(No Model.) 5 Sheets—Sheet 1.

E. WILDI.

CAN FILLING MACHINE.

No. 486,746. Patented Nov. 22, 1892.

Fig. I.

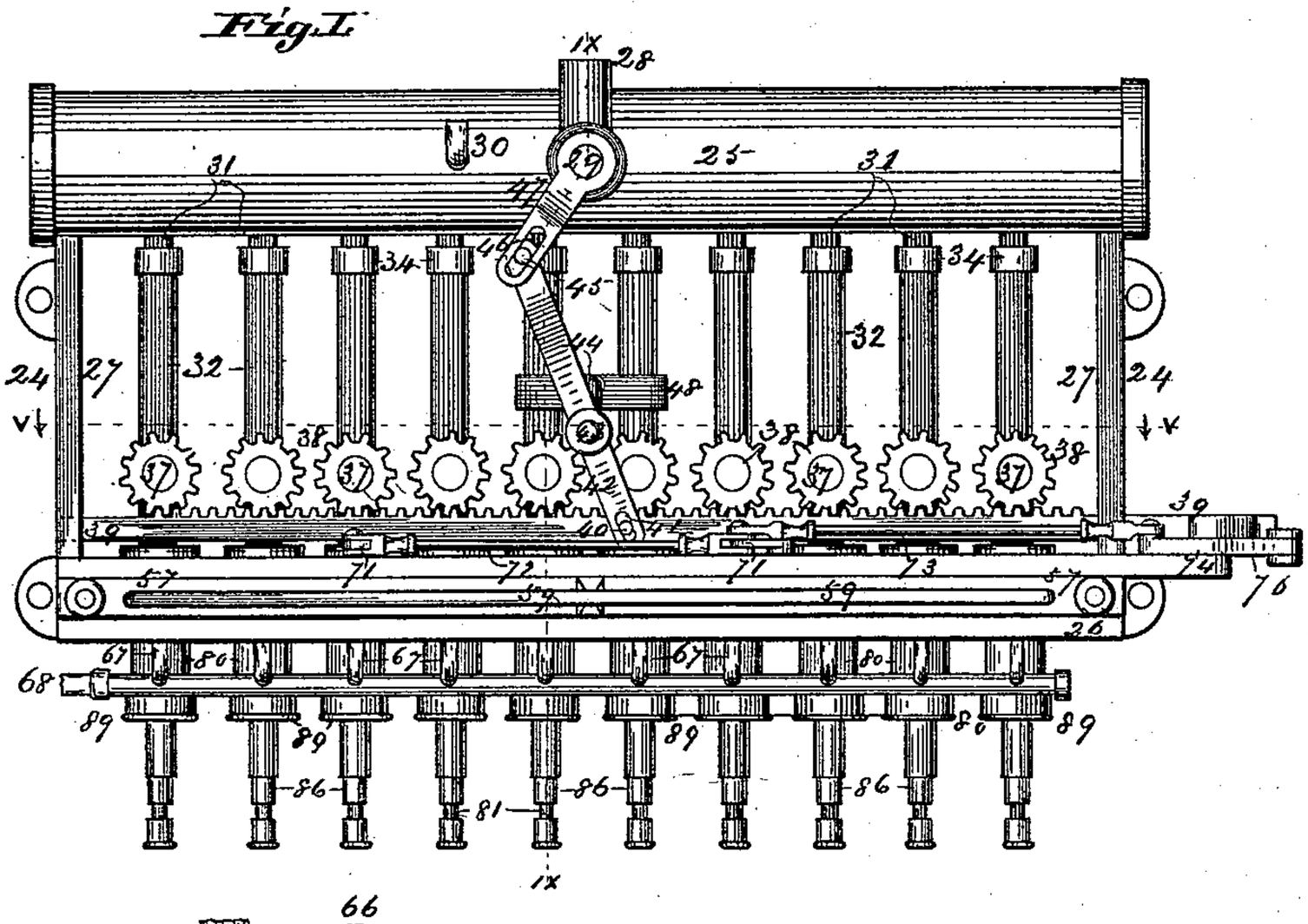
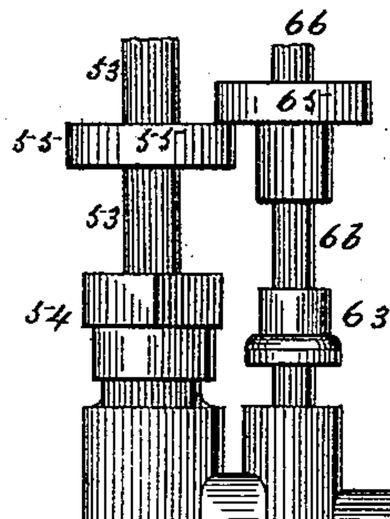


Fig. II.



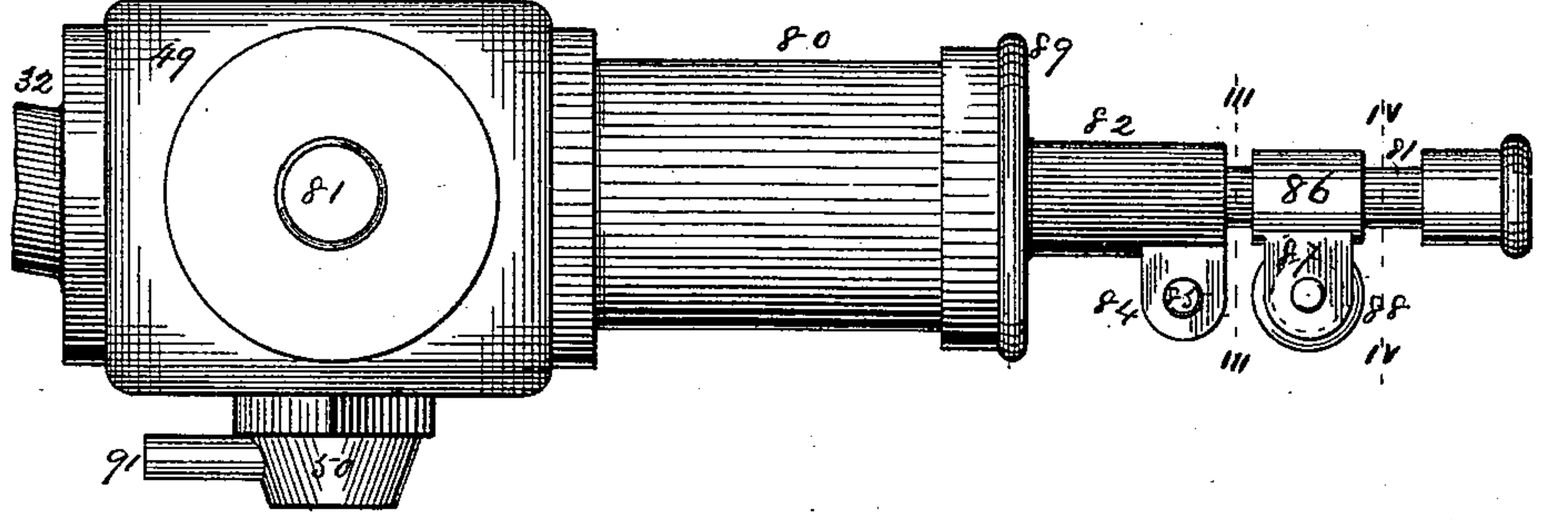


Fig. III.

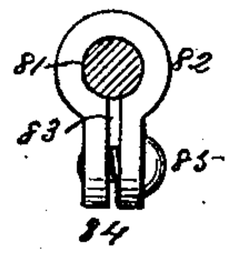


Fig. IV.

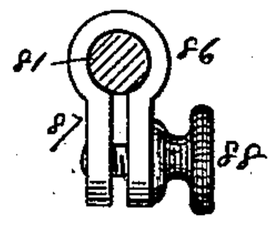


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Fig. V.

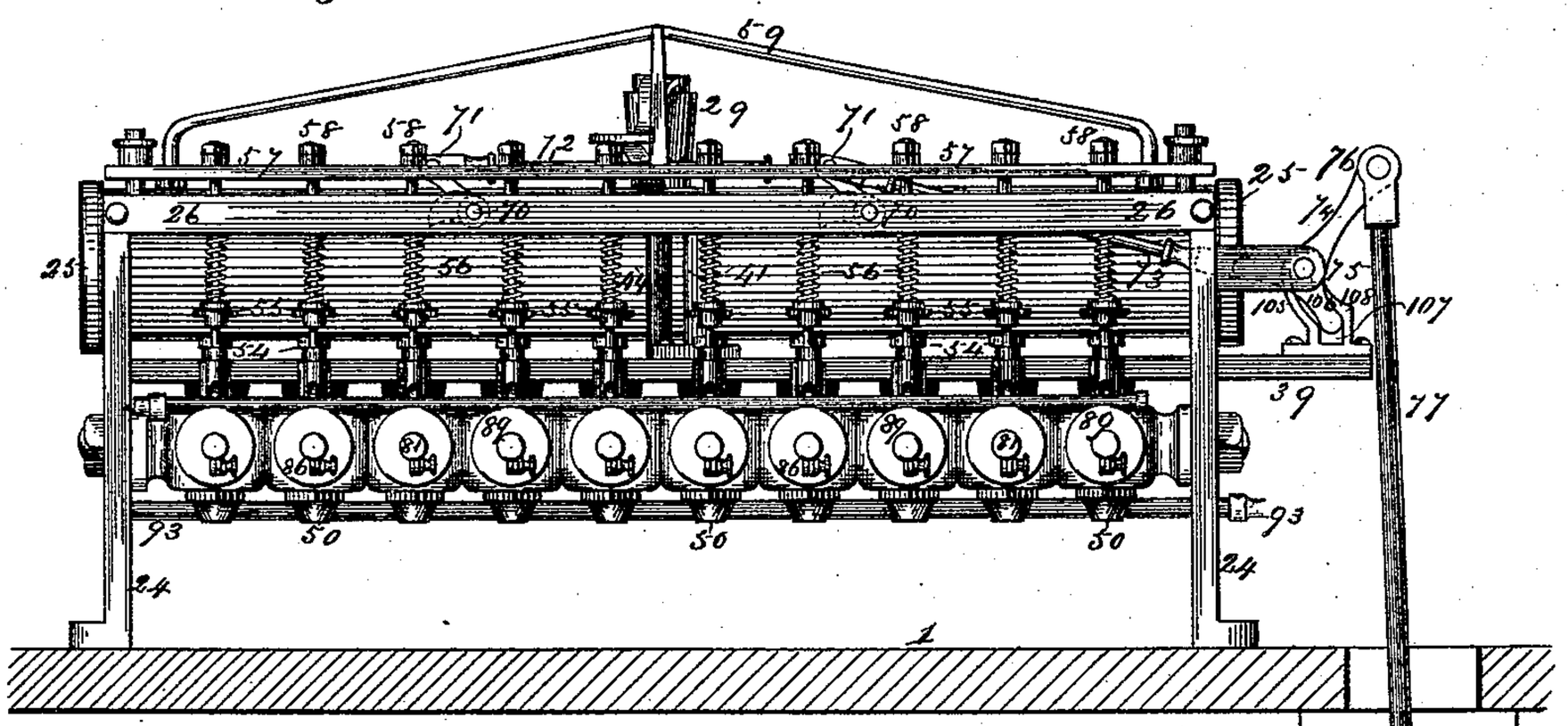

Fig. VI.

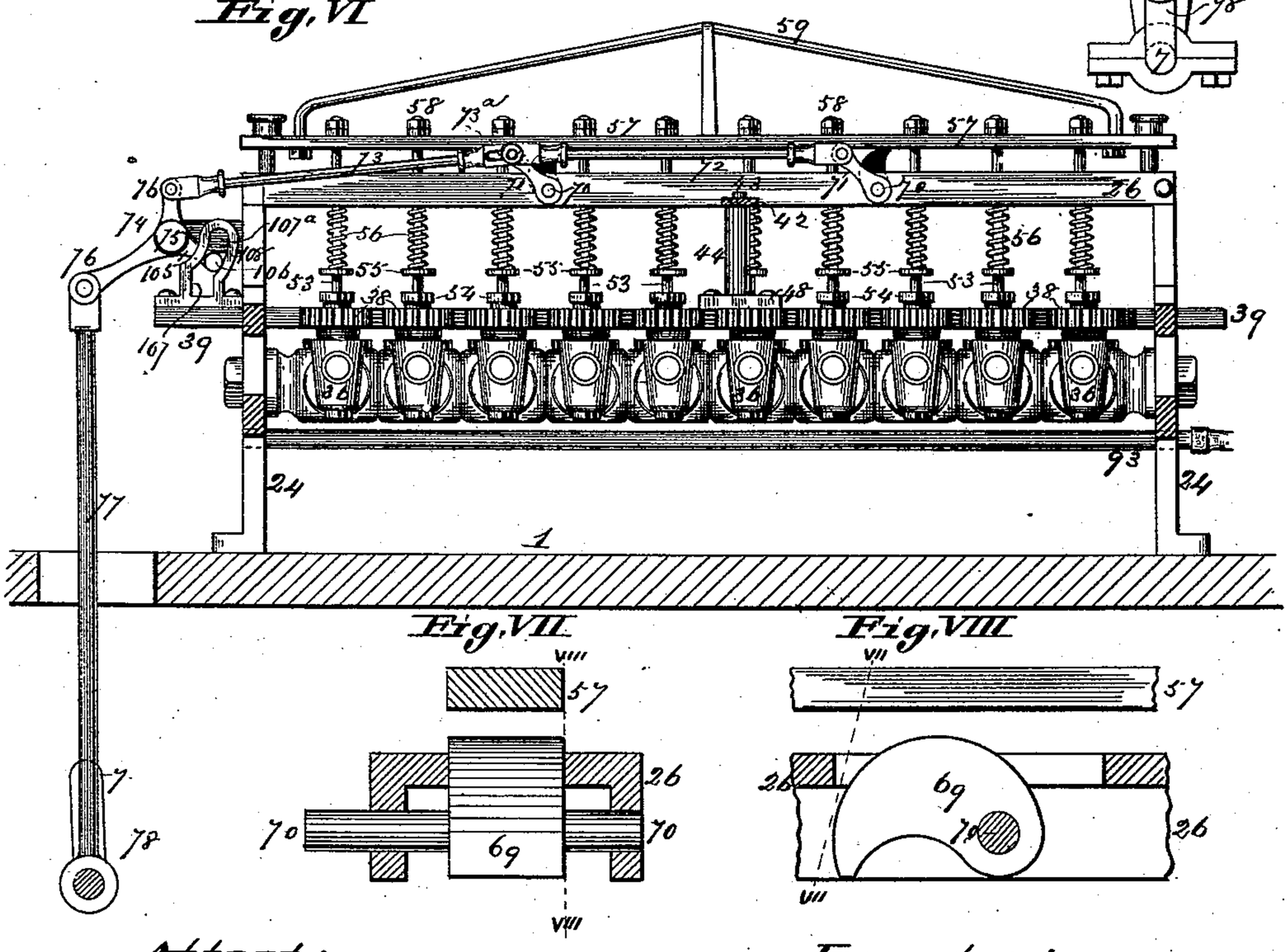

Fig. VII.

Fig. VIII.

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Fig. IX

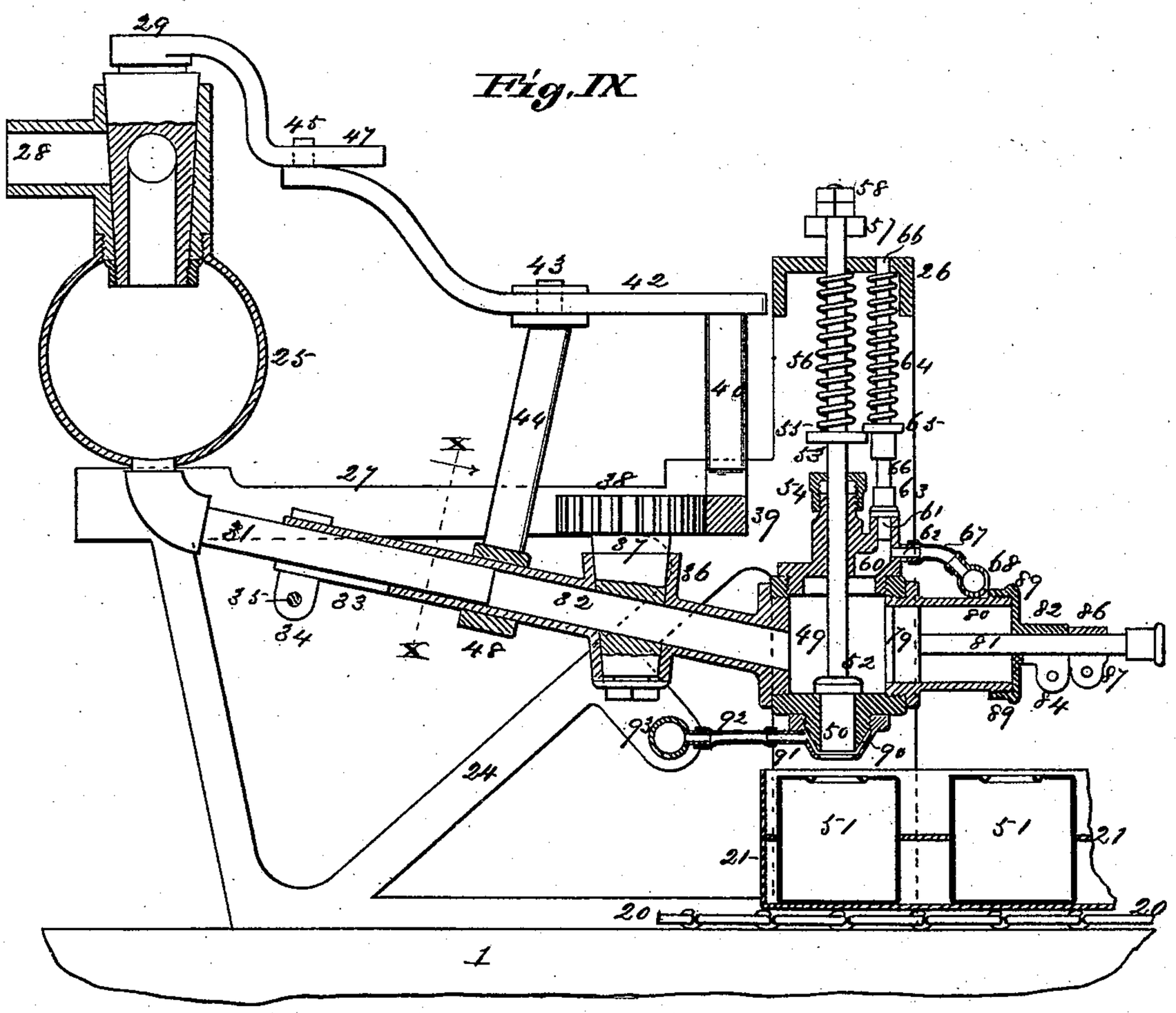

Fig. X.

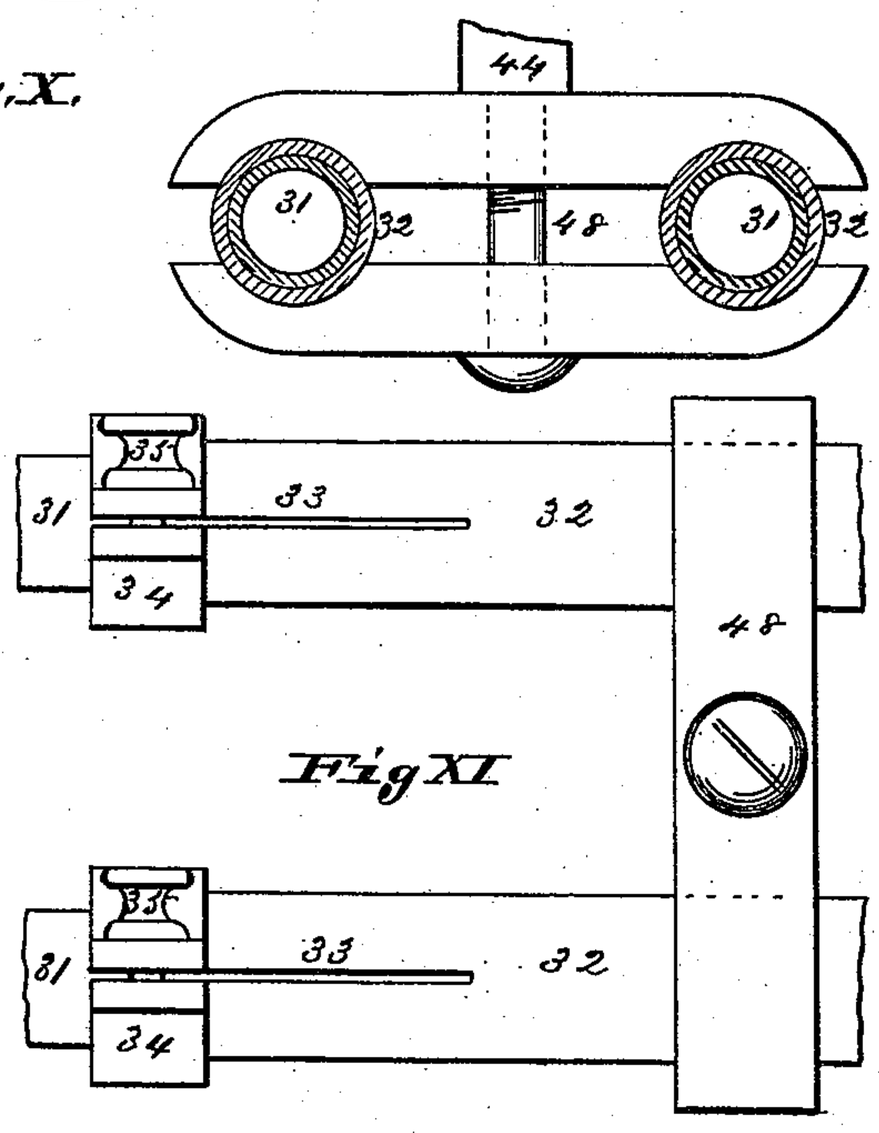

Fig XI

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Fig. XII.

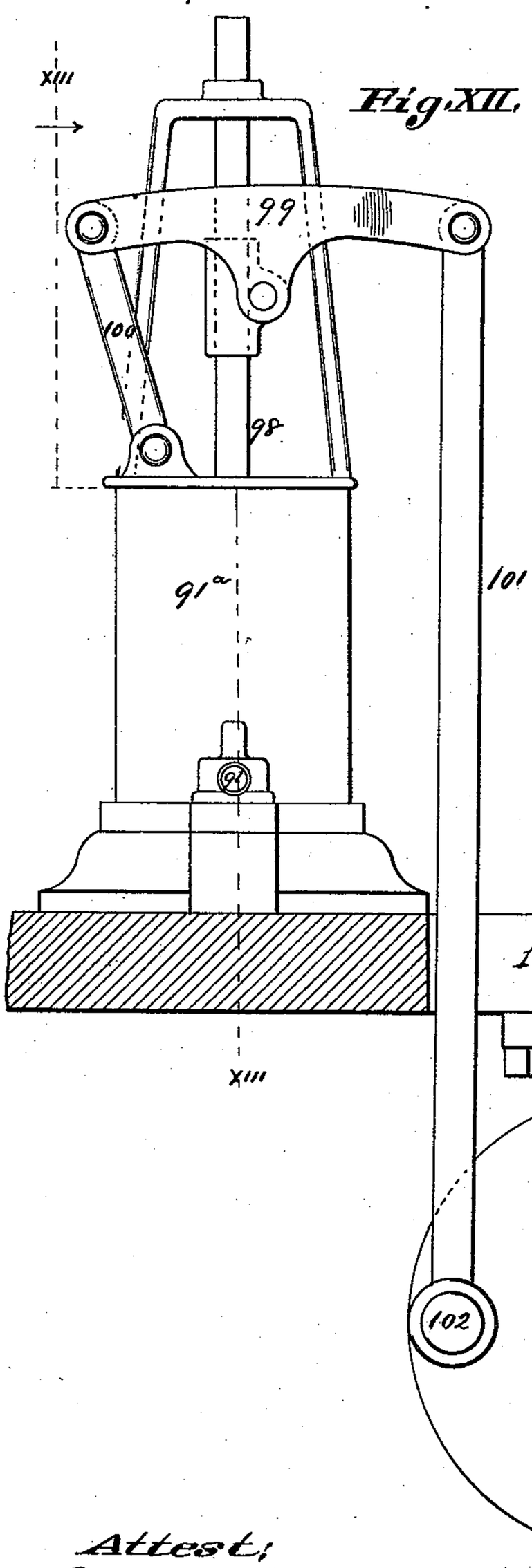

Fig. XIII.

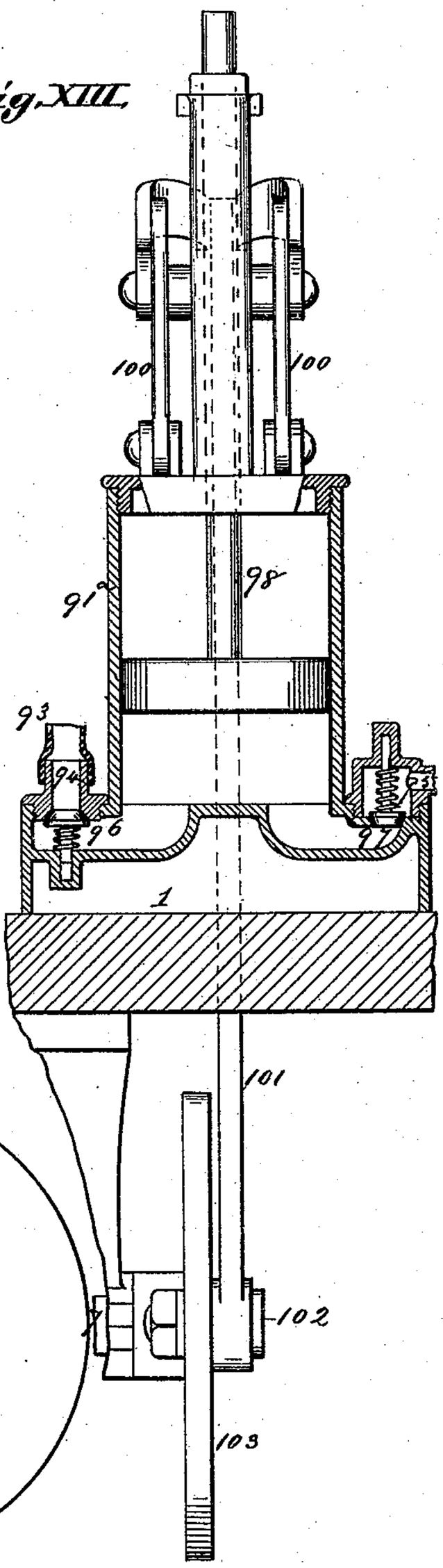

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Fig. XIV.

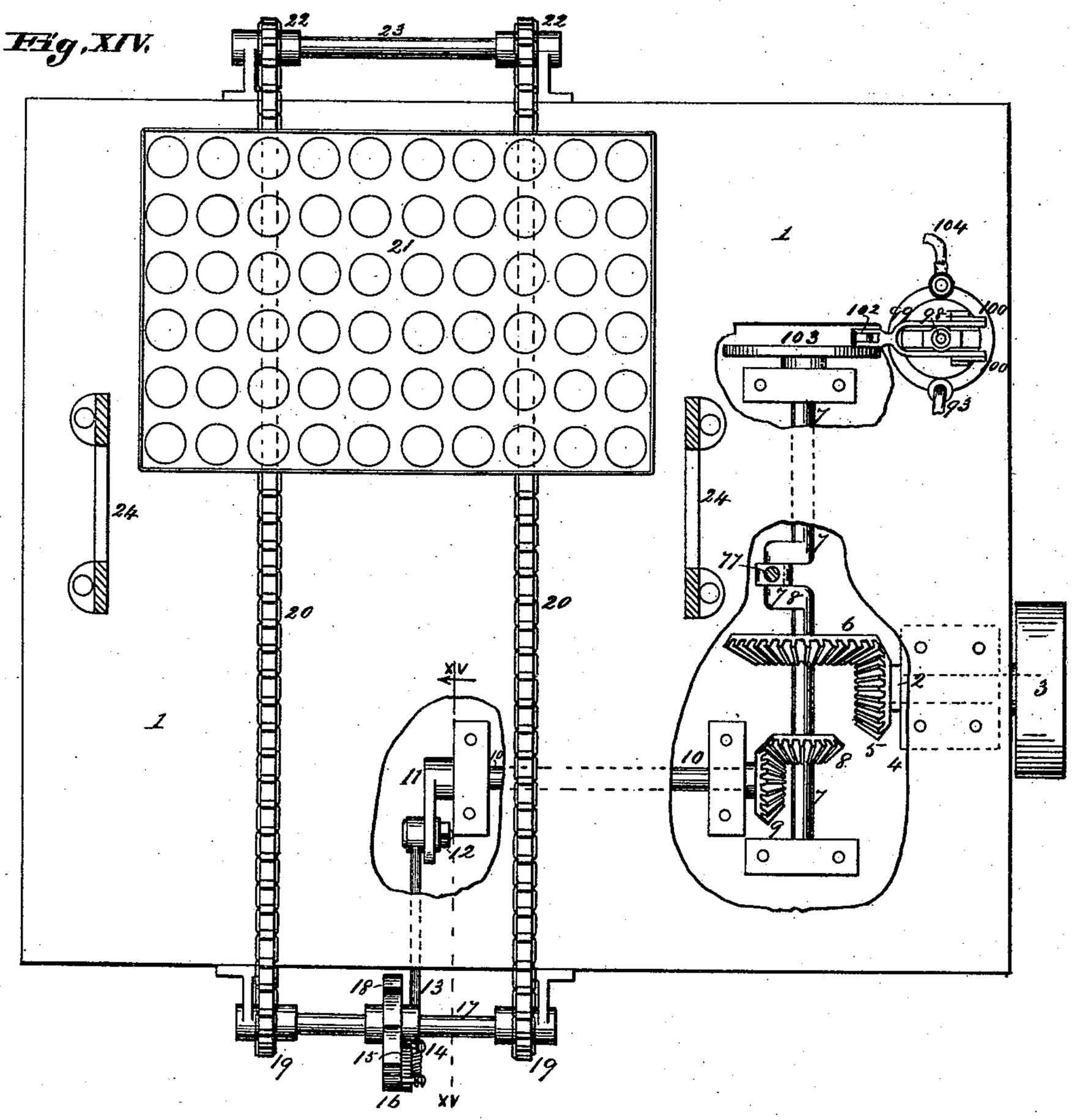
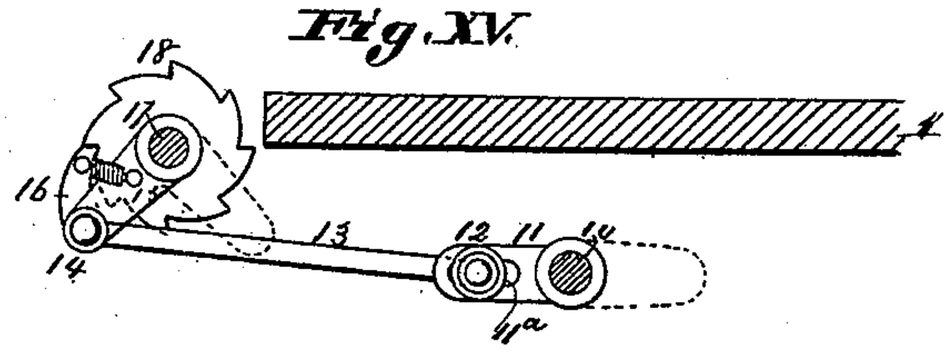


Fig. XV.



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UNITED STATES PATENT OFFICE.

EMIL WILDI, OF HIGHLAND, ILLINOIS.

CAN-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 486,746, dated November 22, 1892.

Application filed February 5, 1891. Serial No. 380,343. (No model.)

To all whom it may concern:

Be it known that I, EMIL WILDI, of Highland, in the county of Madison and State of Illinois, have invented a certain new and useful Improvement in Can-Filling Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This is an improvement on the invention described in Letters Patent of the United States granted to me March 25, 1890, and numbered 424,394, the novel features being hereinafter fully described, and set forth in the claims.

Figure I is a detail top view of the machine. Fig. II is an enlarged side view of the measuring-receptacles, &c. Fig. III is a vertical transverse section taken at III III, Fig. II. Fig. IV is a vertical transverse section taken at IV IV, Fig. II. Fig. V is a front elevation with the table in section. Fig. VI is a transverse vertical section taken at VI VI, Fig. I. Fig. VII is a transverse section taken at VII VII, Fig. VIII, showing a lifting-can of the valve-bar. Fig. VIII is a vertical longitudinal section taken at VIII VIII, Fig. VII. Fig. IX is a vertical longitudinal section taken at IX IX, Fig. I. Fig. X is an enlarged vertical transverse section taken at X X, Fig. IX. Fig. XI is an enlarged detail bottom view of two of the telescoped feed-pipes and the clamps of the fulcrum-post of valve-lever. Fig. XII is a side elevation of the suction-pump by which the drip is removed from the discharge-nozzles. Fig. XIII is a vertical longitudinal section taken at XIII XIII, Fig. XII. Fig. XIV is a top view of the table, parts being broken out to show parts beneath and the standards being shown in horizontal section. Fig. XV is a vertical longitudinal section taken at XV XV, Fig. XIV.

1 is the horizontal table, which may be of any dimensions or material and supported in any manner.

2 is the drive-shaft, having a drive-pulley 3 and having bearing at 4 beneath the table. (See Fig. XIV.) The drive-shaft carries a miter-wheel 5 that engages a miter-wheel 6 upon the crank-shaft 7, which has, also, bearing beneath the table.

8 is a miter-wheel upon the crank-shaft 7, which engages a miter-wheel 9 upon another crank-shaft 10 beneath the table.

11 is a crank-arm slotted longitudinally at 11^d.

12 is a wrist-pin fixed in the slot by a nut and connected by a rod 13 with a pin 14 upon an oscillating arm 15, to which is hinged a spring-pawl 16″. The arm oscillates on a shaft 17, carrying a ratchet-wheel 18 that is fixed to the shaft and with whose ratchet-teeth the pawl engages. The pawl is drawn toward the ratchet-wheel by a spring 16^a. The arm 15 is longer than the arm 10, so that the rotation of the arm 10 causes the oscillation of the arm 15, and the consequent intermittent motion of the shaft 17. The shaft 17 has fast upon it two sprocket or chain gear-wheels 19, around which are carried the endless feed-chains 20, upon which are placed the trays 21, in which the cans are set and carried beneath the nozzle through which the cans are filled. The feed-chains 20 pass over wheels 22 on a shaft 23 at the other end of the table, so as to keep them stretched.

24 are standards fixed to the table and supporting the closed feed-vessel 25. The standards are connected by this feed-vessel and also by a transverse channel-bar 26, and have longitudinal bars 27. (See Figs. I and IX.)

28 is a supply-pipe leading to the vessel 25 from a reservoir. (Not shown.)

29 is a cock in the pipe 28, which is automatically closed while the contents of the vessel is being discharged by means that will be described hereinafter.

30 is an air-pipe extending upward from the top of the vessel 25, allowing the escape and entrance of air as the vessel is being filled and emptied.

31 are pipe-sections extending from the bottom of the vessel 25, and which are telescoped in the upper ends of the inclined pipes 32, the latter being slotted lengthwise upon one side, as seen at 33, and compressed upon the sections 31 by clamps 34, tightened by screws 35. The purpose of this construction is to allow the parts to be readily disconnected for purpose of washing and scalding. Each of the pipes 32 has in it a cock 36, whose plug 37 carries a spin-wheel 38. The spin-wheels of all the cocks engage the teeth of a cog rack-bar 39, sliding endwise in suitable bearings to

open and close the cocks 36 simultaneously with each other and with the opposite movement of the cock 29, so that as the cocks 36 open the cock 29 closes, and vice versa. To accomplish this movement of the cocks the bar 39 has a standing pin 40 that engages in the slot 41 of a lever 42 fulcrumed at 43 upon a post 44. The other end of the lever has a pin or stud 45 that engages in the slot 46 of an arm 47 that is fast to the plug of the cock 29. (See Fig. I.) The post 44 is secured to two of the pipes 32 by a screw-clamp 48. (See Figs. IX, X, and XI.)

Each pipe 32 discharges into a separate measuring-chamber 49, having at its bottom the nozzel 50, through which the liquid is discharged into the cans 51. (See Fig. IX.)

52 is a valve closing the nozzle. The stem 53 of the valve passes through a stuffing-box 54 and carries above the stuffing-box a collar 55, upon which bears the lower end of a spiral spring 56, surrounding the stem, and whose upper end bears against the under side of the bar 26. The stems 53 of all the valves 52 pass through a lifting-bar 57 and carry nuts 58 bearing upon the top of the bar, so that when the bar is raised all the valves 52 are raised with it. The bar 57 is stiffened by a rod 59 connected to it at the ends and passing over one or more struts.

60 is a duct at the top of the measuring-chamber, ending in an air-duct 61 and a liquid-duct 62. The duct 61 is closed by a valve 63 held down upon its seat by a spring 64, whose lower end bears upon a collar 65, fixed to the valve-stem 66, and whose upper end bears against the bottom of bar 26. The liquid-duct 62 is connected by a piece 67 of removable hose with a discharge-pipe 68, through which escapes any surplus liquid that overflows from the measuring-chamber. The air-duct is in communication when open with the atmosphere and admits air to take the place of the liquid running from the measuring-chamber through the nozzle 50. To this end the collar 65 projects over the edge of the collar 55, so that the valve 52 in ascending carries with it the valve 63. (See Figs. II and IX.) The bar 57 is lifted by cams 69 upon rock-shafts 70, having bearing in the bar 26. The rock-shafts 70 have arms 71 connected together by rod 72 and connected by rod 73 to one arm of a T-lever 74, fulcrumed to the fixed frame at 75. 76 is an arm of the lever 74, connected by the rod 77 to the crank 78 of the shaft 7, so that the rotation of the shaft 7 moves these parts from the position shown in Figs. V and IX to that shown in Fig. VI, the valves 52 and 63 being closed in the former figures and open in the latter figure. The rod 73 is slotted at its connection with the wrist of the arm 71 (see 73^a, Fig. VI) to give some lost motion at that point.

The capacity of the measure 49 is adjusted, as required, by much the same way as described in my former patent, No. 424,394—namely, by a piston 79 within a cylinder 80, open at the inner end to the chamber 49, the part of the cylinder at the inner side of the piston forming part of the measure-chamber. The stem 81 of the piston passes through a contractile neck 82, the neck being slotted longitudinally at 83 and having lugs 84 at each side of the slot through which passes a contracting screw or bolt 85, that serves to lock the piston in position. (See Figs. II, III, and IV.) 86 is an open collar upon the stem 81, and which has lugs 87 each side of the slot in which engages a screw or bolt 88, by which the collar is contracted upon the stem to lock it fast thereon, the purpose of this collar being to limit the inward movement of the piston. The piston is screwed in position and its head 89 is screwed on the body of the cyinder, so that the parts may be removed for the purpose of cleaning. There is a provision for sucking the drip from the nozzle after each discharge to prevent the liquid dropping from the nozzle. This provision is formed in my former patent, No. 424,394; but the construction of the suction device varies in the two cases. The nozzle consists of two parts with an annular space 90 between them. 91 is a suction-pipe communicating with the space 90 and connected by a piece 92 of rubber hose with a pipe 93, that communicates with a vacuum-pump 91^a. (See Figs. II, V, IX, XIII, and XIV.) The pipe 93 communicates with the induction-port 94 of the vacuum or suction pump, and is discharged through the eduction-port 95, the ports having check-valves 96 and 97″. The pump piston-rod 98 is connected to a lever 99, fulcrumed on a link or links 100, which fixed end is attached to the pump-cylinder. The free end of the lever 99 is connected by a rod 101 to a wrist-pin 102 upon a disk 103 upon the crank-shaft 7.

104 is a discharge-pipe connected with the eduction-port 95.

The T-lever has an arm 105, having a stud 106 that works in a slot 107 of a standard 108, upon the rack-bar 39, so as to cause the movement of the rack-bar and opening and closing of the cocks 36 at the proper time. The upper part 107^a of the slot 107 is concentric with the fulcrum 75, so that while the stud 106 is working in this part of the slot the rack-bar 39 remains at rest, the rack-bar only moving when the arm 105 is near its lower position and the stud in the vertical part of the slot. It will be seen that the cocks 36 are opened and closed quickly and have periods of rest in both positions. (See Figs. V and VI.)

The operation of the apparatus is as follows: A tray is placed on the endless chains in such position that a row of cans is beneath the nozzles. (See Fig. IX.) The apparatus being in motion, the valves 52 and 63 are opened and the contents of the measures 49 flow into the cans, the air entering the measures through the duct 61 as the liquid flows out. The valves 52 and 63 now close and the drip is sucked from the nozzle chamber or space 90. The

cock 29 closes and the cocks 36 open and the liquid in the cylinder 25 fills the measures 49. At the same time the endless chains 20 have been moved and a fresh line of cans are brought beneath the nozzles.

I claim as my invention—

1. The combination, in a machine for filling cans, of an endless carrier adapted to support a number of cans to be filled and a number of measures provided with nozzles and discharge-valves, whereby a row of cans is simultaneously filled, with means for giving alternating movement to the endless carrier and valves, the same comprising a pawl-and-ratchet mechanism for revolving the carrier, a lifting device for simultaneously operating said valves, power mechanism and connecting-rods operated by the latter and in turn operating the pawl-and-ratchet mechanism and the lifting device, substantially as described.

2. The combination, in a machine for filling cans, of an endless carrier for the cans and a number of measures provided with nozzles and discharge-valves, with means for giving alternating movement to the endless carrier and valves, the same comprising geared crank-shafts, a pawl-and-ratchet mechanism for revolving the carrier, a lifting device for simultaneously operating said valves, and connecting-rods operated by the cranks of said shafts and in turn operating the pawl-and-ratchet mechanism and the lifting device, substantially as described.

3. The combination, in a machine for filling-cans, of an endless carrier adapted to support a number of cans to be filled and a number of measures provided with nozzles and discharge-valves, with means for giving alternating movement to the endless carrier and valves, the same comprising a lifting-bar connecting the stems of the valves, cams acting upon said lifting-bar, connected rock-shafts carrying the cams, pawl-and-ratchet mechanism for revolving the carrier, a power mechanism, and connecting devices between the power mechanism and pawl-and-ratchet mechanism and between the power mechanism and one of the rock-shafts, substantially as described.

4. The combination, in a can-filling machine, of a vessel 25, with induction-cock 29, the measuring-vessels 49, having reciprocating discharge-valves 52, ducts leading from vessel 25 to the measures, a rotary cock in each of the ducts, said rotary cocks being connected, a lever mechanism operated by the connections on the rotary cocks for opening the induction-cock when the latter are closed, or vice versa, and means, substantially as described, for alternately opening and closing the rotary cocks and valves, substantially as set forth.

5. The combination, in a can-filling machine, of the endless carrier 20, having intermittent movement, the vessel 25, with supply-cock 29, measures 49, ducts leading from the vessel 25 to the measures, cocks 36 in the ducts, discharge-nozzles 50, with drip-chambers 90, valves 52, suction device in connection with the drip-chamber and devices, substantially as described, to accomplish the synchronal movement of the endless carrier, cocks, valves, and suction device, as set forth.

6. The combination, in a can-filling machine, of the row of measures 49, valves 52, with stems connected to a single bar, cams 69, rock-shafts 70, with cams 71, connecting-rods 72 73, lever 74, with means of oscillating the same, and having arm 105, slotted standard 108, rack-bar 39, ducts leading from a supply and cocks 36 in said ducts, with spin-wheels 38, engaging the rack-bar, all constructed and adapted to operate substantially as set forth.

7. The combination, in a can-filling machine, of the vessel 25, measures 49, with ducts leading from vessel 25 to the said measures, cocks 36, spin-wheels 38, rack-bar 39, with slotted standard 108, valves 52, bar 57, connected with the valve-stems 53, cams 69, cam-shafts 70, and lever 74, with arms connected with the standard 108, and arms 71 on the cam-shafts, all constructed and adapted to operate substantially as set forth.

8. The combination, in a can-filling machine, of the vessel 25, supply-cock 29, operating arm and lever 47 42, rack-bar 39, with pin 40, measures 49, duct leading from said vessel to said measures, cocks 36 in the ducts, with spin-wheels 38, valves 52 and 63, bar 57, cams 69 on shafts, carrying-arms 71, rods 72 and 73, lever 74, with arms connected with the rod 73, and with a slotted standard on the rack-bar, all constructed and adapted to operate, substantially as set forth.

EMIL WILDI.

In presence of—
EMANUEL WINTER,
ADOLPH MEYER.