

(No Model.)

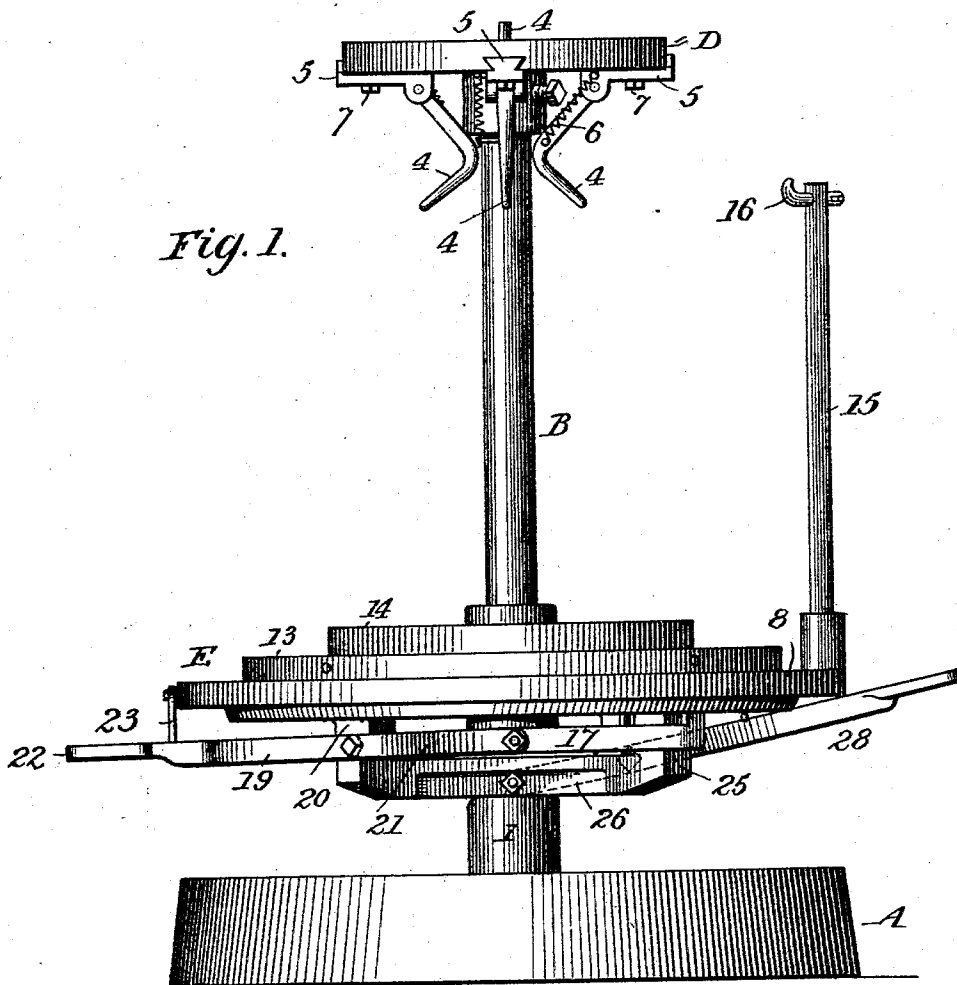
3 Sheets—Sheet 1.

H. CAMPBELL.

METHOD OF AND MACHINE FOR MAKING BARRELS.

No. 548,626.

Patented Oct. 29, 1895.



Witnesses
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Fig. 2.

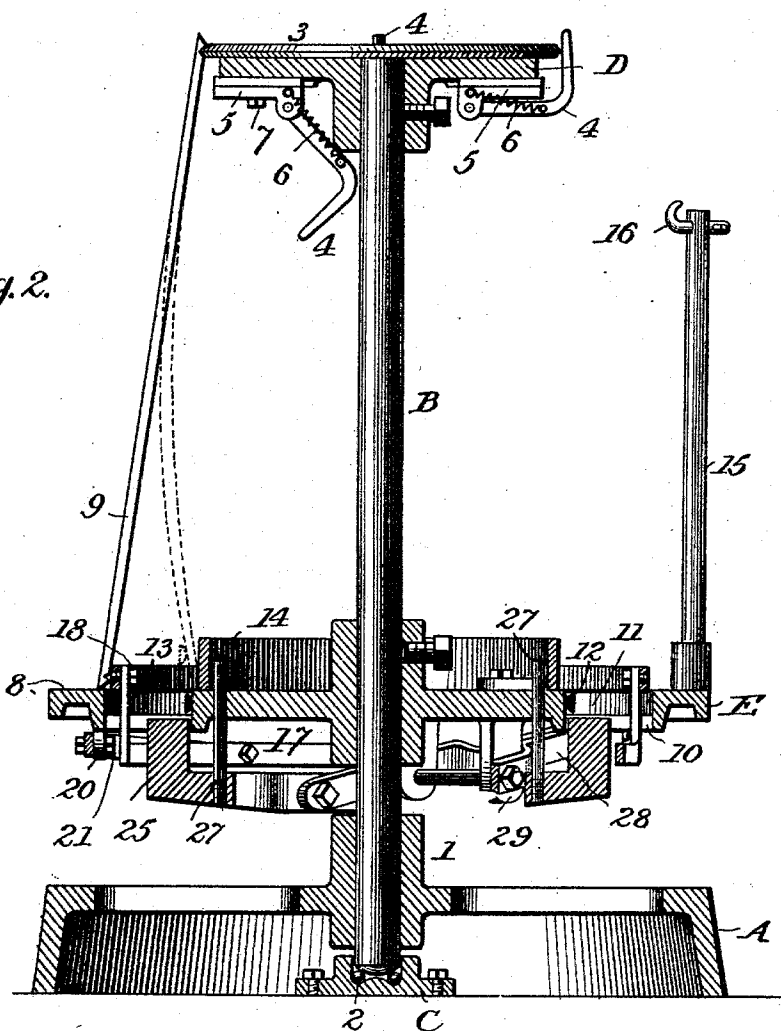
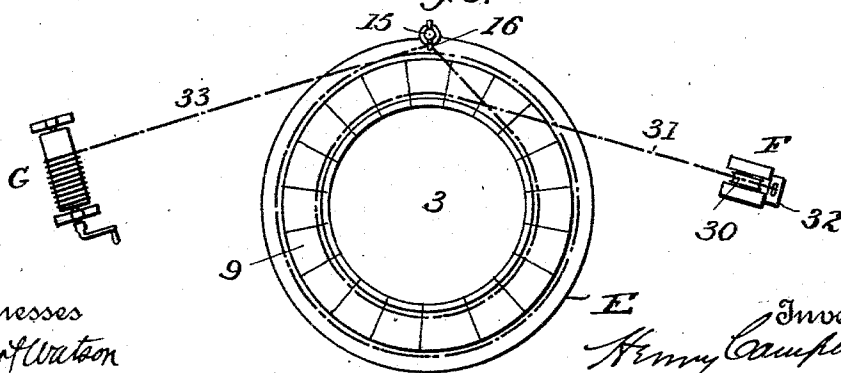


Fig. 5.



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Fig. 3.

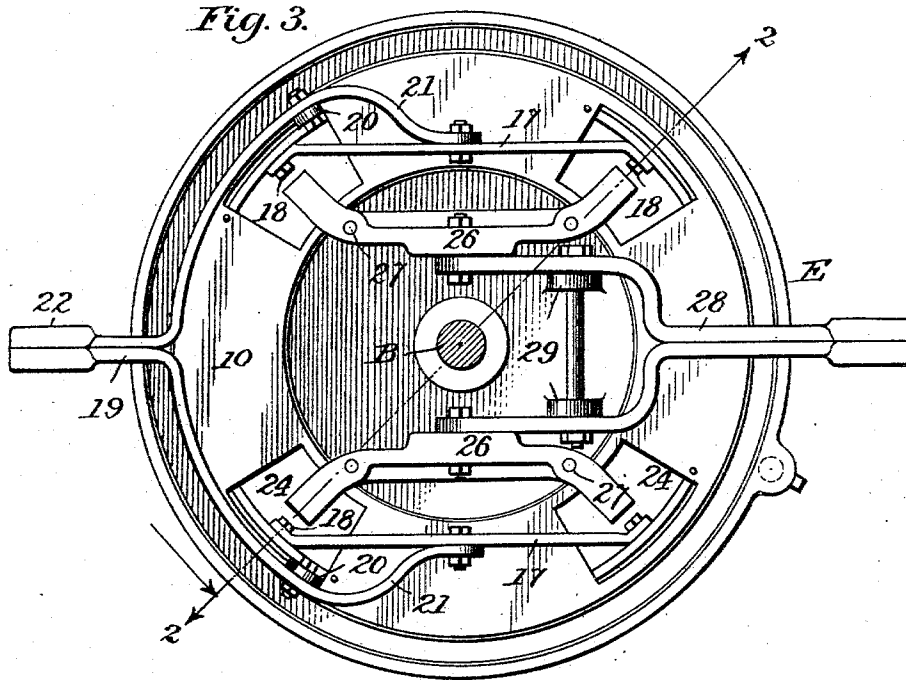
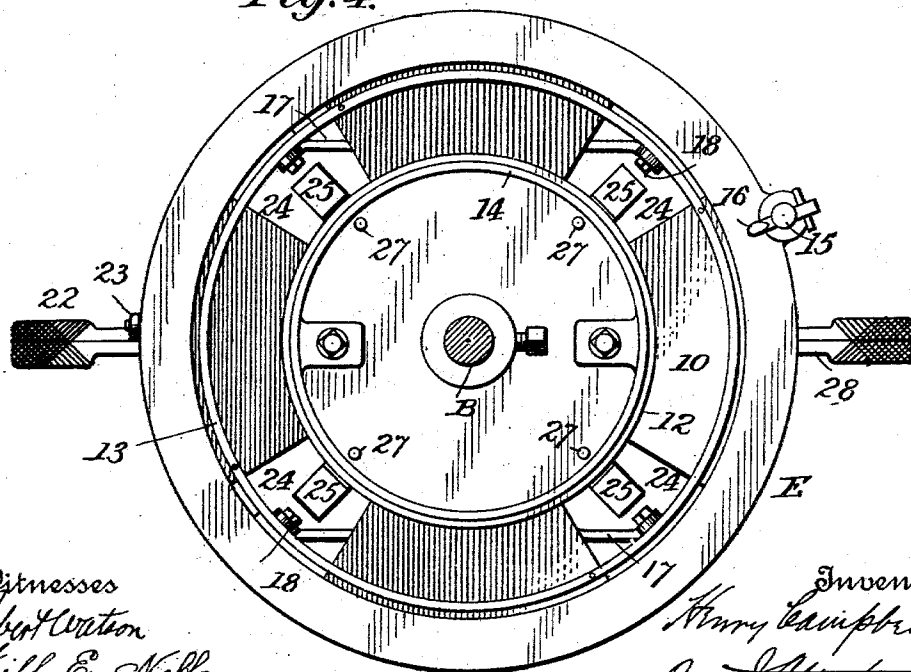


Fig. 4.



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UNITED STATES PATENT OFFICE.

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METHOD OF AND MACHINE FOR MAKING BARRELS.

SPECIFICATION forming part of Letters Patent No. 548,626, dated October 29, 1895.

Application filed January 25, 1895. Serial No. 536,233. (No model.)

To all whom it may concern:

Be it known that I, HENRY CAMPBELL, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Methods of and Machines for Making Barrels, of which the following is a specification.

My invention relates to improvements in barrel-making machines and to a new method of setting up barrels.

My improved method consists in, first, crozing the staves, then setting up the staves around one of the barrel-heads, then placing hoops upon that end of the barrel provided with a head, then windlassing the staves at the opposite end of the barrel, and then placing a catch-hoop upon said opposite end, and finally placing the remaining barrel-hoops in position. By this method the barrel is practically finished before firing, excepting the lower hoops and the insertion of the second head, by a continuous series of operations, and it can afterward be fired more easily and advantageously than has heretofore been possible. The various improvements in the machine by means of which this method is carried out will now be described, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the complete machine. Fig. 2 is a vertical section on the line 2 2 of Fig. 3. Fig. 3 is a bottom plan view of the lower plate of the revolving former. Fig. 4 is a top plan view of the same, and Fig. 5 is a general plan view of the entire machine on a reduced scale.

The principal parts of the machine are a stationary base A, a vertical shaft B, resting in a seat C, a circular upper plate or frame D, adjustably fixed upon the shaft B, and a circular lower plate or frame E, also adjustably fixed upon the shaft B.

The base A, as shown, is circular, but it may be of any suitable design. It is provided with a hub or bearing 1, in which the shaft B revolves, and the shaft rests, preferably, upon ball-bearings 2 in the seat C. The former, consisting of the shaft and the upper and lower frames D E, is therefore free to revolve.

The upper frame D forms a suitable support

for the head 3 of the barrel. The head is centered and held upon the support by means of a series of arms 4, which are pivoted to adjustable blocks 5 upon the under side of the frame D, said arms having angular portions which project above the upper frame, to engage the barrel-head when the arms are thrown up. By means of springs 6 the arms 4 are held either in their operative or inoperative positions, as shown, respectively, on the right and left sides of Fig. 2. The blocks 5 can be adjusted by means of suitable bolts 7 to adapt the arms to different sizes of barrel-heads.

The lower frame E has an outer ring 8, which forms a support for the lower ends of the staves 9 when first assembled. Within the ring 8 is a depressed portion 10, above which there is a recess 11, in which the catch-hoop 12 rests before being applied to the barrel, and into which the adjustable outer form or ring 13 may be lowered to permit the barrel to be windlassed. The inner part of the frame E supports a circular inner form 14, against which the lower ends of the staves are brought by the windlass-rope. Upon the outer edge of the frame E is a post 15, having upon it a hook 16, for a purpose to be hereinafter specified.

The ring 13, which is a temporary form for the lower ends of the staves, is carried by a pair of supporting-bars 17 under the frame E, each having its ends bent upward and attached to the ring by bolts 18. A lever 19, pivoted to projections 20 underneath the frame E, has two arms 21 pivotally connected, respectively, to the bars 17. The lever 19 is provided with a foot-piece 22. The projections or lugs 20, as shown, are not parallel, and the pivot-bolts of the lever 21 are therefore not in line with each other. The movement of the lever 19 is so small that there is little tendency to bind on account of this disposition of the lugs 20, and such tendency may be corrected by allowing a slight lateral play on the pivot-bolts. While the staves for a barrel are being assembled, the lever 19 is held down by means of a latch 23, and consequently the temporary forming-ring is elevated, as shown in Figs. 1 and 2. When the staves are assembled and ready for wind-

lassing, the latch 23 is kicked off of the lever, and the weight of the ring 13 and its connections causes it to drop into the recess 11.

Extending up through the recess 24 in the depressed portion 10 of the frame E are supports 25 for the catch-hoop 12. As shown, these supports are arranged in pairs upon bars 26 beneath the frame E, and these bars are guided vertically by pins 27 passing up through holes in the frame. The supports 25 are normally in their lowest positions, as shown in Fig. 2. When it is desired to force the catch-hoop up onto the barrel, the outer end of a lever 28 is depressed by the foot, thus raising the bars 26, which are pivotally connected to the inner end of the lever. The lever is fulcrumed upon projections 29 beneath the frame E.

As shown in Fig. 5, there is a stationary post F at one side of the machine, in the top of which there is a pulley 30, over which runs a rope or cord 31, the outer end of the rope being attached to a weight 32. The pulley is preferably arranged in a fork at the top of the post, and as the weight rises to the top it engages the post, being too large to be drawn through the opening of the fork. A windlass G of ordinary construction is arranged at another side of the machine and provided with a rope 33.

The operation of the machine is as follows: The barrel-head 3 is first placed on top of the frame D and centered and held by the arms 4, of which there may be any desired number, four beingshown. The forming-ring is raised and kept in its upper position by the latch 23. The end of the rope 31 is then engaged with hook 16 upon the post 15. The staves are then assembled consecutively with the croze in their upper ends resting against the barrel-head and their lower ends resting against the ring 13. As the machine is revolved, the rope 31 holds the staves which have been set up in place. When an arm 4 is reached, it is thrown down out of the way and the staves serve to retain the barrel-head in position. After all of the staves of the barrel have been assembled the former is turned until the rope 31 becomes taut by reason of the weight on said rope being caught and held by the fixed post. This prevents the former from revolving further. The bilge-hoop is then driven over the upper ends of the staves, thus securing the contour of the barrel. Then the quarter-hoop and end hoop are respectively placed in position. The rope 33 is then thrown around the lower ends of the staves in a direction the reverse of the rope 31 and is held stationary by being attached to the post 15 on the former, as shown in Fig. 5. The ring 13 is then permitted to drop away from the staves by releasing the lever 19. The windlass being then operated the staves are drawn into position against the forming-ring 14, as shown in dotted lines in Fig. 2, after which the lever 28 is depressed and the catch-hoop 12 forced up onto the lower ends of the staves. The barrel is then

lifted off of the machine and fired, after which the remainder of the permanent hoops are placed upon it and it is finished in the usual manner. Instead of operating as above it will be evident that the end of the windlass-rope may be attached to some fixed object and the windlass operated in the usual manner.

The upper and lower frames can be adjusted vertically upon the shaft to adapt the machine to barrels and kegs of different heights. The centering-arms on the upper frame are adjustable radially to receive heads of different diameters, and the inner forming-ring on the lower frame can be removed and replaced by one of greater or less diameter. It will thus be seen that the machine is adapted to the erection of barrels and kegs of various sizes.

I find that by practically completing the barrel, all excepting the hoops at one end, before firing the heat can be applied much more uniformly to the interior, there being no leaks or drafts.

My improved machine can be operated by a single man or boy and barrels very rapidly assembled thereon. For continuous operation it requires one or two helpers, whose duty it is to take the barrels and place the remainder of the permanent hoops upon them after they are removed from the machine and fired.

It will be evident that various changes in the details of construction may be made without departing from the spirit of my invention.

Therefore, without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. In a barrel making machine, the combination with a base and a vertical revoluble shaft revolving therein, of an upper frame upon the shaft provided with means for centering and holding a barrel head, and a lower frame upon said shaft provided with a vertically movable outer forming ring and a fixed inner forming ring, substantially as described.

2. In a barrel making machine, the combination with the base and the vertical revoluble shaft, of an upper frame adjustable on the shaft and provided with means for centering and holding a barrel head and a lower frame adjustable on the shaft and provided with a vertically movable outer forming ring and an inner fixed forming ring, substantially as described.

3. In a barrel making machine, the combination with the base, the vertical revoluble shaft and the lower frame upon the shaft, of the upper frame, provided with a series of arms pivoted to its underside and having angular portions adapted to project above the frame to engage and center a barrel head, and springs arranged to hold the arms in their operative and inoperative positions, substantially as described.

4. In a barrel making machine, the combination with the vertical revoluble shaft, of the upper frame provided with radially adjust-

able blocks upon its underside, arms pivoted to the blocks and having angular portions extending above the frame to hold and center a barrel head thereon, and springs connected with the blocks and the arms and arranged to hold the latter in either their operative or inoperative positions, substantially as described.

5. In a barrel making machine, the combination with the base, the revoluble shaft, and the upper frame upon the shaft, of a lower frame provided with an outer circular support for the staves, an outer forming ring adjacent to said support and vertically movable, an inner fixed forming ring, means for moving the outer forming ring to release the staves, and a windlass arranged to draw the staves to the inner ring, substantially as described.

6. In a barrel making machine, the combination with the base, the revoluble shaft, and the upper frame upon the shaft, of a lower frame on the shaft having an outer circular support for the staves, a forming ring adjacent to said support, and a foot lever and connections for raising and lowering said ring, substantially as described.

7. In a barrel making machine, the combination with the base, the revoluble shaft, and the upper frame upon the shaft, of a lower frame upon the shaft having a support upon which to assemble the staves, means for windlassing the staves, vertically movable supports for a catch-hoop, and a lever and connections for raising and driving said catch-hoop after the barrel has been windlassed, substantially as described.

8. In a barrel making machine, the combination with the base, the revoluble shaft, and

the upper frame upon the shaft, of a circular support for the staves, a movable forming ring adjacent to said support, a foot lever and connections for operating said ring, an inner forming ring, vertically movable supports for a catch-hoop adjacent to said latter ring and a foot lever and connections for raising and driving the catch-hoop, substantially as described.

9. In a barrel making machine, the combination with the base, and the revoluble shaft, of the upper frame carried by the shaft and adapted to support a barrel head, the lower frame carried by the shaft and having a support for the staves, the post supported upon the lower frame, the movable forming ring, the fixed post, the weighted rope for holding the staves temporarily, and the windlass rope and windlass for windlassing the barrel, substantially as described.

10. The method of making barrels which consists in, first, crozing the staves, then setting up staves around one of the barrel heads, then placing the bilge, quarter and end hoops respectively upon that end of the barrel provided with a head, then windlassing the staves at the opposite end of the barrel, then placing a catch-hoop upon said opposite end, then firing the barrel, and finally, placing the remaining hoops in position, substantially as described.

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

HENRY CAMPBELL.

Witnesses:

CHAS. L. HUTCHINS,
JNO. WATSON, Jr.