

No. 701,694.

Patented June 3, 1902.

G. H. EVERSON.

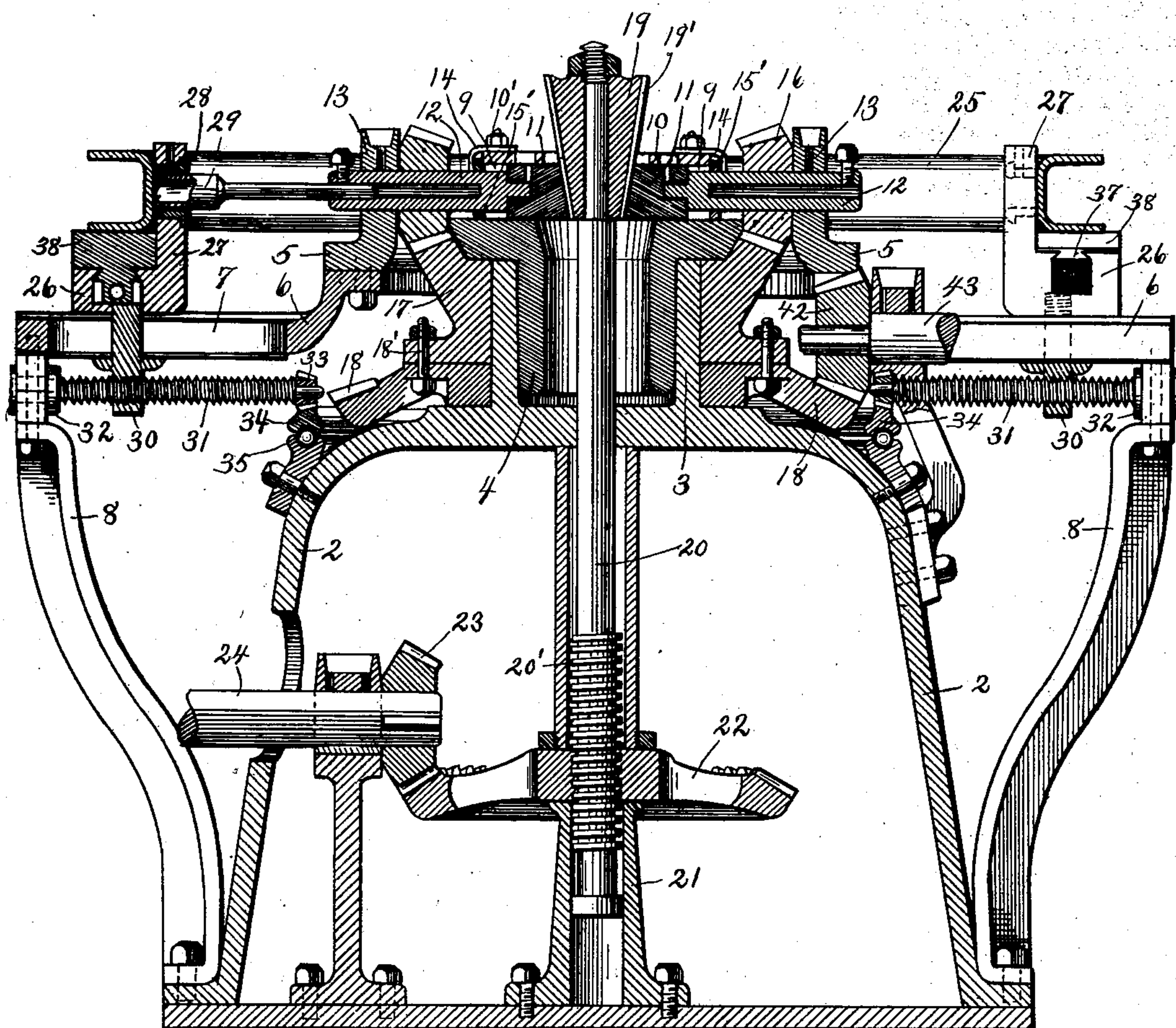
MACHINE FOR DRILLING SPOKE HOLES IN METALLIC WHEEL FELLIES.

(Application filed May 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES.

J. R. Keller  
Alex. D. Mabou.

INVENTOR.

Geo. H. Everson.  
J. W. Nesbitt  
Atty



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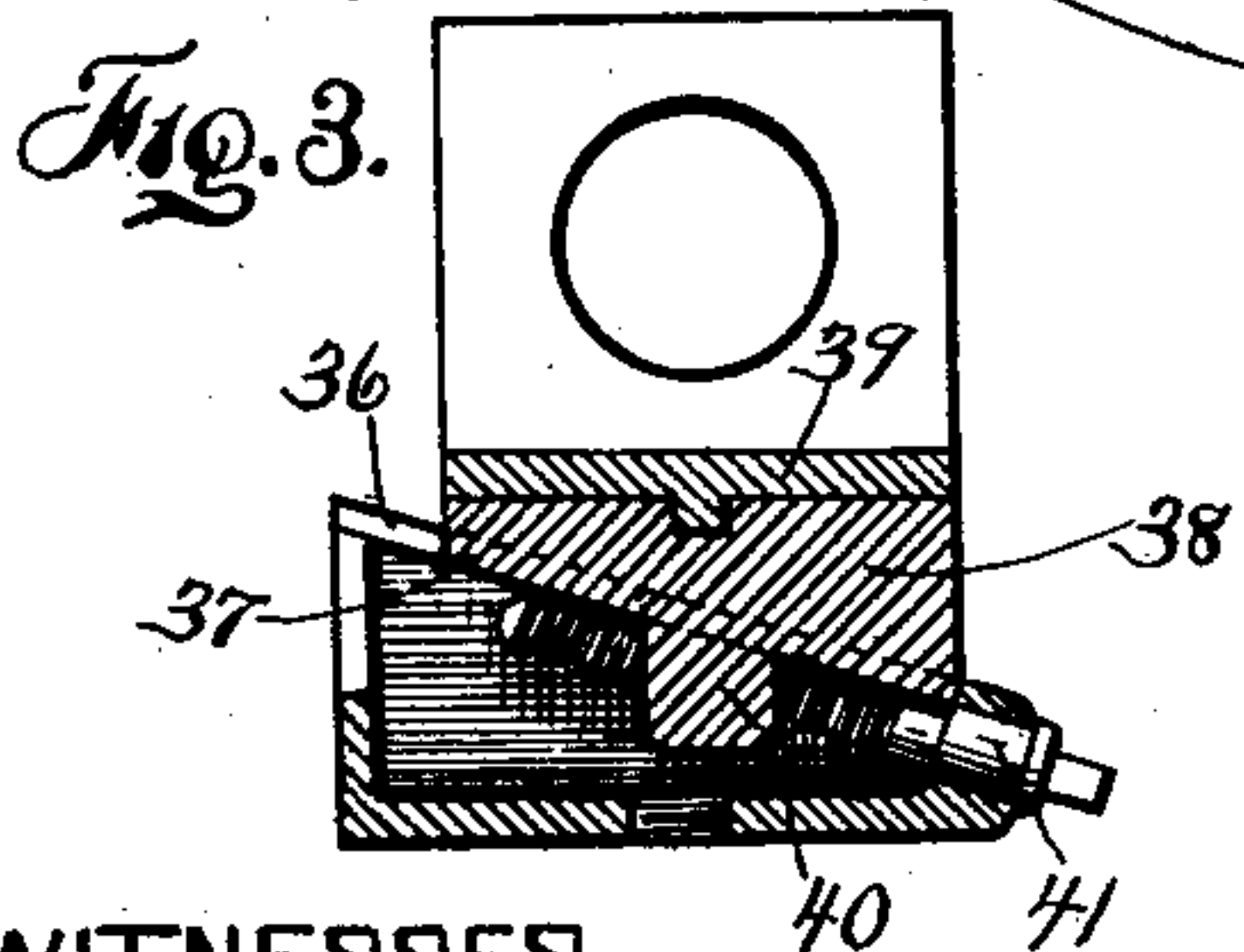
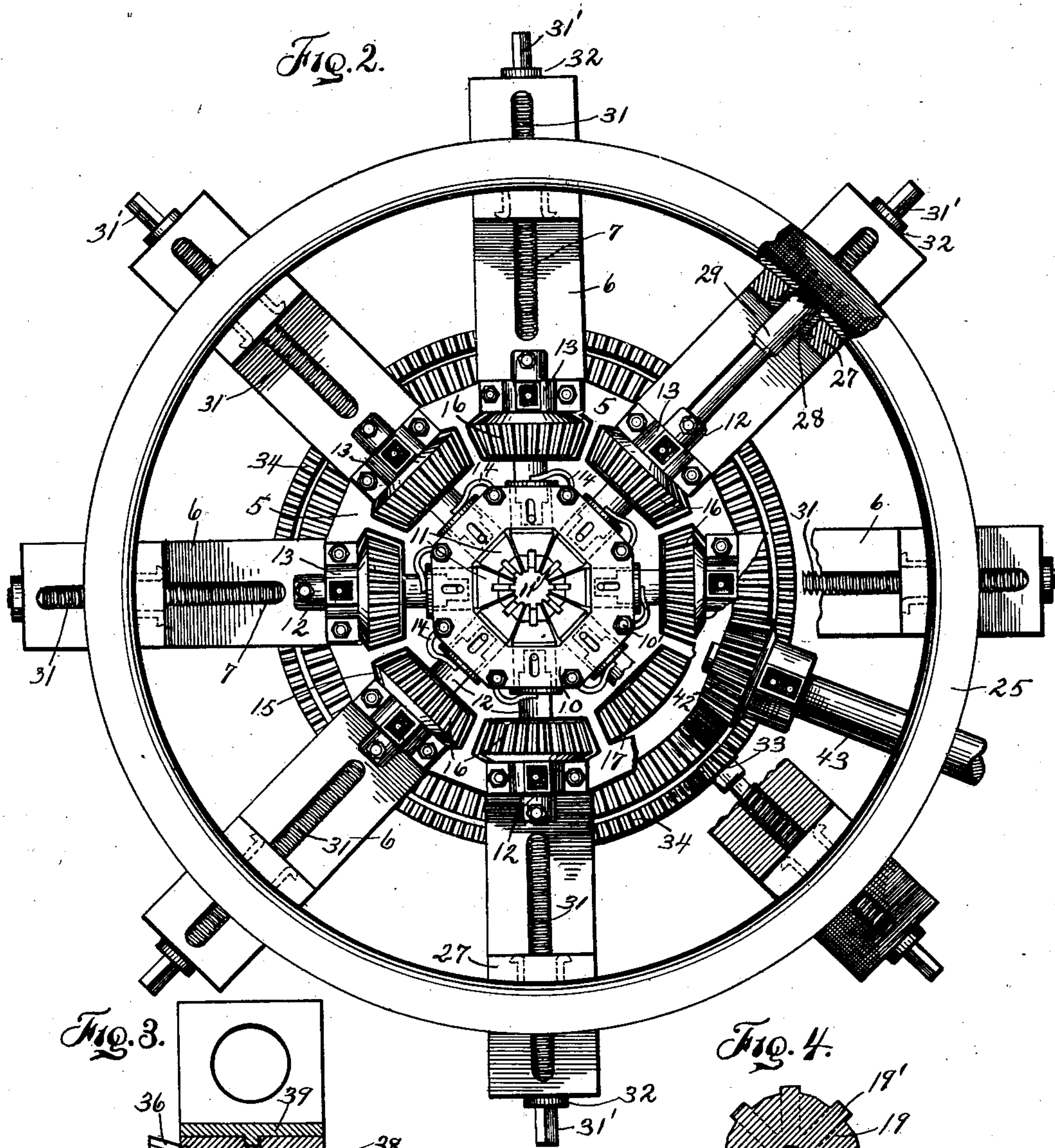
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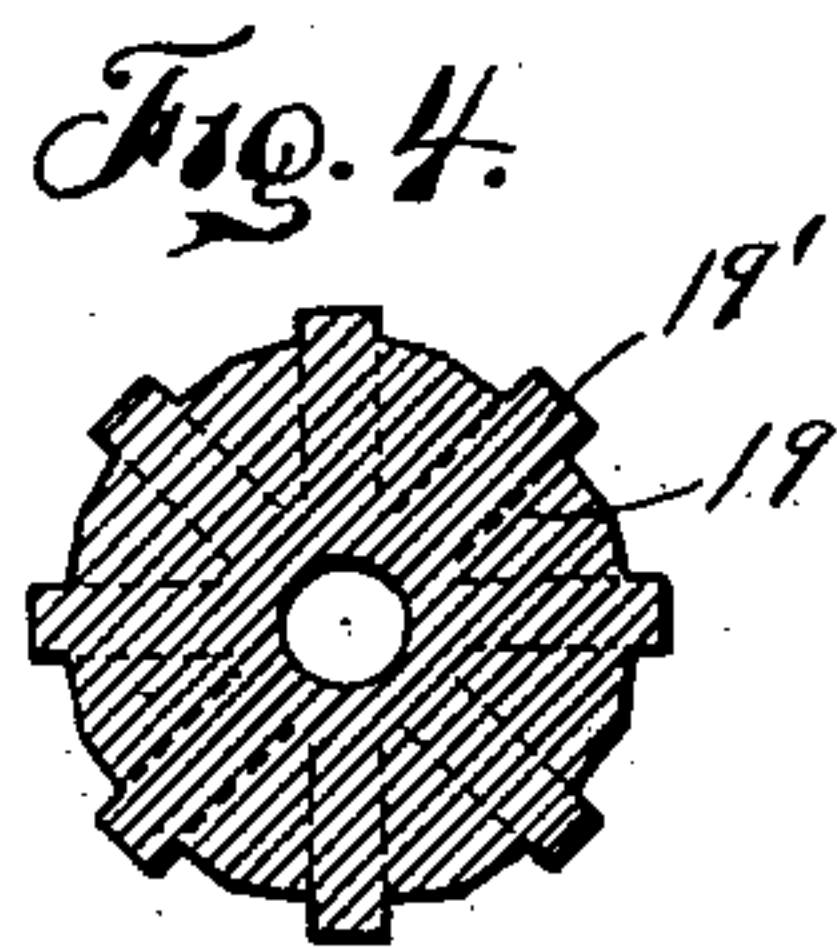
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WITNESSES.

*J. R. Keller*

*Alex. D. Mabou.*



INVENTOR.

*Geo. H. Everson.*  
*By J. W. Nesbit*  
*Atty.*



# UNITED STATES PATENT OFFICE.

GEORGE H. EVERSON, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR DRILLING SPOKE-HOLES IN METALLIC WHEEL-FELLIES.

SPECIFICATION forming part of Letters Patent No. 701,694, dated June 3, 1902.

Application filed May 20, 1901. Serial No. 61,166. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. EVERSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Drilling Spoke-Holes in Metallic Wheel-Fellies, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a machine for drilling spoke-holes in wheel rims or fellies; and the primary object thereof is to provide an improved machine of the type having a radial series of drills adapted to operate simultaneously and form all the spoke-holes at one and the same time.

The invention consists in the novel features of construction and in the combination and arrangement of parts hereinafter described and claimed, and illustrated by the accompanying drawings, wherein—

Figure 1 is a vertical sectional view of my improved machine; and Fig. 2 is a top plan view of the same, portions thereof being broken away to illustrate underlying mechanisms. Fig. 3 is a detail view illustrating the adjustment of one of the work-holding devices. Fig. 4 is a sectional view of the spindle-feeding wedge.

Referring to the drawings, 2 represents a dome-shaped bed-plate having at its top the hollow bearing 3, and fitting within this bearing is the depending and hollow projection 4 of the top frame portion 5. Secured to and extending radially outward from frame 5 are the horizontal ribs or bars 6, slotted longitudinally at 7 and at their outer ends supported on the upper ends of standards 8, rising from base 2. Formed in the upper face of frame 5 is a series of radially-arranged depressions 9, and confined therein by cap-plate 10 are the sliding heads 11, formed, preferably, of brass. 12 denotes the longitudinally-movable drill-spindles, journaled at their inner ends in heads 11, with their outer portions journaled in bearings 13 on plate 5. The spindles are held normally retracted by springs 14, which embrace the same in front of a ring 15', shrunk on each spindle, the springs being preferably secured by bolts 10', which hold cap-plate 10 in place.

Spindles 12 extend through vertical openings 15 in frame 5 and are adapted to move longitudinally through beveled pinions 16, fitting within openings 15 and with which the spindles have spline connections. The said pinions being thus confined within the frame-openings are held in fixed relative position, with the longitudinally-adjustable spindles turning therewith. These pinions are engaged at their under sides by the large gear-wheel 17, rotatable on bearing 3 and carrying at its base the gear 18, which is engaged by pinion 42 on power-shaft 43. Gears 17 and 18 are here shown formed separately and united by bolts 18'. By this means all of the spindles are rotated simultaneously and at uniform speed by a single actuating-gear.

For feeding the spindles forward against the pressure of springs 14 I provide a downwardly-tapering wedge 19, which is substantially circular in cross-section and provided with the radial ribs 19', which fit corresponding depressions 11' in the inner inclined faces of sliding heads 11. Wedge 19 is secured to the upper end of shaft 20, which extends downward centrally through the machine and into tubular bearing 21, rising from the base of bed-plate 2. Rotatably mounted on bearing 21 is the horizontal gear-wheel 22, having a threaded bore through which extends the threaded portion 20' of shaft 20, and meshing with gear 22 is pinion 23 on the inner end of feed-regulating shaft 24. This shaft may be actuated in any suitable manner, and by means thereof and of the interposed gearing shaft 20 and wedge 19 are moved as required for sliding all of heads 11 simultaneously, thereby feeding the drills forward uniformly and at the required speed. After the drilling has been completed the movement of shaft 20 is reversed, thereby raising wedge 19, when springs 14 retract the spindles automatically, thus disengaging the drills from the work.

For sustaining fellies of different diameters in operative position on the machine I provide a series of supports 26, which rest on the radial bars 6, with the vertical member 27 of each support formed with a bushed opening 28, which forms an accurate guide for passing the drill 29 to the work. Supports 26 are slidable longitudinally on bars 6, and depending from each support through



slot 7 is projection 30, formed with a threaded aperture, and extending through the latter is the screw-shaft 31, which is parallel with bar 6. This shaft is sustained in a bearing 5 32 at the upper end of standard 8 and is provided at its outer extremity with wrench-hold 31'. At the inner end of the shaft is pinion 33, which meshes with the large gear-wheel 34, the latter encircling the upper of 10 bed-plate 2 and supported thereon by ball-bearing 35. All of the radially-extending shafts 31 are thus geared together, so that rotation of any one thereof by means of a wrench applied to its outer end will simulta- 15 neously rotate all of said shafts, and thus move supports 26 uniformly either inward or outward, as may be required.

The top surface of each of supports 26 is preferably inclined and formed with a dove-tailed guideway 36 to receive corresponding 20 projection 37 on the under side of the adjustable rest 38. The under surface of this rest is inclined complementary with surface 36, but the top thereof is constantly level. 25 By this means the supports may be adapted to receive either wide or narrow fellies and accurately center them with regard to openings 28. A further adjustment in this regard may be had by providing each of rests 38 30 with a removable top plate 39, which may be used or not, as circumstances may require. For adjusting rest 38 the same may be provided with a bottom projection 40, having the screw 41 extending therethrough, the 35 screw being journaled in support 26.

The machine here shown and described is constructed with special reference to drilling the spoke-holes of the U-shaped metallic rims shown in my application for patent on metallic wheels filed April 19, 1901, Serial No. 40 56,575. In this form of felly the metal to be bored is comparatively thin, and for this reason a hollow drill is preferably used. It will be understood, however, that the invention 45 is not limited in this regard, as fellies of different forms and of varying thicknesses may be drilled with equal facility.

With the felly-supports 26 properly adjusted and the felly positioned thereon the 50 drills are very accurately centered in passing through the bushed openings 28, and hence the spoke-openings are formed at corresponding points and with the greatest possible precision.

The machine here shown is provided with 55 eight spindles for drilling as many holes simultaneously. In my above-recited application the wheel shown is provided with sixteen spokes, and for drilling the felly thereof on an eight-spindle machine eight holes are 60 first drilled, and then the felly is so turned as to drill the other eight holes midway between those first drilled. It will be understood, however, that the machine may be constructed with a greater or less number of spindles, as 65 may be desired.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a drilling-machine, the combination 70 of a frame, a circular series of heads 11 slidable horizontally therein and formed with inclined inner ends, a tapering device movable vertically and centrally through the series of slides and adapted to impinge the inclined inner- 75 end surfaces thereof, a drill-chuck rotatably mounted in each slide, and means for rotating the chucks, substantially as shown and described.

2. In a drilling-machine, the combination 80 of an elevated bed-plate, drills and drill rotating and feeding mechanism supported at the upper end thereof, standards 8 positioned outwardly from the bed-plate, horizontal 85 screw-shafts 31 journaled at their outer ends in said standards and at their inner ends provided with pinions, a bearing encircling the upper portion of the bed-plate, a large gear-wheel sustained by said bearing and mesh- 90 ing with said screw-shaft pinions, and work-supporting devices in engagement with and adapted to be adjusted by said screw-shafts, substantially as shown and described.

3. In a drilling-machine, the combination 95 of a bed-plate having the upwardly-projecting tubular bearing 3, top frame portion 5 having the depending part 4 fitting bearing 3, drill-chucks rotatable in the frame portion 5, a pinion on each chuck, a large gear-wheel 100 mounted on bearing 3 and meshing with all of said pinions, and means for driving said gear, substantially as shown and described.

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

GEORGE H. EVERSON.

Witnesses:

J. M. NESBIT,  
ALEX. S. MABON.