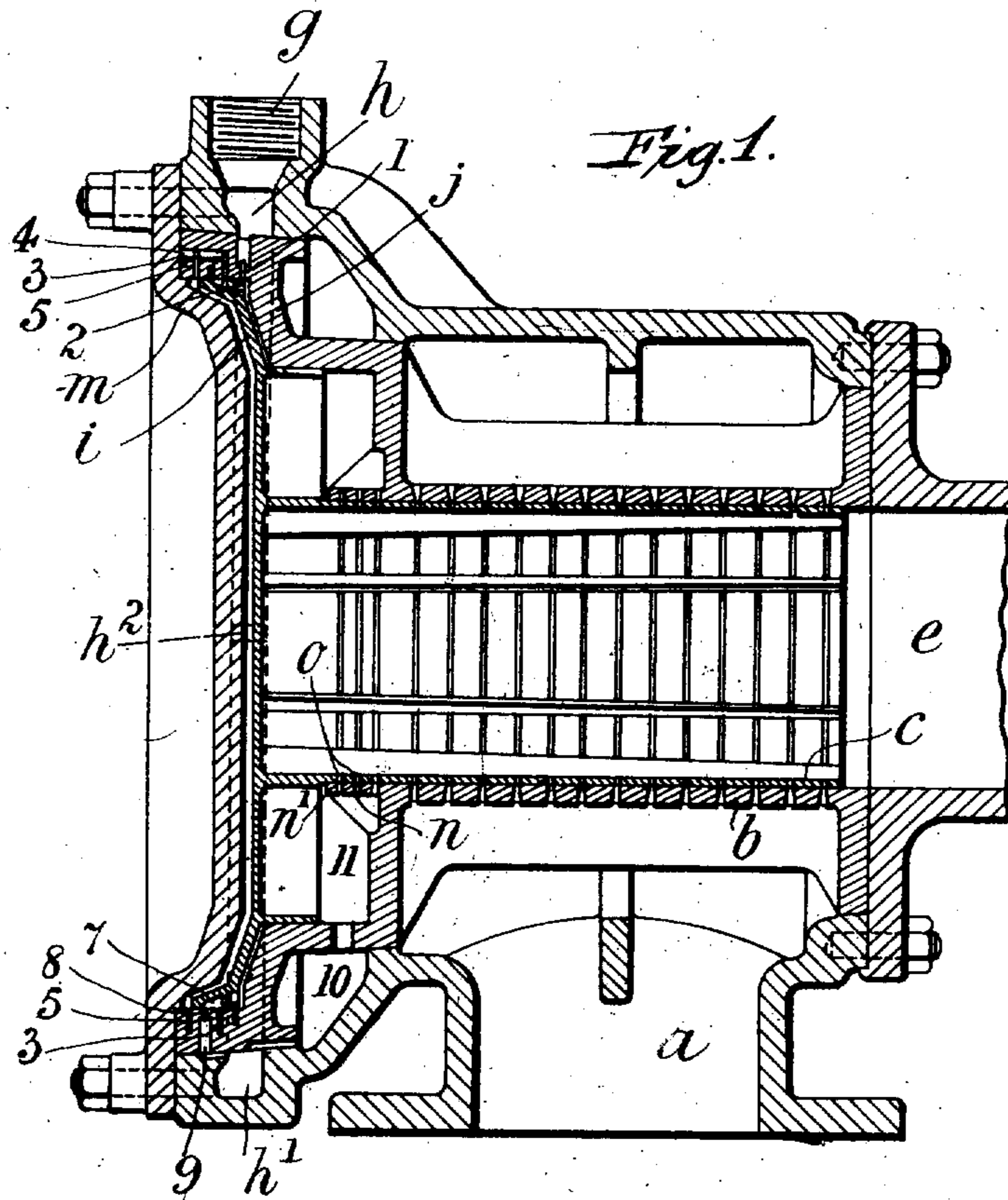


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SOUND PRODUCING DEVICE.  
APPLICATION FILED JUNE 5, 1908.

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Patented Oct. 25, 1910.

2 SHEETS-SHEET 1.



WITNESSES.

*J. P. Northey*  
*W. H. Hale, Jr.*

INVENTOR.

*J. P. Northey*  
*By William, Fisher & Witherston*  
*his attorneys.*

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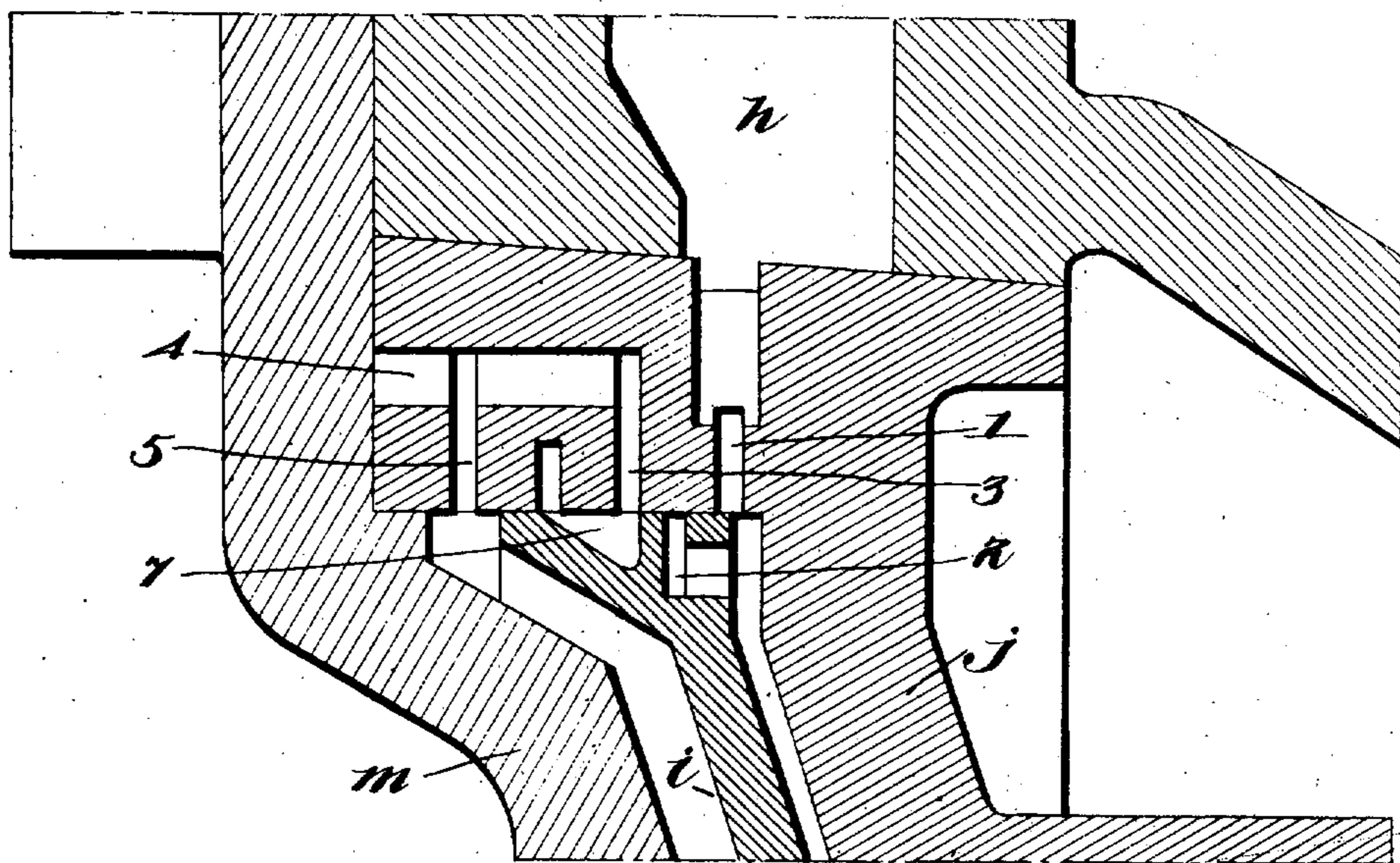
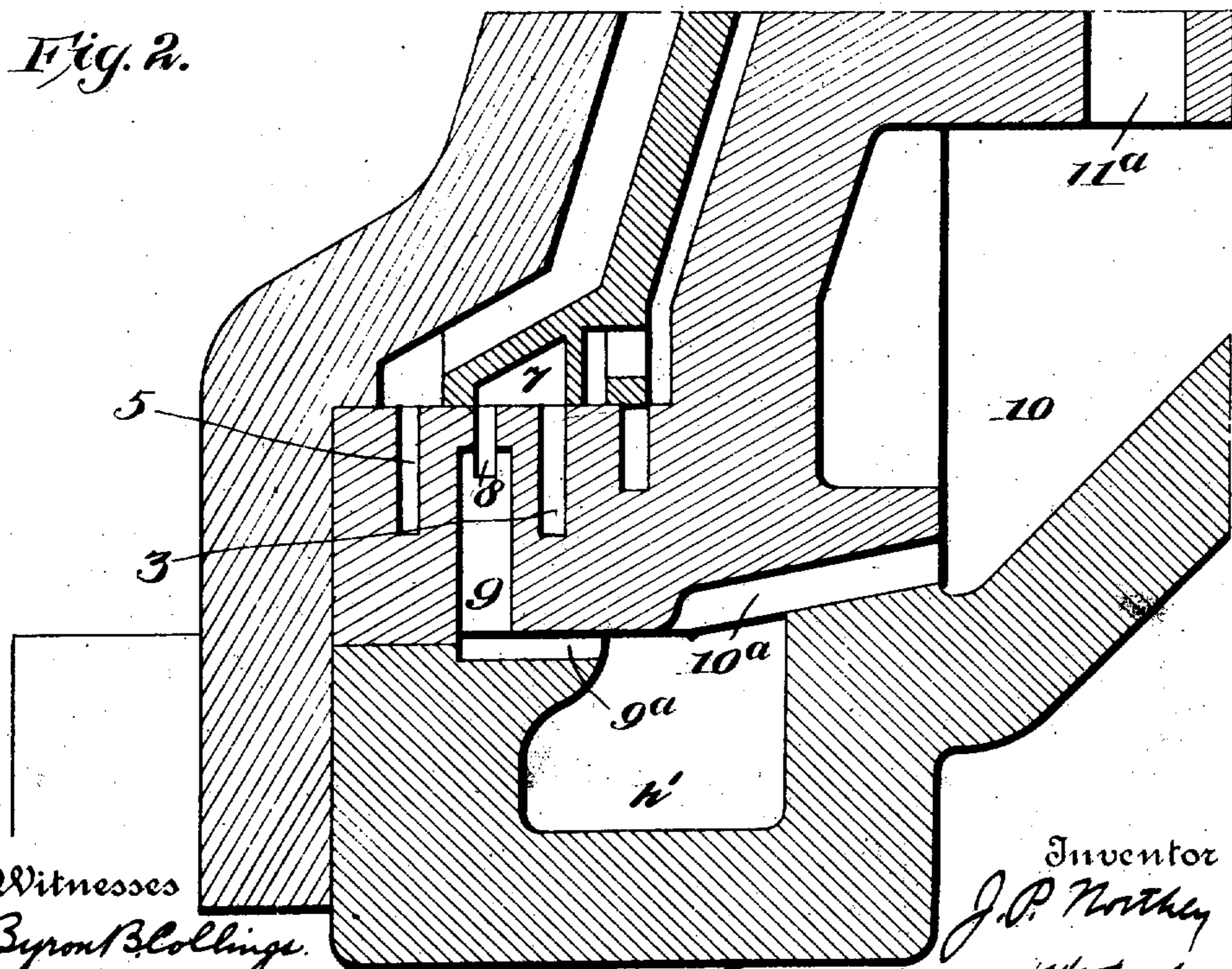


Fig. 2.



Witnesses  
Byron B. Bollinger  
J. S. Gindler

Inventor  
J. P. Northey  
By William H. H. Witherspoon  
his Attorneys

# UNITED STATES PATENT OFFICE.

JOHN PELL NORTHEY, OF TORONTO, ONTARIO, CANADA.

SOUND-PRODUCING DEVICE.

973,960.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed June 5, 1908. Serial No. 438,898.

*To all whom it may concern:*

Be it known that I, JOHN PELL NORTHEY, a subject of His Majesty the King of Great Britain, residing at the city of Toronto, Province of Ontario, Canada, but at present of the Savoy Hotel, London, England, have invented a new and useful Improved Sound-Producing Device, of which the following is a specification.

This invention relates to sound producing devices suitable for fog signaling, position locating, or the like, of the character in which a fixed part having note determining orifices is employed in conjunction with a moving part having similar orifices, and driven from a separate fluid supply.

According to the present invention I utilize the driving air or steam after it has done its work by passing it again into the note air in such a manner that it mixes with it in vibrations synchronous with the larger volume of note vibrations and thus increases the volume of the latter without destroying its purity.

In the accompanying drawing is shown one form of apparatus adapted to my present invention, Figure 1 being a sectional elevation of sufficient of a diaphone or sound producing apparatus for the purpose of understanding same. Fig. 2 is a fragmentary sectional detail view showing on an enlarged scale the various ports and passages adjacent the piston head for the incoming and exhausting auxiliary fluid under pressure.

In the form shown it will be seen that the sound producing air or steam after its entrance at *a* passes through a slotted cylinder *b*, and through a slotted movable part terminating in the resonator *c*, the movable part being open ended for the purpose of discharging the air vibrations. The movable part may be reciprocated in any of the usual ways with a separate steam or air supply or the particular arrangement illustrated may be employed. In this case the separate steam or air entrance *g* passes the fluid to a passage *h* which extends half way around as an inlet passage, and the other half way around as an exhaust passage *h'*, a partition *h<sup>2</sup>* separating the two. From the supply passage *h* the fluid passes through an annular port 1 in an enlarged head *j* of the cylinder *b* and between it and a piston *i* of the movable part *c*, which it forces away from the cylinder head al-

lowing the fluid to pass through annular ports 2 and 3 in the piston and cylinder heads respectively to holes 4 and thence by an annular port 5 in the cylinder head to the other side of the piston head so that the latter is driven in the opposite direction, the inlet port 1 being thus closed. As the ports 5 and 1 are a short distance away from the cylinder cover *m* and the part of the cylinder head opposed to the piston head respectively, spaces for the fluid are left on each side of the piston head which act to cushion it in either direction. The fluid passes back from the cover side of the piston head by way of the port 5, holes 4, port 3 into an annular space 7 in the piston head then by way of an annular port 8 in cylinder head to holes 9 which in turn, through the port 9<sup>a</sup>, communicate with the exhaust passage *h'* from which the exhaust air or steam passes, through a port 10<sup>a</sup>, to a chamber 10, from thence, through the port 11<sup>a</sup>, to a chamber 11 and from thence through slots *n* in an extension *n'* of the cylinder and through corresponding slots *o* in the movable part thus producing vibrations similar to those of the sound producing air with the result in this case, that the driving air or steam which previously was wasted, or if discharged into the resonator was so done that it disturbed the note, is utilized to increase the volume of the latter.

In the embodiment of the invention shown it will be seen that chamber 11 is open to a portion of one side of the piston head. The remaining portion of this side of the piston head is always under pressure but its area is less as will be seen than the side from which the exhaust takes place.

It will be understood that the particular construction is only shown as an example of a moving part driven by a separate supply for the purpose of illustrating the utilization of the exhaust of the latter, and that the invention can be adapted to other constructions in which the same conditions exist.

What I claim is:—

1. A sound producing device comprising a fixed part having note determining orifices, a movable part having similar coacting orifices, one of said parts comprising a note vibration chamber, means conducting a main fluid under pressure to same, a piston head carried by said movable part, means for conducting an auxiliary fluid under pressure to said piston head, and means con-

ducting the exhaust auxiliary pressure fluid from said piston head and introducing same into said chamber synchronously with the introduction of said main fluid.

5 2. A sound producing device comprising a fixed part having note determining orifices, a movable part having similar co-acting orifices, means conducting fluid under pressure to said orifices, a piston head carried by said movable part, means conducting  
10 fluid under pressure to said piston head, an exhaust chamber for the exhaust pressure fluid from said piston head, said exhaust chamber containing portions corresponding  
15 to said fixed and movable part and having co-acting orifices therein to receive the exhaust from said exhaust chamber.

3. A sound producing device comprising a fixed part having two sets of note determining orifices, a movable part having two  
20 similar co-acting sets of orifices, means for conducting pressure fluid to one co-acting set, a piston head carried by such movable part, separate fluid conducting means leading  
25 to said piston head, and an exhaust

chamber for said separate fluid in communication with the other co-acting set.

4. A sound producing device comprising a fixed part having note determining orifices, a movable part having similar co-acting  
30 orifices, one of said parts comprising a note vibration chamber, and said movable part being provided with a piston head, means for conducting fluid under pressure through  
35 said orifices into said vibration chamber, means for conducting an auxiliary fluid under pressure to said piston head, and means for conducting the exhaust from said auxiliary fluid under pressure to said vibration  
40 chamber at the same time that said main fluid is introduced therein, and through orifices of the same size as said previously mentioned orifices.

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

JOHN PELL NORTHEY.

Witnesses:

ALLEN PARRY JONES,  
EDWARD T. FOSTER.