

No. 745,677.

PATENTED DEC. 1, 1903.

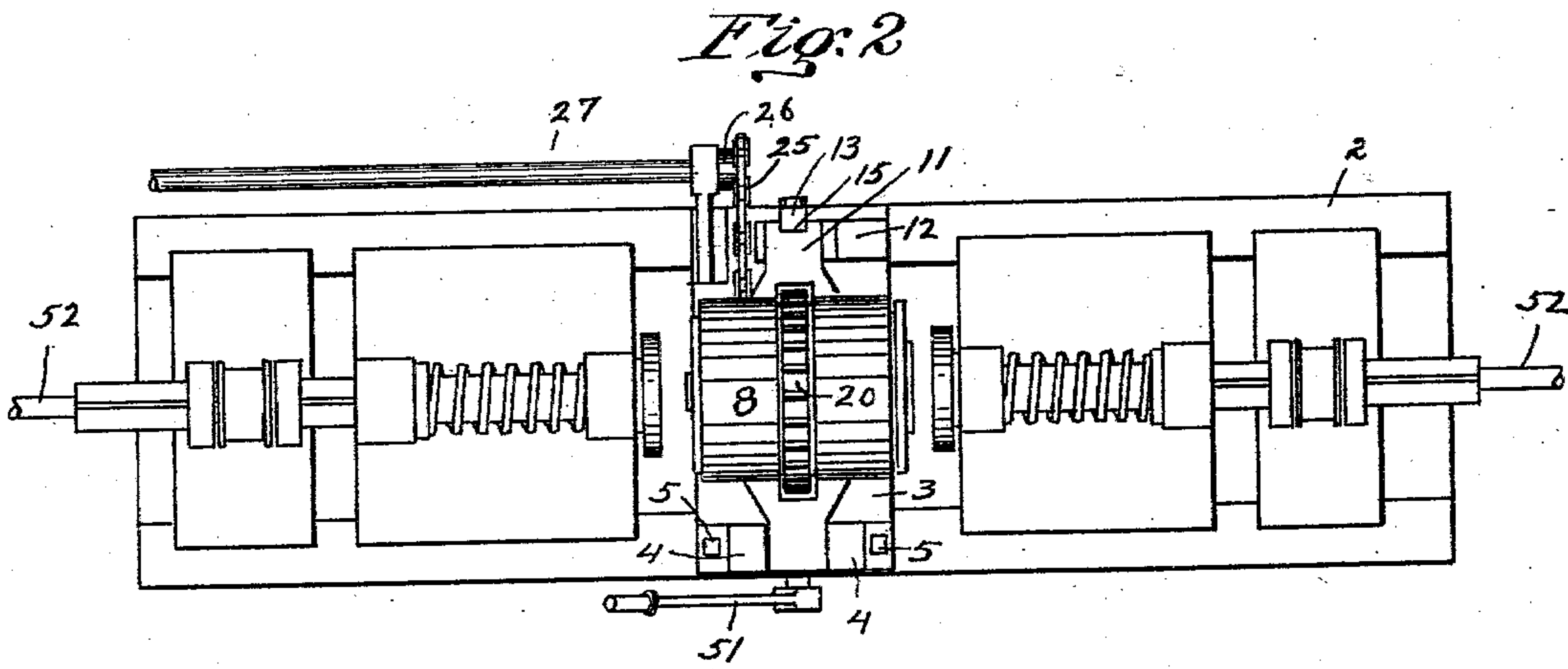
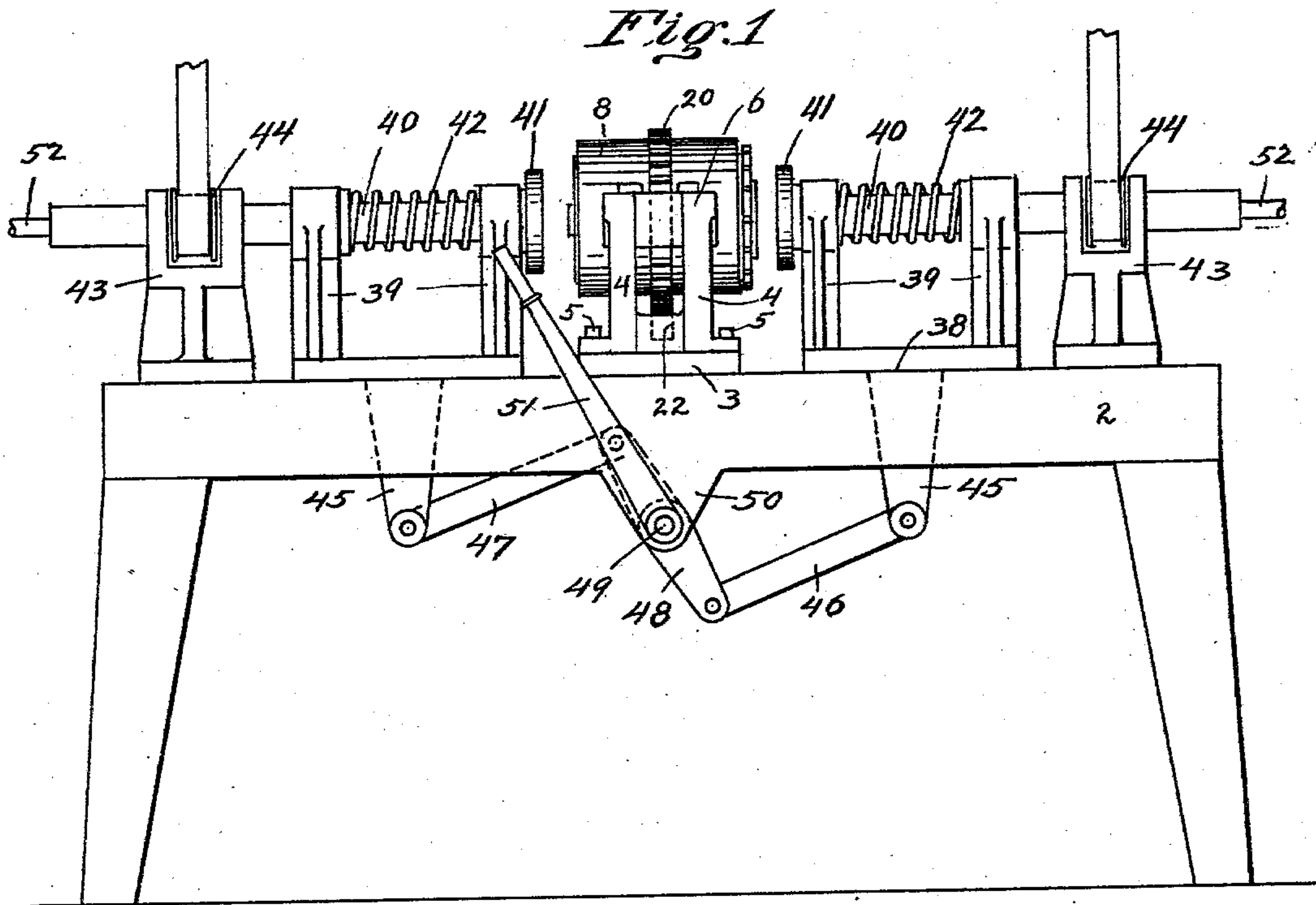
H. A. SCHNELBACH & H. A. HEUPEL.

GRINDING MACHINE.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses.
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Robert Lottan

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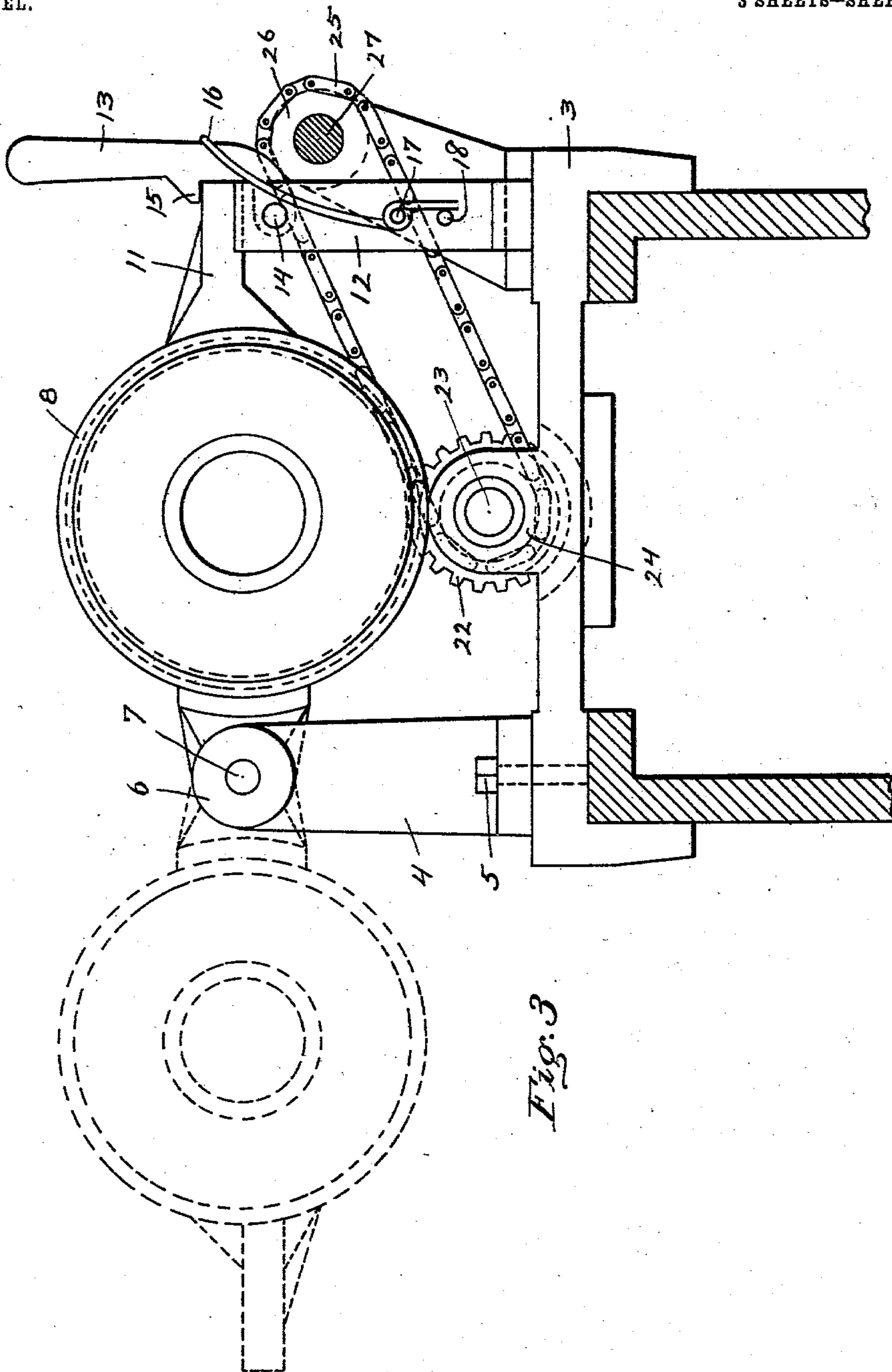


Fig. 3

Witnesses.

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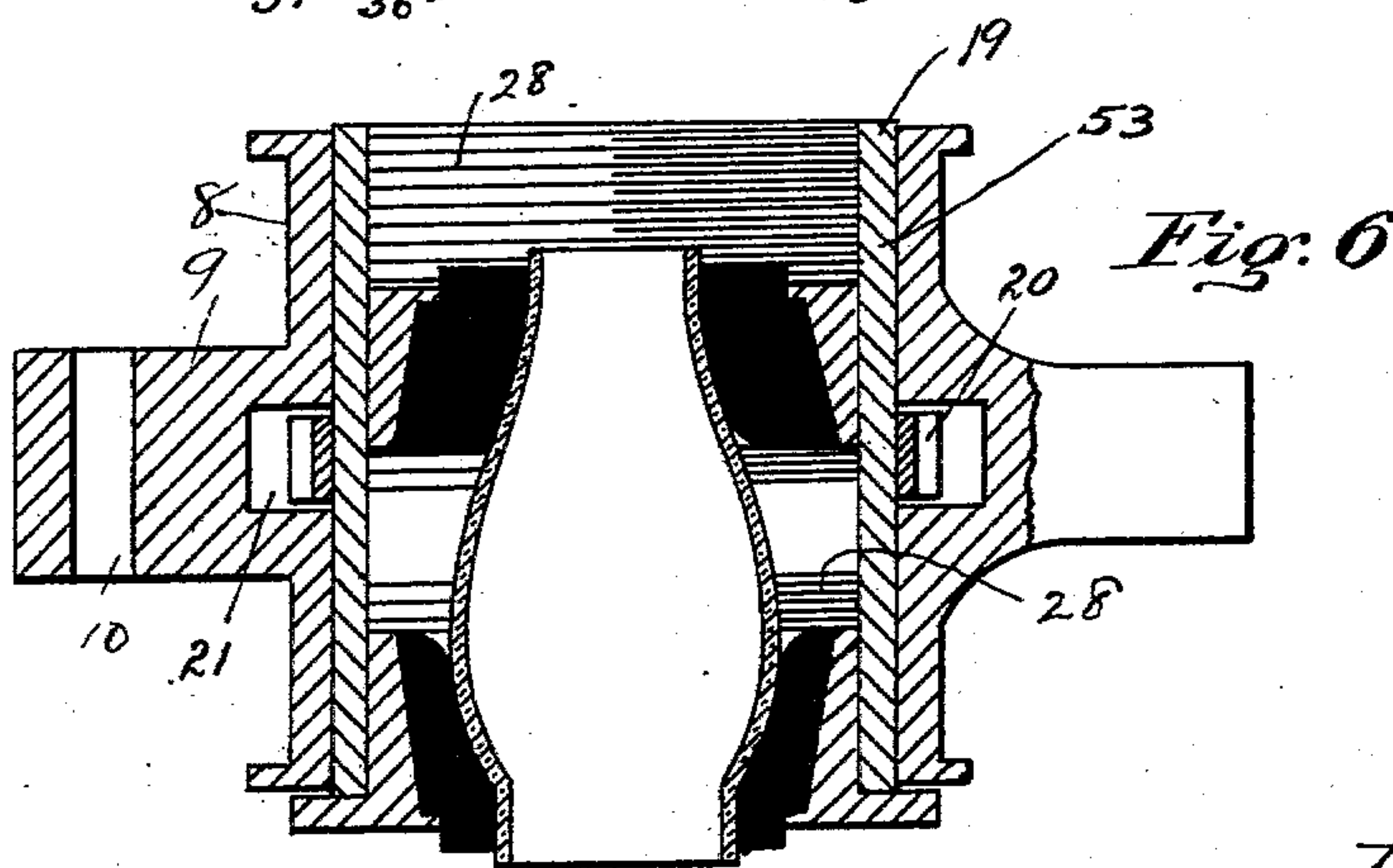
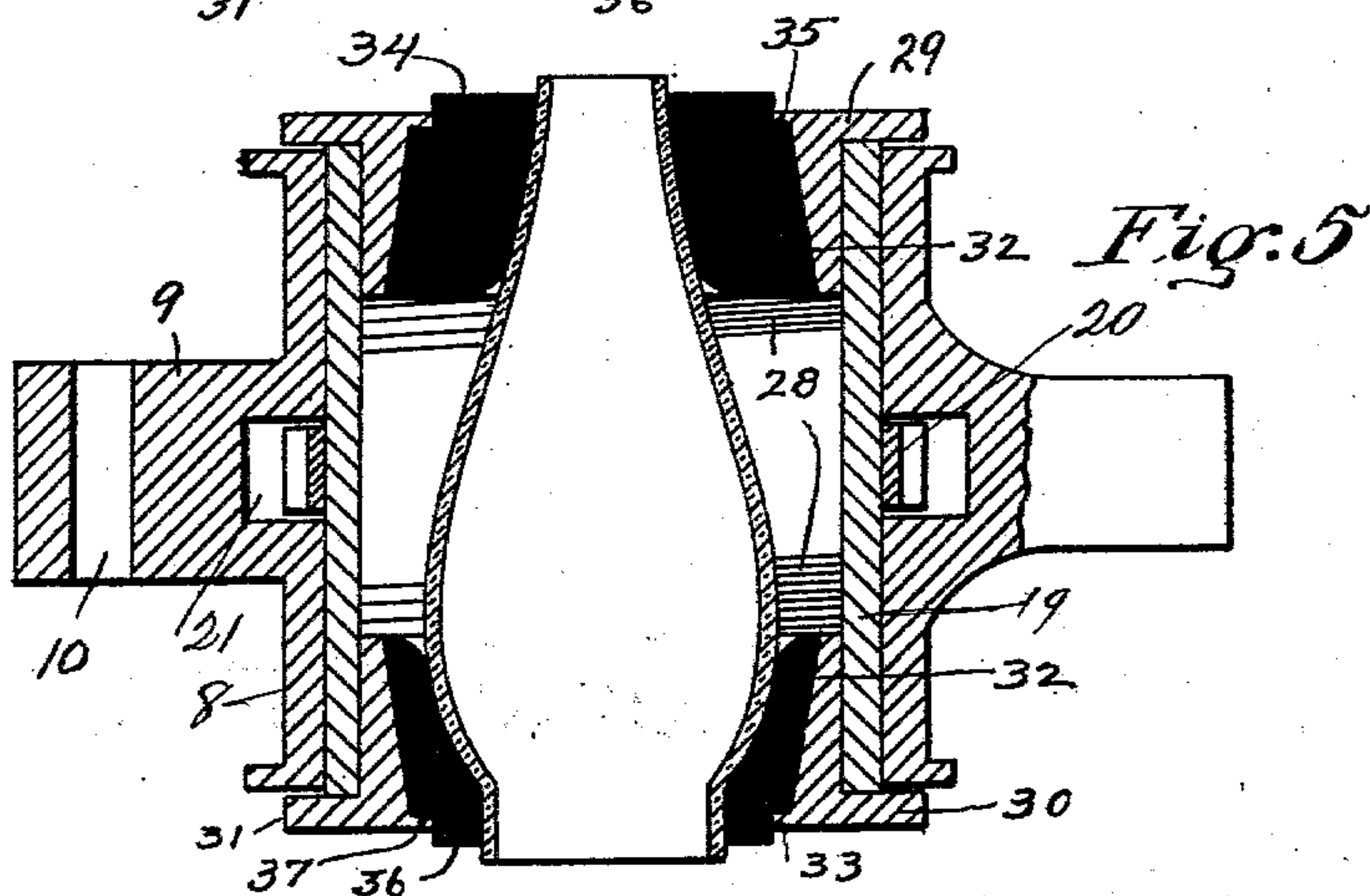
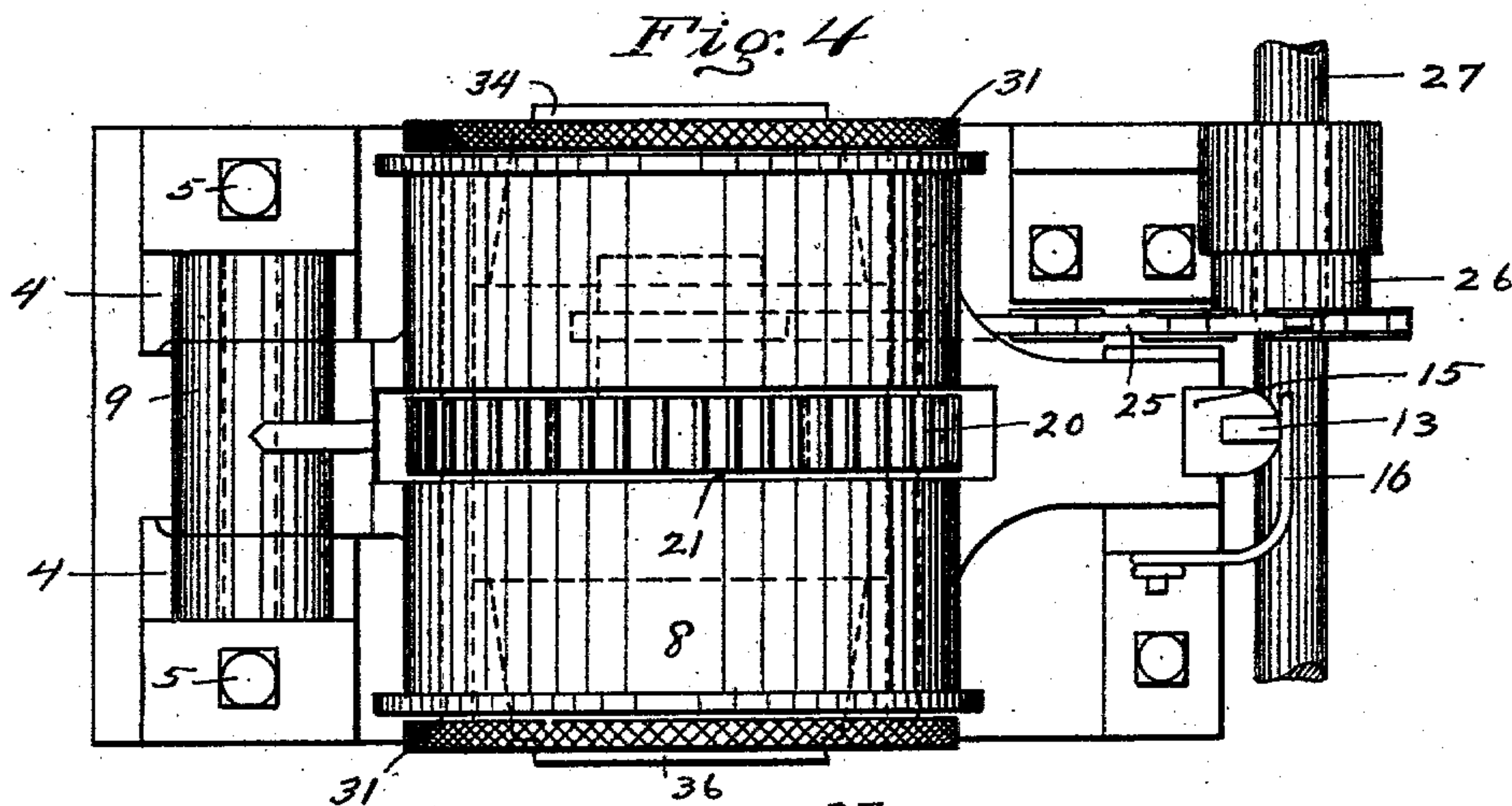
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3 SHEETS—SHEET 3.



Witnesses.

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Robert C. Lott.

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UNITED STATES PATENT OFFICE.

HARRY A. SCHNELBACH, OF PITTSBURG, AND HERMAN A. HEUPEL, OF CHARLEROI, PENNSYLVANIA, ASSIGNORS TO MACBETH EVANS GLASS COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 745,677, dated December 1, 1903.

Application filed February 5, 1903. Serial No. 142,026. (No model.)

To all whom it may concern:

Be it known that we, HARRY A. SCHNELBACH, a resident of Pittsburg, in the county of Allegheny, and HERMAN A. HEUPEL, a resident of Charleroi, in the county of Washington, State of Pennsylvania, have invented a new and useful Improvement in Grinding-Machines; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to apparatus for grinding articles of glassware, and more especially to open-ended articles, such as lamp-chimneys, where both ends are subjected to a finishing operation.

The object of our invention is to provide a simple form of apparatus by means of which the article to be finished is so held with reference to the grinding-faces that both ends of the article may be acted upon at the same time and the article finished without the necessity of reversing its position.

To these ends our invention comprises, generally stated, a suitable rotary holder, with means for holding the article to be finished securely intermediate of the ends of said article and grinding devices adapted to be brought into contact with the projecting ends of said article, so that both ends of said article may be acted upon and ground at the same time.

Our invention further comprises certain other novel features, all of which will be hereinafter fully set forth and claimed.

To enable others skilled in the art to make and use our invention, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side elevation of our improved grinding apparatus. Fig. 2 is a plan view of same. Fig. 3 is an enlarged end view, partly in section. Fig. 4 is an enlarged plan view. Fig. 5 is a section taken on the line 5 5, Fig. 3; and Fig. 6 is a like sectional view showing the device adjusted for an article of shorter length.

Like numerals indicate like parts.

In the drawings the numeral 2 designates a suitable stand or support for the machine, and resting on said support is the bed-plate 3. The standards 4 are bolted to the bed-plate 3 by means of bolts 5, said standards having the bearings 6, in which the shaft 7 is journaled. A drum 8 is mounted to swing on the shaft 7, said drum having the journal 9 with the opening 10 therein, through which the shaft 7 passes. On the opposite side of said drum is the arm 11, adapted to rest upon the support 12, secured to the bed-plate 3. A latch-arm 13 is pivoted to the support 12 at 14, said latch-arm having the latch 15 adapted to engage the upper face of the arm 11 and lock said arm rigidly in position. A spring 16 bears against the rear face of the latch-arm 13, said spring passing down and around the stud 17 and with its free end bearing against the stud 18, the tendency of said spring being to hold said latch-arm 13 in its locking position.

Within the drum 8 is the cylinder 19, said cylinder having upon its outer surface the cog 20, by means of which said cylinder is adapted to be rotated within the drum 8. The drum 8 has the annular space 21, which provides for the reception of the cog 20. A pinion 22 meshes with the cog 20, said pinion being mounted on the shaft 23. A sprocket-wheel 24 is mounted on the shaft 23, and a sprocket-chain 25 connects said sprocket-wheel with the sprocket-wheel 26 on the main power-shaft 27, driven by any suitable power. In this manner power is transmitted from the shaft 27 to the pinion 22 and in turn to the cylinder 19. The cylinder 19 is internally threaded, as at 28, to receive the threaded bushing 29 at one end and a like threaded bushing 30 at the other end, said bushings having the milled flanges 31 for convenience in turning said bushings. The bushings 29 and 30 are flaring or outwardly curved, as at 32, and have also the shoulders 33. The bushing 29 is adapted to receive the rubber or other yielding bushing 34, which fits snugly within the bushing 29, said rubber bushing having

the shoulder 35, adapted to engage the shoulder 33 of the bushing 29, while at the same time said rubber bushing 34 projects slightly beyond the bushing 29. The bushing 30 is also adapted to receive the rubber or other yielding bushing 36, adapted to fit snugly within the bushing 30 and having the shoulder 37 adapted to engage the shoulder 33 of the bushing 30. The rubber bushing 36 may be internally shaped so as to correspond to the contour of the article to be ground, and where such an article is a lamp-chimney, as illustrated, said bushing is shaped to correspond substantially to the rounded surface of the chimney at that portion of said chimney in contact with the bushing. In like manner the bushing 34 is also shaped internally to correspond to the portion of the article with which it engages, and, as illustrated, is made to conform to the upper or tapering portion of a lamp-chimney.

Mounted on the support 2 at each end of the drum 8 are the bed-plates, movable in suitable guides 38, each carrying the standards 39, within which are mounted the shafts 40. At the ends of the shafts are grinding-wheels 41, made of any suitable material, and a spring 42, encircling the shaft 40 between the standards, acts to permit of the yielding of the grinding-disks when in operation.

The shaft 40 is journaled at its outer end in a bifurcated standard 43, and within the arms of said standard is the driving-pulley 44, which is splined upon the shaft 40, so that said shaft can move to and fro independent of said pulley.

The bed-plates 38 are mounted, as stated, to slide to and fro upon the frame 2, and extending down from said bed-plates are the lugs 45, to which the arms 46 and 47 are pivoted. The arm 46 is connected at its opposite end to the lower end of the rock-arm 48, while the arm 47 is connected to the upper end of the rocking arm 48, said rock-arm being pivoted at 49 to the depending bracket 50. The lever 51 is adapted to operate the rock-arm 48. From this construction it is apparent that by the operation of the lever 51 the sliding bed-plates 38 may be moved into position to bring the grinding-disks 41 into contact with the ends of the article to be ground, while the driving-pulleys 44 remain in operative position in the stationary supports 45, the shafts 40 sliding in said pulleys.

The shafts 40 are hollow shafts and may be connected up by suitable pipes 52 to a water-supply, said pipes conveying the water to the shafts 40, whence it passes to the opposite ends of said shafts, where it is sprayed by any suitable means over the grinding-faces of the disks 41, all of which was old prior to our invention and forms no part thereof.

When our improved grinding apparatus is in use, the operator releases the drum 8 by

pulling back the latch-arm 13 to release the arm 11, whereupon said drum may be swung over to the position shown in dotted lines in Fig. 3. The operator then turns the bushing 30 to withdraw said bushing and the rubber bushing 36, inclosed therein. When the bushing 30 has been removed, which may be done by one or two turns, the threads being arranged accordingly, the chimney to be ground is inserted with its top portion within the rubber bushing 34 and projecting slightly beyond the same, whereupon the bushing 30 is inserted and screwed up in position until the rubber bushing 36 bears against the chimney, while the lower end of said chimney projects slightly beyond said rubber bushing. In this manner the chimney is accurately centered within the cylinder 19 and is securely held in position therein by the bushings, the rubber bushings acting to cushion the chimney and prevent the breaking of the same, while at the same time said chimney is held rigidly in position and accurately centered, so as to present its upper and lower edges to the grinding-wheels in proper position to be ground evenly. The operator after the chimney has been properly adjusted within the cylinder 19 throws the drum 8 back into its normal position, with the arm 11 resting on the support 12, whereupon the latch 15 is brought into position to engage said arm 11 and lock the drum securely in position, with the cog 20 in engagement with the pinion 22. The operator then grasps the lever 51, and by throwing it in the proper direction brings the grinding-disks 41 into contact with both ends of the chimney. Power having been applied to operate the several parts, the chimney is caused to rotate in one direction, while the grinding-disks in contact therewith are driven in the opposite direction. The grinding-disks are held in contact with the upper and lower edges of the chimney until the proper grinding action has been obtained and the chimney properly finished, whereupon the operator throws the lever 51 in the opposite direction to withdraw the grinding-disks and then releases the drum 8 to force it over into its inoperative position. The operator can then quickly remove the bushing 30, withdraw the chimney finished, and insert a new one, and repeat the above operation. The chimneys may thus be finished at both ends by one operation, thereby doing away with the necessity of reversing the chimney to grind the opposite end after one end has been ground, while at the same time the chimney is held at points intermediate of its ends, so as to be securely held during the grinding operation and at the same time relieved of any strain which would tend to break the chimney. The chimneys may be accurately centered, so as to present their edges evenly to the grinding-disks, and this centering is done quickly and without any nicety of adjust-

ment on the part of the operator, the bushings themselves acting to center the chimneys.

In Fig. 6 we have illustrated our invention in connection with the finishing of a chimney of shorter length than that represented in Fig. 5, in which case it is only necessary to employ a bushing 53 without a flange, so that said bushing may be screwed within the cylinder 19 to any suitable distance, according to the length of the chimney to be finished. The chimney is inserted in the same manner as above described, while the grinding-disk for the upper end of the chimney is moved within the cylinder 19 sufficiently to bear against the upper end of said chimney to perform the grinding operation.

What we claim as our invention, and wish to secure by Letters Patent, is—

1. In glass-grinding apparatus, a positively-driven rotary cylinder, means for supporting the article to be ground intermediate of its ends within said cylinder, and grinding mechanism for finishing the ends of said article.

2. In glass-grinding apparatus, a positively-driven rotary support for the article to be ground, and grinding mechanism for finishing both ends of said article at the same time.

3. In glass-grinding apparatus, a frame, a support formed of yielding material in said frame adapted to support the article intermediate of its ends, and grinding mechanism for finishing the ends of said article.

4. In glass-grinding apparatus, a frame, an internally-yielding support in said frame adapted to support the article to be ground, and grinding mechanism for finishing the end of said article.

5. In glass-grinding apparatus, a frame, an internally-yielding bushing in said frame adapted to support the article to be ground, and grinding mechanism for finishing the end of said article.

6. In glass-grinding apparatus, a frame, yielding bushings in said frame adapted to encircle the article to be ground at points intermediate of its ends, and grinding mechanism for finishing the ends of said article.

7. In glass-grinding apparatus, a frame, a yielding bushing in said frame adapted to encircle the article to be ground, an adjustable support for said bushing, and grinding mechanism for finishing the end of said article.

8. In glass-grinding apparatus, a frame, a yielding bushing adapted to encircle the article to be ground, a rigid bushing in said frame and within which said yielding bushing is supported, and grinding mechanism for finishing the end of said article.

9. In glass-grinding apparatus, a frame, a yielding bushing adapted to encircle the article to be ground, a rigid bushing threaded into said frame and supporting said yielding bushing, and grinding mechanism for finishing the end of said article.

10. In glass-grinding apparatus, a frame, a yielding bushing adapted to encircle the article to be ground, a rigid bushing in said frame, said bushing having a tapering seat adapted to receive said yielding bushing, and grinding mechanism for finishing the end of said article.

11. In glass-grinding apparatus, a frame, a yielding bushing adapted to encircle the article to be ground, a rigid bushing in said frame, said bushing having a shoulder with which a shoulder on said yielding bushing engages, and grinding mechanism for finishing the end of said article.

12. In glass-grinding apparatus, a frame, a yielding bushing supported in said frame adapted to encircle the article to be ground, said bushing having a seat therein corresponding substantially to the shape of that portion of the article encircled thereby, and grinding mechanism for finishing the end of said article.

13. In glass-grinding apparatus, a frame, yielding bushings at each end thereof adapted to encircle the article to be ground intermediate of its ends, means for removing one of said bushings, and grinding mechanism for finishing the ends of said article.

14. In glass-grinding apparatus, a swinging frame, means for supporting the article to be ground within said frame, and grinding devices in position with reference to said frame to grind both ends of the article supported therein.

15. In glass-grinding apparatus, a swinging frame, means for supporting the article to be ground within said frame, a locking device for said frame, and grinding devices in position with reference to said frame to grind both ends of the article supported therein.

16. In glass-grinding apparatus, the combination with a suitable support, of a swinging frame mounted thereon, means for supporting the article to be ground within said frame, a latch-bar on said support adapted to engage said frame, and grinding devices in position with reference to said frame to grind both ends of the article supported therein.

17. In glass-grinding apparatus, the combination with a suitable support, of a swinging frame mounted thereon, means for supporting the article to be ground within said frame, a spring-actuated latch-bar having a latch adapted to engage said frame, and grinding devices in position with reference to said frame to grind both ends of the article supported therein.

18. In glass-grinding apparatus, the combination with a suitable support, of a drum mounted therein, a rotary cylinder within said drum, means for supporting the article to be ground therein, a cog in said cylinder, a pinion engaging said cog, mechanism for driving said pinion, and grinding mechanism adapted to finish the articles to be ground.

19. In glass-grinding apparatus, the combination with a suitable support, of a swinging drum mounted thereon, a rotary cylinder within said drum, means for supporting the
5 article to be ground within said cylinder, mechanism for rotating said cylinder, and grinding devices in position with reference to said drum to grind both ends of the article to be ground.

In testimony whereof we, the said HARRY A. SCHNELBACH and HERMAN A. HEUPEL, have hereunto set our hands.

HARRY A. SCHNELBACH.
HERMAN A. HEUPEL.

Witnesses:

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ROBERT C. TOTTEN.