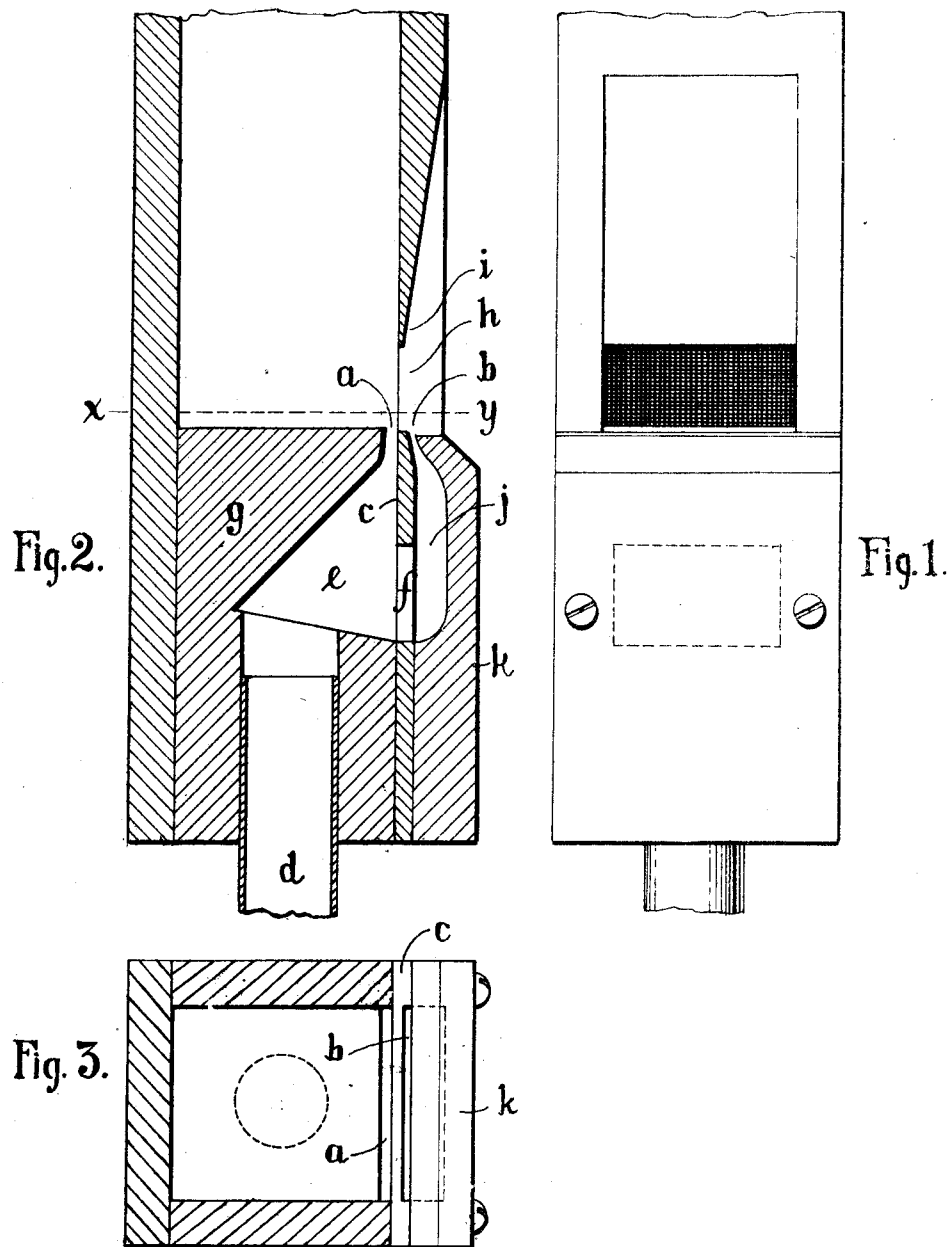


R. Y. BARROWS.
 ORGAN PIPE.
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WITNESSES
Geoffrey
L. P. Higgins

INVENTOR
 Robert Y. Barrows
 BY
Emery Booth *James V. Varnier*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

ROBERT Y. BARROWS, OF RUTHERFORD, NEW JERSEY, ASSIGNOR OF ONE-HALF TO
GEORGE H. HARMAN, OF GLEN RIDGE, NEW JERSEY.

ORGAN-PIPE.

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To all whom it may concern:

Be it known that I, ROBERT Y. BARROWS, a citizen of the United States, and a resident of Rutherford, in the county of Bergen and State of New Jersey, have invented an Improvement in Organ-Pipes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to the labial pipes of an organ, its object being the production of tones of great power and harmonic richness from pipes of small scale, without the requirement of a high pressure wind supply and the attendant necessity of an additional bellows or reservoir.

Without recourse to high wind pressure, a pipe may be made to yield a greater volume of sound by increasing its scale; that is, by making its horizontal section greater in proportion to its length; but as the impression of power depends as much upon timbre or quality as upon volume or quantity of sound, it is evident that the development of the overtones is of very great importance. The large scale pipe is however quite deficient in this respect, the tone being much too pure to be pleasing.

In pipes of ordinary scales the harmonic bridge used in various forms for many years causes an entrained air current to act upon or combine with the original wind sheet, modifying the quality of the tone without however increasing the volume of sound.

By means of the new labial pipe herein-after described, and shown in detail in the accompanying drawings, it is possible to obtain with a wind pressure as low as three or four inches, tones that have heretofore required a very much greater pressure. This new pipe which I call the calliaphone differs from the usual labial organ pipe in that, in addition to the usual slit which delivers the wind sheet across the mouth of the pipe, another slit is provided parallel to the first slit and communicating with the same wind supply passage in the block, its object being not only to add to the volume of sound but also to provide a means of inducing and controlling the production of harmonic overtones vastly superior to that afforded by any of the forms of harmonic bridge commonly used for this purpose. So great

is the control afforded by this additional wind sheet that both slits may be made much wider than would be possible in a pipe having a single slit, thus producing a tone not only of great power but of extremely rich and brilliant timbre. It is obvious that this pipe will require a very copious supply of wind and that a foot of ample bore must be provided. This invention may be applied to all varieties of labial pipes, metal or wood, stopped (covered) or open, of any scale, having one mouth, or two, and whether blown at high pressure or low. Owing to the extreme intensity of the air vibration, open pipes of this kind should be tuned by means of an adjustable shade or slide placed over a slot in a side of the pipe at the upper end, and not by means of a shade applied to the top.

The drawings show an open wood pipe about 4 feet in length, pitch C, the width being 2 inches and the depth 2½ inches, the mouth being three sevenths its width in height.

Figure 1 is a front elevation, Fig. 2 a longitudinal section, and, Fig. 3 a transverse section at $x-y$ in Fig. 2.

In what follows, the slit of the pipe may be considered as divided, or the pipe may be considered as being provided with an additional slit parallel to the main slit. For purposes of description, the latter view will be adopted.

In the drawings, the principal slit is denoted by a and the supplemental slit by b which is directly in front of and parallel with the main slit. The two slits are separated by a member c which is perforated, as shown at f , the perforation being indicated in Fig. 1 by broken lines. Air under pressure enters the foot d and from the chamber e in the block g is delivered to the slits a and b simultaneously and from them directed across the mouth h . The upper lip i is cut quite sharp and the cavity j in the cap k extends the full internal width of the pipe as indicated by the broken lines in Fig. 3.

Careful attention should be given to the voicing of the improved pipe in order to get the best results, though this is of course true of all pipes. Few specific directions can be given for this purpose; but it may be useful to call Fig. 2 especially to attention, where the supplemental or outer slit b

will be seen to be directed inwardly or in such wise relatively to the other slit, as to cause the two emerging wind sheets to meet slightly in front of and about on a level with the edge of the lip. An organ builder will vary this to suit himself or any given case, as no absolute rule can be given.

I claim as my invention:

1. A labial organ pipe having means to divide its slit from end to end so that it may discharge the air across the mouth in two parallel sheets, and means to supply air under pressure simultaneously to both divisions of the slit.

2. A labial organ pipe having one mouth, one wind inlet, and two parallel discharge openings for delivering two sheets of air

under pressure simultaneously across the mouth.

3. A labial organ pipe having the air passage which forms the wind sheet cut partly in the block and partly in the cap and provided with a separating member placed between the cap and the block and perforated to allow air to enter the passage in the cap from that in the block.

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

ROBERT Y. BARROWS.

Witnesses:

D. B. DODGE,
Jos. E. COSTELLO.