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SHEET ADJUSTING DEVICE FOR MECHANICAL MUSICAL INSTRUMENTS.
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Fig. 1.

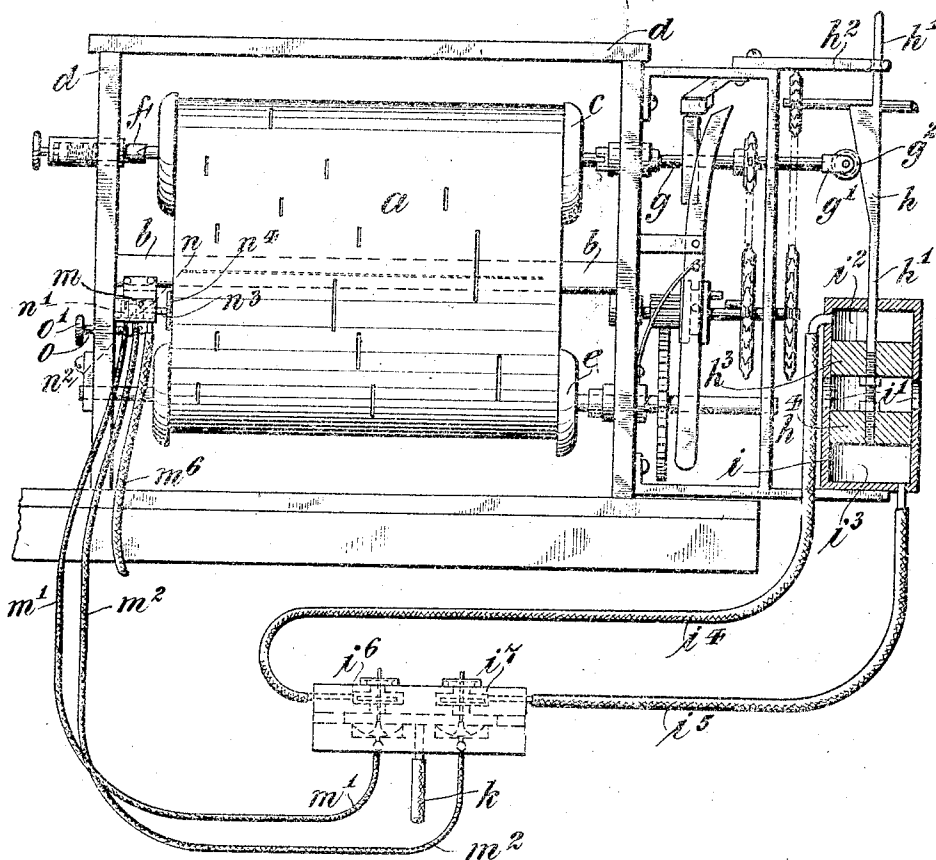
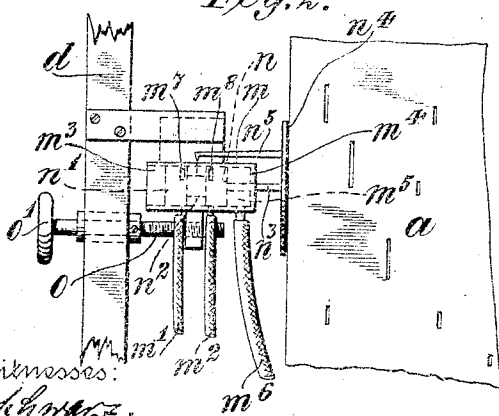


Fig. 2.



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SHEET-ADJUSTING DEVICE FOR MECHANICAL MUSICAL INSTRUMENTS.

1,008,976.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK G. LYNDE, a citizen of the United States, residing in the borough of Manhattan of the city of New York, in the State of New York, have invented certain new and useful Improvements in Sheet-Adjusting Devices for Mechanical Musical Instruments, of which the following is a specification, reference being had to the accompanying drawing, forming a part hereof.

This invention has for its object to provide improved devices for effecting lateral adjustment of the perforated music sheet of a mechanical musical instrument to preserve the registry of its perforations with the ducts of the tracker board. One purpose in view is to make the sheet adjusting devices very sensitive, so that they will respond quickly to very slight shifts of the music sheet out of proper position; another purpose is to reduce to a minimum the wear upon the edge of the music sheet in the operation of the sheet adjusting devices; and another purpose is to permit the music sheet to be freed from contact with the sheet adjusting devices during the rewind.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which it is illustrated and in which—

Figure 1 is a view partly in elevation and partly in section showing so much of the tracker box of a pneumatic piano player as is necessary to enable the application of the invention to be understood. Fig. 2 is a detail view on a larger scale of a portion of the devices shown in Fig. 1.

The perforated music sheet *a*, arranged to cooperate in the usual manner with the tracker board *b*, is wound upon a spool *c* which is mounted in the frame *d* of the tracker box in such manner as to be capable of adjustment laterally with respect to the music sheet, that is, longitudinally with respect to the axis of the roll itself. From the spool or roll *c* the music sheet passes to the winding-on roll *e* which is also mounted in the frame *d* of the tracker box but is not necessarily capable of lateral adjustment. The two rolls are driven, in the wind and in the rewind, by any usual or suitable mechanism which need not be particularly described or explained herein. One end of the roll *c* is mounted in a yielding, spring box *f* of usual construction, by which the roll *c*

is pressed normally in one direction, but is permitted to yield when pressed in the opposite direction. At the other end the roll *c* is supported by a driving shaft *g* which is capable of limited longitudinal movement in its bearing and may be moved, to effect, in cooperation with the spring bearing box *f*, the required lateral movement of the music sheet to correct its alinement with respect to the tracker board *b*. Any usual or suitable means for effecting the required longitudinal movement of the shaft *g* may be employed.

As shown in the drawing a swiveled box *g'* on the end of the shaft *g* supports a roller *g''* which bears against a vertically movable cam *h*. The latter is mounted upon or formed with a rod *h'* which is guided in a suitable bearing *h''* at its upper end and at its lower end is connected to a double piston *h''*, *h'''*. The latter is arranged in a cylinder *i* which is provided in its middle portion, between the two pistons *h''*, *h'''*, with one or more openings *i'* so that the proximate faces of the pistons *h''*, *h'''*, are subject alike to atmospheric pressure and the piston is therefore balanced normally. The end chambers *i''* and *i'''* of the cylinder *i*, however, are separately connected with the vacuum system of the player, which is sufficiently represented by the pipe *k*, through suitable pipe connections *i''*, *i'''* and controlling pneumatics *i''*, *i'''*, which are of usual construction. The pneumatics *i''* and *i'''* are controlled, so as to effect the connection of one end *i''* or the other end *i'''* of the cylinder *i* with the vacuum system, by devices actuated by the displacement of the edge of the music sheet, so that the slightest disalinement of the music sheet produces a correcting movement of the roll *c* through movement of the cam *h* in one direction or the other. For this purpose, each of the pneumatics *i''* and *i'''*, is connected by a tube *m'*, *m''*, with a small cylinder *m* which is supported in convenient proximity to one edge of the music sheet *a*. The cylinder *m* is open to atmospheric pressure at one end, as at *m''*, and is closed at the other end, as at *m'*, the chamber *m'''* at the closed end of the cylinder being connected with the vacuum system, which is sufficiently indicated by the pipe *m'''*. The cylinder is also provided with somewhat widely separated ports *m''* and *m'''*. In the cylinder *m* is placed a double piston valve *n*, *n'*, the two parts of which are separated by an annular

recess n^2 which is slightly narrower than the distance between the two ports m^7 and m^8 of the cylinder, so that when the piston valve is in normal or middle position both ports are closed. The connections m^7 and m^8 , above referred to, are also connected into the wall of the cylinder m , preferably in line, respectively, with the ports n and n' . The piston valve is connected by a stem n^3 with a plate of detector n^4 against which the edge of the music sheet bears. The plate n^4 may also be provided with an indicating finger n^5 to show when the detector and the valve are in middle position.

It will now be seen that when the music sheet a is displaced, for example, to the right, the port m^8 and the connection m^7 will be uncovered by the valve head n and air under atmospheric pressure will be admitted to the pneumatic i^7 which will establish connection between the pipe i^5 and the vacuum pipe k . This will cause the double piston h^3, h^4 to be pulled down and the cam h will therefore press the spool c to the left, against the pressure of the spring box f , thereby correcting the alinement. Similarly if the music sheet is displaced to the left, the cam will be caused to move upward and the spring box f will then be free to move the roll to the right to correct the alinement. The detector n^4 is made to follow the edge of the music sheet and is held against the same with a light pressure, through the connection of the pipe m^6 to some part of the vacuum system in which the vacuum is low, and in which, by usual and suitable devices not necessary to be shown herein, the vacuum is destroyed during the rewind. The pressure of the detector against the edge of the sheet is therefore very light during use and may be removed entirely, if desired, during the rewind, so that the wear on the edge of the music sheet is very slight.

For adjustment of the detector to suit different conditions, the cylinder m is supported upon a screw o which is suitably mounted in the frame d of the tracker box and is provided with an adjusting head o' .

It will be understood that various changes in details of construction and arrangement may be made to suit different conditions of use and that the invention, therefore, is not limited to the particular construction and arrangement shown and described herein.

I claim as my invention:

1. The combination with a tracker box mechanism having a longitudinally movable

shaft for the music roll, of a cylinder connected at each end to the vacuum system and open to the atmosphere in its middle portion, a double piston in said cylinder, means actuated thereby to shift the music roll, pneumatics to control the connection of the cylinder ends with the vacuum system and devices actuated by the shifting of the music sheet to control said pneumatics.

2. The combination with a tracker box mechanism having a longitudinally movable shaft for the music roll, of a pneumatic device to shift the music roll, pneumatics to control the connection of said device with the vacuum system, a valve cylinder supported adjacent to the edge of the music sheet, connections therefrom to said pneumatics, a valve piston in said cylinder, and a detector connected with said piston and adapted to be shifted by the displacement of the edge of the music sheet.

3. The combination with a tracker box mechanism having a longitudinally movable shaft for the music roll, of a pneumatic device to shift the music roll, pneumatics to control the connection of said device with the vacuum system, a valve cylinder supported adjacent to the edge of the music sheet, connections therefrom to said pneumatics, a valve piston in said cylinder, a detector connected with said piston and adapted to be shifted by the displacement of the edge of the music sheet, and a connection from said cylinder to the vacuum system whereby the detector is pressed toward the edge of the music sheet.

4. The combination with a tracker box mechanism having a longitudinally movable shaft for the music roll, of a pneumatic device to shift the music roll, separate connections from the vacuum system to said pneumatic device to actuate the same in opposite directions, separate pneumatics to control said connections, a valve cylinder supported adjacent to the edge of the music sheet and having separated air ports, separate connections from said cylinder to said pneumatics, a double valve piston in said cylinder to control the connections to said pneumatics, and a detector connected with said piston and adapted to be shifted by the displacement of the edge of the music sheet.

This specification signed and witnessed this 14th day of December, A. D. 1910.

FRANK G. LYNDE.

Signed in the presence of—

AMBROSE L. O'SHEA,

ELLA J. KRUGER.