

No. 849,400.

PATENTED APR. 9, 1907.

T. JOHNSON.
BARREL HOOP FORMER.
APPLICATION FILED MAY 28, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

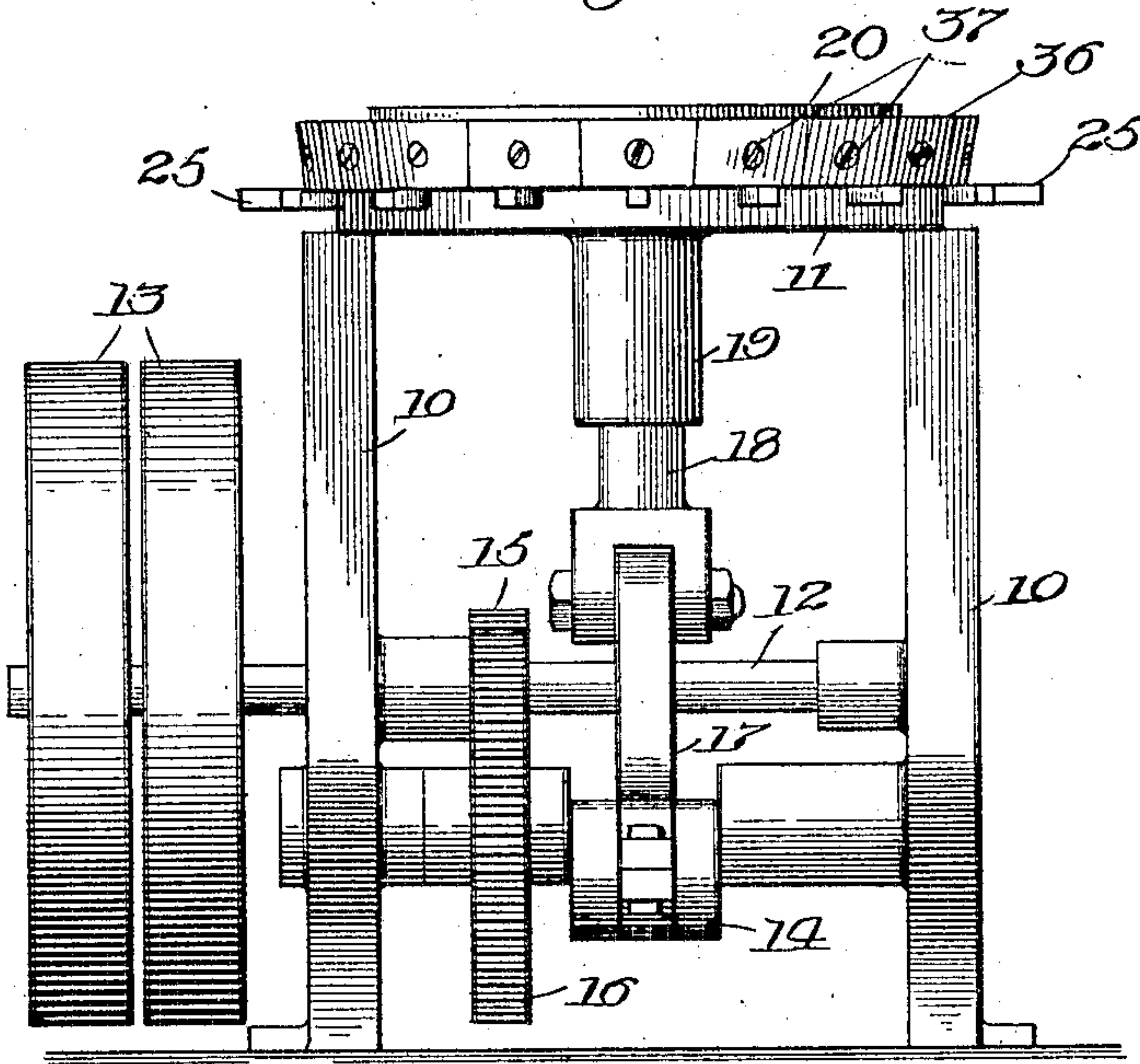


Fig. 2.

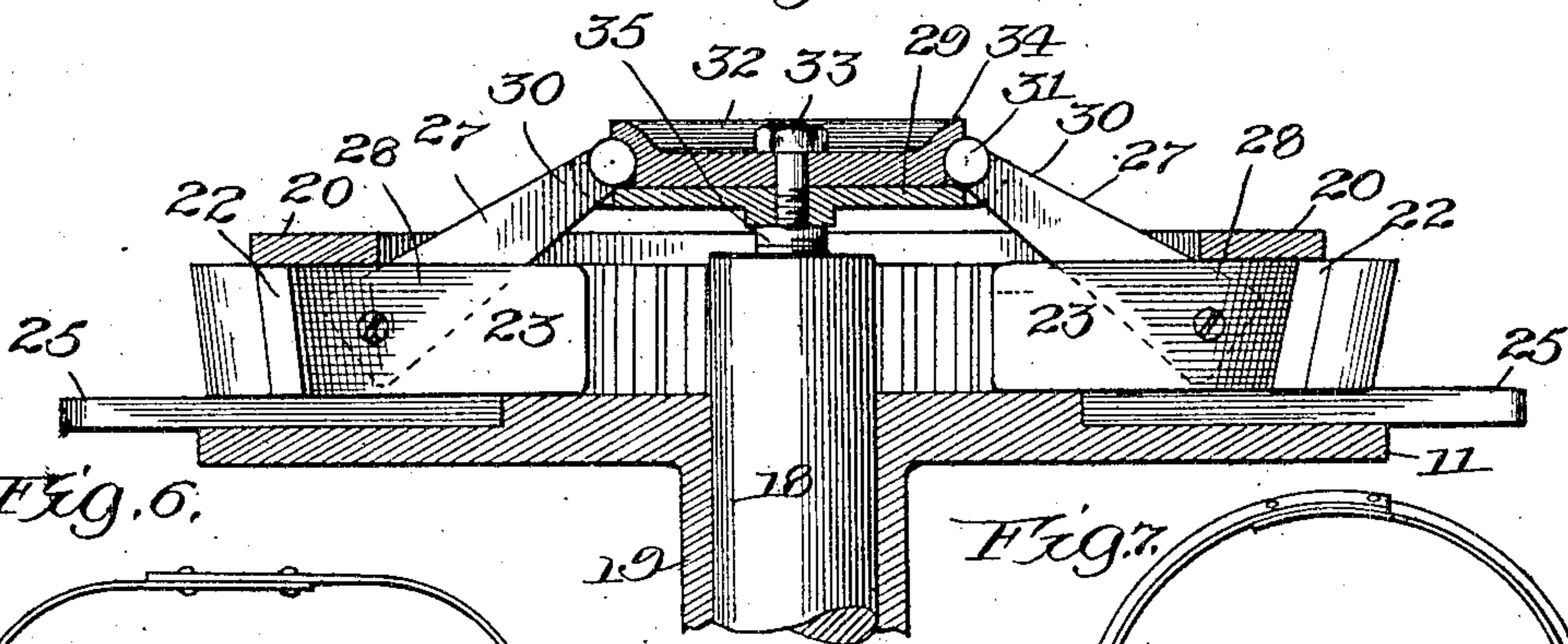


Fig. 6.

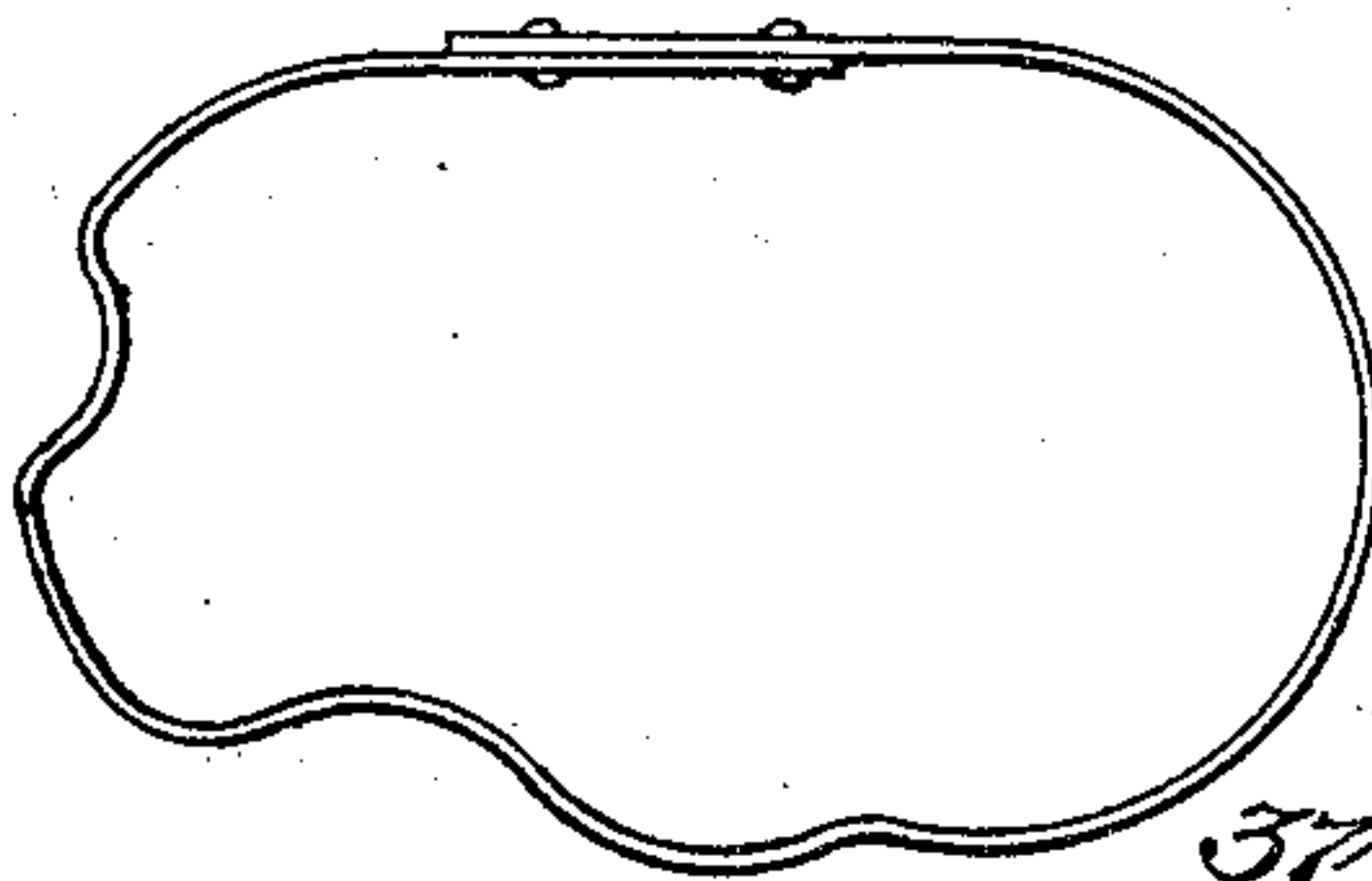


Fig. 5.

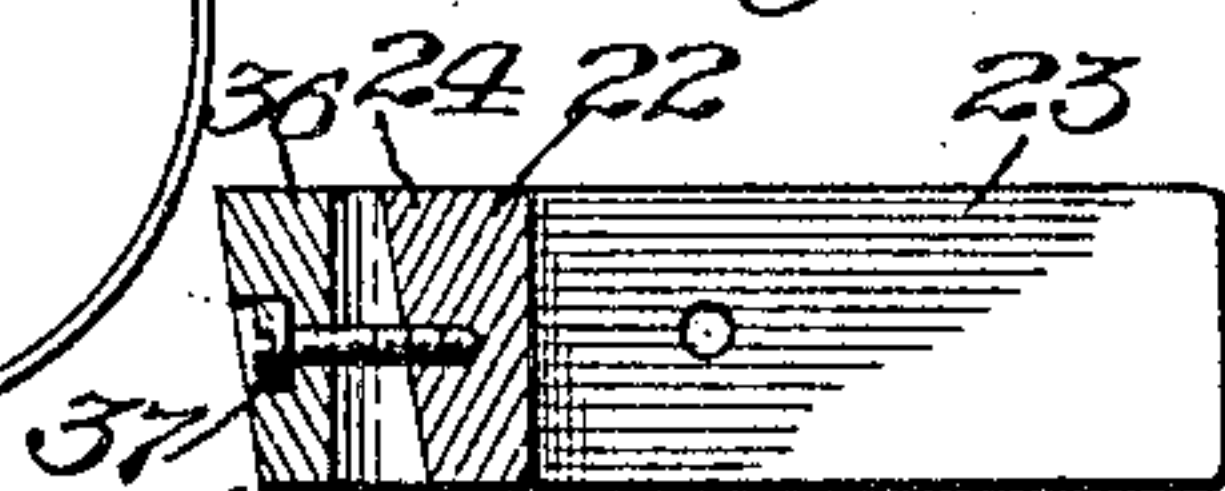


Fig. 7.

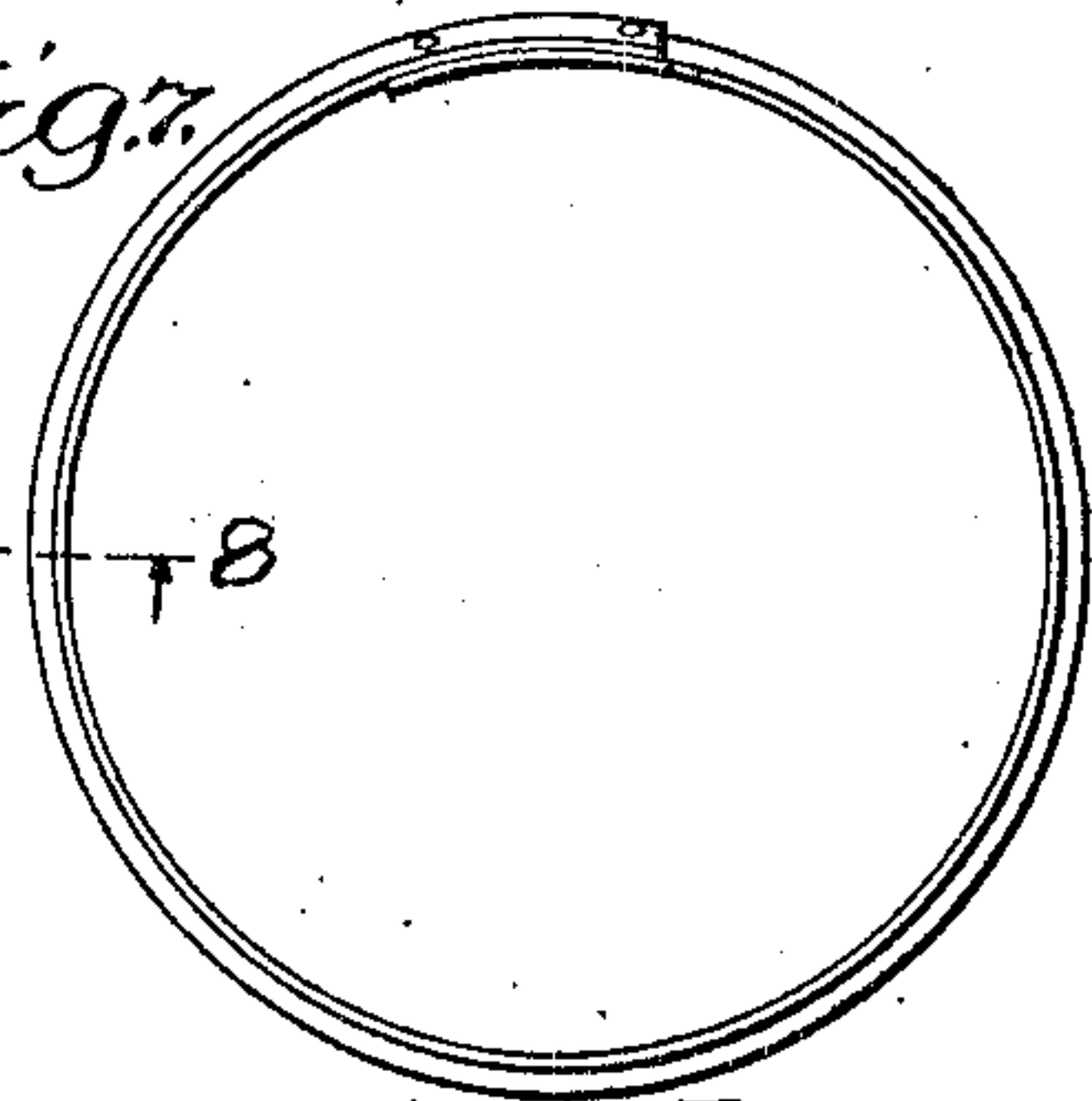
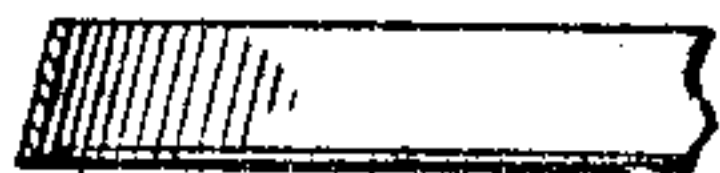


Fig. 8.



Witnesses:

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Elizabeth Molitor

Inventor:

Thorwald Johnson:

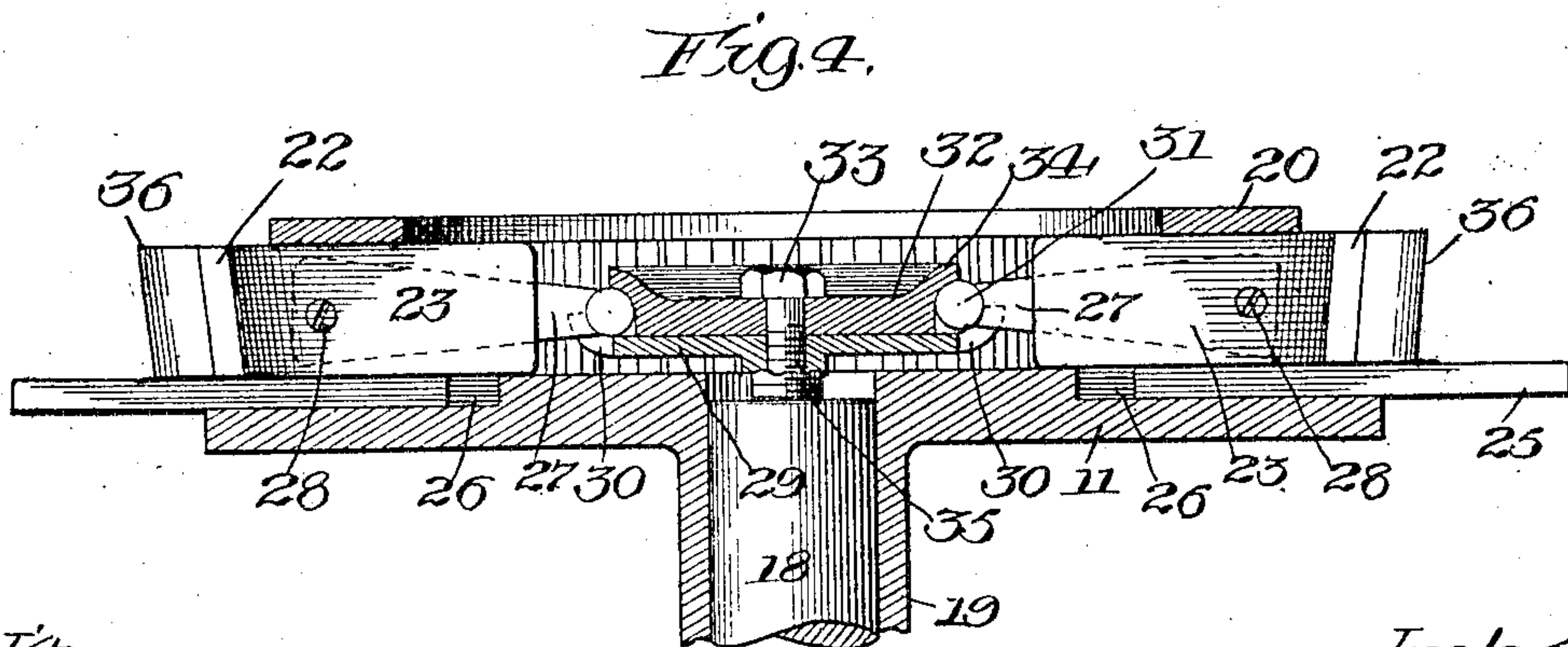
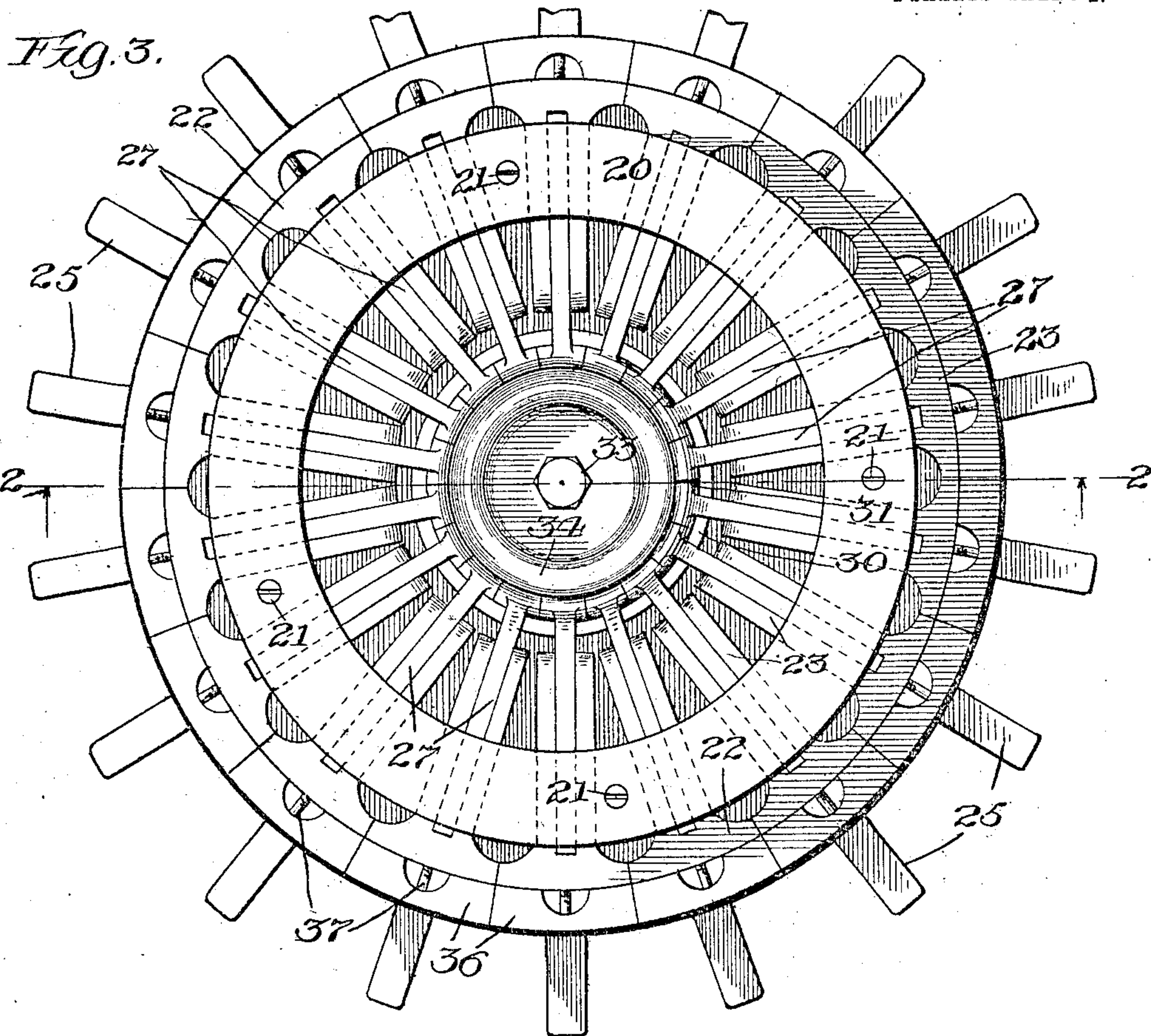
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his atty.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

THORWALD JOHNSON, OF CHICAGO, ILLINOIS.

BARREL-HOOP FORMER.

No. 849,400.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed May 28, 1906. Serial No. 319,043.

To all whom it may concern:

Be it known that I, THORWALD JOHNSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Barrel-Hoop Formers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to machines for forming barrel-hoops, and is especially concerned with certain new and improved features in machines of this character which form the entire hoop into a perfect circle and at the same time flare and stretch the same to accurately and tightly fit the associated barrel.

In the accompanying drawings, Figure 1 is a view in elevation of a machine embodying my improvements. Fig. 2 is a sectional view on the line 2 2 of Fig. 3, showing the form in its retracted position. Fig. 3 is a plan view. Fig. 4 is a view similar to Fig. 2, but showing the form in its expanded or outer position. Fig. 5 is a detail view, partly in section, of one type of expanding member or section that may be employed. Fig. 6 is a view of a hoop before being acted upon by the machine. Fig. 7 is a view of such hoop after it has been acted upon by the machine, and Fig. 8 is a sectional view on the line 8 8 of Fig. 7.

When the ends of the hoop iron or steel are riveted together, the hoop is irregular in form and the joint is more or less flattened by reason of the riveting operation, Fig. 6 illustrating an instance of the condition of the hoop in this preliminary stage. It is then necessary to give the proper form to the hoops, whether the hoop-iron has been preliminarily flared or not, in order to form the entire hoop into a perfect circle and so that it will be accurately formed, flared, and stretched to correspond to the contour of the end of a barrel, as shown in Figs. 7 and 8. In the machine illustrated for accomplishing this purpose I provide a frame comprising legs or standards 10 and a circular table 11. In the lower part of the frame and at one side of its center I journal a driving-shaft 12, provided with suitable pulleys 13, one of which is a drive-pulley and the other of which is an idler, so that the drive-belt, (not shown,) extending from a suitable power-shaft, may be shifted from one to the other to start and stop the machine in the usual manner. A

crank-shaft 14 is also suitably journaled on the frame, at about the center thereof, and is driven by the drive-shaft through a suitable train of gears 15 and 16, the latter being secured upon the crank-shaft. The shaft 14 is provided with a crank attachment 17, which actuates a vertically-reciprocating rod 18, guided in a sleeve 19, depending from a suitable central opening in the table 11, as shown in Figs. 2 and 4. The table 11 is preferably circular in outline and is provided with a circular cap 20, which is spaced somewhat above the upper face of the table, as shown in Fig. 2, by any suitable means, such as the retaining-bolts 21.

The form for shaping the hoops comprises a suitable number of radially-movable members or sections 22, arranged upon the edge of the table below the cap. These sections are flared or beveled outwardly toward their upper ends, as shown in Figs. 2 and 4, and when at the outward limit of their movement they correspond in circular contour to a transverse section of a barrel. These sections are arranged radially about the reciprocating rod 18 and are adapted to move outwardly and inwardly, so as to increase or decrease the diameter and circumference of the circular form which they compose. Each section is T shape in outline and comprises a head and two parallel vertical webs 23. The faces 24 of the heads of the sections are beveled and curved to conform to the flare and curvature of the finished hoops. Each section is mounted upon a guide 25, adapted to move in a radial channel or way 26 and whose outer end projects beyond the face of its associated section. Each section is provided with an operating-rod 27, whose outer end is secured between the vertical webs in any suitable manner, as by the bolts 28, and whose inner end is connected to a circular head 29, rigidly attached to the reduced upper end of the reciprocating rod 18. The head 29 is dish shape in outline and is serrated upon its upturned edge, the ends of the rods 27 passing through the openings between the serrations 30 and having lateral wings or extensions 31 lying behind the serrations and resting within the seats formed thereby. A plate 32 of less diameter than the plate 29 is attached to the reduced end of the rod 18, as by a nut 33, and is provided with an upwardly and outwardly flaring

bearing-surface 34, which rests over and upon the wings 31 of the rods 27, so that when the plate is clamped in place, as by its nut, the wings of the rods 27 are securely held in their seats upon the head, being, however, free to turn therein as the head is reciprocated.

The form composed of the movable sections 22 may accommodate hoops of different sizes by making the head adjustable with relation to the reciprocating rod. For this purpose the head may be mounted upon a stem 35, adjustable on the rod 18, as by a screw-thread connection, as shown in Figs. 2 and 4. By raising or lowering the stem the diameter of the form is decreased or increased for hoops of different size. In order further to increase the capacity of the machine, so that it may operate upon hoops of entirely different sizes or standards, I may provide each of the movable sections with a supplemental detachable head 36, which is secured to the outer face of the section by any suitable means, such as the screw 37, the arrangement being such that the supplemental heads 36 increase the size of the circle made by the form. The faces of the supplemental heads are preferably beveled or flared in substantially the same manner as the faces of the main sections 22, and it is obvious that the size of the form may be increased or decreased to accommodate hoops of larger size or diameter by means of these supplemental heads.

Power being applied to the drive-pulley, the rod 18 is reciprocated vertically and motion is communicated to the operating-rods 27, and as the rod 18 moves upward the outer ends of the radially-arranged sections 22 are drawn inwardly, thus decreasing the size of the circle made by the form. When the form is thus brought to its smallest diameter, a hoop is placed about the sections 22, the outwardly-projecting ends of the slides 25 forming a rest or stop therefor, and upon the downward stroke of the rod 18 the parts take the position shown in Fig. 4 to expand the diameter of the form and the hoop is brought to a perfect circle, being simultaneously flared and stretched to correspond to the contour and flare of the expanded circle corresponding to the barrel. The hoop is removed on the next upward stroke of the reciprocating rod, and the sections are again brought to their position to reduce the diameter of the form for the reception of another hoop.

The fixed connection between the operating-rods and their reciprocating head provides for positive movement of the sections in both directions under the action of the head, so that the sections are simultaneously and uniformly moved for expansion and retraction. By thus preventing any uneven movement of the sections and insuring their

positive retraction, I avoid the necessity of pushing them back by hand, which would interfere with the rapid working of the machine.

By having the faces of the sections flared or beveled upwardly the hoop is located with its smallest diameter at the lower edges of the faces, and in the expanding operation of the machine the strain or thrust of the sections causes the hoops to tend to crowd down toward the lower edges of the faces and against the stops 25. By this arrangement I am enabled to do away with all stops or pins above the hoop which when the flare or bevel is reversed are necessary to prevent the hoop from being forced off upwardly in the expanding operation and whose removal and replacement consume much time. By the present machine the operation is greatly expedited, as the operator is relieved of the necessity of manipulating any stops or pins.

Having described my invention, what I claim is—

1. A former comprising a plurality of radially-movable sections having upwardly-flared faces, a rod reciprocating at the center of the sections, and a series of rods connecting the sections to the reciprocating rod to positively expand and retract the sections.

2. A former comprising a plurality of radially-movable sections having their faces curved and upwardly flared to correspond with a barrel end, a rod reciprocating at the center of the sections, a head on the rod, and a series of rods positively connecting the head and sections.

3. A former comprising a plurality of radially-movable sections having their faces curved and flared to correspond with a barrel end, a rod reciprocating at the center of the sections, a head on the rod comprising a pair of opposed plates, and a series of rods each pivoted at one end to a section and clamped at the other end between the plates.

4. A former comprising a plurality of radially-movable sections having their faces curved and flared to correspond with a barrel end, a rod reciprocating at the center of the sections, a head on the rod comprising a clamping-plate and a dish-shaped plate having its edge serrated, and a series of rods each pivoted at one end to a section and having its other end provided with wings adapted to seat between the serrated edge of the plate and the clamping-plate.

5. A former comprising a table having radial ways, a plurality of movable sections having guides adapted to said ways, said guides extending beyond the associated sections, and a reciprocating rod positively moving said guides in both directions in the ways.

6. A former comprising a table having radial ways, a plurality of movable sections having guides adapted to said ways, said

guides extending beyond the associated sections, a reciprocating rod positively moving said guides in both directions in the ways, and a series of supplemental heads adapted
5 to said sections.

7. A former comprising a plurality of radially-movable sections having their faces curved and flared to correspond with a barrel end, a rod reciprocating at the center of the
10 sections, a head on the rod comprising a pair of opposed plates, a series of rods each pivot-

ed at one end to a section and clamped at the other end between the plates, and a series of supplemental heads adapted to said sections and having their faces curved and flared.

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

THORWALD JOHNSON.

Witnesses:

ELIZABETH MOLITOR,
J. McROBERTS.