

No. 713,280.

Patented Nov. 11, 1902.

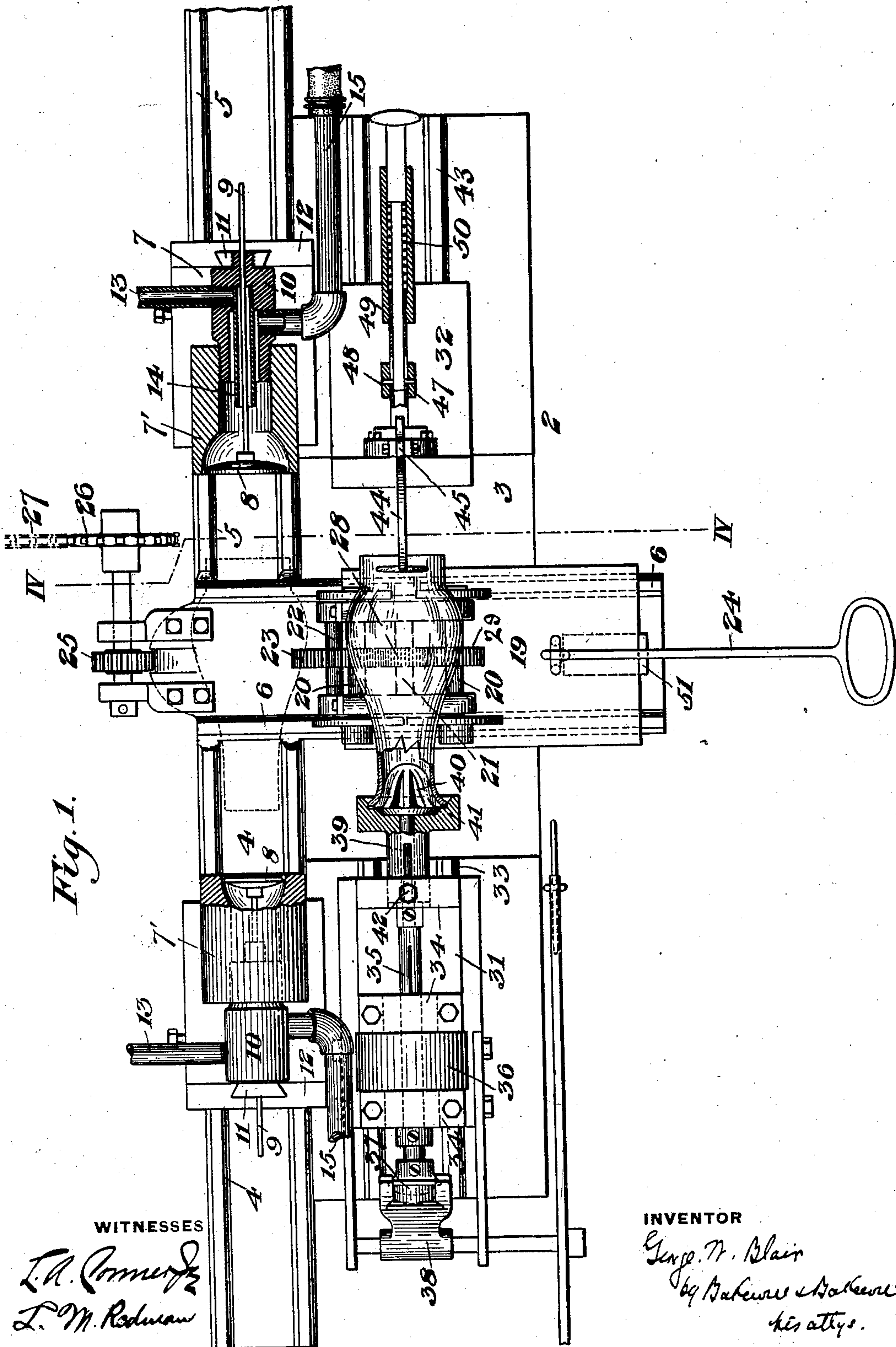
G. W. BLAIR.

APPARATUS FOR FINISHING GLASS ARTICLES.

(Application filed June 3, 1899.)

(No Model.)

4 Sheets—Sheet 1.



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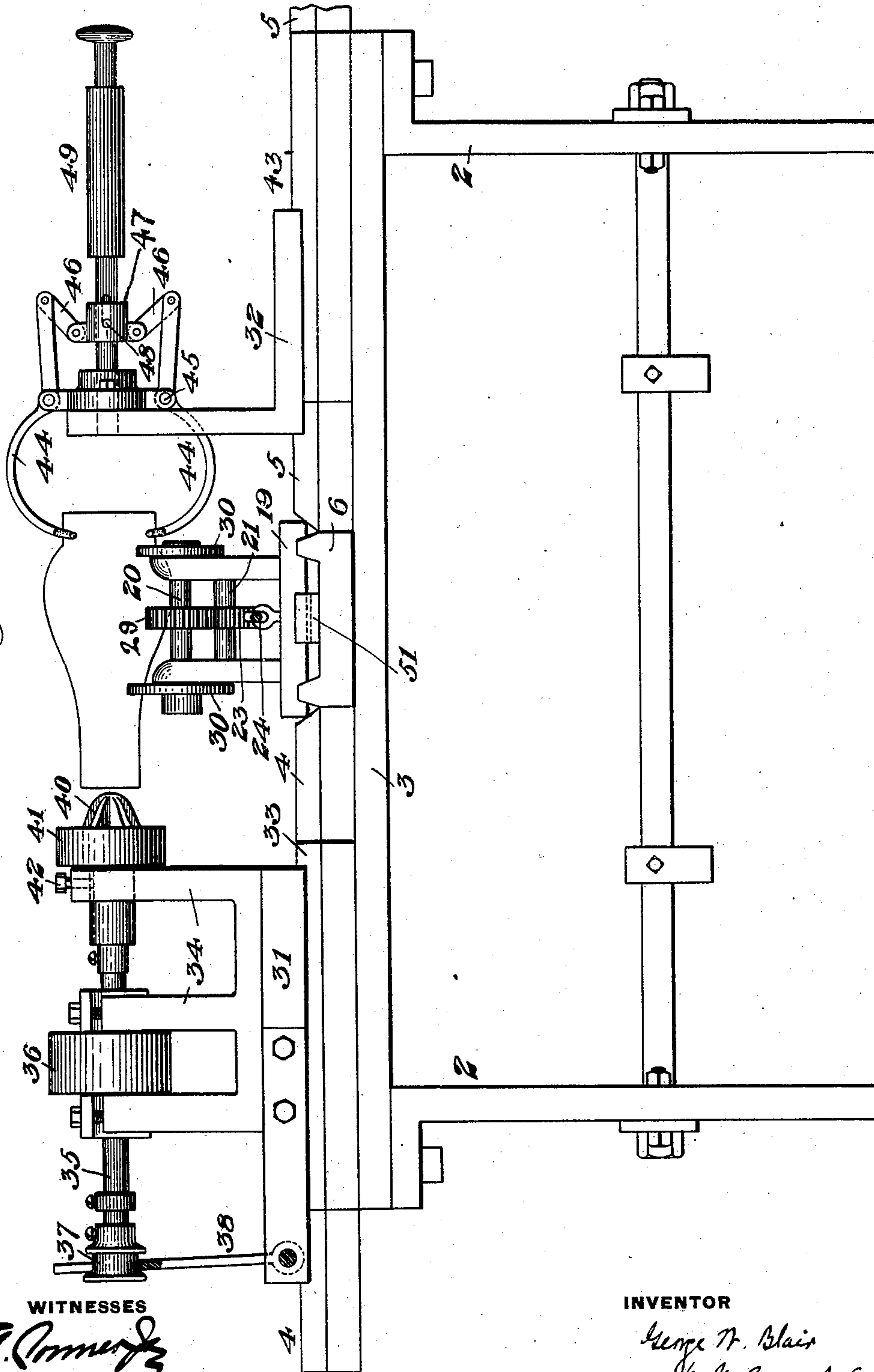
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Fig. 2.



WITNESSES

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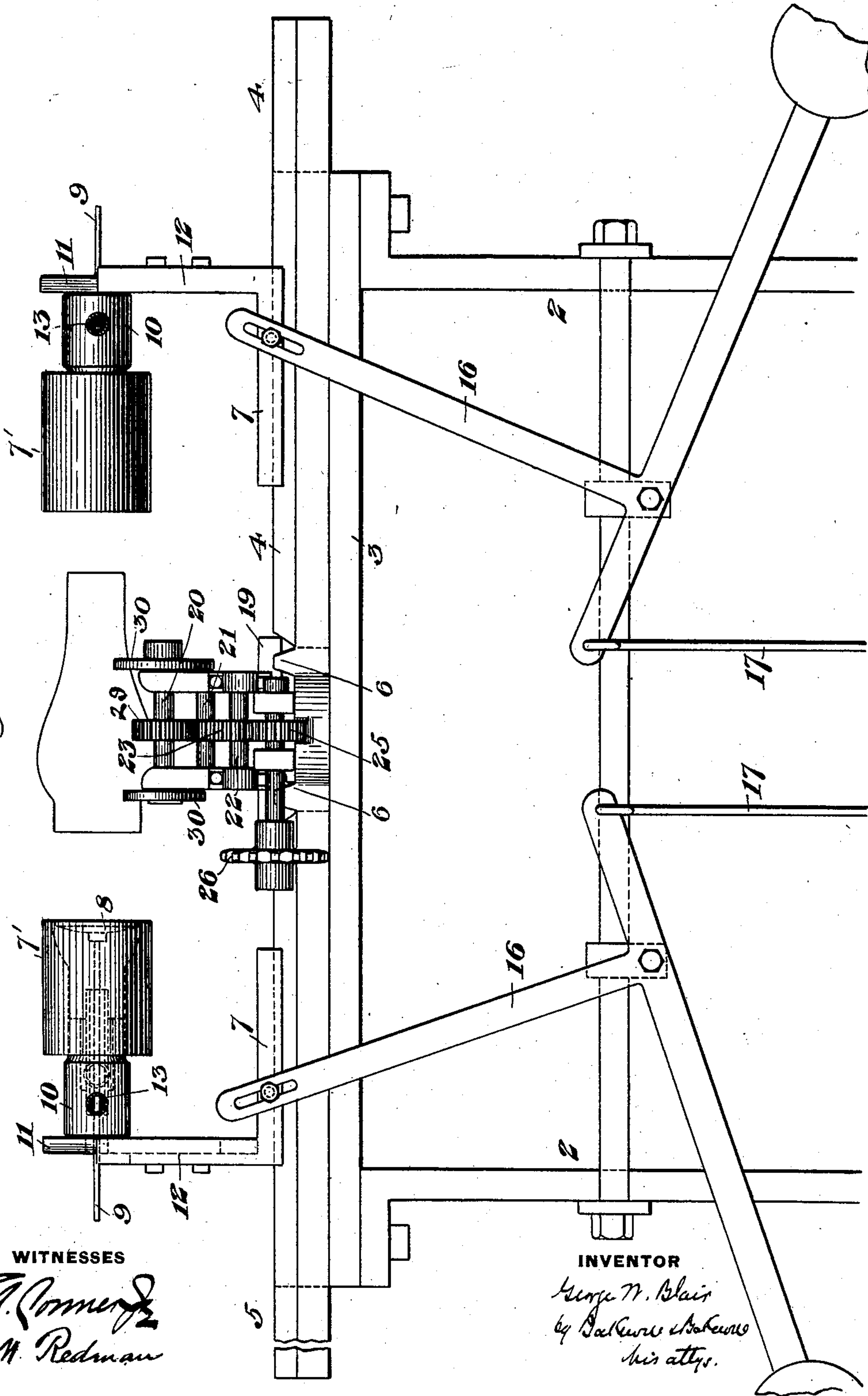
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(No Model.)

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Fig. 3.



WITNESSES

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No. 713,280.

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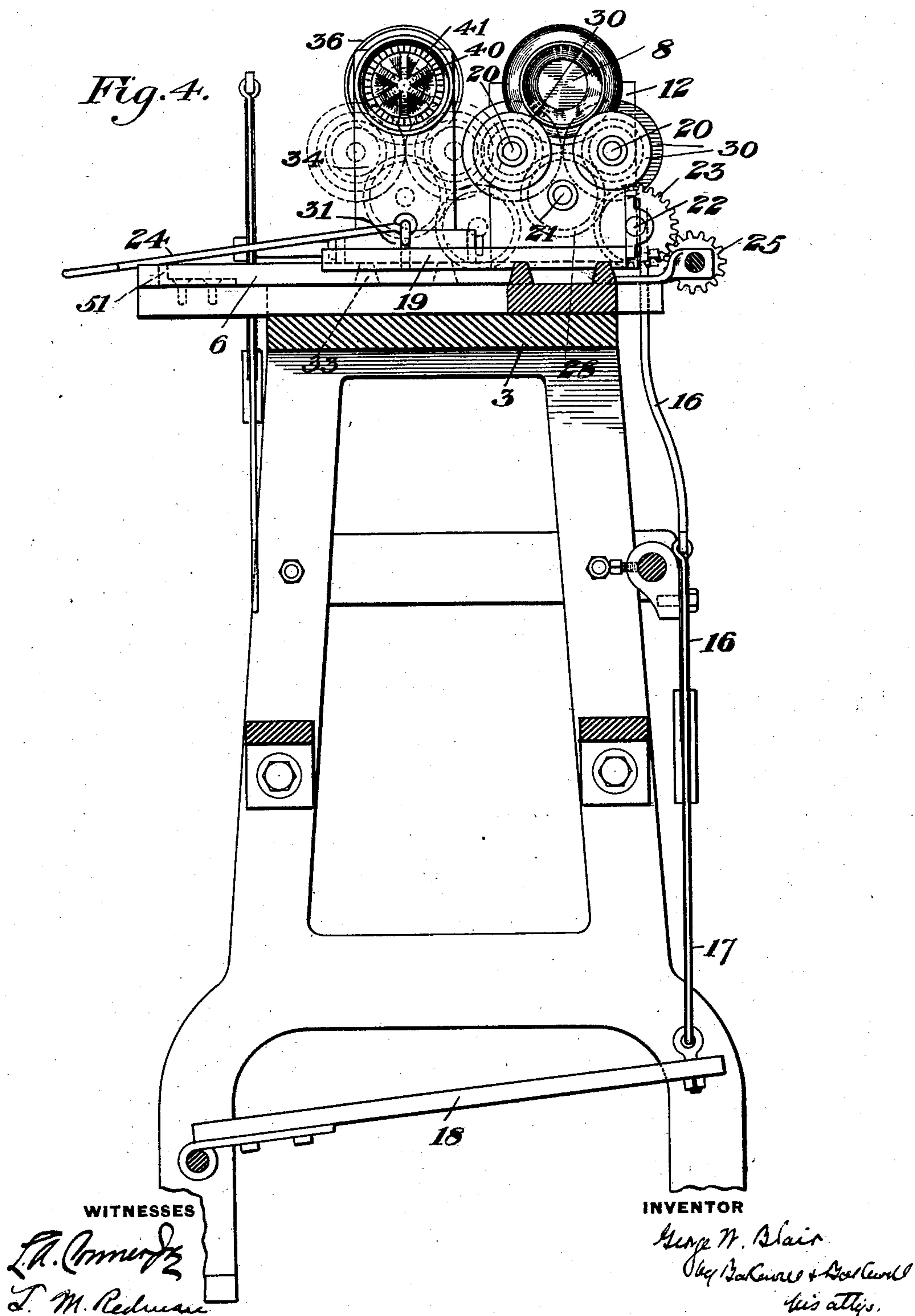
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4 Sheets—Sheet 4.



UNITED STATES PATENT OFFICE.

GEORGE W. BLAIR, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR FINISHING GLASS ARTICLES.

SPECIFICATION forming part of Letters Patent No. 713,280, dated November 11, 1902.

Application filed June 3, 1899. Serial No. 719,229. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BLAIR, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Finishing Glass Articles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view, partly broken away, of apparatus constructed in accordance with my invention. Fig. 2 is a front elevation showing the crimping mechanism, omitting the fire-polishing apparatus for clearness. Fig. 3 is a rear elevation showing the fire-polishing apparatus only; and Fig. 4 is a cross-section on line IV IV, Fig. 1, showing the actuating connections.

My invention relates to the finishing of glass articles, such as chimneys, and is designed to provide improved apparatus for fire-polishing one or both ends of the article, and, further, to provide mechanism in connection therewith for crimping the top of the chimney.

In the drawings, 2 represents the framework of the machine, carrying the base-plate or platform 3 for supporting the various parts. To this base are secured three tracks 4, 5, and 6, the tracks 4 and 5 being in line with each other and the track 6 extending at right angles to them and between their inner ends. On the tracks 4 and 5 are mounted slides 7, each carrying a cylindrical burner or furnace 7'. The furnace-chamber of each is preferably flared outwardly toward its outer open end and partially closed by an adjustable disk 8, leaving a narrow annular slot between the disk and the outer end of the chamber. The disk is adjustably supported by a rod 9, extending through the rear block 10 of the burner, which block is secured to the part 7' and to an adjustable dovetailed slide 11, supported within a similarly-shaped slot in a vertical support 12, secured to the slide 7. The gas is fed through pipe 13 and enters the burner-chamber through pipe 14, while the air passes through pipe 15 into the annular space around the pipe 14 and unites with the gas at the inner end of this pipe. The air and gas may be supplied by flexible hose. The inner end of each burner is pref-

erably made of a size slightly larger than the end of the article which it heats, the disk being of about the same size as such end. The slides 7 may be adjusted to move the burners or furnaces toward and from the articles by elbow-levers 16, having link connections 17 with foot-pedals 18 and provided with suitable counterweights. When the burners are adjusted to the proper point for the class and size of articles being finished, they are preferably secured in this position until another size of article is to be finished, though they may be moved toward and from the ends of the article in polishing it, if desired.

A slide 19 is carried on the track 6 and is provided with vertical supports for two upper shafts 20 and a lower intermediate shaft 21.

In rear brackets secured to the standards are provided bearings for another shaft 22, carrying a central toothed wheel 23, which when the slide or carriage is moved back to the rear end of the track by a suitable handle 24 intermeshes with a pinion 25, carried in fixed bearings upon the machine-frame. The shaft of pinion 25 is provided with a sprocket-wheel 26, driven by a chain 27. The toothed wheel 23 intermeshes with a similar wheel 28 upon the shaft 21, which in turn engages centrally-located toothed wheels 29 upon the shafts 20. The shafts 20 are provided at their outer ends with disks 30, which are made of a suitable size, so that the chimney or other article will rest upon and be rotated by them, as shown in Fig. 1.

In front of the tracks 4 and 5 and parallel therewith are provided adjustable supports 31 and 32 for carrying the crimping mechanism. The support 31, which is adjustable on the way 33, is provided with a vertical standard 34, having bearings for a shaft 35. The shaft 35 has a spline connection with a driving-pulley 36, and at the rear end has a loose connection 37 with lever mechanism 38, by which the shaft may be moved longitudinally in its bearings. The shaft 35 is hollow, and within its front end is secured the stem 39 of a crimper-plug 40, a set-screw being used to adjust the connection.

The crimper-block 41, through which the stem 39 extends, is held against rotation by a set-screw 42 entering a groove therein, but

is moved back and forth with the plug. The other adjustable spool 32 moves on a track or way 43 and is provided with a clamp comprising levers 44, pivoted at 45 and having link connections 46 with a sliding collar 47. The collar is provided with a cross-pin 48, extending through a hollow stem 49, and is acted upon by spring 50, which tends to force the forward clamping ends of the levers 44 toward each other. These ends are provided with asbestos-covered strips, which bear upon the base portion of the chimney and prevent its rotation. The levers may be operated by link connection with a foot-lever.

15 The operation is as follows: A chimney being placed upon the rollers or disks of the carriage 19, this carriage or slide is moved back into its rear position, and in such position the chimney is rotated by the gear connections from pinion 25. The burners or furnaces having been previously adjusted to the proper place apply annular flames to the ends of the chimney, thus simultaneously fire-polishing both ends. As soon as this is done the slide 19 is pulled forward and stopped in proper position in front of the crimping mechanism by blocks or stops 51. The clamping-levers are pulled back while the slide is moved forward, and, being then released, will grip the base of the chimney and hold it against rotation. The plug 40 being rotated by suitable belt connections with pulley 36 the plug and crimping-block are forced forward and act upon the upper edge of the chimney, crimping it into the desired form. These parts are then retracted, the clamp is released, and the chimney removed by grasping it in asbestos-tipped tongs or in any other desired way. Another chimney is then put upon the carriage and the operation is repeated.

The advantages of my invention result from the rapid and economical finishing of the article. The burners are adjustable toward and from each other for different articles and may also be adjusted vertically. Only one of these burners may be used in cases where one end of the article is to be fire-polished. The article is also quickly and easily crimped, the upper end of the article being brought to the proper temperature for this purpose by the fire-polishing burners. The burner for heating the end to be crimped is preferably arranged with a larger slot than the other or otherwise so as to give a higher heat.

The apparatus may be used without the crimping mechanism, and only one burner or furnace may be employed, and many other changes may be made in the form and arrangement of the parts without departing from my invention.

I claim—

1. In fire-polishing apparatus, a support arranged to contact with the sides of a glass article and rotate it in a horizontal position, a carriage or slide upon which the support is

mounted, and a furnace having an opening opposite to the end edges of the rotating article upon the support, to discharge the flame against said edges; substantially as described. 70

2. In fire-polishing apparatus, the combination with a support arranged to rotate the glass article, of a burner arranged in endwise alignment with, and opposite to the end of the article and having a partially-closed front end; the only opening being a curved slot in said end arranged opposite to the end of the article to direct the flame against the edge, and mechanism for rotating the support substantially as described. 80

3. In fire-polishing apparatus, the combination with a support having mechanism for rotating an article, of furnaces or burners arranged opposite the ends of the article, to discharge the flame against the end edges and to fire-polish each end of the article; substantially as described. 85

4. In fire-polishing apparatus, a support arranged to rotate the glass article, mechanism for rotating the support, a furnace opposite to the end of the article and having a partially-closed front end with a slot arranged to direct the flame forwardly against the edge of the article, and means for adjusting the furnace toward and from the article; substantially as described. 95

5. In apparatus for fire-polishing, the combination with a suitable frame, of a movable furnace, a horizontal support for the article in proper position with reference to such furnace, and mechanism for moving said furnace to and from said support, substantially as described. 100

6. In apparatus for fire-polishing, the combination with a suitable frame, of a movable furnace, a support for the article in proper position with reference to the furnace, a lever, and connections between said lever and furnace for moving the same to and from said support; substantially as described. 110

7. In fire-polishing apparatus, a support arranged to rotate the article, an annular burner opposite to the end of the article having a closed central portion and arranged to direct an annular flame forwardly against the edges of the article, and mechanism for rotating the support; substantially as described. 115

8. The combination with a movable support arranged to receive the article in a substantially horizontal position and rotate it, of a furnace arranged to heat the end of the article in one position of the support, and crimping apparatus arranged to shape the end of the article in another position of the support; substantially as described. 125

9. The combination with a way or track, of a carriage movable thereon having a support arranged to receive an article in a substantially horizontal position and rotate it, mechanism for rotating the article in one position of the support, a burner or furnace arranged to heat the article in this position, and shap-

ing mechanism arranged to act upon the article in another position of the support; substantially as described.

10. In crimping apparatus, a clamp arranged to hold the article against rotation, an end-wise-movable non-rotary crimping-block, and a rotary crimping-plug arranged to expand the end of the article into the block; substantially as described.

11. The combination with a movable support having disks or rollers to support the article, of a clamp for the article, and crimping mechanism arranged to act upon it when clamped; substantially as described.

12. In finishing apparatus for glassware, a movable carriage having disks or rollers to support the article, actuating connections arranged to rotate the disks in one position of the carriage, burners arranged to heat the ends of the article in such position, mechanism for clamping the article against rotation in another position of the carriage, and shaping mechanism arranged to shape the end of the article when so clamped; substantially as described.

13. The combination with the movable support upon which the article is laid and held in horizontal position, of means for rotating it while upon the support, a furnace or burner arranged at the end of the support and having an opening opposite to the end edges of the rotating articles arranged to heat the end edges of the article, and shaping mechanism arranged to shape one end of the article while still hot; substantially as described.

14. A movable support having disks arranged to support the article, mechanism for rotating the article, heating means arranged to fire-polish at least one end of the article while being rotated, and crimping apparatus arranged to crimp one end of the article while still hot from the fire-polishing operation; substantially as described.

15. The combination with a support for an article, of a burner adjustable toward and from the article, and mechanism for adjusting the burner at right angles to the axis of the article; substantially as described.

16. The combination with a support, having rollers upon which the article is laid and held in horizontal position, of a clamp arranged to prevent rotation of the article, and crimping mechanism carried on the support adjustable toward and from the article; substantially as described.

17. In apparatus for fire-polishing glassware, a support upon which the article is laid and held in a horizontal position, means for rotating it while upon the support, and a furnace or burner arranged at the end of the support, and having an opening opposite to the end edges of the rotating article upon the support to discharge the flame against said end edges; substantially as described.

18. In apparatus for fire-polishing glassware, rollers upon which the article is laid and held in a horizontal position, means for driving said rollers, and a furnace or burner arranged at the end of the support and having an opening opposite to the end edges of the rotating article upon the rollers to discharge the flame against said edges; substantially as described.

19. In apparatus for fire-finishing glassware, rollers upon which the article is laid and held in a horizontal position, means for driving said rollers, and furnaces or burners arranged at each end of the rollers, said furnaces having openings opposite to the end edges of the rotating article upon the rollers to discharge the flame against said edges; substantially as described.

20. In apparatus for fire-finishing glassware, a support upon which the article is adapted to be laid and held in a horizontal position, means for rotating it while upon the support, a furnace or burner arranged at the end of the support and having an opening opposite to the end edges of the rotating article upon the support to discharge the flame against said edges, and means for varying the distance between said furnace and support; substantially as described.

21. In apparatus for fire-finishing articles of glassware, a glory-hole consisting of a hood, a source of heat, and an adjustable deflector; substantially as described.

22. In a glass-finishing machine, a shell-like burner open at its lower end, and a circular and upwardly-tapering device positioned within the open lower end of the burner and contracting the same into a narrow continuous orifice; substantially as described.

In testimony whereof I have hereunto set my hand.

GEORGE W. BLAIR.

Witnesses:

L. M. REDMAN,
G. B. BLEMING.