BEST AVAILABLE COPY

No. 857,260. PATENTED JUNE 18, 1907.

H. M. SALYER.

AUTOMATIC PIANO.

APPLICATION FILED MAR. 29, 1905.

3 SHEETS—SHEET 1.

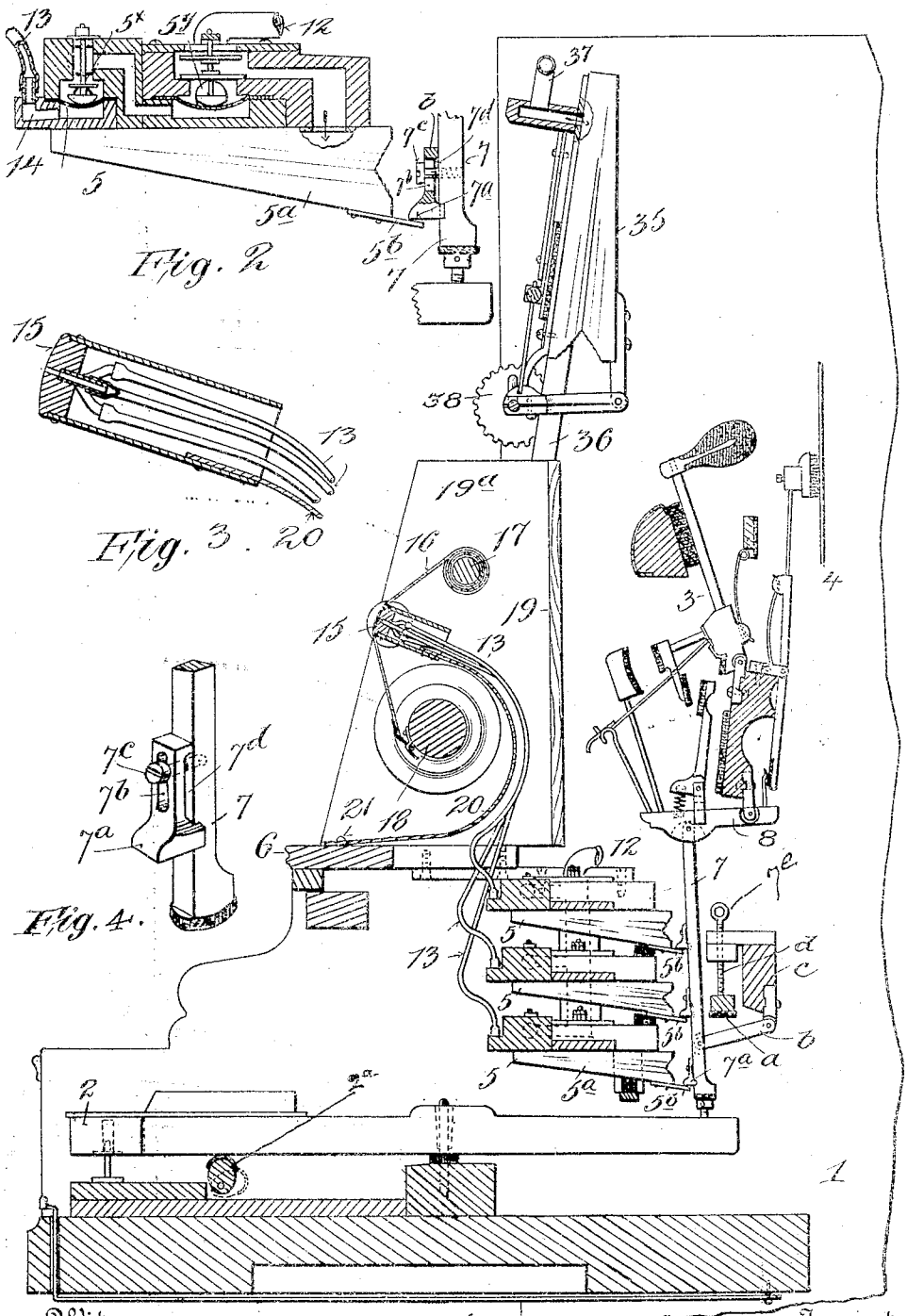


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 1.

Witnesses
C. W. Benjamin
M. Hallingshead

Inventor
Harry M. Salyer,
By his Attorney
P. F. Browne

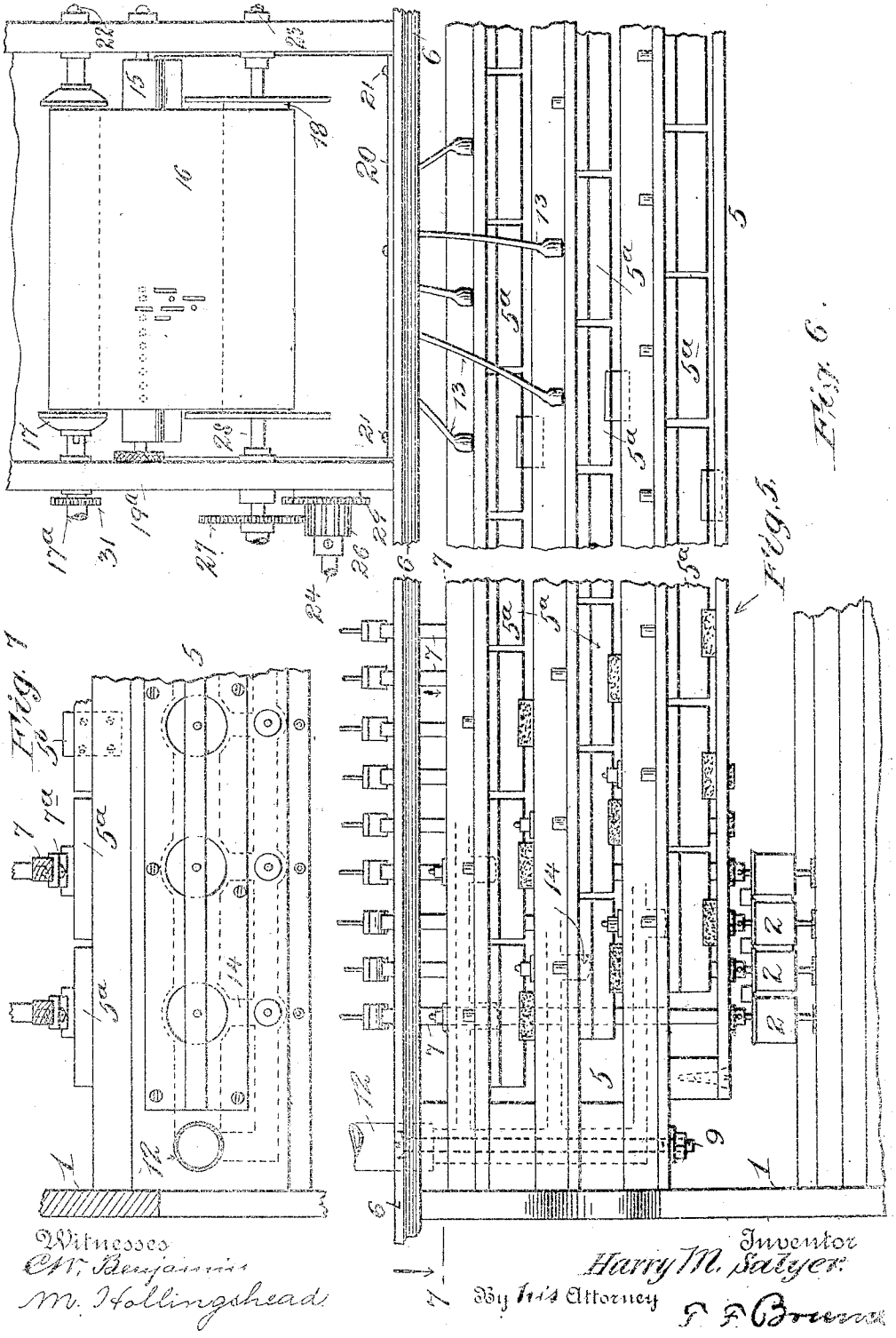
No. 857,260. PATENTED JUNE 18, 1907.

H. M. SALYER.

AUTOMATIC PIANO.

APPLICATION FILED MAR. 29, 1905.

3 SHEETS—SHEET 2.



Witnesses
C. F. Benjamin
M. Hollingshead

Inventor
Harry M. Salyer.
By his Attorney
F. F. Brown

No. 857,260. PATENTED JUNE 18, 1907.

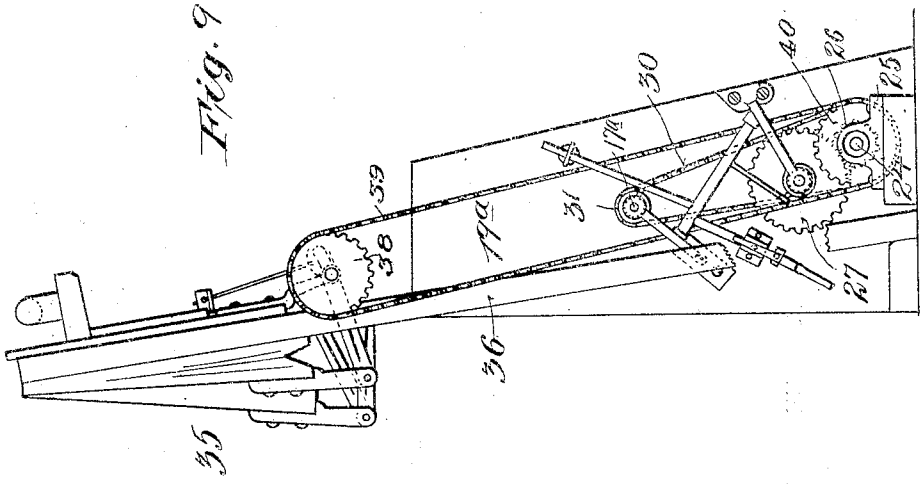
H. M. SALYER.

AUTOMATIC PIANO.

APPLICATION FILED MAR. 29, 1905.

3 SHEETS—SHEET 3.

Fig. 9.



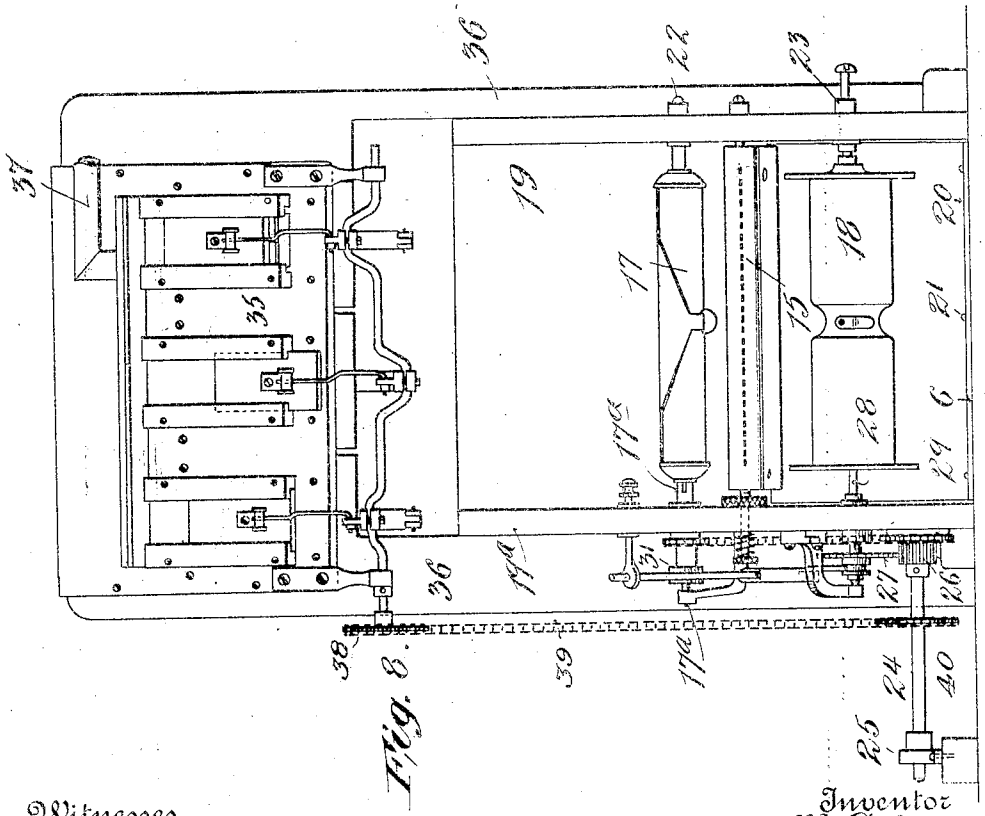


Fig. 8.

Witnesses
C. W. Benjamin
M. Hollingshead

Inventor
Harry M. Salyer.
By his Attorney
F. F. Bourne

UNITED STATES PATENT OFFICE.

HARRY M. SALYER, OF NEW YORK, N. Y., ASSIGNOR TO JOHN H. LUDWIG, OF NEW YORK, N. Y.

AUTOMATIC PIANO.

No. 857,260. Specification of Letters Patent. Patented June 18, 1907.

Application filed March 29, 1905. Serial No. 252,660.

To all whom it may concern:

Be it known that I, HARRY M. SALYER, a citizen of the United States, residing in New York city, borough of Bronx, New York, have invented certain new and useful Improvements in Automatic Pianos, of which the following is a specification.

My invention relates to improvements in automatic pianos and more particularly to the class utilizing pneumatic-operating mechanism controlled by the passage of a perforated music-sheet over the tracker board, and one of the objects of my invention is to locate the pneumatic devices for operating the piano action, the tracker, the music-sheet operating devices, the motor, and associated parts in the space within the main frame of the piano in front of the music strings and above the manual keys; and another object of the invention is to simplify and improve the general arrangement of such mechanism.

The invention comprises the novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein,

Figure 1 is a vertical sectional view of the upper front portion of a piano provided with my improvements, Fig. 2 is an enlarged detail section of one of the pneumatics for operating the hammers of the piano action, Fig. 3 is an enlarged sectional view of the tracker, Fig. 4 is a detail view of one of the prolongs and its adjustable projection, Fig. 5 is a detail front view showing the relation of the operating pneumatics to the manual keys or key board, Fig. 6 is a front view showing the operating pneumatics and the music-sheet rolls and connections, Fig. 7 is a horizontal section substantially on the plane of the line 7, in Fig. 5, Fig. 8 is a front view illustrating the music-sheet rolls and the motor and connections for operating them, and Fig. 9 is a side view thereof.

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

The main case or frame 1, the manual keys or key board 2, the piano action 3, and the strings 4 may be generally of any well known or suitable construction. The operating pneumatics indicated, generally, at 5, comprising primary and secondary valves 5^x, 5^y, striking or motor pneumatics or bellows 5^a, are located in the space above the rear ends of the keys 2, below the shelf 6 and in front of the prolongs or rods 7 that extend between the keys 2 and the wippens 8, said pneumatics being shown arranged in vertically disposed series supported from the shelf 6, as by bolts 9. Each bellows 5^a of the pneumatics has a projection or finger 5^b that engages a projection 7^a on the corresponding prolong 7, there, of course, being one bellows 5^a for each prolong to be operated.

The projections 7^a are made adjustable upon the prolongs 7 and for this purpose said projections are shown provided with slots 7^b receiving screws 7^c entering the prolongs. Said projections are shown hollowed or recessed on their inner faces at 7^d, whereby they have a slight spring tendency for purposes of adjustment with respect to their respective bellows 5^a. By means of this arrangement I am enabled to accurately adjust each projection 7^a in proper contact with the corresponding finger 5^b by first setting up screws 7^c so that they will hold the projections 7^a and yet permit the latter to slide, and then by placing a tool upon the tops of the projections they may be independently pushed down into contact with the corresponding fingers 5^b, ensuring the proper relation of the projections 7^a to the depressed or expanded positions of the bellows 5^a, and then the pneumatics 5 can be removed through the front of the case with the shelf 6, the screws 7^c can be tightened for permanently holding the projections 7^a upon the prolongs and then the pneumatics 5 are to be replaced with the fingers 5^b under the projections 7^a. By this means accurate adjustment of the fingers of the bellows with respect to the projections of the corresponding prolongs may be readily and accurately effected.

In order to prevent the prolongs 7 from being raised higher by the pneumatics than they are intended to be raised by the keys 2, I provide an adjustable stop a above the arm b that pivotally connects the prolong 7 with the stationary bar c of the piano action, the stop a being shown carried by a screw d supported by the bar c, there being one of such stops a and screws d for the arm b of each prolong. By this means the stops a can be located over the arms b in such position that said arms will engage said stops when the

prolongs are raised by the pneumatics 5 to a height corresponding to the lift of the prolongs by the keys 2, which in the example shown are limited in their downward movement at their front ends by the guide pin rail at the front ends of the keys. By having the stops *a* adjustable the upward movement of each prolong by the corresponding pneumatic can be independently regulated in accordance with the requirement of the corresponding hammer.

I have shown a well known form of operating pneumatic 5 to be connected, as by a pipe 12, with a well known form of bellows reservoir (not shown) to be exhausted by the pedal operated bellows, for producing suction in the bellows 5^a, tubes 13 connecting the passage 14 of each operating pneumatic 5 with the tracker 15 in well known manner, whereby as perforations in the music-sheet 16 pass over the openings in the tracker the corresponding bellows 5^a of the operating-pneumatics will be lifted to operate the corresponding prolong through its projection 7^a to cause the corresponding hammer to strike a string 4.

The tracker 15 and the rolls 17, 18 for the music-sheet 16 are supported within a receptacle or box 19 that rests upon and is secured to the shelf 6, which receptacle is located above the operating pneumatics 5 and in front of the piano action 3, and in the space behind the usual front music-sheet rack above the shelf, whereby the tracker and the rolls 17, 18 are in convenient position for access and occupy what would ordinarily be waste space in a piano. The tubes 13 extend rearwardly and downwardly from the tracker 15 through the receptacle 19, and within said receptacle is placed a shield 20, which may be in the form of a metal sheet extending from the tracker 15, to which it is secured, rearwardly behind and under the music-sheet take-up roll 18 and between said roll and the tubes 13, and is then extended forwardly and secured to the shelf 6, as by screws or the like 21. This shield 20 prevents injury to and displacement of tubes 13 when a music-sheet is being adjusted or removed. The music-sheet rolls 17, 18 have supports 22, 23 attached to the side walls of receptacle 19 and may be of any well known construction permitting the roll 17 to be readily removed and replaced.

Mechanism for operating the take-up roll 18 and for rewinding the music-sheet 16 on the roll 17 is shown supported on the side wall 19^a of receptacle 19 above the operating pneumatics 5 and in front of the piano action 3. The mechanism for this purpose may be of any well known construction wherein an operating shaft 24, one end of which is supported upon shelf 6, as by a bearing 25, is provided with a pinion 26 meshing with a gear 27 on the axis of shaft 28 of roll 18, the sprocket wheel 29 on shaft 24 having a chain 30 that passes over a sprocket 31 on the shaft 17^a of music roll 17. Well known devices for causing the music roll 17 to rewind the music-sheet thereon are shown in Fig. 9, but need no further description. The pneumatic motor for operating the music-sheet controlling devices is indicated, generally, at 35 and it is shown supported by uprights 36 located at the sides of receptacle 19 and secured thereto as well as to the shelf 6. The pipe 37 leads from motor 35 to the pedal bellows in well known manner. A sprocket 38 on the crank shaft of the motor by means of a chain 39 passing over sprocket 40 operates shaft 24. The motor 35 is thus located in the space within the piano case above and forward of the action and above the tracker.

As the prolongs 7 can be lifted by the pneumatics free from the keys the front ends of the keys would move downwardly as the corresponding prolong was lifted, and the inner ends of the keys would therefore follow the upward movement of the prolongs, thereby tending more or less to resist the free downward movement of the prolongs after the strings were struck by the hammers, thus retarding to some extent the action of the mechanical playing of the piano. In order to keep the keys from movement during the time of mechanical playing I provide means to hold the keys rigidly and which may be withdrawn from the keys to permit them to have free movement for manual playing. To this end I have shown a bar 2^a, extending across the key board in line with the keys adapted to be moved into and out of contact with the keys as desired. The bar 2^a shown in Fig. 1 is eccentrically journaled, or in the nature of a cam shaft extending under the front portions of the keys, adapted when turned to the position shown in full lines in Fig. 1 to bear against the keys and prevent them from following the movements of the prolongs, and when said cam shaft is moved down substantially as shown in dotted lines in Fig. 1, the keys will be free to be operated manually.

In the foregoing it will be seen that all the essential parts of a pneumatic piano playing mechanism are located in the space in front of the strings and above the manual keys or the key board in what is usually waste space in an ordinary piano case, whereby such case can be utilized without changing the position of the piano action or the general arrangement of the piano as an entirety. It will be seen also that the operating pneumatics 5 act directly upon the prolongs 7 without operating the keys 2, and without requiring any connections between the keys and said prolongs, and as the projections 7 from the prolongs are located above and merely rest upon the fingers 5^b of the bellows of the operating pneumatics, the keys

are free to be operated manually in usual manner without any interference.

Having now described my invention what I claim is:

1. In a piano the combination of the piano action and the keys, with operating pneumatics located above the keys and forward of the prolongs, means for operating the action by the pneumatics, a receptacle supported upon the shelf of the piano in front of the action, a tracker and music-sheet operating rolls supported upon said receptacle, a motor for operating the music-sheet devices, and means for supporting the same above said receptacle in the space forward of the strings, substantially as described.

2. In a piano the combination of the piano action and the keys, with operating pneumatics located above the keys forward of the prolongs of the action, means for operating the action by said penumatics, a receptacle supported by the shelf of the piano forward of the action, a tracker supported within said receptacle, music-sheet rolls and means for supporting the same within said receptacle, devices for operating said rolls supported by said receptacle, and a motor connected with the music-sheet operating devices and supported above said receptacle in the space forward of the strings, substantially as described.

3. In a piano the combination of the piano action and the keys, with operating pneumatics located above the keys forward of the prolongs of the action, means for operating the action by said pneumatics, a receptacle supported by the shelf of the piano forward of the action, a tracker supported within said receptacle, music-sheet rolls, means for supporting the same within said receptacle, devices for operating said rolls supported by said receptacle, and a motor connected with the music-sheet operating devices and supported above said receptacle in the space forward of the strings, a shaft of the music-sheet operating devices having a support carried by the shelf of the piano, substantially as described.

4. In a piano the combination of the piano action and keys, with operative pneumatics connected with the action for mechanically operating the same, arms connected with the prolongs of the action, and means for limiting the upward movement of said arms, substantially as described.

5. In a piano the combination of the piano action and keys, with operative pneumatics connected with the action for mechanically operating the same, arms connected with the prolongs of the action, and stops above said arms to limit the upward movement of the arms, substantially as described.

6. In a piano the combination of the piano action and keys, with operative pneumatics connected with the action for mechanically operating the same, arms connected with the prolongs of the action, stops above said arms, and means for adjustably supporting said stops to limit the upward movement of the prolongs, substantially as described.

7. In a piano the combination of the piano action and keys with operating pneumatics located above the keys forward of the prolongs of the action, connections between the prolongs and the corresponding pneumatics, and stops to limit the upward movement of the prolongs, substantially as described.

8. In a piano the combination of the piano action and keys, with operating pneumatics located above the keys forward of the prolongs of the action, connections between the prolongs and the corresponding pneumatics, arms connected with the prolongs, and stops above the arms to limit the upward movement of the prolongs, substantially as described.

9. In a piano the combination of the piano action and keys, with operating pneumatics located above the keys forward of the prolongs of the action, connections between the prolongs and the corresponding pneumatics, arms connected with the prolongs, stops above the arms, and means for adjustably supporting said stops, whereby the upward movement of the prolongs may be regulated, substantially as described.

10. In a pianoforte action a wippen, an extension connected thereto and engaging the key, a swinging guide connected to the extension, a rail, a stop attached to the rail and located in the path of said guide and serving to limit the motion thereof when the key is struck and thereby limit the motion of the wippen, substantially as described.

11. In a mechanically operated piano, the combination with the piano action having abstract rods, of rods or plates having elongated openings, for receiving screws engaging with the abstract rods, the lower end of said rods being enlarged to form abutments, substantially as described, said elongated slots enabling vertical adjustment of said plate on the abstract rod and said screws serving to secure said plate in any adjustable position.

HARRY M. SALYER.

Witnesses:
T. F. BOURNE,
M. HOLLINGSHEAD.