No. 840,089.

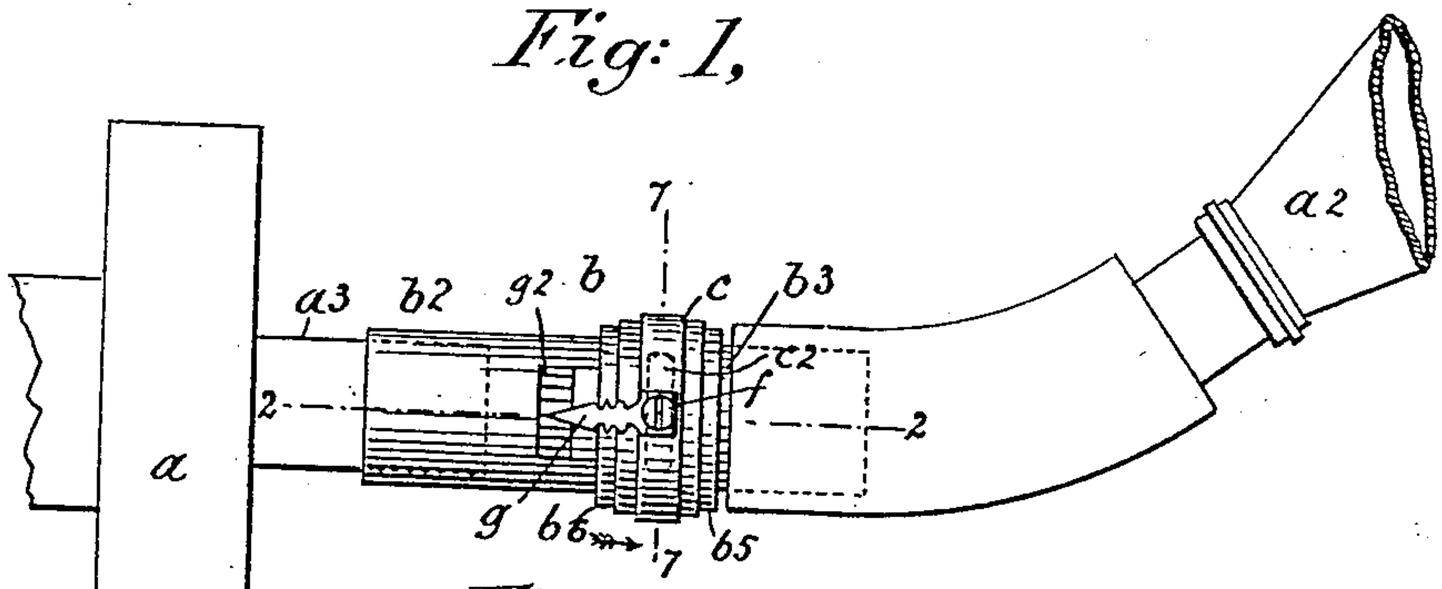
PATENTED JAN. 1, 1907.

A. H. RYDER.

SOUND REGULATOR FOR PHONOGRAPHS.

APPLICATION FILED SEPT. 1, 1905.

Fig: 1,



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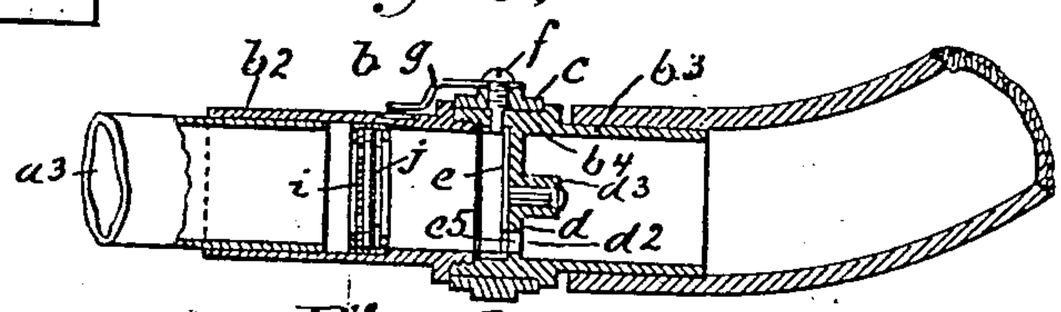

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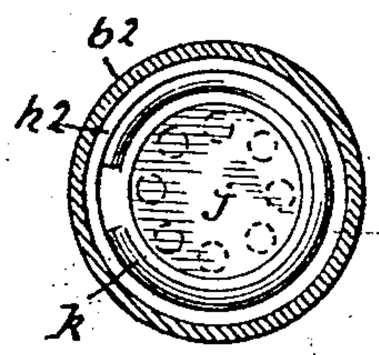

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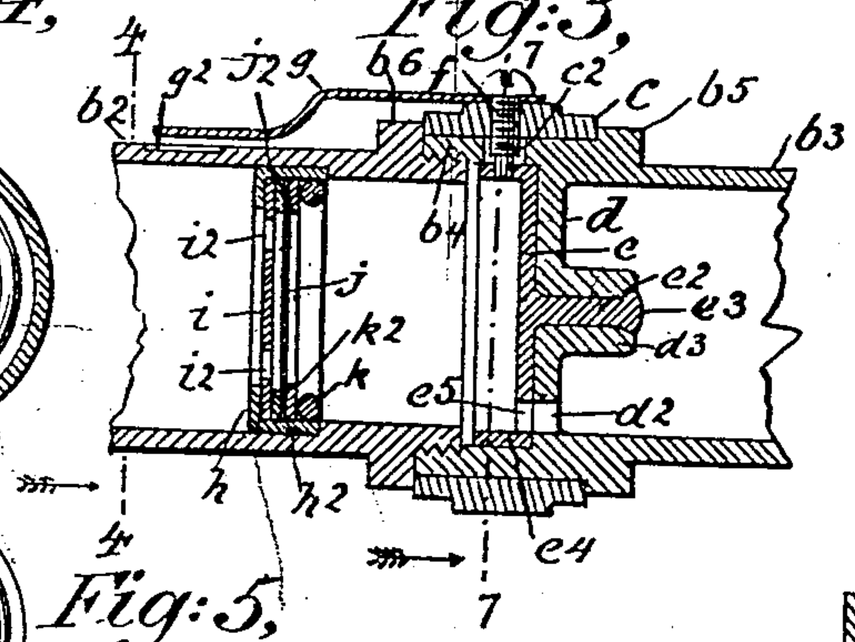

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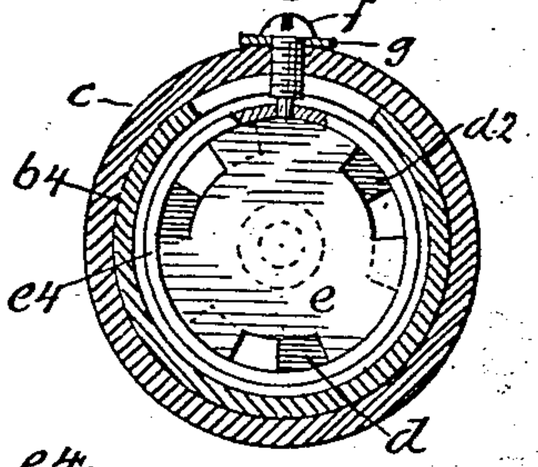

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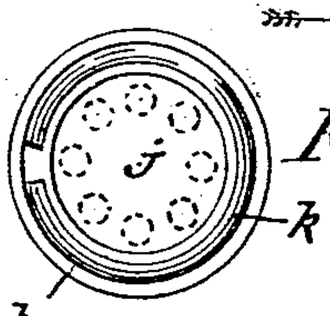

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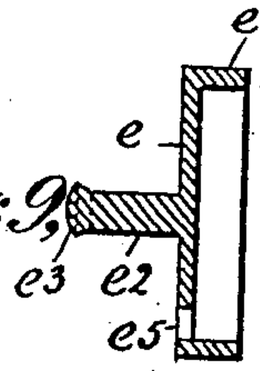

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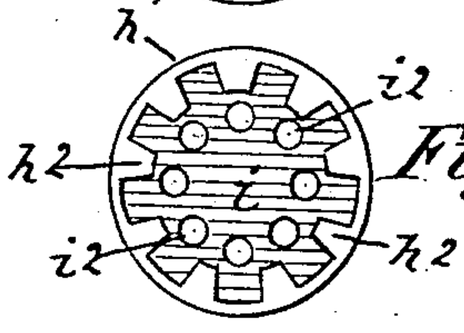
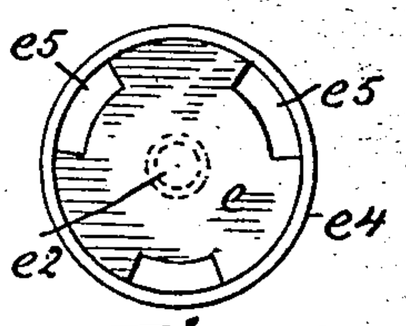


Fig: 8,



WITNESSES

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SOUND-REGULATOR FOR PHONOGRAPHS.

No. 840,089. Specification of Letters Patent. Patented Jan. 1, 1907.

Application filed September 1, 1905. Serial No. 276,740.

To all whom it may concern:

Be it known that I, ARTHUR H. RYDER, a citizen of the United States, residing in the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Sound-Regulators for Phonographs and other Talking-Machines, of which the following is a specification, such as will enable those skilled in the art to which my invention relates to make and use the same.

The object of this invention is to provide improved means for connecting the horn of a talking-machine or other machine of the class specified to the machine proper, whereby the metallic vibrations or rasping metallic sounds usually produced by machines of this class are in a measure done away with and a more regular and musical tone or voice-tone produced, a further object being to provide an improvement of the class specified for use in connection with the delivery-horns of talking-machines and similar instruments, whereby the sound-waves are prevented from traveling around the horn in spiral curves and whereby the harsh grating or similar metallic sounds are to a considerable extent obviated and whereby the operator may at will regulate the volume of sound produced by the horn, a still further object being to provide a horn-coupling for instruments of the class specified containing a supplemental vibratory device; and with these and other objects in view the invention consists in an attachment for instruments of the class specified constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 is a side view of my improved horn attachment for instruments of the class specified and showing the method of connecting it with the machine and with the horn; Fig. 2, a sectional view of the attachment on the line 2 2 of Fig. 1; Fig. 3, a view similar to Fig. 2, but showing the attachment proper on an enlarged scale; Fig. 4, a section on the line 4 4 of Fig. 3; Fig. 5, an end view of a supplemental vibratory device which I employ; Fig. 6, a reversed side view of the vibratory device shown in Fig. 5; Fig. 7, a section on the line 7 7 of Fig. 1 and on the line 7 7 of Fig. 3 and also a similar section through Fig. 2; Fig. 8, a side view of a valve-plate which I employ, and Fig. 9 a transverse section thereof.

In the drawings forming part of this specification I have shown at a the reproducer of a talking-machine or other sound or musical reproducing machine and at a^2 the delivery-horn thereof. The reproducer a is provided with the usual tube a^3, with which in practice my improved horn-attaching device b is connected. The horn-attaching device b in the form of construction shown comprises a tube made of two parts b^2 and b^3, and the part b^3 in the form of construction shown is provided with an enlarged inner end member b^4, into which the part b^2 is screwed, and mounted on the enlarged end member b^4 of the part b^3 is a collar or band c, said collar or band being rotatable and being placed between annular beads b^5 and b^6, formed, respectively, on the tube members b^3 and b^2.

The enlarged part b^4 of the tube member b^3 is provided approximately centrally thereof with a transverse partition d, having oblong ports or passages d^2 arranged concentrically of the center thereof, and placed on the inner face of said partition is a rotatable valve-plate e, provided with a central stud e^2, which passes outwardly through the partition d and through a central hub d^3 formed thereon, and the head of which is enlarged, as shown at e^3, to prevent its movement longitudinally of the attachment, and said valve-plate is provided with a flange or rim e^4, and passing through the collar or band c and through the transverse oblong slot c^2 in the end member b^4 of the tube member b^3 is a screw f, which passes into and is secured in the flange or rim e^4 of the valve-plate e, and by means of which said valve-plate may be turned, and the said valve-plate is provided with concentrically-arranged oblong slots forming ports or openings e^5, which are adapted to register with the corresponding ports or openings d^2 in the partition d.

Secured to the collar or band c by the screw f is a pointer g, which ranges longitudinally of the tube member b^2 and is adapted to operate in connection with a transverse scale g^2, formed on said tube member, and removably placed in the tube member b^2 is a supplemental vibratory device comprising a collar h, said collar being provided at its outer end with inwardly-directed projections h^2. Within the collar h of the supplemental

vibratory device is placed a rigid disk *i*, preferably composed of fiber and provided with small ports or passages i^2, which in the form of construction shown are arranged concentrically around the center thereof, and placed on the side of the disk *i* adjacent to the valve-plate *e* is a flexible diaphragm *j*, also preferably composed of fiber and separated from the disk *i* by an annular band or gasket j^2, and the diaphragm *j* is held in the diaphragm-collar *h* by an open spring-ring *k*, between which and said diaphragm is placed an annular gasket k^2.

As thus constructed it will be seen that the volume of vibratory sound passing through the partition *d* may be regulated at all times by turning the valve-plate *e*, which is done by turning the collar or band *c*, and the pointer *g* operating in connection with the scale g^2 will tell to what extent the ports or passages d^2 in the partition *d* are opened and closed.

In the operation of this device the sound-waves from the reproducer *a* first impinge on the perforated disk *i* of the vibratory device within the tubular member b^2, which, being constructed of non-metallic substance, insulates all grating, harsh, or indistinct sounds foreign to the record, and the said sound-waves pass through said disk and strike against the sensitive diaphragm *j*, which sets up a new series of sound-waves which are deprived of their tendency toward a spiral movement and which may be regulated in volumes at the will of the operator by turning the collar or band *c*. The result of this is to produce a more perfect tone, voice, or musical sound which is to an extent free from the metallic and harsh qualities usually produced by instruments of this class.

As thus constructed it will be seen that my improvement involves a regulator placed between the delivery-horn and the reproducer and comprising in its construction a vibratory diaphragm, a stationary sound-regulating diaphragm, and a supplemental-volume or sound-volume regulating device involving a rotatable member located in the axis of the sound-waves passing through the reproducer, and while I prefer the construction shown and described it will be apparent that changes therein and modifications thereof may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described means for connecting the horn of a reproducing instrument with said instrument, comprising a tubular coupling having a fixed transversely-arranged apertured plate therein and an apertured valve-plate coöperating with said fixed plate, and external devices movable independently of the coupling whereby said valve-plate may be rotated and the extent of said rotation indicated, said coupling being also provided in the end thereof adjacent to the instrument with a supplemental vibratory device.

2. The herein-described means for connecting the horn of a reproducing instrument with said instrument, comprising a tubular coupling having a fixed transversely-arranged apertured plate therein and an apertured valve-plate coöperating with said fixed plate, and external devices movable independently of the coupling whereby said valve-plate may be rotated and the extent of said rotation indicated, said coupling being also provided in the end thereof adjacent to the instrument with a supplemental vibratory device, consisting of a transversely-arranged perforated disk and a vibratory diaphragm adjacent thereto.

ARTHUR H. RYDER.

Witnesses:
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