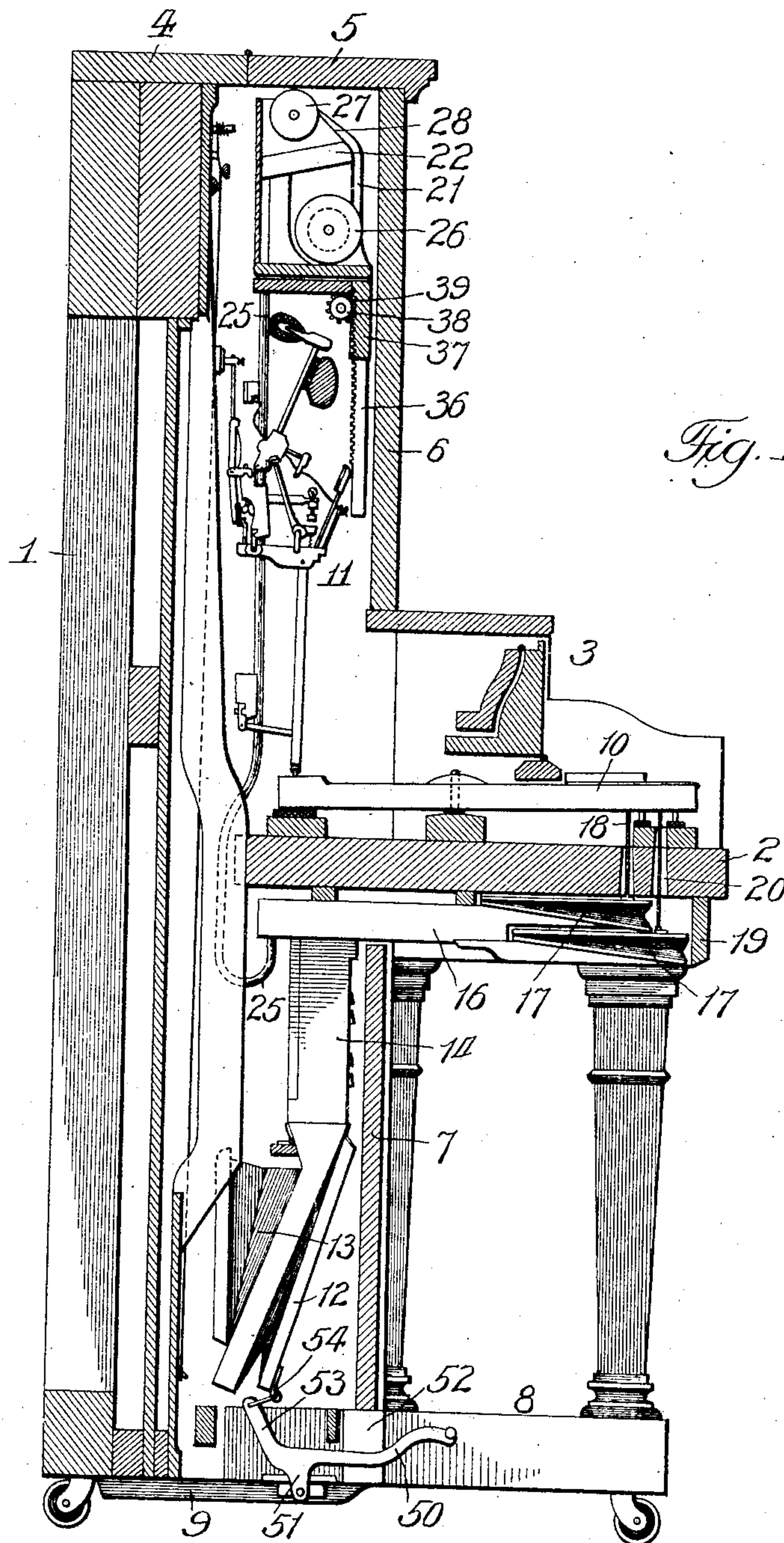


No. 855,671.

PATENTED JUNE 4, 1907.

R. A. RODESCH.  
AUTOMATIC PIANO.  
APPLICATION FILED JULY 30, 1906.

2 SHEETS--SHEET 1.



Attest:  
John Enders.  
Chas. H. Buell.

Inventor:  
Robert A. Rodesch,  
by Robert Burns Attorney.

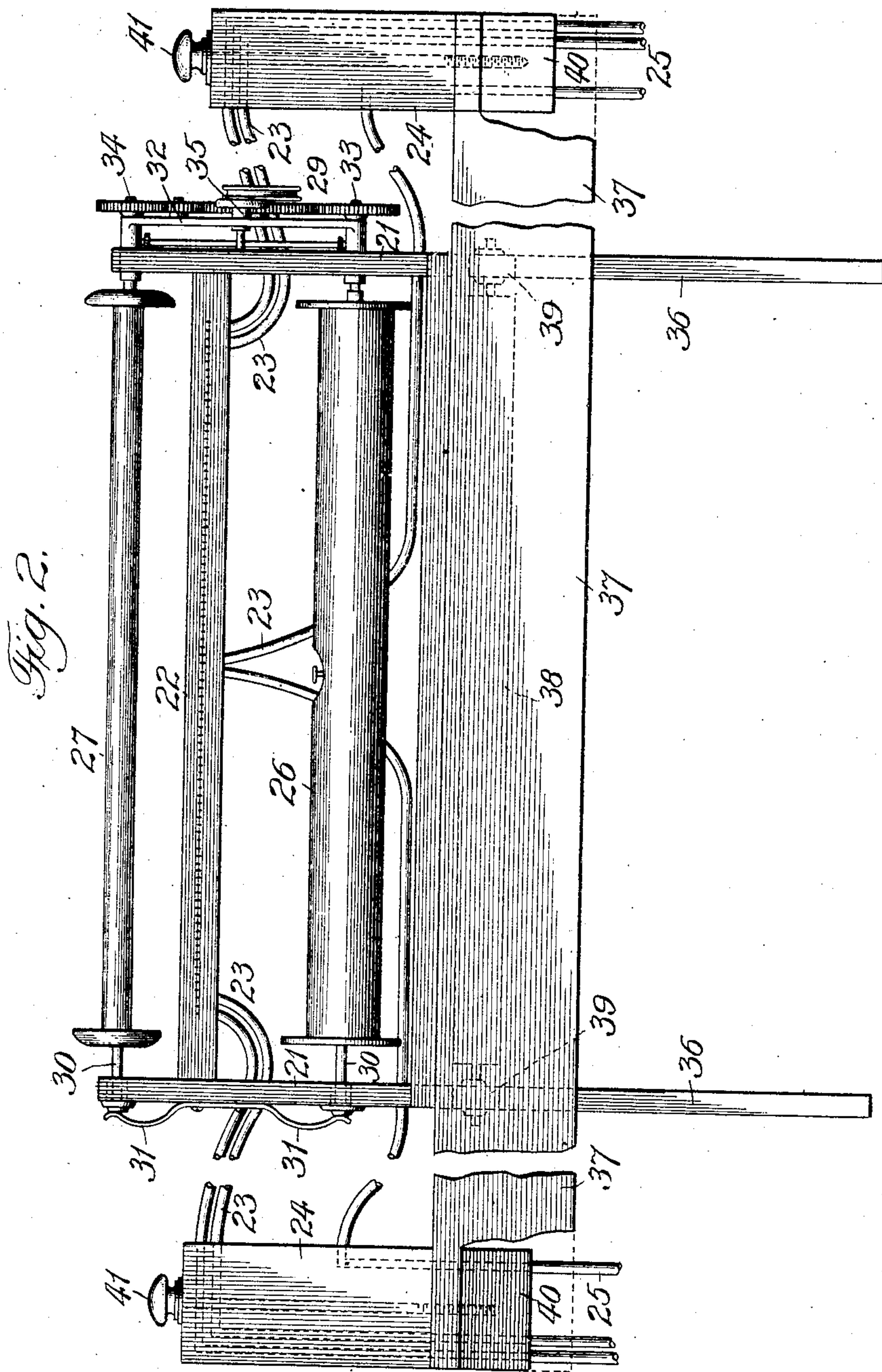
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Inventor:  
Robert A. Rodesch.  
by Robert Burns  
Attorney.



# UNITED STATES PATENT OFFICE.

ROBERT A. RODESCH; OF DIXON, ILLINOIS, ASSIGNOR TO RODESCH PIANO  
AND PLAYER CO., A CORPORATION OF ILLINOIS.

## AUTOMATIC PIANO.

No. 855,671.

Specification of Letters Patent.

Patented June 4, 1907.

Original application filed September 11, 1905, Serial No. 277,814. Divided and this application filed July 30, 1906.  
Serial No. 328,401.

*To all whom it may concern:*

Be it known that I, ROBERT A. RODESCH, a citizen of the United States of America, and a resident of Dixon, in the county of Lee and State of Illinois, have invented certain new and useful Improvements in Automatic Pianos, of which the following is a specification.

This application is a division of my application filed September 11, 1905, Serial Number 277,814.

This invention relates to that class of automatic piano players in which a pneumatically actuated playing mechanism is controlled by a traveling perforated music sheet or like controlling means; and the present improvement has for its object to provide a simple and compact structural formation and combination of parts adapting the automatic playing mechanism for convenient application to an ordinary upright piano, without requiring any change in the form, dimensions, or appearance of the same, and with which the operation of the self-playing mechanism is rendered easy and efficient, all as will hereinafter more fully appear and be more particularly pointed out in the claims.

In the accompanying drawings:— Figure 1 is a transverse sectional elevation of an upright piano, having the present improvements applied. Fig. 2 is an enlarged fragmentary front elevation of the upper part of the piano, illustrating the arrangement of the tracker board, music sheet carrying mechanism, etc.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings:—1 represents the rear frame of an upright piano, upon which the sound board, and string plate are mounted in the customary manner. Such rear frame is inclosed in the usual outer piano casing which in detail comprises the usual key table 2, and its superposed desk front 3; stationary cap board 4; hinged cover 5; upper front board 6, screen board 7; lower molding rail 8, and bottom board 9, as well as the other minor parts usual to an upright piano.

10 are the action keys mounted in any usual manner on the key table 2, and having operative connection with the usual piano action 11; such action comprising the usual series of hammers, their throwing jacks, rockers, back catch springs, trip devices,

martingales, and lift bars, as well as the connecting pivots for said parts.

12 is the manually actuated exhaust pump of the pneumatic playing mechanism, arranged in the lower part of the piano casing immediately to the rear of the screen board 7, of such casing, as shown in Fig. 1. Such pump may be of any usual construction, the bellows form shown being preferred, in that it can be arranged for convenient actuation by the pedal lever hereinafter described.

13 is the collapsible exhaust equalizing or accumulating chamber of any usual form communicating with the exhaust pump, and adapted to equalize the exhaust action of such pump, or a pair of such pumps when two are used to create the exhaust action of the playing mechanism.

14 is the exhaust chest or chamber of the playing mechanism, communicating with the upper end of the exhaust equalizing chamber aforesaid, and arranged in an upright position immediately above said chamber, and behind the screen board 7, in the preferred arrangement of parts illustrated in Fig. 1 of the drawings.

15 are the primary pneumatics arranged in the exhaust chest 14, and adapted for actuation by the music or controlling sheet acting in conjunction with the individual openings of the tracker bar, as hereinafter more fully described.

16 is a shelf, having a series of air conduits, and extending forwardly from the upper end of exhaust chest or chamber 14; such air conduit shelf being arranged immediately beneath the key table 2, and preferably attached to the underside of the same.

17 are the series of operating or motor pneumatics which actuate the action keys 10 in the operation of the piano. In the present construction such motor pneumatics have their lower and fixed members mounted rigidly upon forward extensions at the front side of the air conduit shelf 16, while the margin bodies of their movable members are connected in a direct manner with the action keys by vertical pull connections 18, preferably of a pliable material, such as leather, and so that in the ordinary actuation of the action keys by a player the pull connections are free to yield and not offer any impediment to the normal and free movement of said action keys. By the aforesaid arrange-



ment of parts, the points at which the vertical pull connections 18 are attached to the action keys correspond with the normal points at which the keys are struck by the player in the  
 5 actuation of the instrument. The result of such arrangement is that the tone produced in the automatic operation of the instrument very closely approaches the tone produced in an ordinary actuation.

10 With a view to afford a compact arrangement of parts, the fixed member of each motor pneumatic is arranged in an inclined direction upon the forward extension of the air conduit shelf 16, as shown in Figs. 1 and 2, so  
 15 that when each movable member is in any expanded condition it will have a horizontal position immediately beneath the key table 2 approximately parallel to the action keys, so that the motor pneumatic will occupy a  
 20 minimum amount of vertical space beneath said key table.

19 is a depending bar at the front end of the key table adapted to conceal the forward ends of the motor pneumatics from view, and  
 25 protect them.

20 are vertical orifices in the key table from the passage of the vertical pull connections aforesaid.

The arrangement of the operating or motor  
 30 pneumatics and their connection to the action keys constitutes the subject matter of my application, filed September 11th, 1905, Serial Number 277,814 hereinbefore referred to.

21 is the carrying frame of the tracker  
 35 board, take up and rewind rolls, and their usual accessories. In the present improvement such frame is arranged in the upper portion of the piano-casing to the rear of the upper front board 6, of such casing, and is  
 40 made vertically adjustable so that when the hinged cover 5 is thrown back, the said frame can be raised above the top of the piano in a convenient position to display to the operator the music or controlling sheet as it passes  
 45 over the tracker board. The vertical adjustment of said frame is attained by mechanism hereinafter described.

22 is the tracker board of any usual construction carried by the frame 21. Such  
 50 tracker board will have the usual series of passages which in the present construction are connected by a series of flexible pipes or ducts 23, with a corresponding series of passages in the end trunks 24, hereinafter de-  
 55 scribed; the series of passages in said end trunks connecting in turn by pipes or ducts 25 with a corresponding series of passages in the exhaust chest 14, which contain the series of primary pneumatics before referred to.

60 26 is the take up roll, and 27 the rewind roll for the controlling sheet 28. Such rolls are arranged at opposite sides of the tracker board and are adapted to guide and move the controlling sheet 28 over the openings or  
 65 passages in said tracker board, as usual in the

present type of self playing pianos, and to this end a suitable spring or other usual motor, not shown, will be connected to a pulley 29, carried by the frame 21 and have opera-  
 70 tive connections with said rolls. In the preferred construction of the said rolls, as shown in Fig. 2 of the drawings, the holding centers 30, at the inner ends of the rolls 26 and 27, are adapted to yield, under the influence of  
 75 the winged spring 31, to permit of a limited longitudinal adjustment of said rolls in effecting an adjustment of the controlling sheet 28 with relation to the tracker board.

32 is a yoke member having an adjustment in the frame 21 longitudinally with the rolls, 80 and adapted to afford bearings for the operating shafts 33 and 34 of said rolls; such yokes are adapted to have endwise bearing against the adjacent ends of the rolls so as to resist the end thrust of the same due to the  
 85 spring 31 before described.

35 is an adjusting screw and nut by which adjustment is imparted to the yoke 32 longitudinally with the rolls.

The specific mechanism above described 90 for effecting a lateral or transposing adjustment of the rolls and music sheet above described, constitutes the subject matter of a companion divisional application, of even date herewith, Serial Number 328,402. 95

36 are depending rack bars at the respective ends of the frame 21, moving in suitable guides formed in the board or rail 37, hereinafter referred to, so that said bars will  
 100 guide said frame in a vertical direction.

38 is a spring roll journaled on the board or rail 37, and provided with pinions 39, engaging the aforesaid rack bars 36, the arrangement being such that the spring tension of the said roll will counterbalance the weight  
 105 of the frame 21 and the parts mounted thereon, so that the said frame will remain in any vertical adjustment at which it may be placed by the operator.

The end trunks 24, before referred to, are 110 located at opposite ends of the interior of the piano casing and at opposite sides of the tracker board, and are detachably secured to the top of side checks 40, fixed in the interior of the piano casing, and provided with a  
 115 series of passages corresponding with the series of passages in said end trunks, so that the passages in both parts will register when in proper relative position. The series of passages in said cheeks communicate in turn  
 120 with the series of pipes or ducts 25 before referred to.

In the preferred form of the present invention, as illustrated in Fig. 2, the end trunks 24 are carried by the board or rail 37, 125 heretofore referred to, and the arrangement is such that said trunks 24, the board 37, the tracker board, the take up and rewind rolls, and gearing with the pulley 29 which is connected to the motor, can be removed as an 130



entirety from the piano for tuning and like purposes.

41 are vertical screws by which the trunks 24 are secured to the cheeks 40, in the detachable manner above set forth.

50 is the pedal lever for actuating the exhaust pump 12 of the pumping mechanism. In the present construction such lever is provided with a depending arm 51 intermediate of its length by which it is pivoted to the bottom board 9 of the piano casing by suitable pivot brackets, as shown in Fig. 1. The forward end of said lever projects through the bottom front rail 52 of the piano casing for operative engagement by the foot of the operator, while the rear end of such lever is formed with an upward and angular extension 53, the free end of which is operatively connected by a link 54 to the movable member of the exhaust pump 12, as shown. Such construction is adapted to afford a very compact and efficient arrangement of parts whereby the operation of the exhaust pump can be effected in an easy and convenient manner, and constitutes the subject matter of a companion divisional application, of even date herewith, Serial Number 328,403.

Having thus fully described my said invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, and a pneumatic action for operating said keys, the said action comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action.

2. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, and a pneumatic action for operating said keys, the said action comprising in part a frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action, and a vertically adjustable supporting rail for said frame detachably secured to the piano casing.

3. In an automatic piano, the combination of a piano casing, action keys, a supporting table, motor pneumatics arranged below said table, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the in-

terior of the piano casing below the top cover 65 of the same, and above the piano action.

4. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections extending 70 in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a frame carrying the 75 tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action, and a vertically ad- 80 justable supporting rail for said frame detachably secured to the piano casing.

5. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged 85 below said table and attached to the underside of the same, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automat- 90 ically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the 95 interior of the piano casing below the top cover of the same, and above the piano action.

6. In an automatic piano, the combination of a piano casing, action keys, a support- 100 ing key table, motor pneumatics arranged below said table and attached to the underside of the same, pull connections extending in a direct manner between the outer ends 105 of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a frame carrying the tracker board, take up and rewind rolls and 110 their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action, and a vertically adjustable supporting rail for said frame detachably secured to the piano casing. 115

7. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections of flexible material connecting in a direct manner the 120 outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a verti- 125 cally adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing



below the top cover of the same, and above the piano action.

8. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action.

9. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action.

10. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action.

11. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano

casing below the top cover of the same, and above the piano action.

12. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action.

13. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, the fixed members of said motor pneumatics having an inclined position, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same and above the piano action.

14. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, the fixed members of said motor pneumatics having an inclined position, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, and above the piano action.

15. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, the fixed members of said motor pneumatics having an inclined position, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take



up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same and above the piano action.

5 16. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, the fixed members of said motor pneumatics having an inclined position, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same and above the piano action.

15 17. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, and a pneumatic action for operating said keys, the said action comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

25 18. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, and a pneumatic action for operating said keys, the said action comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing, top cover of the same, means for guiding said frame vertically, the same comprising vertical guide racks depending from said frame, a board or rail secured to the piano casing and having guiding engagement with said racks, a spring roll, and pinions carried by said spring roll and having operative engagement with said racks.

35 19. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, and a pneumatic action for operating said keys, the said action comprising in part a vertically adjustable frame carrying the tracker board take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, a supporting rail, for said frame detachably secured to the piano casing, means for guiding said frame vertically and means for holding said frame at its vertical adjustment.

40 20. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, and a pneumatic action for op-

erating said keys, the said action comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, a supporting rail for said frame detachably secured to the piano casing in a detachable manner, guide racks depending from said frame and having guiding engagement with said rail, a spring roll, and pinions carried by said spring roll and having operative engagement with said racks.

70 21. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

80 22. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls, and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

95 23. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics and means for automatically operating said pneumatics, the same comprising in part a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

100 24. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged



below said table and attached to the under side of the same, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

25. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

26. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically controlling said pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

27. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and

means for holding said frame at its vertical adjustment.

28. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls, and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

29. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, the fixed members of said motor pneumatics having an inclined position, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

30. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, the fixed members of said motor pneumatics having an inclined position, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

31. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, the fixed members of said motor pneumatics having an inclined position, pull connections of flexible material extending in a direct manner between the outer



ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

32. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, the fixed members of said motor pneumatics having an inclined position, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

33. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, the fixed members of said motor pneumatics having an inclined position, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically operating said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

34. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, the fixed members of said motor pneumatics having an inclined position, pull connections extending in a direct manner between the outer ends of the keys and the movable members of the motor

pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically controlling said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

35. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table, the fixed members of said motor pneumatics having an inclined position, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically controlling said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

36. In an automatic piano, the combination of a piano casing, action keys, a supporting key table, motor pneumatics arranged below said table and attached to the under side of the same, the fixed members of said motor pneumatics having an inclined position, pull connections of flexible material connecting in a direct manner the outer ends of the keys and the movable members of the motor pneumatics, primary pneumatics controlling the motor pneumatics, and means for automatically controlling said motor pneumatics, the same comprising in part, a vertically adjustable frame carrying the tracker board, take up and rewind rolls and their ordinary accessories, the said frame being arranged in the interior of the piano casing below the top cover of the same, means for guiding said frame vertically, and means for holding said frame at its vertical adjustment.

Signed at Chicago, Illinois, this 27th day of July 1906.

ROBERT A. RODESCH.

Witnesses:

ROBERT BURNS,  
HENRY MOE.