

1,404,285.

C. FREBORG.  
PLAYER PIANO CONSTRUCTION.  
APPLICATION FILED MAY 24, 1915.

Patented Jan. 24, 1922.

2 SHEETS—SHEET 1.

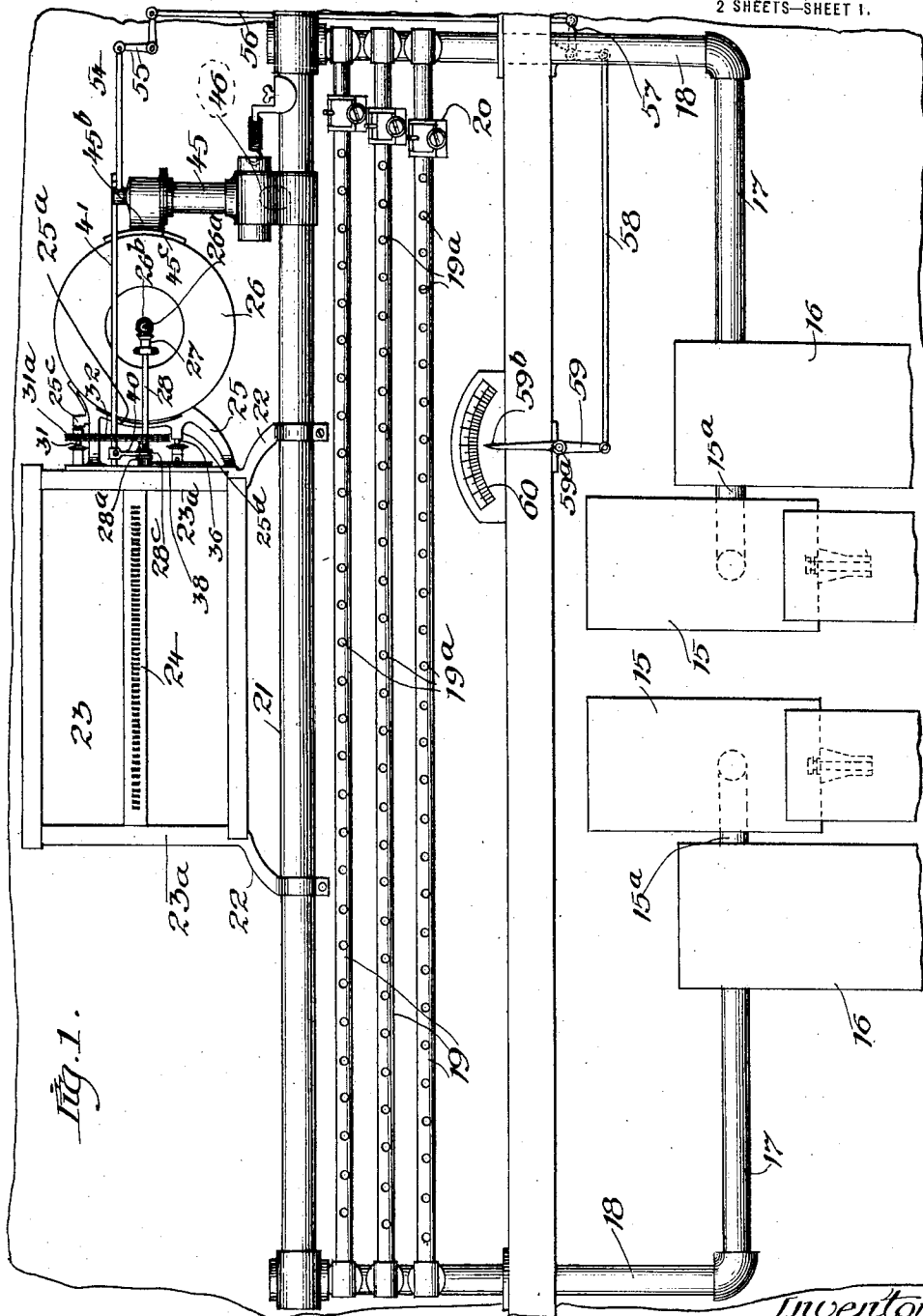


Fig. 1.

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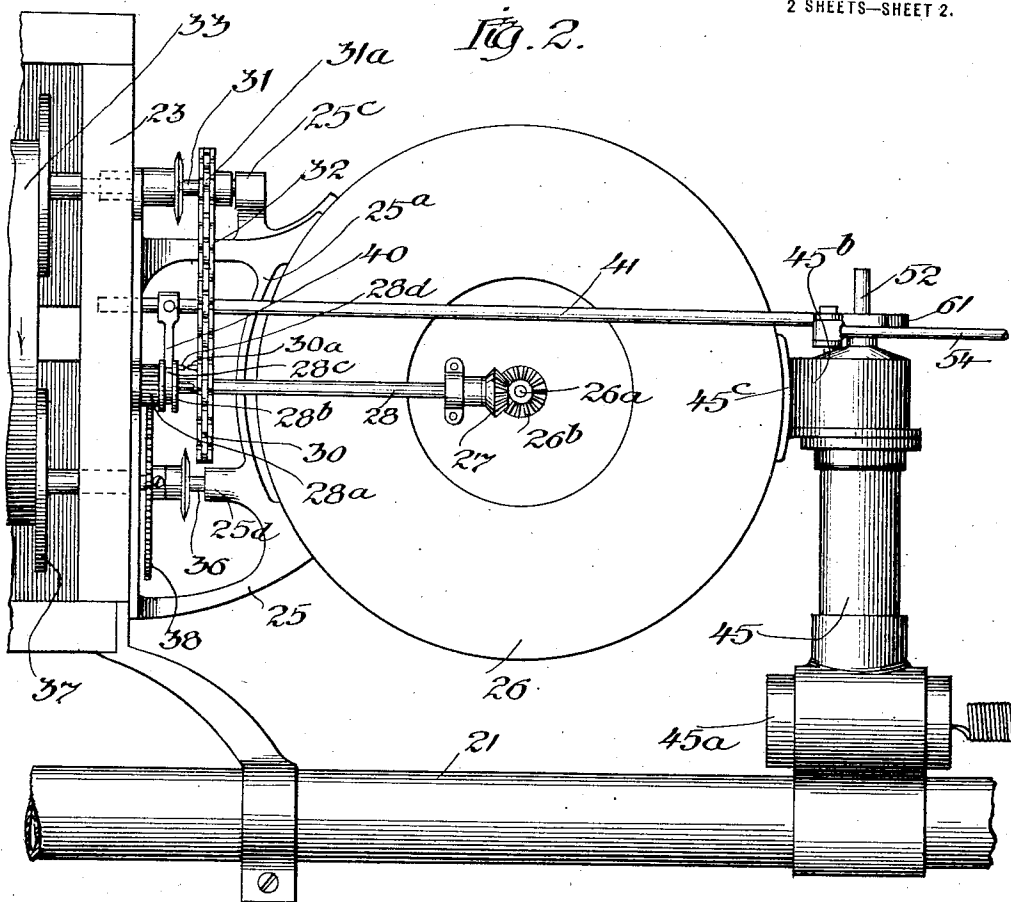


Fig. 3.

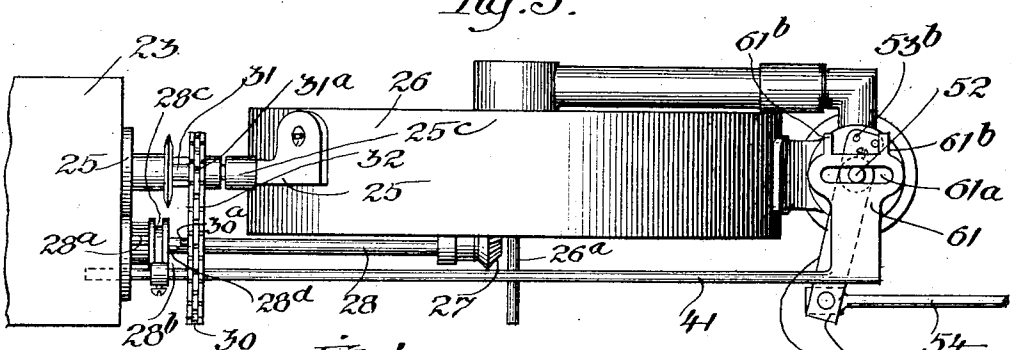
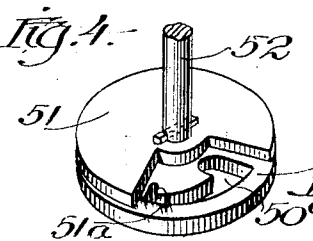


Fig. 4.



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# UNITED STATES PATENT OFFICE.

CHARLES FREBORG, OF KANKAKEE, ILLINOIS, ASSIGNOR TO PRICE & TEEPLE PIANO COMPANY, A CORPORATION OF ILLINOIS.

## PLAYER-PIANO CONSTRUCTION.

1,404,285.

Specification of Letters Patent. Patented Jan. 24, 1922.

Original application filed January 7, 1914, Serial No. 810,873. Divided and this application filed May 24, 1915. Serial No. 30,069.

*To all whom it may concern:*

Be it known that I, CHARLES FREBORG, a citizen of the United States, residing at Kankakee, in the county of Kankakee and State of Illinois, have invented certain new and useful Improvements in Player-Piano Constructions, of which the following is a specification.

This invention relates to improvements in player piano construction, and has for its object to provide an improved form of vacuum line, motor mounting, and rolling and re-rolling mechanism. This application is a division of my parent application Patent No. 1,267,535 of May 28, 1918.

Hitherto it has been necessary to provide a motor mounting and vacuum line which has been bulky and cumbersome, difficult to assemble, and inefficient in operation. My invention aims to overcome all these objections.

Still another object is to provide means for controlling the speed of the roll winding mechanism, such means being also operable to throw into operation the re-roll mechanism.

These and other objects will be more fully set forth in the following specification and shown in the accompanying drawings, in which:

Fig. 1 is a front elevation of my invention;

Fig. 2 is a similar view on an enlarged scale of a portion of the construction shown in Fig. 1;

Fig. 3 is a plan view of the construction shown in Fig. 2; and

Fig. 4 is a perspective detail of the valve for controlling the motor.

Like numerals refer to like elements throughout the drawings: 15 designates a conventional form of vacuum producing apparatus such as foot operated bellows or the like, there being preferably a pair of the same which communicate with vacuum boxes or chambers 16 through tubes 15<sup>a</sup> in such wise as to maintain a constant partial vacuum in the boxes 16. From the latter lead tubes or ducts 17 communicating with the upwardly extending tubes 18 at each end of the apparatus. Small tubes 19 extend across between the tubes 18 and are in communication therewith. These tubes 19 are apertured, as indicated by numerals 19<sup>a</sup>, and

actuating pneumatics 20 are adjustably mounted thereon and communicate through the apertures 19<sup>a</sup>, as is more fully described in a copending application of mine. It is sufficient to state here that these tubes 19 not only form a mounting and support for the pneumatics 20, but also function as a portion of the air line for the operation of said pneumatics.

Located above the tubes 19 and extending across and communicating with the tubes 18, is the conduit tube or pipe 21. It is to be noted that this cross communication between the tubes 18 afforded by the pipe or tube 21 results in the obtaining in the latter of a substantially equalized partial vacuum which is of great value in securing the proper and delicate functioning of these instruments. Brackets or arms 22 are clamped or otherwise mounted upon the tube 21 which is sufficiently rigid in construction to act not only as a duct but also as a support, and these brackets serve to support the walls 23<sup>a</sup> of the roll chamber 23. Between the walls 23<sup>a</sup> extends the tracker bar 24. Secured to one of the walls 23<sup>a</sup>, at the outer side thereof, is the supporting bracket member indicated by numeral 25, the arms of which are rigidly attached to the wall 23<sup>a</sup>. This bracket member 25 carries a curved plate 25<sup>a</sup> to which is rigidly attached the casing of the actuating motor 26 which is shown and described in my parent application. It is only necessary, with respect to the latter, to say here that a centrally located shaft 26<sup>a</sup> is rotated by the action of the motor. This shaft carries a bevel gear 26<sup>b</sup> which meshes with a second bevel gear 27 carried upon a shaft 28. Adjacent its other extremity this shaft carries a gear or pinion 28<sup>a</sup> with which is formed a collar 28<sup>b</sup>, grooved at 28<sup>c</sup>. On the outer face of this collar 28<sup>b</sup> is provided the pin 28<sup>d</sup>. The gear 28<sup>a</sup> and collar are splined for sliding engagement upon the shaft 28 while rotated thereby. A sprocket wheel 30 is loosely mounted upon the shaft 28 adjacent the collar 28<sup>b</sup>. This sprocket is provided with a pin 30<sup>a</sup> similar to the pin 28<sup>d</sup> and is so arranged that when the collar is moved toward the sprocket 30, from the position shown in Fig. 2, the pins 28<sup>d</sup> and 30<sup>a</sup> will be mutually engaged, for a purpose to be hereinafter described. Extending upwardly from the upper portion of the bracket 25 is a bearing 25<sup>a</sup>

in which is mounted one end of shaft 31 which carries a second sprocket wheel 31<sup>a</sup>. A chain 32 extends around the sprockets 30 and 31<sup>a</sup>. The shaft 31 is in operative engagement with the music roll 33. A third shaft 36 is provided below shaft 31, the same being rotatably mounted in the bearing 25<sup>a</sup> of bracket 25 and being in operative engagement with the collecting reel 37. A gear 38 is attached to the shaft 36, as shown in Fig. 2. An arm 40 fits in the groove 28<sup>c</sup> of collar 28<sup>b</sup> and is attached to a slidable rod 41, so that through the medium of the latter the gear 30 may be moved into or out of mesh with gear 38. When in mesh, as shown in Fig. 2, the collecting reel 37 will be positively driven to unwind the music, as indicated by the arrow in Fig. 2. During this unwinding the reel 33 will be allowed to unwind freely, as will be apparent. When it is desired to re-wind, gear 28<sup>a</sup> is shifted out of mesh with gear 38 until pin 28<sup>d</sup> contacts with pin 30<sup>a</sup>, whereupon the sprocket 30 will be positively rotated to positively rotate the music roll 33 and rewind the music thereon. A duct member 45 communicates through the aperture 46 in tube 21, and is fitted therearound, as indicated in Fig. 1. This duct member 45 is provided with an automatic pressure adjusting plug 45<sup>a</sup>, not forming a part of this invention, and consequently of no importance herein. The tube or duct 45 extends upwardly from the tube 21 to the chambered elbow 45<sup>b</sup> which is provided with a plate portion 45<sup>c</sup> to which the casing of the motor 26 is attached. It will be apparent that the motor is rigidly supported between the wall 23<sup>a</sup>, which in turn is supported upon tube 21, and the duct 45 which is supported upon tube 21, the motor communicating through the tube 45 with the tube 21 and thereby with the air exhausting means 15. Located in the chambered elbow 45<sup>b</sup> is the plate 50 having the aperture 50<sup>a</sup> therein. Mounted upon this plate is the valve disk 51 having a cut-away sector 51<sup>a</sup>, and being attached to the shaft 52 which projects upwardly through the top of the elbow 45<sup>b</sup>, as shown in Fig. 2, for example. Attached to this shaft 52 is the arm 53 which in turn is pivotally attached to a rod 54 pivotally attached at its other extremity to the bell crank 55. On the other extremity of this bell crank, to which it is pivotally attached, extends downwardly the rod 56 to another bell crank 57, to an arm of which it is pivotally connected. Another rod 58 pivotally attached to the other arm of the bell crank 57 extends to the controlling lever 59 and is pivotally attached thereto. This controlling lever is pivoted at 59<sup>a</sup> and carries the indicator portion 59<sup>b</sup> coacting with the chart or scale 60.

Mounted above the arm 53 on top of elbowed chamber 45<sup>b</sup> is the flattened arm 61

of the rod 41 with respect to which it is angularly disposed. This flattened arm 61 is provided with a cross slot 61<sup>a</sup> therein, fitting over shaft 52. Rearwardly thereof the arm 61 is provided with the lugs or shoulders 61<sup>b</sup> spaced apart, as shown in Fig. 3. The arm 53 extends rearwardly of the shaft 52, as shown in Fig. 3, and is provided with the upwardly extending spaced apart pins 53<sup>b</sup>, for a purpose to be hereinafter described.

In the operation of the above described mechanism it will be apparent that the proper arrangement of the aperture 50<sup>a</sup> and valve disk 51, as well as chart 60, the indicator portion 59<sup>b</sup> of lever 59 will be moved to the division of chart 60 which corresponds to the desired speed of playing. This will result in proper movement of the valve disk 51, as will be obvious, through the medium of the bell crank rods described above. Operation between the ordinary limits of playing may be effected without movement of the arm 61, but when the indicator 59<sup>b</sup> is moved to rewind, which is preferably at the left-hand edge of the scale or chart 60, one of the pins 53<sup>b</sup> will contact with the lug 61<sup>b</sup> and slide the arm 61 bodily, together with rod 41, so that through the medium of arm 40, gear 28<sup>a</sup> will be moved out of mesh with gear 38, as described above, and the re-rolling mechanism will be thrown into operation.

It will be apparent that I have provided a construction for devices of this nature in which the supporting members combine with the functions of the vacuum line members. I have also provided an improved means for operating the rolling and re-rolling members, as described above.

While I have shown and described one form of my embodiment, I do not wish to be restricted to such showing or description beyond the scope of the appended claims.

What I claim is:

1. In combination, a fixed wall, a supporting frame secured thereto, a vacuum motor secured to said supporting frame, a supporting tube, said tube forming a part of the vacuum line, and a tube leading from said supporting tube and communicating therewith, said tube being secured to and in communication with said vacuum motor.

2. In combination, air exhausting means, a plurality of duct members leading from said air exhausting means, an apertured cross tube extending between and in communication with said duct members, an actuating pneumatic carried by and in communication with said apertured cross tube, a second tube extending between and in communication with said duct members, a supporting duct member mounted on and communicating with said last named cross tube, and a motor supported by and communicating with said supporting duct.

3. In combination, air exhausting means, spaced apart duct members leading from said air exhausting means, a plurality of apertured pneumatic carrying cross tubes  
 5 extending between and in communication with said duct members, a cross tube extending between and communicating with said duct members, and a motor supported by and in communication with said last named  
 10 cross tube.
4. In combination, air exhausting means, spaced apart duct members leading from said air exhausting means, a plurality of apertured pneumatic carrying cross tubes  
 15 extending between and in communication with said duct members, a cross tube extending between and communicating with said duct members, a wall member carried by said last named cross tube, a motor carried  
 20 by said wall, and a duct member extending between said motor and said last named cross tube and providing communication therebetween.
5. In combination, air exhausting means,  
 25 spaced apart duct members leading from said air exhausting means, a plurality of apertured pneumatic carrying cross tubes extending between and in communication with said duct members, a cross tube extend-  
 30 ing between and communicating with said duct members, a wall member carried by said last named cross tube, a motor carried by said wall, and a duct member extending between said motor and said last named cross tube and providing communication therebetween.
6. In combination, a vacuum line, a motor adapted to be operated thereby, a collecting  
 40 reel having a shaft, a music-roll engaging shaft, a main driving shaft arranged to be rotated by said motor, means coacting with said driving shaft to drive either of said  
 45 first-named shafts, means to transfer such driving from one of said shafts to the other, a valve for controlling the speed of said motor, means connected to the stem of said valve for regulating the same, a sliding yoke  
 50 carried by said transferring means and adapted to embrace said valve stem, and means carried by said valve regulating means adapted, when the latter is moved to one of its positions of adjustment, to engage  
 55 said yoke to thereby operate said transferring means.

In testimony whereof, I have subscribed my name.

CHARLES FREBORG.

Witnesses:

WILLIAM W. HEHR,  
 W. A. SCHNEIDER.