

No. 768,713.

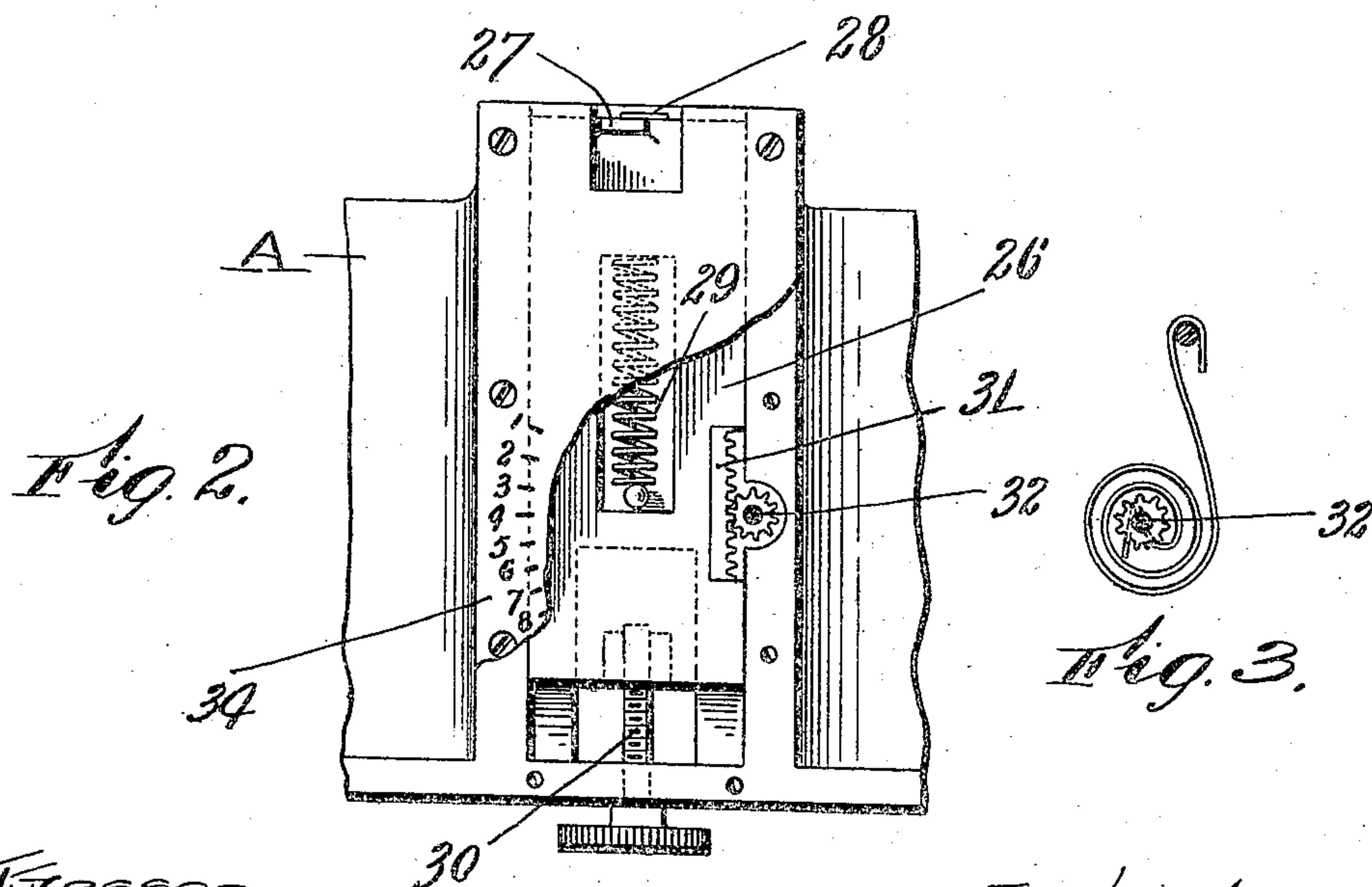
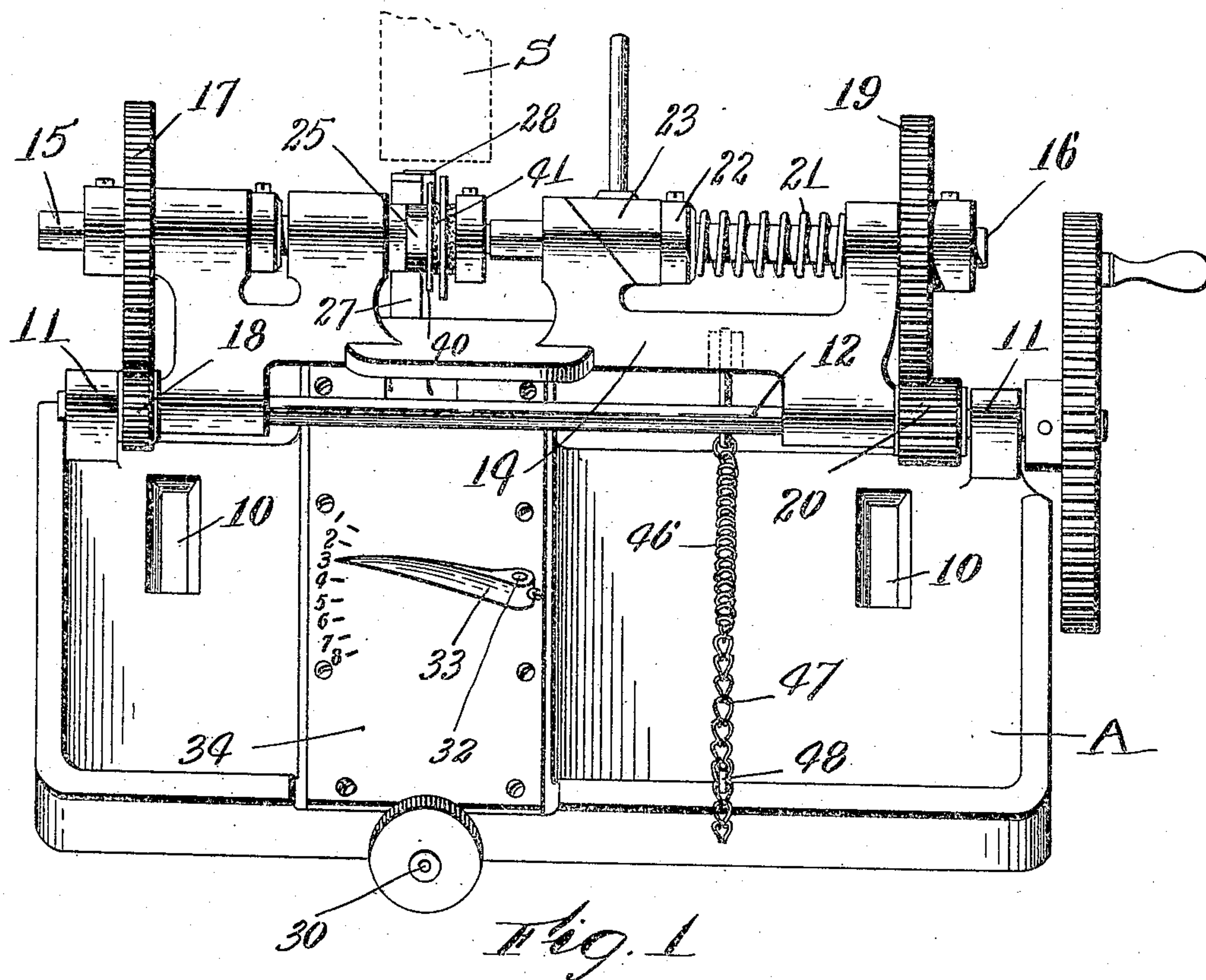
PATENTED AUG. 30, 1904.

L. WILHELM.  
LENS GRINDING MACHINE.

APPLICATION FILED APR. 18, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
C. F. Wilson  
M. E. Ryan

The Vector;  
 Louis Wilhelm.  
 By his Attorneys  
 Southgate and Southgats

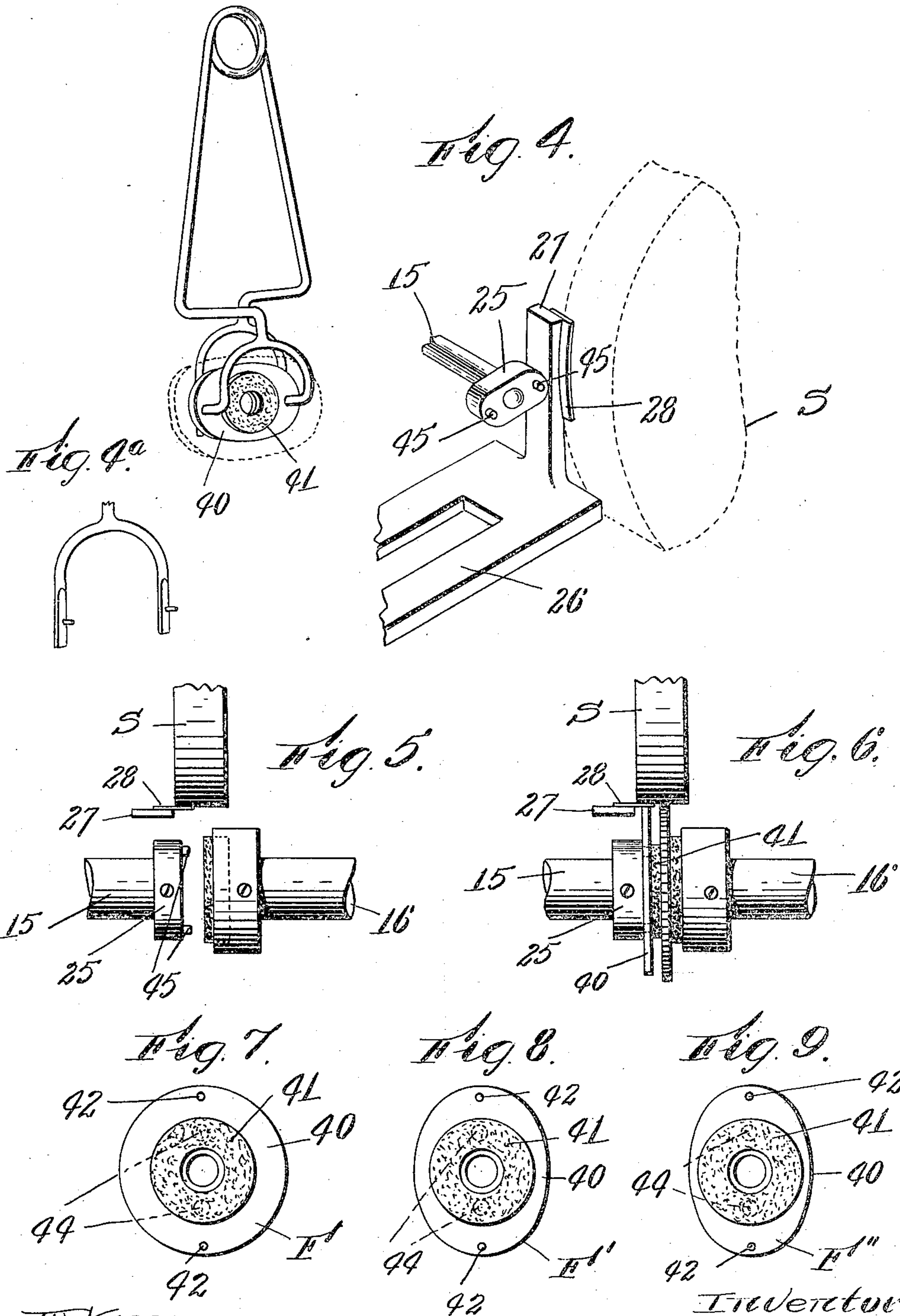
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# UNITED STATES PATENT OFFICE.

LOUIS WILHELM, OF WORCESTER, MASSACHUSETTS.

## LENS-GRINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 768,713, dated August 30, 1904.

Application filed April 18, 1904. Serial No. 203,604. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS WILHELM, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Lens-Grinding Machine, of which the following is a specification.

This invention relates to a grinding-machine for shaping lenses for spectacles or eyeglasses.

The especial objects of this invention are to provide a strong, compact, efficient, and accurate grinding-machine which can be readily and quickly adjusted for grinding different sizes and shapes of lenses, the operation being controlled by a guide-plate or former which is located immediately adjacent to the lens or lenses being ground.

To these ends this invention consists of the lens-grinding machine and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a front perspective view of a lens-grinding machine constructed according to this invention. Fig. 2 is a fragmentary plan view thereof, partly broken away. Fig. 3 is a detail view of the spring controlling the pointer-shaft. Fig. 4 is a fragmentary perspective view showing the holding-tool and sufficient parts of the grinding-machine to illustrate the way the work is put in place therein. Fig. 4<sup>a</sup> is a fragmentary detail view of one of the jaws of the tool. Fig. 5 is a detail view showing the machine open for the reception of work. Fig. 6 is a view similar to Fig. 5, showing the work clamped in place; and Figs. 7 to 9, inclusive, are detail views of the different formers which may be used as templets or guides in the grinding of different forms of lenses.

In that class of grinding-machines to which this invention relates the lens or lenses which are being ground are mounted to turn with a shaft which is journaled in a swinging frame. The swinging frame is normally carried toward a grinding-wheel under spring-pressure, and the swinging of the frame is controlled by a cam or former shaped to produce the desired ellipse or other outline of lens. An

example of these grinding-machines is illustrated in my prior United States Letters Patent, No. 656,685, granted to me August 28, 1900.

The especial object of the present invention is to provide a lens-grinding machine in which the former is located immediately adjacent to the work which is being ground and to provide simple and convenient adjustments for setting the machine to produce wide varieties of work.

Referring to the accompanying drawings and in detail, A designates a base-plate or casting. The base-plate or casting A is provided with slots 10 for receiving the fastening-bolts, which may fasten the construction in proper position to cooperate with a grinding-stone or emery-wheel S. The stone S may be rotated in any of the usual manners and also preferably has a slight lateral motion imparted thereto, the sidewise travel of the stone being imparted by any of the well-known connections, which need not be herein described at length. At the rear of the base-plate A are projections or bosses 11, and journaled in the bosses 11 is a shaft 12. Pivoted on the shaft 12 is a swinging frame 14, and journaled in the swinging frame 14 are the shafts 15 and 16. Fastened upon the shaft 15 is a gear 17, which meshes with and is driven by a pinion 18 on the shaft 12. Secured on the shaft 16 is a gear 19, which meshes with and is driven by a wide-faced pinion 20 upon the shaft 12. The shaft 16 is longitudinally movable in its bearings and is provided with a cushioned clamping disk or plate at its end. Carried by the shaft 16 is a spring 21, which bears upon a collar 22. Mounted loosely upon the shaft 16 is an opening-cam 23, which is provided with a handle and has an inclined face which cooperates with the inclined face of the bearing. By turning the opening-cam the shaft 16 may be moved longitudinally to open the machine for the reception of the work, as hereinafter described. The fixed shaft 15 is provided at its inner end with a block or clamping-disk 25, having projecting pins 45 for detachably receiving the different formers, as hereinafter described.

The connections for adjusting the machine



are most clearly illustrated in Fig. 2. As shown in this figure, 26 designates a slide which has an upright or arm 27 at its inner end carrying the curved contact-plate 28, which lies close to the face of the stone, as shown in Fig. 4. The slide 26 is normally forced back by a spring 29 and may be drawn forward by an adjusting-screw 30, having a thumb-wheel at its front end. An indicating-  
 10 pointer is provided to aid in adjusting the machine.

As shown in Fig. 2, the slide 26 is provided with a rack 31, which meshes with and turns a pinion secured upon the vertical pointer-shaft 32. Fastened on the upper end of the  
 15 pointer-shaft 32 is a pointer or index-finger 33, which coöperates with index-marks which may be numbered upon the cover-plate 34, as most clearly indicated in Fig. 1.

20 The different-shaped formers and the manner in which the work may be fastened in the machine are most clearly illustrated in the second sheet of drawings.

As shown in Figs. 7 to 9, inclusive, the  
 25 formers may have a considerable variety of shapes, from the perfectly-round former illustrated in Fig. 7 to the comparatively long and flat oval-shaped former illustrated in Fig. 9. In all shapes, however, each of the formers  
 30 comprises a metallic disk or body portion 40, having a cushion 41 on one face thereof. The body portion of each former is also preferably provided with two gage-holes 42 near its circumference and with two drive-pin holes  
 35 44, which are adapted to fit onto the pins 45 of the grinding-shaft 15.

In order to fasten the lens or lenses which are to be operated upon in proper position, I preferably employ a carrying-tool or spring-  
 40 fork.

In the use of this tool, as illustrated in Fig. 4, the proper-shaped former F, (illustrated in Fig. 7,) the former F', (illustrated in Fig. 8,) or the former F'' (illustrated in Fig. 9) is first  
 45 selected, and its gage-pin holes 42 are fitted to the small pins projecting from one jaw of the spring-clamp, as shown in Fig. 4<sup>a</sup>. The lens is next put in place at the side of the former, care being taken to have the center  
 50 of the lens opposite the center hole in the former and to have the central line of the lens (which may be marked with red ink or otherwise indicated) in line with the gage-holes 42. The spring clamping-tool is then used to  
 55 hold the lens and former together in proper position, so that they may then be inserted into the machine while the shafts are separated, as illustrated in Fig. 5, after which the spring-pressed grinding-shaft 16 will clamp  
 60 and hold the work in place to be operated upon. The index-arm is then set to proper number, and, as illustrated most clearly in Fig. 1, the swinging frame may be turned  
 65 back to bring the work into engagement with

sion of said spring being regulated by means of a chain 47, the different links of which may be set into engagement with the pin 48. Where two or more lenses are being ground, a heavier pressure can be used without dan-  
 70 ger of chipping or injuring the work than when a single lens is being ground.

In the actual use of a machine as thus constructed it will be seen that the former is in immediate proximity to the work, and on this  
 75 account the work will be swung toward and away from the stone without liability of chattering or other inequality of motion which is liable to chip or injure the work being done.

To compensate for the wear of the grind-  
 80 ing-stone, the indicating - pointer 33 may be set to different positions upon its vertical shaft, or the entire construction may be shifted upon its support, if desired.

I am aware that changes may be made in  
 85 the construction of my machine for grinding lenses by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the construction I  
 90 have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine of the class described, the combination of two shafts in alinement with  
 95 each other, a plurality of removable gage disks or formers, means for causing a relative longitudinal movement of the shafts to clamp a lens-blank and a selected former in place between the ends of the shafts, and a contact-  
 100 plate coöperating with the former and located close to the grinding-wheel.

2. In a machine for grinding lenses, the combination of two shafts arranged in alinement, a plurality of removable gage plates or form-  
 105 ers, means for producing a relative longitudinal motion between said shafts to clamp a lens-blank and a selected former in place between the ends of the shafts, a contact-plate to be engaged by the former and located near  
 110 the grinding-wheel, and means for adjusting the contact-plate to produce different-shaped lenses.

3. In a machine for grinding lenses, the combination of shafts arranged in alinement, one  
 115 of said shafts having a contact-face, and the other of said shafts having a face with registering-pins projecting therefrom, a plurality of removable formers, each having sockets for engaging the registering-pins, means for pro-  
 120 ducing a relative longitudinal movement between the shafts to clamp a former and a lens-blank between the ends of the shafts, the position of the former being determined by the registering-pins, and a contact-plate coöper-  
 125 ating with the former, and means for adjusting the contact-plate to produce lenses of different shapes.

4. In a machine for grinding lenses, the combination of a swinging frame, shafts journaled  
 130



therein, a former turning with said shafts, a contact-plate coöperating with the former, means for adjusting the contact-plate toward and away from the grinding-wheel to produce  
5 different sizes and shapes of lenses, and a pointer coöperating with an index to show the different adjustments of the contact-plate.

5. In a machine of the class described, the combination of a cam or former, a contact-  
10 plate for engagement therewith, means for adjusting the contact-plate to produce different sized and shaped lenses, a swinging pointer coöperating with an index to show the different adjustments of the machine, and a spring  
15 normally tending to turn the pointer in one direction to prevent lost motion or backlash in the adjustment thereof.

6. In a machine of the class described, the

combination of the cam or former, the horizontal slide having an arm or post, a contact- 20 plate carried thereby for engagement with the former, a spring-pressed slide, a thumb-screw for moving the slide to different positions, a vertical pointer-shaft having a rack-and-pinion connection with said slide, and a pointer 25 secured on said vertical shaft to coöperate with an index showing the different adjustments of the machine.

In testimony whereof I have hereunto set my hand in the presence of two subscribing 30 witnesses.

LOUIS WILHELM.

Witnesses:

LOUIS W. SOUTHGATE,  
PHILIP W. SOUTHGATE.