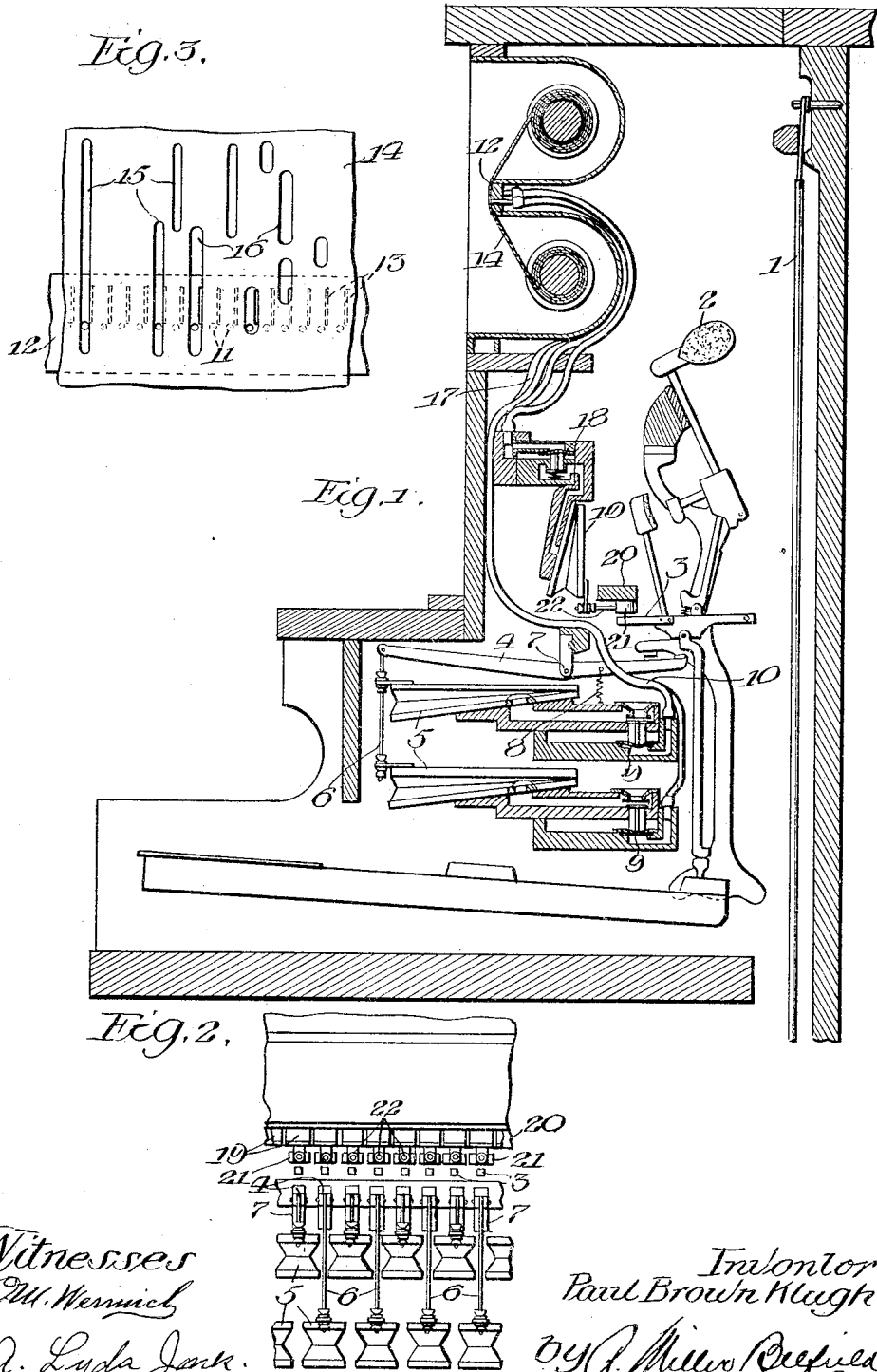


P. B. KLUGH.
 MECHANICAL MUSICAL INSTRUMENT.
 APPLICATION FILED NOV. 19, 1910.

1,228,029.

Patented May 29, 1917.



Witnesses
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UNITED STATES PATENT OFFICE.

PAUL BROWN KLUGH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CABLE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MECHANICAL MUSICAL INSTRUMENT.

1,228,029.

Specification of Letters Patent.

Patented May 29, 1917.

Application filed November 19, 1910. Serial No. 593,205.

To all whom it may concern:

Be it known that I, PAUL BROWN KLUGH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Mechanical Musical Instruments, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to mechanical musical instruments and especially to a type of instrument commonly called a player piano or piano player. The present invention relates more particularly, although not exclusively, to the accentuation of certain notes or series of notes to bring out solo effects.

The object of the invention, when applied to piano players or player pianos, is to provide means for producing the aforesaid solo effects in an improved manner. Certain broad features of the solo device herein set forth are claimed in my Patent No. 1,183,210 issued May 16th, 1916, and in my Patent No. 1,183,738 under the same date, I claim broadly various embodiments, in their general nature, of the devices set forth herein. My present application is a modification and improvement over my said Patent No. 1,183,738, and differs from it in one form, in that the modifying devices in this present application are associated with intermediate operating members of a piano action.

In the form of carrying out the invention herein shown, I employ a piano action together with a power pneumatic to operate the same, and then provide supplemental or solo pneumatics or means to change the strength of actuation of said piano action, associating said pneumatics or means with an intermediate portion of the piano action, which in the specific embodiment herein shown comprises a wippen of said action.

I will describe my invention more in detail by reference to the accompanying drawing, illustrating one form of carrying out the invention, in which:

Figure 1 is a side elevation, partly in section, of a player piano embodying my invention;

Fig. 2 is a front elevation of that portion of Fig. 1 illustrating my improved devices, and:

Fig. 3 shows a tracker board and music sheet which may be used in connection with my invention.

Referring more particularly to Fig 1, I show a mechanical musical instrument having the strings 1 to be struck by the piano action. The piano action includes the hammer 2 and its associated actuating mechanism including the wippen 3. I prefer to specify the actual member whose operation is limited, or supplementally controlled, and which in this instance is the wippen 3, as an intermediate portion of the piano action between the hammers 2 thereof and the key. The piano action is operated by a power pneumatic 5, through the agency of the spindle 6 and the lever 4. The lever 4 is pivoted at 7 and is controlled by a spring 8. The power pneumatic 5 is controlled by means of suitable valve mechanism 9 which in turn is controlled through a tube or duct 10 communicating with an aperture 11 in the tracker board 12. There are also slits or elongated openings 13, 13 in the tracker board, there being an aperture 11 and an associated slit 13 corresponding to each pneumatic 5. The music sheet 14 is provided with narrow perforations 15 and wide perforations 16, the narrow perforations serving merely to cooperate with the apertures 11, and the wide perforations cooperating with both the apertures 11 and the slits 13 to produce the solo effects, all as set forth in my aforesaid Patent No. 1,183,210. The slits 13 communicate with tubes 17 extending to the valve mechanism 18 of the supplemental or solo pneumatics 19, suitably mounted as shown. An abutment 20 is provided near which some intermediate portion of the piano action, as in this instance the wippens 3, may move under certain conditions in response to the actuation of the power pneumatics 5.

I provide means to limit the throw of this intermediate portion and specifically these means, in this present application, consist of the removable stops 21 individually operated through the actuation of the spindles 22 by the solo pneumatics 19. Now, whenever a narrow perforation 15 in the music sheet permits operation of a power pneumatic, the piano action for that note is operated and its operation is limited by the presence of a removable stop 21 serving as an auxiliary abutment. Should it be decided to accentuate certain notes or a mel-

ody, such notes are provided for in the music sheet by wide perforations 16, which wide perforations primarily or initially cause the actuation of the solo pneumatics 19, where-
 5 by the selected removable stops 21 are withdrawn, whereafter said perforations 16 in their further progress cause the associated actuation of the power pneumatics 5 to operate the piano action. This actuation of
 10 the piano action when the stops 21 are removed produces accentuation of the tones produced, as there is no limiting effect on the piano action, the limiting means, in this case the removable stops, having been with-
 15 drawn from operative association with the intermediate portion of said piano action.

I obtain most peculiarly effective results when applying my invention to some intermediate portion of the action as herein set
 20 forth.

Certain features of the invention herein disclosed are disclosed and claimed in my Patent No. 1,206,779, issued Nov. 28th 1916.

While I have herein shown and particu-
 25 larly described the preferred embodiment of my invention, I do not mean to limit myself to the precise construction and arrangement as herein set forth, but having thus described one form of my invention, what I
 30 claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising a piano action, a fixed abutment therefor, means movable to and from a
 35 position between a member of said action which is below the hammer shank and said abutment to limit the stroke thereof and means for moving said movable means.

2. A device of the character described comprising a piano action, an abutment therefor, a removable stop movable to and
 40 from a position between a member of said action which is below the hammer shank, and said abutment to limit the stroke thereof and means for moving said stop.

3. A device of the character described comprising in combination, a piano action, power pneumatics to operate said action, an abutment, movable stops separate
 50 from said abutment normally positioned between said abutment and wippens of said action to limit the stroke of the wippens, and solo pneumatics to operate said stops, said stops being movable to and from their posi-
 55 tions between the wippens and said abutment.

4. A device of the character described comprising a piano action, power pneumatics to operate same, a fixed abutment therefor, means movable to and from a position
 60 between an intermediate member of said action below the hammer shank and said abutment to limit the stroke thereof, and a solo pneumatic to operate said means.

5. A device of the character described

comprising a piano action, power pneumatics to operate same, an abutment therefor, a removable stop movable between an intermediate member of said action below the hammer shank and said abutment to
 70 limit the stroke thereof, and a solo pneumatic to operate said removable stop.

6. A device of the character described comprising a piano action, power pneumatics to operate same, an abutment therefor, a stop or supplemental abutment independent of said first mentioned abutment for a
 75 member of said action intermediate the hammer shank and the member engaging the keys to limit the stroke thereof, and a solo pneumatic to operate said supplemental abutment to and from a position between said
 80 member and said first mentioned abutment.

7. A device of the character described comprising a piano action, a fixed abutment therefor, means independent of said
 85 abutment movable between a wippen member of said action and said abutment to limit the stroke thereof, and means for moving said movable means.

8. A device of the character described comprising a piano action, an abutment therefor, and a removable stop movable to and from a position between a wippen of
 90 said action and said abutment to limit the stroke thereof and means for moving said stop.

9. A device of the character described comprising in combination, a piano action, power pneumatics to operate said action, a
 95 fixed abutment mounted above the wippens of said action, stops movable to and from a position between the wippens and said abutment, and solo pneumatics having connections for operating said stops.

10. A device of the character described comprising a piano action, power pneumatics to operate same, a fixed abutment therefor, means movable to and from a position
 100 between a wippen of said action and said abutment to limit the stroke thereof, and a solo pneumatic to operate said means.

11. A device of the character described comprising a piano action, power pneumatics to operate same, an abutment therefor, a
 105 removable stop movable to and from a position between a wippen of said action and said abutment to limit the stroke thereof, and a solo pneumatic to operate said removable stop.

12. A device of the character described comprising a piano action, power pneumatics to operate same, an abutment or stop therefor, a supplemental abutment for a
 110 wippen of said action to limit the stroke thereof, and a solo pneumatic to operate said stop or supplemental abutment, said stop being movable to and from a position between said first mentioned abutment and said
 115 wippen.

13. A device of the character described comprising a piano action, power pneumatics to operate same, an abutment therefor, a supplemental abutment or stop for a member of said action below the hammer shank to limit the stroke thereof, a solo pneumatic to operate said stop or supplemental abutment, a tracker board having two sets of openings, a music sheet with two coöperating sets of perforations, and tubes or connections between the tracker board and solo and power pneumatics, said stop being movable to and from a position between said first mentioned abutment and said wippen.

14. A device of the character described comprising a piano action, power pneumatics to operate same, a fixed abutment therefor, means movable to and from a position between a wippen of said action and said abutment to limit the stroke thereof, a solo pneumatic to operate said means, a tracker board having two sets of openings, a music sheet with two coöperating sets of perforations, and tubes or connections between the tracker board and solo and power pneumatics.

15. The combination with a piano action and an automatic action for operating the piano action, of means for limiting the blow striking operation of the piano action comprising members adapted to intercept operating movements of parts of the piano action intermediate the hammers and keys, a music sheet, and means controlled by said music sheet for actuating said members.

16. The combination of a piano action and an automatic action for operating the same, a second automatic action and means operated by said second automatic action for acting upon a portion of said piano action between the hammers and keys thereof so as to limit the blow striking movement of said action.

17. The combination of a piano action and a sheet controlled automatic action for actuating the same, a second sheet controlled automatic action and means operated by said second automatic action for acting upon a portion of the piano action between the hammers and keys thereof so as to modify the blow striking movement of said action.

18. The combination of a piano action and a pneumatic action for actuating the same, a second pneumatic action and means operated by said second pneumatic action for acting upon a portion of the piano action between the hammers and keys so as to change the blow striking movement thereof.

19. The combination with a piano action, of an automatic action for operating the same, a series of abutments and means for

introducing said abutments into the paths of blow striking movements of members of the piano action intermediate the hammers and keys to shorten said movements.

20. The combination with a piano action, of an automatic action for actuating the piano action, abutment devices arranged to be moved into and out of position to intercept and shorten blow striking movements of members of said piano action between the hammers and keys thereof, and a second automatic action arrangement for controlling said abutment devices.

21. The combination with a piano action, of a set of pneumatics for actuating said piano action, a series of abutment devices arranged for movement into and out of position to intercept blow striking movements of members of said piano action between the hammers and keys, and a second set of pneumatics arranged to control said abutment devices.

22. The combination with a piano action, of means for intercepting blow striking movements of intermediate members thereof, and a set of pneumatics for operating said intercepting means.

23. The combination with a piano action, of abutment devices arranged to be moved into and out of position to intercept the blow striking movements of the wippens thereof, and a set of pneumatics for actuating said abutment devices.

24. The combination with a tracker having front and rear rows of apertures, of a piano action, a set of pneumatics for actuating said piano action, said pneumatics being connected for operation with the front row of apertures, a second set of pneumatics connected with the rear tracker apertures, and abutment devices controlled by said second set of pneumatics for intercepting blow striking movements of members of the piano action between the hammers and keys.

25. The combination with a piano action, of a tracker having two sets of apertures, means operated through the apertures of one of said sets for operating the piano action, and means operated through the apertures of the other of said sets of apertures for varying the operation of the piano action by obstructing the operative movements of portions of said action between the hammers and keys.

In witness whereof, I hereunto subscribe my name this 2nd day of November A. D., 1910.

PAUL BROWN KLUGH.

Witnesses:

W. N. JOHNSON,
N. D. TOBIN.

It is hereby certified that in Letters Patent No. 1,228,029, granted May 29, 1917, upon the application of Paul Brown Klugh, of Chicago, Illinois, for an improvement in "Mechanical Musical Instruments," errors appear in the printed specification requiring correction as follows: Page 1, line 71, for the word "key" read *keys*; page 2, line 7, strike out the word "associated"; same page, line 8, before the word "power" insert the word *associated*; same page, line 123, claim 12, strike out the words "or stop"; same page and claim, line 124, after the word "abutment" insert the words *or stop*; page 3, line 14, claim 13, for the word "wippen" read *member*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of June, A. D., 1917.

[SEAL.]

Cl. 84—160.

R. F. WHITEHEAD,
Acting Commissioner of Patents.

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[SEAL.]

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R. F. WHITEHEAD,
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