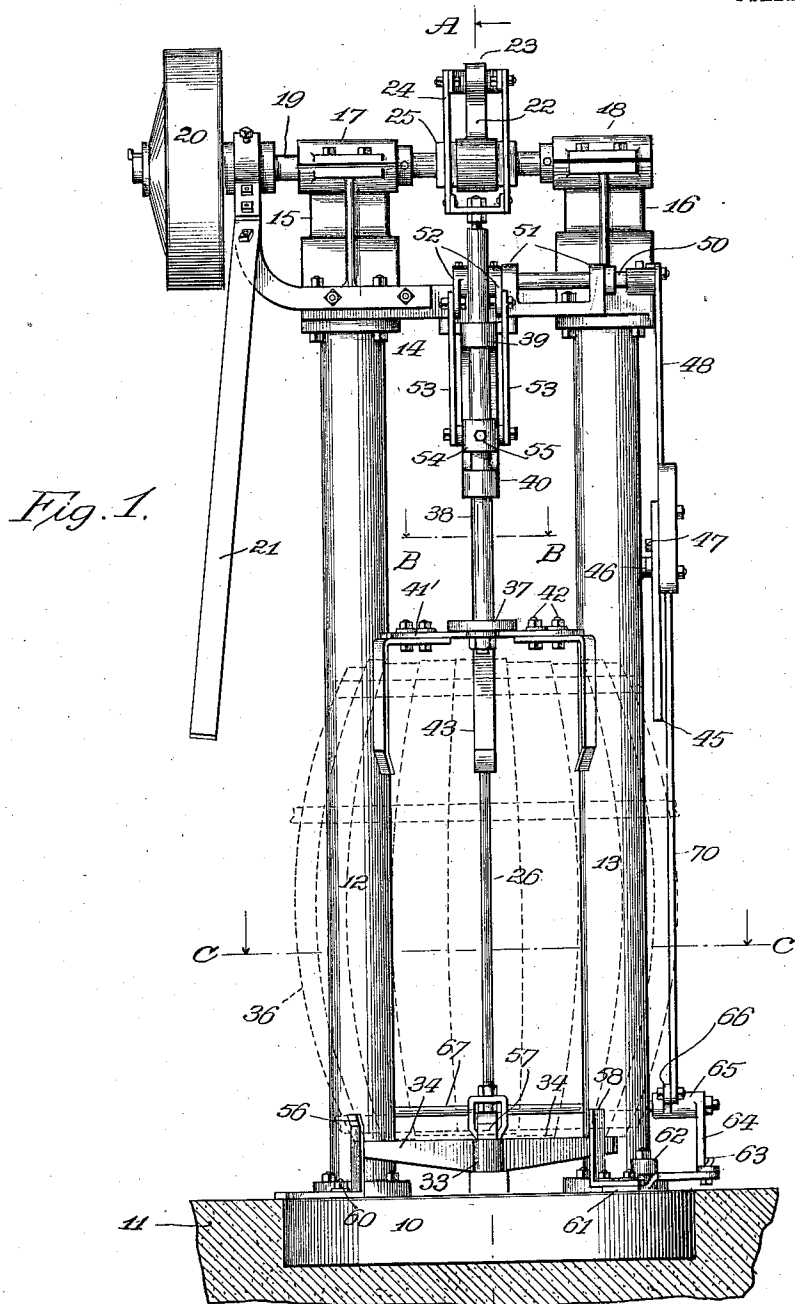


T. JOHNSON.
 BARREL LEVELING MACHINE.
 APPLICATION FILED SEPT. 27, 1911.

1,014,756.

Patented Jan. 16, 1912.

4 SHEETS—SHEET 1.



Witnesses:
 Robert H. Weir
 A. H. Ralsag

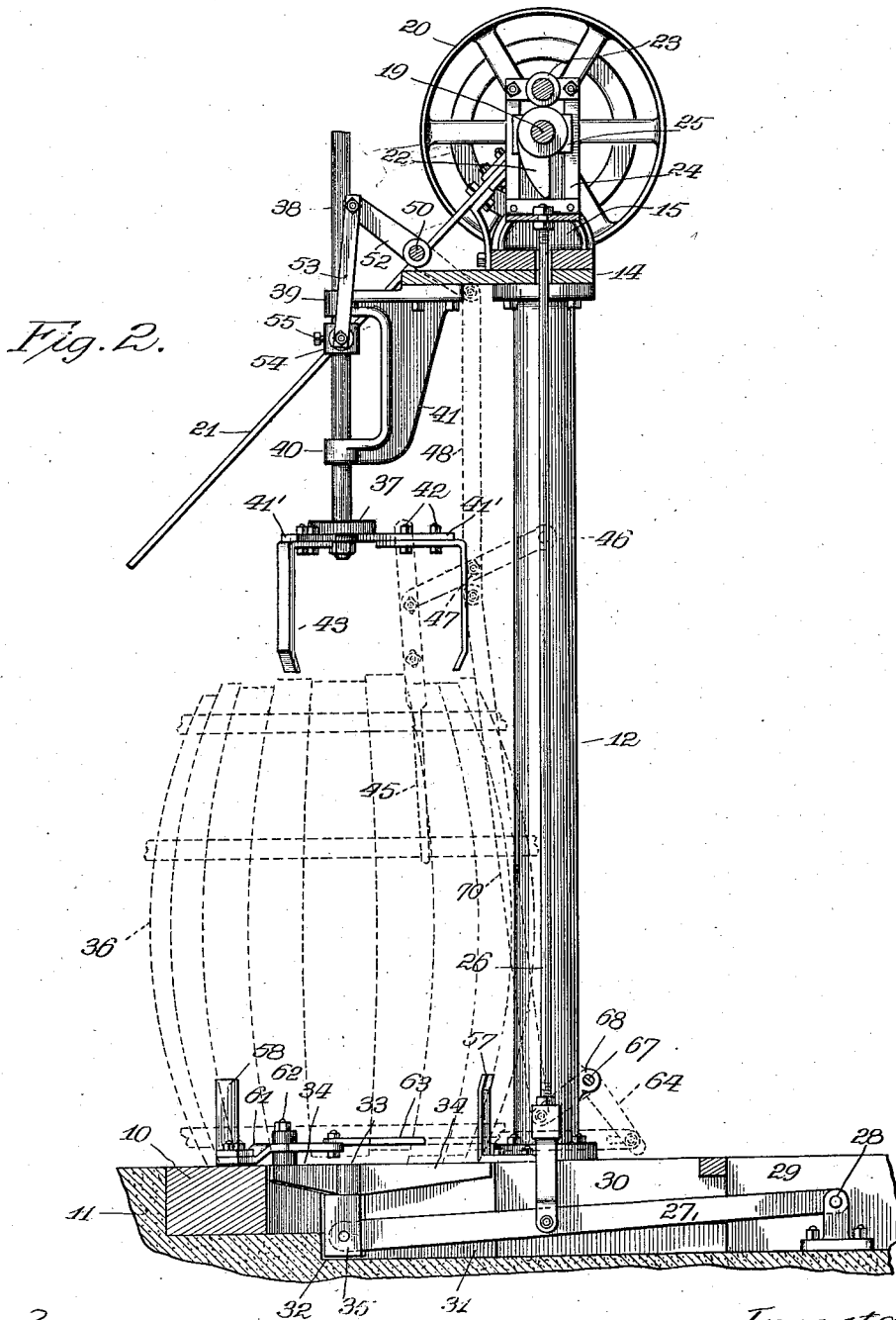
Inventor:
 Thorwald Johnson
 John Howard McElroy
 per [Signature]

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4 SHEETS-SHEET 2.



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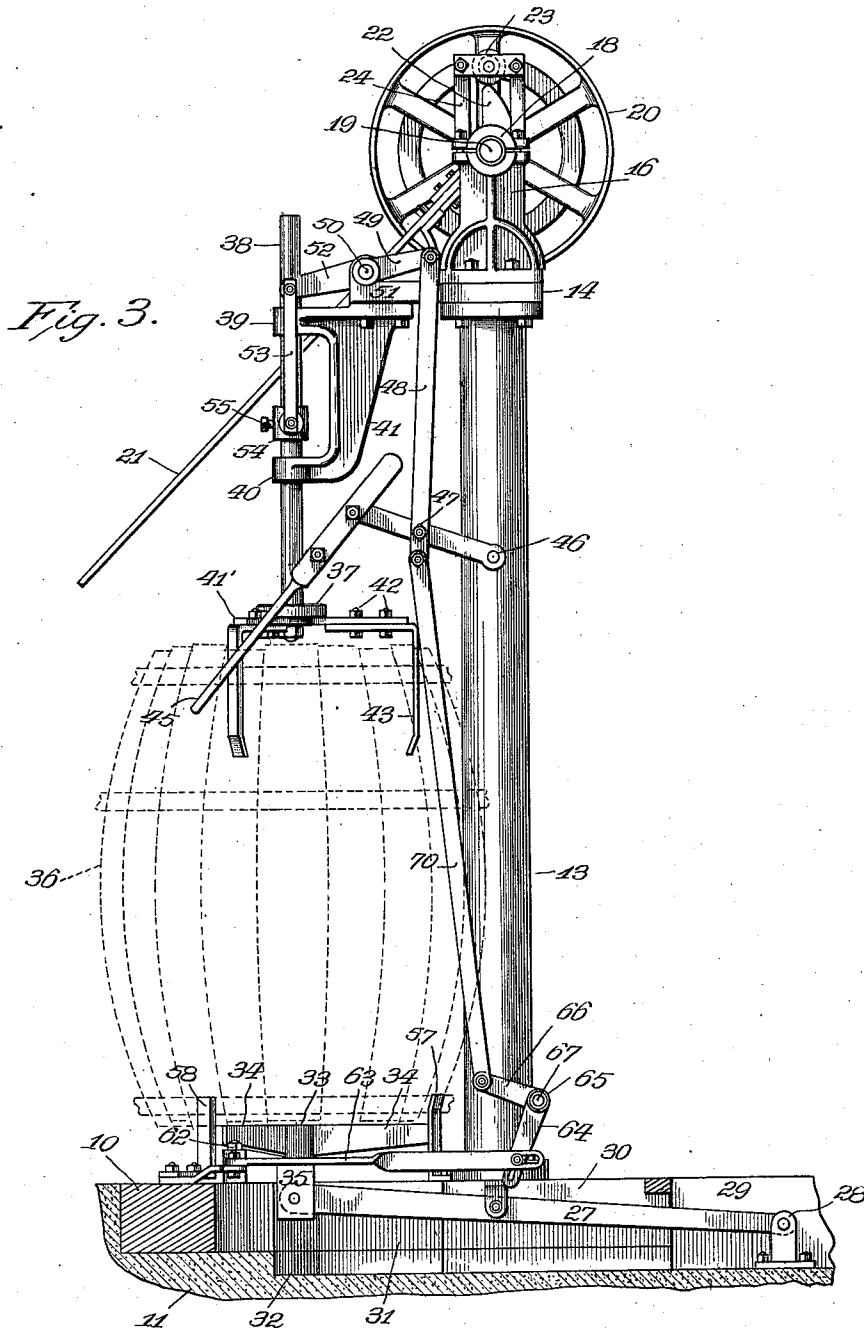
Inventor:
Thorwald Johnson,
by John Howard McElroy
his Atty.

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4 SHEETS-SHEET 3.



Witnesses:
 Robert F. Weir
 A. H. Rabsag

Inventor:
 Howard Johnson,
 by John Howard Eloy,
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4 SHEETS—SHEET 4.

Fig. 4.

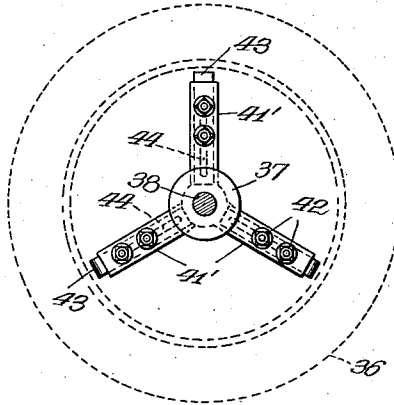
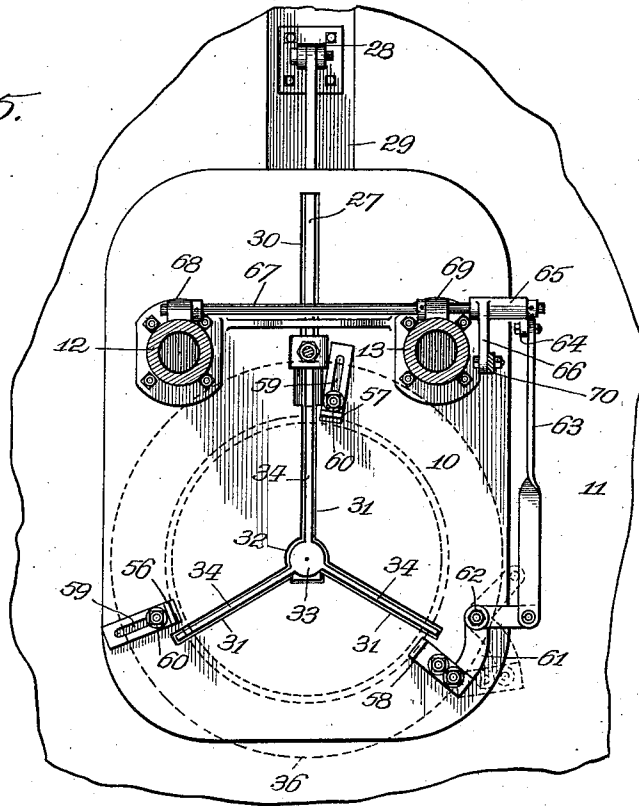


Fig. 5.



Witnesses:
 Robert H. Weir
 A. H. Dabag

Inventor:
 Thorwald Johnson,
 by John Howard McElroy
 His Attorney

UNITED STATES PATENT OFFICE.

THORWALD JOHNSON, OF CHICAGO, ILLINOIS.

BARREL-LEVELING MACHINE.

1,014,756.

Specification of Letters Patent.

Patented Jan. 16, 1912.

Application filed September 27, 1911. Serial No. 651,571.

To all whom it may concern:

Be it known that I, THORWALD JOHNSON, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Barrel-Leveling Machines, of which the following is a full, clear, and exact specification.

My invention is concerned with the art of barrel making, and is designed to produce a machine for automatically leveling or evening the staves of the barrel in the process of manufacture.

As is well known, the barrel staves in the rough are assembled and held in place by temporary hoops before the ends are finally shaped to hold the heads, and it has been the practice to bounce the ends of the barrels by hand upon a solid surface to level the staves while they are held by the temporary hoops and before they are placed in the machine which shapes the ends of the staves, and it is the object of my invention to produce a machine which will bounce the barrels automatically, rapidly and in a satisfactory manner, thus saving time and expense in their manufacture.

To illustrate my invention, I annex hereto four sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which,—

Figure 1 is a front elevation of the complete machine, the barrel being shown in dotted lines, the parts being in the position assumed before the barrel is dropped to bounce it; Fig. 2 is a view in side elevation, in section on the line A—A of Fig. 1, but with the parts in position ready to put the barrel in place; Fig. 3 is a view similar to Fig. 2, but with the parts in the same position as they are in Fig. 1; Fig. 4 is a detail in plan view on the line B—B of Fig. 1; and Fig. 5 is a plan view in section on the line C—C of Fig. 1.

The machine must be provided with a heavy, solid base 10, which preferably consists of a heavy metal casting embedded in the floor 11 of the establishment, and I secure rigidly to this base 10 a pair of vertical standards 12 and 13, upon the upper ends of which is bolted the cross piece 14 having the brackets 15 and 16, the upper ends of which are provided with bearings 17 and 18 for the drive shaft 19, which has on the outer end the customary loose belt wheel 20, which can be clutched or unclutched to the

shaft by the operation of the hand lever 21 in the customary manner. This shaft 19 is provided with a cam 22 which coöperates with the anti-friction roller 23 journaled in the top of the guiding frame 24, which is adapted to slide freely up and down and be guided in bearings 25 suitably supported on the shaft 19.

It will be noted that the cam 22 is shaped so as to raise the frame 24 quickly, and to release it and allow it to fall instantly when it passes the highest point of the cam. This frame 24 is connected by the rod 26 with the lever 27, which is fulcrumed at 28 in a slot in the floor 11 and so located that the forward portion of the lever can swing up and down in a similar slot 30 in the frame base 10. As best seen in Fig. 5, this frame base 10 has a plurality, preferably three, of radiating slots 31, which, together with the aperture 32 in the center, are adapted to receive the spider 33, which consists of the central portion and a number of arms 34 corresponding to and occupying the slots 31. This spider is pivotally connected at 35 to the lever 27, and it is obvious that a barrel 36 that is placed centrally over the aperture 32 will have its lower end engaged by the spider and lifted quickly and suddenly released by the action of the cam 22 upon the anti-friction roller 23, so that as the shaft 19 is rotated the barrel will be bounced rapidly up and down upon the massive and solid base 10, thus insuring the staves being quickly jarred down so that the lower end of the barrel will be perfectly level, and when the lower ends of the staves are leveled, they are, in the rough, sufficiently uniform in length so that the upper end will be level enough to permit of the shaping machine acting thereon to trim off the ends and cut out the groove which receives the head of the barrel.

To guide the barrel in its up and down movement and to keep it in place, I provide the guide head 37, which is carried by the shaft or rod 38 which is mounted to slide vertically in bearings 39 and 40 carried by the bracket 41 bolted to the cross piece 14. The head 37 has a plurality, preferably three, of equidistant arms 41', through which the bolts 42 are adapted to pass, so that the generally rectangular guide fingers 43 can be radially adjusted as is necessary to coöperate with barrels having heads of different diameters. It will, of course, be understood

that the horizontal portions of the fingers 43 are provided with the slots 44 indicated in dotted lines in Fig. 4, through which the bolts 42 pass, and it will also be understood
 5 that the lower ends of the fingers are turned in slightly to facilitate their entering the top of the barrel.

To move the cross head from the position shown in Fig. 2, where it is raised to permit
 10 the barrel to be put in the machine, to the position shown in Figs. 1 and 3, where it is lowered to center and hold the barrel in position, and vice versa, I provide the hand lever 45, which for convenience of manipu-
 15 lation has the shape shown, and which is pivoted to the standard 13 at 46. The lever 45 is pivoted at 47 to a link 48, the upper end of which is pivoted to the crank arm 49 secured upon the rock shaft 50 journaled in
 20 bearings 51 formed in or secured to the cross piece 14. The rock shaft 50 has secured on its inner end the pair of crank arms 52, which in turn have pivoted thereto the pair of links 53, the lower ends of which are piv-
 25 oted on the collar 54, which is preferably adjustably secured on the shaft 38 between the bearings 39 and 40, and which is conveniently secured in the desired position of adjustment by the set screw 55. Of course,
 30 the vertical adjustment is provided to adapt the machine for barrels of different lengths. It will be obvious that as the hand lever 45 is swung to the position shown in Fig. 3, the guide head will be lowered, and as it is
 35 swung to the position shown in Fig. 2, it will be raised.

To accurately position the bottom of the barrel on the base 10, I provide two station-
 40 ary guide fingers 56 and 57, together with a similar movable one, 58, which is mounted so that it can be swung into the dotted line position shown in Fig. 5, where it is out of the way enough to permit the ready inser-
 45 tion of the barrel on the base. When the barrel is in place and the movable finger 58 is swung back to full-line position, the three fingers serve to center the barrel accurately with reference to the guide head 37. It will be noted that the fingers 56 and 57 are angu-
 50 lar and that their horizontal portions have slots 59 through which bolts 60 are passed to secure them in any desired position of adjustment necessary to guide barrels of any particular size. The finger 58 is, by similar
 55 means, adjustably secured on one arm of a bell crank lever 61 which is fulcrumed on the base 10 at 62 and is connected by the link 63 with the vertical arm 64 of a bell crank lever 65 formed by securing the vertical arm 64
 60 and a horizontal arm 66 on the rock shaft 67 journaled in bearings 68 and 69 formed on the standards 12 and 13, respectively. The horizontal arm 66 is connected by a link 70 with the lower end of the link 48, so
 65 that when the lever 45 is raised to lift the

guide head 37 out of the barrel, the guide finger 58 will at the same time be swung out of the way preparatory to inserting another barrel. When the lever 45 is swung up to the position shown in Fig. 3 to lower the
 70 guide head 37 into the top of the barrel, the finger 58 is at the same time swung inward and engages the bottom of the barrel, if it is not already accurately positioned, and forces it against the fingers 56 and 57, thus accu-
 75 rately positioning the barrel, so that when the lever 21 is thrown to clutch the pulley 20 on the shaft 19 to begin bouncing the barrel, it will be positioned accurately, and will be guided as it is raised up on the fingers 43 of
 80 the head 37, and will similarly be guided as it falls by the fingers 56, 57 and 58.

The operation of my complete apparatus will be readily understood from the foregoing description, and a machine built in ac-
 85 cordance with the foregoing disclosure will serve to level a barrel with great rapidity in a few seconds, by means of a few bumps and without any undue noise.

While I have shown and described my in-
 90 vention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of
 95 the following claims except as may be necessitated by the state of the prior art.

What I have shown as new, and desire to secure by Letters Patent of the United
 100 States, is:

1. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider,
 105 and automatic mechanism for raising and quickly lowering said spider to bounce a barrel centered thereon upon said base member.

2. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider,
 110 including a guide head having guiding surfaces adapted to be raised and lowered into the top of the barrel on the spider, and automatic mechanism for raising and quickly lowering said spider to bounce a barrel centered thereon upon said base mem-
 115 ber.

3. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider,
 120 including radially disposed guide fingers on the base adapted to cooperate with the exterior of the bottom of a barrel on the spider, and automatic mechanism for raising and
 125

quickly lowering said spider to bounce a barrel centered thereon upon said base member.

4. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider, comprising a guide head having guiding surfaces adapted to be raised and lowered into the top of a barrel on the spider, together with radially disposed guide fingers on the base adapted to cooperate with the exterior of the bottom of said barrel, and automatic mechanism for raising and quickly lowering said spider to bounce a barrel centered thereon upon said base member.

5. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider, a lever having a power arm shorter than the load arm connected to the spider so that the latter constitutes the load, a cam shaft, and connections between the shaft and the lever so that as the former is rotated the spider will be raised and quickly lowered by the action of the cam, for the purpose described.

6. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider, a lever having a power arm shorter than the load arm attached to the spider so that the latter constitutes the load, a drive shaft, a frame embracing said drive shaft, an anti-friction roller carried by the frame, a cam secured on the shaft within the frame cooperating with the anti-friction roller, and a rod connecting the frame and the lever, substantially as and for the purpose described.

7. In a barrel leveling machine, the combination with a rigid base member having a plurality of slots in its upper surface radiating from a common center, of a movable spider comprising a corresponding plurality of arms adapted to fit in the slots so that it can be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider, and automatic mechanism for raising and quickly lowering said spider to bounce a barrel centered thereon upon said base member.

8. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider, including radially disposed guide fingers on the base adapted to cooperate with the exterior of the bottom of a barrel on the spider, automatic mechanism for raising and quickly lowering said spider to bounce a barrel centered thereon upon said base member, and means for swinging one of said guide fingers to and from the center of the base.

9. In a barrel leveling machine, the combination with a rigid base member, of a movable spider adapted to be raised above and lowered into said base, guiding mechanism for centering a barrel over said spider, including radially disposed guide fingers on the base adapted to cooperate with the exterior of the bottom of the barrel on the spider, automatic mechanism for raising and quickly lowering said spider to bounce the barrel centered thereon upon said base member, and means for swinging one of said guide fingers to and from the center of the base and simultaneously lowering and raising the guide head.

10. In a barrel leveling machine, the combination with a rigid base member, of a barrel supporting member adapted to raise and lower a barrel, automatic mechanism for raising and quickly lowering said barrel-supporting member to bounce a barrel carried thereby, and guiding mechanism for centering the barrel on said barrel-supporting member, said mechanism including a guide head having guiding surfaces adapted to be raised and lowered into the top of the barrel.

11. In a barrel leveling machine, the combination with a rigid base member, of a barrel-supporting member adapted to raise and lower a barrel, automatic mechanism for raising and quickly lowering said barrel-supporting member to bounce a barrel carried thereby, and guiding mechanism for centering a barrel on said barrel-supporting member, said mechanism including radially disposed guide fingers on the base member adapted to cooperate with the exterior of the bottom of said barrel.

12. In a barrel leveling machine, the combination with a rigid base member, of a barrel-supporting member adapted to raise and lower a barrel, automatic mechanism for raising and quickly lowering said barrel-supporting member to bounce a barrel carried thereby, and guiding mechanism for centering a barrel on said barrel-supporting member, said mechanism including a guide head having guiding surfaces adapted to be raised and lowered into the top of said barrel, together with radially disposed guide fingers on the base member adapted to cooperate with the exterior of the bottom of said barrel.

13. In a barrel leveling machine, the combination with a rigid base member, of a barrel supporting member adapted to raise and lower a barrel, automatic mechanism for raising and quickly lowering said barrel-

supporting member to bounce a barrel carried thereby, guiding mechanism for centering a barrel on said barrel-supporting member, said mechanism including a guide head
 5 having guiding surfaces adapted to be raised and lowered into the top of said barrel, together with radially disposed guide fingers on the base member adapted to cooperate with the exterior of the bottom of said barrel, and means for swinging one of said
 10 guide fingers to and from the center of the base member.

14. In a barrel leveling machine, the combination with a rigid base member, of a
 15 barrel supporting member adapted to raise and lower a barrel, automatic mechanism for raising and quickly lowering said barrel-supporting member to bounce a barrel carried thereby, guiding mechanism for centering a barrel on said barrel-supporting member, said mechanism including a guide head
 20 having guiding surfaces adapted to be raised and lowered into the top of said barrel, together with radially disposed guide fingers on the base member adapted to cooperate with the exterior of the bottom of said barrel, and means for swinging one of said
 25 guide fingers to and from the center of the base member and simultaneously lowering and raising the guide head.
 30

15. In a barrel leveling machine, the com-

bination with a base member, of a guide head carrying a plurality of fingers adapted to be reciprocated above the base, guide fingers on the base concentric with the guide head, a lever upon which one of the base
 35 guide fingers is secured, and connections for simultaneously reciprocating the guide head and swinging the lever.

16. In a barrel leveling machine, the combination with a base member, of a guide head carrying a plurality of fingers adapted to be reciprocated above the base, guide fingers on the base concentric with the guide head, a lever upon which one of the base
 40 guide fingers is secured, and connections for simultaneously reciprocating the guide head and swinging the lever, said connections consisting of a hand lever, a link extending therefrom up to the guide head, a link extending therefrom down toward the lever,
 45 a bell crank lever attached to the downwardly extending link, and a horizontal link connecting the bell-crank lever and the guide-finger supporting lever.
 50

In witness whereof, I have hereunto set my hand and affixed my seal, this 25th day of September, A. D. 1911.

THORWALD JOHNSON. [L. S.]

Witnesses:

HENRY F. FELZ,

JOHN HOWARD McELROY.