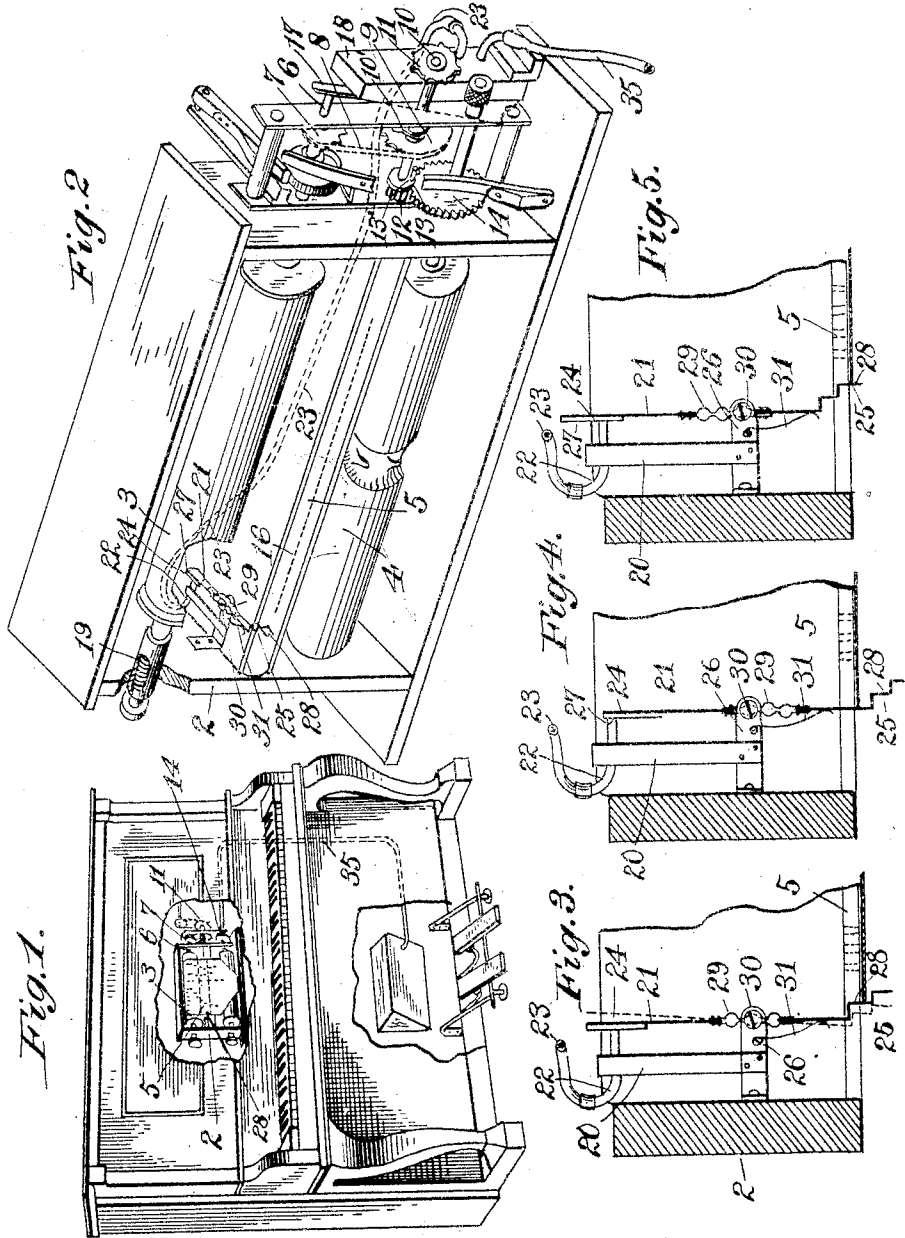


P. DUFFY.
SHEET GUIDING MECHANISM.
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1,035,171.

Patented Aug. 13, 1912.



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Fig. 6.

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UNITED STATES PATENT OFFICE.

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SHEET-GUIDING MECHANISM.

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To all whom it may concern:

Be it known that I, PETER DUFFY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Sheet-Guiding Mechanism, of which the following is a specification.

This invention relates to improved means for guiding sheets or webs, such for instance as music sheets or webs, the object of the invention being to provide an improved mechanism of this character by means of which the music sheet will not only be automatically maintained in its proper position relatively to the tracker board, but the same may be utilized for transposing the music into different keys without the necessity of moving the tracker board or re-positioning the spools.

In the drawings accompanying and forming part of this specification, Figure 1 is a perspective view of a self-playing pianoforte with parts of the casing broken away to illustrate the present improvement attached thereto; Fig. 2 is a perspective view of the sheet-guiding mechanism detached from the pianoforte; Figs. 3, 4 and 5 are detail views of the shiftable valve member and the port which it controls, Fig. 3 illustrating the position of the valve lever when the music sheet is in its normal position, Fig. 4 illustrating the position of the valve lever when the sheet has been shifted to transpose the music to a lower key, while Fig. 5 illustrates the position of the valve lever when the sheet has been shifted to transpose the music to a higher key; and Fig. 6 is a detail view of the valve lever.

Similar characters of reference indicate corresponding parts throughout the figures of the drawings.

The present improvement is particularly adapted for self-playing instruments and is carried by a suitable casing or support 2 which may be attached within the casing of the pianoforte. This casing 2, which may be of any suitable or desired construction, supports a pair of music rolls 3 and 4, the roll or spool 3 usually carrying the record or music sheet which is to travel over the perforated tracker board 5 when the same is wound upon the companion roll or spool 4. For unwinding the sheet from one roll to

the other suitable mechanism well known in this art is used, and therefore a general description thereof only is deemed necessary herein.

The music roll 3 is supported at one end by a journal or shaft 6 mounted in suitable bearings, and this shaft 6 carries a sprocket wheel 7 connected by a suitable sprocket chain 8 with another sprocket wheel 9 on a shaft 10 supported by the frame work. On this shaft is mounted a pinion 12 having a pin 13 therein forming one member of a clutch member 13', a corresponding pin, not shown, carried on the sprocket 9 forming the other member of the clutch. Motion is imparted to the shaft 10, which is a sliding shaft, by a sprocket 11. When the shaft is in position shown in Fig. 2 the pinion 12 is in engagement with the gear 14, thereby rotating the roll 4 and unwinding the music web from the roll 3. When the lever for shifting this shaft 10 is brought to the right the pinion 12 is disengaged from the gear 14 and the clutch pin 13 will engage the pin on the sprocket 9, at which time it will be seen that the roll 3 is winding up the music from the roll 4. The sprocket 9 is loosely mounted on the shaft 10 and held in lateral position by the guide finger 10'. Between these rolls 3 and 4 is located the usual tracker board 5, having the usual perforations 16 with which the perforations in the record or music sheet coincide.

The shaft 6 is supported by the frame work for longitudinal movement, the end thereof projecting into position to engage an arm 17 carried by a bellows 18 secured to the frame work. The opposite end of the roll 3 is supported by a spring-pressed plunger or journal 19 by means of which the roll 3 will be maintained in such position that the end of the shaft 6 will be held in engagement with the arm 17 of the bellows.

Away from the music sheet is a pair of members 20 and 21, the member 20 comprising a fixed arm carrying a port, and for this purpose it carries a tube 22 to which is attached a flexible tube 23 leading from the bellows 18 hereinbefore referred to. The lever 21 is supported in position to have one end thereof engaged by the music sheet and its opposite end in position to close the port, this lever being supported for lengthwise movement and also for swinging move-

ment, and is therefore pivotally supported adjacent to the member 20. The rear end of this lever 21 forms a valve 24 for closing the port, while the front end of the lever is step formed, as at 25, the lever being pivotally supported intermediate its ends on a bracket 26, to which the port member 20 is also secured. In the present instance the lever is shown comprising a valve portion 27 and a sheet engaging portion 28 connected by a pair of resilient corrugated members 29 for the reception of a pivot 30 by means of which the lever is pivotally supported for swinging movement. By this construction the lever may be pushed rearwardly or drawn forwardly into one or another of the openings formed by the corrugated connecting resilient members, three of which are shown in the present instance. A suitable spring 31 is located in position to normally maintain the valve lever in engagement with the music sheet, whereby the port will normally be maintained closed. Leading from the bellows to the usual pneumatic of the musical instrument is a tube 35, the opening thereinto from the bellows being somewhat smaller than that connecting the bellows with the port carried by the member 20, thereby to permit proper operation of the bellows in the manner about to be described.

The lever 21, according to the position of the music sheet, will have one of its steps in engagement with the edge of the sheet during its traveling movement from the roll 3 to the roll 4, so that if the sheet varies with relation to the tracker board the mechanism herein shown will automatically shift the sheet to have the perforations therein properly coincide with the perforations of the tracker board. For instance, if the sheet during its traveling movements moves to the left it will shift the lever 21 into the position shown in dotted lines in Fig. 3, thereby moving the valve and opening the port and permitting atmospheric air to pass into the tube and from thence to the bellows, thereby expanding the same and causing the arm thereof to move away from the shaft 6, whereupon the spring actuated plunger at the opposite end of the roll 3 causes the roll to move toward the right so as to again bring the shaft 6 into engagement with the arm of the bellows and so return the sheet to its proper position relatively to the tracker board, at which time the valve will close the port. If, however, the sheet should crawl or move to the right, the port being closed by its valve the gradual exhaust of the air from the bellows contracts the same and causes the arm to shift the shaft 6 and thereby the music roll against the action of the spring actuated plunger into proper position to have the sheet travel in its proper position on the tracker board. It is understood, of course, that by reason of the fact that the outlet from

the bellows is of smaller diameter than the inlet thereto the air will pass therefrom with less rapidity than it passes thereinto.

Should a music sheet of one manufacturer be wider or narrower than that of another, or should it be desired to transpose the music to a lower or a higher key, it is merely necessary to adjust the valve lever by pushing it forward or rearward. For instance, if it is desired to transpose the music into a lower key this valve lever is drawn forward so that the pivot thereof will be located in the rear opening formed by the corrugated members, which will thus bring the rear step of the series of three steps into engagement with the music sheet. If, on the contrary, it is desired to transpose the music into a higher key the lever is pushed rearward so that the pivot will be brought into the forward or first opening, which will thus bring the first or forward step of the lever into position to contact with the edge of the sheet. It will thus be observed that in any position of the lever the valve thereof controls the port leading to the bellows. It will also be understood that various modifications may be made and various forms of levers supported in different manners could be used to accomplish the same purpose, so that the details may be more or less varied without departing from the spirit or scope of this invention, which broadly consists of a valve member for controlling a port by means of its engagement with the sheet, and which member may be adjusted relatively to the sheet to permit the music to be transposed into different keys.

From the foregoing it will be observed that the music may be transposed into different keys without the necessity of moving the tracker board or re-positioning the spools, and that not only is the present improvement automatically effective to properly guide the music sheet, but that it may also be used to transpose the music by the mere adjustment of the valve lever.

I claim as my invention:

1. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port and an adjustable valve member for closing said port and having contact with the music sheet and adjustable across the edge of the sheet to transpose the music into a different key.

2. A music sheet guiding mechanism, comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port located away from and out of contact with the sheet and a shiftable and adjustable valve member for controlling said port and having a part thereof in contact with the music sheet and adjustable across the edge

of the sheet to transpose the music into a different key.

3. A music sheet guiding mechanism, comprising a pneumatically operated device, a port connected therewith, and shiftable and adjustable means in engagement with the sheet and coöperating with said port for controlling the position of the sheet and adjustable across the edge of the sheet to transpose the music into a different key.

4. A music sheet guiding mechanism, comprising a port, automatically operative means connected with the port for moving the sheet laterally, and means for governing said sheet-moving means and comprising a shiftable and adjustable valve member coöperating with the port and having a part thereof in position to contact with the sheet and adjustable across the edge of the sheet to transpose the music into a different key.

5. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port and a pivotally supported valve lever in engagement with the sheet and controlling said port, said lever being supported for movement in the direction of its length relatively to its pivotal support.

6. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port located away from and out of contact with the sheet and a pivotally supported valve lever in position to contact with the sheet and control said port, said lever being supported for movement lengthwise thereof whereby its position may be varied relatively to its pivotal support.

7. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port and a pivotally supported and adjustable member having a step formed part adapted to contact with the music sheet and a valve controlling said port.

8. A music sheet guiding mechanism comprising means operative to move the sheet laterally, means for controlling the operation of said means and including a port and a pivotally supported and adjustable member having a step formed part adapted to contact with the music sheet and a valve controlling said port, and means for holding said member in engagement with the music sheet.

9. A music sheet guiding mechanism comprising means operative to move the sheet laterally, means for controlling the operation of said means and including a port and a pivotally supported and adjustable member having a step formed part adapted to contact with the music sheet and a valve

controlling said port, said member having means to maintain it in engagement with its pivotal support in any of its adjusted positions.

10. A music sheet guiding mechanism comprising means operative to move the sheet laterally, means for controlling the operation of said means and including a port and a pivotally supported and adjustable member having a step formed part adapted to contact with the music sheet and a valve controlling said port, said member having means to maintain it in engagement with its pivotal support in any of its adjusted positions, said means comprising resilient members.

11. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and comprising a port located away from and out of contact with the sheet, and a step formed valve lever adapted to contact with the sheet and having a valve for closing said port, said valve lever being supported for swinging movement between its ends and also for lengthwise adjustable movement relatively to the sheet.

12. A music sheet guiding mechanism comprising means operative to move the sheet laterally and including a pneumatic, and means for controlling the operation thereof and including a port and a swingingly supported and lengthwise adjustable valve controlling member in position to contact with the sheet.

13. A music sheet guiding mechanism comprising means operative to move the sheet laterally and including a pneumatic having an inlet and an outlet, the latter of smaller diameter than the inlet, a port in communication with the inlet of said pneumatic, and means in engagement with the sheet and carrying a valve for closing said port, said means comprising a member supported for pivotal movement and lengthwise adjustment relatively to its pivotal support.

14. A music sheet guiding mechanism comprising means operative to move the sheet laterally and including a pneumatic having an inlet and an outlet, the latter of smaller diameter than the inlet, a port in communication with the inlet of said pneumatic, and means in engagement with the sheet and carrying a valve for closing said port, said means comprising a member supported for pivotal movement and lengthwise adjustment relatively to its pivotal support and having one end thereof of step formation.

15. A music sheet guiding mechanism comprising a pair of rolls, means for winding the sheet from one roll to the other, lengthwise shiftable journals for supporting

the roll originally carrying the sheet, a spring for normally pressing said roll in one direction, a bellows having an inlet and an outlet, the latter of less diameter than the inlet, an arm carried by the bellows and in engagement with one of said journals, a port in communication with the inlet of said bellows, a swinging lever having a stepped end in engagement with the sheet and having a valve for closing said port, said lever being supported for adjustment lengthwise thereof, and means for maintaining said lever in engagement with the sheet.

16. A music sheet guiding mechanism comprising a pneumatically operated device and a port connected therewith and controlled by means in engagement with the sheet, said means supported for and capable of movement in transverse directions, one in the direction of the travel of the sheet and one across the edge of the sheet, such movement effecting the transposition of the music into a different key.

17. A music sheet guiding mechanism comprising a pneumatically operated device and a port connected therewith and controlled by means in engagement with the sheet, said means supported for movement in transverse directions relatively to its point of support, one a swinging movement and the other an adjustable movement lengthwise thereof.

18. A music sheet guiding mechanism

comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port and a member controlling said port and having means adjustable into different positions one crosswise of the edge of the sheet to engage the music sheet and effect a transposition of the music into a different key.

19. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port and a member controlling said port and having means adjustable into different positions to engage the music sheet, said sheet engaging means comprising offsets or steps.

20. A music sheet guiding mechanism comprising means operative to move the sheet laterally, and means for controlling the operation of said means and including a port and a member controlling said port and having means bodily adjustable lengthwise into different positions to engage the music sheet, said port being located away from and out of contact with the music sheet.

Signed at New York, county and State of New York, this 23rd day of June, 1911.

PETER DUFFY.

Witnesses:

PETER DUFFY,
FREDERICK S. WILSON.