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1,660,996

N. H. HOLLAND

COMBINED RADIO LOUD SPEAKER AND PHONOGRAPH

Filed May 1, 1925

Fig. 1

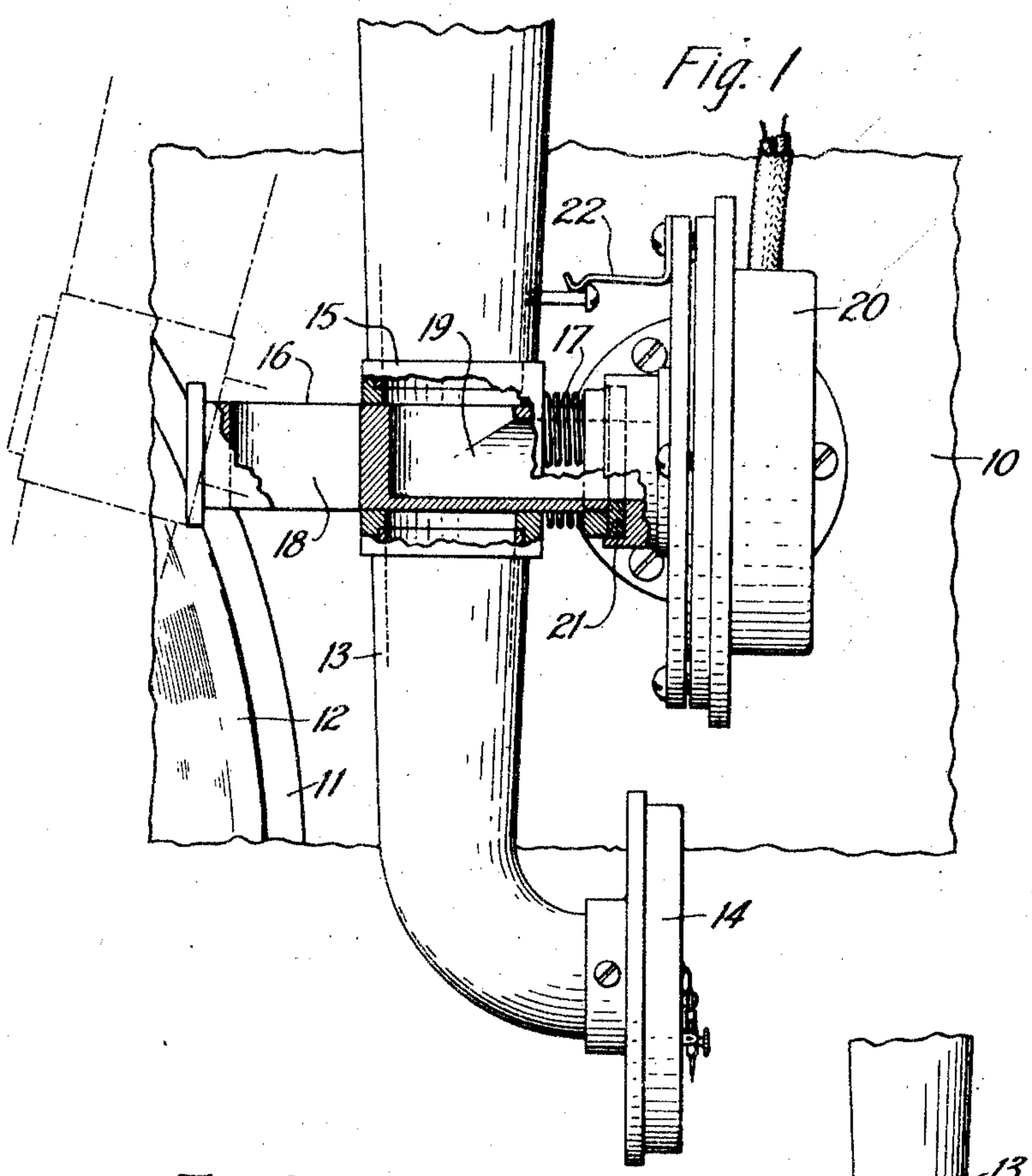


Fig. 2

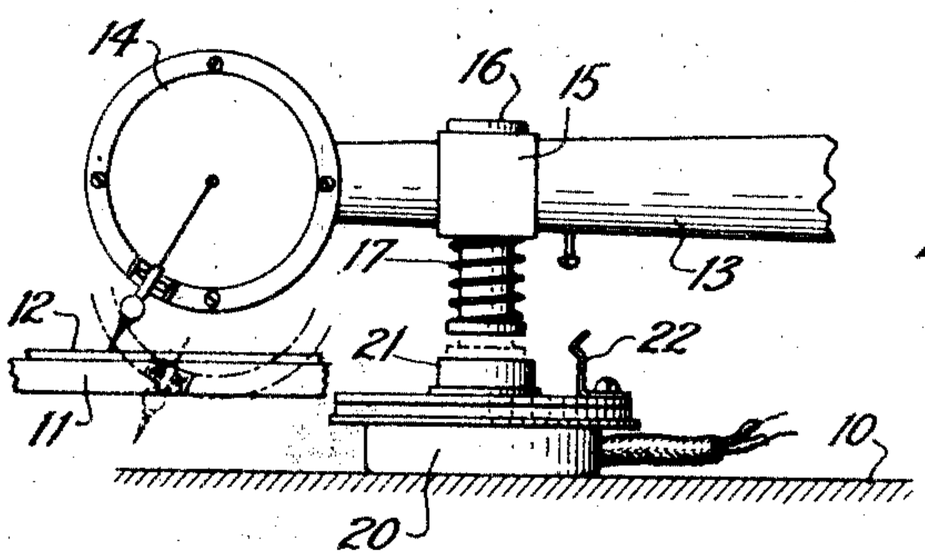


Fig. 3

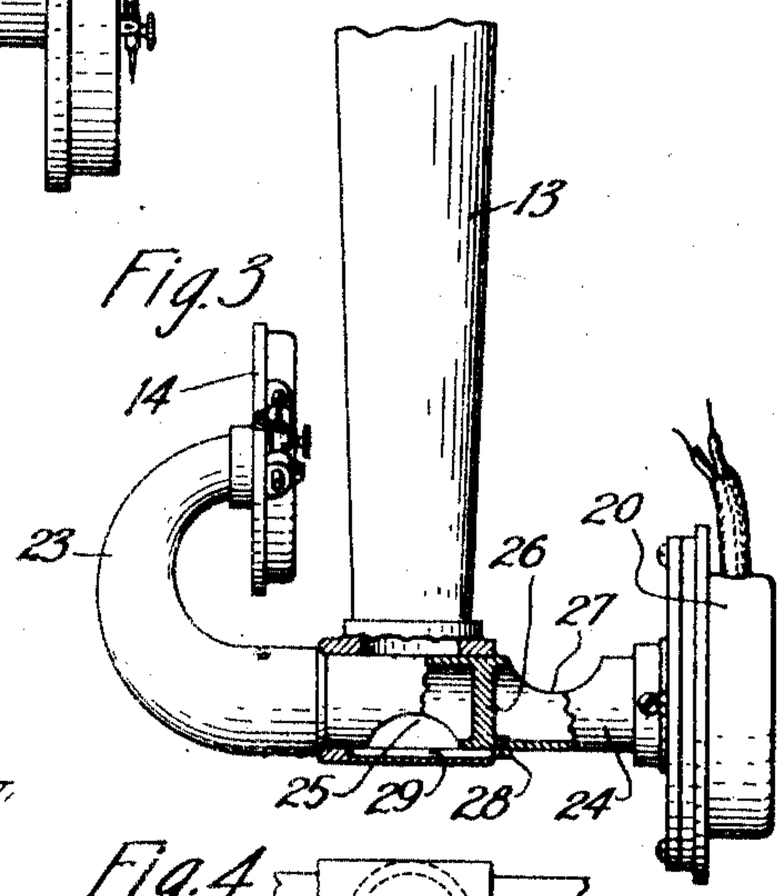
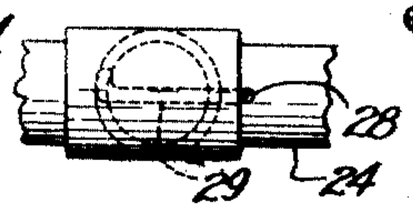


Fig. 4



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UNITED STATES PATENT OFFICE.

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COMBINED RADIO LOUD SPEAKER AND PHONOGRAPH.

Application filed May 1, 1925. Serial No. 27,168.

This invention relates to a novel arrangement of a phonograph and a loud speaking telephone receiver element so associated that one amplifying horn serves either the phonograph reproducer or the loud speaking receiver.

An object of this invention is to facilitate using the phonograph amplifying horn with either sound reproducing element, thus securing simplicity, compactness, flexibility and efficiency in combining a phonograph and a radio or other type of loud speaking element.

In general this invention comprises a standard phonograph and a loud speaking telephone receiver located in proximity to the phonograph tone arm. The tone arm is equipped with a fitting and valve for alternately connecting with either phonograph reproducer or the loud speaking telephone receiver element and for closing the passage into the tone arm from either sound reproducing element so that only one sound reproducing element has access to the passage leading to the amplifying horn during operation.

In accordance with a specific application of this invention, the loud speaking telephone receiver element is located at the top of the phonograph cabinet and at the side of the turn-table in such a position that the tone arm may be swung into engagement with it and connection established between the latter and the tone arm and at the same time cut off the passage from the phonograph reproducer.

Another arrangement consists in mounting the loud speaking telephone receiver upon the tone arm of the phonograph with suitable valves to cut off either one or the other of the sound reproducers from the tone arm passage. This arrangement is applicable more particularly where the tone arm of the phonograph is so supported that the additional weight of the loud speaking telephone element will not affect the pressure of the stylus on the phonograph record. The association of the various elements employed in this invention results in an arrangement which makes for convenience and efficiency of operation since the tone arm can be quickly placed in operative relation with either of the sound reproducers. Means are provided to cut off the passage leading from the diaphragm of the sound reproducer not in use thus avoiding distortion which might be caused if the diaphragm of the element not in use were in direct connection with the tone arm passage.

Referring to the drawings, Fig. 1 is a top view of the phonograph tone arm with side connection and a fixed loud speaking telephone element; Fig. 2 is a side view of the phonograph tone arm with vertical connection and a fixed loud speaking telephone element; Fig. 3 is a top view of the phonograph tone arm having a loud speaking telephone element directly mounted on the arm; and Fig. 4 is a partial end view of the tone arm as shown in Fig. 3.

Similar reference characters designate similar parts in the different views.

Referring to Fig. 1, 10 designates a small part of the phonograph cabinet, 11 the turntable, 12 a record, and 13 the tone arm on which is regularly mounted the phonograph reproducer 14. The fitting for connecting the loud speaking telephone element with the tone arm is shown at 15 and consists of a valve and connecting member 16. The moving part of the valve 16 permits passage from the phonograph reproducer 14 through the tone arm when the member 16 is moved and held by means of the spring 17 in its extreme right position. The direct opening through 16 is shown at 18. The second passage through the valve 16 from the loud speaking telephone element is shown at 19 and communicates with the passage in the tone arm only when the spring 17 is compressed and 16 moved to its extreme left position. When in this position, the passage from the phonograph reproducer 14 through the tone arm is cut off. The loud speaking telephone element is shown at 20 mounted upon the phonograph cabinet 10 at the side of the turn-table in such a position that when the tone arm is moved to one side of the record the valve 16 engages and tightly connects with the outlet 21 from the loud speaker telephone receiver. The tone arm and the loud speaker are held together by means of the catch or locking rod 22 which holds the spring 17 under compression and the valve 16 in such position that the opening 19 leads into the passage in the tone arm. It is obvious that the act of swinging the tone arm into opera-

tive engagement with the loud speaking telephone element automatically closes the passage in the tone arm leading from the phonograph reproducer 14, and also upon releasing the tone arm from engagement with the loud speaking telephone element, the spring 17 forces the valve 16 to the right and automatically disconnects the passage 19 from the tone arm and places the passage 18 in alignment with the longitudinal passage through the tone arm, thus directly providing communication from the phonograph reproducer 14 through the tone arm. The dot and dash line drawing at the left in Fig. 1 shows the position of the valve 16 when the phonograph reproducer is in operation.

Fig. 2 shows a modified arrangement in which the chief difference from Fig. 1 consists in placing valve 16 vertically through the tone arm and mounting the loud speaking telephone element 20 at the side of the turn-table with its opening 21 in a vertical position. To establish operative relation with the loud speaking telephone element in this arrangement, the tone arm is moved from the record and the lower end of the valve 16 placed upon the outlet 21 of the loud speaking telephone element. The valve acts the same as explained in connection with Fig. 1, the tone arm being allowed to drop when moved to one side of the turntable. While a catch 22 is shown, it is contemplated that the valve 16 and spring 17 may be designed so that the weight of the tone arm is sufficient to actuate the valve.

Fig. 3 shows another arrangement in which the loud speaking telephone element is mounted directly upon the tone arm of the phonograph. A valve combination is shown which permits connecting either sound reproducing element with the tone arm. In this arrangement, the phonograph reproducer 14 is connected by means of the goose-neck 23 to the tone arm 13. The part of the goose-neck connected with the tone arm is provided with a valve 24 which has an opening 25 so positioned that passage is had into the tone arm when the phonograph reproducer is in operative relation with a record. The loud speaking telephone element 20 is mounted on the right end of the tubular valve 24. A partition 26 in the valve cuts off communication between the two sound reproducers. An opening 27 in the valve 24 permits communication between the loud speaking telephone receiver 20 and the tone arm when the goose-neck and valve are moved to the left and rotated to such position that the opening 27 and the passage through the tone arm are in alignment. The pin 28, in the valve member 24, slides in the keyway slot 29 when the loud speaking telephone receiver is moved to the left and it engages in the bend at the left end of this slot to hold the valve opening 27 in alignment with the passage in the tone arm. The pin 28 also holds the valve member 24 in the extreme right position when the phonograph reproducer 14 is placed in operative position. It is obvious that with the valve arrangement above described that either of the sound reproducing elements may be connected with the passage through the tone arm and into the common amplifying horn of the phonograph.

It is to be understood that this invention is not to be limited to the structures described and illustrated, since many modifications within the scope of the appended claims may be made without departing from the spirit of the invention.

What is claimed is:

1. The combination of a sound amplifying horn, of a tone arm, a mechanically operated reproducer, an electrically operated reproducer, a valve member slidable transversely of the tone arm and provided with port openings adapted in different positions of said valve to selectively associate one of said reproducers with the amplifier to the exclusion of the other, means tending normally to hold said valve in position to associate the mechanical reproducer with the amplifier, and means for retaining the valve in its alternate position.

2. The combination of a sound amplifying horn, of a tone arm, a mechanically operated reproducer, an electrically operated reproducer, a tubular valve slidable transversely of the tone arm and provided with port openings adapted in different positions of said valve to selectively associate one of the reproducers with the tone arm to the exclusion of the other, a spring tending normally to hold the valve in position to associate the mechanical reproducer with the amplifier and locking means on the tone arm and the electrical reproducer for retaining the valve in position to associate the electrical reproducer with the amplifier.

In witness whereof, I hereunto subscribe my name this 28th day of April A. D., 1925.

NEWMAN H. HOLLAND.