No. 802,037. PATENTED OCT. 17, 1905.

T. GILLER.

PUMP VALVE.

APPLICATION FILED JUNE 30, 1903.

Fig. 1.

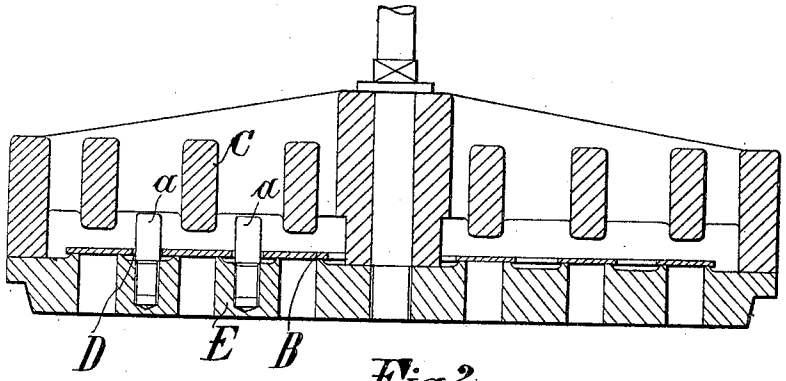
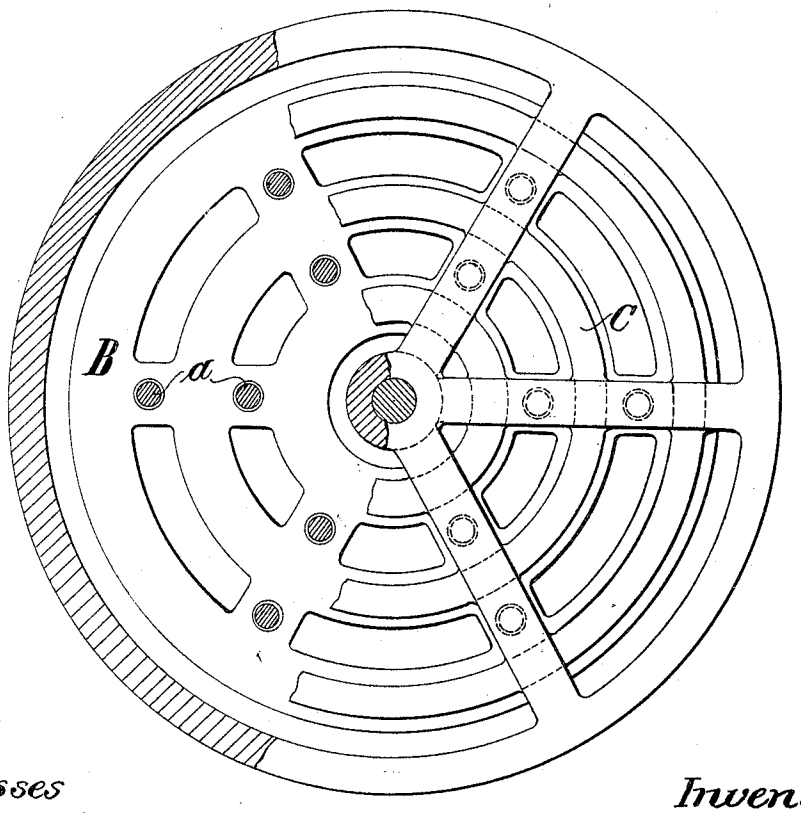


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

THEODOR GILLER, OF MÜLHEIM-ON-THE-RUHR, GERMANY, ASSIGNOR TO WILHELM REMY, OF DÜSSELDORF, GERMANY.

PUMP-VALVE.

No. 802,037. Specification of Letters Patent. Patented Oct. 17, 1905.

Application filed June 30, 1903. Serial No. 163,690.

To all whom it may concern:

Be it known that I, THEODOR GILLER, residing at Mülheim-on-the-Ruhr, Germany, have invented certain new and useful Improvements Relating to Pump-Valves, of which the following is a specification.

With ordinary plate or disk valves it is usual to guide the plate during its lift by means of a central bolt, and where accurate guidance is necessary to provide it with an additional guide-box which surrounds and tightly closes in the bolt. In some cases the plate is guided round its periphery. In every case the guidance is performed by an agent which causes friction. These and similar methods of guidance have the drawback that whenever the gas or liquid pressure fails to lift the plate evenly all round it is apt to jam against or catch on the guide. Further, the plate is apt to stick or be suspended whenever dirt or grit gets into the guide, which happens with comparative frequency when the fan or pump works at a high speed. This factor has to be carefully considered in view of the modern tendency to use high-speed engines.

The liability to stick and jam increases with the increase in diameter of the valve-plate, and as a matter of fact the guiding arrangements hereinbefore referred to cannot be used with valves above a certain diameter.

It has been proposed to overcome the obvious disadvantages of the aforementioned guiding devices by using in addition to them special so-called "guides" at the expense, of course, of simplicity. These additional guides reduce the life and consequently the safety in working of the valve-plate.

Under the present invention it is possible to use with perfect certainty of action simple valves up to the largest diameter with a practically frictionless guide and adapted to work properly, no matter what number of revolutions the gas or liquid pump may make. Briefly stated, the invention aims at providing, on the one hand, a frictionless guide which can be used with any size of valve in contradistinction to the usual cylindrically-guided valve-plates and, on the other hand, simplicity combined with reliability as compared with guided valve-plates of any kind.

In order to enable others to understand, make, and use my said invention, I will now proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a valve constructed according to this invention; and Fig. 2 is a top plan view of the same, a part of the grid or cover being broken away to show the guide-pins and the valve plate or disk.

As may be seen from the accompanying drawings, the invention consists in using a number of guide-pins *a*, which project through holes in the valve-plate B and are fastened either in the valve-seat E or in the grid or cover C or in some other part. These pins, however, do not quite fill up the holes in the plate, but are fitted with a free space, which gives them a certain amount of play. The size of this free space D is governed by the height of lift of the valve, the free space increasing with an increasing height of lift and decreasing with a decreasing height of lift. This free space is rendered necessary, owing to the fact that it is necessary to allow the plate to rise up on one side to the limit of its stroke, while at the opposite side it remains on its seat without causing the plate to jam or stick on the pins. The plate can therefore rise without, practically speaking, any friction. The seat-surfaces are of course made broad enough to insure that the valve will always sit tight on its seat, even though lateral forces may push it to one side as far as the amount of play provided for will allow.

It is immaterial to the invention whether instead of using a number of guide-pins only one is employed or whether instead of arranging the pins inside of the plate they are arranged outside—*i. e.*, round the circumference—provided that in all cases the amount of play, which is the characteristic feature of the invention, is provided for between the plate and the pin-guides.

What I claim, and desire to secure by Letters Patent of the United States, is—

In a valve, a valve-seat, a grid arranged parallel therewith but separated therefrom sufficient to provide an intermediate space, a relatively thin plate or disk located in the space between the said valve-seat and grid and adapted to have free movement therein, said plate or disk being provided with a plurality

of openings, and a plurality of fixed guide-pins projecting freely through the openings in the plate or disk, the diameter of said pins being proportionately smaller than the diameter of the openings whereby to provide a free space between the guiding-faces of the pins and the edges of the openings to permit the plate or disk to have free and unrestrained movement toward and from its seat in parallel or inclined planes.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

THEODOR GILLER.

Witnesses:

WILLIAM ESSENWEIN,

PETER LIEBER.