

No. 684,842.

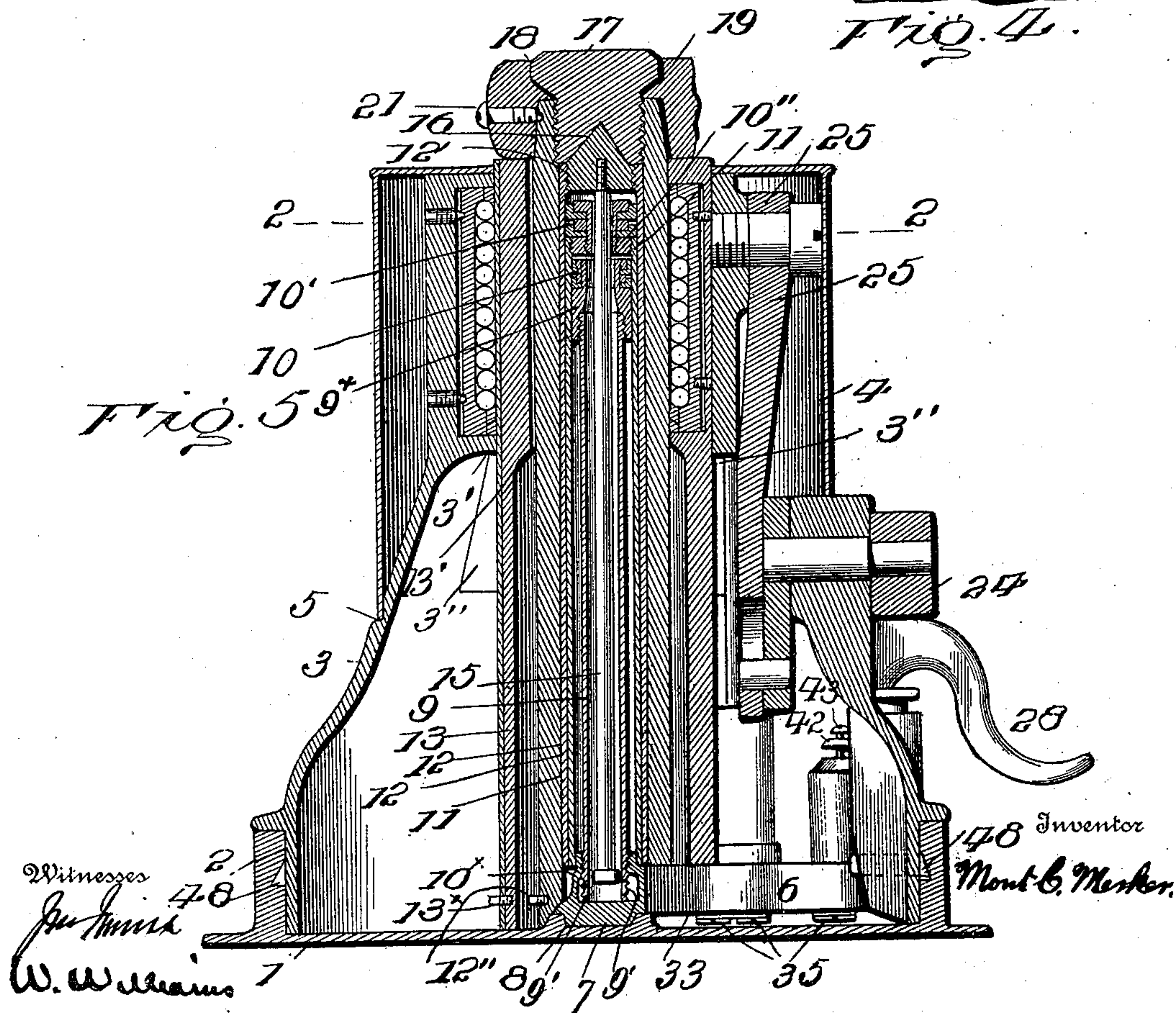
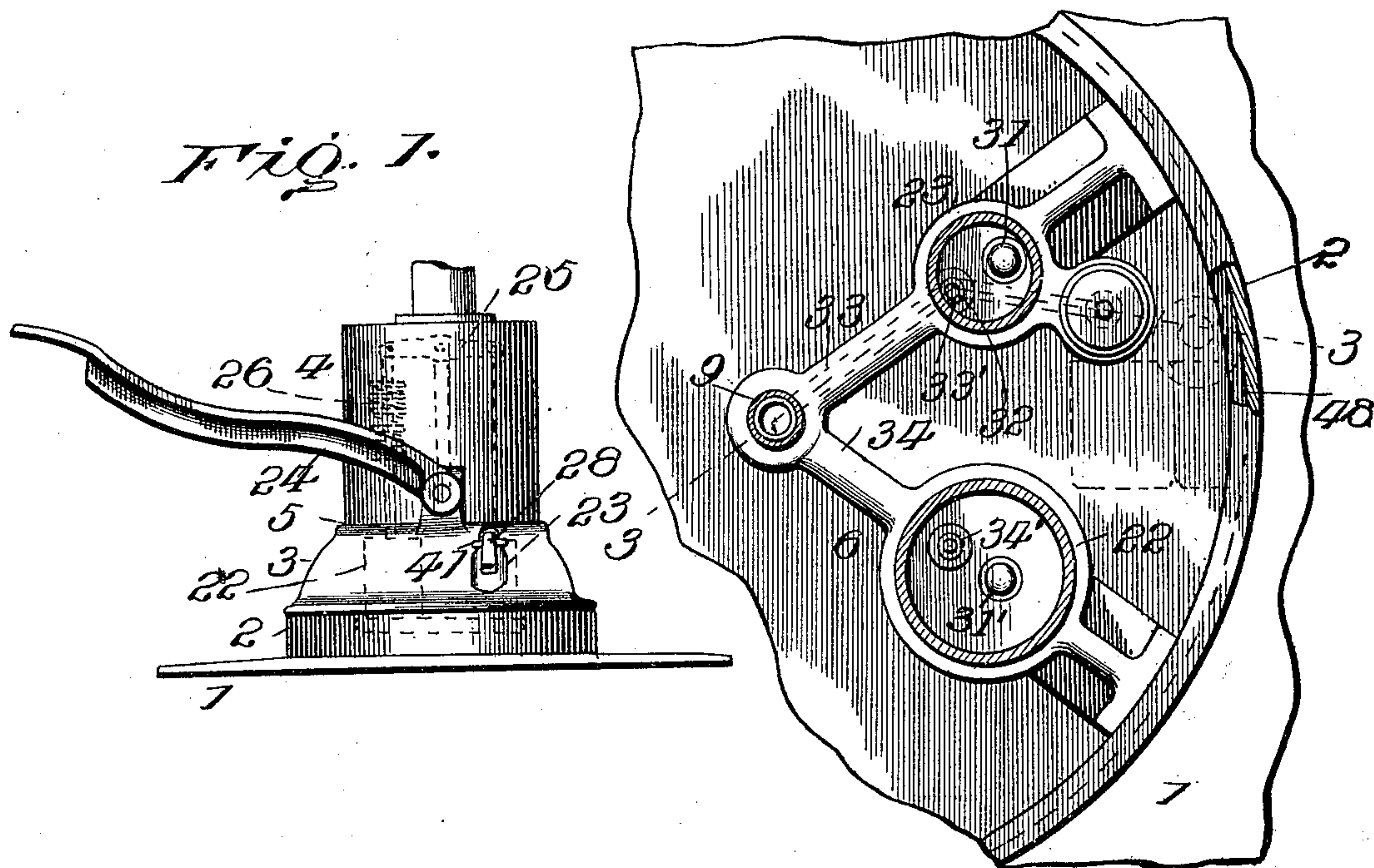
Patented Oct. 22, 1901.

M. C. MERKER.
ELEVATING MECHANISM.

(Application filed Apr. 5, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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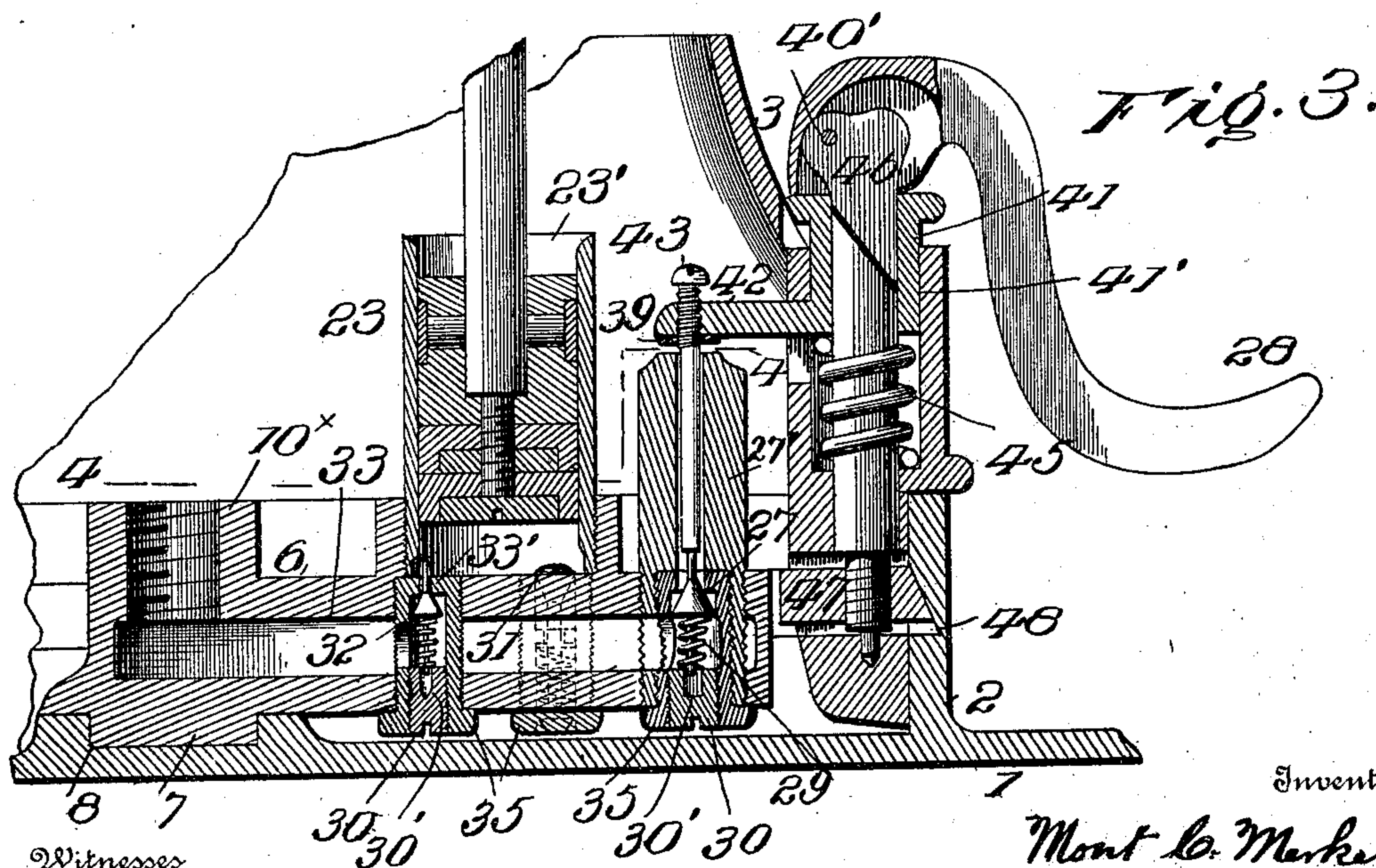
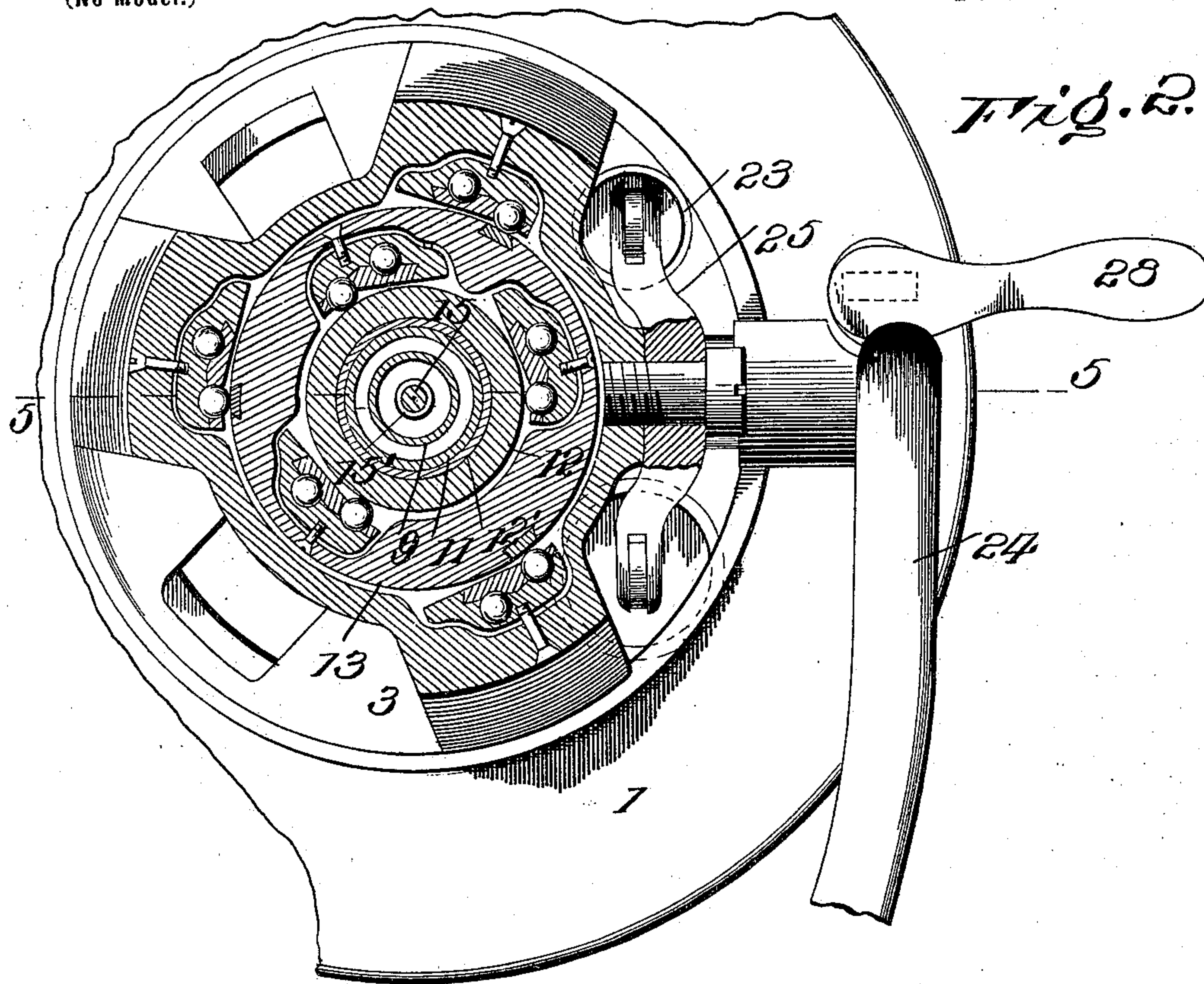
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2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

MONT C. MERKER, OF NEW YORK, N. Y.

ELEVATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 684,842, dated October 22, 1901.

Application filed April 5, 1899. Serial No. 711,856. (No model.)

To all whom it may concern:

Be it known that I, MONT C. MERKER, a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Elevating Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to means for supporting, elevating, and lowering chair-seats and other loads; and its objects are to increase the economy, efficiency, and controllability of such devices.

The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a partial elevation. Fig. 2 is a section on line 2 2 of Fig. 5. Fig. 3 is a partial enlarged section on line 3 3 of Fig. 4. Fig. 4 is a partial section on line 4 4 of Fig. 3. Fig. 5 is a central section on line 5 5 of Fig. 2.

Numeral 1 denotes a base comprising a vertical non-rotatable pedestal or base flange 2, which constitutes, with the base-bottom, a reservoir for oil or other liquids. Upon said flange is rotatably mounted a pedestal or supporting-frame 3, provided with a separate cover 4, supported on a ledge 5.

6 denotes a hollow casting situated in the reservoir and fixed to and rotatable with the pedestal. It has a circular foot 7, stepped in a socket 8, situated centrally in the base. This casting is cored out, as indicated in Figs. 3 and 4, to provide suitable conduits whereby oil or other liquid may be used to raise and lower the seat or other weight. The rotary pedestal, with the casting 6, supports and carries elevating mechanism, including a plunger-tube 9, fixed in the short tubular extension or nipple 10^x.

11, 12, and 13 denote, respectively, inner, central, and outer telescoping tubes. The tube 12 has a lining 12'.

10 is a packing between tubes 9 and 11, and 10' a packing between the lining of tube 12 and tube 11.

15 denotes a fluid-displacer having on its upper end a pointed plug or nut 16, screwed into the lining 12'. This plug is 16 fixed in the lining 12' of tube 12 and bears against

the nut or plug 17, screwed into said tube 12, as shown in Fig. 5.

The oil forced into tube 9 through port or ports 9' fills the space about the displacer and enters tubes 11 and 12 through spaces adjacent the displacer, with the effect to elevate the seat. This oil-displacer has an enlarged part 15', by which it is adapted to engage a ring 10'', fixed in tube 11, whereby said tube may be drawn up by the displacer when the latter is elevated by fluid-pressure under the plug or nut 16.

9^x is a packing-holding ring screwed to tube 9 and forming a continuation thereof. It has an interior opening that permits the free passage of the oil-displacer foot 15'. There is free passage contiguous the displacer for oil or other fluid, so that pressure initially acts directly upon the head of the outer tube 12. The packing 9^x has an opening sufficient for the passage of the displacer-foot; but the packing between said outer tube and the intermediate tube 11, comprising ring 10'', while sufficient for the transmission of fluid-pressure is not sufficient for the passage of the displacer-foot. The operative effect is that pressure against plug 16 forces up the outer tube and the plug pulls up the displacer, whose foot passes freely through the packing between the fixed and intermediate tubes 9 and 11 into engagement with the ring 10'' of the packing between tubes 11 and 12. It is not new to pull up one of a series of telescoping tubes by means of pressure applied to one or more of them, and such construction is disclaimed herein.

The plug 17 is provided with a flaring head to bear on the beveled wall of an opening 18 in the cross-bar 19 of a chair-seat frame.

21 is a screw to fix together the tube 12 and the cross-bar. The tube 12 is provided with a pin 12'' to engage a shoulder 13' to draw up tube 13, and 13^x is a stop to engage a pedestal flange or projection 3' to arrest the ascent of said tube 13.

To raise the seat, oil or other fluid is forced into the fixed tube 9 through an inlet or inlets 9' by pump-pistons working in pump-cylinders 22 and 23. A lever-handle 24 oscillates the two-armed bar 25, to each arm of which is pivoted a piston-rod.

26 (see dotted lines in Fig. 1) denotes a

spring which operates the smaller pump-piston.

The pump construction is not of the present invention and is fully set forth in my Patent No. 605,255, dated June 7, 1898.

Means for suitably opening and closing conduits to lower or to arrest the lowering of the telescoping tubes after they have been raised by the pump to lift the seat or other weight comprise an outlet-valve 27, a lever 28 to open said valve, and a spring 29 to close the same.

The fixed tube 9 communicates with the respective pump-cylinders by means of conduits 33 and 34 and suitably-valved pump-outlets 33' and 34'. 32 denotes the valves for said pump-outlets.

31 and 31' denote the inlets of the respective pumps. (See Figs. 4 and 3.)

Suitable valve-seats for the conduits, where- by the pumps and tube 9 communicate, and also for valve 27, are provided in bushings or thimbles, such as indicated at 35. These extend across the cored-out conduits 33 and 34 and are preferably made of brass and screwed into the casting 6 when expanded by heat, so that upon cooling it is shrunk upon the thimbles, which latter are closed below by screw-plugs 30. These plugs have sockets 30' to receive valve-stems, as shown, and they hold valve-closing springs between themselves and the valves. The valve 27 is seated in a port, whereby the interior of the casting 6 communicates with its exterior—that is, with the reservoir inclosed by flange 2. The valve is yieldingly held to its seat by a spring and by fluid-pressure and is opened to permit escape of oil from tube 9 and casting 6. When valve 27 is opened, oil escapes from conduits 33 and 34.

When it is desired to lower the chair-seat or other load, the valve 27 is opened by depressing the long arm of a lever 28, which pushes down a sleeve 41, sliding in a bearing 41', formed or fixed in the pedestal. This sleeve has an extension 42, carrying an adjustable pin 43. The said movement of the lever by the medium of the sleeve and pin opens the valve 27 for the escape of oil from the seat-elevating tubes, the rate of escape being regulatable by varying the pressure on lever 28. A buffer of leather or the like is denoted by 39. 45 is a spring to return the sleeve 41. The port closed by valve 27 communicates with an overflow-conduit in a tube 27'. This tube extends through the hollow casting and has a screw-threaded connection with its opposite walls and also with a thimble which contains the valve. The tube 27' is detachable, together with the sleeve, valve, and valve-spring, and the several parts contained in the tube are separable from each other. The tube 27' and the sleeve each have an oil-outlet communicating with the hollow casting.

The opening of the valve 27 is, as above indicated, under the control of the operator by means of the lever 28, which can be suit-

ably moved to open the valve more or less, as desired. This is easily done by the extremity of the operator's foot suitably depressing the lever, the heel remaining on and supported by the base or by the floor, the lever being suitably bent and substantially as shown for the purpose. One object of the elastic washer or body 39 is to avoid jar. Obviously the pin 43 can be adjusted to act sooner or later on the valve and in any desired relation as to time of contact of the washer with the tube. The oil is forced out through the tubular conduit and under the washer compressed by the liquid. The arm or extension 42 can be pressed upon the buffer or washer 39 more or less, as desired, to regulate the escape of fluid under said washer. This constitutes a regulator of the escape of fluid supplemental to valve 27 and controllable by the same operating mechanism.

The fulcrum of the lever 28 is a pin 40', held in a rod 46. The lever is adapted to lock the pedestal against movement on the base by means of said rod 46, which is screwed into a block 47, so that by turning the lever and rod in a direction parallel to the base the block is moved lengthwise the rod, with the effect to tighten or loosen its bearing in the annular groove 48 of the base-flange, according as it is or is not desired to lock the base and pedestal together. This function can be performed separately or simultaneously with the opening of valve 27 by suitable operation of the lever 28. Between the upper portion of the pedestal and the tube 13 and between the latter and tube 12 are provided antifric-tion-ball housings, which are described and claimed in my application for patent for same of even date herewith. The upper end of the pedestal is made as small in horizontal section as practicable to reach the outer telescoping tube and avoid unnecessary enlargement of it and of the inclosed tubes. This contraction of the pedestal necessitates cutting it away, as indicated at 3'', to permit the T-lever 25 to extend from the exterior of the pedestal to its interior, so that the pumps may be situated within the pedestal and the operating-levers mainly on the outside of it. The main purpose of the cover 4 is to conceal and protect as much of the pump-lever as practicable and to hide the cuts in the pedestal. Said cuts or openings in the pedestal may be made at intervals all around the same to reduce its weight.

Telescoping tubes provided with shoulders or projections at their lower ends to engage similar projections on the interior of surrounding tubes have been employed, and such construction is shown in my Patent No. 605,255, dated June 7, 1898. Such projections prevent the tubes fitting each other closely, and thereby increase the size and weight of all the exterior tubes. In this particular the present improvement, consisting of the construction hereinafter pointed out, is characterized by a close fit between the in-

ner and the contiguous telescoping tubes, whereby the diameter of all the exterior tubes and parts may be reduced.

Having thus described my invention, I claim—

1. In an elevating-machine, the combination of a pump, telescoping plunger-tubes, a valve independent of the pump normally closing the outlet from the tubes, a pedal-lever, and a sliding part disconnected from the valve, and a regulable pin intermediate said part and valve and bearing loosely on the latter to open the valve.

2. In an elevating-machine, the combination of a base, a rotating pedestal, telescoping plunger-tubes, a valve normally closing the outlet from the tubes, a lever, a sliding part intermediate the lever and valve, said part carrying a pin adapted to bear on the valve, whereby the valve may be opened, a clamping-block, and a rotatable rod screw-threaded to the block, said lever being fulcrumed in the rod.

3. In an elevating-machine, the combination of a pump, comprising inlet and outlet valves, telescoping plunger-tubes, a valve independent of the pump normally closing the outlet from the tubes, pump-valve springs, a pedal-lever, and a sliding part disconnected from the valve, a regulable pin intermediate said part and valve and bearing loosely on the latter to open the valve, and a spring to return said sliding part.

4. In an elevating-machine having a base and rotating pedestal, a seat-elevating pump, plunger-tubes, a valve independent of the pump normally closing the outlet from the tubes, a lever, and a part intermediate the lever and valve movable directly by the lever against the valve to open the same, said part comprising an adjustable piece and being constructed and arranged to enter the outlet-passage beyond the valve.

5. In an elevating-machine having a base and rotating pedestal, a seat-elevating pump, plunger-tubes, a valve independent of the pump normally closing the outlet from the tubes, a lever, and a part intermediate the lever and valve movable directly by the lever against the valve to open the same, said part comprising an adjustable piece and being constructed and arranged to enter the outlet-passage beyond the valve, and an elastic packing movable toward and from the outlet end of said passage.

6. In an elevating-machine, telescoping tubes, means for moving the tubes by fluid-pressure, a valve to discharge the tubes at will, and mechanism to open the valve, said mechanism including a movable pin, a guide for the pin, and an elastic piece adapted to be compressed by fluid-pressure to permit escape of oil thereunder.

7. In an elevating-machine, telescoping tubes, means for moving the tubes by fluid-pressure, a valve to discharge the tubes at

will, and mechanism to open the valve, said mechanism including a movable pin, a guide for the pin, an elastic piece adapted to be compressed by fluid-pressure to permit escape of oil thereunder and a pedal-lever to open the valve.

8. In an elevating-machine, the combination of the base, a rotating pedestal, a pump, seat-elevating tubes actuated by the pump, an outlet-valve to discharge the liquid contents of the tubes, a lock to hold the base and pedestal in fixed relation, and a lever independent of the pump and operatively connected to the valve and to the lock whereby the valve can be opened simultaneously with the locking of the base and pedestal and said lever and lock being adapted to be actuated in either direction when the valve is open.

9. In an elevating device, the combination of a fixed tube, means for forcing fluid into said tube, a tube telescoping with the fixed tube and provided near its top with an interior shoulder, the outer telescoping tube fitting the interior telescoping tube and movable above the top of the fixed tube, said telescoping tubes being normally in free communication with the fixed tube, and a part fixed to the outer tube and having an enlarged foot movable through and above the fixed tube into engagement with an inner shoulder of the inner telescoping tube, substantially as described.

10. In an elevating-machine, the hollow casting supporting liquid-circulating devices, a tube extending through and secured in the casting, a thimble secured in the foot of the tube, the tube and thimble being each provided with an opening to communicate with the interior of the casting, a valve controlling an outlet-port, and a valve-seat in said thimble, the tube detachable from the casting and all the parts detachable from each other.

11. In an elevating-machine, the hollow casting supporting liquid-circulating devices, a tube extending through and secured in the casting, a thimble secured in the foot of the tube, the tube and thimble being each provided with an opening to communicate with the interior of the casting, a valve controlling an outlet-port, and a valve-seat in said thimble, the tube detachable from the casting and all the parts detachable from each other, a screw having a socket and closing the thimble-bottom, the valve being provided with a stem held in the screw-socket.

12. In an elevating-machine, having a base and rotating pedestal, the combination of telescoping plunger-tubes, a valve normally closing the outlets from the tubes, a locking device to lock the base and pedestal together and a lever to open the valve and operate the lock either simultaneously or separately.

13. In an elevating-machine, the telescoping tubes, the pedestal having the upper part of its wall cut away to provide an opening 3",

the base to support said pedestal, pumping mechanism situated in the base and extended through said opening to the exterior of the pedestal, and a removable cover seated on
5 and surrounding the pedestal and embracing the exterior of said tubes above the pedestal.

14. In an elevating-machine, the pedestal having its top contracted at about and above its mid-height, and having openings in its
10 upper part to provide a situation for mechanism and to reduce weight, a separable case inclosing said contracted top, the pedestal being provided on its contracted portion with a shoulder to support the cover, and pump
15 mechanism extending from the inside of the pedestal through its contracted top and inclosed between said cover and the pedestal.

15. In an elevating-machine, the telescoping tubes, a pump, an outlet-conduit, a valve
20 normally closing said conduit, means for opening said valve and a compressible cover for said conduit adapted to be compressed by pressure to permit escape of the fluid.

16. In an elevating-machine, the telescoping tubes, a pump, an outlet-conduit, a valve
25 normally closing said conduit, means for opening said valve and a compressible cover for said conduit adapted to be compressed by pressure to permit escape of the fluid, said
30 means comprising a part adapted to compress

the said cover independently of the fluid-pressure.

17. In an elevating-machine, telescoping tubes, a pump to force liquid into the tubes, an outlet-conduit to discharge oil from the
35 tubes, an independent normally closed valve for said conduit, a supplement to said valve device adapted to control the escape of fluid from the conduit after it has passed the valve, and mechanism adapted to operate both the
40 valve and the supplementary device, said mechanism being separate and distinct from the pump.

18. In an elevating-machine, telescoping tubes, a pump to force liquid into the tubes,
45 an outlet-conduit, an independent normally closed valve for said conduit, a supplemental device adapted to control the escape of fluid from the conduit after it has passed the valve, and a lever to open the valve, said lever being
50 independent of the pump and adapted to vary the fluid-escape through the supplemental device.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MONT C. MERKER.

Witnesses:

JOHN D. BRINKMAN,
J. UHRMANN.