

No. 675,055.

Patented May 28, 1901.

J. C. DUROUAUX.
LENS GRINDING MACHINE.

(Application filed Oct. 5, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig.2.

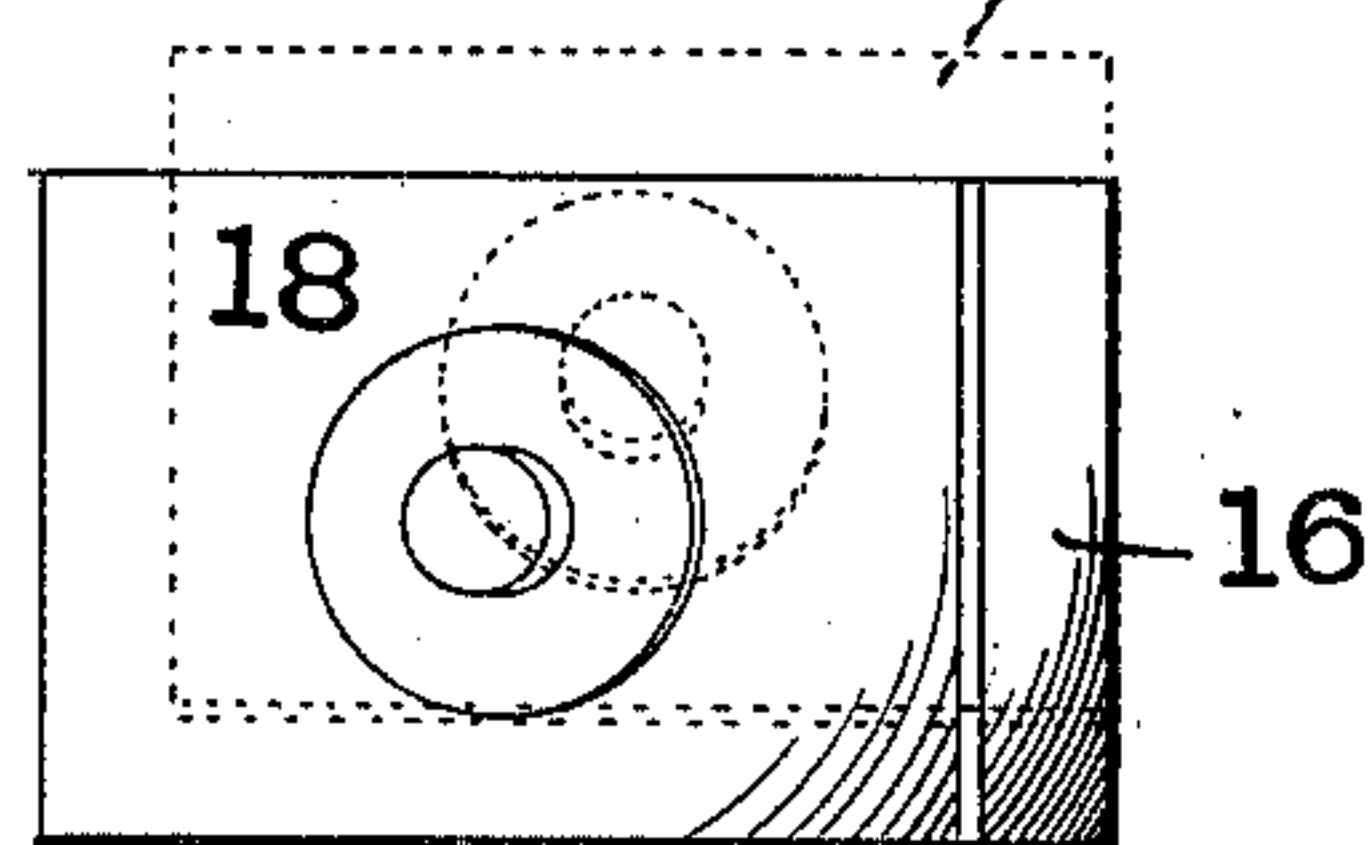
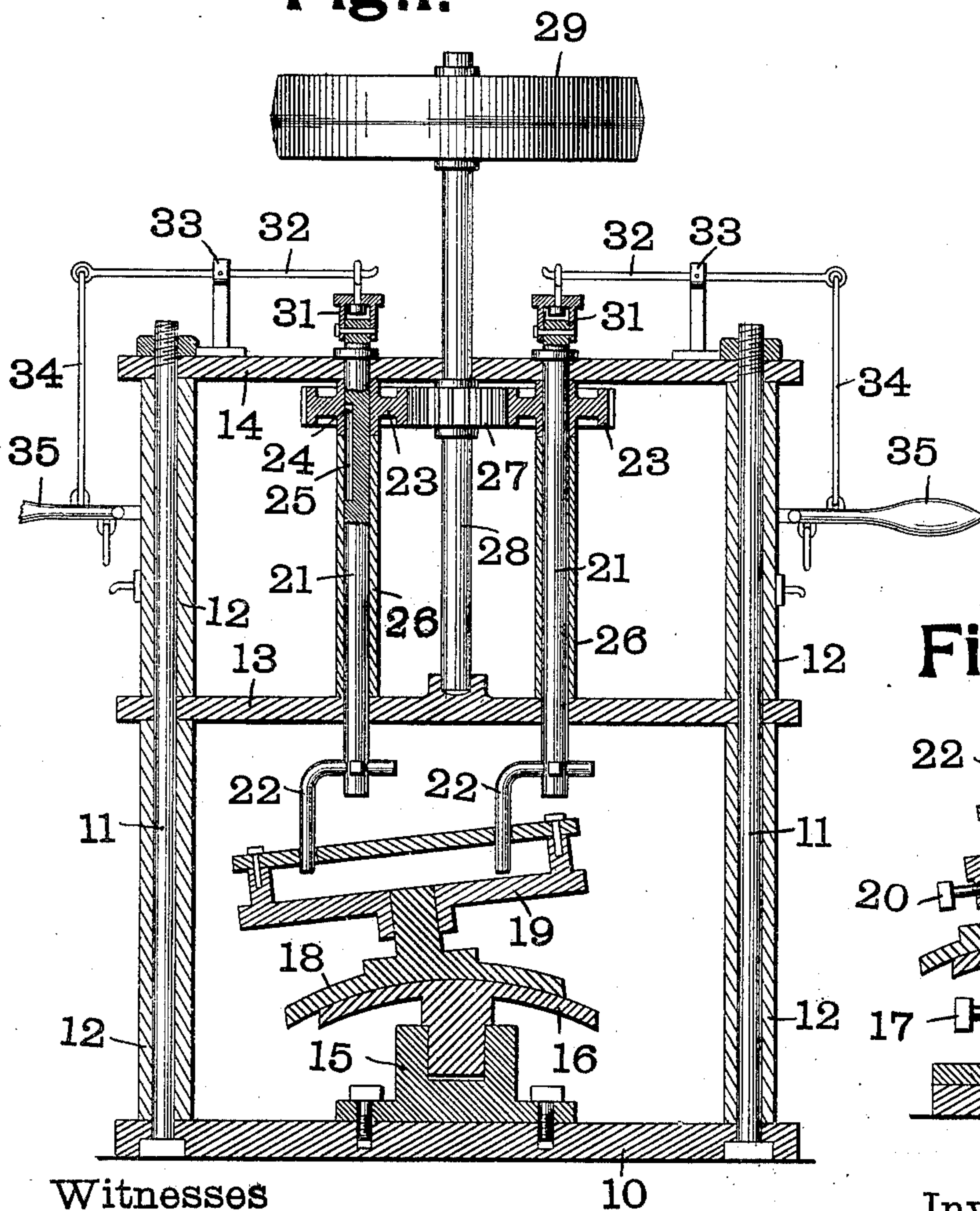


Fig.1.

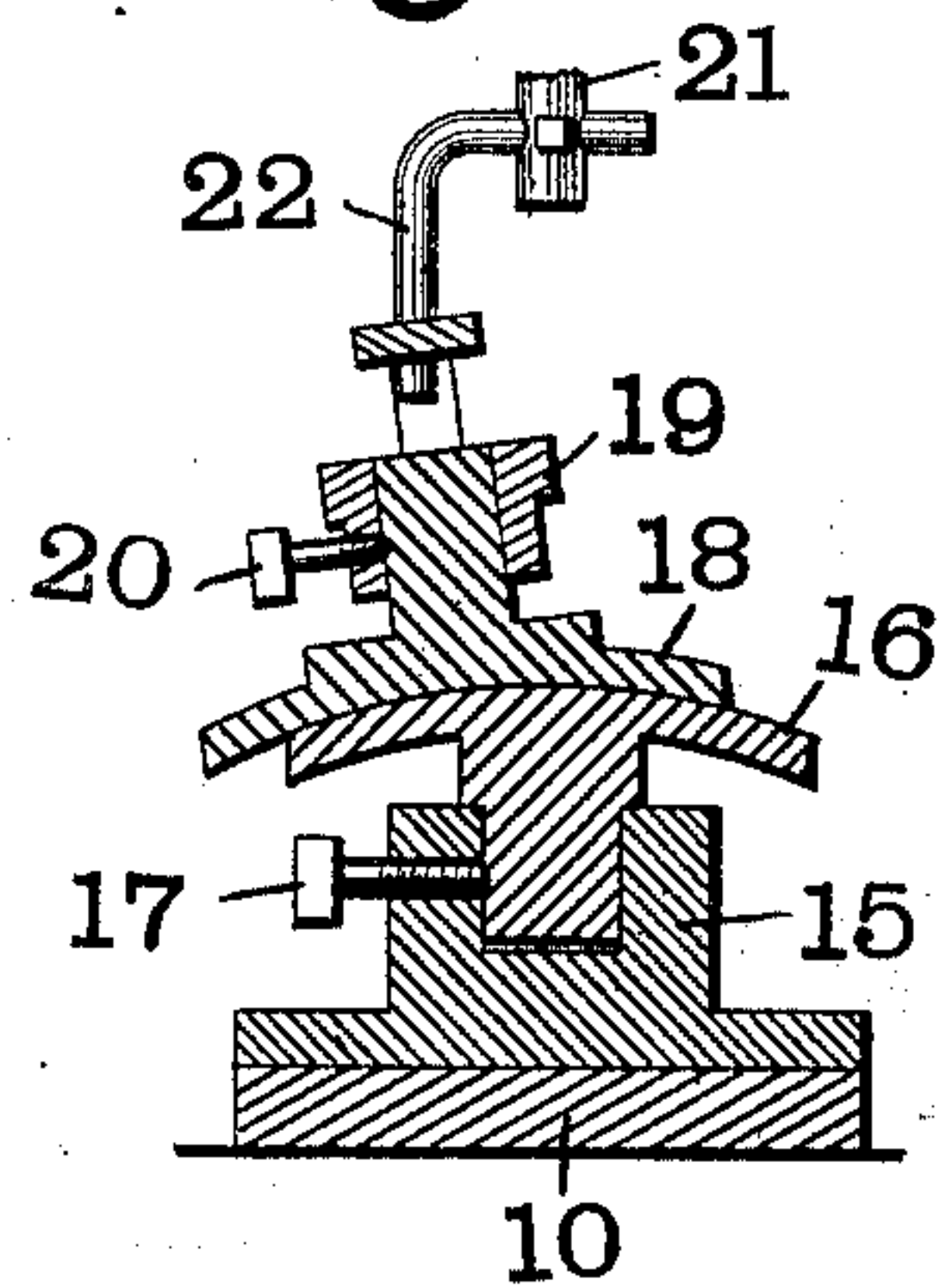


Witnesses

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Fig.3.



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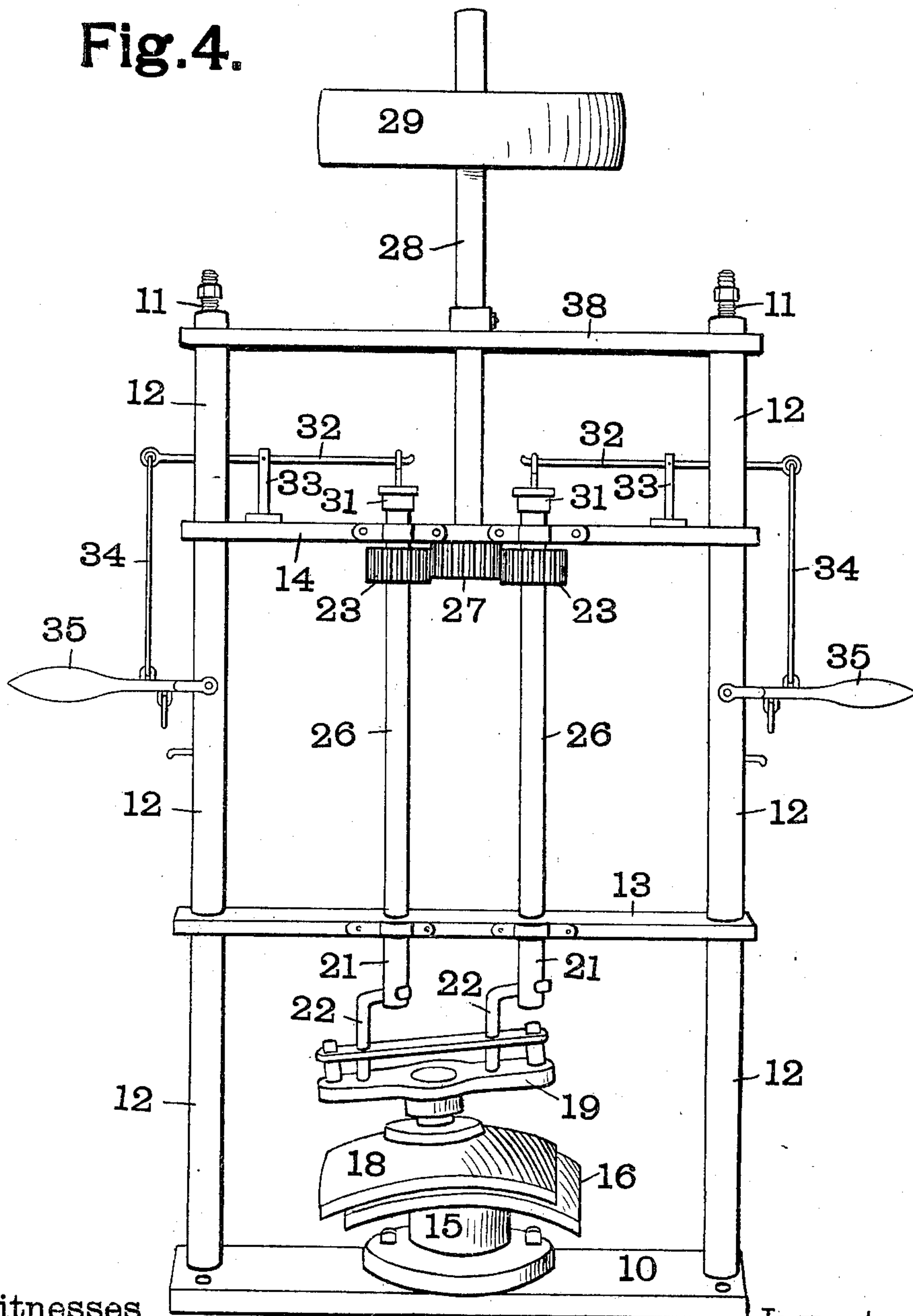
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2 Sheets—Sheet 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH C. DUROUAUX, OF ST. LOUIS, MISSOURI.

LENS-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 675,055, dated May 28, 1901.

Application filed October 5, 1900. Serial No. 32,091. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. DUROUAUX, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
5 invented a certain new and useful Lens-Grinding Machine, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference
10 being had to the accompanying drawings, forming part of this specification.

The object of my invention is to produce a lens-grinding machine which will grind a toric lens—that is, a lens the surface of which is
15 composed of two curves of different radii.

My machine can also be used to grind cylindrical and spherical lenses.

My invention consists, in part, in the combination, with two cooperating grinding-tools,
20 of driving-gear engaging one of said tools at a plurality of points, whereby a translatory motion is imparted to said tool.

My invention also consists in certain other novel features and details of construction, all
25 of which are described in the following specification and pointed out in the claims affixed hereto.

In the accompanying drawings, which illustrate a lens-grinding machine made in accordance with my invention, Figure 1 is a vertical section. Fig. 2 is a top plan view of the grinding-tools. Fig. 3 is a vertical transverse section through the lower part of the machine, and Fig. 4 is a perspective view showing a
35 slight modification in the frame of the machine.

Like marks of reference refer to similar parts in the several views of the drawings.

10 is the base of the machine, to which is
40 secured two upright rods 11. Surrounding the rods 11 are sleeves 12, which serve to hold cross-bars 13 and 14 in proper position. Secured to the base 10 is a tool-holder 15, in which the lower grinding-tool 16 is secured by
45 means of a set-screw 17, Fig. 3. Cooperating with the lower grinding-tool 16 is an upper grinding-tool 18, which is secured in a tool-holder 19 by means of a set-screw 20. Passing through the cross-bars 13 and 14 are two
50 parallel shafts 21, which are connected with the upper-tool holder 19 by means of L-shaped

arms 22. Each of the shafts 21 is provided with a gear-wheel 23, which is keyed to it by means of a key 24, sliding in a keyway 25, so as to allow the said shaft 21 to move longitudinally independent of the gear-wheel, but to be incapable of independent rotation. The gear-wheels 23 are held in position by means of sleeves 26, surrounding the shafts 21. The gear-wheels 23 mesh with a gear-wheel 27, rigidly secured to a driving-shaft 28. The driving-shaft 28 is provided at its upper end with a belt-wheel 29.

In order to provide means for disengaging the arms 22 from the upper-tool holder 19, so as to remove the said tool-holder from the machine, the upper ends of the shafts 21 are provided with caps 31, connected to levers 32, so as to allow the said shafts to freely rotate. The levers 32 are pivoted in forks 33 and are connected, by means of rods 34, with handles 35, pivoted to the upper sleeves 12.

In the modification shown in Fig. 4 the frame of the machine is slightly modified, an additional cross-bar 38 being added, through which the driving-shaft 28 passes. In other respects this form of machine is the same as that shown in Fig. 1 and has the same operation.

The operation of my machine is as follows:
80 The lenses to be ground are placed between the upper and lower grinding-tools in the usual manner. The shaft 28 is then rotated by any suitable power. The rotation of the shaft 28 is communicated through gear-wheels 27 and 23 to the shafts 21. These shafts being connected through the arms 22 with the upper tool-holder 19, and consequently with the upper grinding-tool 18 carried thereby, impart a circular translatory motion to said upper
90 grinding-tool. As this circular translatory motion is such that any line on the grinding-tool remains parallel with itself, toric as well as cylindrical and spherical, lenses can be ground on the machine. When it is desired
95 to remove the grinding-tools, the handles 35 are drawn down to disengage the arms 22 from the tool-holder 19. The tool-holder 19 and upper grinding-tool 18 can then be readily removed from the machine and other grinding-
100 tools inserted in the holders by means of the set-screws 17 and 20.

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

1. In a lens-grinding machine, the combination with two cooperating grinding-tools, of driving-gear engaging one of said tools at a plurality of points, whereby a translatory motion is imparted to said tool.

2. In a lens-grinding machine, the combination with a stationary grinding-tool, of a movable grinding-tool cooperating therewith, and driving-gear engaging with said movable tool at a plurality of points, whereby a translatory motion is imparted to said movable tool.

3. In a lens-grinding machine, the combination with a frame, of a stationary grinding-tool carried by said frame, a movable grinding-tool cooperating with said stationary tool, two shafts carried by said frame and engaging said movable tool, and means for imparting motion to said shafts.

4. In a lens-grinding tool, the combination with a frame, of a stationary grinding-tool carried by said frame, a movable grinding-tool cooperating with said stationary tool, two parallel shafts carried by said frame, and gearing for imparting a rotary motion to said shafts.

5. In a lens-grinding machine, the combination with a frame, of a stationary grinding-

tool carried by said frame, a movable grinding-tool cooperating with said stationary tool, two shafts carried by said frame and engaging said movable tool, a gear-wheel on each of said shafts, a driving-shaft, and a gear-wheel on said driving-shaft meshing with said first-named gear-wheels.

6. In a lens-grinding machine, the combination with a frame, of a stationary tool, a movable grinding-tool cooperating with said stationary tool, a driving-shaft, a gear-wheel on said shaft, two gear-wheels meshing with said first-named gear-wheels, and two shafts slidably connected with said second-named gear-wheels and engaging said movable tool.

7. In a lens-grinding machine, the combination with a frame, of a stationary grinding-tool carried thereby, a movable grinding-tool cooperating with said stationary grinding-tool, a tool-holder removably secured to said movable grinding-tool, two rotating arms engaging said tool-holder, and gearing for actuating said rotary arms.

In testimony whereof I have hereunto set my hand and affixed my seal in the presence of the two subscribing witnesses.

J. C. DUROUAUX. [L. S.]

Witnesses:

JAMES H. BRYSON,
W. A. ALEXANDER.