

R. A. GALLY.
AIR VALVE.
APPLICATION FILED FEB. 8, 1913.

Patented July 14, 1914.

1,103,754.

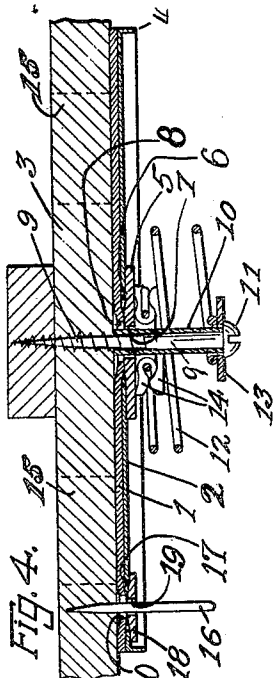


FIG. 3.

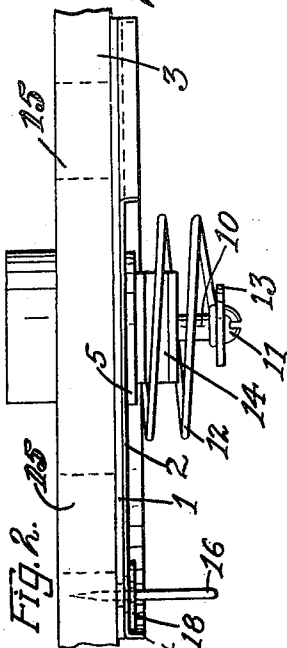
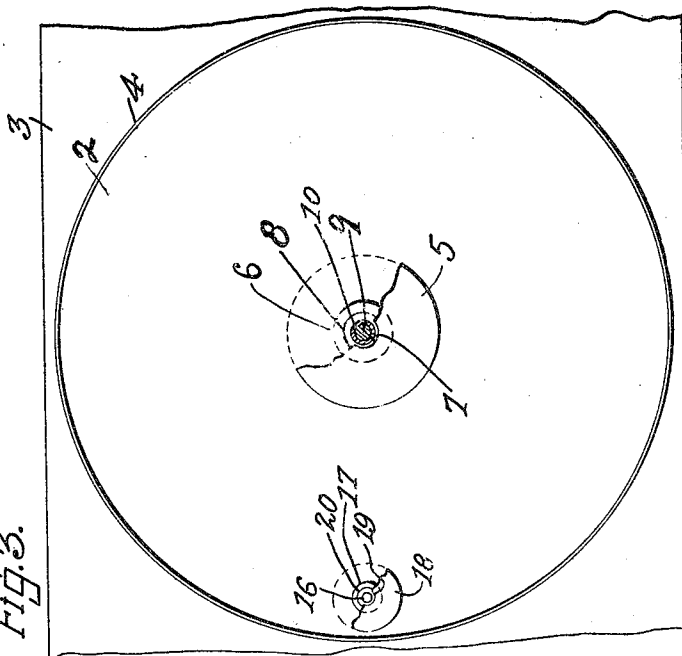
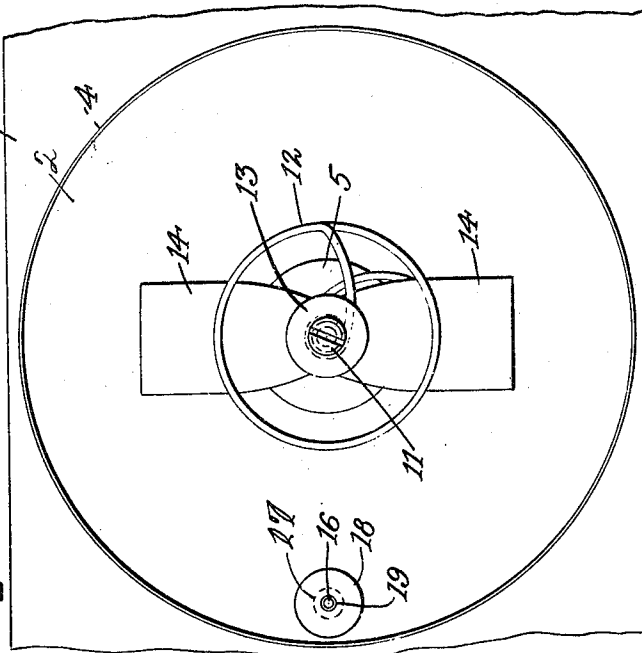


FIG. 1.



Witnesses:
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UNITED STATES PATENT OFFICE.

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AIR-VALVE.

1,103,754.

Specification of Letters Patent.

Patented July 14, 1914.

Application filed February 8, 1913. Serial No. 747,131.

To all whom it may concern:

Be it known that I, ROBERT A. GALLY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Air-Valves, of which the following is a specification.

Previous devices of this character have lacked permanent flatness, security of assembly, and ease of regulation, where the present invention has sure joining of guard, leather and felts, with certainty and facility of regulation of spring, and a lasting true face, all being especially useful for sensitive and quick working valves, as for bellows of player pianos, vacuum cleaners, etc.

In the drawings, Figure 1 is a plan view of a complete bellows valve and spring; Fig. 2 a side view with rim of guard partly removed; Fig. 3 is a plan view of valve with spring and center screw removed; and Fig. 4 is a side view of the complete device in section.

A disk valve 1 of flexible material as leather requires a guard 2 of stiff material as tin to hold the flexible disk 1 to its seat 3, especially when the valve is hung under the seat, where its weight would tend to make it sag. This guard should be of a true plane at its outer part to make particularly certain the contact of the outer part of the flexible disk 1 to its seat 3. The guard therefore has its edge turned up in a narrow flange or rim 4 around its circumference, holding it stiff from accidental bending, and enabling its exact truing by tapping on the top of the flange. The upturned rim 4 also enables the gripping of the metal all around the edge of the guard against slipping while the interior flat part is struck or stretched to remove any "buckle" of the metal.

The securing of metal to leather being difficult to do with certainty and without causing unevenness in the leather when attached to the inner face of the guard 2, a washer 5 is placed on the outer face of the guard 2 over a hole 6 in the guard, and the leather is then glued or otherwise attached to the washer 5 through the hole 6, thus holding both to position with the guard 2. The washer 5 may be additionally attached directly to guard 2. A hole 7 in the center of washer 5 and a hole 8 through leather valve 1 center freely on the main guide 9, with the hole in the leather 1 preferably

larger than that in the washer 5, as leather is apt to corrode the guide if latter is of metal, while washer 5 may be of a safe material like felt or "bush-cloth." As screws having threads suitable for wood, and of proper size for this structure, do not have a smooth part or "barrel" long enough for the purpose of this valve guide 8, it has heretofore been necessary to take an extra length screw and cut off its point end, making a poor end to enter wood, so to avoid this and at the same time secure a better material for the valve to move on, a tube or sleeve 10 is slid over a screw of proper length not to extend through the seat 3, this sleeve covering all threads of the screw which are outside the seat, and allowing a smooth sliding guide surface of "fiber," brass, or other desirable material. As this sleeve 10 can be made of a correct length to act as a stop or check under the head 11 of guide or screw 9, the exact distance of that head 11 from the seat 3 is always assured when the guide 8 is replaced after removal. A spring 12 is centered on the guide 9 and sleeve 10, extending from the outer face of the valve parts out toward the head 11 of guide 9, which resists the pressure of the spring. One or more washers or "burrs" 13 are placed between the head 11 of guide 9 and the outer part of the spring 12, so that by removing or adding to the number of said washers a fine regulation of the tension of spring 12 may be had without the trouble of altering the spring.

To prevent squeaking or rattling of the spring 12 where it runs on sleeve 10 or guide 9, or where its own coils might touch each other, a special soft bushing 14 is employed. This bushing 14 is placed inside the small center coil of spring 12 which is next to the valve and travels on the sleeve 10 or guide 9, thus damping any sound from that motion, and the felt or cloth of this bushing 14 is brought out between and beyond the large coils of the spring 12, preventing any noise of contact of such coils together or of the inner coil against the guard 2.

To prevent the valve from revolving on its center and thereby changing the position of its leather 1 in holding over the ports 15, and consequently losing tightness by the shifting of the impressions of the ports 15 on the leather 1, a guide pin 16 is driven into the seat 3 near the outer edge of leather

1 and guard 2, and centered with a hole 17 in guard 2. To prevent noise, a soft or "dead" washer 18 is attached over the hole 17 with a guide hole 19 in washer 18 freely fitting the pin 16, and a larger hole 20 is provided in leather 1 so that the leather needs no attachment to the guard at that part, and yet will never catch on the pin. A polygonal or other form of valve or guard may be used instead of the disk shape, although that is preferred.

Various other modifications or substitutions may be made and yet the structure be subjected to,—

15 What I claim as my invention:—

1. A valve device comprising a flexible valve having a hole therein, and a stiff guard on the outer face of said valve, and having a hole therein opposite to and larger than said hole in the valve, a washer having a hole therein smaller than the hole in the guard and attached to the outer face of said guard with its hole over the hole in the guard, and opposite to the hole in the valve, said valve and said washer being attached together through the hole in the guard.

2. A valve device comprising a flexible valve having a hole therein, and a stiff guard on the outer face of said valve, and

having a hole therein opposite to and larger than said hole in the valve, a washer having a hole therein smaller than the hole in the guard and attached to the outer face of said guard with its hole over the hole in the guard, and opposite to the hole in the valve.

3. A valve-seat and a valve-means, said valve means provided with a guide hole, a guide screw entered into said seat and extended through the guide hole, a spring having several coils surrounding said guide, a loop on said spring slidably engaged on said guide, and a soft bushing in said loop and extended outwardly between the said coils of the spring.

4. A valve-seat and a valve-means, said valve means provided with a guide hole, a guide or screw entered into said seat and extended through the guide hole, a spring having several coils surrounding said guide, a loop on said spring slidably engaged on said guide, and a soft bushing in said loop and extended outwardly between the valve-means and the part of the spring adjacent thereto.

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Witnesses:

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