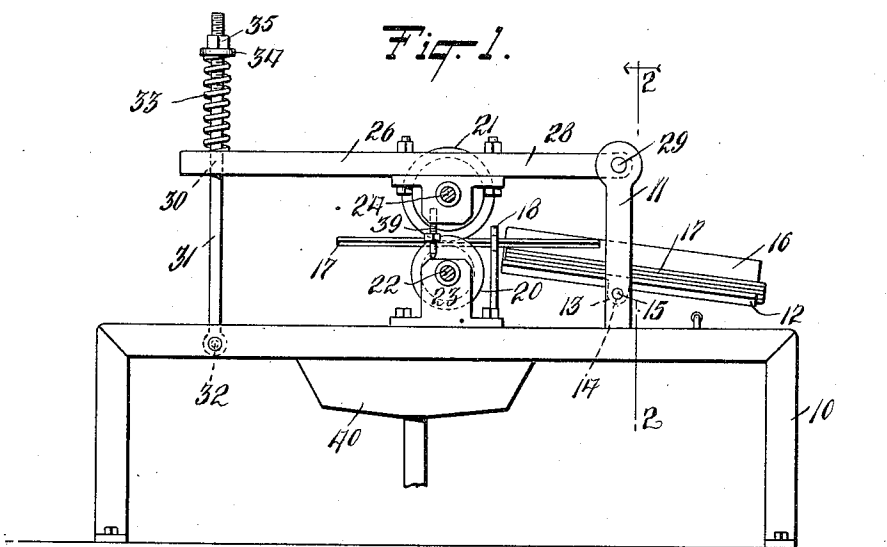
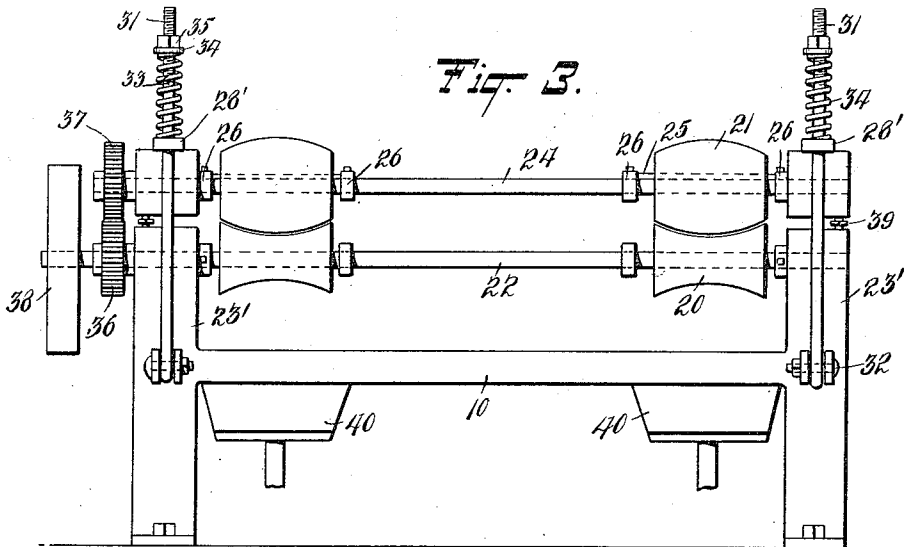


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MACHINE FOR FORMING BARREL STAVES.
APPLICATION FILED SEPT. 4, 1912.

1,064,488.

Patented June 10, 1913.

2 SHEETS—SHEET 1.



WITNESSES
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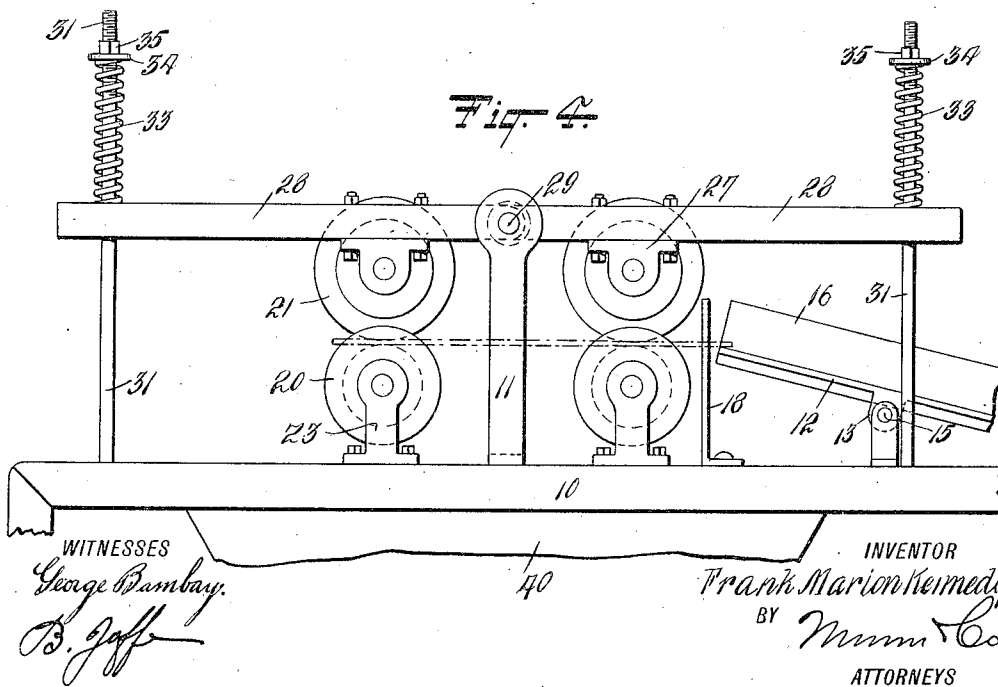
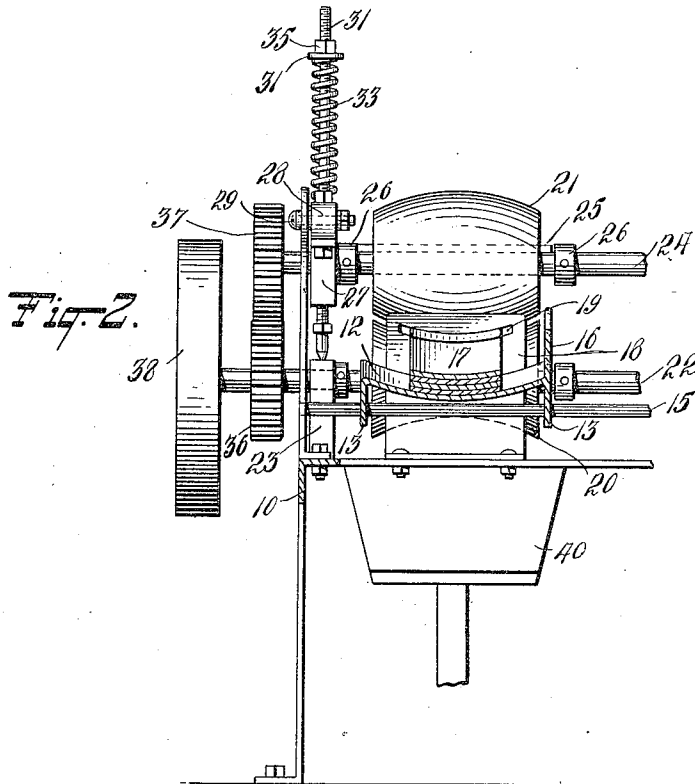
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UNITED STATES PATENT OFFICE.

FRANK MARION KENNEDY, OF CLARENDON, ARKANSAS.

MACHINE FOR FORMING BARREL-STAVES.

1,064,488.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed September 4, 1912. Serial No. 718,444.

To all whom it may concern:

Be it known that I, FRANK MARION KENNEDY, a citizen of the United States, and a resident of Clarendon, in the county of Monroe and State of Arkansas, have invented a new and Improved Machine for Forming Barrel-Staves, of which the following is a full, clear, and exact description.

This invention relates to machines for forming barrel staves and has reference more particularly to that class which, in forming the barrel staves, extracts the sap from the surface of the staves by means of a pair of revolving rollers having the profile of a stave.

The object of the invention is to provide an inexpensive machine for forming barrel staves, simple and solid in construction, which will remove the sap from a hot, steamed stave by pressure of a pair of revolving rollers from the surface of the stave only, and give to the stave a bilge of a predetermined radius.

A further object of the invention is to provide a machine for barrel staves that will adjust itself to differences in thickness of the sides of staves.

A still further object is to provide a machine for barrel staves that will flatten out a little the bilge of the stave as cut by the knife of the stave-cutting machine.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of an embodiment of my invention; Fig. 2 is a vertical section, on the line 2—2 of Fig. 1, enlarged and showing only one side of the machine; Fig. 3 is a front elevation of same, with a cast frame, and Fig. 4 is a side elevation of the machine when a stave passes to a consecutive pair of rollers in one operation.

Referring to the drawings, a frame 10 carries at each side a standard 11, fixed to the frame in any suitable way at the lower end. A table 12 has near its middle, and extending below the table surface, two flanges 13, provided with orifices 14. Through the orifices 14 of the flanges 13 a rod 15 is passed, having its bearing in standards 11, near the

lower end of the standards. On this rod 15 a table 12 on each side of the frame is rocking, due to the position of the flanges 13, the table is also balanced on the rod 15. The table 12 is also provided at one side with a wall 16 projecting above the table plate, for facilitating the manipulation of the table and also for the staves 17 placed on the table.

In front of the forward end of each table 12 facing it with one side is a standard or wall 18 rigidly fixed to the frame 10 and is provided with a slot 19, so as to allow only one stave to pass through the slot from the table 12, the slot 19 having a shape corresponding to the bilge of the stave. Close to the opposite side of the standard or wall 18 are two rollers 20 and 21, having their axes in vertical alinement and their curved surfaces being opposite and in the same horizontal plane as the slot 19. The roller 20 is concave and the roller 21 convex, having their radii of curvature slightly larger than the diameter of the barrel for which the stave is cut. The lower rollers 20 are slidably mounted on a horizontal shaft 22, which bears in blocks 23 supported by the frame and fixed to it. The upper roller 21 is mounted on a horizontal shaft 24 which is provided with a key 25 engaged by the keyway of the roller 21. The roller 21 is adapted to slide on the shaft 24 while constrained to move with the same. Two collars 26 are provided at each extremity of the key 25, so as to limit the sliding motion of the roller 21. The upper rollers 21 have their surface convex of same curvature as the surface of the lower rollers 20, and forming in profile the bilge of a stave. The shaft 24 is journaled in bearings 27 attached to and supported by a lever 28, pivotally attached at one end to the upper end of the standard 11 by means of a bolt 29, said lever having at the other end a vertical orifice 30. Through the orifice 30 a vertical rod 31 projects, its lower end being pivotally attached to the frame 10 by means of a pin 32, so as to swing in same plane with the lever 28. The upper projecting end of the rod 31 is provided with a coil spring 33, bearing with its lower end on the lever 28, and with its upper end against a washer 34 mounted on the threaded extremity of the rod 31, and maintained in place by a nut 35, provided on the threaded end of the rod 31. By means of the nut 35 and rod 31, the tension of the spring 33 may be varied, and consequently the pressure of

the rollers 20 and 21 on the surface of the passing stave is also varied.

As is seen from Fig. 3, the ends of the machine at each side are similar, so as to balance during operation.

The horizontal shafts 22 and 24 have at one end parts projecting through the bearing blocks 23 and 27 and provided respectively with meshing gears 36 and 37, fixed on these ends, and preferably the lower horizontal shaft is also provided with a pulley 38, by means of which the rollers are positively driven. It is understood that the teeth of the spur gears 36 and 37 are so shaped as to allow the required vertical displacement of the upper roller by the passing stave. To prevent all contact of curved surfaces of the rollers 20 and 21, the upper bearing block 27 is provided with a vertical stud 39, projecting downward on the lower bearing block 23. By means of this stud the space between the curved surfaces of the rollers may be adjusted. Below the rollers 20 and 21 a dripping pan 40 is provided, to receive the sap forced out from the surface of the staves, and by means of pipes the sap is conveyed to a receptacle, not shown in the drawings.

In Fig. 3 the only difference is in the form of the frame, which is cast integrally with the bearing blocks 23', and the levers 28' are at both ends provided with rods 31 pivotally connected to the ends of the frame. The Fig. 3, being an end elevation, shows only one end of the frame, the other being similar in every respect.

In Fig. 4 the modification consists in having two consecutive pairs of rollers at each end of the frame, through which the stave passes, so as to force the sap out of the surface of the stave and give the desired bilge in two stages. The same thing may be done in more stages by adding more rollers in line, and all can be done in one continuous operation, every pair of rollers having their pressure separately adjusted.

Timber from which the staves are cut is either steamed or boiled in hot water to soften it, and then cut while hot, by the slack barrel stave cutting machine, using a concave knife, having the shape of the bilge of a barrel. A number of superposed cut staves 17, still hot, are placed on the rocking table 12 of my device, and one by one passed through the slot 19 in the standard 18, and by said slot directed between two shaping rollers 20 and 21, the rollers 20 and 21 being of small diameter, so as to have a small surface of contact with the stave passing between them. The stave is carried by the friction of the rotating rollers and the wood, the amount of pressure on the passing stave being regulated by the tension of the spring 33. I have found that this pressure must be so adjusted that the pressure

rollers will force the sap to the surface of the hot stave in advance of the rollers, due to their motion and pressure, and will not force the sap through the longitudinal pores of the timber, the sap being forced to either side, over the last end of the stave passing between the rollers and dripping into the receiving pan 40. Thus, the sap is removed from the surfaces of the stave while it is hot, and in consequence the surface is left dry and the center portion contains about the same amount of sap as before rolling; that is to say, the pressure action of the spring 33 is so adjusted as to remove only the surface sap. The sap remaining in the center of the stave leaves to the timber sufficient elasticity to take the shape of the rollers and maintain the same shape.

The reason for making the radius of the convexity and concavity of the rollers larger than the radius of the barrel, is to compensate for the straightening out when drying, and the slidable motion of the rollers on the shaft is to allow a translation of the rollers when the sides of the passing stave are not of the same thickness, which is very common in practice, and the rocking table permits the operator to incline it so as to have the forward end of the staves in alinement with the slot 19 of the standard 18.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a device of the class described, comprising a plurality of pairs of superposed revolving and axially translating rollers and forming by their opposite surfaces the bilge of a stave, and having means for adjusting the pressure between said superposed rollers.

2. In a device of the class described, comprising a plurality of pairs of superposed revolving and axially translating rollers, forming with their opposite surfaces the bilge of a stave, a member associated with each pair of said rollers and having means to admit only one stave at a time to said pair of rollers, and a tilting table associated with said member, to allow the forward end of staves placed on said table to face the means in said member for admitting only one at a time, said superposing rollers having resilient means to adjust the pressure between said pairs of superposed rollers.

3. In a device of the class described, comprising a plurality of pairs of superposed revolving and axially translating convex and concave rollers, said convex and concave rollers having the radius of their curvature greater than the radius of the bilge of the barrel for which the staves are intended.

4. In a device of the class described, comprising a plurality of revolving and axially translating concave rollers, an equal plurality of revolving and translating convex

rollers, superposing said concave rollers, adjustable means at each side of said rollers, to limit said axial translation of said rollers, the convex rollers being adapted to move
5 vertically, means associated with said convex and concave rollers, to prevent the surfaces of revolution of said rollers from coming in contact, adjustable resilient means associated with said convex rollers, to adjust
10 the pressure between said convex and said concave rollers, a rocking table adapted to receive the staves, a standard between said rocking table and each pair of said convex and concave rollers, said standard

having means for allowing only one stave to
15 be fed at a time to said rollers from said table, and a dripping pan under each pair of said rollers, adapted to collect the sap removed from the surface of the stave by
20 said rollers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK MARION KENNEDY.

Witnesses:

C. A. WILBURN,

H. B. BATEMAN.

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