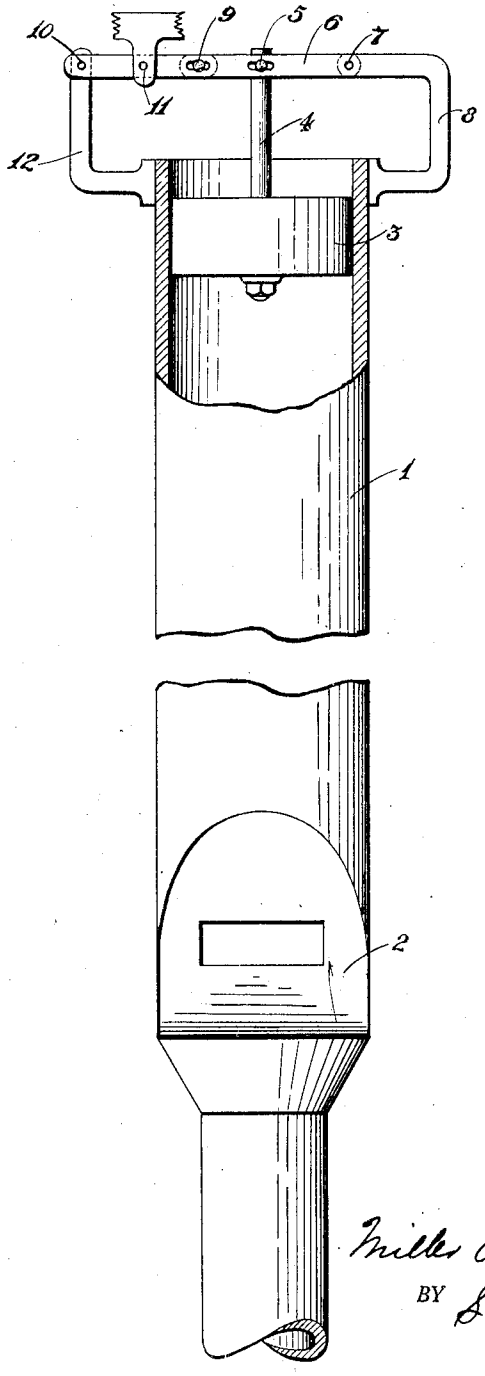
Nov. 19, 1929. M. R. HUTCHISON 1,735,864

SOUND PROPAGATING DEVICE

Filed May 2, 1928



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Patented Nov. 19, 1929 1,735,864

UNITED STATES PATENT OFFICE

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SOUND-PROPAGATING DEVICE

Application filed May 2, 1928. Serial No. 274,525.

The invention relates to resonating chambers for sound propagating devices.

One object of the invention relates to means for insuring a uniformity of pitch of sound waves propagated by a given sound propagating device despite variations in temperature and humidity of the surrounding atmospheric medium.

A further object of the invention is to provide means for preventing changes in volume of a resonating chamber associated with a sound propagating device.

One feature of the invention relates to the provision of a movable piston positioned within a resonating chamber associated with a sound propagating device whereby variations in the length of the resonating chamber in response to characteristic changes may be compensated for by opposite variations of the position of the piston within the chamber.

A further feature of the invention relates to the operation of a piston determining the end of a resonating chamber by means responsive to temperature conditions surrounding the apparatus.

Referring to the figure of the drawing, the invention is illustrated in connection with an organ pipe. It is to be understood, however, that the invention is not confined to the particular instrument disclosed and may be applied as well to a resonating chamber associated with any preferred type of means for propagating sound waves.

As illustrated in the drawing, there is provided a resonating chamber 1, associated with a reed 2 of an organ. As is the common practice, the resonating chamber is resonated to sound waves of a frequency of the fundamental sound propagated by the reed 2. The length of the column of atmospheric medium within the chamber 1 determines the frequency of sound waves to which the column is resonant. It is, therefore, necessary for the accurate reinforcement of the fundamental sound waves propagated by the reed 2 that the column of atmospheric medium within the chamber 1 remain of a uniform length regardless of the variations in temperature of the surrounding atmospheric medium.

As illustrated, there is provided a closure 3, terminating at one end of the chamber 1. As the length of the resonating atmospheric medium within the chamber increases when the chamber 1 expands under a rise in temperature, some adjustable compensating means to determine the length of the column of atmospheric medium should be employed. For accomplishing this purpose, the closure 3 is provided with a supporting arm 4, which is pivotally connected as at 5 to a toggle 6, one end of which is secured as at 7 to a vertical extending support 8 secured to the upper end of the chamber 1. The opposite side of the toggle 6 is connected as at 9 with a lever 10 fulcrumed as at 11 to a support positioned on some relatively fixed body such as a wall or ceiling of the room. The opposite end of the lever 10 is secured to a vertical support 12, extending from the chamber 1 opposite the support 8.

In the operation of this form of the invention, as the temperature of the surrounding medium rises and the chamber 1 expands pushing upwardly the supports 8 and 12, the support 8 carries with it by its connection as at 7 one side of the toggle 6, moving it in a counterclockwise direction about its function 5. At the same time the support 12 moves upwardly carrying with it one side of the lever 10, moving it in a clockwise direction about its fulcrum 11. The opposite end of the lever 10 thus moves downwardly and as the length of the lever arms 6 and 10 are properly proportioned the downward movement of the left side of the arm 6 under the influence of the lever 10 is proportionate to the upward movement of the right side of the arm under the influence of the support 8. Thus, the movements about the pivot 5 are balanced and under the influence of changes of temperature the closure 3 remains stationary with respect to the reed 2, thus insuring at all times a resonating chamber of the same length regardless of atmospheric conditions surrounding the chamber. There are obviously other methods of maintaining the closure 3 in a fixed position relative to the reed 2 and the scope of the present invention is not intended to be confined to the specific lever action herein disclosed.

The invention upon which this application is based is broader than the specific embodiment shown and described for the purpose of illustrating at least one of the ways in which it may be employed. The scope of the invention is, therefore, to be understood as not being limited by the present specific description. I intend no limitations other than those imposed by the claim.

What is claimed is:

In an organ pipe a closure for said pipe, a toggle supporting said closure, supports secured to the closed end of said pipe and to said toggle in such a manner that movements of said closed end with respect to the mouth of said pipe will cause rotation of said toggle whereby the distance between said closure and the mouth of said pipe will remain constant.

Signed at New York, in the county of New York and State of New York, this 17th day of January A. D. 1928.

MILLER REESE HUTCHISON.