

(No Model.)

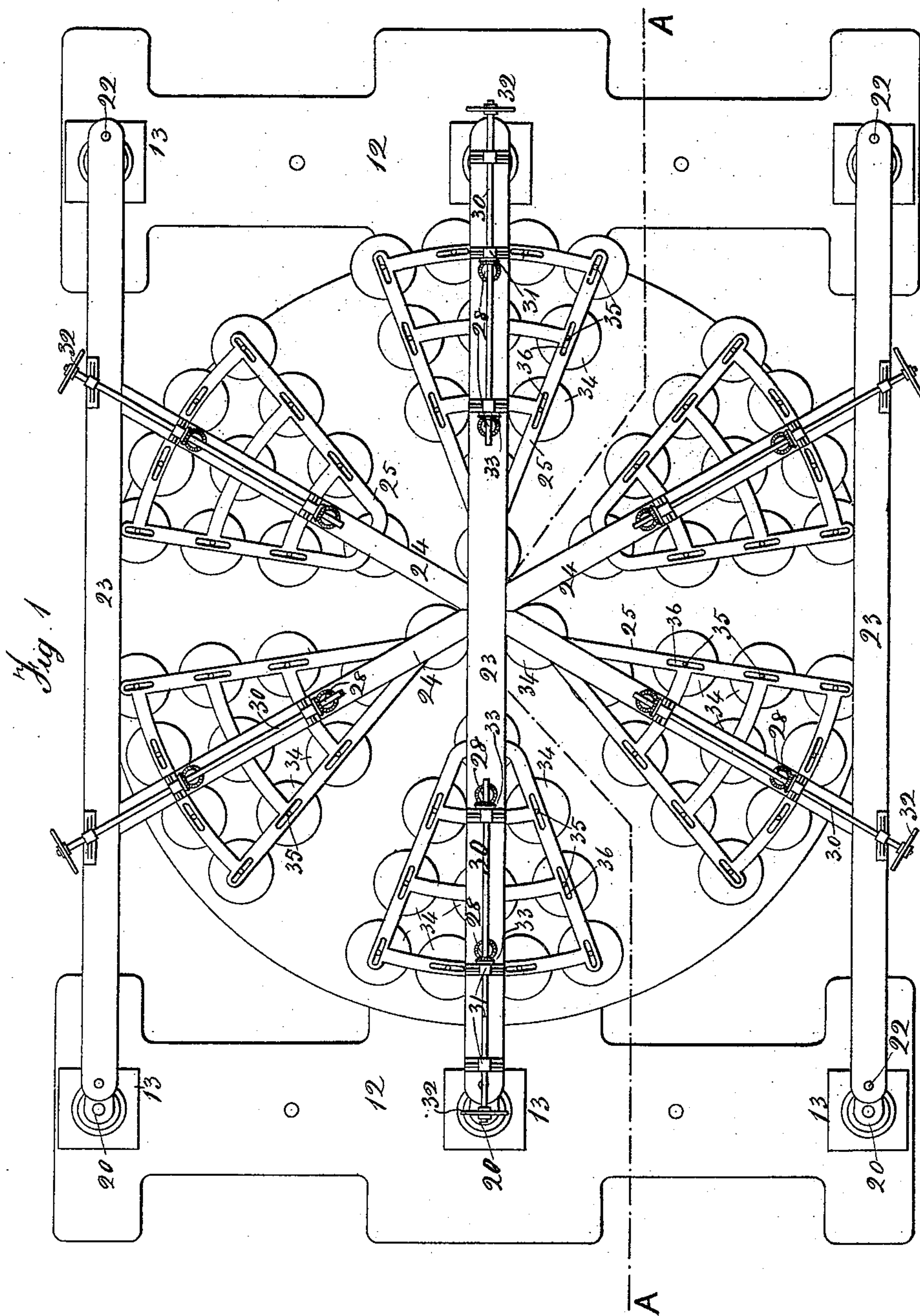
3 Sheets—Sheet 1.

M. MALEVEZ.

APPARATUS FOR GRINDING, SMOOTHING, AND POLISHING GLASS.

No. 449,686.

Patented Apr. 7, 1891.



Witnesses

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(No Model.)

3 Sheets—Sheet 2.

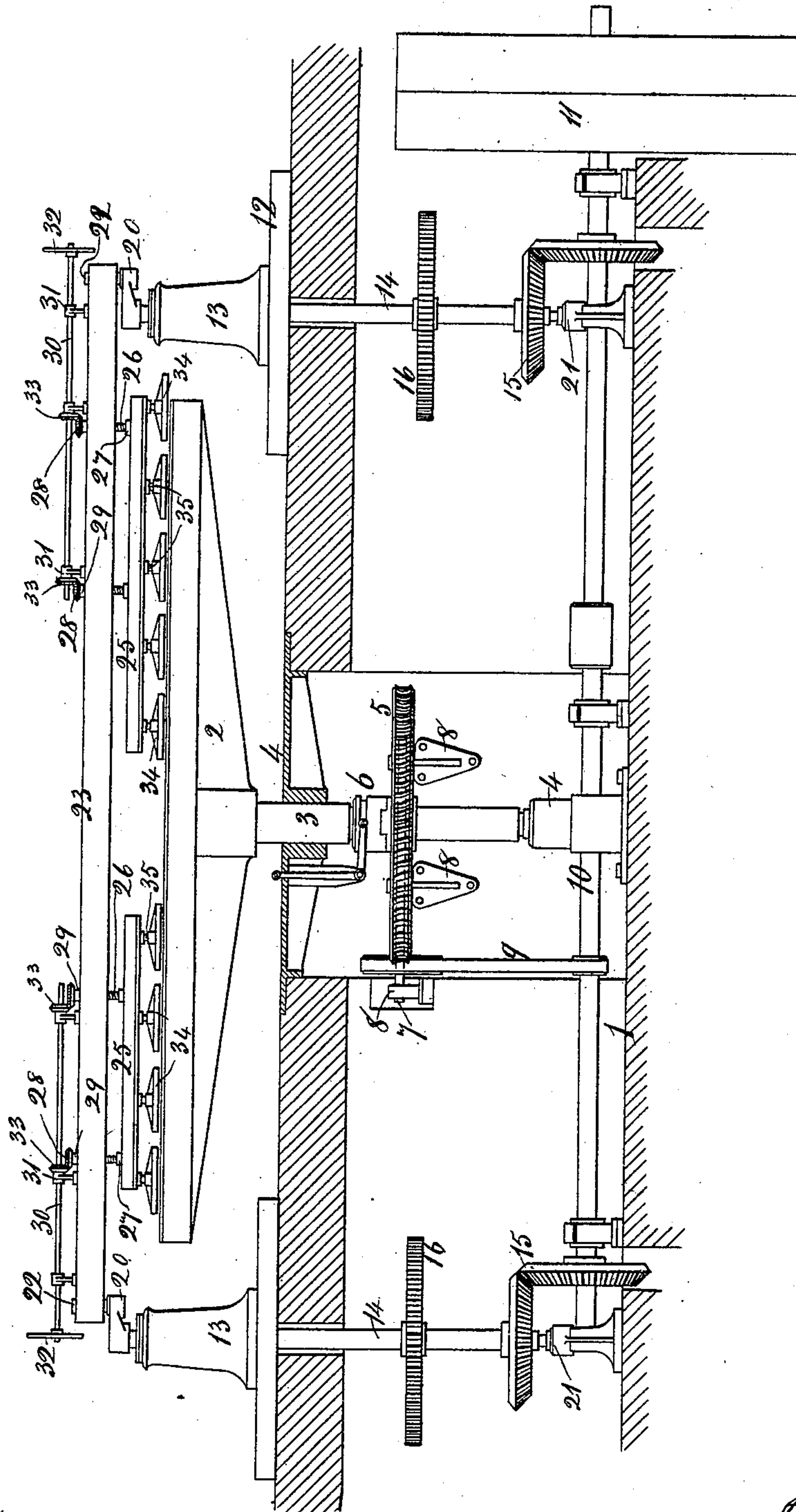
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Fig. 2



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(No Model.)

3 Sheets—Sheet 3.

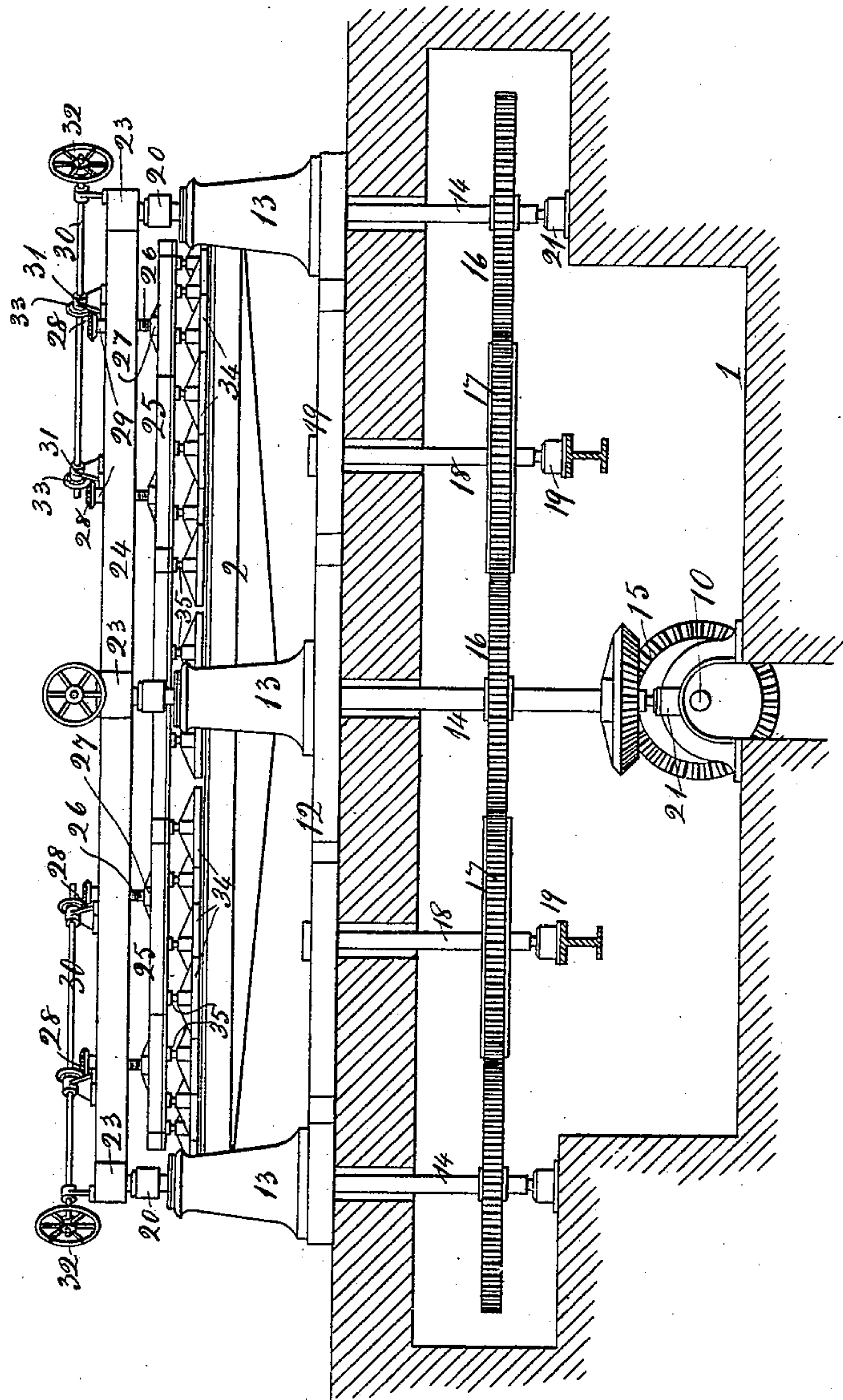
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Fig. 3



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UNITED STATES PATENT OFFICE.

MELCHIOR MALEVEZ, OF BRUSSELS, BELGIUM, ASSIGNOR TO MESSIEURS
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APPARATUS FOR GRINDING, SMOOTHING, AND POLISHING GLASS.

SPECIFICATION forming part of Letters Patent No. 449,686, dated April 7, 1891.

Application filed October 23, 1890. Serial No. 369,021. (No model.) Patented in Belgium August 22, 1886, No. 74,333; in England April 23, 1888, No. 6,028; in Germany November 14, 1888, No. 48,725, and in Italy January 9, 1890, No. 2,675.

To all whom it may concern:

Be it known that I, MELCHIOR MALEVEZ, of Brussels, in the Kingdom of Belgium, have invented a new and useful Improvement in
5 Apparatus for Grinding, Smoothing, and Polishing Glass, (for which I have obtained Letters Patent in Belgium, No. 74,333, dated August 22, 1886, and Patent of Addition No. 78,563, dated August 22, 1887; in Great Britain, No.
10 6,028, dated April 23, 1888; in Germany, No. 48,725, dated November 14, 1888, and in Italy, No. 26,757, dated January 9, 1890, and nowhere else;) and I do hereby declare the following to be a full, clear, and exact description thereof.

15 The invention relates to apparatus for grinding, smoothing, and polishing glass, more especially plate-glass.

20 The main objects are to so construct such apparatus that the glass is operated on uniformly and effectually by the grinding, smoothing, and polishing disks or rubbers.

25 Figure 1 is a plan. Fig. 2 is a vertical section at the line A A, part being in elevation; and Fig. 3 is an end view of my improved apparatus.

1 represents the foundation of brick-work or other suitable material.

30 2 is a table on which the glass to be ground, smoothed, or polished is secured in any usual manner. The said table is carried on a vertical shaft 3 free to rotate in bearings 4.

35 5 is a worm-wheel freed from or connected to the shaft 3 by means of a clutch 6. This clutch may be of any usual form. The worm-wheel 5 is actuated by a worm on a shaft 7, carried in bearings 8, which worm is not shown, because behind and meshing with said worm-wheel. (See Fig. 2.) Motion is given
40 to the worm-wheel shaft 7 by means of a belt 9, passing around pulleys on the said worm-wheel shaft 7 and main driving-shaft 10.

45 The main driving-shaft 10 is actuated by any convenient motor through fast and loose pulleys 11. The frames 12 are provided each with three bearings 13, through which pass shafts 14. The central shafts are driven directly from the main driving-shaft 10 by bevel-gear 15, while the outer shafts are driven

from the central shafts by means of toothed
50 wheels 16 on the said shafts and intermediate toothed wheels 17, secured to axles 18, free to revolve in bearings 19. In this way all the shafts 14 rotate in the same direction. The upper ends of the shafts 14 have secured
55 thereto cranks 20, and the lower ends are free to rotate in bearings 21. The cranks 20 are provided with pins 22, which fit into bearings in three beams 23, one crank being at the end of each beam. The said beams are connected
60 together by tie-bars 24, disposed so as to radiate at angles of about sixty degrees from the center of the middle beam. Beneath the middle beam and the tie-bars are six frames
65 25, suspended by means of screw-shafts 26, the lower ends of which pass through nuts 27 in the frames 25. The upper ends of the said screw-shafts are provided with bevel-toothed wheels 28, and are carried in bearings
70 29, secured to the beams and tie-bars. The shafts 30 are carried in bearings 31 on the beams and tie-bars, and are provided with operating hand-wheels 32 and with bevel-toothed wheels 33, which gear into the wheels 28 on the screw-shafts 26. The grinding, smoothing,
75 or polishing disks or rubbers 34 are shown as not fixed to and carried by the frame; but they are provided with pins 35, which fit loosely and freely in slots 36 in the frames 25, to move with such frames horizontally and
80 downwardly, but not upwardly. The slots 36 are disposed in the frames 25, that the grinding, smoothing, or polishing disks or rubbers are arranged in more or less concentric circles.

85 The action of the apparatus is as follows: The glass to be ground, smoothed, or polished is secured on the table 2 in any usual manner, the frames 25 first having been raised close to the beams and tie-bars by means of
90 the screw-shafts 26, actuated through the hand-wheels 32 and shafts 30 and their gear. Suitable grinding, smoothing, or polishing disks or rubbers 34 are placed next on the glass with their pins in alignment with the
95 slots in the frames 25, and then the frames 25 are lowered until the pins of the grinding, smoothing, or polishing disks or rubbers en-

gage in the slots 36. The main shaft 10 is now set in motion, and the glass being acted on is rotated with the table 2, while the disks or rubbers have a circular or orbital motion 5 imparted to them by means of the cranks 20 acting on the beams, tie-bars, and frames.

The motion of the table 2 may be arrested at pleasure by means of the clutch 6.

I claim—

10 1. Grinding, smoothing, and polishing apparatus for glass, consisting of a table 2 and means to rotate it, in combination with beams 23, bars 24, which tie said beams together, radiating frames 25, screw-shafts 26, connect- 15 ing the frames and beams and tie-bars, and gearing for operating the said screw-shafts to raise and lower the frames and crank-shafts, cranks thereon connected to the beams, and 20 shafts simultaneously and in one direction,

thereby to impart a circular or orbital motion to the frames and their rubbers, substantially as described.

2. Grinding, smoothing, and polishing apparatus for glass, consisting of a table 2 and 25 means to rotate it, in combination with beams 23, bars 24, tying said beams together, radiating frames 25, suspended from said beams and tie-bars, rubbers arranged concentrically upon said frames and crank-shafts, cranks 30 thereon connected to the beams, and power appliances to drive all of the crank-shafts simultaneously and in one direction, thereby to impart a circular or orbital motion to the frames and their rubbers, substantially as de- 35 scribed.

MELCHIOR MALEVEZ.

Witnesses:

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