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PLAYER PIANO AND THE LIKE

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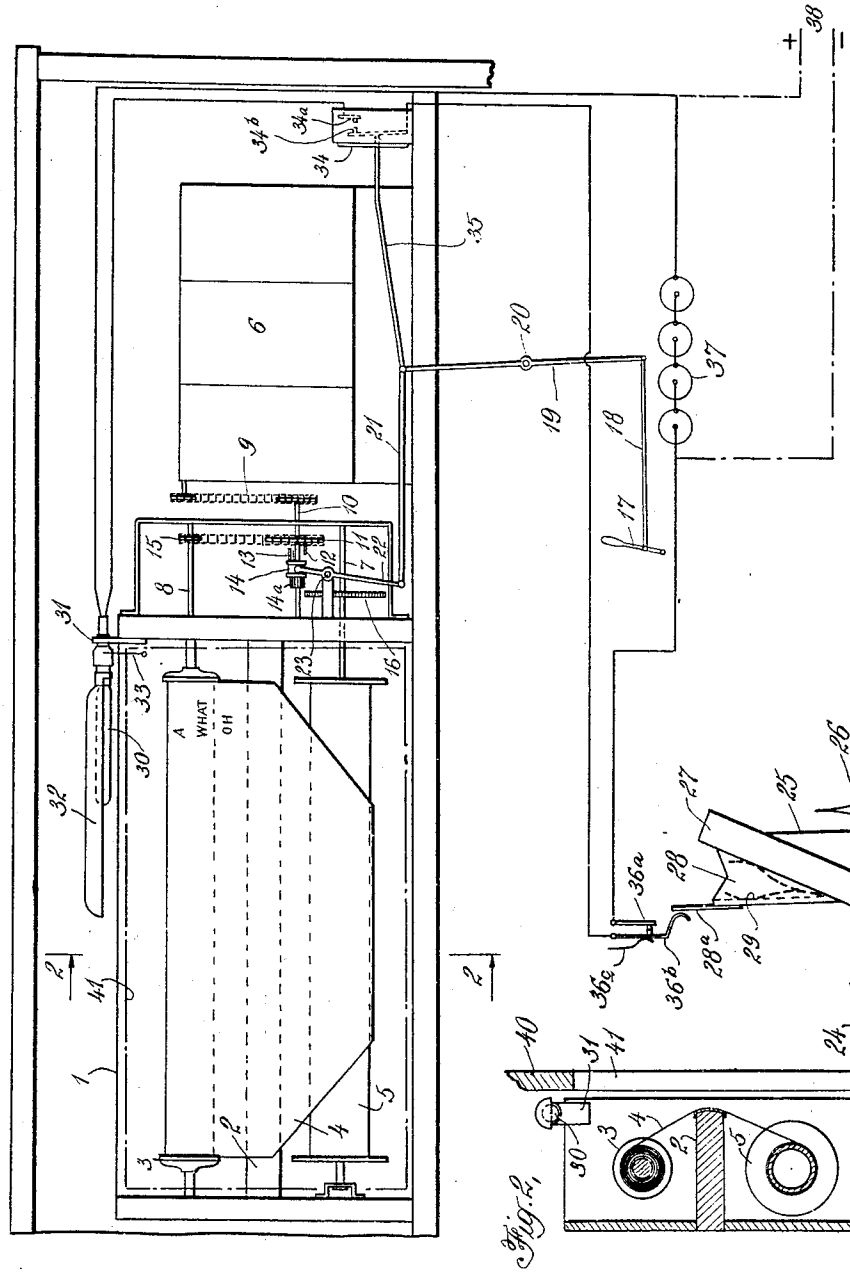


Fig. 1

Fig. 2

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PLAYER PIANO AND THE LIKE.

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To all whom it may concern:

Be it known that I, JOSEPH H. DICKINSON, a citizen of the United States, residing at Larchmont, Westchester County, New York, have invented certain new and useful Improvements in Player Pianos and the like, of which the following is a specification.

My present invention relates to illuminating the words of a song-roll or the expression markings, etc., on the perforated music-rolls while in use in a player-piano or the like, and for this purpose adaptively provides an electric-lamp in the tracker-box of the player. The invention also provides broadly for the automatic control of said light from a suitably related movable part of the instrument.

The invention may also comprise pneumatic means for controlling said light which automatically throws on the light while the exhauster is being operated, and vice versa cuts it off when the exhauster is not being operated. This feature is particularly useful in a foot-pumped instrument but is nevertheless broadly applicable to a motor-pumped instrument.

The invention may also comprise means which automatically cuts off the light while the music-sheet is being rewound on its spool, this feature being specially useful wherever it is important to economize in electric current, as for example when using a battery of dry-cells for the current source.

The drawings show only one of the specific embodiments that my invention is adapted to take, the electric switches being shown in a diagrammatic form for simplicity's sake rather than in their commercial form as required to satisfy the fire underwriters. In said drawings, Fig. 1 is a front elevation of the tracker-box and pneumatic motor portions of an upright player piano showing the electric light in place, also indicating in side elevation the foot-pumped suction-producer of the player with a diagram of the electrical connections between the foregoing and the current source, which source may be either a battery (full line) or the regular electric-lighting mains (dotted lines) according to the particular home equipment of the user; Fig. 2 is a reduced-scale vertical section on the line 2—2 in Fig. 1 looking in the direction of the arrows.

I will now describe the particular embodiment of my invention as illustrated in the drawings. 1 is the tracker-box of the instrument, 2 the tracker-bar, 3 the spool of the music-sheet 4; 5 is the take-up spool, 6 is the pneumatic motor.

The music-roll and take-up spool are shown operatively supported in the usual well-known manner.

Any usual clutch mechanism may be provided for connecting the motor 6 so as to drive either the take-up spool spindle 7 to draw the music-sheet downwardly over the tracker-bar in playing direction, or vice versa to disconnect the motor from the take-up spool and to connect it with the music-spool spindle 8. The clutch and related mechanism shown comprises the chain and sprocket drive 9 from the motor to the shaft 10 on which is mounted the loose sprocket 11 having clutch-pin 12 engageable by the pin 13 on the slidable clutch-sleeve 14 splined to the shaft 10. The aforesaid sprocket 11 is chain-connected to another sprocket 15 on the music-spool driving-spindle 8. When the clutch-sleeve 14 is in its right-hand position as shown in Fig. 1, it will be seen that the motor is disconnected from the take-up spool and is connected to the music-spool spindle 8 so as to rewind the music-sheet upwardly on the music-spool.

When the clutch-sleeve 14 is shifted to the left, its pinion 14^a is meshed with the gear 16 on the take-up spool spindle 7; and then the motor will drive the take-up spool and draw the music-sheet downwardly over the tracker-bar to play it.

The means for shifting the clutch-sleeve 14 as aforesaid may be automatic from the music-sheet in the well-known manner or may be manual and in that case may consist of the swinging hand-lever 17, link-connection 18 to the lower end of lever 19 pivotally supported at 20, and link-connection 21 to lever 22 pivotally supported at 23 with its upper end engaging an annular groove in the clutch-sleeve 14.

The foot-pumping plant shown comprises the usual pedal-means 24 operatively connected with the pumper-bellows 25. 26 is the spring tending to collapse the pumper 25 after the depression of the pedal 24 has opened it. 27 is the reservoir box and 28 is the reservoir bellows. This being a well-known apparatus in the art, it is entirely unnecessary to illustrate or describe the in-

ternal valves and air-passages by which operating the pumper bellows 25 results in exhausting the chamber 27 and the reservoir bellows 28, with the result that, depending upon the force and rapidity of the pumping, said reservoir bellows 28 is collapsed to a greater or less extent against the tension of the spring 29 which resists the collapse of the bellows.

The reservoirs 27 and 28 are, of course, operatively connected as usual by tubing, not shown, with the pneumatic motor 6 and the rest of the player-action.

It has been necessary to show and describe the above usual parts of the player at least to this limited extent in order to make clear their operative combination with the other parts of my invention as follows:

30 is an incandescent lamp and socket supported on a bracket 31 on the right side of the tracker-box above and in front of the music-roll so as to illuminate particularly the right-hand part of the music-sheet where the words of song rolls, etc., are customarily printed. The lamp is preferably of the elongated cylindrical type surmounted by a semi-cylindrical reflector 32 longer than the lamp so as to illumine effectively more of the width of the sheet to show up the expression line and other indicia on the sheet.

The front-board 40 of the piano-casing (shown only in Fig. 2) has the usual opening at the tracker-box indicated by the dotted outline 41 in Fig. 1 for inserting and playing the music-roll.

In addition to a pull or other hand-switch 33 is the tracker-box accessible to the operator,—I provide automatic means for switching on and off the current to the lamp 30 as follows: 34 is a switch comprising a stationary contact 34^a and a movable contact 34^b, the latter being operated to and from the stationary contact by a link-connection 35 with the lever 19 of the clutch-mechanism so that during "rewind" these contacts are open (and the light is off as hereinafter explained), whereas during "playing" the contacts are closed (and the light is on).

36 is another switch comprising a stationary contact 36^a and a movable contact 36^b. 36^c is a spring which when unopposed closes the movable contact with the stationary contact. The free end of the movable contact extends into the path of a lug 28^a on the reservoir bellows 28 so that said lug will strike against and open the movable contact 36^b due to the expansion of the spring 29 when the pumping plant is not being operated, and there is no exhaust on the bellows 28. On the other hand, as soon as the pumpers 25 are worked and the reservoir bellows 28 has started to collapse, the said lug 28^a is carried away from the movable contact 36^b and the spring 36^c thereupon closes the two contacts 36^b and 36^a on each other.

The aforesaid switches 34 and 36 and the lamp 30 are electrically connected in series with each other and with the source of current supply, which may be either a battery of dry or other cells 37, or the regular house-lighting mains 38.

The mode of operation of the foregoing devices is as follows: Fig. 1 shows the condition when the pumps are in operation to rewind the music-sheet. At this time, the switch 36 will be closed but the other switch 34 will have been automatically opened by the operator at the same time that the clutch was shifted to "rewind." Therefore, during the rewind, the lamp will be dark and that much current will be saved, which is important especially when using a battery. If the house-mains be used and it is not a financial object to save the lamp-current during the rewind, then the switch 34 could be dispensed with.

When the music-sheet is being played with the clutch in "play" position, then the switch 34 will be closed, as will be also the switch 36 and the light will be on, this being the time that the light is needed to read the words or other indicia on the music-sheet as is passes down over the tracker-bar.

Should now the operator shift the clutch to rewind, the light will automatically go out as already explained, due to the opening of the switch 34. Also the light will automatically go out if the operator gets up from the instrument without shifting the clutch to "rewind," because after the pumping stops, the spring 29 will expand the reservoir-bellows 28 and the lug 28^a on its movable board will open the contacts of the switch 36 and thereby automatically break the electric circuit to the lamp.

It should be understood that the pneumatic means for controlling the switch 36 need not be the specific bellows 28 but may be some other bellows or pneumatic operably related to the pneumatic action of the player. Also the pumping plant need not be foot-pumped but may be motor-driven. Also the control of the light from the "unwind" and "rewind" clutch mechanism is practicable irrespective of whether the instrument is foot or motor pumped. Also, other changes and modifications are possible in the above specific embodiment of my invention which are nevertheless within the spirit of said invention and of the foregoing disclosure and the annexed claims, and as such are intended to be covered thereby.

What I claim is:

1. In combination, a pneumatic player action, a tracker-bar, means for unwinding and rewinding the sheet of a music-roll over

said tracker-bar, an electric lamp which illuminates the sheet of said music-roll, an electrical circuit for said lamp, and pneumatic means which controls said lamp circuit and which itself is operably related to the pneumatic player action.

2. In an automatic player, a foot-operated exhauster, a tracker-bar, means for unwinding and rewinding the sheet of a music-roll over said tracker-bar, an electric lamp which illumines the sheet of said music-roll, an electrical circuit for said lamp, and pneumatic means operably connected with said exhauster and arranged to make or break said electric lamp circuit depending upon whether the exhauster is in or out of operation.

3. In an automatic player, an exhauster, a tracker-bar, means for unwinding and rewinding the sheet of a music-roll over said tracker-bar, an electric lamp which illumines the sheet of said music-roll, an electrical circuit for said lamp, a pneumatic connected with said exhauster, a spring which expands said pneumatic when the exhauster is out of operation, and a self-closing switch in the aforesaid lamp-circuit operably positioned relatively to said pneumatic for the expansion of the pneumatic by the spring to open said switch and for the collapse of the pneumatic by the exhauster to permit said switch to close itself.

4. In an automatic player, an exhauster, a tracker-bar, means for unwinding and rewinding the sheet of a music-roll over said tracker-bar, an electric lamp which illumines the sheet of said music-roll, an electrical circuit for said lamp, a pneumatic operably connected with said exhauster and arranged to make or break said lamp-circuit depending upon whether or not the pneumatic is being exhausted.

5. In an automatic player, a tracker-bar, means for operatively supporting a music-roll relatively to said tracker-bar, a take-up spool, a motor, clutch mechanism for connecting the motor either to unwind or rewind the music-roll, an electric lamp which illumines the sheet of said music-roll, an electrical circuit for said lamp, and a switch in said circuit operably connected with the clutch mechanism to be closed when the clutch is at "unwind" and to be opened when the clutch is at "rewind."

6. In an automatic player, an exhauster, a tracker-bar, means for operatively supporting a music-roll relatively to said tracker-bar, a take-up spool, a motor, clutch mechanism for connecting the motor either to unwind or rewind the music-roll, an electrical lamp which illumines the sheet of said music-roll, an electric circuit for said lamp, a switch in said circuit operably connected with the clutch mechanism to be closed when the clutch is at "unwind" and to be opened when the clutch is at "rewind"; a second switch in the lamp circuit in series with the first switch; and pneumatic means connected with the exhauster to control said second switch so that it is closed when the exhauster is in operation and is open when the exhauster is out of operation.

7. In an automatic player embodying pneumatic means for actuating it and music roll means for supporting a music sheet in playing position, a lamp positioned to illuminate a music sheet in playing position, and means controlled according to the presence or absence of pneumatic operating conditions in said pneumatic means for lighting and extinguishing said lamp.

8. In combination with a player piano having through the front-board of its casing an opening behind which are located the music-roll, tracker-bar and take-up spool,—an electric lamp behind the plane of said front-board to illumine the front face of the music-sheet, an electric circuit for said lamp, and means which controls said lamp circuit and which itself is operably related to and controlled by a movable part of said piano.

9. In combination with automatic player mechanism controlled from a perforated music-sheet, an electric lamp located to illuminate said music-sheet; an electric circuit for said lamp; and means which controls said lamp circuit and which itself is operably related to and controlled by a movable part of the mechanism of said automatic player.

10. In an automatic player, a tracker-bar, means for operatively supporting a music-sheet relatively to said tracker-bar, a motor, clutch mechanism for connecting the motor either to unwind or rewind the music-sheet, an electric lamp which illuminates said music-sheet, an electrical circuit for said lamp, and means which controls said lamp circuit and which itself is operably related to and controlled by the clutch mechanism.

In witness whereof, I have hereunto set my hand this 4th day of June, 1920.

JOSEPH HUNTER DICKINSON.