B. A. BAER.

SOUND RECORDING AND REPRODUCING MACHINE.

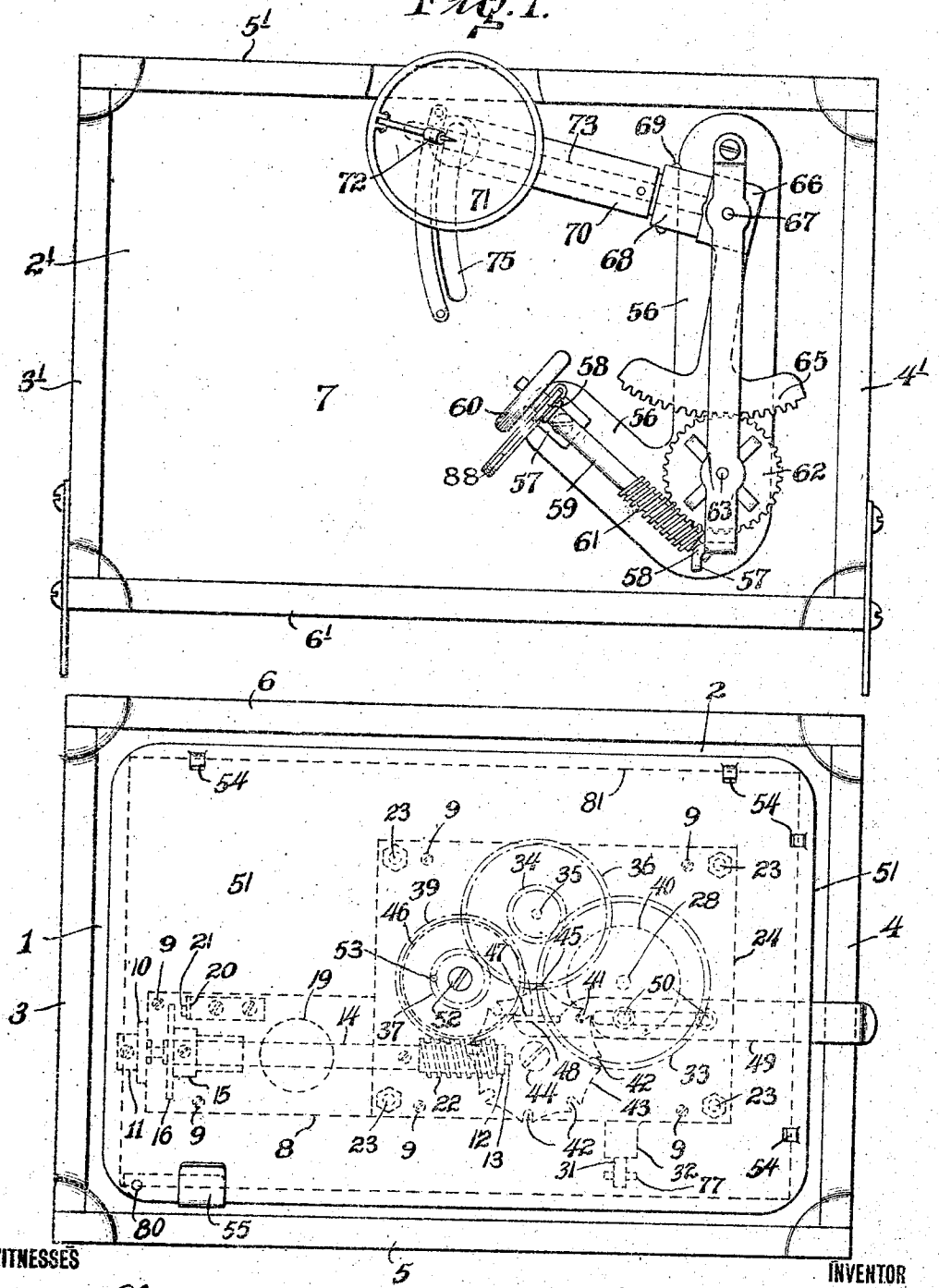
APPLICATION FILED MAR. 30, 1909.

1,171,082.

Patented Feb. 8, 1916.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

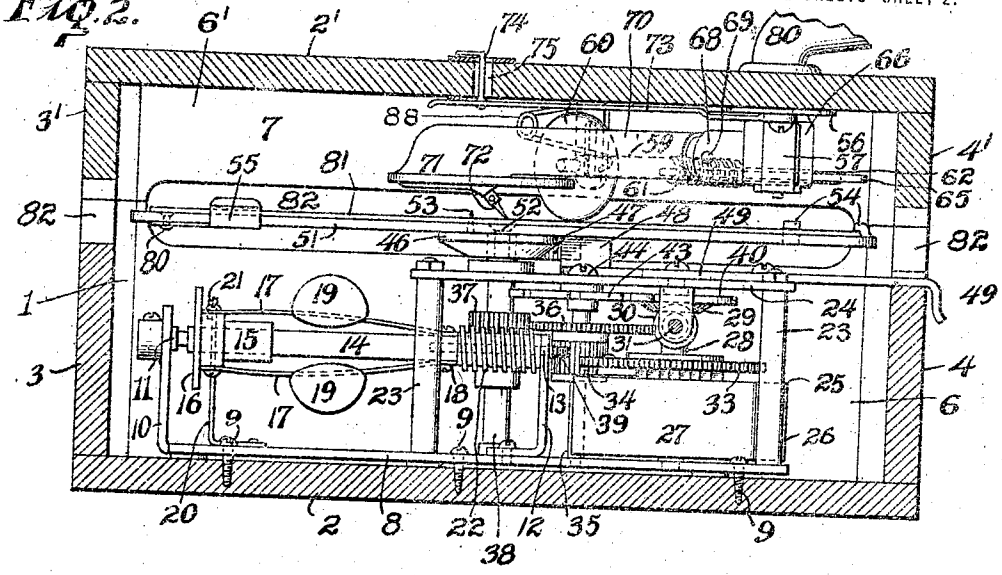


Fig. 6.

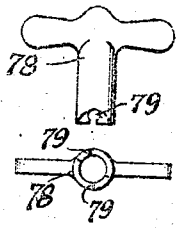


Fig. 3.

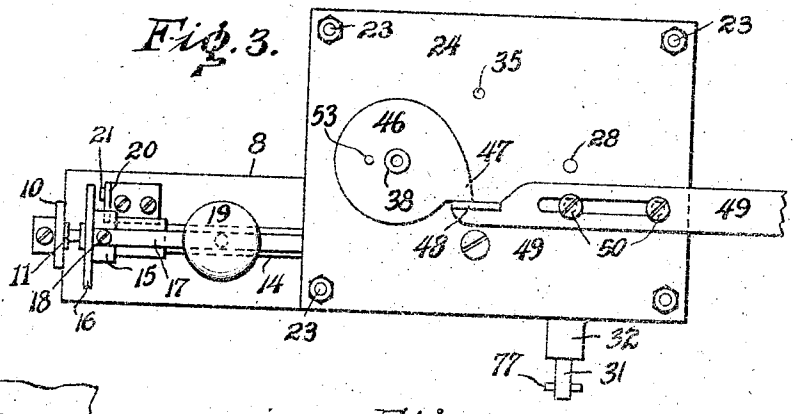


Fig. 5.

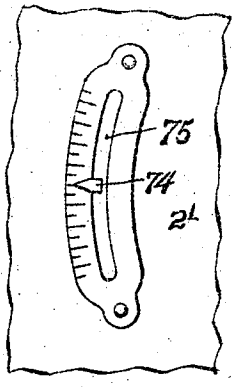
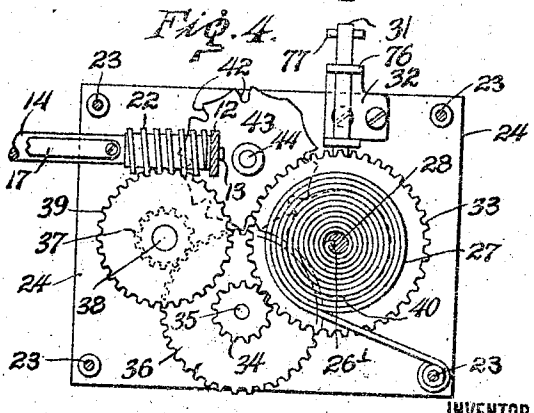


Fig. 4.



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SOUND RECORDING AND REPRODUCING MACHINE.

1,171,082. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed March 30, 1909. Serial No. 486,776.

To all whom it may concern:

Be it known that I, BERTHOLD A. BAER, a citizen of the United States, residing in Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Sound Recording and Reproducing Machines, of which the following is a specification.

My invention relates to sound recording and reproducing machines, and the object thereof is to produce, first—a machine wherein a card or similar article can be mounted for the purpose of having a record produced thereon by a moving needle point which is vibrated by the action of sound waves; second—a machine wherein a record is produced on a card or similar article by a recorder and the identical record reproduced by substituting a reproducer for the recorder; third—a machine for producing a record on a card or similar article and at the same time marking the card for the purpose of fixing the position for the orderly reproduction of the record from the card; fourth—a machine wherein the recording and the reproducing can be interrupted, stopped and continued at the will of the operator; fifth—a machine provided with an index for informing the operator of the position of the record on the card.

With these and other objects in view my invention consists in the construction, combination and arrangement of parts as will be hereinafter more fully described and claimed and illustrated in the accompanying drawings, it being understood that changes in form, size, shape and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of my invention.

In the accompanying drawings, Figure 1, is a plan view of the machine with the lid open; Fig. 2, is an elevation with the lid down; Fig. 3, is a plan view of the governing mechanism; Fig. 4, is a plan view of the operating mechanism; Fig. 5, is a plan view of the indicator; and Fig. 6, is a key.

Similar figures refer to similar parts throughout the several views.

A box 1, consists of a bottom 2, walls 3, 4, 5, 6, and is provided with a lid 7, consisting of a top 2′. and walls 3′, 4′, 5′, 6′. Inside the box 1, is mounted a base-plate 8, secured to its bottom 2, as at 9. The plate 8, supports a pedestal 10, provided with a bearing 11, and with a pedestal 12, provided with a bearing 13. In the bearings 11, and 13, is journaled a shaft 14. On shaft 14, is slidingly mounted a collar 15, carrying a disk 16, facing the pedestal 10. To the collar 15, are attached two spring-strips 17, 17, which are attached to the shaft 14, at 18. Two hemispheres 19, 19, are centrally mounted on the strips 17, 17, constituting a ball governor. Between the disk 16, and the governor, is a pedestal 20, supporting a shoe 21, facing the disk 16. On the shaft 14, and near the pedestal 12, is mounted a worm 22. Within the box 1, are mounted four posts 23, for supporting a plate 24. On one of the posts 23, as at 25, is hooked one end 26, of a spring coil 27, whose other end 26′, is fastened to a pin 28, on which is mounted a bevel-gear 29, meshing with a bevel-gear 30, mounted on a pin 31, in a key-hole 76, of a bracket 32, for winding up the spring 27. On pin 28, is mounted a gear 33, meshing with a pinion 34, mounted on a pin 35. On pin 35, is also mounted a gear 36, meshing with a pinion 37, mounted on a pin 38. On pin 38, is also mounted a worm-gear 39, meshing with the shaft-worm 22. On pin 28, is also mounted a cog-wheel 40, provided with a single tooth 41, to engage successively pockets 42, of a disk 43, mounted on a pin 44, supported from the plate 24, for causing disk 43, to turn until a lug 45, is reached.

On the top of plate 24, and over pin 38, is mounted a disk 46, provided with a lug 47, to be held by a catch 48, of a bar 49, slidingly mounted on plate 24, by means of guides 50, 50. A card-holder 51, is mounted over disk 46, by a screw 52, and over a pin 53, projecting from disk 46, and through the card-holder 51. The card-holder 51, is provided with fixed pockets, 54, and with a swinging pocket 55, pivoted on a pin 80.

On the inside of the cover 7, and to the top 2′, is fastened a bracket 56, supporting pedestals 57, 57, provided with bearings 58, 58, for a shaft 59, on which is mounted a friction disk 60, and a worm 61. A worm-gear 62, meshing with worm 61, is mounted on a pin 63, pivoted in the bracket 56, and also meshes with a gear-sector 65, attached to a

hub 66, mounted on a pin 67, pivoted in the bracket 56. The hub 66, carries a socket 68, in which is pivoted a pin 69, on which is mounted a tubular arm 70, for supporting a sound-box 71, which carries a recording or reproducing stylus 72. To the hub 66, is also fastened an arm 73, provided with an index 74, which projects through a slot 75, in the top 2'.

A key 78, for winding up spring 27, is provided with notches 79, 79, for engaging a pin 77, projecting through pin 31, for turning pin 31, in a direction to cause the spring 27, to wind up, and becoming disengaged when an attempt is made to turn the key in the wrong direction.

For operating the machine, insert the key in the key-hole and turn pin 32. Gear 30, mounted on pin 31, transmits the motion through gear 29, to pin 28, winding up the spring 27. The wheel 40, mounted on pin 28, revolves, and its tooth engages successively the pockets of disk 43. When lug 45, is reached, the tooth 41, on wheel 40, is prevented from passing it, and serves as a safety device for the spring 27. After the spring is wound up, a specially prepared card as 81, is mounted on the card-holder 51, inserting its three corners in pockets 54. It is then pressed against the card-holder until 53 is forced through it making a permanent hole in the card to indicate the position of the card when mounted for reproducing. The pivoted pocket 55, is then swung around to hold down the free corner of the card. The lid is now put down which brings the friction disk 60, in contact with the card, and the recorder in contact with the prepared surface of the card. Sliding bar 49, is now pulled outwardly until lug 47, of disk 46, is released, which releases spring 27. The spring commences to unwind, transmitting its motion through pin 28, gear 33, through pinion 34, gear 36, pinion 37, worm gear 38, and worm 22 to shaft 14. The speed is regulated by the governor-balls, the disk 16, in connection with shoe 21, acting as a brake. Pinion 37, mounted on pin 38, on which disk 46, is mounted, causes the card-holder 51, and the card 81, mounted thereon, to revolve under the recorder or reproducer, to either produce a record on the card or to reproduce from the card as the case may be. As the card rotates, the friction disk 60, held in frictional contact therewith by a spring 88, transmits motion to worm gear 62, through shaft 59, and worm 61, mounted thereon. Gear 65 transmits the motion to the recorder or to the reproducer, as the case may be, connected therewith through arm 70, socket 68 and hub 66, and at the same time index 74, indicates the position of the recorder or of the reproducer on the card. To stop the operation all that is necessary is to push bar 49, inwardly until catch 48, is in the way of lug 47.

The box itself is of the same shape as the card, and to permit of the free rotation of the card is provided with slots as at 82.

The recorder is made to vibrate by the sound produced in a horn, as 80, connected with the hub 66, and transmitted through the pivoted arm 70, to sound box 71. The vibrating recorder produces impressions upon the prepared surface of the card. When the card with such an impressed record is mounted in such a box and a reproducer substituted for the recorder, it sets up vibrations in the sound-box 71, which are transmitted through the horn. When the spring 27, is unwound to its utmost capacity the lug 45, of disk 43, holds the tooth 41, of wheel 40, preventing any further operation.

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

1. The combination, in a sound recording and reproducing machine, of a box, a card carrier rotatably mounted in said box, a cover for the box, said card carrier being wholly independent of the cover, a friction disk carried by the cover and revolubly supported thereby, and a sound-box carried by said cover in operative connection with and adapted to be fed by said disk, said disk being arranged to be rotated by the carrier when the cover is down on the box.

2. A sound recording and reproducing machine comprising a box, a carrier rotatably mounted therein adapted to carry a card, a cover for the box, a bracket mounted on the inside of the cover, a friction disk revolubly supported thereby and adapted to be rotated by the card when the cover is down on the box, a sound box pivotally supported by said bracket, a gear sector adapted to move the sound box relatively to the carrier, a shaft carrying the friction disk provided with a worm, and a gear in mesh with said sector and worm.

3. A sound recording and reproducing machine, comprising a box provided with a revolubly mounted carrier, a cover therefor provided with a friction disk adapted to be revolved by the carrier, a sound box suspended from the cover and adapted to be moved by the disk relatively to the carrier, a needle point suspended from the sound box, a gear, a shaft carrying the friction disk and provided with a worm in mesh with said gear, and a sector in mesh with said gear adapted to cause said needle to move over the surface of the carrier.

4. A sound recording and reproducing machine, comprising a box provided with a revoluble carrier, a cover therefor provided with a disk adapted to be rotated by the

carrier, a sound box above the carrier adapted to be moved by the disk relatively to the carrier, a needle point suspended from the sound box over the carrier, and means above the cover adapted to indicate the position of the needle point relatively to the carrier.

In witness whereof I have hereunto signed this specification in the presence of two subscribing witnesses.

BERTHOLD A. BAER.

Witnesses:

EMANUEL KLINE,

WM. PORTNER.