

No. 709,984.

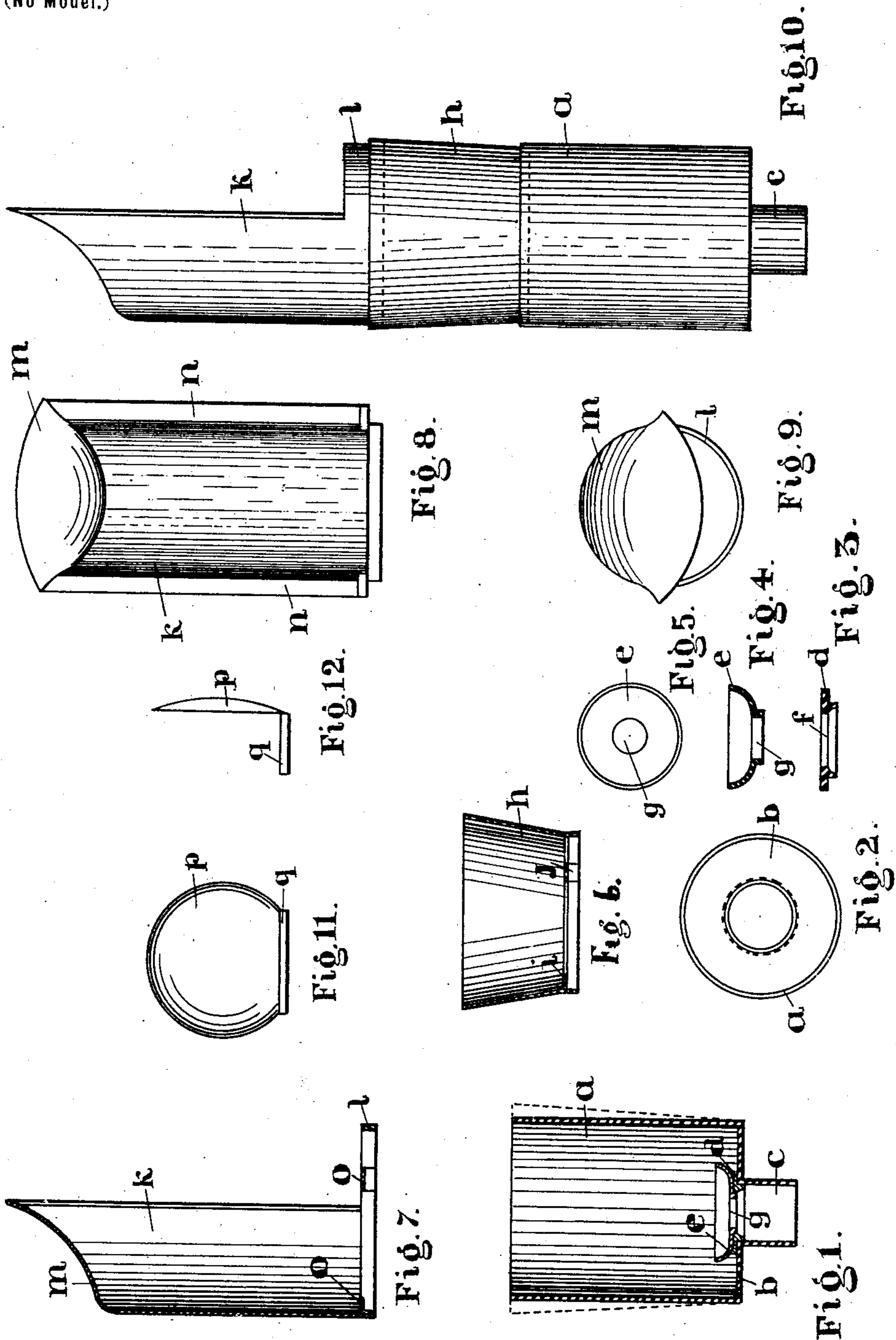
Patented Sept. 30, 1902.

W. S. HOW.

RESONATOR OR AMPLIFIER FOR PHONOGRAPHS.

(Application filed Mar. 1, 1901.)

(No Model.)



Witnesses.

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RESONATOR OR AMPLIFIER FOR PHONOGRAPHS.

SPECIFICATION forming part of Letters Patent No. 709,984, dated September 30, 1902.

Application filed March 1, 1901. Serial No. 49,476. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SAMUEL HOW, a subject of the King of Great Britain, residing at 35 Albany street, Regents Park, London, England, have invented new and useful Improvements in Resonators or Amplifiers for Phonographs and other Instruments for Recording and Reproducing Sounds, of which the following is a specification.

10 The object of this invention is to enable phonographs and such like instruments to reproduce the human voice in a more natural manner than heretofore and to eliminate the squeaky, metallic, and nasal element therefrom.

15 My improved resonators, amplifiers, and reflectors are shown by the accompanying drawings; in which—

20 Figure 1 represents a section of a resonator or amplifier constructed according to this invention. Fig. 2 is a plan of same. Fig. 3 is a section of one form of perforated modulator. Fig. 4 is a section of another form of perforated modulator. Fig. 5 is a plan of same. Fig. 6 25 is a section of a conical piece which may be used in conjunction with the resonator shown by Figs. 1 and 2. Fig. 7 is a section of a reflector which may be used in conjunction with the apparatus shown by Figs. 1, 2, and 6. Fig. 8 is a front view of same. Fig. 9 is a plan 30 of same. Fig. 10 shows the resonators and reflectors used together. Fig. 11 is a front view of another form of reflector. Fig. 12 is a side view of same.

35 The same letters denote the same parts in all the figures.

40 a is a cylinder, of vulcanite, papier-mâché, or of any other suitable material, open at the top and provided with a flat bottom b , to which is attached or formed integral there- with a short cylindrical neck c , which fits onto the phonograph or other similar apparatus in place of the usual trumpet. The cylinder 45 a and neck b form the resonator or amplifier.

50 d e are perforated diaphragms or stops which are fitted into the bottom of the cylinder a , as shown by Fig. 1, when it is desired to reproduce the human voice. The diaphragms or stops d are made with apertures f of various diameters, and they may either be used alone or in combination with the stops

e , which may also be made with apertures g of various sizes. As will be seen by referring to the drawings, Figs. 1, 3, and 4, the diaphragm or stop e is cup-shaped above the aperture g , while the diaphragm or stop d is cup-shaped below the aperture f . 55

When it is necessary or desirable to amplify or intensify the sounds produced by the instrument still more than the cylinder a is 60 capable of effecting, I provide a cone h , (shown in section at Fig. 6 and in elevation at Fig. 10,) of vulcanite, papier-mâché, or of any other suitable material, which is provided at the bottom with an internal flange i or lugs j , 65 which flange or lugs rest on the top of the cylinder a when the cone h is used in conjunction therewith, or, if preferred, the cone h may be made to fit inside the cylinder a , as shown by Fig. 10. If the sound requires still 70 further amplification—as, for instance, if the instrument is being used in large halls—I may use a second similar (but larger) cone to that shown by Figs. 6 and 10 and which fits in or on the mouth of the cone h . In 75 some cases—as, for instance, when the instrument is placed at one end of a large hall and it is desired to enable the entire audience to hear the reproduced sounds—I make use of the reflector k (shown by Figs. 7, 8, and 9) 80 to effect this result. This reflector consists of an approximate semicylinder of any suitable material attached to a ring l , the semicylinder k being provided with a covered top m and side wings n . 85

90 o o are lugs secured to the inside of the ring l to support the reflector k on the top of the cone h , or the reflector k may be made to fit inside the mouth of the cone h , as shown by Fig. 10. The reflectors may also be spherical, elliptical, or parabolic, and are produced by pressing or otherwise forming a circular piece of suitable material into the required curvature. Such a reflector is shown by Figs. 11 and 12, the reflector p being secured to a 95 ring q to enable it to be fitted to the cylinder a or to the cone h .

This invention is applicable to instruments in which the record is inscribed on a disk instead of a cylinder by using a suitable connecting-piece between the sound-box and the resonator or amplifier. 100

Although I prefer to use a cylinder *a*, I may use a cone, as indicated by dotted lines, Fig. 1. The most suitable materials for my improved resonators or amplifiers are vul-

5 canite, celluloid, papier-mâché, wood, and other non-metallic substances, those substances which are homogeneous giving the best results.

By using resonators or amplifiers constructed as hereinbefore specified the harsh, metallic, and nasal quality of the sounds produced by phonographs and other sound-recording instruments is avoided and the reproduction of the record of the human voice is rendered

15 almost perfect.
What I claim, and desire to secure by Letters Patent, is—

1. In a resonator or amplifier for phonographs and the like the combination of a tube

20 *a* having a flat bottom *b* and a cylindrical neck *c* with one or more cup-shaped modulators *d* *e* having apertures *f* *g* in the bottom thereof all substantially as specified for the purpose stated.

25 2. In a resonator or amplifier for phonographs and the like the combination of a tube *a* having a flat bottom *b* and a cylindrical

neck *c* with one or more cup-shaped modulators *d* *e* and a cone *h* adapted to fit the mouth of the tube *a* all substantially as specified for 30 the purpose stated.

3. In a resonator or amplifier for phonographs and the like the combination with the tube *a* attached to the sound-box of the instrument, of a reflector consisting of a semi-

35 cylinder *k* having a curved top *m* and side wings *n* *n*; the semicylinder *k* being secured to a ring *l* adapted to fit the mouth of the tube *a*, all substantially as specified for the purpose stated. 40

4. In a resonator or amplifier for phonographs and the like the combination of a tube *a* having a flat bottom *b* and a cylindrical neck *c* with one or more cup-shaped modulators *d* *e* a cone *h* adapted to fit the tube *a* and 45 a reflector *k* having a curved top *m* and side wings *n* *n* and a ring *l* secured to the reflector *k* all substantially as specified and for the purpose stated.

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Witnesses:

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