G. W. BEMIS.

BELLOWS VALVE.

APPLICATION FILED DEC. 15, 1908.

945,905. Patented Jan. 11, 1910.

Fig. 2.

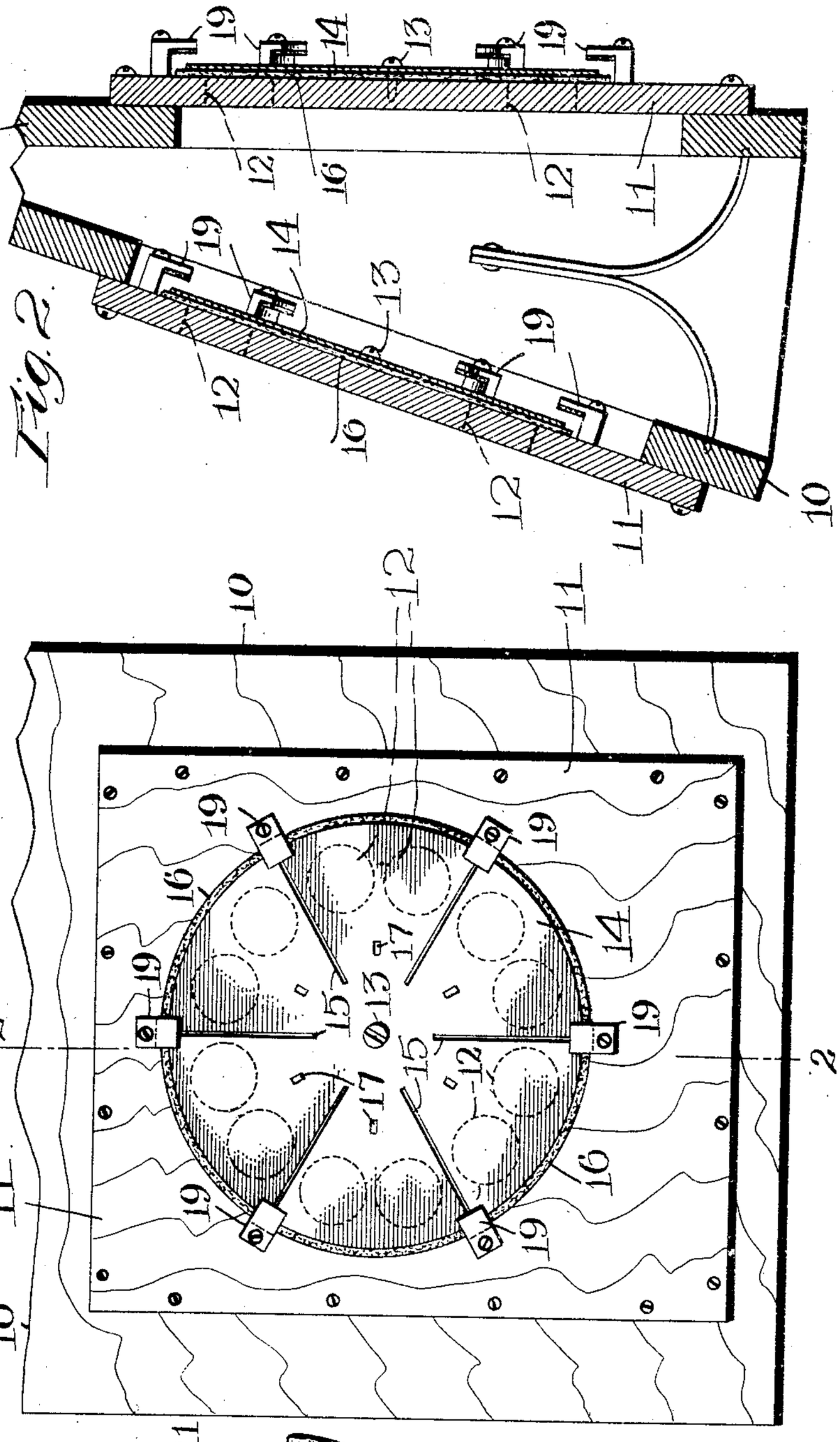
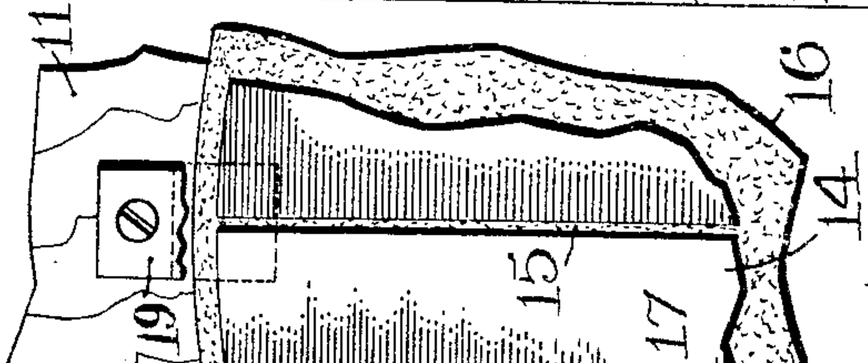


Fig. 1.

Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE W. BEMIS, OF WORCESTER, MASSACHUSETTS.

BELLOWS-VALVE.

945,905. Specification of Letters Patent. Patented Jan. 11, 1910.

Application filed December 15, 1908. Serial No. 467,592.

To all whom it may concern:

Be it known that I, GEORGE W. BEMIS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Bellows-Valve, of which the following is a specification.

This invention relates to a valve for bellows or other air-pumping devices and is especially designed for musical instruments, although capable of use for other purposes.

The principal object of the invention is to provide a construction of valve which shall not be capable of producing the disagreeable thumping noise produced by many valves which are on the market; in other words, to make a valve which shall be substantially noiseless in operation; also to provide a simple, convenient and easily manufactured and repaired construction which shall be practicable in every way and to improve the details thereof.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Figure 1 is a plan of the outside of an ordinary form of bellows showing a preferred embodiment of this invention applied thereto. Fig. 2 is a sectional view of the bellows showing two of these valves in position, one on the inside and the other on the outside, and Fig. 3 is an enlarged plan view showing certain details of construction.

The invention is shown applied to an ordinary form of bellows 10 having plates 11 thereon. Each of these plates is provided with a plurality of openings 12 through which the air is designed to pass in a well known way and which are designed to take the place of the ordinary valve openings. These openings are shown as arranged in a circle and at the center of the circle is illustrated a fastening device 13 for securing the center of a circular sheet metal disk valve 14 in position. This valve is secured at the center only so that its edges are free to vibrate toward and from the plate. These edges are made free to vibrate in sections independently of each other as by providing a series of radial slits 15 extending from the edge inwardly to a point near the center where the valve is attached. In this way it will be seen that each section can vibrate as a valve independently of the others.

On the under or seating surface of the sheet metal valve, which is preferably made of aluminum or other readily flexible material, is placed a continuous circular sheet 16 of leather or other flexible non-metallic material. This sheet of course is secured to the plate by the fastening means 13 which passes through the metal disk valve and it is secured to the latter by means of a series of tongues 17 integral with the valve, projecting through the leather and clenched thereto. Its outer edges, however, is free from the edges of the metal disk valve all around which permits it to contract and expand and to be entirely free for the desired kinds of movement.

On the plate are mounted a series of stops 19 designed to limit the vibrating motion of the edges of the disk under heavy currents of air. These stops are conveniently arranged to bridge the several slits and consequently if one of them is broken, those at the sides thereof will operate to stop the two sections between them and in fact, if desired, the number of stops can be equal to half the number of slits only.

I have found in practice that a valve constructed in accordance with the principles herein set forth operates with absolute noiselessness even under the most rapid flow of air which is likely to take place in an instrument of this kind. At the same time it is of very simple construction and can be made very cheaply and is very easily applied, removed and repaired.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details of construction shown and described, but

What I do claim is:—

1. As an article of manufacture, a valve for a bellows comprising a rigid support having perforations therethrough, a flexible sheet metal disk secured thereto and adapted to cover the perforations, said disk having slits from its edges toward the center and having a continuous sheet of thin leather more flexible than the disk on the under side thereof free from the sections between the slits at their outer edges and said sections having means near the center for securing the leather thereto.

2. In a device of the character described, the combination of a plate having openings therethrough arranged in a circle, a sheet metal valve secured to said plate at the center of said circle and provided with radial slits extending from its edges toward the center, its edges being free to vibrate, and stops mounted on said plate and projecting over the edges of said disk in line with the radial slits, whereby each stop prevents excessive motion of two sections of the valve.

3. In a device of the character described, the combination of a plate having an opening therethrough, a sheet metal valve secured to said plate at one side of the opening and free at its edge to vibrate toward and from the opening, said valve having a sheet of leather on the under side thereof free from it at its edge and having integral means near the point at which the valve is attached to the plate for securing the leather to the valve, and means on the plate for limiting the vibration of the edge of the valve.

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

GEORGE W. BEMIS.

Witnesses:
ALBERT E. FAY,
C. FORREST WESSON.