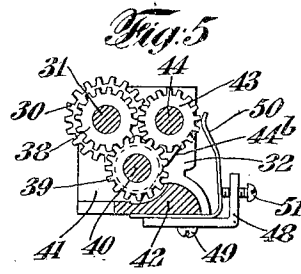
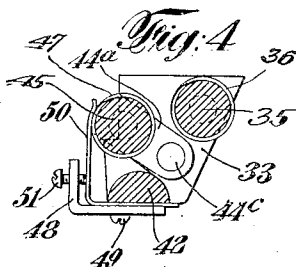
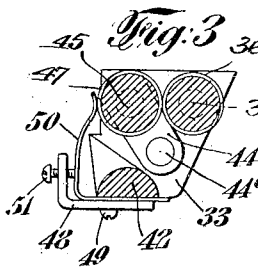
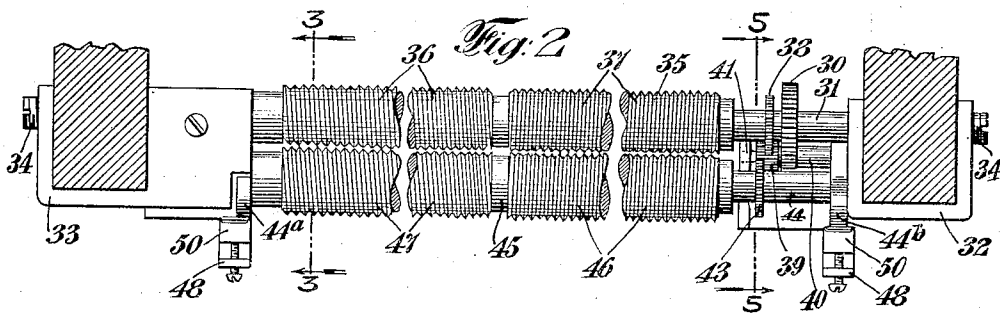
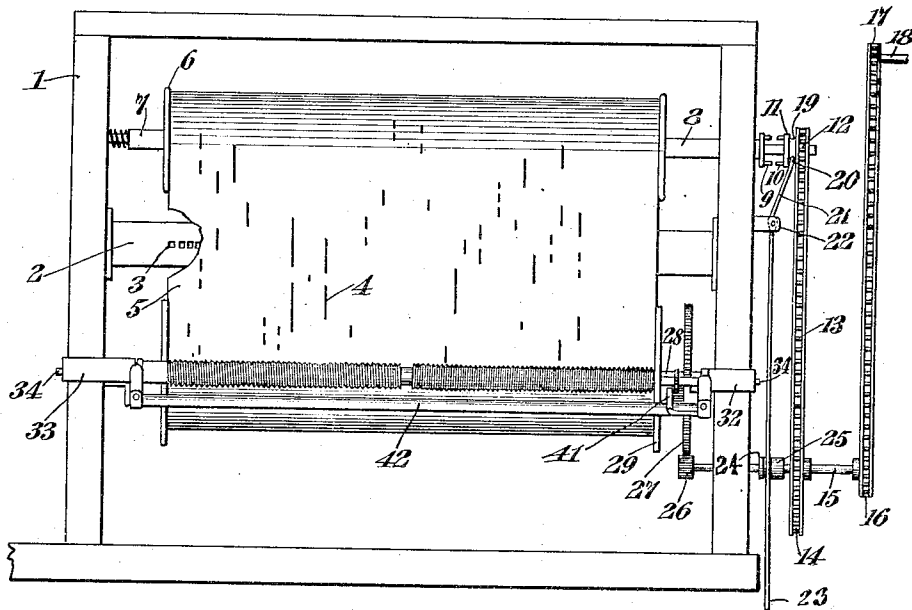


1,337,530.

Fig:1



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ARTHUR A. PAGE, OF NEW YORK, N. Y.

TRACKING DEVICE.

1,337,530.

Specification of Letters Patent.

Patented Apr. 20, 1920.

Application filed March 17, 1917. Serial No. 155,452.

To all whom it may concern:

Be it known that I, ARTHUR A. PAGE, of New York, in the county of New York, and in the State of New York, have invented a certain new and useful Improvement in Tracking Devices, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates particularly to devices designed to be used in connection with musical instruments operated by means of record rolls, whereby the record roll is maintained in its proper and central position during the operation of the musical instrument thereby.

The object of my invention is to provide an apparatus by means of which record rolls in musical instruments may be maintained in their proper and middle positions while the musical instruments are being played thereby. More particularly, the object of my invention is to provide an apparatus of this character by means of which the sheet of material carrying a record may be made to register exactly with the openings in a tracker bar so that the notes may be played according to the record. A further object is to provide an apparatus of this character which is extremely simple in construction and which can be produced at a low cost. A further object is to provide an apparatus of this kind which may be readily applied to player devices of various different types. Further objects of my invention will appear from a detailed description thereof contained hereinafter.

While my invention is capable of embodiment in many different forms, for the purpose of illustration I have shown only one form thereof in the accompanying drawings, in which—

Figure 1 is a front elevation of a tracking device made in accordance with my invention, the same being shown as applied to the player mechanism of a musical instrument as, for example, a player piano;

Fig. 2 is a plan view of the tracking device showing the supports to which it is attached in cross-section;

Fig. 3 is a vertical section of the same taken on line 3—3 of Fig. 2 and showing the parts in operative position;

Fig. 4 is a similar view showing the parts

in position prior to the operation of the tracking device; and

Fig. 5 is a vertical section of the same taken on line 5—5 of Fig. 2.

In the drawings I have shown an apparatus which may, for example, be attached to a player piano, the player mechanism of which is partly shown herein, although it is to be understood that the player mechanism itself may be of any desired type, and that the player piano may be of any desired type, and that instead of the piano, if desired, any other mechanically played musical instrument may be used. In the apparatus shown in the drawings, there is a frame 1 supporting a tracker bar 2, which may be provided with a series of openings 3, to admit atmospheric air for the operation of the player mechanism in the usual way and thereby operate the musical instrument not shown. These openings 3 in the operation of the player mechanism are arranged to register with openings 4 in a flexible sheet 5 of any suitable character carried by a roll 6 which is supported at one end by a spring-pressed pivot 7, and at the other end by a positively driven shaft 8 having fixedly secured thereto longitudinally directed pins 9, which are adapted to engage with similar pins 10 on a sliding sleeve 11 carrying a sprocket wheel 12, which is arranged to be driven by a chain 13 from a sprocket wheel 14 on a shaft 15 also carried by the frame 1 and having a gear 16, driven in any suitable manner, as by a chain, from a gear 17 on a shaft 18 connected to any suitable motor driving apparatus. On the sliding sleeve 11 there is an annular recess 19 to receive a yoke 20 on a lever 21 pivoted in a bracket 22 on the frame 1. Said lever 21 has a handle 23 at its lower end for manual operation. Below the bracket 22, said lever 21, furthermore, is arranged to engage with two shoulders 24 and 25 on the shaft 15 so that the shaft 15 may be moved bodily to throw a gear 26 on its inner end into and out of engagement with a gear 27. A fixed shaft 28 carries a roll 29 which receives the free end of the flexible sheet 5 during the operation of the apparatus. Gear 27 also meshes with a gear 30 on a shaft 31 carried in two U-shaped brackets 32 and 33 arranged to be secured

to the sides of the frame 1 by screws 34. The shaft 31 carries a tracker roll 35 carrying two screw threads 36 and 37 at the two ends thereof which are respectively right-hand and left-hand threads. On the shaft 31 there is, furthermore, a small gear 38 which meshes with a gear 39 on a shaft 40 supported at one end in the bracket 32 and at the other end in a bracket 41 extending upwardly from a rod 42 which joins together the two brackets 32 and 33. Said gear 39 in turn meshes with a gear 43 on a shaft 44 carried by arms 44^a and 44^b, one of which is supported upon the bracket 32 and the other of which is supported by a bearing 44^c attached to the U-shaped bracket 33. Said shaft 44 has thereon a tracker roll 45 provided with two screw threads 46 and 47 which are also respectively left-hand and right-hand threads. At the front and at the two ends of the bar 42 there are attached L-shaped bars 48 by screws 49 to hold in place leaf springs 50 adapted to bear against the upper ends of the arms 44^a and 44^b. Adjusting screws 51 are provided on bars 48 to adjust the pressure with which the two rolls 35 and 45 are held together.

In the operation of my invention a record roll carrying a sheet of flexible material 5 and provided with apertures 4 will be inserted by displacing the spring pressed pivot 7 so that said roll becomes held between the pivot 7 and shaft 8, the motor being meantime disconnected from the shaft 8 by the pins 9 having been disengaged from the pins 10 through the movement of the lever 23. The end of the flexible sheet 5 is now attached to the roll 29 while said roll 29 is also disconnected from the motor owing to the disconnection of the gear 26 from engagement with the gear 27. The flexible sheet of material 5 is passed between the rolls 35 and 45, however, before having its end attached to the roll 29, which is readily accomplished by moving the roll 45 on its arms 44^a and 44^b away from the roll 35 while the flexible sheet 5 is being inserted between said rolls 35 and 45. The lever 23 is now moved so as to throw the gear 26 into mesh with the gear 27, whereupon the sheet of flexible material 5 is fed forwardly thus bringing the openings 4 into registry with the openings 3 in the tracker bar 2 and causing the musical instrument to be played. During the feeding of the sheet of material 5 forwardly in this manner, said sheet is maintained in its central position by reason of the screw threads 36, 37, 46 and 47 so that thereby perfect registry is always maintained between the apertures 4 and the openings 3. In the operation of the device the two tracker rolls 35 and 45 rotate in the same direction so that their adjacent surfaces tend to move the flexible sheet 5

neither forwardly nor rearwardly, inasmuch as there is one surface on one of said rolls passing over the flexible sheet 5 in one direction, and another surface on the other of said rolls passing said sheet in the opposite direction. Both of said rolls 35 and 45 move in the opposite direction to the roll 29 so that the tendency of said rolls 35 and 45 is to maintain a flexible sheet of material 5 always in its central position by reason of the presence of the right-hand threads at the left ends of said rolls and the left-hand threads at the right ends of said rolls. When the entire selection on the flexible sheet 5 has been played the lever 23 may be moved in the opposite direction so as to disconnect the gear 26 from the gear 27 and bring into engagement the pins 9 and 10 whereupon the shaft 8 will be positively rotated so as to roll up the flexible sheet 5 in the opposite direction until the roll has been re-wound when it may be replaced by another roll if desired. When the tracking device has been applied to a particular player apparatus, the screws 51 will be adjusted to cause the proper pressure to be applied by the springs 50 so that in this way the flexible sheet 5 may be caused to remain always in its central position.

While I have described my invention above in detail, I wish it to be understood that many changes may be made therein without departing from the spirit of my invention.

I claim:

1. A tracking device having a record-sheet-centering means comprising a transversely extending member having a surface located in the path of movement of the sheet and adapted to engage said sheet, said surface being provided with a plurality of inclined ridges adapted to contact the sheet in passing said surface.
2. A tracking device having means to retain a flexible record sheet in its central position, comprising a record sheet engaging member having an inclined groove in the surface which coöperates with the record sheet.
3. A tracking device having means to retain a flexible record sheet in its central position, comprising a record sheet engaging roll having an inclined groove in the surface which coöperates with the record sheet.
4. A tracking device having means to retain a flexible record sheet in its central position, comprising a record sheet engaging roll carrying a thread at each end thereof, said threads being adapted to engage the record sheet in passing the roll.
5. A tracking device having means to retain a flexible record sheet in its central position, comprising a record sheet engaging roll carrying a thread at each end thereof, said threads being adapted to engage the

record sheet in passing the roll, said threads being right- and left-hand, respectively.

6. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying an inclined groove, and another similar roll contiguous to the first mentioned roll.

7. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying a spiral thread at each end thereof, and another similar roll contiguous to the first mentioned roll.

8. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, said spiral threads being right and left-hand respectively and another similar roll contiguous to the first mentioned roll.

9. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying an inclined groove, and another similar roll contiguous to the first mentioned roll and means to drive said rolls in the same direction.

10. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, and another similar roll contiguous to the first mentioned roll, and means to drive said rolls in the same direction.

11. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, said spiral threads being right and left-hand respectively and another similar roll contiguous to the first mentioned roll, and means to drive said rolls in the same direction.

12. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying an inclined groove, another similar roll adjacent to the first mentioned roll, and yielding means for holding said rolls together.

13. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, another similar roll adjacent to the first mentioned roll, and yielding means for holding said rolls together.

14. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying a spiral thread at each end thereof, said spiral threads being right and left-hand respectively, another similar roll adjacent to the first mentioned roll, and yielding means for holding said rolls together.

15. A tracking device having means to retain a flexible record sheet in its central po-

sition, comprising a driving roll carrying an inclined groove, and another similar roll adjacent to the first mentioned roll, means to drive said rolls in the same direction, and yielding means for holding said rolls together.

16. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, another similar roll adjacent to the first mentioned roll, means to drive said rolls in the same direction, and yielding means for holding said rolls together.

17. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, said spiral threads being right and left-hand respectively, another similar roll adjacent to the first mentioned roll, means to drive said rolls in the same direction, and yielding means for holding said rolls together.

18. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying an inclined groove, another similar roll adjacent to the first mentioned roll, and yielding means comprising independently adjustable springs at the ends thereof for holding said rolls together.

19. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying a spiral thread at each end thereof, another similar roll adjacent to the first mentioned roll, and yielding means comprising independently adjustable springs at the ends thereof for holding said rolls together.

20. A tracking device having means to retain a flexible record sheet in its central position, comprising a roll carrying a spiral thread at each end thereof, said spiral threads being right and left-hand respectively, another similar roll adjacent to the first mentioned roll, and yielding means comprising independently adjustable springs at the ends thereof for holding said rolls together.

21. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying an inclined groove, and another similar roll adjacent to the first mentioned roll, means to drive said rolls in the same direction, and yielding means comprising independently adjustable springs at the ends thereof for holding said rolls together.

22. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, another similar roll adjacent to the first mentioned roll, means to drive said rolls in the same direction, and yielding means comprising in-

dependently adjustable springs at the ends thereof for holding said rolls together.

23. A tracking device having means to retain a flexible record sheet in its central position, comprising a driving roll carrying a spiral thread at each end thereof, said spiral threads being right and left-hand respectively, another similar roll adjacent to the first mentioned roll, means to drive said rolls in the same direction, and yielding means comprising independently adjustable springs at the ends thereof for holding said rolls together.

24. A tracking device having a record-sheet-centering means comprising a transversely extending member having a surface located in the path of movement of the sheet

and adapted to engage said sheet, said surface being provided with a plurality of oppositely inclined ridges adapted to contact the sheet in passing said surface.

25. A tracking device having a record-sheet-centering means comprising a transversely extending member having a surface located in the path of movement of the sheet and adapted to engage said sheet, said surface being provided with a plurality of oppositely inclined ridges converging in the direction of movement of the sheet and adapted to contact the sheet in passing said surface.

In testimony that I claim the foregoing I have hereunto set my hand.

ARTHUR A. PAGE.