

No. 765,451.

PATENTED JULY 19, 1904.

W. F. ALTENBAUGH & L. A. CONNER, JR.

GLASS BLOWING MACHINERY.

APPLICATION FILED SEPT. 4, 1900.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. I.

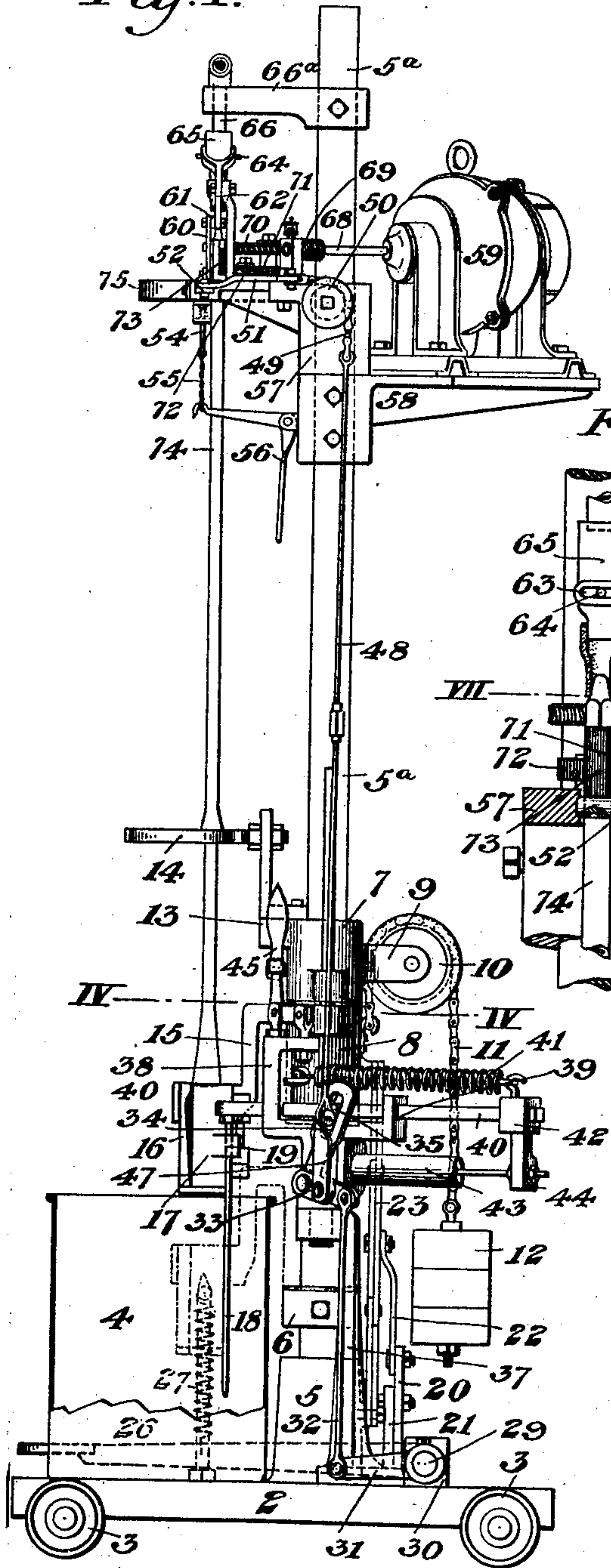


Fig. II.

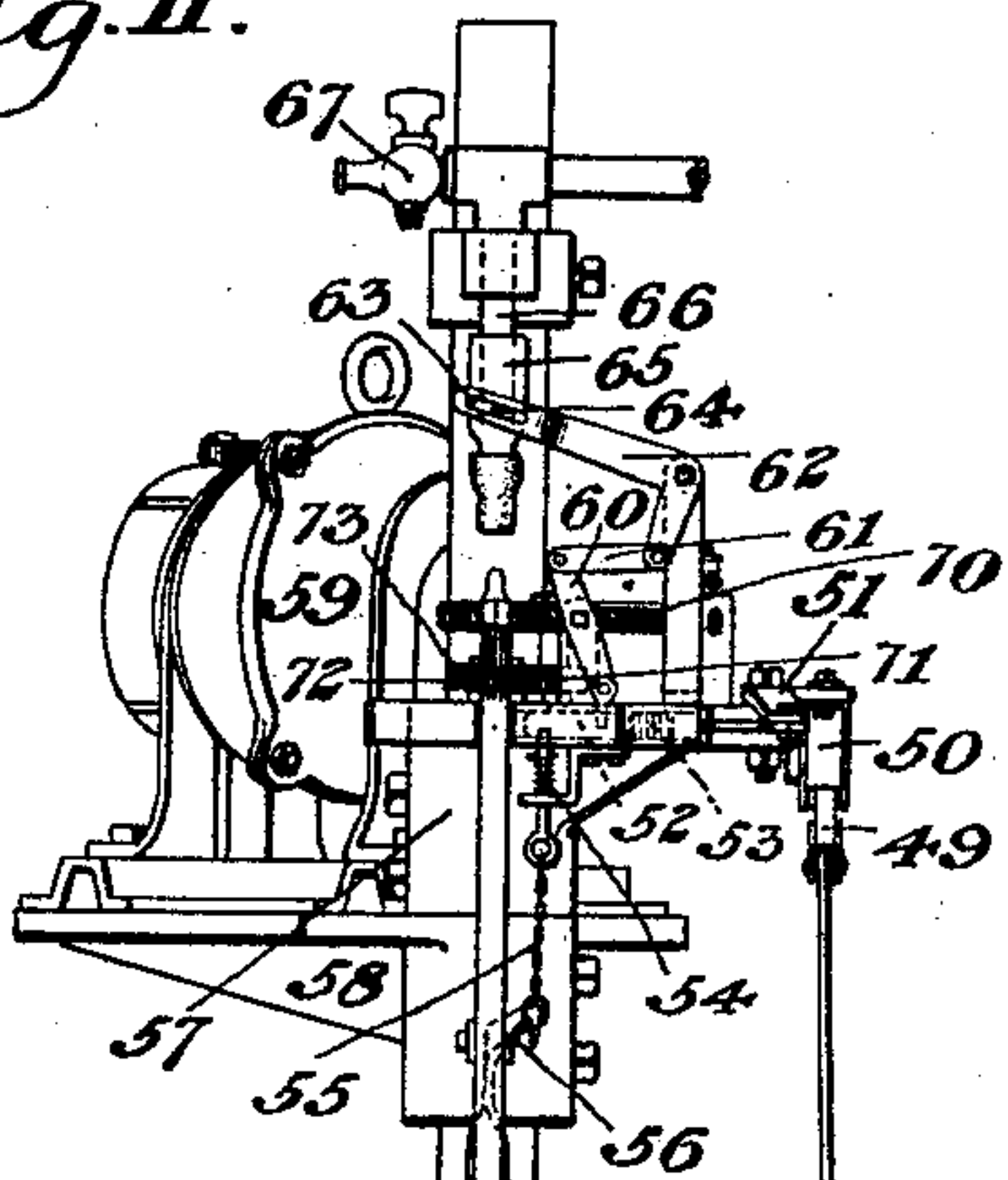
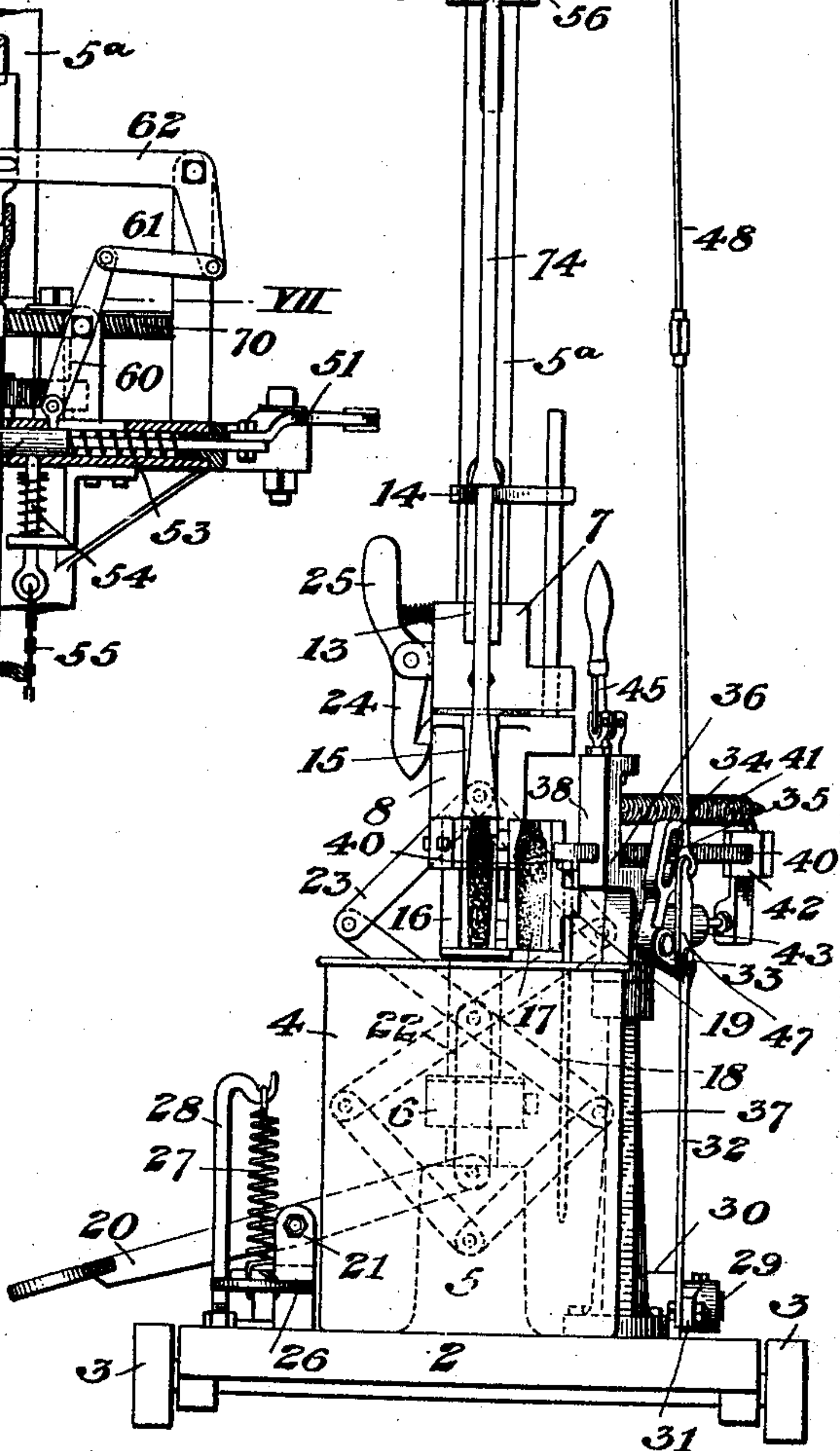


Fig. III.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. IV.

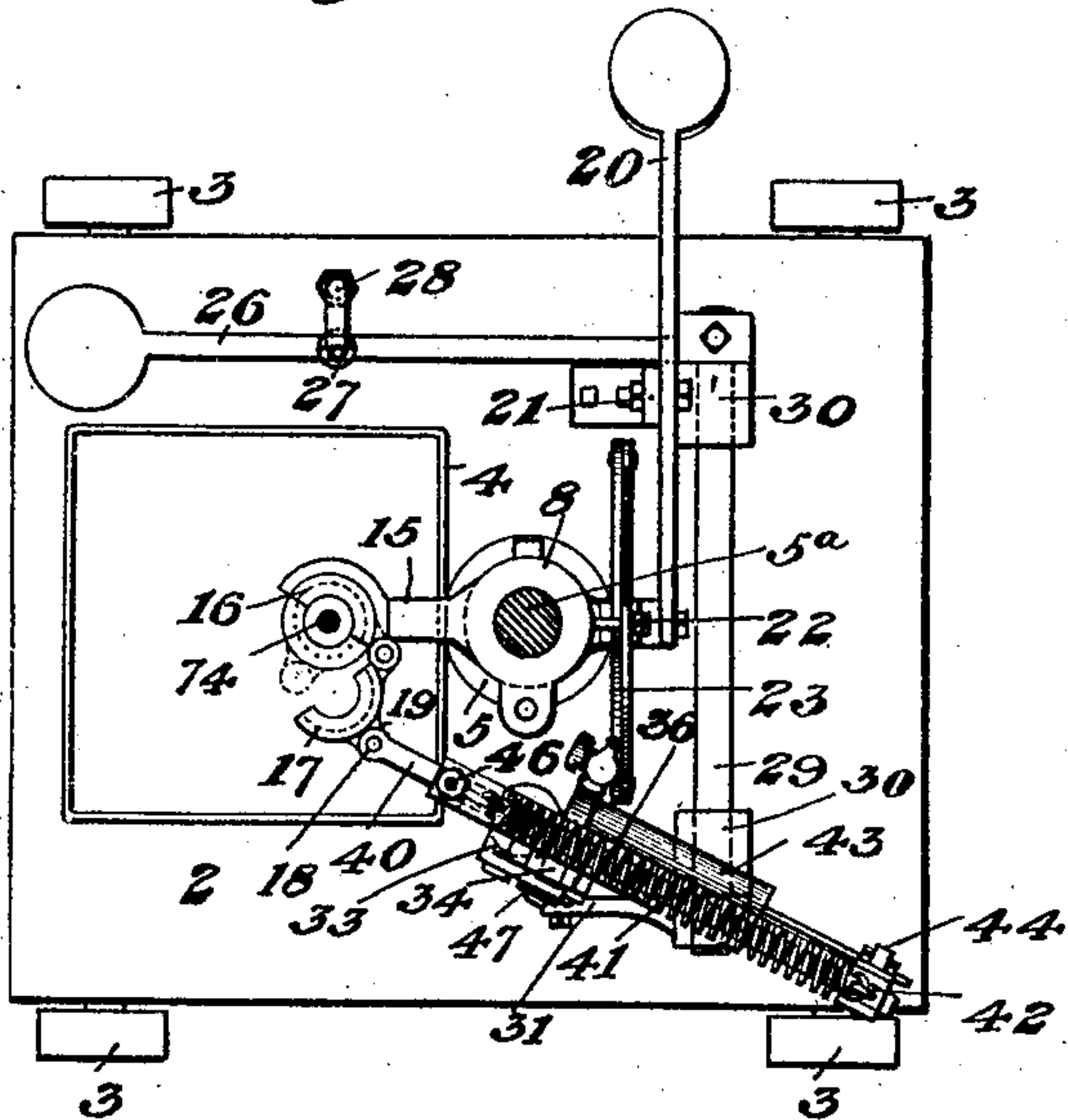


Fig. VI.

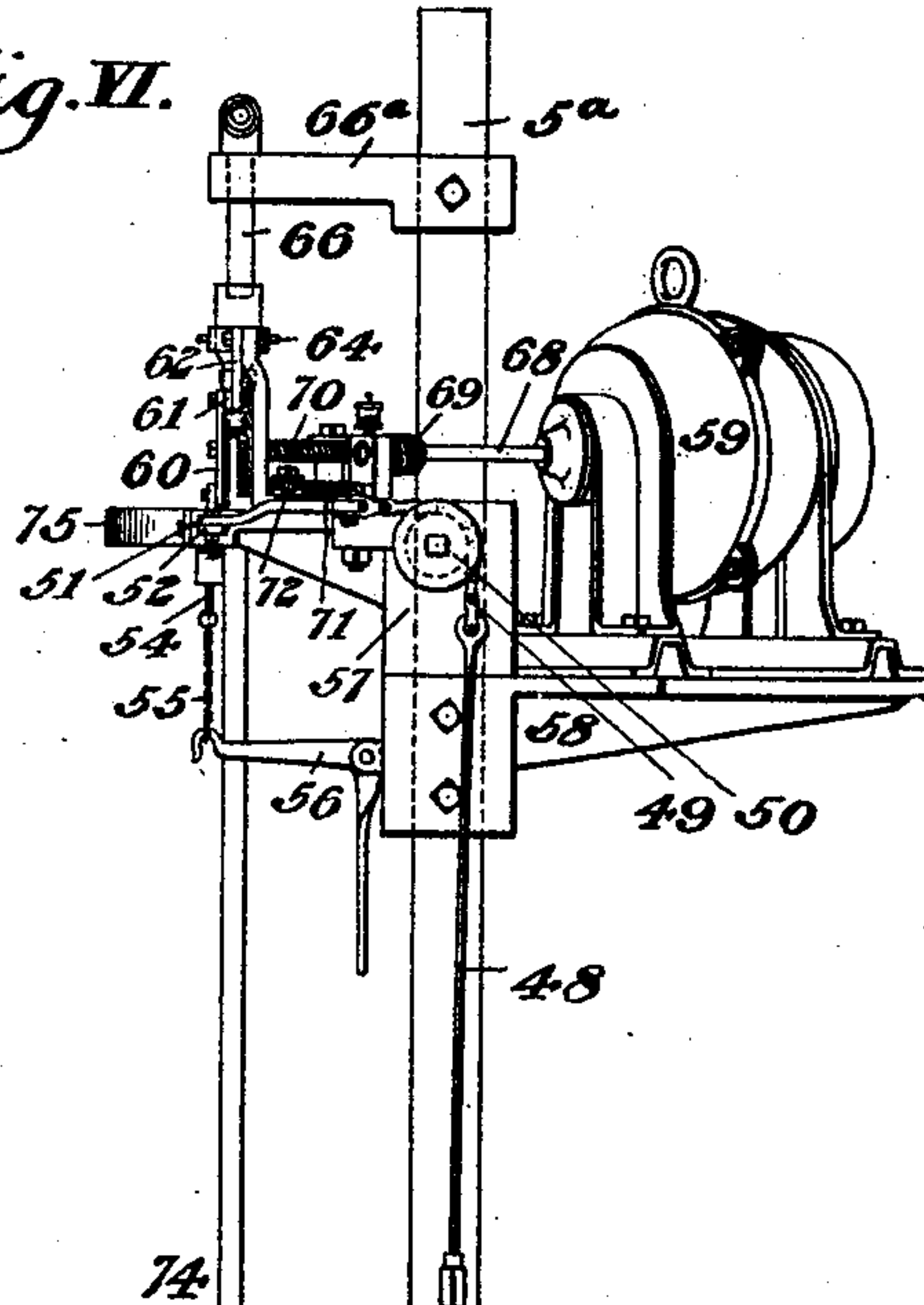


Fig. V.

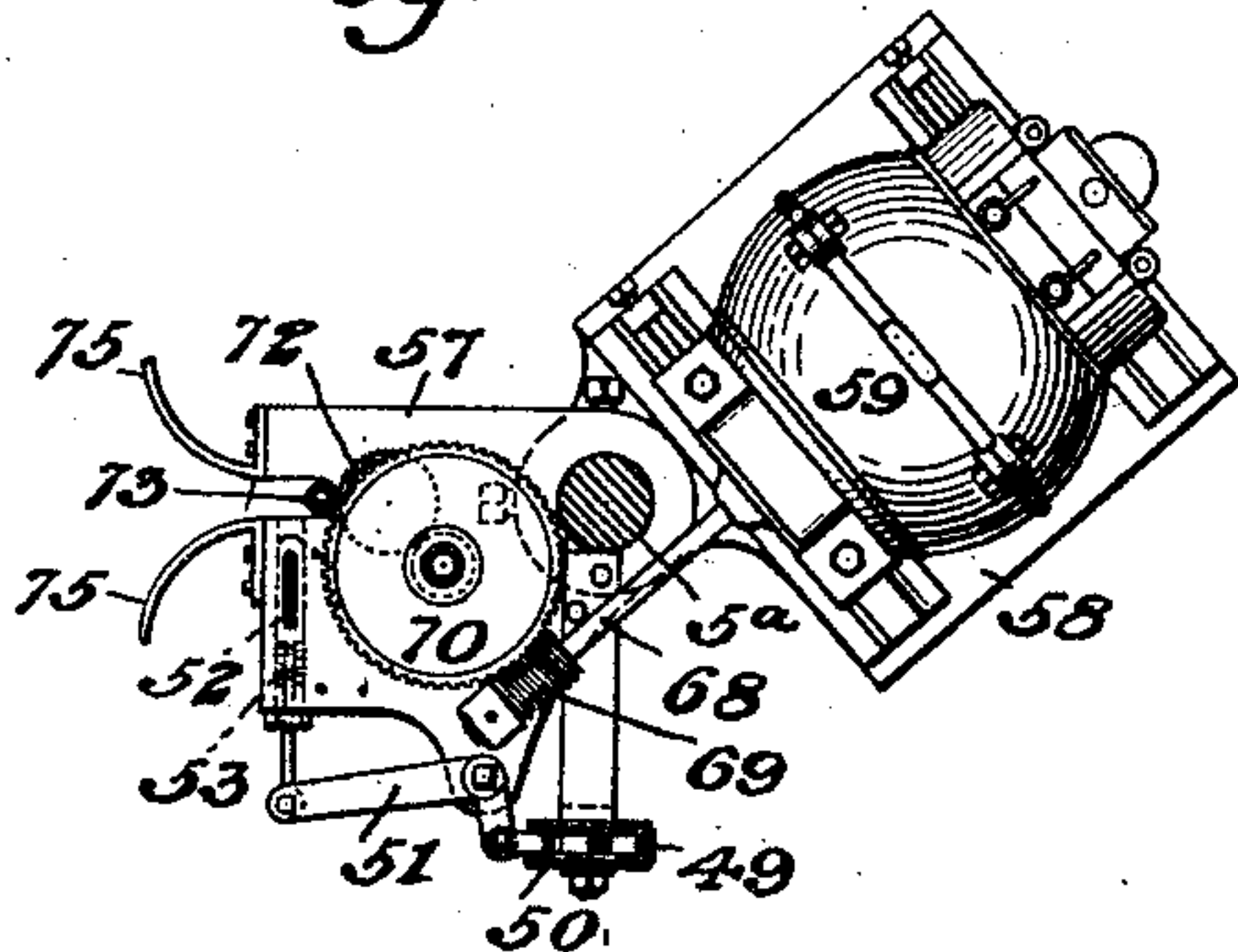
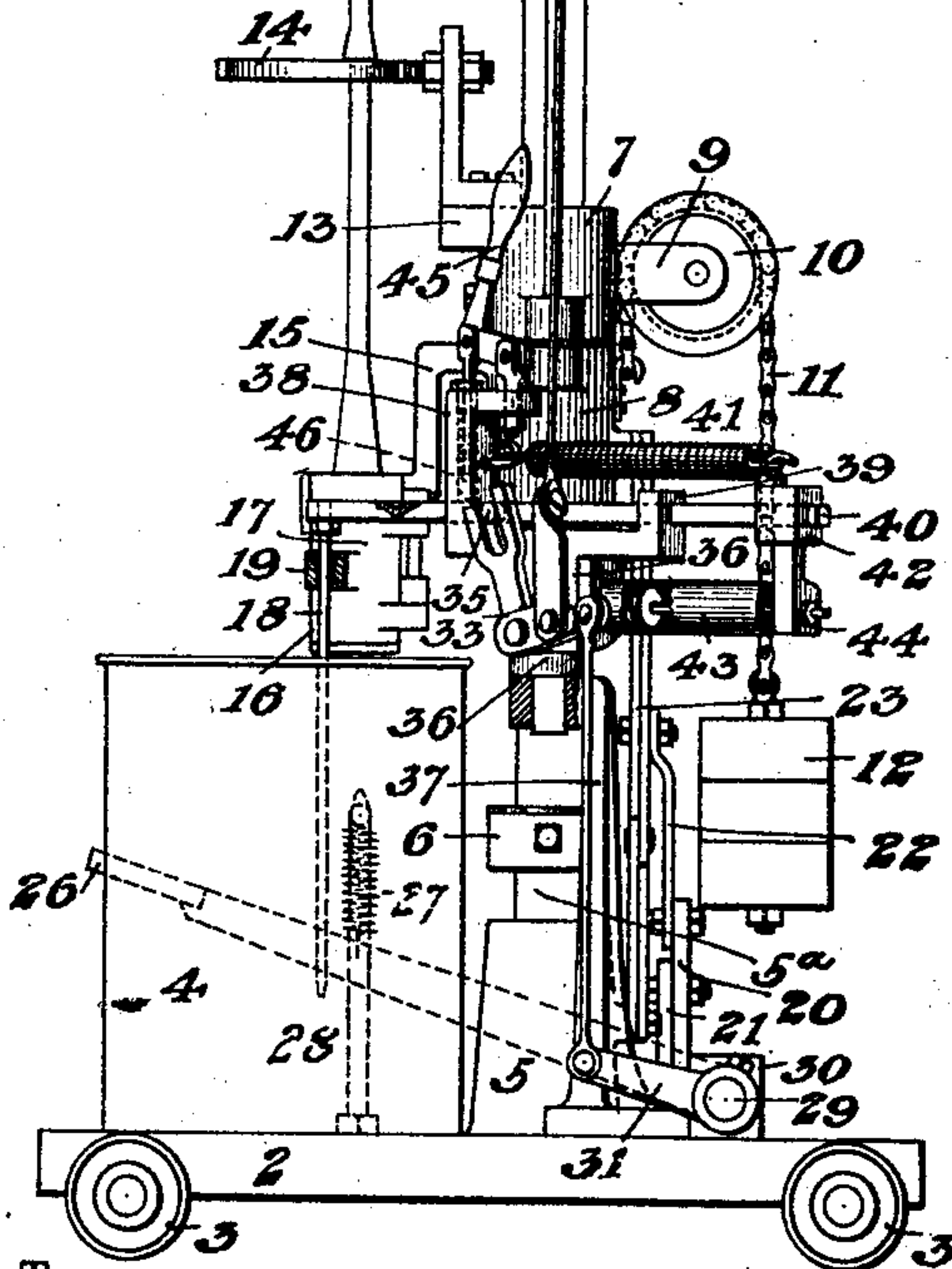


Fig. VII.



WITNESSES

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UNITED STATES PATENT OFFICE.

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GLASS-BLOWING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 765,451, dated July 19, 1904.

Application filed September 4, 1900. Serial No. 28,928. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM F. ALTENBAUGH, a resident of Tiffin, county of Seneca, and State of Ohio, and LENDELL A. CONNER, Jr., a resident of Pittsburg, county of Allegheny, and State of Pennsylvania, citizens of the United States, have invented or discovered new and useful Improvements in Glass-Blowing Machinery, of which the following is a specification, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure I is a side view of the blowing-machine with the mold elevated, but open, blowpipe inserted, but top bolt for blowpipe not yet snapped into retaining position. Fig. II is a front view of the blowing-machine with the parts in the same position as shown in Fig. I. Fig. III is an enlarged front view, partly in section, of the upper part of the machine with top bolt in position for retaining blowpipe in place and blowing-head down in engagement with blowpipe. Fig. IV is a horizontal section on line IV IV of Fig. I, showing treadles, mold-supporting slide, mold-closing spring, and rock-shaft operating mold-opening devices, which shaft also operates retracting mechanism for retaining top bolt for blowpipe. Fig. V is a top plan of the parts of the blowing-machine in the same relative position as shown in Figs. I and II, with under parts omitted for clearness. Fig. VI is a side elevation of the machine with the mold elevated and closed and top bolt in retaining position against the upper end of the blowpipe. Fig. VII is a sectional plan view on line VII VII of Fig. III.

The purpose of our invention, generally stated, is the construction of mechanism for the manufacture of hollow glass articles in paste-molds.

The particular combinations of machinery by which we accomplish our operations are specifically set forth in the subjoined claims and explained in the present specification.

In the several views, which make part of this specification, 2 is a portable platform upon wheels 3 3. Mounted upon this platform is a

tank 4, filled with a cooling liquid and into which the mold descends in the intervals between blowing.

5 is a pedestal, mounted also upon the platform 2 at one side of the tank 4. Supported in said pedestal 5 is the upright steel column 5^a. Column 5^a is provided at suitably-adjusted distances with the lower collar 6 and the upper collar 7, which serve to limit the throw of the sliding mold-supporting sleeve 8. Collar 7 has one side lug 9, which acts as a bearing for sheave 10, over which passes chain 11, attached at one end to the mold-supporting sleeve 8 and at the other end to the counterpoise-weight 12. On the other side of collar 7 is the arm 13, which supports the lower pair of blowpipe-guides 14.

Mold-supporting sleeve 8 has an arm 15 connecting the sleeve to one half, 16, of the paste-mold. The other half, 17, of the paste-mold is hinged, as usual, to the first half and is opened and closed by the mechanism herein-after described.

The mold in its rise and fall is guided by a pin 18 on mold-slide 8. The pin 18, projecting downwardly from a portion of the mold-opening mechanism hereinafter described, passes through an eye 19, formed in a lug on said mold.

The mold is raised by means of a treadle 20, intermediately pivoted to post 21, mounted on platform 2, and pivotally connected at its inner end with a link 22, pivotally connected to lazy-tongs 23, which in turn are pivotally connected with the mold-supporting sleeve 8. The mold is automatically locked in elevated position by the spring-dog 24, attached to collar 7. By tapping handle 25 the dog 24 is released, and the mold slowly descends against the action of the counterpoise 12.

One half of the mold is opened and closed by the following mechanism: 26 is a treadle working against the spring 27, hung from post 28. Treadle 26 is connected with a horizontal rock-shaft 29, carried in suitable bearings 30 30 on the platform 2. On one end of said rock-shaft is a crank 31, connected by link 32 to a bell-crank lever 33. The long

arm of the bell-crank 33 has an eye 34 moving on a stud 35, projecting from the mold opening and closing bar.

The mold opening and closing mechanism 5 is supported upon the piece 36, swiveled upon pedestal 37. Piece 36 has two guides 38 39, through which slides the mold opening and closing bar 40. Bar 40 is pulled inwardly through the operation of spring 41, connect- 10 ed to block 42 on outer end of bar 40. The mold is prevented from closing too violently by the dash-pot 43, whose piston-rod connects with lug 44 on block 42. The mold is locked 15 in its open position by a dog 46, which engages bar 40, and by throwing handle 45 the dog 46 is operated so as to release the bar 40 and close the mold.

The short arm of bell-crank 33 has the link 47 pivoted thereto, which link makes a loose 20 connection with rod 48, connected to chain 49, passing over sheave 50 and attached to the lever 51, which is fastened to blowpipe-retaining bolt 52, forced forward by spring 53 and locked by spring-actuated dog 54. Dog 25 54 is tripped by chain 55 and bell-crank 56. Bolt 52 slides in a suitable bracket 57 on the column 5^a. This bracket is secured to the column by set-screws. Below this bracket is a bracket 58, fastened by set-screws to said 30 column. Upon said bracket also stands the motor 59. Connected with the bolt 52 is the lever 60, connected by link 61 with bell-crank 62, having eye 63 engaging pin 64 in blowing-head 65. The blowing-head under the action 35 of the bell-crank 62 moves up and down upon pipe 66, which conveys air-pressure to the machine from any suitable source. Pressure can be admitted or cut off by valve 67. Normally this valve is left open while the machine 40 is running. Pipe 66 is sustained by suitable bracket 66^a on column 5^a.

The shaft 68 of the motor 59 is prolonged into a worm 69, which meshes with gear 70. Upon the same shaft with gear 70 is smaller 45 gear 71, meshing with idler 72, which engages with teeth 73 upon the upper end of the blowpipe 74. 75 represents the guides for the blowpipe.

The machine will be operated by two work- 50 men—the blank-blower, hereinafter called the “blower,” and the “turning-out” boy, hereinafter called the “boy.”

The blower takes a suitable gather of glass on a blowpipe 74 and forms an initial cavity 55 therein by blowing and swinging in the usual manner, or the blank may be formed in any other manner. Meantime the boy has stepped upon the treadle 20, raising the open mold to its elevated position, where it is automatically 60 locked by the dog 24, as before described. The blower now approaches with the blank hanging from the end of his blowpipe and inserts the pipe into the pipe-guides 14 and pushes it into its seat at the rear end of said 65 guides. The blower then taps the handle 45,

which unlocks the mold-closing mechanism, and the mold closes through the action of the spring 41, cushioned in its movement by the dash-pot 43. Still holding the blowpipe, the blower taps the upper bell-crank lever 56, 70 which releases the dog on the pipe-retaining bolt 52, which is pushed forward under the action of its spring, and the teeth on the blowpipe are thus held up against the teeth of the idler 73. As the motor 59 is running con- 75 tinuously, the pipe, with attached blank, is now rotated. The inward movement of the bolt 52 simultaneously brings down the blowing-head 65 into relation with the blowpipe, and the blank is thus blown while being ro- 80 tated. The inward movement of the bolt 52 has no effect on the mold opening and closing mechanism, as the intermediate connections being loosely connected to each other merely 85 assume an angular position to each other and exert no pull. The blower now leaves for another blank. After the piece is blown the boy steps on the mold-opening treadle 26, opening the mold by the mechanism previously 90 described, and the mold is locked in open position by the spring-dog 46. The action of the bell-crank 33 in opening the mold simultaneously draws back the retaining-bolt 52 and lifts the blowing-head 65. The boy now 95 removes the blowpipe with the blown article hanging attached thereto. Before stepping from the machine the boy trips the mold-lock 24 by tapping the handle 25, and the mold sinks by gravity into the water. The boy 100 then cracks off the article and cleans his pipe.

Having described our invention, we claim—

1. In paste-mold blowing mechanism, the combination of a mold, personally-operated means for lifting and opening the mold, self- 105 operating means for closing the mold and separate personally-operated means for controlling said self-operating means.

2. In paste-mold blowing mechanism, the combination of a mold, personally-operated 110 means for lifting said mold, automatic means for locking the mold in elevated position and means for controlling the descent of the mold by gravity.

3. In paste-mold blowing mechanism, the combination of a mold, means for lifting said 115 mold, personally-operated means for opening said mold by swinging a movable part thereof from a fixed part thereof and personally-controlled self-operating means for closing said 120 mold.

4. In paste-mold blowing mechanism, the combination of a mold, personally-actuated de- 125 vices for lifting the mold and opening the mold, personally-controlled self-operating mechanical devices for closing the mold and gravity-controlled mechanism for lowering the mold.

5. In paste-mold blowing mechanism the combination of a mold, a standard, a sleeve 130 sliding upon said standard and supporting said

mold, a second standard and mechanism mounted upon said second standard for opening and closing said mold.

5 6. In paste-mold blowing mechanism, the combination of a mold, a swiveling frame, a bar on said frame connected with a movable part of said mold, a spring connected with said bar for closing the mold and means for moving said bar to open the mold.

10 7. In paste-mold blowing mechanism, the combination of a mold, means for lifting, opening and closing said mold and personally-controlled self-operating means for simultaneously locking the blowpipe in operative relation to a rotating mechanism and connect-
15 ing the blowpipe with a source of compressed air.

20 8. In paste-mold blowing mechanism, the combination of a mold, personally-operated means for lifting the mold and personally-controlled means for releasing it from its elevated

position, manually-operated means for opening the mold and personally-controlled self-operating means for closing the mold, personally-controlled self-operating means for 25 locking the blowpipe in operative connection with a motor and connecting the blowpipe with a source of compressed air and manually-operated means for cutting off the supply of air to the blowpipe and unlocking the blow- 30 pipe from the motor.

In testimony whereof we have hereunto set our hands.

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LENDELL A. CONNER, Jr.

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