

982,814.

2 SHEETS—SHEET 1.



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ELECTRICAL MUSIC-PLAYER.

982,814.

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To all whom it may concern:

Be it known that I, DAVID J. HAUSS, a citizen of the United States, residing at Aurora, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Electrical Music-Players, of which the following is a specification.

My invention relates to improvements in electrically actuated music players.

One of its objects is to provide improved tracking mechanism adapted to produce music from sheets of different scales.

Another object is to provide for the use of sheets of different widths.

Another object is to provide an automatic adjustment of the tracker to cause the same to adjust itself to sidewise movements of the sheet, or variations caused by expansion, contraction or swaying of the sheet or parts thereof.

Another object is to provide in connection with the foregoing means to change the key of the music.

It further consists in certain details of form, combination and arrangement, all of which will be more fully set forth in the description of the accompanying drawings in which:

Figure 1 is a front elevation of the tracker and music feeding rolls, with the contact roll omitted. Fig. 2 is a diagram of the electrical connections for the automatic tracker adjustment. Fig. 3 is a vertical section on line *v v* of Fig. 1 showing the link adjusters in end view. Fig. 4 is a detail perspective view of the contact roll supporting and adjusting mechanism. Fig. 5 is a detail view partly in section of the tracker adjusting mechanism.

Fig. 6 is a sectional detail of the electrically actuated mechanism to automatically adjust the tracker.

In the accompanying drawings A represents the frame in which the operative parts are mounted.

B represents an electric motor by means of which the sheet rolls are rotated.

C represents the receiving roll which receives the sheet during the act of playing. The roll C receives motion from motor B through a worm *b* on the motor shaft driving a worm wheel *b'* on the shaft *b²* which carries a bevel gear *b³* driving a beveled gear *b⁴* on shaft *b⁵* which also carries a spur gear *b⁶*. The shaft *b⁵* is axially in line with the

shaft *c* of the roll C. The shaft *c* carries a spur gear *c'* of the same size and pitch as the gear *b⁶*. A movable pinion *c²* is adapted to simultaneously mesh with gears *c' b⁶* to transmit motion from shaft *b⁵* to shaft *c*.

The delivery roll D is supported between centers *d d'* which are in turn carried on adjustable brackets *d² d³* slidably supported upon rods *d⁴ d⁵* and movable to and from each other to adjust the centers to rolls carrying sheets of varying width by means of a series of links *e e' e² e³ e⁴ e⁵* which are pivotally connected together and are connected at E E' to the brackets *d² d³*. A link *f* locked by a screw *f'* and nut *f²* to a slotted opening in the frame piece *a* forming the lower cross-bar of frame A and connected at the opposite end to link *e* serves to shift said links and to thereby simultaneously move the centers *d d'* to or from each other and to lock the same to the adjusted position by tightening nut *f²*.

The roll D is adapted to be driven in the reverse direction to roll C to rewind the sheet on roll D to accomplish which the center *d'* has a limited movement relative to bracket *d³* and is splined upon and adapted to telescope over shaft *d¹²* and is held in engagement with roll D by a spring *d⁹*. The shaft *d¹²* carries a spur gear *d⁷* while a spur gear *d⁸* is mounted upon the motor shaft adjacent to gear *d⁷*. A pinion *d⁹* is adapted to simultaneously mesh with the gears *d⁷ d⁸* to transmit motion from the motor shaft to shaft *d¹²*. The pinions *c² d⁹* are preferably carried upon a sliding member *d¹⁰* which serves to disengage one pinion when the other is engaged.

Commercial sheets are cut to different scales, say for instance that while one series of sheets is cut upon a scale of six notes the inch, crosswise of the sheet, another series will be cut upon a scale of nine notes to the inch. In order to provide an instrument adapted to play from sheets of different scale, I provide a tracker preferably adjustably mounted upon cross rods *J' d⁵*, and provided with two or more independent sets of contact fingers arranged in different scales to correspond to the scales of the sheets to be played from. As illustrated in Fig. 3, G represents a tracker plate preferably of insulating material, which has a series of recesses on a scale of say six to the inch, in

which recesses are located a series of spring contact fingers g , the shanks g' of which are seated in metal tubes g^2 carried by the plate G, and which tubes serve to make electrical contact between the fingers and the lead wires by means of metallic plugs attached to said wires and detachably inserted into the opposite ends of said tubes.

H represents a tracker plate having a series of recesses on a scale of say nine to the inch in which recesses are mounted in the manner above described a series of spring contact fingers h , the metal tubes to receive the shanks of fingers h being represented by h' . The plate H is attached to the rear of plate G in such manner that the free ends of fingers h are in alinement and below the fingers g , said plates G H being movable together crosswise of the sheet.

The brackets $d^2 d^3$ carry rods $i i'$ which project into recesses in the end of the bracket plates in position to depress the end fingers $g h$ so as to shift said end fingers out of contact with the sheet, and prevent sounding the corresponding music notes; hence in adjusting the brackets $d^2 d^3$ to receive a short music roll, the surplus fingers at opposite ends are automatically cut out by the rods $i i'$.

The tracker plates are primarily adjustable by hand to determine the key of the music, which is effected by shifting the tracker plates crosswise of the sheet. This adjustment is effected by moving the screw stud I to the right or left in the slot i^2 and then locking said stud by means of nut i^3 . The stud I is connected by a link i^4 to lever i^5 pivoted to frame A. The opposite end of lever i^5 is in engagement with an annular groove in the end of a sleeve J which is supported by a rod J' carried by frame A. The sleeve J in turn closely fits a sleeve j attached to the tracker plates, and is supported endwise between oppositely disposed springs $j' j^2$ pressing against collars $j^3 j^4$ carried by sleeve J. Thus the sleeve j has a limited movement relative to sleeve J due to the yielding of springs $j' j^2$ while an endwise movement of sleeve J beyond the limited elasticity of springs $j' j^2$ will serve to shift the trackers endwise, which movement of the tracker is effected by moving lever i^5 , and serves to change the key.

K represents an electrically actuated controller which is carried by a rod k attached to sleeve J and moves endwise with sleeve J and which controller has a rod N connected to the trackers, and which due to the yielding of springs $j' j^2$ is enabled to shift the tracker to a limited extent in either direction to compensate for the sidewise movement buckle, or other inequality in the movement of the sheet. The movements of the rod N are automatically controlled or effected by means of electromagnets $k^2 k^3$, having armatures $k^4 k^5$ which are immersed in a liquid

contained in a cylinder k^6 between said magnets. L represents a plunger in said cylinder against which the flat faces of armatures $k^4 k^5$ are normally pressed by springs $n n'$ which seat at the opposite ends against collars $n^2 n^3$ pinned to the rod N, to which plunger L is also pinned. Fingers or levers $p p'$ carried by brackets $d^2 d^3$ are in position to be engaged by opposite edges of the sheet should it depart from its normal path of travel to either side, thereby closing one or other of the electrical circuits at contacts $p^2 p^3$ to energize one of the magnets $k^2 k^3$. When one of the magnets k^2 or k^3 say k^3 is energized it draws its armature toward itself against the action of its spring n' , and thus opens a space between the attracted armatures and plunger L and permits the liquid in cylinder k^6 to flow through the passage l' in plunger L, and find a passage under its own pressure due to the tendency of plunger L to move, between the faces of plunger L and armature k^4 , and thus permits plunger L to move toward the attracted armature drawing the tracker into alinement with the sheet. As soon as the circuit is broken the armature again by reason of its spring seats against the plunger and closes the passage l' causing the liquid in cylinder k^6 to lock the plunger against movement. When the opposite magnet is energized the plunger is caused to move in the opposite direction, and thus the tracker is automatically adjusted to compensate for irregularities in the feed of the sheet.

The sheet is pressed by a contact roller M against the contact fingers g to play music cut to the coarser scale or against the fingers h to play music cut to a finer scale. The roller M is pivotally mounted in a frame m which is pivotally supported upon links or arms m^2 , the upper ends of which are provided with a series of pins m^3 projecting through slots m^4 in the frame A. Pivoted latch members m^5 are adapted to engage either beneath the lower pin m^3 to lock the contact roller in position to engage the fingers g or to engage between the two lower pins m^3 to lock the roller M in position to engage the fingers h . A spring m^6 serves to press the roller M in contact with the sheet. When the sheet is to be rewound on roller D the rod m^7 is pulled forward to disengage the sheet from the contact fingers.

The speed of the motor B is varied as required by shifting a controlling lever R across a series of electrical contacts R'.

S represents a link connected at one end to the controlling lever R and at the opposite end to an indicator r sliding in ways on the frame piece a , and which indicator travels over a scale T which indicates to the operator the speed or number of revolutions of the sheet roll C.

The mechanism herein illustrated and de-

scribed is capable of considerable modification without departing from the principle of my invention.

Having described my invention what I claim is:

1. In a mechanism of the character described, sheet delivery and receiving rolls adapted to feed a music sheet, a tracker provided with plural series of electrical contact fingers, said respective series of contact fingers being differently spaced, and a contact member adapted to selectively contact with the fingers of said respective series.

2. In a mechanism of the character described a sheet delivery roll, a sheet receiving roll, a sheet adapted to be fed from one of said rolls to the other, and electrical contact fingers arranged in plural series with the respective series of fingers differently spaced, and means to engage any selected series of fingers with said sheet.

3. In a mechanism of the character described, a sheet delivery roll, a sheet receiving roll, a sheet adapted to be fed from one of said rolls to the other, electrical contact fingers arranged in plural series with the respective series of fingers differently spaced, a contact member on the opposite side of said sheet from said contact fingers, and means to selectively bring said contact member into operative relations with the respective series of contact fingers.

4. In a mechanism of the character described, a music sheet, electrical contact fingers arranged in plural series with the respective series of fingers differently spaced, and a contact member adapted to bring the sheet into operative relation with the desired series of contact fingers.

5. In a mechanism of the character described, a tracker board, electrical contact

fingers arranged upon said board, a music-sheet adapted to be fed over said contact fingers, a contact member to hold said sheet in operative relation with said fingers, means to manually adjust said tracker board crosswise of the sheet, electrical contact members adapted to contact with opposite edges of the sheet, and electrically actuated mechanism in electrical circuits controlled by said contact levers to automatically shift said tracker board.

6. In a mechanism of the character described a tracker board electrical contact fingers arranged upon said board, a music sheet adapted to be fed over said contact fingers, a contact member to hold said sheet in operative relation with said fingers, means to manually adjust said tracker board crosswise of the sheet, electrical contact members adapted to contact with opposite edges of the sheet, and electrically actuated mechanism manually adjustable with said tracker board, in electrical circuits controlled by said contact levers, and adapted to automatically move said tracker board crosswise of the sheet.

7. In a mechanism of the character described, mechanism adapted to feed a music sheet, a tracker provided with two independent series of electrical contact fingers, said respective series of contact fingers being differently spaced, and a contact member adapted to selectively contact with the fingers of either of said respective series.

In testimony whereof I have affixed my signature in presence of two witnesses.

DAVID J. HAUSS.

Witnesses:

WALTER J. MURRAY,
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