a larger scale of the presser and adjacent parts. Fig. 5 is a transverse section of a portion of the same on a still larger scale. Fig. 6 is a bottom plan view of one of the slides or stocks upon which the cutters are mounted and by which they are actuated. Fig. 7 is a sectional view of the same on line y—y, Fig. 6. Fig. 8 is a transverse sectional view of the same on line x—x of Fig. 6.

Referring to the drawings, 1 indicates a table or bed plate of any suitable character provided with rests 2 for the ends of the stave to be operated on.

3 are gage screws operating slides 4 against which the stave is laid as it is placed in the machine and which may be adjusted so that the crozes may be at right angles to the central longitudinal line of the stave.

5 are lugs fixed on the table and carrying hinge pins 6, on which latter are mounted guides 7. These guides are connected by a frame 8 and are adapted to be raised and lowered by a spring or springs 9 and by clamps 10 to release or clamp the stave x. The springs 9 are placed at any suitable point between the table and some portion of the movable guides or their connecting frame and tend to hold said guides above and away from the stave. One or both of the guides may have an arm 34 (Fig. 2) extending rearwardly beyond the pivots 6 and provided with a counterbalancing weight 35, in place of the springs 9.

The clamp 10 consists preferably of a lever having a cam arm a adapted to engage a pin or projection b on the guide. The lever is pivoted at c on the main frame and has a handle d.

The body or stock of each crozing tool is shown at 12 and is fitted in one of the guides 7 so as to reciprocate therein crosswise of the stave and above the end thereof. It is provided with knives 13 arranged at an angle to each other as shown to form the croze, and with a flat and slightly inclined knife 14 which cuts the chine. I also prefer to provide a knife e adapted to trim the end of the stave.

The crozing tools are provided with suitable mechanism mounted on and moving with said guide and frame, whereby the tools may be simultaneously reciprocated. For this purpose I have devised and prefer two horizontal levers 15 and 16 mounted upon pivots 17 carried by the frame 8 and having slots 18 at their outer ends embracing rollers 19. The

latter are mounted on the tops of the crozing tool stocks. The inner ends of the levers are provided with slots 20 which engage corresponding rollers on a central stud 21. Preferably the slotted end of lever 15 is forked and the slotted end of the other lever enters within it as seen in Fig. 1. The stud 21 is fixed in a slide 22 which fits in a guide 23 in or on the frame 8.

24 is an angle lever the vertical arm of which is formed with a slot 25 embracing a roller 26 mounted in the rear end of the slide 22. This angle lever is fulcrumed at 27 on a bracket 28 fixed to the table, and its other arm extends forward and has a handle 29 by which the lever may be oscillated vertically by the workman. It will be seen that this movement will cause the reciprocation of the crozing tools and their operation on both ends of the stave.

I will now describe the means by which the stave may be held in such manner as to insure that all parts of the croze shall be of the same depth, and so as to cause the bottom or apex of the croze to be always formed at a uniform distance from the outer surface of the stave; in other words the thickness of the stave from the apex of the croze to the outer side (the bottom as the stave lies in the machine) of the stave is always the same regardless of the thickness of the stave. Said means comprise a presser by which the stave is temporarily flattened at the instant the croze is cut, and a stop by which the crozing tool is arrested in its downward movement at a uniform distance above the top of the stave rest. By employing suitable yielding devices the presser may be mounted on the same frame that carries the crozing tool, and the arrest of the downward movement of the presser which will depend upon the thickness of the stave will not necessarily cause the arrest of the downward movement of the crozing tool.

Referring to my preferred construction, which I have illustrated, 30 is a presser adapted to engage and flatten the transverse curve or hollow of the stave from the form shown in dotted lines at x' in Fig. 3, to that shown in full lines at x. The under face of the presser may be hollowed so that it will first engage the outer edges of the stave. The presser may be yieldingly mounted on the guide of the crozing tool in various ways.

In the drawings 31 indicate pins which keep the presser in place on the guide but permit a certain extent of movement toward and from the guide.

32 are strong springs of such tension that the stave will be flattened before the limit of compressibility of the springs is reached, and the further movement of the guide will bring the crozing tool to its uniform final position with its guide against the adjustable stop 33, in which position it finishes the cutting of the croze. The stop 33 is adjustable in order that when the oscillating frame carrying the knives comes to rest in its depressed or lowermost position, the guides for the knives may be substantially parallel with the outer or bottom face of the stave so as not to cut the croze nearer to the said outer surface at one edge of the stave than at the other.

It will be understood that the machine may be built to croze but one end of the stave when firkins, truck barrels, or tubs are manufactured, the machine illustrated being a double one adapted to simultaneously croze both ends of a stave.

What I claim is—

1. In a crozing machine the combination with the crozing devices, and a support for the same whereby they may be brought into proper position to operate upon the staves of a presser for flattening the stave, carried by said support and movable in a direction perpendicular to the surface of the stave independently of the crozing devices substantially as set forth.

2. The combination of a crozing tool, a guide for the same movable toward and from the stave to clamp and release the latter, a presser carried by the guide and adapted to flatten the stave, and a stop 33 in line with said guide for arresting it when in proper position relative to the outer or bottom face of the stave substantially as set forth.

3. The combination of a crozing tool, a guide for the same, a presser carried by said guide, and means such as springs for permitting the motion of the guide toward the presser, substantially as set forth.

4. The combination of the guides 7, the connecting frame 8, the crozing tools in said guides, the levers 15, 16, connected with said tools the slide 22, connected with said levers the guide 23, and the lever 24, and means for depressing the guides 7, substantially as set forth.

5. In a crozing machine, the combination with the crozing devices, of a stave compressing guide carrying the crozing tool and having a yielding presser 30, substantially as set forth.

6. The combination with the hinged frame having guides, and crozing tools mounted in the latter, one for each end of the stave, of a lever 24 situated between said guides and connected with and adapted to operate both of said tools, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY CAMPBELL.

Witnesses:
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J. S. BARKER.