Dec. 31, 1935. A. N. CURTISS 2,026,342

ELECTRICAL PICK-UP APPARATUS

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Fig. 1.

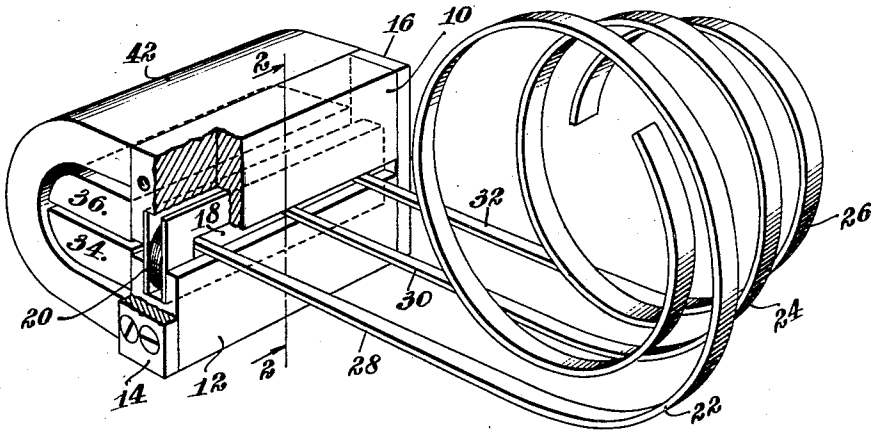
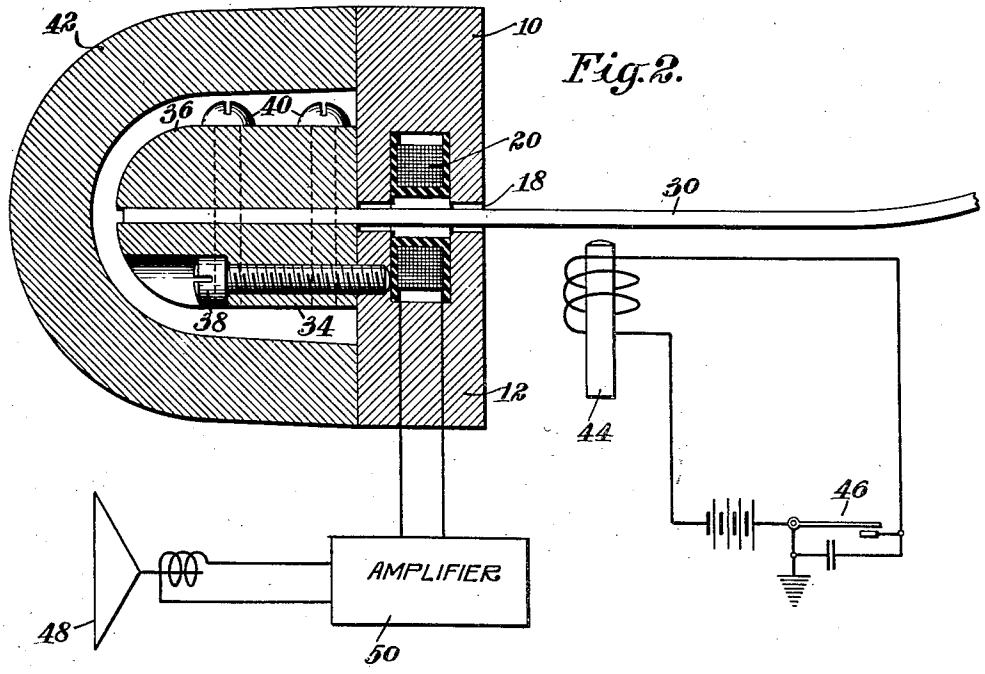


Fig. 2.



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ELECTRICAL PICK-UP APPARATUS

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5 Claims. (Cl. 84—408)

My invention relates to improvements in electrical pick-up apparatus adapted, particularly, for embodiment in electrical musical instruments such as electric carillons, chimes, pianos, and the like.

In systems of the character referred to, a single note is sounded by striking a suitable vibratory member which is associated with or forms part of an electrical pick-up device. This member forms part of a magnetic circuit and, upon vibrating, causes a current wave to be developed in a pick-up coil, at a frequency corresponding to the note to which the member is tuned. The note is made audible by amplifying the current wave and supplying the same to a loudspeaker.

An electrical pick-up device of the character referred to is disclosed in Patent No. 1,978,583, issued October 30, 1934 to Carroll D. Kentner. This device is adapted particularly for use in an electric carillon.

One of the objects of my invention is to provide an improved pick-up device of the character referred to which is relatively simple in construction and relatively small in comparison with pick-up devices heretofore used for electric carillons, and to provide a device which is particularly adapted for a chime unit in clocks.

Other objects and advantages will hereinafter appear.

In accordance with my invention, only a single pair of pole pieces is used, and these are spaced to provide an elongated air gap through which all the reeds extend. There is only one pick-up coil, which is common to all the reeds and through which the latter pass.

My invention resides in the improved pick-up device of the character hereinafter described and claimed.

For the purpose of illustrating my invention, an embodiment thereof is shown in the drawing, wherein:

Figure 1 is a perspective view, partly broken away, of a pick-up device constructed and operated in accordance with my invention; and

Fig. 2 is an enlarged sectional view, the section being taken on the line 2—2 in Fig. 1, and the various parts of the complete system being shown diagrammatically.

In the drawing, the reference numerals 10 and 12 designate complementary pole elements or members of magnetic material which are supported in spaced relation by end pieces 14 and 16 of non-magnetic material, to provide an elongated air gap 18.

The adjacent faces of the pole members are recessed, as shown, to provide a chamber in which a single pick-up coil 20 is disposed. This coil is common to and embraces or surrounds all of the reeds, and has an elongated central opening aligned with the air gap 18.

The reeds 22, 24 and 26 have elongated end portions 28, 30, and 32, respectively, which extend through the air gap 18 and the coil 20, and are supported for free vibratory movement by clamping blocks 34 and 36 of non-magnetic material. These blocks run the entire length of the pole pieces, the lower block being secured to the pole piece 12 by one or more screws 38 of non-magnetic material. The upper block 36 is secured to the lower block by screws 40 of non-magnetic material to clamp the tips of the vibratory members to hold each of the latter for free vibratory movement from the point of support to the free end of the member.

A single magnet 42 extends the entire length of the device, and is disposed as shown to provide a good magnetic path between the pole pieces, around the non-magnetic clamping or supporting means 34, 36.

In operation, the reeds are struck in a predetermined sequence to produce a desired melody, or simultaneously, if a chord is desired. For this purpose, there is associated with each reed a striker 44 and a key or switch 46. When the switch 46 is closed the striker 44 operates to set the reed into vibration, thereby changing the flux distribution in the air gap 18 to induce a corresponding voltage wave in the pick-up coil. The note, corresponding to the period of vibration of this member, is then sounded from a loudspeaker 48 which is supplied from a suitable amplifier 50 whose input circuit is connected with the coil 20.

From the foregoing it will be seen that I have provided an improved electrical pick-up device which is relatively simple in construction and inexpensive to make as compared with the more elaborate devices such as are required for electric carillons, and which is relatively small and compact whereby the device is particularly useful for a chime in clocks.

While but one embodiment of my invention has been disclosed, it will be understood that various changes can be made such as in the size, shape and arrangement of the various parts without departing from the spirit of my invention or the scope of the claims.

I claim as my invention:

1. In an electrical pick-up device, complementary pole elements supported in spaced relation to

provide an air gap, a plurality of elongated vibratory members each having an end portion disposed between said elements and extending through said gap, a single pick-up coil common to said members and disposed between said elements and having a central opening through which the end portions of all of said members extend, and supporting means extending from at least one of said elements and holding said members for free vibratory movement from said supporting means to the free ends of said members.

2. In an electrical pick-up device, complementary pole elements supported in spaced relation to provide an air gap, a plurality of elongated vibratory members each having an end portion disposed between said elements and extending through said gap, a pick-up coil surrounding all of said members and being common thereto and disposed between said elements, and supporting means extending from at least one of said elements and holding said members for free vibratory movement from said supporting means to the free ends of said members.

3. In an electrical pick-up device of the type embodying a plurality of vibratory members which are struck to cause them to vibrate, a pair of complementary pole members each recessed in a face thereof and supported with their recessed faces adjacent to and spaced from each other to provide jointly a chamber and an elongated air gap for receiving a plurality of the vibratory members, means carried by at least one of said pole members for supporting the vibratory members for free vibratory movement, and a single pick-up coil disposed in said chamber and having a central elongated opening in alignment with said gap.

4. In an electrical pick-up device, a pair of pole members each recessed on a face thereof and disposed in complementary relation with their recessed faces adjacent each other to provide a chamber, elements of substantially non-magnetic material disposed respectively at the opposite adjacent ends of said members and spacing the same to provide an elongated air gap, a single pick-up coil disposed in said chamber and having an elongated central opening aligned with said gap, a plurality of vibratory members having elongated end portions each extending through said gap and said opening, and means extending from at least one of said pole members and holding said vibratory members for free vibratory movement.

5. In an electrical pick-up device, a plurality of vibratory reeds of permeable material, a magnet having complementary poles spaced to provide an air gap, means for supporting said reeds for vibration in the air gap, and a common pick-up coil surrounding all of the reeds.

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