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C. O. HAYS.  
 PHONOGRAPH.  
 APPLICATION FILED MAR. 13, 1911.

Patented Aug. 1, 1911.

2 SHEETS-SHEET 1.

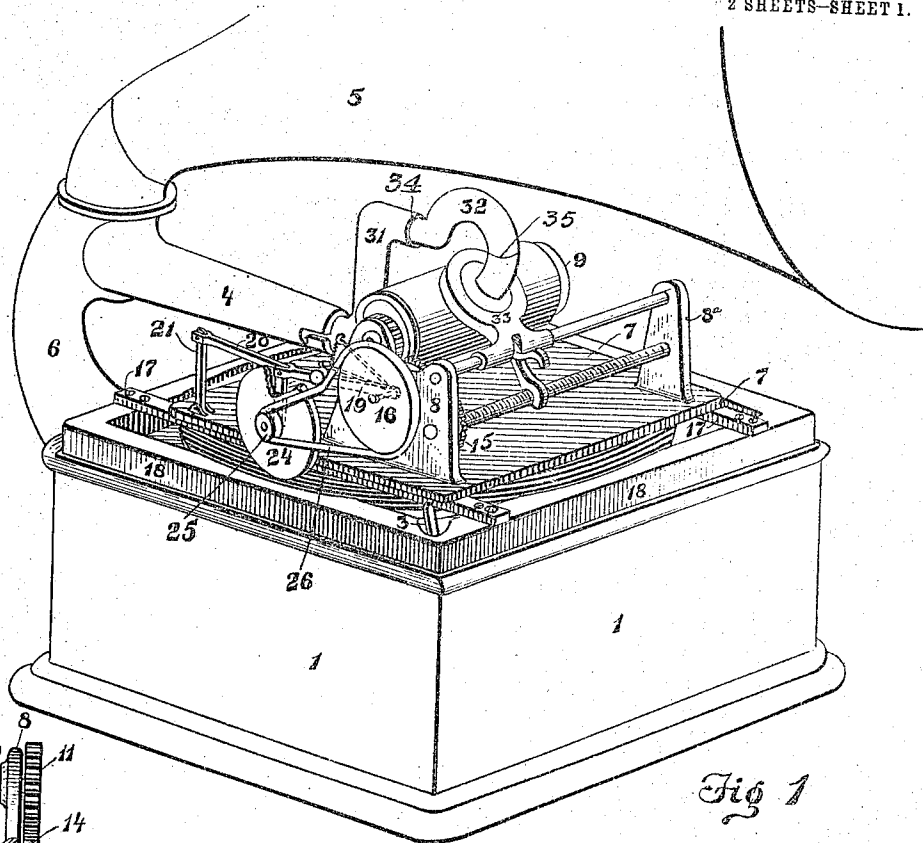


Fig 1

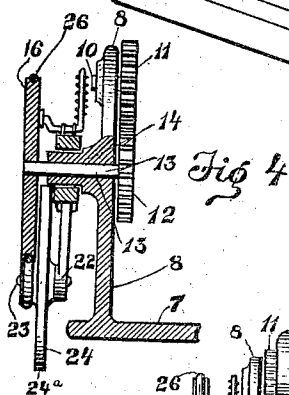


Fig 4

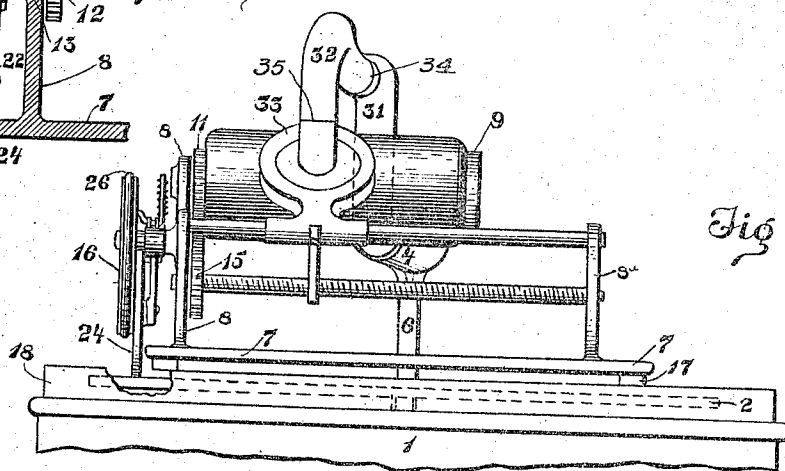


Fig 3

Witnesses

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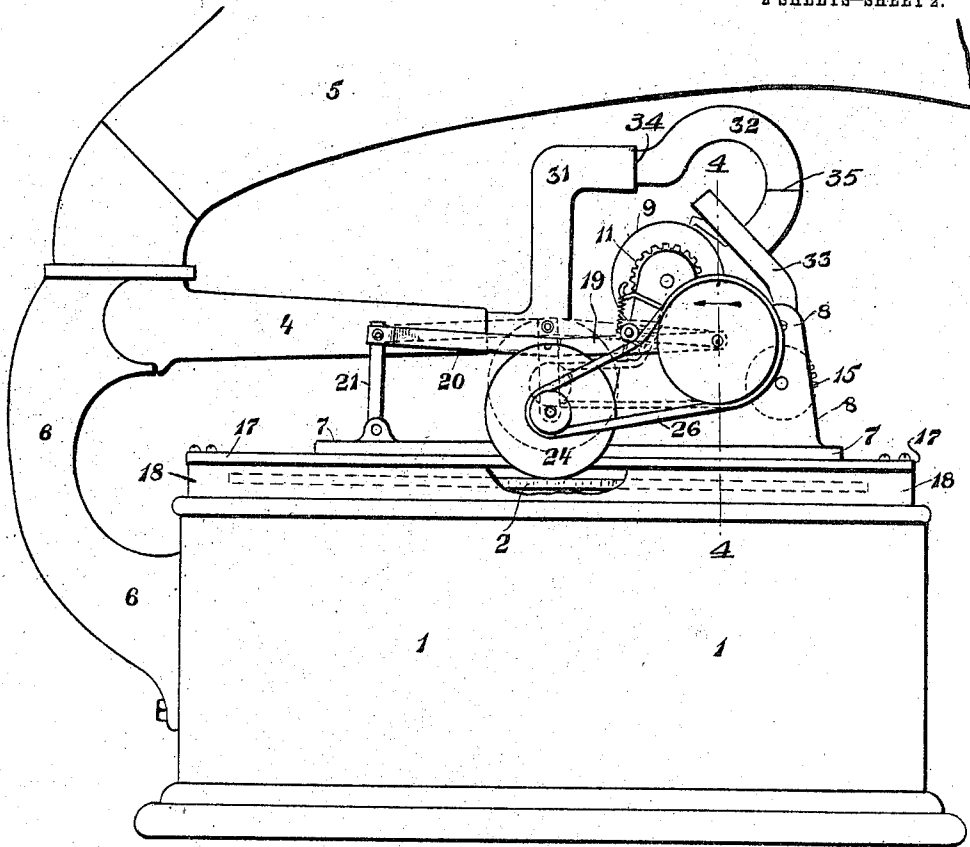


Fig 2

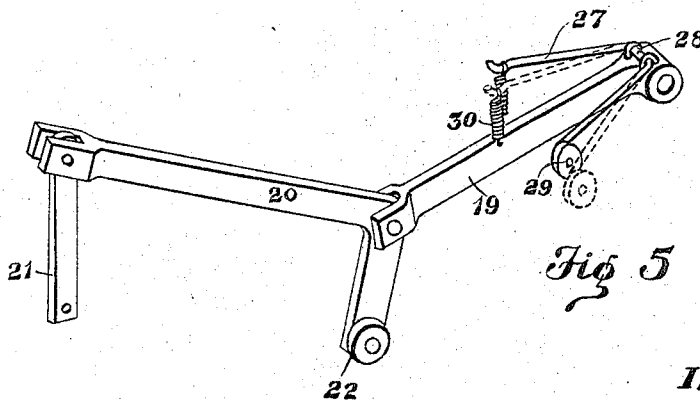


Fig 5

Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES O. HAYS, OF LOCUST CORNER, OHIO.

PHONOGRAPH.

999,646.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed March 13, 1911. Serial No. 614,180.

*To all whom it may concern:*

Be it known that I, CHARLES O. HAYS, a citizen of the United States, residing at Locust Corner, in the county of Clermont and State of Ohio, have invented certain new and useful Improvements in Phonographs, of which the following is a specification.

The invention relates to the combination of a mandrel mechanism with the operating mechanism of a disk-record phonograph, to the effect that the mandrel mechanism of any ordinary type of phonograph for the use of cylinder records can be used in connection with the cabinet and operating mechanism of any ordinary type of disk-record phonographs. This general object is accomplished by mounting the mandrel mechanism on a suitable frame adapted to rest on the cabinet of the disk machine around the turn table thereof, and by gearing with the mandrel mechanism a friction wheel adapted to travel on the turn table and to be rotated by the same to actuate the mandrel mechanism.

The invention, thus set forth in general terms, is illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a perspective view showing a mandrel mechanism mounted on the cabinet of a disk-record phonograph; Fig. 2, an end elevation of the same; Fig. 3, a front elevation of part of same; Fig. 4, a fragmentary section on line 4—4, Fig. 2; and Fig. 5, a detached perspective view of the compensating levers.

Similar numerals refer to similar parts throughout the drawings.

On the cabinet 1 of the disk-record phonograph is mounted the usual turn table 2, and in the cabinet is provided the usual motor and other operating mechanism (not shown) for rotating the turn table, the same being provided with the usual brake and regulator 3. The tone arm 4 and the horn 5 are mounted on the bracket 6 which in turn is secured to the cabinet in the usual manner. The mandrel mechanism includes the usual base plate 7, the standards 8 and 8<sup>a</sup> thereon, the mandrel 9 having its shaft 10 journaled in the standard 8, the gear wheel 11 secured on the mandrel-shaft, and the driving gear wheel 12 secured on the driving shaft 13 which is journaled in the bearing 14 formed or secured on the standard 8, which driving gear wheel meshes with the

mandrel-wheel 11 on one side and feed gear wheel 15 on the other side; and on the outer end of the driving shaft is secured the pulley wheel 16.

The base plate 7 of the mandrel mechanism is preferably secured to the cross bars 17 which in turn are secured to the rectangular frame 18 which is adapted to rest on the top of the disk-cabinet freely around the turn table thereof, and in this relation of the parts the cross bars 17 and the base plate of the mandrel mechanism are located freely above the turn table. The oscillating arm 19 is pivoted at one end on the bearing 14 of the driving shaft 13, between the standard 8 and the pulley wheel 16, and is pivoted at the other end to the angle of the L-lever 20, which lever has its horizontal arm pivoted to the upper end of the upright link 21, the lower end of which link is pivoted to the base plate of the mandrel mechanism.

On the lower end of the depending arm of the L-lever 20 is provided the bearing 22 in which is mounted the axle 23 of the friction wheel 24 which is provided with the rubber or frictional tire or periphery 24<sup>a</sup>; and on the side of the friction wheel is secured the pulley wheel 25. The belt or band 26 is provided around the pulley wheels. The U-shaped rod 27 is pivoted by its yoke 28 on the oscillating arm 19, on one end of which rod is pivoted the idle wheel 29 and the other end of the rod is connected to the arm 19 by means of the spring 30.

When the mandrel mechanism, with its supporting frame, is placed upon the disk-cabinet, the parts are so arranged that the periphery of the friction wheel will rest upon the turn table 2, preferably near the periphery thereof, and be rotated by the frictional contact therewith when the turn table is rotated by its operating mechanism; and it is evident that the oscillating arm 19, the L-lever 20 and the upright link 21, which collectively may be called the compensating levers, will permit the friction wheel to rise and fall to conform to the variations in the height of the turn table as it rotates, and it is evident that by the peculiar arrangement of the compensating levers, that the friction wheel will rise and fall in a substantially vertical line, so that it will neither advance nor retard with reference to the rotation of the disk; it is furthermore

evident that the action of the spring 30 serves to press the idle wheel 29 firmly against the belt 26 at all times, and that as the friction wheel is slightly elevated the idle wheel will press the belt downward to keep it tightly around the pulley wheels. And it will be understood that when the mandrel mechanism is combined with the disk-cabinet, a suitable connecting pipe as 31 is provided to connect the gooseneck 32 of the reproducer frame 33 with the tone arm, there being a rotatable sliding joint at 34 between the connecting pipe and the gooseneck, and a swivel joint at 35 in the gooseneck, so that the phonograph is thus adapted for the use of cylinder records; and that when the mandrel mechanism and corresponding parts are removed, a suitable disk-reproducer (not shown) is secured to the tone arm, thus adapting the phonograph for the use of disk records mounted on the turn table in the usual manner.

I claim:

1. The combination of a phonograph cabinet having a rotatable turn table thereon, a frame adapted to rest on the cabinet around the turn table, a mandrel mechanism on the frame, and a friction wheel resting on the

turn table and having an oscillating gearing connection with the mandrel mechanism. 30

2. The combination of a phonograph cabinet having a rotatable turn table thereon, a frame adapted to rest on the cabinet around the turn table, a mandrel mechanism on the frame, a friction wheel resting on the turn table and having a gearing connection with the mandrel mechanism, and a bearing for the friction wheel connected with the mandrel mechanism, whereby the wheel is adapted to oscillate with the turn table. 40

3. The combination of a phonograph cabinet having a rotatable turn table thereon, a frame adapted to rest on the cabinet around the turn table, a mandrel mechanism on the frame, a friction wheel resting on the turn table and having a gearing connection with the mandrel mechanism, and a bearing for the friction wheel having compensating lever connections with the mandrel mechanism, whereby the pulley wheel is adapted to oscillate directly up and down with the turn table. 50

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Witnesses:

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