

No. 685,899.

Patented Nov. 5, 1901.

J. M. ALDERFER.

MACHINE FOR MANUFACTURING CRATE HEADS.

(Application filed June 28, 1901.)

(No Model.)

3 Sheets—Sheet 1.

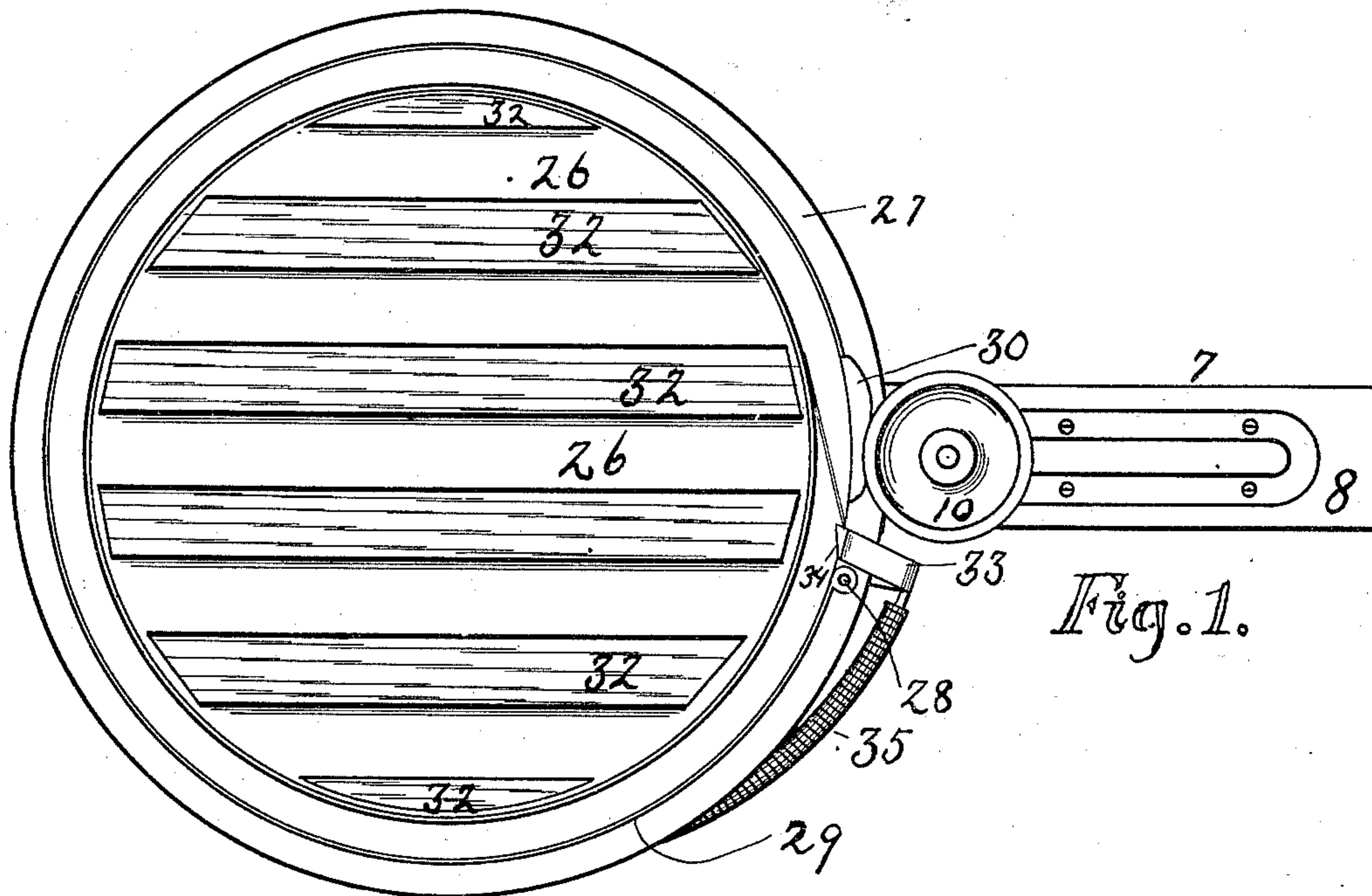


Fig. 1.

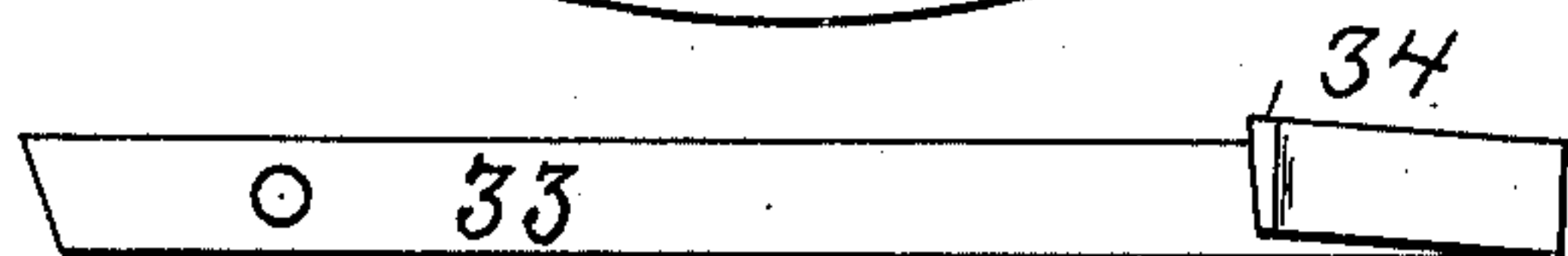


Fig. 2.

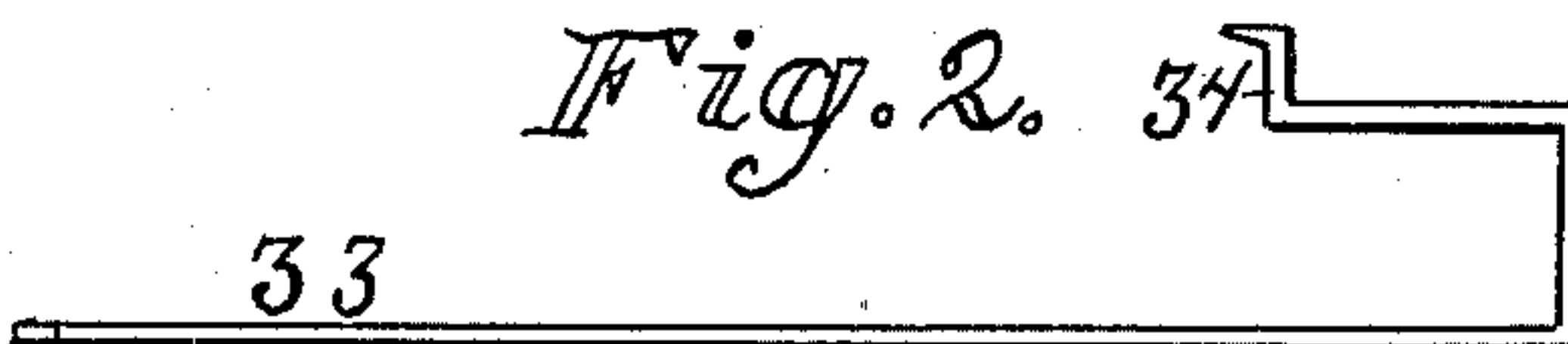


Fig. 3.

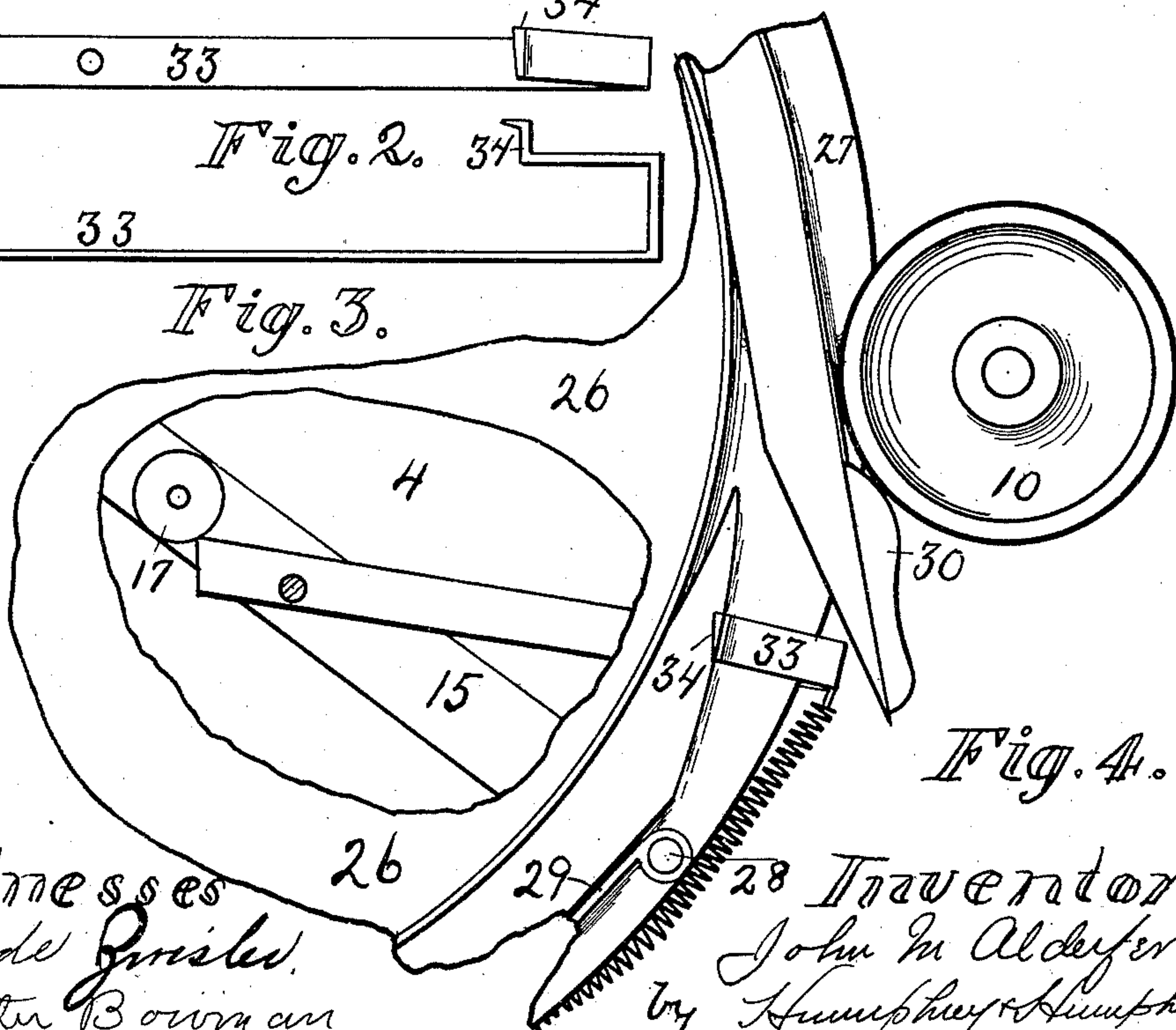


Fig. 4.

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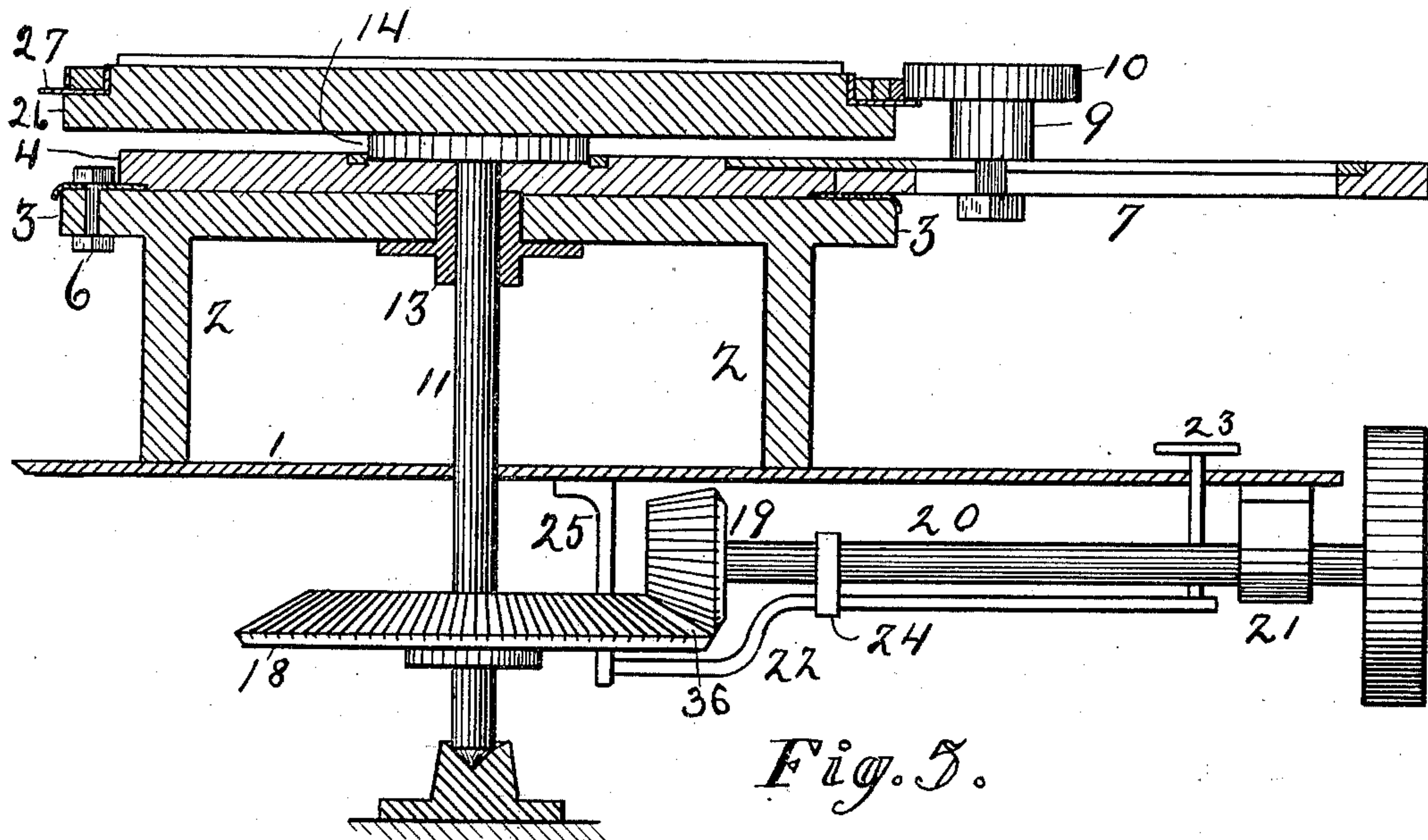


Fig. 5.

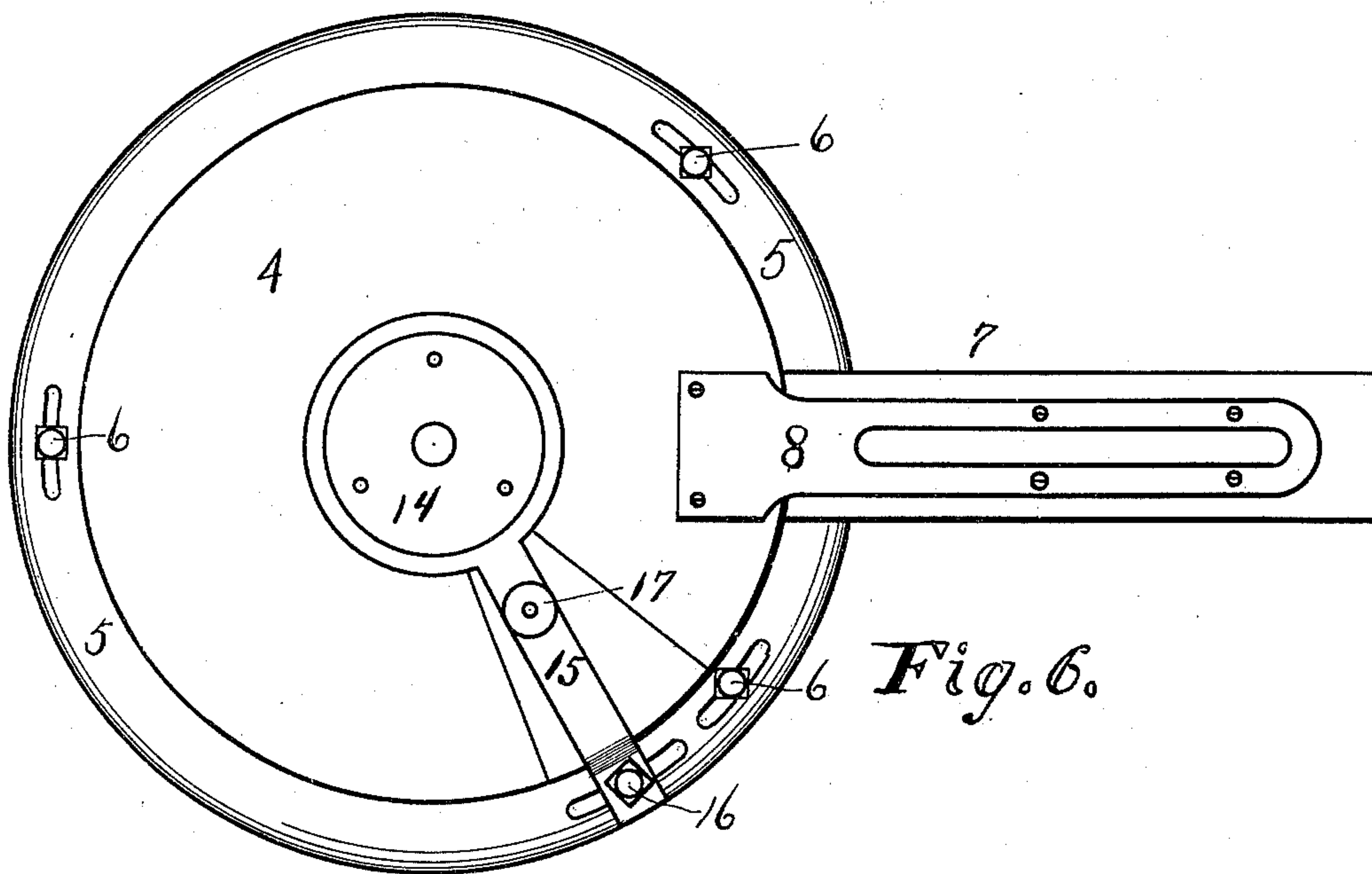


Fig. 6.

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3 Sheets—Sheet 3.

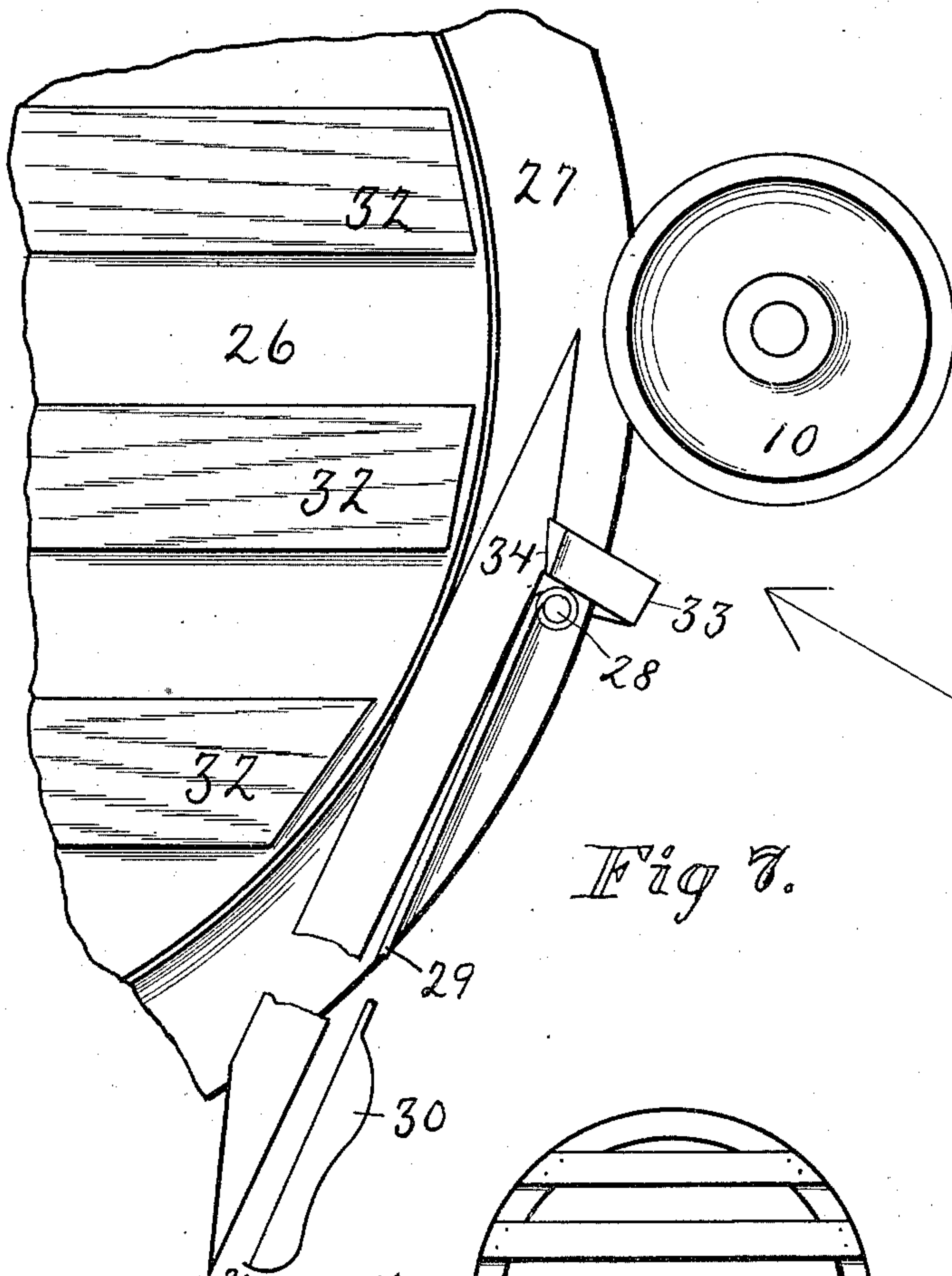


Fig. 7.

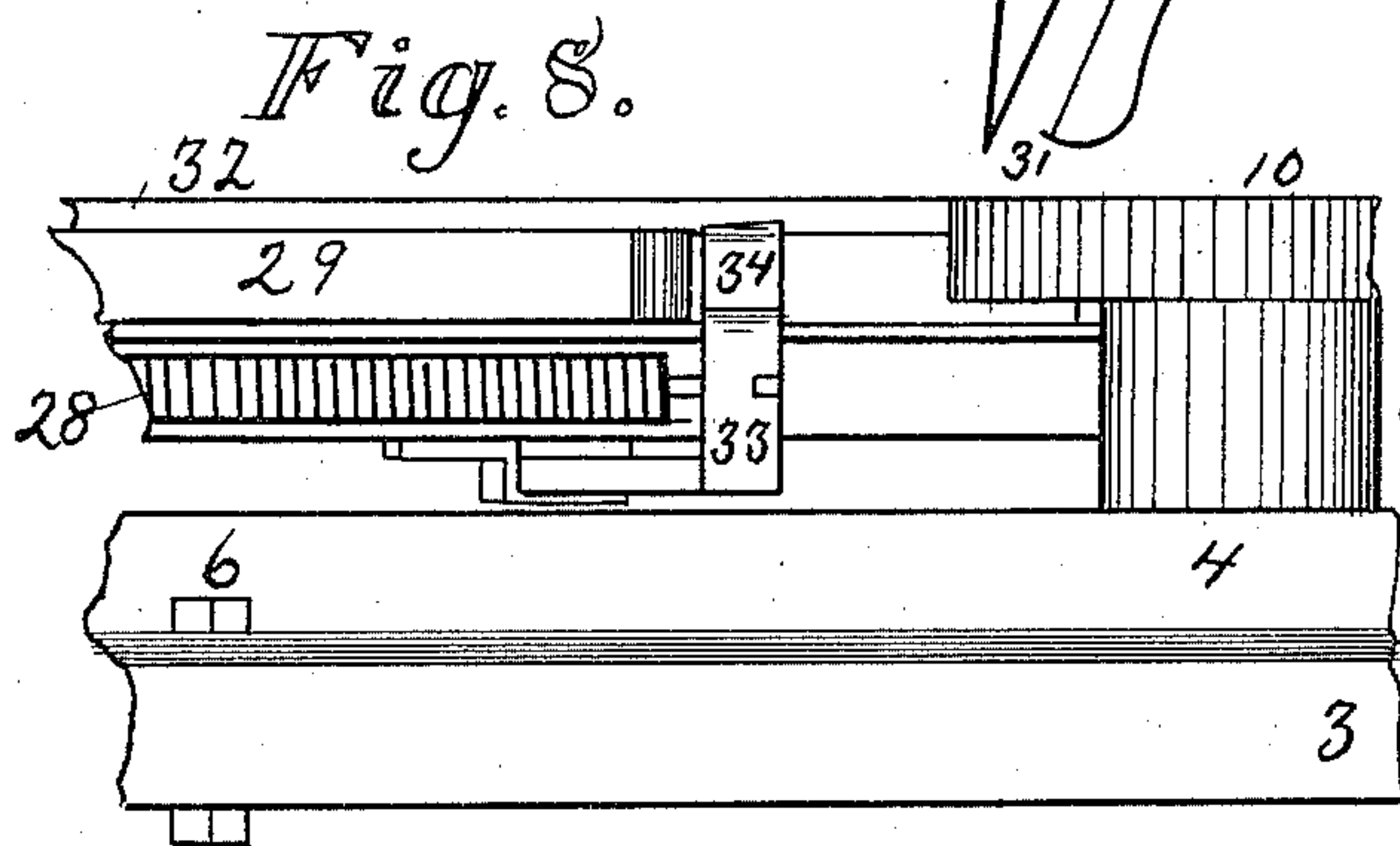


Fig. 8.

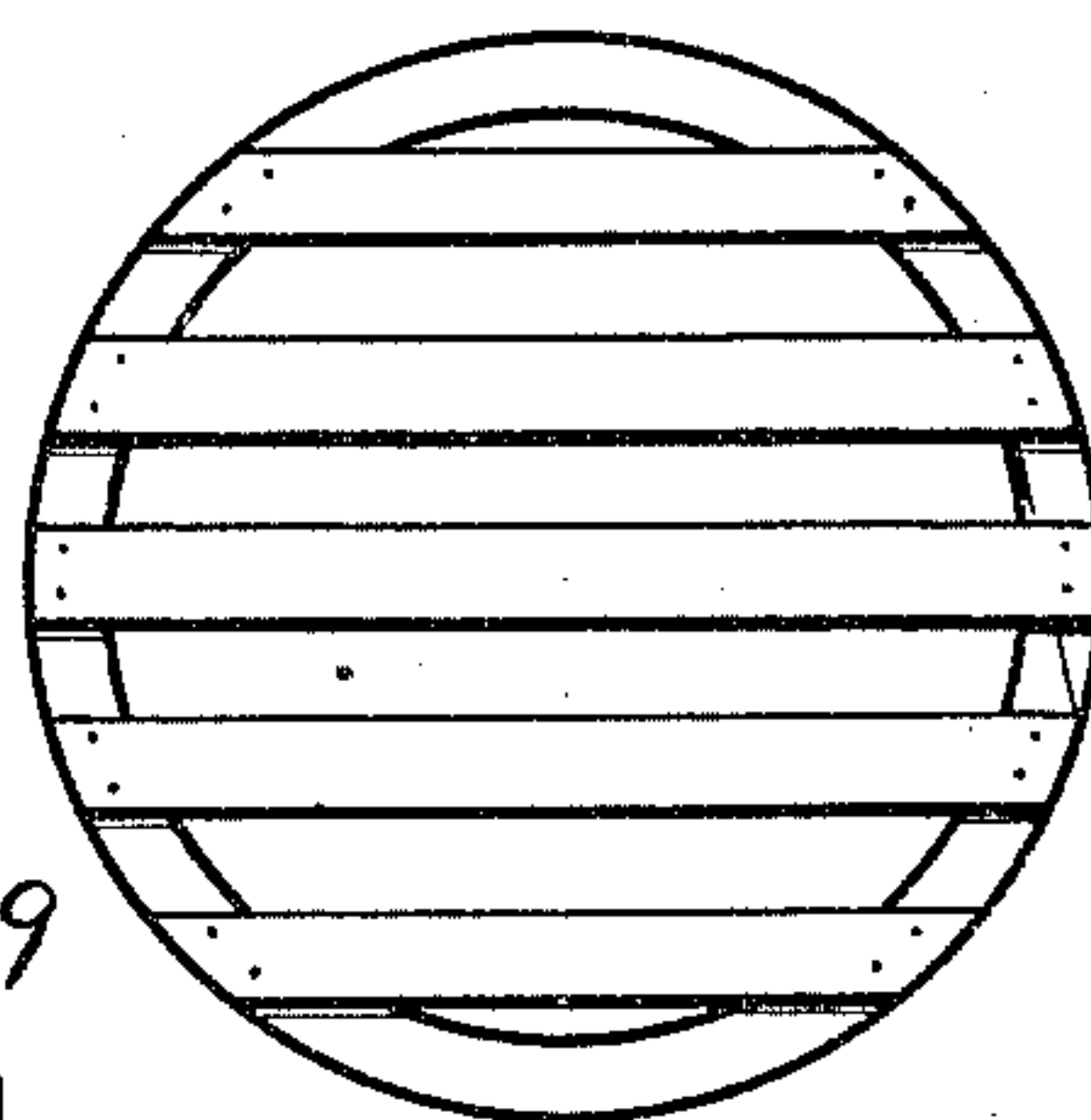


Fig. 9.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN M. ALDERFER, OF SHARON CENTER, OHIO.

MACHINE FOR MANUFACTURING CRATE-HEADS.

SPECIFICATION forming part of Letters Patent No. 685,899, dated November 5, 1901.

Application filed June 28, 1901. Serial No. 66,424. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. ALDERFER, a citizen of the United States, residing at Sharon Center, in the county of Medina and State of Ohio, have invented a certain new and useful Improvement in Machines for Manufacturing Crate-Heads, of which the following is a specification.

My invention has a general relation to devices to be employed in facilitating the construction of that class of crate-heads having a hoop across which are nailed slats at intervals. The two heads are joined by longitudinal parallel slats to form a cylindrical crate, in which it is customary to pack rubber tires and crockery for shipment.

The object of my invention is to provide mechanism to receive the hoop-sticks, bend them into a hoop, with the tapered ends lapped, hold them while the attendant nails the lap, and guide and hold the cross-slats until they are nailed in place.

To the accomplishment of the aforesaid object my invention consists in the peculiar and novel construction, arrangement, and combination of parts hereinafter described and then specifically pointed out in the claims, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different views, Figure 1 is a plan of my machine; Figs. 2 and 3, a plan and a side elevation, enlarged, respectively, of a rocking lever, to be further described; Fig. 4, a detail plan, enlarged, of the lap in the crate-ring just before closing with the mechanism to perform this function; Fig. 5, a vertical central transverse section of the machine; Fig. 6, a plan of the machine with the revolving head removed; Fig. 7, a detail of the machine, showing the manner of placing the wooden strip preparatory to bending the same; Fig. 8, a side elevation of the revolving head on a line with the arrow in Fig. 7; Fig. 9, a plan view of the crate-head produced by this machine.

Primarily in describing this machine it may be better understood by stating that the operating-machine is generally situated on the main floor 1 of the factory and the gearing necessary thereto in the basement or lower

floor, as shown in Fig. 5. Upon this floor 1 is a permanent table 2, with a circular top 3, upon which circular top is a partially-rotatable head 4, circular in form and concentric with said table-top 3. This head 4 bears on its under outer edge an annular ring 5, with a downturned outer edge. This ring 5 has at intervals slots through which pass bolts 6, which when tightened hold the ring 5 and head 4 rigid with the table-top 3, but when loosened permit a slight horizontal revolution of the head 4 and ring 5. Extending from one side of the head 4 and fastened thereto is an arm 7, having on its upper face a metal plate 8, sunken in the arm and flush with its upper surface. This plate 8 and arm 7 are slotted longitudinally, and in this slot is a vertical shouldered shaft 9, which is held in a desired place in the slot by means of a tightening-nut at its lower end. On the upper end of the shaft 9 is a revoluble plain-faced wheel or idler 10, the purpose of which will be later described.

Passing vertically through the center of the head 4, top 3, and floor 1 is a shaft 11, journaled in a box 13 in the top 3, which bears at its upper end a face-plate 14. This plate 14 is partially sunken in the head 4, but does not rest thereon, and is surrounded by the ring end of a lever 15, which is partially rotatable around the plate 14 and whose free end is bent over the outer edge of the head 4 and fastened by a bolt 16, passing through a slot in the ring 5 and top 3. This lever 15 bears a revoluble roller 17, and the desired position of this roller is obtained by swinging the free end of the lever 15, which is permitted by the cut-away portion of the head 4 on either side of the lever 15. Mounted upon the shaft 11 is a bevel-gear 18, arranged to revolve with said shaft and having on one side a blank space 36, produced by removing a number of teeth. This gear 18 is arranged to mesh with a bevel-pinion 19, mounted on a horizontal shaft 20, mounted in a bearing 21 remote from the pinion 19, so as to allow a certain amount of spring motion to the pinion end of the shaft 20. The normal tendency of the pinion-shaft 20 is to hold the pinion out of engagement with the gear 18, and the following mechanism is used to cause them to mesh. Below the shaft 20 is a bent

lever 22, having at one end a pedal 23, by which the end of the lever is depressed. The lever 22 is attached to the shaft 20 by a tie 24, and the opposite end of the lever 22 is held
 5 from upward motion by a bracket 25, so that pressure upon the pedal 23 will bring downward the pinion 19 into mesh with the gear 18. On the upper end of the shaft 11 and firmly fastened thereto is a drum 26, circular
 10 in form and concentric with the shaft and having a rabbeted upper edge, in which is fastened an angle-iron 27, consisting of a horizontal flange and vertical side, both integral and fastened into the rabbet in the drum.
 15 Upon the horizontal part of the angle-iron is a pin 28, surrounded by the eye of a long band-iron 29, which terminates in an enlarged head 30, Fig. 7, which has a number of teeth 31 at its inner end. This head 30 has on its
 20 outer part an incurved portion with a radius equal to the idler 10 and into which curve the roller runs at the termination of the bending of the hoop.

Upon the upper face of the drum 26 are a
 25 series of guides 32, between which the slats for making the crate-head are placed during the nailing.

On the under face of the drum 26 is a lever 33, pivoted and fastened to and revolving
 30 with the drum. This lever 33 (shown in plan and side elevation in Figs. 2 and 3) is generally in the shape of a square-cornered hook with the hook end 34 bent outwardly and placed as shown best in Fig. 4, with the
 35 long end fastened by a bolt to the under face of the drum 26 and its hooked end inclosing the edge of the drum and angle-iron 27, so that its hook end rides slightly above the horizontal portion of the angle-iron, and a
 40 spring 35 is attached to this lever 33 at its outer bend, whose normal tendency is to draw the hooked portion toward the pin 28. The end of the lever 33 opposite to the hooked end is so placed that during each revolution
 45 of the drum 26 it will encounter the roller 17 and will move the hooked end forward until it passes the roller and will then be returned to its normal position against the pin 28 sharply by the spring 35.

Before describing the operation of this machine it must be borne in mind that the drum 26 will make one complete revolution when the pedal 23 is depressed to cause the pinion 19 to mesh with the gear 18 and will be prevented from continuous revolution by the
 55 teeth of the pinion 19 encountering the cut-out portion of the gear 18.

In operation strips of a suitable kind of wood, having their ends cut on a slanting
 60 line parallel with each other, are steamed sufficiently to render them flexible, and when thus prepared are brought singly to the machine and are inserted, as shown in Fig. 7 of the drawings, upon the angle-iron 27 between
 65 the pin 28 and the upright portion of the angle-iron, with the cut-away part in the direction of the roller 10. The machine is then

started by pressing upon the pedal 23, which pulls down the lever 22 and with it the pinion 19 into mesh with the gear 18, which causes
 70 the drum to revolve. At this point it is deemed necessary to state that the pressing down of the pinion 19 into the open space cut in the gear 18, which normally is immediately under the center of the pinion 19, would not
 75 of itself cause the rotation of the drum 26, because the pinion would encounter no teeth in the gear 18. They are caused to mesh, however, in the following way: In pushing the strip of material between the pin 28 and
 80 the vertical portion of the angle-iron 27 a slight thrust is used, which causes a very slight turning of the drum 26, thereby bringing the gear 18 into engagement with the pinion 19, and thus causing it to make a complete
 85 revolution. As the drum 26 revolves it bends the strip of wood around the vertical portion of the angle-plate 27, and by hand the band-iron 29 is fed forward closely against the wood and the roller 10, bearing against
 90 the band-iron, pressing the wood firmly in place, and this is kept up until the parts assume the position shown in Fig. 4. When the parts have reached the position immediately preceding that shown in Fig. 4, the two
 95 ends of the strip will be projected tangentially from the angle-plate, and if nothing were done to cause one to fold in first the ends would encounter each other and would not make a
 100 smooth joint. In order to cause the end first introduced into the machine to fold down and permit the other end to fold over it and make a smooth joint, I employ the lever 33, which normally rests against the pin 28, traveling
 105 on the under face of the drum 26. At the time just mentioned the inner end of this lever encounters the roller 17 and the outer end is thrown forward with its upturned edge 34 against the slanting face of the wooden strip, and as it swings on its center it presses in-
 110 ward the tapering end of the strip while the lever is in engagement with the roller 17; but the instant the lever passes the roller the action of the spring withdraws the outer end of the lever 33 quickly backward against the pin
 115 28, and as the drum continues to revolve the roller 10 rides up onto the enlarged portion 30 of the strap 29 and the drum ceases its revolution at the moment when the concave portion of the part 30 is in engagement
 120 with the roller 10. This arresting of the motion of the drum is caused by the pinion 19 entering the cut-away portion of the gear 18. Slats of the appropriate length are then laid between the guides 32 on top of the
 125 drum 26 and are nailed down into the now completely bent hoop and the hoop partially raised, being held together by the slats, and the joint made by the two ends of the strip are nailed together, forming a perfect hoop.
 130 The band 29 and completed crate-head are lifted vertically off from the drum to any desired place and the band 29 swung around ready for the next strip of wood to be bent.

Any size of head may be made on this machine, as drums of different diameters can be used and the roller 10 be placed nearer or farther from the center of the drum by means of adjusting devices heretofore described.

In order to make a perfect article, the roller 10 must rest in the concave portion of the end 30 of the band 29, and in order to do this it will be found necessary at times to release the bolts 6 and by means of the handle 7 swing the head 4 and handle 7 to either side to accomplish this result, as the drum ceases its revolution at a definite point, caused by the cut-away portion in the gear 18.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine of the class designated, the combination of a revoluble drum surrounded by an angle-plate to receive strips of suitable material for forming hoops, a band pivoted to said angle-plate and terminating in an enlarged head having a concave outer surface with a wheel adapted to bear against said band during the revolution of said drum and to rest in said concave part, substantially as shown and described.

2. In a machine of the class designated, the combination of a table and a head mounted thereon, a lever mounted in said head, a roller mounted on said lever, of a revoluble drum, means for retaining strips of suitable material on said drum, a pivoted lever mounted on said drum and arranged to en-

counter said roller and press inward one end of said strips, substantially as shown and described.

3. In a machine of the class designated, the combination of a revoluble drum, mechanism mounted thereon for receiving and holding strips of suitable material during the process of bending, a shaft mounted in suitable bearings to support said drum, a gear mounted on said shaft having a blank space at one point in its teeth, a pinion suitably mounted to engage and rotate said gear, and means to cause said pinion and gear to engage, substantially as shown and described.

4. In a machine of the class designated, the combination of a fixed table, a head adjustably mounted thereon, a lever mounted in said head, a roller mounted on said lever and capable of adjustment concentrically with the center of said head, of a revoluble drum, means for retaining strips of suitable material on said drum, a pivoted lever mounted on said drum and arranged to encounter said roller and press inward one end of said strips, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

JOHN M. ALDERFER.

In presence of—

C. E. HUMPHREY,
MAUDE ZWISLER.