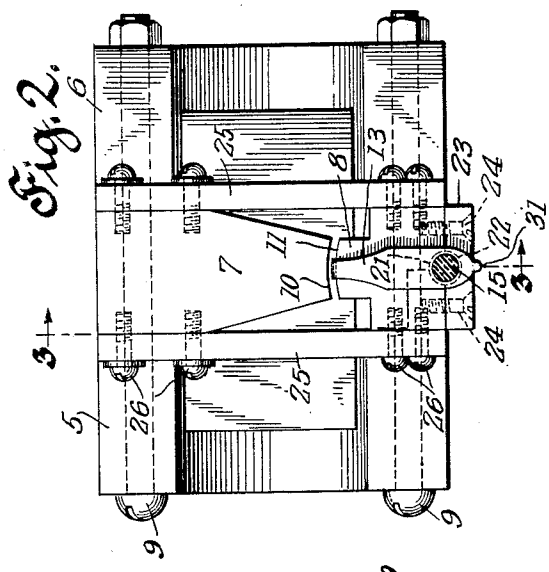
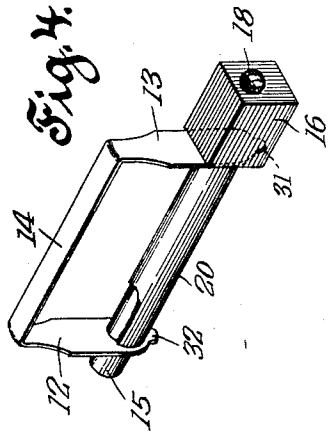
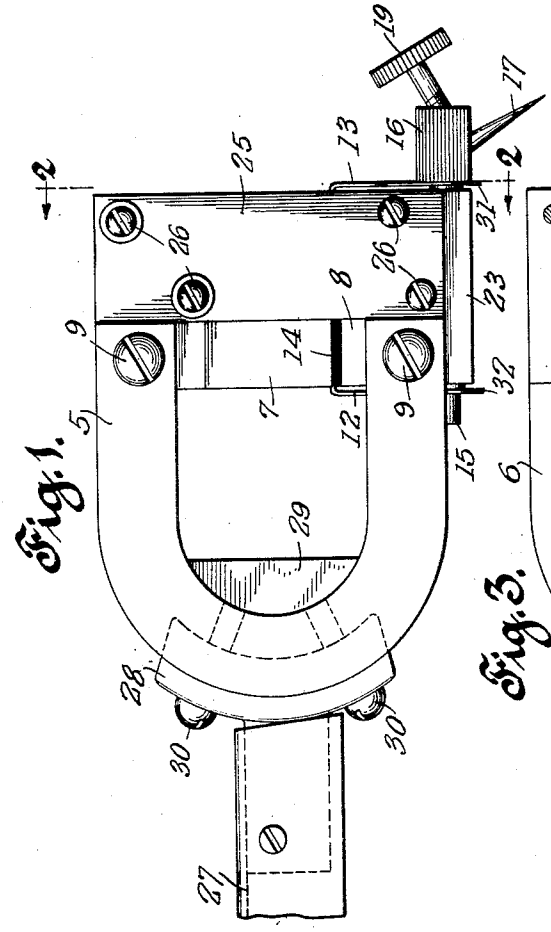
June 27, 1933. O. B. PARKER 1,916,162

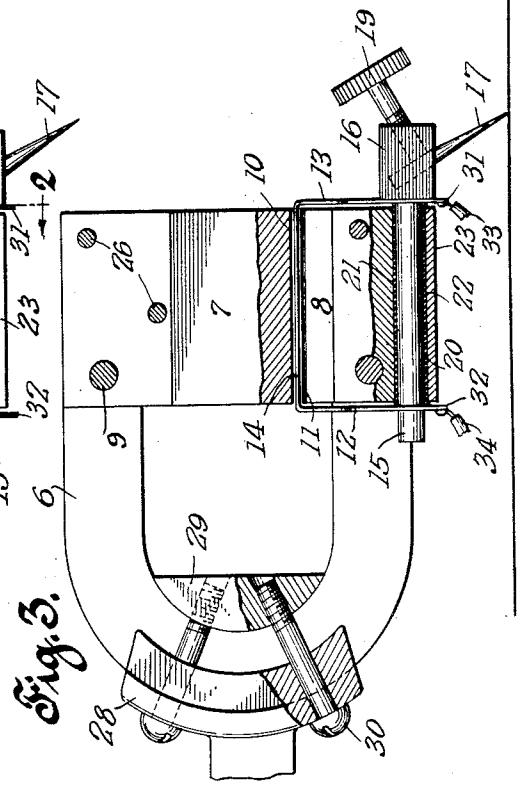
ELECTRIC REPRODUCER

Filed Jan. 21, 1930









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UNITED STATES PATENT OFFICE

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ELECTRIC REPRODUCER

Application filed January 21, 1930. Serial No. 422,263.

This invention relates to reproducers of the dynamic as distinguished from those of the magnetic type.

The objects of the invention are to provide a dynamic unit in which the moving element will be particularly light and mobile rendering the instrument sensitive and true in its action and to combine with the sensitive action the factor of ample power.

The various novel features of construction, combinations and relations of parts by which the foregoing and other desirable objects are attained will appear as the specification proceeds.

The drawing accompanying and forming part of the specification illustrates one simple practical embodiment of the invention, it being understood that this illustration is primarily for purposes of disclosure and that accordingly the physical structure may be varied as regards this illustration without departure from the true spirit and broad scope of the invention.

Fig. 1 is a broken side elevation of a form of the invention embodied in a pickup unit for a phonograph; Fig. 2 is a front end view of the same as taken on substantially the plane of line 2—2 of Fig. 1, with the arbor of the movable element appearing in section; Fig. 3 is a broken part sectional view as on substantially the plane of line 3—3 of Fig. 2; Fig. 4 is a broken part sectional detached view of the movable element structure.

A powerful magnetic field is provided in the unit illustrated by means of two permanent horse-shoe magnets 5, 6, secured in side by side consequent pole relation and having their combined fluxes concentrated in the pole pieces 7, 8, secured between the ends of the magnets by the through bolts 9.

These pole pieces are shown as having opposed substantially concentric concave, convex polar faces 10, 11, defining an arcuate gap. The movable element traverses this gap and is mounted on an axis corresponding with the center from which the arcuate gap is described.

As shown particularly in Fig. 4, the movable element consists of a light U-shaped strip of copper or other good conducting material having substantially parallel side portions 12, 13, connected by a transversely bowed part 14. The curvature of this transversely bowed connecting portion substantially corresponds with the curvature of the gap. This U-shaped conductor is fixed on its ends on an arbor 15, which may be of insulating material and which is shown as enlarged at the front and formed into a holder 16 for the needle or stylus 17, said holder having a screw seat 18 for the needle clamping screw 19.

To permit the necessary oscillating movements, the mounting arbor 15 is shown as surrounded by a sleeve 20 of rubber or other resilient material and this resilient journal portion of the arbor is shown as clamped in place between half round seats 21, 22, formed in the lower face of the pole piece 8 and in the upper face of a cap piece 23, the latter being secured to the bottom of the pole piece by the screws 24.

To aid in rigidly holding the pole pieces in properly spaced relation, side bars 25 of non-magnetic material are shown secured to the sides of the pole pieces in bridging relation by the screws 26.

The complete unit is indicated as mounted on the end of a supporting arm 27 by means of cooperating concavo-convex clamp members 28, 29, gripping the arched portions of the magnets and held together by the screws 30.

The conductor can be made of thin flat strip material, bent into U-form and hence be light but rigid and offer no appreciable resistance. The bowing of the transverse conductor bar 14 gives the structure greater stiffness and permits of but small clearances between the conductor bar and adjacent pole pieces. Hence the electrical efficiency of the device is ample for all practical purposes. The conductor may be connected in circuit in any suitable way, as for example, in the illustration, by providing the end portions of the bar with terminal tabs 31, 32, to which the wires 33, 34 may be soldered or otherwise connected.

The single conductor bar of thin flat stock reduces the electrical resistance to a minimum and the transverse bowing of this bar in con-

centric relation to the arcuate gap reduces the magnetic reluctance to a minimum, rendering the device particularly effective and responsive to the least movements of the stylus.

The wiring lug extensions and the flexible wire connections below the arbor, more or less counter-balance the loop portion of the conductor above the arbor. If desired, these parts below the arbor or mounting shaft may be made to exactly balance the conductor bar.

What is claimed is:

1. In apparatus of the character disclosed, a magnet system having a transversely curved magnetic gap, a conducting yoke having a single conductor bar operating in said gap, a stylus holder connected with said yoke, wiring connections with the ends of said conductor yoke and a mounting arbor of insulating material engaged by opposite end portions of said conductor yoke.

2. In apparatus of the character disclosed, a magnet system having a transversely curved magnetic gap, a conducting yoke having a single conductor bar operating in said gap, a stylus holder connected with said yoke, wiring connections with the ends of said conductor yoke, a mounting arbor of insulating material engaged by opposite end portions of said conductor yoke and resilient mounting means for said insulating arbor.

3. An electro dynamic phonograph pickup, comprising a magnet system having closely spaced concavo convex pole faces providing a narrow arcuate magnetic gap, a single conductor of thin flat strip material of low electrical resistance mounted for movement in said magnetic gap substantially concentric therewith, pickup circuit connections to the ends of said bar and a stylus holder arranged to oscillate said conductor bar about its center of movement.

4. An electro dynamic phonograph pickup, comprising a magnet system having closely spaced concavo convex pole faces providing a narrow arcuate magnetic gap, a single conductor of thin flat strip material of low electrical resistance mounted for movement in said magnetic gap, substantially concentric therewith, pickup circuit connections to the ends of said bar, a stylus holder arranged to oscillate said conductor bar about its center of movement and including a resiliently mounted rocking arbor, the conductor bar having angularly bent end extensions fixed to said arbor.

5. An electro dynamic phonograph pickup, comprising a magnet system having closely spaced concavo convex pole faces providing a narrow arcuate magnetic gap, a single conductor of thin flat strip material of low electrical resistance mounted for movement in said magnetic gap, substantially concentric therewith, pickup circuit connections to the ends of said bar, a stylus holder arranged to oscillate said conductor bar about its center of movement and including a resiliently mounted rocking arbor, the conductor bar having angularly bent end extensions fixed to said arbor and the stylus holder comprising a stylus clamp carried by said resiliently mounted arbor.

6. An electro dynamic phonograph pickup, comprising a magnet system, having closely spaced concavo convex pole faces providing a narrow arcuate magnetic gap, a single conductor of thin flat strip material of low electrical resistance mounted for movement in said magnetic gap, substantially concentric therewith, pickup circuit connections to the ends of said bar, a stylus holder arranged to oscillate said conductor bar about its center of movement and including a resiliently mounted rocking arbor, the conductor bar having angularly bent end extensions fixed to said arbor and said mounting extensions of the conductor bar having terminal elements for the wiring connections aforesaid.

7. An electro dynamic phonograph pickup, comprising a magnet system having closely spaced concavo convex pole faces providing a narrow arcuate magnetic gap, a single conductor of thin flat strip material of low electrical resistance mounted for movement in said magnetic gap, substantially concentric therewith, pickup circuit connections to the ends of said bar, and a stylus holder arranged to oscillate said conductor bar about its center of movement, said conductor bar being transversely arched in substantially concentric relation to the arcuate gap.

8. An electro dynamic phonograph pickup, comprising a magnet system having closely spaced pole faces providing a narrow magnetic gap, a single conductor bar of thin flat strip material mounted for movement in said magnetic gap to intercept the magnetic flux thereacross, pickup circuit connections with the ends of said conductor bar and a stylus connected to shift said conductor bar in the magnetic gap.

9. In a device of the character disclosed, the combination of a magnet system having a magnetic gap, a mounting shaft, a conductor loop engaged at its opposite ends on said mounting shaft and having the intermediate portion of the same disposed in said magnetic gap, wire terminal extensions on the ends of said conductor loop projecting beyond the mounting shaft to counter-balance the loop portion and wiring connections engaged with said terminal extensions.

10. In a device of the character disclosed, the combination of a magnet system having a magnetic gap, a mounting shaft, a conductor loop engaged at its opposite ends on said mounting shaft and having the intermediate portion of the same disposed in said magnetic gap, wire terminal extensions on the

ends of said conductor loop projecting beyond the mounting shaft to counter-balance the loop portion, wiring connections engaged with said terminal extensions and a stylus projecting from said mounting shaft.

11. In a device of the character disclosed, the combination of a magnet system having a magnetic gap, a conductor loop having an intermediate portion disposed in said magnetic gap and angularly related end portions pivotally supported for mounting said intermediate portion in the gap, said end portions having terminal extensions projecting beyond the pivotal mounting and wiring connected with said terminal extensions.

12. In a device of the character disclosed, the combination of a magnet system having a magnetic gap, a conductor loop having an intermediate portion disposed in said magnetic gap and angularly related end portions pivotally supported for mounting said intermediate portion in the gap, said end portions having terminal extensions projecting beyond the pivotal mounting, wiring connected with said terminal extensions and a stylus mechanically connected with the conductor loop for vibrating the same in the magnetic gap.

In testimony whereof I affix my signature.

OLIVER B. PARKER.