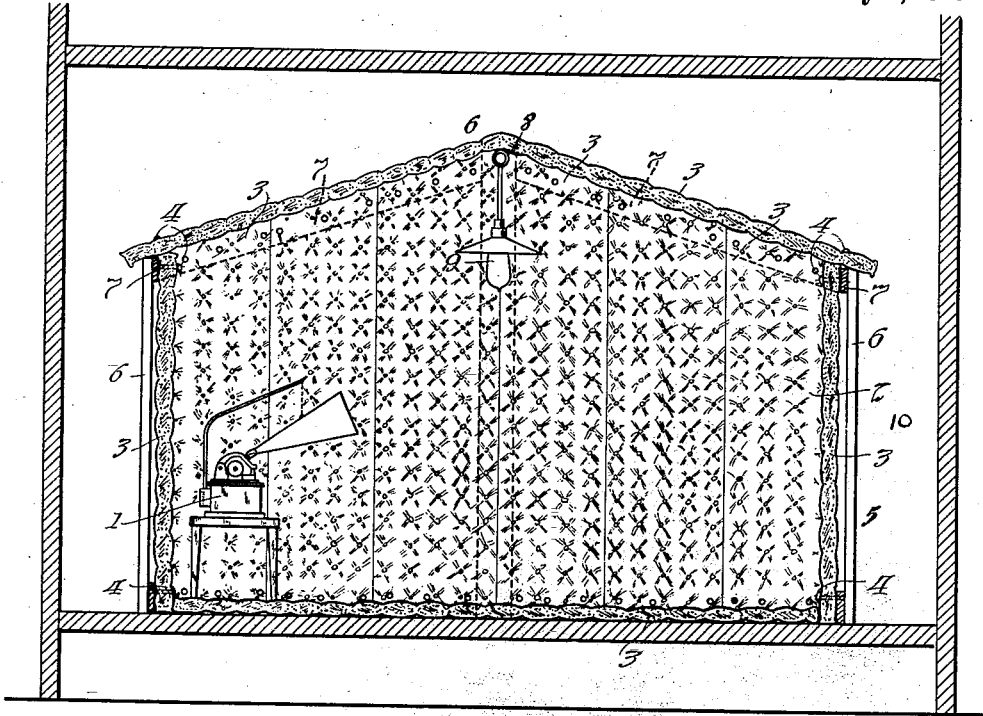


T. A. EDISON.
MEANS FOR RECORDING SOUNDS.
APPLICATION FILED FEB. 16, 1912.

1,190,133.

Patented July 4, 1916.



Witnesses:
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UNITED STATES PATENT OFFICE.

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MEANS FOR RECORDING SOUNDS.

1,190,133.

Specification of Letters Patent.

Patented July 4, 1916.

Application filed February 16, 1912. Serial No. 678,065.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Recording Sounds, of which the following is a description.

My invention relates to means for recording sounds and more especially to an improved chamber within which to record sounds, the invention herein disclosed being an improvement on that disclosed in my co-pending application, Serial No. 669,868, filed January 6, 1912.

The object of my invention is to produce improved means by which a faithful and correct record having good acoustic properties may be obtained.

As set forth in my application above referred to, when the sounds from a given source are recorded in a room having rigid walls, as has heretofore been customary, the walls of the room reflect the sound waves, and these reflected waves after one or more reflections enter the horn of the recording instrument together with the true waves direct from the sound source, all of these waves being greatly amplified by the recording horn. As the reflected sound waves reach the recording instrument later than the direct waves, an objectionable sound interference is caused; so that when a record made in this way is reproduced, the reproduced sound is found not only to be different from that emanating directly from the original sound source, but also to be less agreeable and harmonious. When the source of sound is in close proximity to the horn of the recording instrument, this depreciation in quality is not very noticeable, but when it is at a considerable distance from the horn, as is necessarily the case with the different instruments of an orchestra which is rendering the selection to be recorded, the depreciation in quality is considerable, this depreciation in many instances being so great that the reproduction of the sound as recorded for some of the instruments is very disagreeable. I have discovered that the recording of these reflected waves is the cause of the difference in quality between the sound as heard by the ear directly from the original sound source and as heard from the ordinary

phonograph record; and my invention accordingly contemplates the provision of means for eliminating the reflected sounds or sound waves from the record.

The improved means devised by me for attaining the desired results comprises generally a recording chamber having walls which are non-sound reflecting and also preferably non-sound transmitting; so that none of the sounds emanating from the source are reflected back by the walls into the recording instrument, nor any annoying sounds from without the chamber transmitted to the said instrument. By placing the source of sound and recording instrument in such a chamber, only the true sound waves direct from the sound source are recorded, and a record of good acoustic properties is thereby obtained.

In order that my invention may be better understood, attention is hereby directed to the accompanying drawing forming a part of this specification and in which the figure illustrates in vertical cross section one form of apparatus embodying my invention.

Referring to the drawing, a recording phonograph, which is shown diagrammatically at 1, is located within the chamber 2, which is of suitable size and proportions to permit the singers or other sources of sound to be arranged in proper recording position with respect to the horn of the phonograph. The walls of the chamber 2 are built up of a number of elastic or yielding mattress-like sections 3, each preferably being from about two to three inches in thickness, the yielding character of said sections preventing the reflection thereby of the sound waves impinging thereon. Each of the said sections is filled or stuffed with sound absorbing material, such as asbestos or other suitable fibrous material mixed with powdered magnesite, chalk, or other powdered material, a mixture of asbestos and magnesite or chalk being preferable because of the lightness and excellent sound absorbing qualities of these substances. The magnesite or other powdered material fills the interstices between the fibers of the asbestos or other fibrous material and assists the latter in the frictional absorption of the sound waves which pass into the filling of the walls. The outer covering or casing of the sections 3 may be made of silkline, mercerized cotton, or any other thin yielding fabric. For holding

the sections 3 detachably in place, pins or projections 4 are secured to a frame 5 and pass through small holes in the said sections. As shown in the drawing, the frame 5 comprises a number of vertical members 6, and horizontal or suitably inclined members 7 connecting the tops of the members 6. A pipe or other hollow supporting member 8 extends across the center of the chamber, this pipe serving to contain the wires for a lamp 9. In order to completely insure against the possible entry of annoying sounds from without, I preferably provide my improved recording chamber with double sound-proof walls as by inclosing the chamber 2 within an outer chamber 10, the walls of which latter are separated by an air space from the walls of the chamber 2.

The source of sound and the phonograph or other recording instrument having been placed in proper relative positions in the chamber 2, the phonograph is started and the sound waves to be recorded are transmitted from the source toward the phonograph horn. Those sound waves which do not pass directly to the phonograph pass into the walls of the chamber 2, where they are absorbed as heat by friction with the asbestos and magnesite or other filling of the said walls. All sounds without the chamber are excluded therefrom by the use of the double sound-proof walls, this exclusion being made complete by the sound-absorbing character of the inner walls. A record made in this way accordingly contains only the true sound waves direct from the source and may be caused to reproduce the said waves with exceeding purity and naturalness.

It is understood that I do not limit myself to the specific construction above specified for the walls of the chamber 2 or for the manner of supporting the said walls and that many modifications may be made in the specific structure disclosed without departing from the spirit of my invention.

What I claim as new and desire to protect by Letters Patent is as follows:

1. A sound recording chamber having yielding walls containing a mixture of fibrous and powdered materials, substantially as described.

2. A sound recording chamber having yielding walls containing a mixture of fibrous and powdered materials of low specific gravity, substantially as described.

3. A sound recording chamber having yielding walls containing a mixture of a fibrous material and powdered magnesite, substantially as described.

4. A sound recording chamber having yielding walls containing powdered magnesite, substantially as described.

5. A sound recording chamber having walls containing powdered material, all the inner surfaces of said walls being sufficiently yielding as to be substantially non-sound reflecting, substantially as described.

6. A sound recording chamber having yielding walls containing asbestos fiber and a powdered material of low specific gravity, substantially as described.

7. A sound recording chamber having yielding walls containing asbestos fiber and powdered magnesite, substantially as described.

8. A sound recording chamber having yielding non-sound reflecting inner walls containing a mixture of fibrous and powdered materials of low specific gravity, and outer walls spaced from said inner walls, substantially as described.

9. A sound recording chamber having yielding non-sound reflecting inner walls containing a mixture of a fibrous material and powdered magnesite, and outer walls spaced from said inner walls, substantially as described.

10. A sound recording chamber having yielding non-sound reflecting inner walls containing powdered magnesite, and outer walls spaced from said inner walls, substantially as described.

11. A sound recording chamber having inner walls containing powdered material, all the inner surfaces of said walls being sufficiently yielding as to be substantially non-sound reflecting, and outer walls spaced from said inner walls, substantially as described.

12. A sound recording chamber having yielding non-sound reflecting inner walls containing asbestos fiber and powdered magnesite, and outer walls spaced from said inner walls, substantially as described.

13. A sound recording chamber having walls composed of mattress-like sections, said sections containing powdered sound-absorbing material and the covering thereof consisting of fabric-like material sufficiently yielding as to be substantially non-sound reflecting, substantially as described.

14. A sound recording chamber having inner walls and outer side and top walls spaced at all points from and unconnected with said inner walls, all the inner surfaces of the inner walls being sufficiently yielding as to be substantially non-sound reflecting, substantially as described.

This specification signed and witnessed this 15th day of February 1912.

THOS. A. EDISON.

Witnesses:

FREDERICK BACHMANN,
ANNA R. KLEHM.