

(No Model.)

2 Sheets—Sheet 1.

L. WILSON, Jr.
PUMP.

No. 545,399.

Patented Aug. 27, 1895.

FIG. 1.

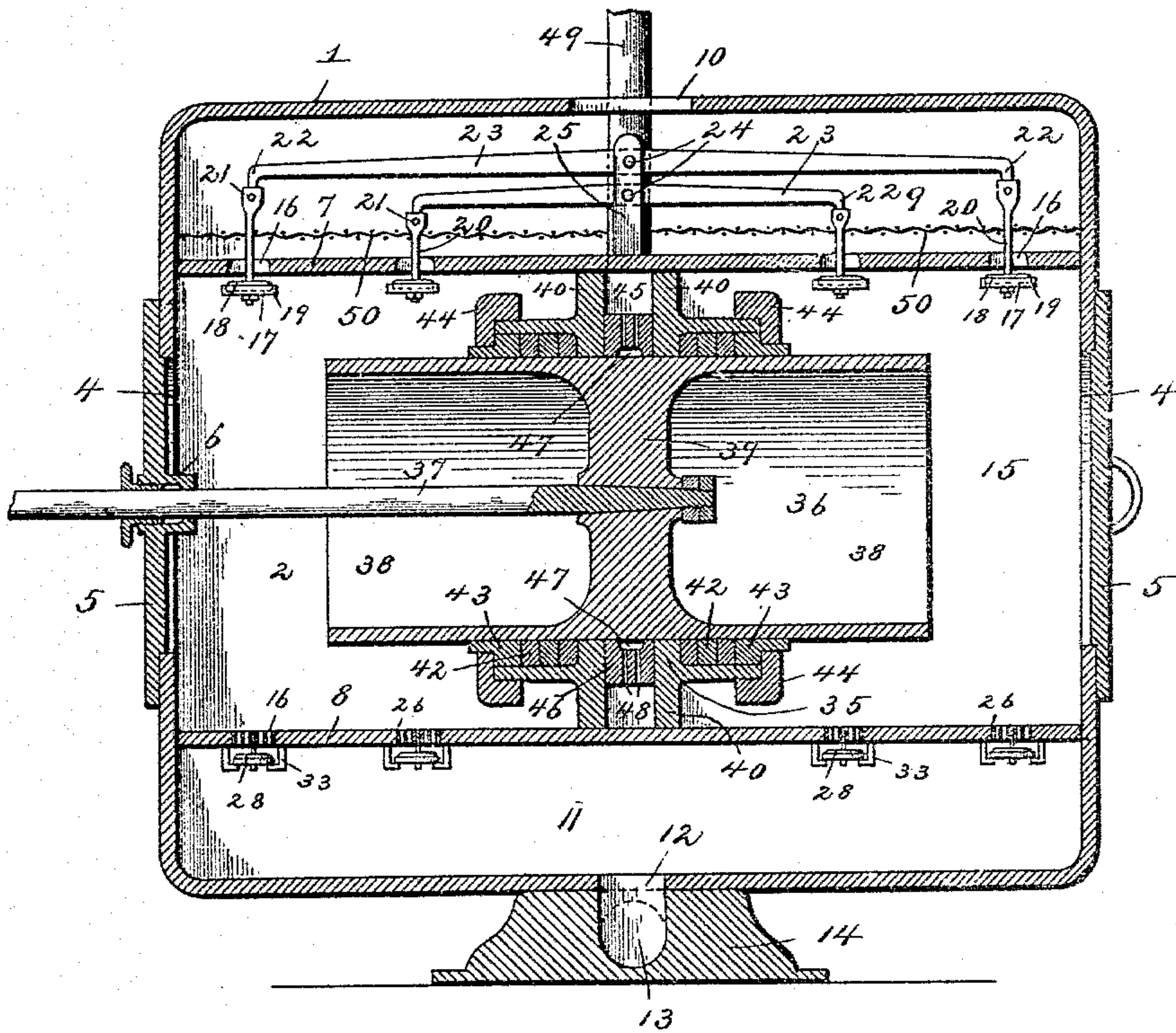


FIG. 5.

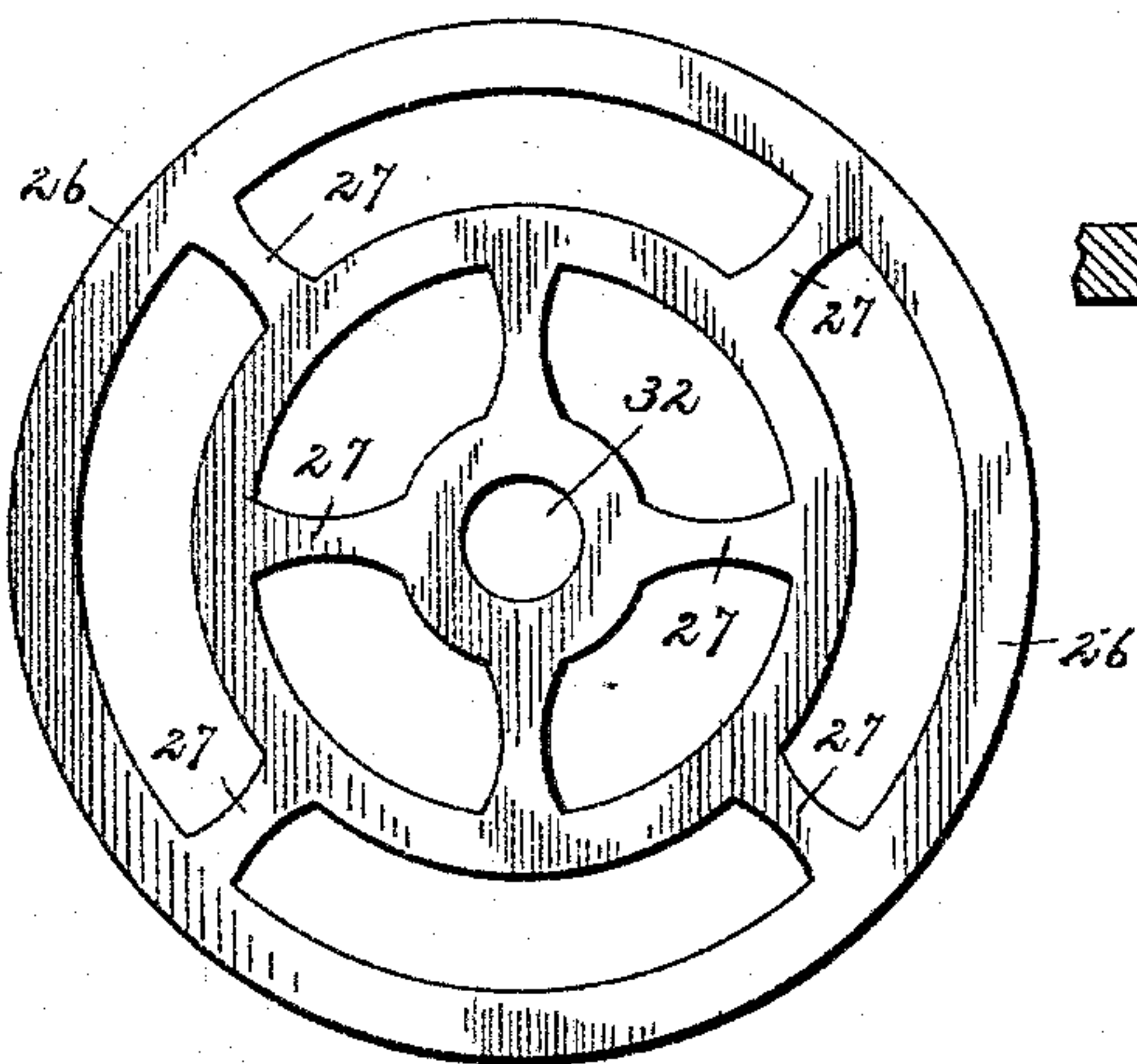
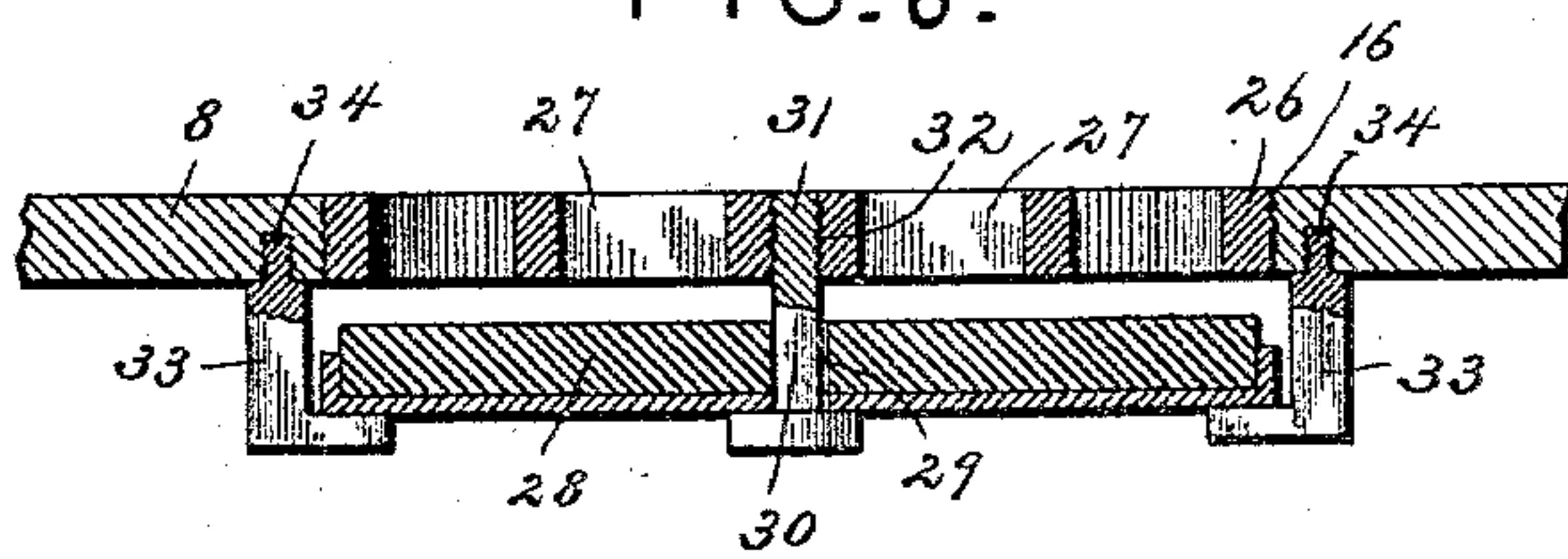


FIG. 6.



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Witnesses

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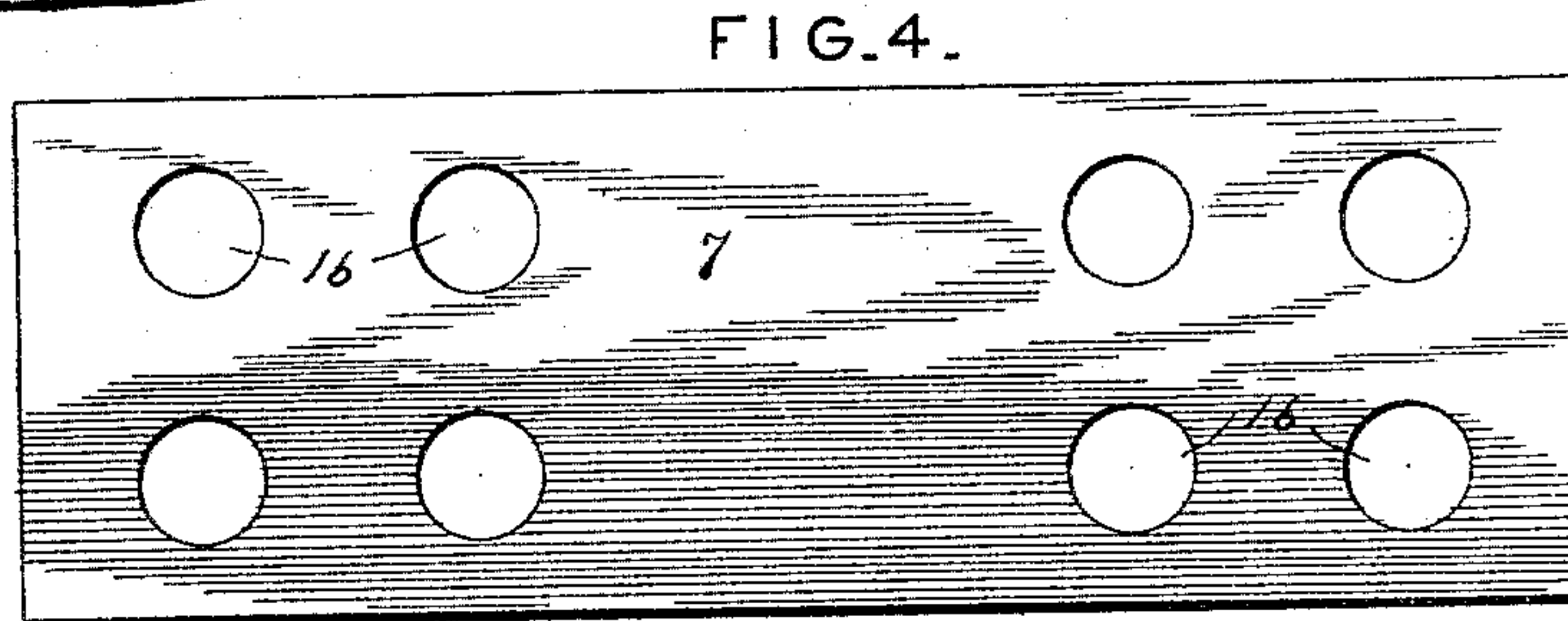
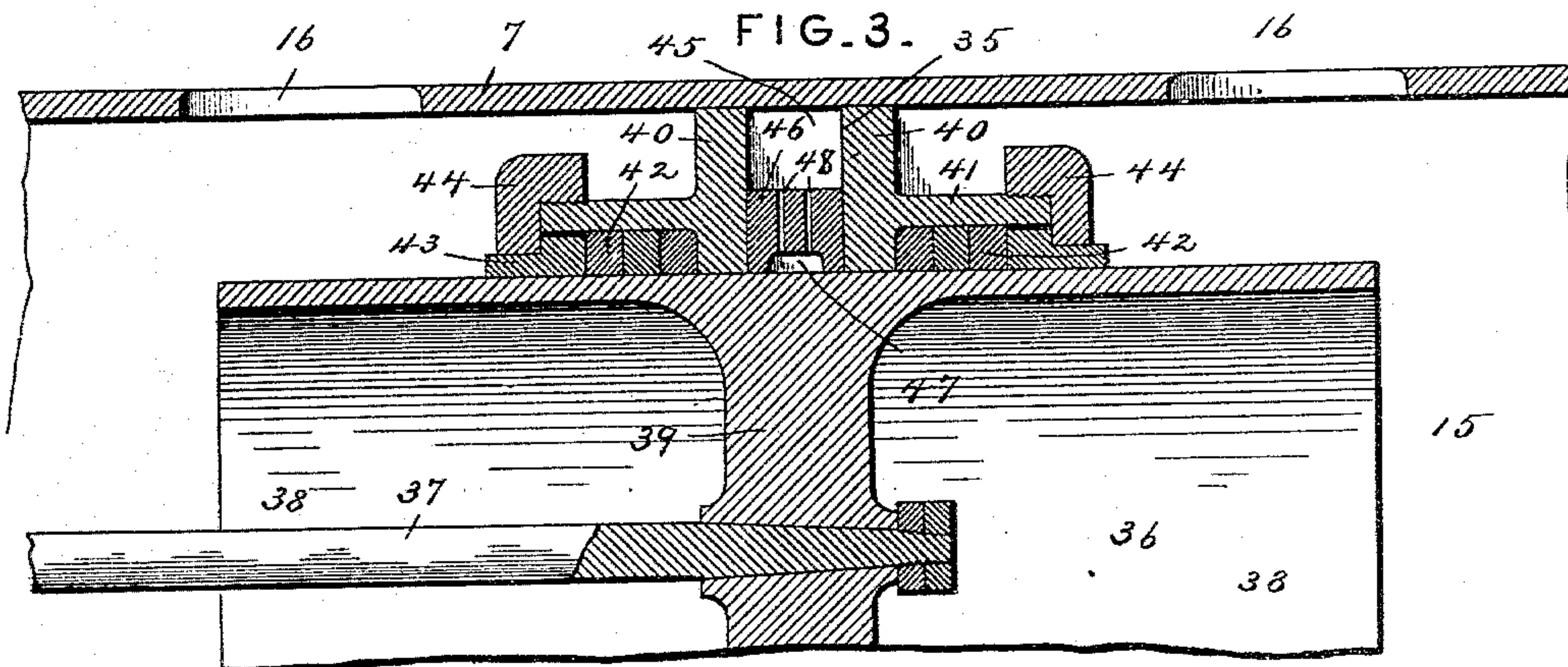
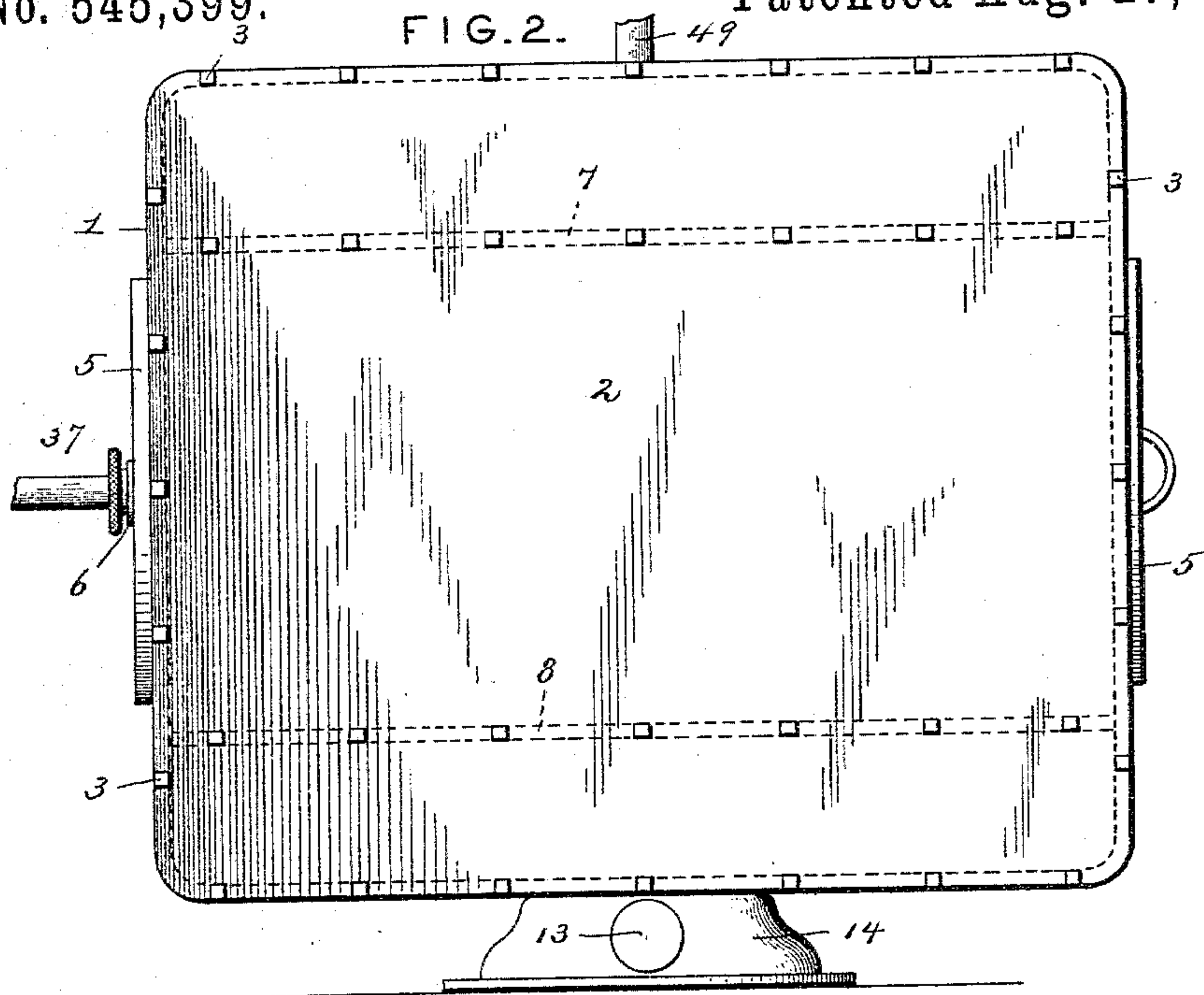
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2 Sheets—Sheet 2.

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No. 545,399.

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Inventor

Witnesses

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UNITED STATES PATENT OFFICE.

LUTHER WILSON, JR., OF LOUISVILLE, KENTUCKY, ASSIGNOR OF TWO-THIRDS
TO JOHN E. GOULD AND GEORGE EDGAR, JR., OF SAME PLACE.

PUMP.

SPECIFICATION forming part of Letters Patent No. 545,399, dated August 27, 1895.

Application filed November 1, 1894. Serial No. 527,651. (No model.)

To all whom it may concern:

Be it known that I, LUTHER WILSON, Jr., a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Pump, of which the following is a specification.

This invention relates to steam-pumps; and it has for its object to effect certain improvements in pumps of that character that are directly coupled with and operated by steam-engines or other motors where it is required to pump large quantities of water with great rapidity, such as for fire-engines and similar purposes.

To this end the main and primary object of the present invention is to construct a steam-pump in a simple and efficient manner, whereby ready access may be had to every working part of the pump, while at the same time providing for a steady and positive operation of the piston and valve devices of the pump.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a vertical longitudinal sectional view of a steam-pump constructed in accordance with this invention. Fig. 2 is a side elevation thereof, showing one of the removable side plates for the pump box or casing. Fig. 3 is an enlarged detail sectional view, showing more clearly the construction of the central interior packing-partition for the reciprocating piston. Fig. 4 is a plan view of one of the valve-plates of the pump box or casing. Fig. 5 is a detail plan view of one of the renewable valve-seat rings for the lower valve-plate. Fig. 6 is an enlarged detail sectional view of a portion of the lower valve-plate, including one of the valved outlet-openings thereof.

Referring to the accompanying drawings, 1 designates a pump box or casing constructed in any suitable size according to the desired capacity of the pump, and said box or casing is constructed in a rectangular shape and is inclosed at its opposite open sides by the re-

movable side plates 2, that are detachably fastened to the opposite sides of the box or casing by means of the fastening-bolts 3. The said removable side plates 2 cover the entire opposite sides of the box or casing, and therefore, when removed, expose the entire interior of the box or casing, so that every part of the pump is readily accessible for the purpose of repair and adjustment. The said rectangular pump box or casing 1 is provided in its opposite closed ends with the opposite end openings 4, that are inclosed by the ordinary end head-plates 5, that also provide additional means for gaining access to the interior of the box or casing, and one of said end head-plates 5 is provided with a central stuffing-box 6, that is projected inwardly within the box or casing to provide an arrangement whereby the engine for operating the pump can be disposed in much closer proximity to the pump box or casing than has heretofore been possible in steam-pumps.

The rectangular pump box or casing 1 has arranged therein the upper and lower parallel valve-plates 7 and 8, respectively, the upper of said plates 7, forming above the same at the top of the box or casing an upper inlet-chamber 9, with which communicates a main inlet-opening 10, formed in the top of the box or casing and adapted to have fitted therein the water or liquid supply-pipe for the pump. The lower of said valve-plates 8 forms below the same a lower outlet-chamber 11, with which communicates a bottom outlet-opening 12, formed in the bottom of the box or casing and opening into the water-outlet passage 13, that may be conveniently formed in the supporting pedestal or base 14, serving as a convenient support for the pump box or casing.

The upper and lower valve-plates 7 and 8 inclose therebetween the main enlarged piston-chamber 15 of the pump box or casing, and said plates are provided at both sides of the vertical center of the pump box or casing with opposite sets of valve-openings 16, which may be arranged in groups of four or more, and arranged to work over the valve-openings 16 of the plate 7. From the under side of said plate are the inlet-valves 17 of the pump. The inlet-valves 17 consist of rubber valve-

disks 18 and metallic valve-plates 19 fitted at one side of said disks to maintain the shape thereof and relieve the same from undue wear, and the said valves 17 are fitted on the lower free ends of the valve-adjusting links 20 that are arranged to work loosely through the valve-openings of the plates 7 and extend above the same, and the upper ends of said valve-adjusting links 20 are pivotally connected, as at 21, to the downturned extremities 22 of the intermediate valve-connecting levers 23, that are pivotally mounted intermediate of their ends, as at 24, within bifurcated pivot or supporting posts 25, arranged centrally on top of the valve-plate 7 within the upper inlet-chamber 9. As clearly illustrated in Fig. 1 of the drawings, the levers 23 are of different lengths, so that the inlet-valves of each opposite set may be connected in pairs, thereby providing an arrangement to insure the positive simultaneous operation of both sets of inlet-valves, the closing of one set of valves providing for a simultaneous opening of the opposite set of valves, and vice versa. The valve-openings 16 in the lower valve-plate 8 are threaded and are adapted to removably receive the renewable exteriorly-threaded valve-seat rings 26. The exteriorly-threaded valve-seat rings 26 are provided with integral skeleton-bridge webs 27, which allow the water to freely pass therethrough, while at the same time forming a large or wide seat for the outlet-valves 28, working against the under side thereof. The outlet-valves 28 are also arranged to work below the plate 8, and are similarly constructed to the upper inlet-valves 17. The outlet-valves 28 are provided with central guide-openings 29, that work over the depending headed guide-bolts 30, that are provided with upper threaded ends 31, engaging in the central threaded openings 32 of the skeleton-bridge webs of the valve-seat rings, and said bolts 30 serve to support the valves 28 when the same are open, and also guide the valves onto their seats to close the valve-openings in the plate 8. The said valves 28 are additionally retained properly in position by means of a series of L-shaped supplemental valve-supporting and guide brackets 33, that are provided with upper threaded ends 34, threaded into the lower side of the plate 8, and the said brackets 33 are circularly grouped closely around the periphery of the valves 28 to support the edges of said valves and guide the same to and away from the seats therefor.

Arranged centrally within the piston-chamber 15, between the opposite sets of inlet and outlet valves, is the stationary central interior packing-partition 35, through which reciprocates the pump-piston 36, attached to one end of the piston-rod 37, that works through the end stuffing-box 6 and is connected with an ordinary pumping-engine in the usual way, and the said pump-piston 36 is preferably of that type provided with the enlarged piston-buckets 38 in both ends thereof at opposite

sides of the central integral solid web 39, to which is fastened one end of the piston-rod 37. The central interior packing-partition 35, through which the piston works, also separates the piston-chamber 15 into opposite and separate compartments, provided with separate sets of inlet and outlet openings by reason of the disposition of the sets of inlet and outlet openings at both sides of the vertical center of the pump box or case. The said packing-partition 35 consists of a pair of spaced stuffing-box plates 40 fitted snugly within the chamber 15 at a central point and provided at one side with the offstanding stuffing-boxes 41, that are disposed toward the ends of the pump box or casing and oppositely to each other. The said oppositely-disposed stuffing-boxes 41 of the spaced stuffing-box plates 40 accommodate therein a series of packing-rings 42, made of any suitable material and snugly embracing the piston 36 reciprocating through the said stuffing-boxes. The packing-rings 42, that are fitted within the oppositely-disposed stuffing-boxes 41, are held snugly in place within such boxes by the flanged glands 43, fitted in the outer ends of the stuffing-boxes against the packing-rings and held in place by means of the interiorly threaded and flanged ring-caps 44, engaging the exteriorly-threaded outer ends of the said stuffing-boxes. The spaced stuffing-box plates 40 confine therebetween a central inclosed oil reservoir 45, entirely surrounding the piston 36 and accommodating therein an oil packing-ring 46 that is turned to have a working fit on the periphery of the piston 36, and therefore not only provides for distributing lubricant to the piston but also supplements the packing of the stuffing-box to provide a perfectly air and water tight fit for the piston within the interior packing-partition 35. The said oil packing-ring 46 is provided in its inner side that embraces the piston with an inner annular lubricant groove 47, that is adapted to preferably contain a mixture of plumbago and oil, and said ring 46 is further provided with a series of oil-holes 48, extending entirely therethrough and communicating with the groove 47 and the interior of the reservoir 48, which may be kept filled with oil by means of introducing oil therein through a suitably-arranged oil-pipe 49, leading outside of the pump box or casing and communicating at its inner end with the reservoir 45 between the plates 40.

In operation it will be understood that the water is received within the pump box or casing at the top and the reciprocations of the piston 36 cause an alternate opening and closing of the inlet and outlet valves at both sides of the central packing-partition 35, and thereby provides for a continuous and uninterrupted discharge of water out through the lower outlet-chamber 11 of the pump box or casing. To increase the efficiency of the herein-described pump, an intercepting screen 50 is arranged horizontally within the upper in-

let-chamber 9, above the valve-plate 7, to collect any foreign materials that would otherwise pass through the valves and either injure the same or entirely clog up the pump. From
 5 time to time the collections of foreign matter on the screen may be readily removed to provide for a cleaning of the pump by simply removing one or both of the removable side plates of the pump box or casing. At this
 10 point it is to be particularly noted that the herein-described construction of pump admits of the use of very light material, preferably copper plate, and the pump can therefore be constructed much lighter than other similar
 15 pumps, while at the same time having an equal capacity thereto and securing the self-same results; and any changes in the form, proportion, and the minor details of construction may be resorted to without departing
 20 from or sacrificing any of the principles of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

25 1. In a pump, a rectangular box or casing having opposite open sides, and upper and lower valve plates provided with opposite sets of valve openings therein, a centrally arranged stationary packing partition between
 30 said valve plates, a double-bucket piston arranged to reciprocate through said partition, the outlet valves supported to work below the valve openings in the lower valve plate, different length levers pivotally supported at
 35 an intermediate point above the upper valve plate, inlet valves pivotally suspended from the extremities of said levers and working below the openings in the upper valve plate, a screen arranged horizontally in the chamber
 40 above the upper valve plate, and opposite removable side plates detachably bolted over the opposite open sides of the box or casing, substantially as set forth.

45 2. In a steam pump, the combination of the box or casing provided with upper and lower valved chambers, a stationary packing parti-

tion arranged centrally in the box or casing and provided with an inclosed oil reservoir, the piston arranged to reciprocate through the partition, and an oil packing-ring arranged within
 50 the oil reservoir on the piston and provided in its inner side with an annular groove, and with a series of oil holes communicating with the groove and said reservoir, substantially as set forth.

55 3. In a steam pump, the combination of the pump box or casing provided with upper and lower valved inlet and outlet chambers, a stationary packing partition arranged centrally within the box or casing between the
 60 upper and lower chambers thereof and comprising separate stuffing boxes spaced from each other and inclosing therebetween an oil reservoir, a double-bucket piston arranged to reciprocate through the stuffing boxes forming
 65 the partition, and an oil packing ring fitted within said oil reservoir between the stuffing boxes, substantially as set forth.

70 4. In a steam pump, the combination of the pump box or casing provided with upper and lower valved inlet and outlet chambers, a stationary packing partition arranged centrally within the box or casing and comprising
 75 a pair of spaced stuffing box plates provided at one side with offstanding stuffing boxes and inclosing therebetween an oil reservoir, the pump piston arranged to reciprocate through the stuffing boxes of the partition, and an oil packing ring arranged within
 80 the oil reservoir on the piston and provided in its inner side with an annular lubricant groove, and with a series of oil holes extending through the ring and communicating with the groove and said reservoir, substantially
 85 as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LUTHER WILSON, JR.

Witnesses:

JOHN H. SIGGERS,
 G. C. SHOEMAKER.