

No. 736,428.

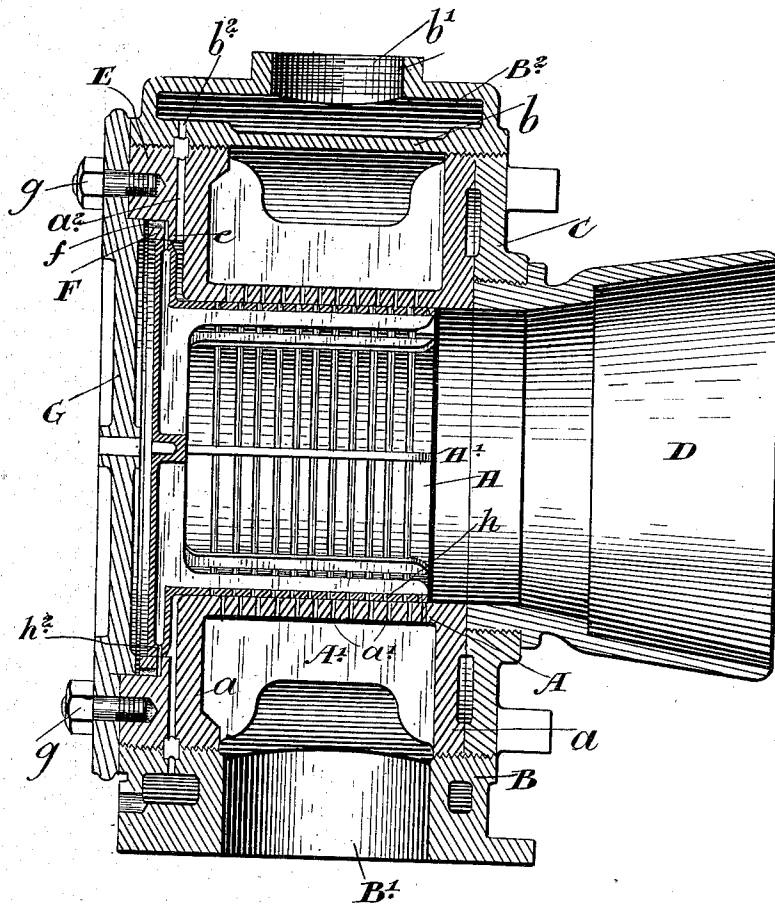
PATENTED AUG. 18, 1903.

J. P. NORTHEY.

SOUND PRODUCING DEVICE SUITABLE FOR SIRENS OR LIKE INSTRUMENTS.

APPLICATION FILED NOV. 22, 1902.

NO MODEL.



Witnesses
A. I. S. Young
R. Shields

Inventor
J. P. Northey
by
J. H. Stoutang & Co.
attys.

UNITED STATES PATENT OFFICE.

JOHN PELL NORTHEY, OF TORONTO, CANADA.

SOUND-PRODUCING DEVICE SUITABLE FOR SIRENS OR LIKE INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 736,428, dated August 18, 1903.

Application filed November 22, 1902. Serial No. 132,428. (No model.)

To all whom it may concern:

Be it known that I, JOHN PELL NORTHEY, manufacturer, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Sound-Producing Devices Suitable for Sirens or Like Instruments, of which the following is a specification.

My invention relates to improvements in sound-producing devices suitable for sirens and like instruments; and the object of the invention is to improve the construction of the diaphone and produce a simple means for economically operating the same and yet produce a uniform or even note of great carrying power; and it consists, essentially, of a casing provided with a suitable cover, a compressed-air or suitable low-pressure-fluid supplying pipe leading to the casing and to passage-ways in the internal cylinder thereof, a suitable resonator or trumpet screwed in the casing and forming a continuation of the cylinder, a piston situated within the cylinder and provided with passage-ways extending to the passage-ways in the cylinder aforesaid and having an enlarged head and passage-ways leading through the edge thereof and located within an enlarged chamber, the main casing also being provided with orifices leading to the chamber surrounding the enlarged head of the piston, such orifices being supplied with air at a comparatively high pressure through a supplemental air-pipe, and passage-ways being made in the casing to lead behind the piston, and the parts being otherwise arranged and constructed in detail as herein-after more particularly explained.

The drawing represents a sectional view of my improved sound-producing device or signaling-siren.

A is the interior cylinder, which is provided with flanges *a* and passage-ways *a'*.

B is the exterior casing, which is screwed onto the threaded circular exterior of the cylinder A. The casing B is provided with an entrance-pipe B', through which it is designed to introduce air at a comparatively low pressure—say at about 20 pounds. The casing B is also provided with a circumferential wall *b*, which extends to the wall of the entrance-pipe B'.

B' is an entrance-pipe leading into the

chamber B², formed between the walls *b* and the exterior wall of the casing B.

C is an annular plate which is screwed into the interior of the casing B, so as to abut the flange *a* of the cylinder A.

D is the resonator, which is screwed into the threaded interior of the plate C.

E is an annular plate which is screwed into the threaded interior periphery of the casing B opposite to the flange *a* and so as to leave an annular passage-way *a*².

B² represents passage-ways extending through the wall *b* of the casing B opposite the passage-ways *a*².

F is a ring which is of the same internal diameter as the inwardly-extending flange *e* of the ring E, such ring forming a passage-way *f* between the flange *e* and the enlarged plate E.

G is the cover-plate, which is fastened to the ring F by suitable cap-screws *g*, such plate G forming, with the ring F, the remainder of the passage-ways *f*.

H is a piston which is provided with a series of orifices *h*, corresponding in number to the orifices *a'* of the cylinder A. The orifices *a'*, as well as the orifices *h*, are annular orifices.

The cylinder A is cast or formed with ribs A', which of course extend across the orifices *a'* and between the flanges *a*, and thereby enable the casting to be made so as to leave the orifices. The ribs A' are preferably exterior ribs. The piston H, however, is provided with interior ribs or wings H', by which I am enabled to cast the piston in one, so as to leave the enlarged orifices, as well as the orifices *h*², in the enlarged piston-head H'.

As hereinbefore stated, the air at low pressure—say at twenty pounds—is introduced through the pipe B' and through the openings or passage-ways *a'* in the cylinder A. The air at high pressure—say one hundred pounds—is introduced through the pipe *b'* and the passage-ways *b*² and *a*² to the front of the enlarged head and forces such head backwardly until the air passes through the passage-way *f* to the back of the head and forces the head forwardly again and exhausts through the passage-ways *h*². In doing so the head, and consequently the piston, is continuously vibrated and the orifices *h* brought opposite the ori-

fice a' , through which the air passes at low pressure, and thereby the requisite sound, tone, or note is produced through the resonator D.

- 5 By the construction I have adopted it will be understood that I produce the sound through low pressure and impart the required movement to the piston by comparatively smaller orifices at high pressure, thereby
10 materially reducing the cost or expense in producing the sound, which is of course an important desideratum.

What I claim as my invention is—

1. In a sound-producing device, the combination with the cylinder having orifices and
15 the piston having orifices corresponding to the same and a suitable head, of the pipe designed to discharge air at low pressure to and through the orifices in the cylinder and piston and the
20 pipe designed to discharge air at high pressure against the head of the cylinder, so as to vibrate it as and for the purpose specified.

2. In a sound-producing device, the combination with the cylinder having passage-ways
25 and the resonator leading therefrom, of the exterior casing forming a chamber around the cylinder, a low-pressure-air pipe leading directly to the cylinder through the casing, a high-pressure-air pipe leading to the exterior
30 chamber, the piston having passage-ways corresponding to the passage-ways in the cylinder and having an enlarged head fitting within the chamber in the casing, said casing and cylinder having passage-ways to carry
35 the air under high pressure to the chamber surrounding the head, whereby such head is vibrated as and for the purpose specified.

3. In a sound-producing device, the combination with the cylinder having orifices and
40 flanges and the casing surrounding the same, and fitted onto the threaded exterior of the

flanges of the cylinder and forming a chamber around such cylinder and the pipe designed to discharge air at low pressure through the orifices of the cylinder and piston and the pipe designed to discharge air at high pressure into the chamber, of the piston having passage-ways corresponding to the passage-ways in the cylinder, an enlarged head provided with an annular opening, a ring surrounding the head and forming a passage-way to the chamber in which the head is located in continuation of the passage-way extending through the casing from the chamber, a supplemental ring within the aforesaid ring forming passage-ways to behind the head and a suitable cover-plate to inclose the head as and for the purpose specified.

4. In a sound-producing device, the combination with the cylinder having passage-ways
6 and the resonator leading therefrom, the exterior casing forming a chamber around the cylinder and a low-pressure pipe leading directly to the cylinder through the casing, of the piston having passage-ways corresponding to the passage-ways in the cylinder and located within the chamber in the casing and having an enlarged head provided with an annular opening, a ring surrounding the head and forming a passage-way to the chamber in which the head is located in continuation of the passage-way extending through the casing from the chamber, a supplemental ring within the aforesaid ring forming passage-ways to behind the head, a suitable
7 cover-plate to inclose the head and a pipe leading to the chamber surrounding the aforesaid head as and for the purpose specified.

JOHN PELL NORTHEY.

Witnesses:

B. BOYD,

C. B. SHEFFIELD.