

J. CUNNING.
 BARREL FORMING MACHINE.
 APPLICATION FILED OCT. 21, 1910.

1,046,445.

Patented Dec. 10, 1912.

2 SHEETS-SHEET 1.

Fig. 3.

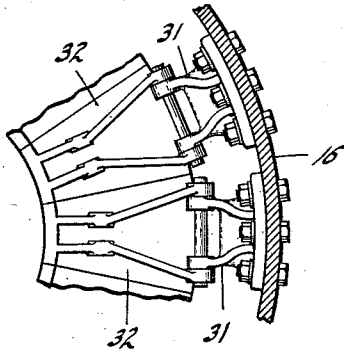


Fig. 4.

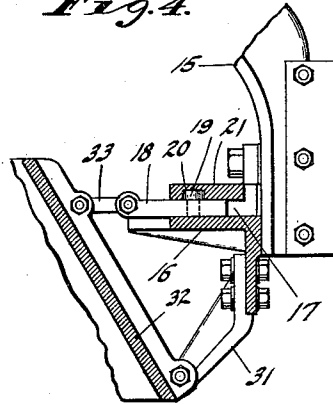
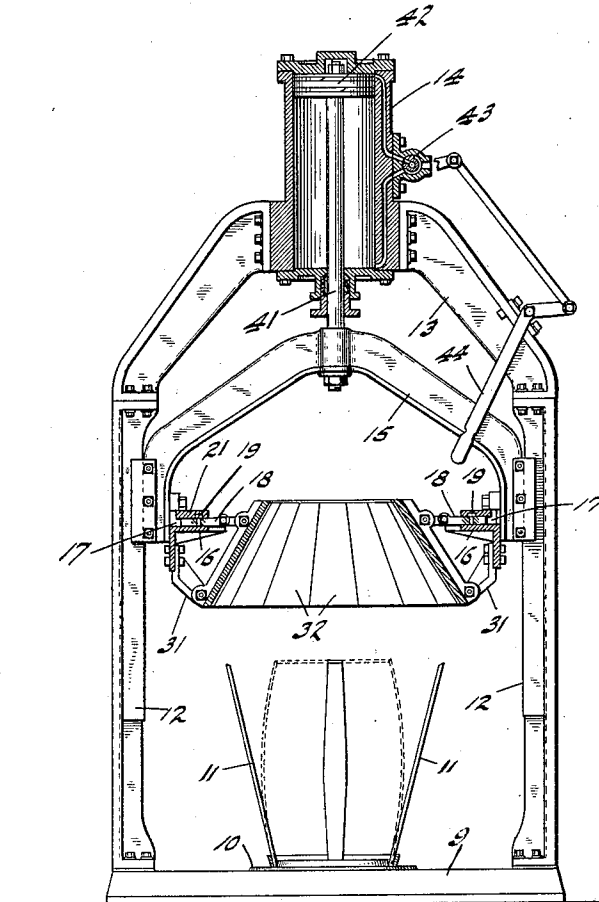


Fig. 1.



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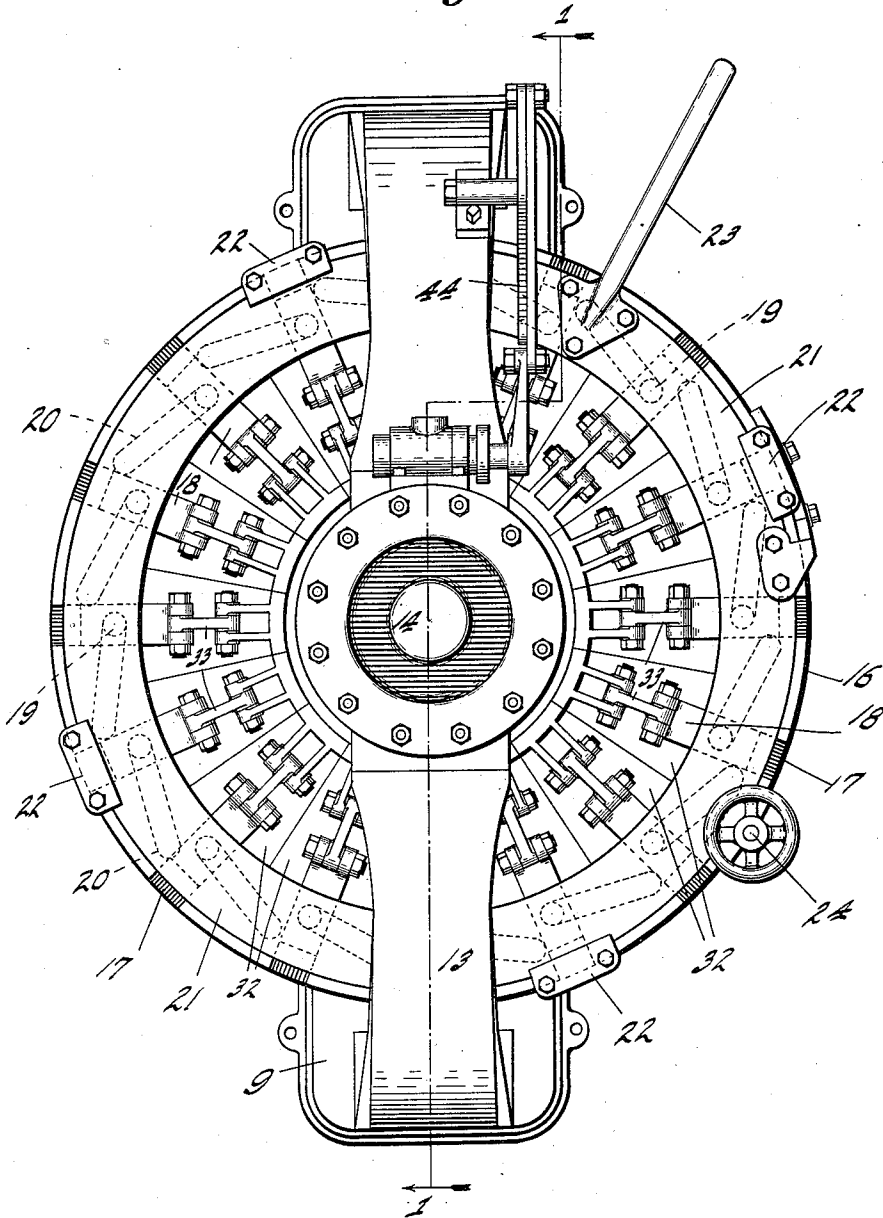
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES CUNNING, OF INDIANAPOLIS, INDIANA.

BARREL-FORMING MACHINE.

1,046,445.

Specification of Letters Patent.

Patented Dec. 10, 1912.

Application filed October 21, 1910. Serial No. 588,308.

To all whom it may concern:

Be it known that I, JAMES CUNNING, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Barrel-Forming Machine, of which the following is a specification.

The object of my invention is to produce a mechanism by means of which the staves of a barrel may be forced together preliminary to the placing of the proper binding hoops, the construction being such that uniform pressure will be exerted so as to bend the staves uniformly together.

The accompanying drawings illustrate my invention.

Figure 1 is a smaller scale vertical section on line 1—1 of Fig. 2 of a machine embodying my invention; Fig. 2 a plan; Fig. 3 a detail of the support of the bending shoes, and Fig. 4 a sectional detail of the entire mounting of one of the bending shoes.

In the drawings, 9 indicates a main work table upon which may be placed a receiver adapted to receive the lower ends of the plurality of staves 11 to be used in the formation of the barrel, these staves of course being preliminarily shaped in proper manner. Extending upwardly from opposite sides of the table 9 are vertical guides 12, 12 connected at their upper ends by an arch 13 which supports a steam or air cylinder 14.

Mounted upon the guides 12 so as to be vertically reciprocable, is an arched head 15 carrying at its lower ends a horizontal ring 16 provided with a multiplicity of radially arranged guide-ways 17 in each of which is slidably mounted a bar 18 provided with a projecting pin 19. The several pins 19 are extended into diagonally arranged slots or grooves 20 (dotted lines Fig. 2) formed in the lower face of a ring 21 which is rotatably mounted in suitable guides 22 carried by the ring 16, the arrangement being such that the ring 21 may be rotated relative to ring 16 and thus cause simultaneous radial movement of the bars 18. This movement of ring 21 may be accomplished by means of a hand lever 23 secured to it and the ring may be clamped in any position by a clamping screw 24.

Ring 16 is provided with a plurality of depending brackets 31 to the lower end of each of which is pivoted the lower end of a bending shoe 32, the upper end of each shoe being connected by a link 33 with the bar 18.

The several bending shoes 32 are arranged in a conical frustum open at the top and bottom and the diameter of the upper end of the frustum may be varied by inward or outward radial movement of the bars 18. The head 15 is carried by the lower end of a piston rod 41 provided with a piston 42 within cylinder 14 and a motive fluid may be introduced into opposite ends of the cylinder to produce opposite movement of head 15 by means of any suitable valve 43 controlled by a hand lever 44 within easy reach of the operator.

In operation, ring 21 will be adjusted so as to make the internal diameter of the upper end of the conical frustum produced by the shoes 32 equal to the external diameter of the barrel to be formed, at a point below the hoop to be attached. The ring 21 is then firmly clamped in place and the desired number of staves 12 placed in position upon the holder 11 with the upper ends of the staves flaring outwardly as shown in full lines in Fig. 1. The head 15 is then driven downwardly so as to cause the shoes 32 to engage the upper ends of the staves and drive them uniformly inwardly toward the center until the inner ends of the staves project above the upper ends of the shoes 32 by an amount sufficient to permit the application of a retaining hoop, whereupon the head 15 may be moved upwardly to withdraw the forming shoes from the barrel, ring 21 being shifted so as to swing the upper ends of the bending shoes outwardly if the shape of the barrel is such as to make this operation necessary in order to permit the bending shoe to pass upwardly over the applied hoop.

By this construction, the staves are operated upon uniformly and simultaneously so that a very even product is rapidly produced.

I claim as my invention:

1. A barrel forming machine comprising a holder for one end of the staves, an annular bending head comprising a plurality of annularly arranged, inwardly and upwardly inclined bending shoes, means for relatively tilting the said shoes to vary the internal diameter of the smaller end of the conical frustum formed thereby, and power-operated means for shifting the bending head axially of the barrel.

2. A barrel forming machine comprising a holder for one end of the staves, an annu-

lar bending head movable in its entirety relatively to said holder axially of the barrel, said head comprising a plurality of annularly arranged, inwardly and upwardly inclined bending shoes, and means for relatively tilting the said shoes to vary the internal diameter of the smaller end of the conical frustum formed thereby.

3. A barrel forming machine comprising
10 a holder for one end of the staves, a frame, an annular bending head movable in its entirety along said frame axially of the barrel, said bending head comprising a plural-

ity of the bending shoes arranged to form a frustum of a cone, and means for tilting 15 said bending shoes to vary the diameter of the smaller end of said frustum.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this fourteenth day of October, A. D. one 20 thousand nine hundred and ten.

JAMES CUNNING. [L. S.]

Witnesses:

THOMAS W. McMEANS,
FRANK A. FAHLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."