No. 891,599. PATENTED JUNE 23, 1908.

J. DANISCHEVSKI.

PRESSURE REGULATOR.

APPLICATION FILED AUG. 11, 1906.

Fig. 4.

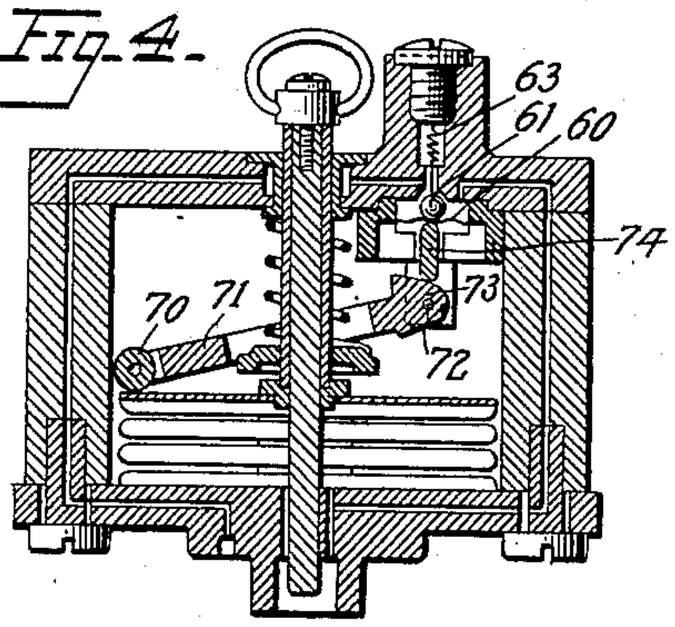


Fig. 2.

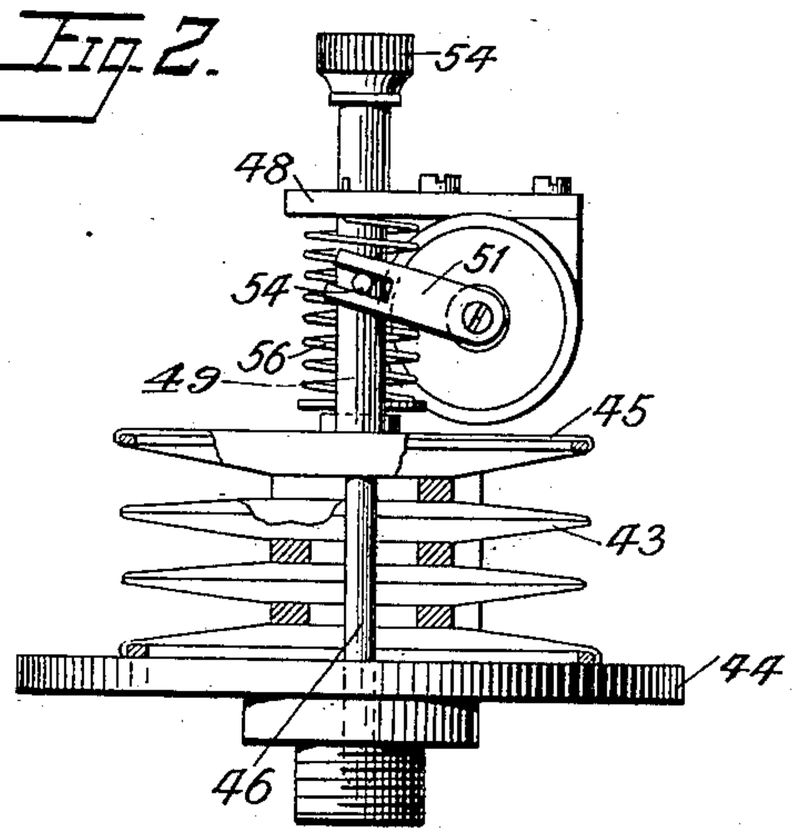


Fig. 5.

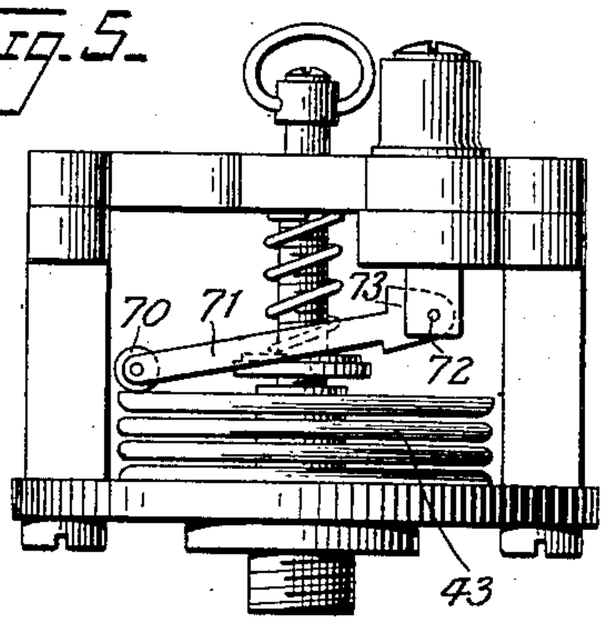


Fig. 3.

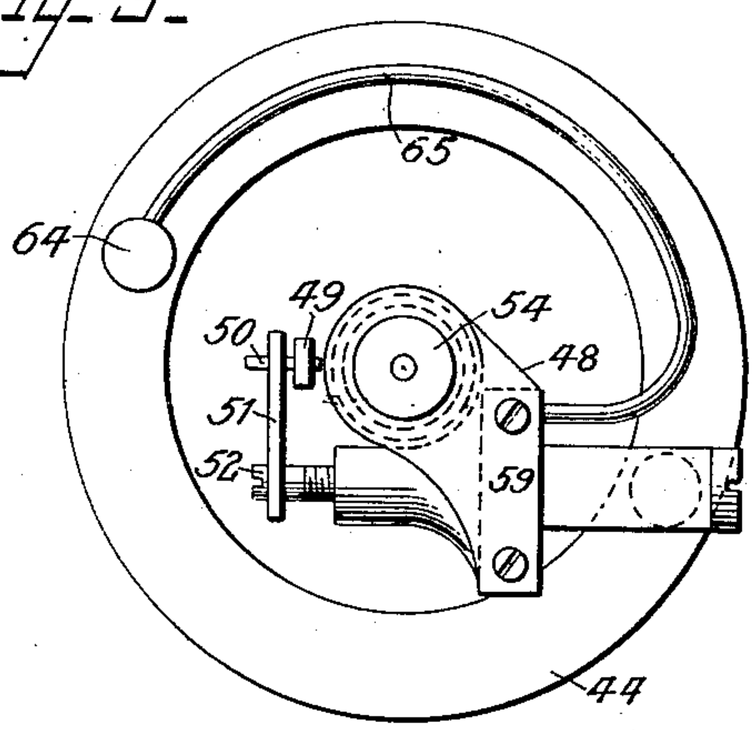


Fig. 6.

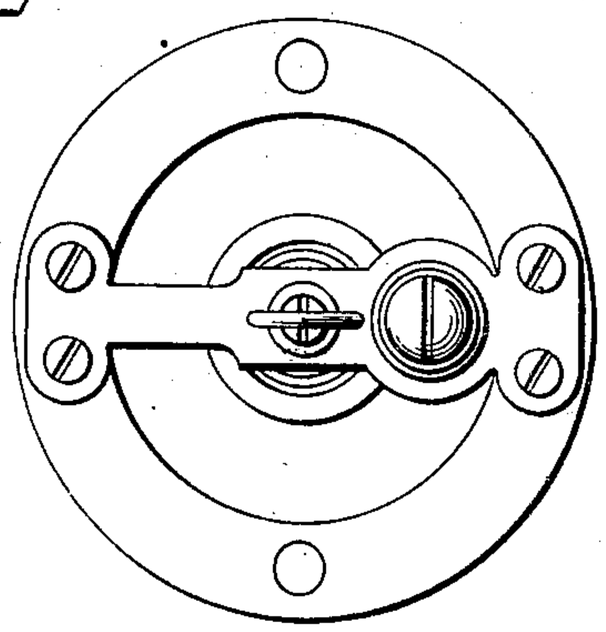
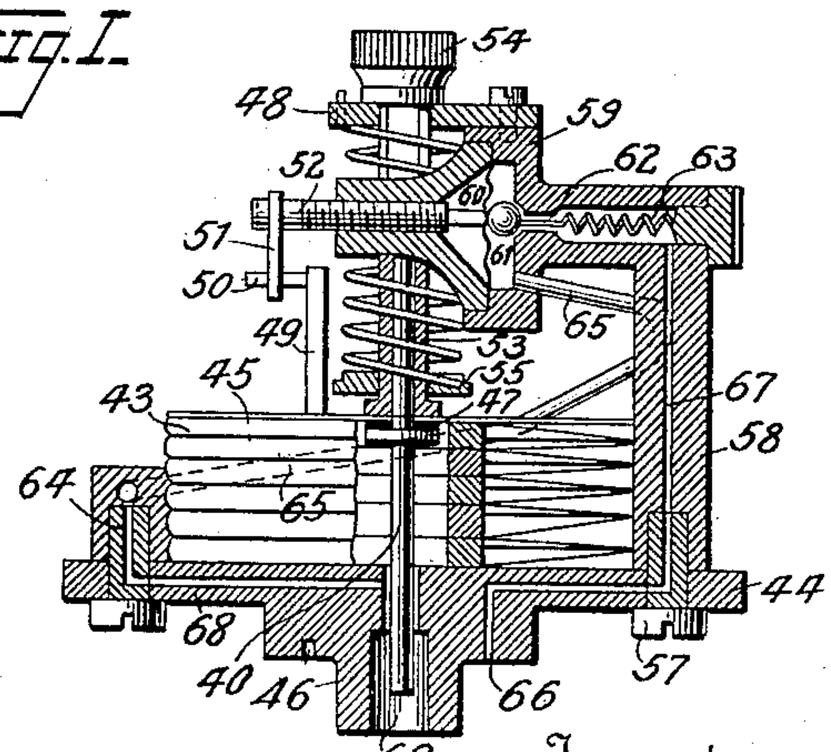


Fig. 1.



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UNITED STATES PATENT OFFICE.

JOSEPH DANISCHEVSKI, OF ST. PETERSBURG, RUSSIA.

PRESSURE-REGULATOR.

No. 891,599. Specification of Letters Patent. Patented June 23, 1908.

Application filed August 11, 1906. Serial No. 330,254.

To all whom it may concern:

Be it known I, JOSEPH DANISCHEVSKI, a subject of the Emperor of Russia, engineer, and a resident of St. Petersburg, Russia, have invented certain new and useful Improvements in Pressure-Regulators, of which the following is a specification.

The invention relates to pressure regulators for incandescent lamps and has for its object an improved regulator for use in connection with incandescent lamps, in which gas or air under pressure is used to cause the fuel, such as petroleum, kerosene or other liquid hydrocarbon, to flow to the burner. By means of the regulator, according to this invention, the amount of fuel supplied to the burner is automatically varied.

On the accompanying drawings, Figure 1 is a vertical central section through one form of the new regulator, Fig. 2 is an elevation thereof, part being in section, Fig. 3 is a plan view of the regulator, Fig. 4 is a central vertical section through a modified form of the new regulator Fig. 5 is an elevation thereof and Fig. 6 a plan view.

Referring first to Figs. 1, 2 and 3, it will be seen, that the regulator comprises several pairs of flexible plates or disks, connected alternately by their exterior and interior edges so as to form a bellows or expanding chamber 43. The latter is hermetically fastened to an annular plate 44, while the upper end of the bellows has a plate 45 soldered to it. Through the center of this plate is passed a rod 46, which is fastened to the plate by means of a suitable washer and shoulder 40, so that the rod 46 will move together with the bellows, as they expand or contract. The rod 46 is guided by the annular plate 44 and a bracket 48.

On the rod 46 is loosely mounted a sleeve 53, which at its upper end is provided with a knurled button 54, while on the lower end of the sleeve a nut 55 is placed, the lower portion of the sleeve 53 being screw-threaded. The upper end of the sleeve is supported by the said bracket 48. The sleeve 53 is surrounded by a spiral spring 56, one end of which is fastened to the said bracket 48 and the other end to the said nut 55. When the knurled button 54, which is secured to the upper end of the sleeve, is turned, the nut 55 will move up and down along the sleeve 53, thereby compressing or loosening the spring 56, the resistance of which spring is accordingly varied. When the bellows 43 are expanded, the sleeve 53 together with the rod 46 will move upwards thereby compressing the spring 56.

As shown in Fig. 1, a small upright 49 is arranged on the top of the plate 45 secured to the upper end of the bellows. The upright 49 is provided with a projecting stud 50, which stud is embraced by a fork 51, the latter being connected to the outer end of a screw 52, the inner end of which screw is opposite a diaphragm 60, placed in a valve-casing 59. The latter is supported on a post 58, which is secured to the annular plate 44 by means of a screw 57. While the inner end of the screw 52 entering the valve-casing 59 is opposite the said diaphragm 60 on one side thereof, a ball-valve 61 at the end of a small rod 62 connected with a spring 63 is arranged on the other side of the diaphragm 60. With the valve-casing 59 there is connected an air-supply tube 65, which communicates with the circular passage 66 in the annular plate 44. A small spindle 64 provided with a bore, is screwed into the plate 44 and the bore in said spindle communicates with the said tube 65.

The operation of the regulator described above is as follows: When the cock of the reservoir containing air under pressure is opened, the air entering the circular passage 66 in the annular plate 44 passes from there into a passage 67, provided in the post 58 and leading to the interior of the valve-casing 59. The air passes along through the tube 65 connected with said part of the valve-casing into the bore of the small spindle 64 and from there into the passage 68. Out of said passage the air will simultaneously enter into the bellows 43 and into the reservoir containing the liquid fuel. The air under pressure entering the bellows 43 will expand the same, thereby raising the small upright 49. The stud 50 projecting therefrom will turn by means of the fork 51 the screw 52 in such a direction that the inner end of the said screw is moved toward the diaphragm 60, thereby forcing the ball-valve 61 on the other side of the diaphragm toward its seat. The size of the opening for the passage of the compressed air entering the valve-casing 59 is thereby diminished or the admission of air is entirely stopped, so that no air can flow into the reservoir containing the liquid fuel. The amount or distance about which the screw 52 is turned in the direction toward the diaphragm 60 depends, of course, on the tension

of spring 56 and is proportional thereto, it being obvious, that the larger the resistance of the said spring, the smaller will be the distance which the screw 52 is turned and the greater will be the amount of air flowing past the ball-valve 61 into the reservoir containing the liquid fuel.

In Figs. 4, 5 and 6, a modification of the regulator is shown. As seen in Figs. 4 and 5, the bellows 43, when expanding, act directly by means of a roller 70 on a lever 71, pivoted about a fixed point 72, the pivoted end of the lever being shaped to form an eccentric head 73, pressing against a stem 74. The inner end of said stem is always in touch with one side of a membrane 60, the other side of which is pressed against by a ball-valve 61, which ball-valve is under the control of a helical spring 63. The operation of this regulator is exactly the same as described above.

Owing to the eccentricity of the head 73 being very small in comparison with the length of the lever 71, the most insignificant increase of pressure in the bellows 43 acting on the lever 71 by means of the roller 70 is sufficient to turn the lever about its pivot, thereby closing the valve 61 by means of the stem 74. With such an arrangement, the regulator is extremely sensitive so that a steady even light without any fluctuations is obtained.

What I claim and desire to secure by Letters Patent is:

1. Pressure regulator for incandescent lamps, comprising an expansible air chamber, a valve casing, an air supply pipe leading to said valve casing, a flexible diaphragm placed therein, a ball valve located on one side of said diaphragm and adapted to regulate the amount of compressed air flowing into the said air chamber, a device located at the other side of the said diaphragm adapted to control the said ball valve, connecting means between the said device and the air chamber and an adjustable spring for resisting the expansion of the said air-chamber with variable pressures.

2. A pressure regulator for incandescent hydro-carbon vapor lamps comprising an expansible air chamber, a valve casing, an air supply pipe leading thereto, a flexible diaphragm in said valve casing, a ball valve located on one side of said diaphragm to control the amount of compressed air flowing into the said air chamber, a stem arranged on the other side of said diaphragm and adapted to act through said diaphragm on the said ball valve and a lever actuated by the said air chamber and having an eccentric head in engagement with the said stem.

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

JOSEPH DANISCHEVSKI.

Witnesses:
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EDWARD WANSCHEIDT.