

M. CLARK.
INTERIOR PIANO PLAYER.
APPLICATION FILED APR. 8, 1909.

8 SHEETS—SHEET 1.

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1,009,828.

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Patented Nov. 28, 1911
 8 SHEETS-SHEET 2.

Fig. 4

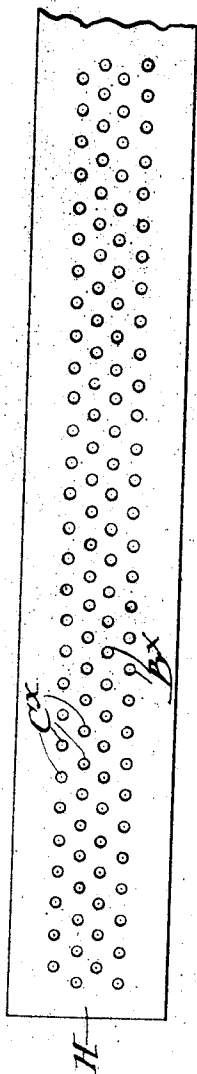


Fig. 3

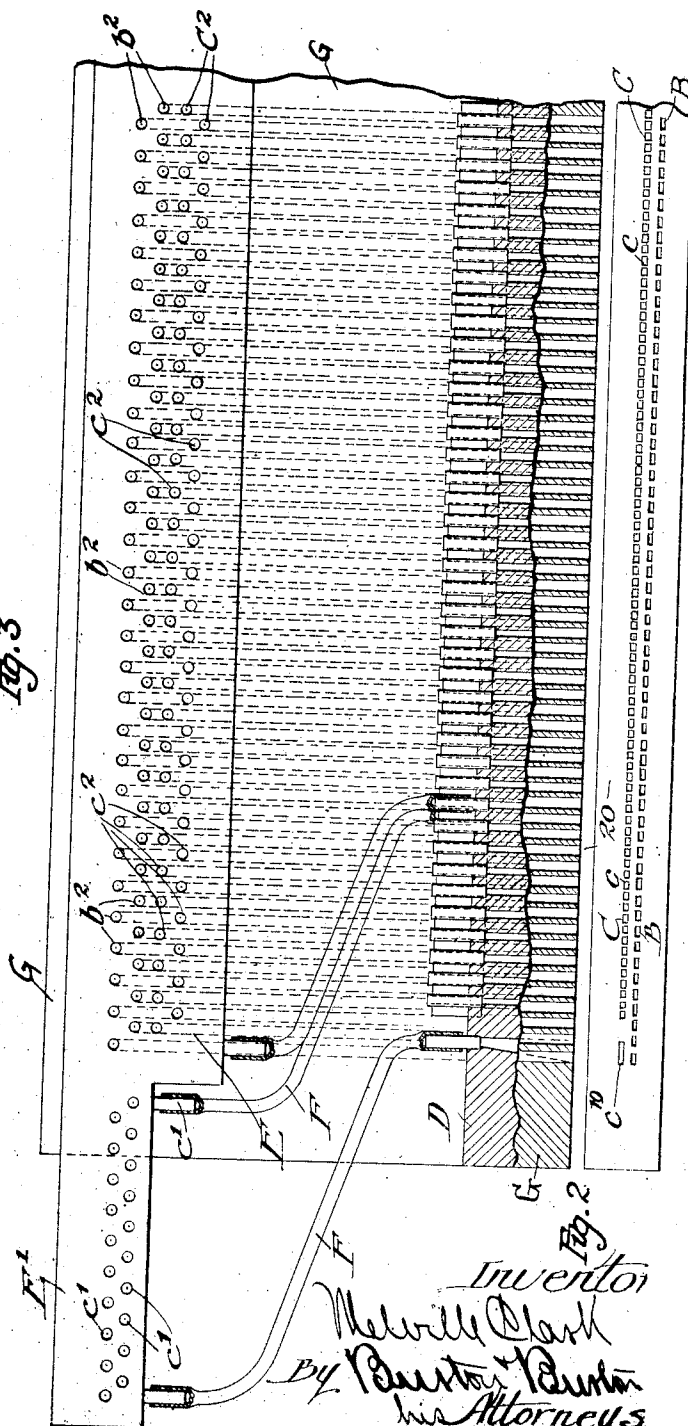


Fig. 2

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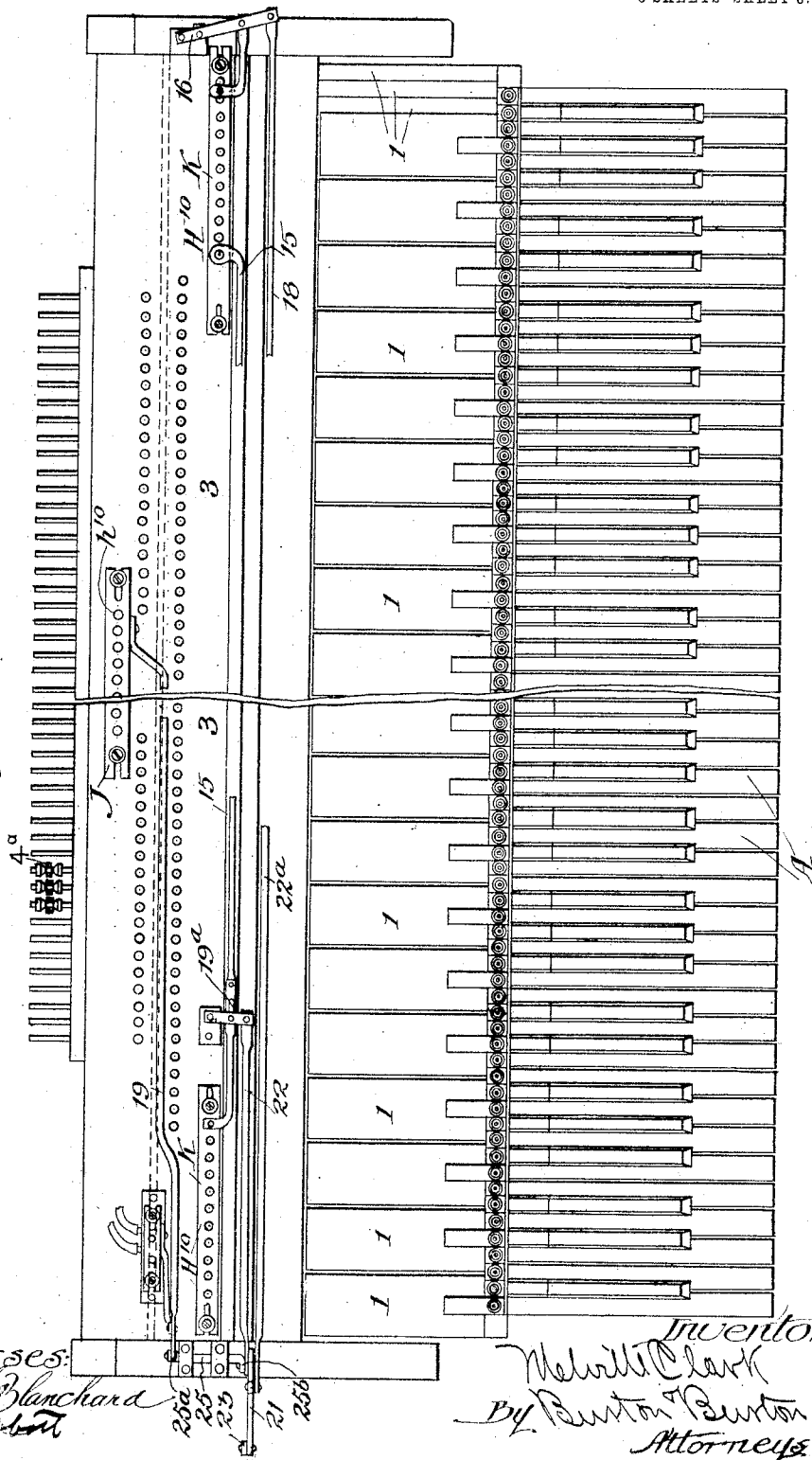
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8 SHEETS—SHEET 3.

Fig. 5.



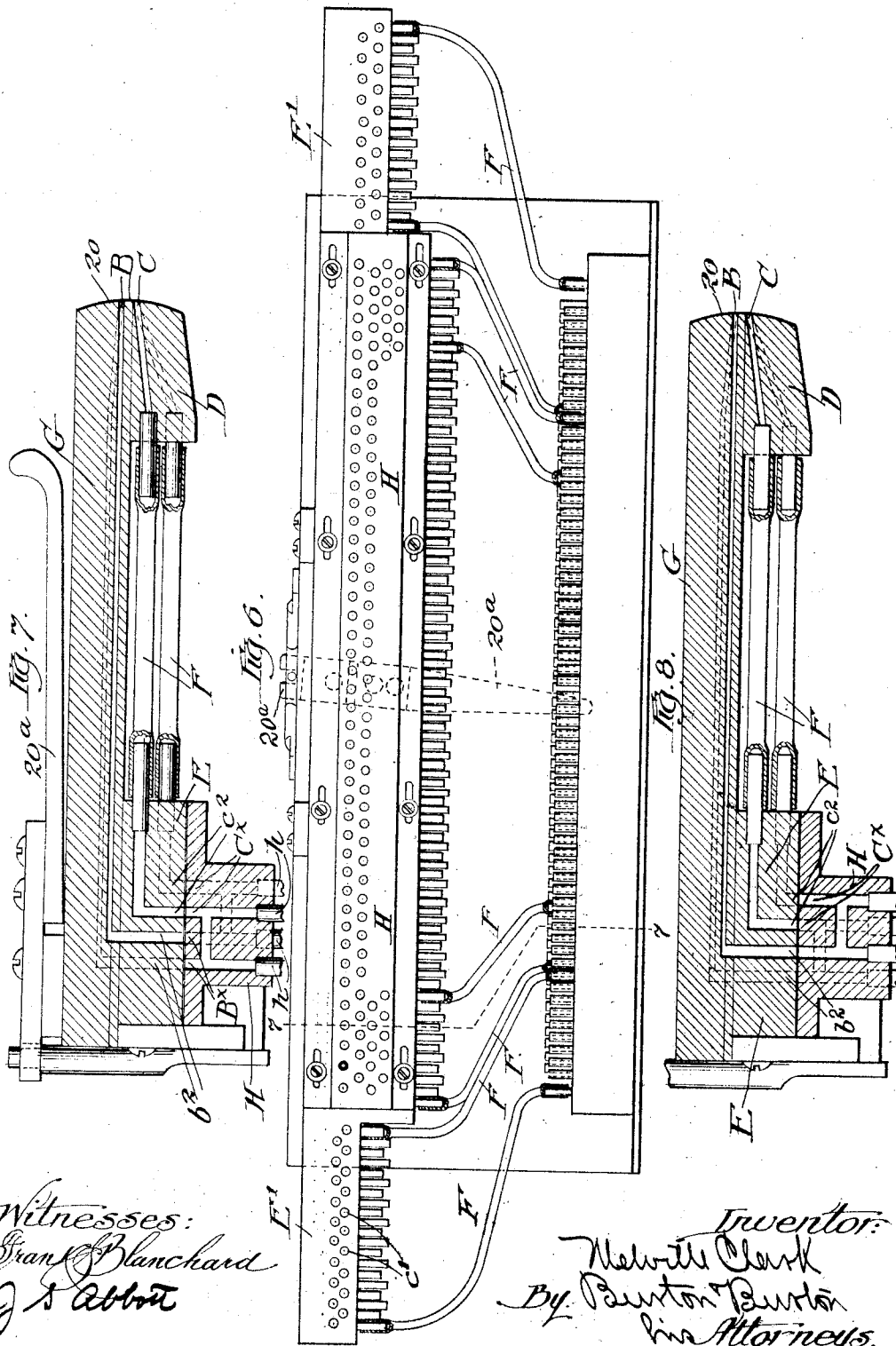
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8 SHEETS—SHEET 4.



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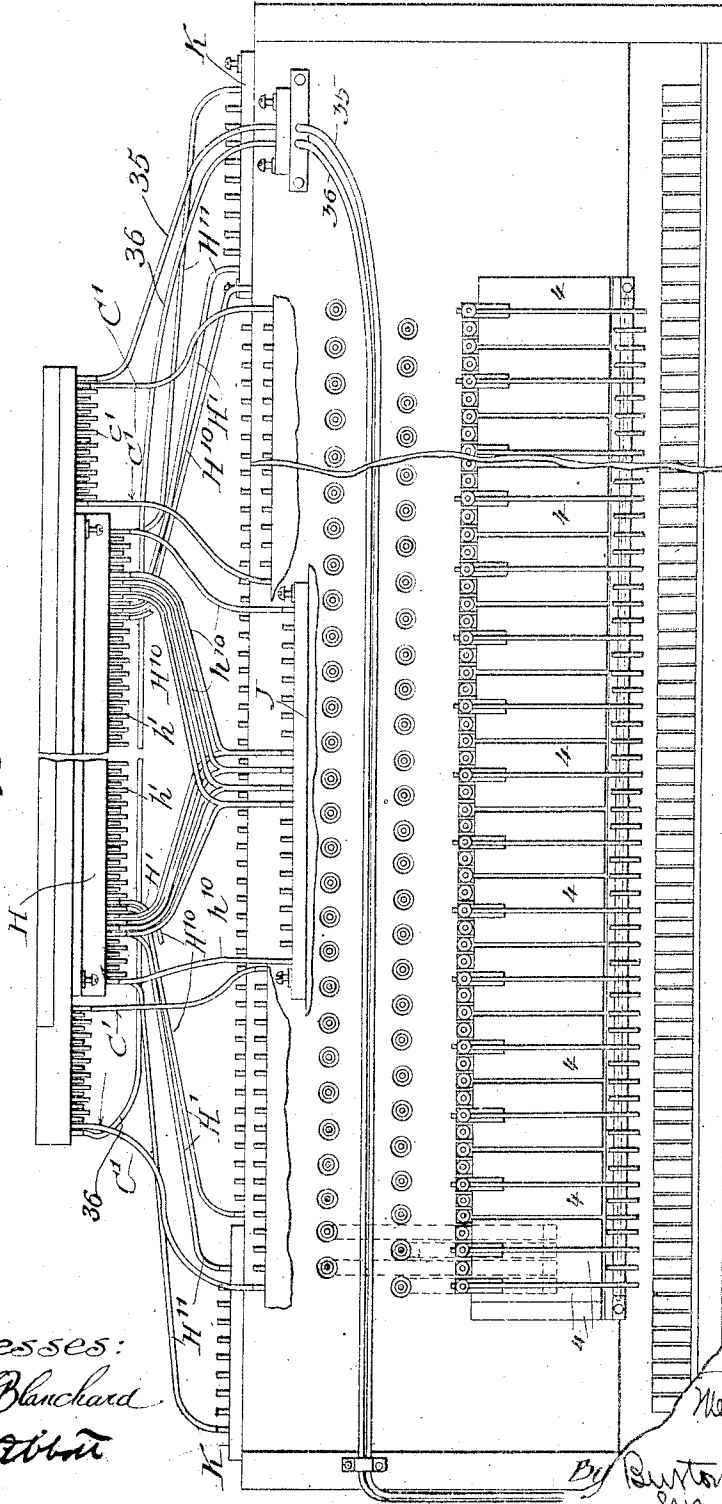
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8 SHEETS—SHEET 5.

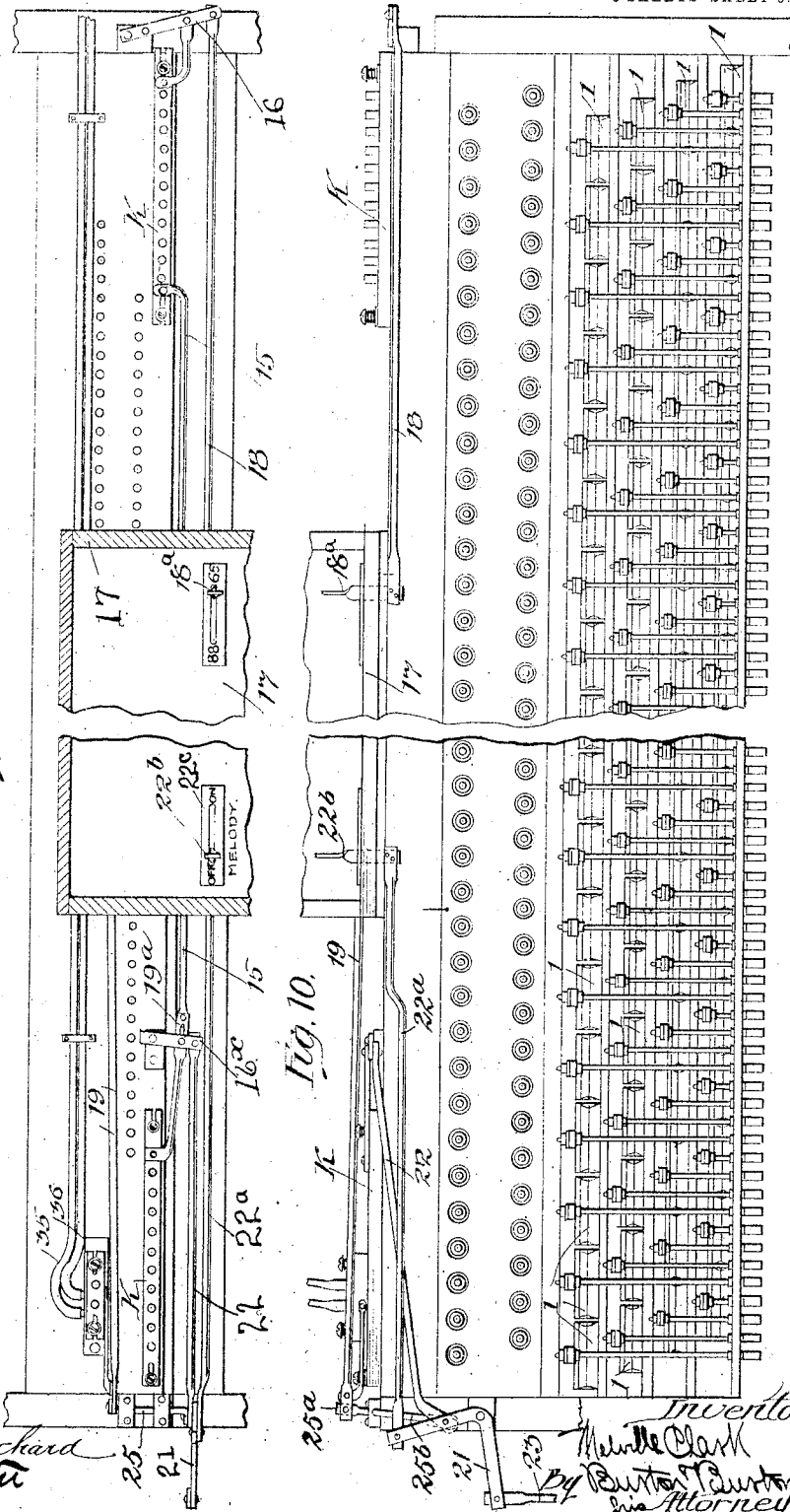
Fig. 9.



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Fig. 18.



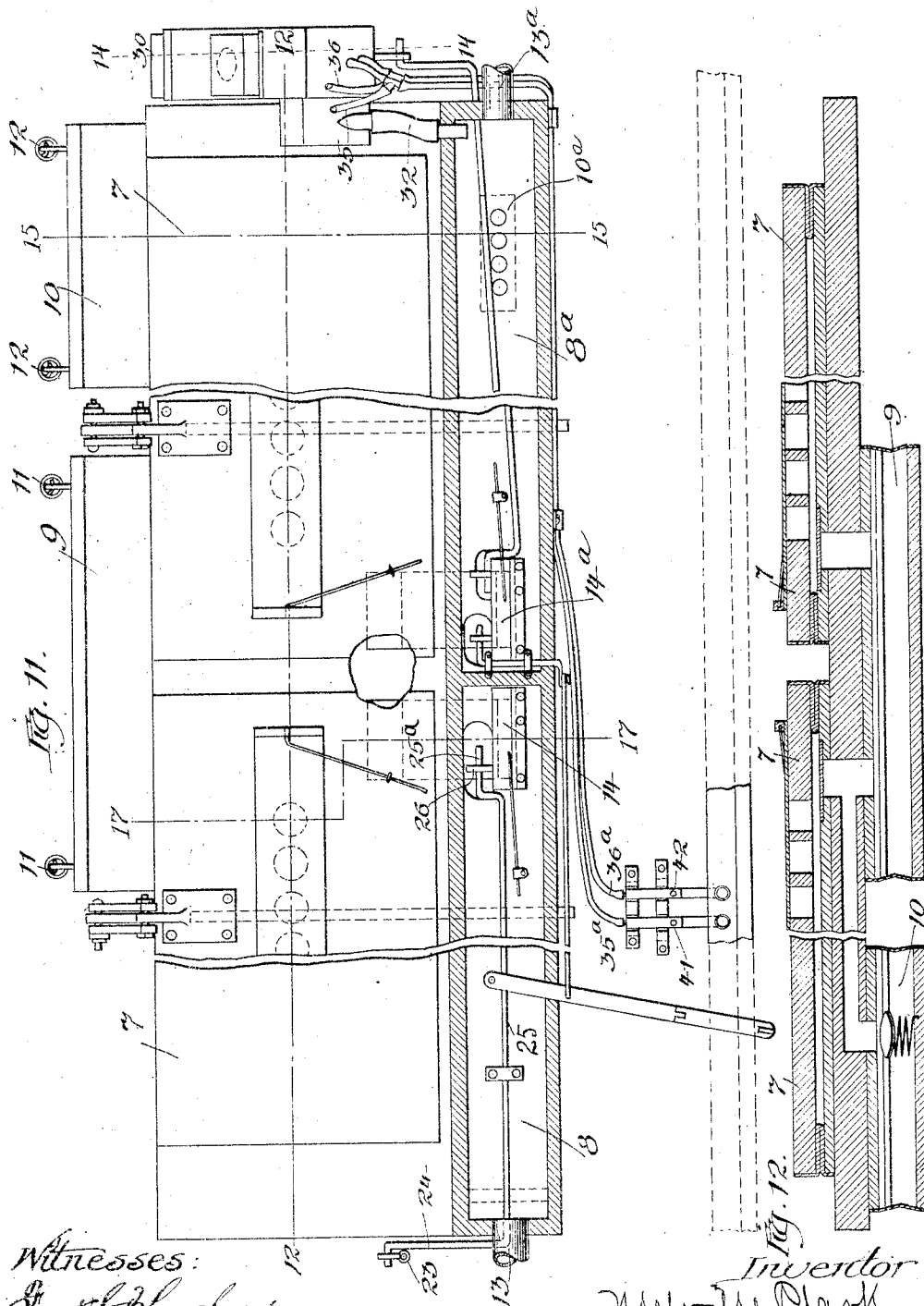
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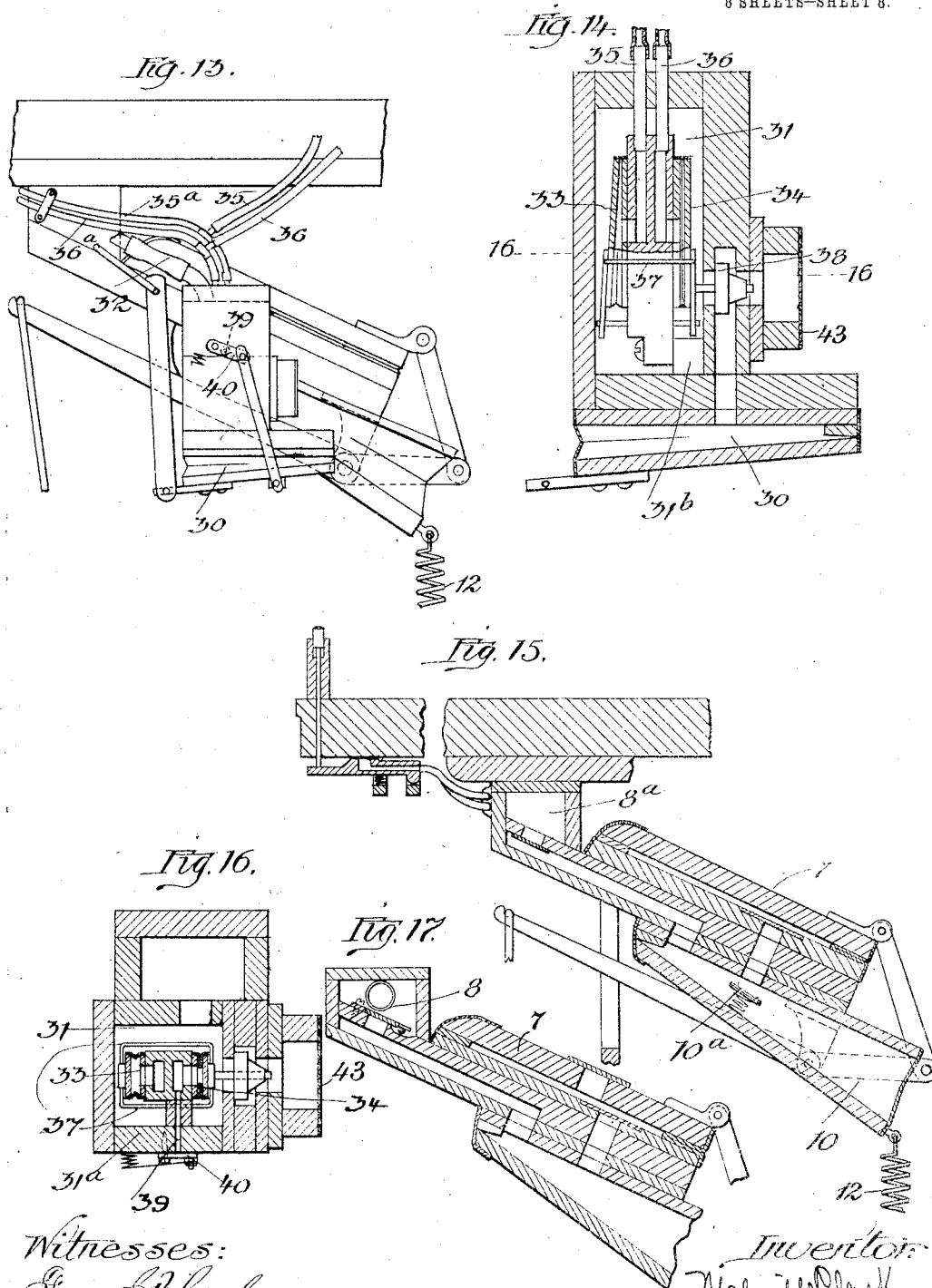
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M. CLARK.
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8 SHEETS—SHEET 8.



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UNITED STATES PATENT OFFICE.

MELVILLE CLARK, OF CHICAGO, ILLINOIS.

INTERIOR PIANO-PLAYER.

1,009,828.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed April 8, 1909. Serial No. 438,625.

To all whom it may concern:

Be it known that I, MELVILLE CLARK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Interior Piano-Players, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

10 The purpose of this invention is to provide an improved construction for interior player pianos adapted for playing melody and accompaniment or for giving prominence to any particular part of the music, as
15 by accenting particular notes or phrases, and adapted also for being operated by perforated controller sheets constructed and arranged for playing either the full range of 88 notes or a lesser number, as 65 or 58
20 notes, for which "perforated music", so-called, has been heretofore commonly made, and particularly for playing the melody or accented or otherwise distinguished parts by means of a separate action from that by
25 which the accompaniment or undistinguished portion of the music is played.

It consists of the features of construction and their combinations shown and described as indicated in the claims.

30 In the drawings:—Figure 1 is a fore-and-aft vertical section through a portion of a piano case comprising the manual equipped with this invention. Fig. 2 is an edge elevation of the tracker board. Fig. 3 is a
35 partly sectional inverted plan view of the tracker board partly broken away, section being made in part at the plane of one row of tracker ducts, and in part at the plane of the other row. Fig. 4 is a detail plan
40 view of a portion of the tracker through which the tracker ducts emerge for the seating of the flexible tube carrying slide thereon. Fig. 5 is a top plan view of the action and manual partly broken away at
45 the middle portion to condense the view. Fig. 6 is an under plan view of the tracker device. Fig. 7 is a section at the line 7—7 on Fig. 6 at one adjustment of the tube-carrying slide. Fig. 8 is a similar view of the
50 same at another adjustment of said slide. Fig. 9 is a rear elevation of the pneumatic action. Fig. 10 is a forward elevation of the same. Fig. 11 is a plan view, partly in section, of the parts below the manual, including the bellows and the tension-governing devices. Fig. 12 is a longitudinal sec-

tion looking from the rear on line 12—12 on Fig. 11. Fig. 13 is an end elevation of part of the same. Fig. 14 is a fore-and-aft vertical section at the line 14—14 on Fig. 11. Fig. 15 is a detail section at the line 15—15 on Fig. 11. Fig. 16 is a section at the line 16—16 on Fig. 14. Fig. 17 is a section at the line 17—17 on Fig. 11. Fig. 18 is a plan view of the top of the action, showing the bottom of the tracker bar supporting frame and slide operating connections.

In the construction shown, the manual keys, A, are actuated for playing by two pneumatic actions, hereinafter referred to, respectively, as the principal action and the melody action. The principal action comprises the motor pneumatics, 1, and their primaries, 2, contained in the primary chamber, 3. This action covers the full range of the instrument,—88 notes,—consisting, therefore, of 88 motor pneumatics, 1, and corresponding number of primaries, 2, only a portion of which are shown, the remainder of the action being broken away in certain of the views to condense the same. Preferably, this principal action is positioned with the motor pneumatics overhanging the manual keys, A, for downward stroke thereon forward of the fulcrum of the keys, as fully shown in my Patent No. 879,739, dated February 18, 1908. The melody action comprises pneumatics for operating upon only a limited portion of the manual. As illustrated, 59 of the manual keys, A, are exposed to the melody action, being a portion of the manual intermediate the ends and comprising a larger number of keys above than below the middle of the entire manual. This action comprising motor pneumatics, 4, and primary pneumatics, 5, is positioned for action of the motor pneumatics upon the manual keys by bell crank levers, 4^a, engaging them for upward pull upon them at a point behind their fulcrum, and as illustrated, near the rear ends of the keys, the construction for this purpose being as fully shown in my Patent No. 869,230, dated October 29, 1907. The primary pneumatic chamber, 6, for the melody action is most conveniently located immediately adjacent to and back of the chamber, 3, of the principal action. Pumpers, 7, are connected with the two exhaust chambers, 8 and 8^a, both connected with a high tension controlling bellows, 9, and the latter 8^a is also connected with a low tension controlling

bellows, 10, (see Figs. 12 and 15), the difference as to tension between the two bellows being determined by the strength of their respective expanding springs, 11 and 12, as well understood, the low tension bellows, 10, being operatively connected with a shut-off valve, 10^a, for closing communication of the chamber, 8^a, with the pumpers when the controller bellows, 10, is fully collapsed, as well understood. The melody action is connected only with the high tension chamber 8 by an air trunk, 13, leading to the primary pneumatic chamber, 6, of that action. The principal action is similarly connected with the chamber, 8^a, by an air trunk, 13^a. Valves, 14, 14^a, are provided for cutting off the chambers, 8 and 8^a, respectively, from the high tension bellows, 9, said valves being operated by means and connections hereinafter described.

For utilizing the two actions for the purposes indicated, there is provided a tracker construction and duct connections therefrom to the respective actions, which will now be described. The tracker as a whole comprises a mouth-piece, 20, having two rows of duct mouths, the first row, B, comprising 88 apertures cut on a wider scale than the other row, C, which comprises 126 note-playing apertures, c, and two additional apertures, c¹⁰, for purpose hereinafter mentioned, said 126 apertures being cut on a narrower scale than the apertures of the row, B, so that the two rows of apertures occupy substantially the same length in the mouth-piece. From the mouth-piece the ducts of two sets extend rearward for connections by flexible tubes to the pneumatic actions. Preferably, the tracker has two longitudinal ribs, D and E, which contain the forward and rear portions of the narrower spaced set, C, said front and rear portions being connected by flexible tubes, F. The wider spaced set, B, is conveniently formed in the body, G, of the tracker, extending from front to rear therein.

The ducts of the set, B, open through the lower surface of the tracker board at the rear portion in two rows of small apertures b² in the customary staggered arrangement for obtaining suitable intervals longitudinally in the apertures of each row. The ducts of the set, C, are diverged alternately upward and downward for issuing from the rear edge of the rib, D, in two rows, so that in each row they may be spaced sufficiently for the customary nipple connection with the flexible tubes, F; a similar double row arrangement for connection with the flexible tubes is provided at the forward edge of the rear rib, E. 88 ducts out of the middle of the set, C, including all but 20 at each end, open down through the surface of the board in two parallel rows of apertures, c², corresponding to and spaced equally with the two

rows of apertures, b², in the same surface of the board. But the corresponding apertures of the two sets, b² and c², are staggered oppositely with respect to each other,—that is, so that any two consecutive apertures of one set are in an oblique line, whose inclination is opposite that of the line in which the two corresponding consecutive apertures of the other set stand. The difference between the longitudinal spacing of the apertures of the set, b², and the spacing of the mouths b of the set of ducts, B, at the tracker board edge is covered by the divergence or splaying of the flexible tubes, F, between the two ribs, D and E. The remainder of the ducts of the set, C,—that is, 20 at each end, open down through the end portions of the rear rib, E, which is extended beyond the end of the main board, G, and are fitted with nipples, c¹, for connection of the flexible tubes C¹ leading to the melody action, as hereinafter described.

Upon the surface of the rib, E, through which the apertures, b² and c², open, there is mounted a slide, H, having in the surface facing said rib, E, two sets of apertures, B^x and C^x, each in two rows, the spacing from each other of the four rows being the same as that of the four rows of apertures in said rib, D, the apertures in the two rows, B^x, and also the apertures in the two rows, C^x, being staggered with respect to each other, the spacing of the apertures in all the rows being the same and equal to the spacing of the rows of apertures, C and B, in said rib, D, of the tracker board; but the corresponding apertures of the sets, B^x and C^x, of the slide are not relatively staggered, but instead are directly opposite each other fore-and-aft or transversely of the rows. With this construction, it will be seen that the slide, H, at one position may have the apertures, B^x, registering with the apertures, B, of the rib, D, and being moved longitudinally half the distance between the consecutive apertures in the rows; the apertures, B^x, will be carried out of registration with the apertures, b², while the apertures, C^x, will be carried into registration with the apertures, c², of the rib, thus changing the connection from the tracker duct mouths, B, to the tracker duct mouths, C, to the extent of the 88 middle mouths of the latter set.

For shifting the connection a lever, 20^a, is provided pivoted on the tracker board and connected with the slide, H. The ducts from the corresponding apertures, B^x and C^x, unite within the slide and emerge at the opposite surface of the slide, in common mouths, fitted with nipples, h, for connection of flexible tubes, H¹, leading to the principal action. Of these 88 tubes, a middle group, H¹⁰, comprising 67 tubes, lead directly to the primary pneumatics of the principal action, and lateral groups—or

separated portions of a group, H^{11} , comprising 10 tubes at one end of the series and 11 tubes at the other end, 21 in all,—lead respectively to slides, K, mounted upon the upper
 5 side of the primary chamber, 3, of the principal action, having its apertures with which the tubes, H^{11} , are connected registering at the opposite side from that at which the said connection is made, with the corresponding ducts leading to the primary pneumatics, 2, such slide being adapted to be
 10 shifted so as to cut off communication, operating thus as cut-off valves for said 21 ducts.

15 The two slides, K, are conveniently mounted above the opposite end portions of the primary pneumatic chamber, 3, and connected by a rod, 15, for simultaneous movement, which is effected by means of levers, 16, 16^x
 20 connected with the slides respectively or their said connecting rod, 15, and having any suitable operating connections, as a rod, 18, extending to either of the levers, and a slide handle, 18^a, mounted for sliding movement in any convenient position on the
 25 tracker board and roll-supporting frame, 17.

When the slide, H, is adjusted by means of the lever, 20, for communication of the set of ducts, C; with the action, and the lever, 16, is adjusted for communication of the
 30 tubes by the slides, K, with the principal action, perforated rolls cut on the wide scale can be used for playing with the full range of 88 notes.

35 When it is desired to use perforated rolls similarly cut for 65 notes, the lever, 16, will be moved to cut off the extra 21 notes, ten at one end and eleven at the other. When the lever, 20^a, is adjusted for communication
 40 of the ducts of the set, B, with the action, similar adjustment of the lever, 16, will adapt the instrument for operating with rolls cut on a narrow scale for 88 notes and 65 notes.

45 The ducts comprising the ten at one end and eleven at the other end which are connected to the slides, K, by the tubes, H^{11} , are branched at any convenient point, preferably as shown, within the slide, H, and the
 50 branches which in that case are fitted with nipples, h^1 , are connected by tubes, h^{10} , with a slide, J, mounted on the melody action and having its ducts with which the said branch tubes connect, adapted to register with ports
 55 for connecting with twenty-one consecutive primary pneumatics of the melody action at the middle portion of its range. For operating this slide, J, a rod, 19, is connected with the lever, 16, the connections being adjusted so that movement of the lever which
 60 carries the slides, K, to open position carries the slide, J, to closed position. As illustrated, the connections comprise a rock shaft 25 to one of whose crank arms 25^a the rod 19
 65 is connected, said rock shaft having another

lever arm 25^b to which rod 22 is connected, the opposite end being connected to a lever 16^x which operates the rod 15 by means of a pin engaging in a slot 19^a in said rod 15 so
 70 that while the slide, J, is at closed position the slide, K, may be moved to open position, if desired, for playing 88 notes without supplemental melody. The 40 tubes, C¹, connecting, 20 at each end with the end groups, comprising 20 each, of the set, C,—that is, those outside of the middle 88 which have
 75 connection with the principal action,—are connected respectively with the next 20 primary pneumatics of the melody action respectively, above and below the middle 21
 80 appropriated for connection with the 21 tubes, h^{10} , last above mentioned, 61 tubes being thus provided for connection with the 61 primary pneumatics of the melody action.

The valve, 14, which controls communication of the controlling bellows, 9, with the
 85 high tension chamber, 8, is provided with operating connections connected with those for operating the slides, J and K, so that when said valve is moved to position for
 90 giving the chamber, 8, connection with the high tension controlling bellows, 9, said slides, K, are moved to position for cutting off the 21 tubes which they control from communication with the principal action
 95 primaries, thereby leaving only the branch tubes, h^{10} , in service for connecting the 21 tracker mouths of the set, B, corresponding to said 21 tubes, in communication with the melody action only, at the same time that
 100 the 40 tubes, C¹, are in service, by reason of opening communication between the chamber, 8, and the bellows, 9. The connections for this purpose between the slides, K, and the valve, 14, comprise a bell-crank lever, 21,
 105 fulcrumed on the action frame, a connecting rod, 22, from one of its arms to one of the slides, K, and a connecting rod, 23, from its other arm to one arm, 24, of a rock-shaft, 25, whose other arm, 25^a, is connected with
 110 the lever arm, 26, of the valve, 24. For operating the slide, J, at will the bell crank lever, 21, is connected by a link, 22^a, with a slide handle, 22^b, operating in a slotted guide plate mounted at any convenient place on
 115 the tracker board and roll supporting frame, 17. The details of this mechanical connection may be modified indefinitely according to the relative situation of the different parts
 120 connected.

One aperture at each end of the set, C, in the tracker board and the duct connections therefrom are provided for the purpose of operating the valve, 14^a, to open and close communication of the chamber, 8^a, with
 125 the low tension controlling bellows, 10. These end apertures in the tracker board are controlled by perforations in the controlling sheet which are formed therein at positions at which, for the purpose of the
 130

music, the said valve should be shifted, being opened when the high tension is to be made operative for playing the accompaniment, and being otherwise closed to cause the accompaniment to be played with the low tension and thereby less prominently than the melody. The devices for controlling this pneumatic, 30, are designed to cause it to maintain its position, either inflated or collapsed, until action is produced by the registration of an aperture at one side or the other of the paper with the corresponding extreme aperture of the set, C. For this purpose there is provided a small exhaust or rarefied air chamber, 31, having connection by a trunk tube, 32, with the chamber, 8^a; and in this small exhaust chamber there are mounted on a support, 31^b, two primary pneumatics, 33 and 34, which are connected by tubes, 35 and 36, with said opposite end apertures of the set, C (see Fig. 9). The two pneumatics have their moving walls connected by a loop, 37, so that they move together, and each pneumatic is collapsed when the other expands. One of said primary pneumatics carries a valve, 38, which operates in the usual manner of a primary pneumatic controlling a motor pneumatic to control the motor pneumatic, 30. It will be seen that, for collapse of the motor pneumatic, 30, the primary pneumatic, 34, will be inflated, and for inflation of the pneumatic, 30, the primary pneumatic 33, will be inflated. The inflation of the primary pneumatic, 34, occurring when atmospheric air is admitted to it by the registration of the corresponding aperture of the perforated roll with the extreme duct mouth at the right-hand end of the set, C, will collapse the pneumatic, 34, by reason of the rigid loop connecting them, but the two pneumatics would resume their normal position upon the passing of the aperture of the paper away from the mouth with which it registers to inflate the pneumatic, 33, unless some provision were made to the contrary. Such provision consists in providing a duct, 39, leading out through the partition board, 31^a, on which the two primary pneumatics, 33 and 34, are mounted, through the side of the chamber, 31, and providing a valve, 40, for closing the end of such duct, such valve being connected with the motor pneumatic, 30, so as to be moved for closing the duct when the motor pneumatic is inflated, and for opening when it is collapsed, said collapse occurring when the primary, 34, is inflated by registration of the proper aperture of the controlling sheet. It thus results that when such registration has occurred and passed, the air supply to the primary pneumatic, 33, provided first by the registration of the aperture-controlling sheet with the tracker

board duct mouth, is maintained afterward through the duct, 39, and the motor pneumatic, 30, is thereby held in collapsed position until an aperture at the other side of the perforated sheet registers with the opposite end duct of the set, B, causing inflation of the primary pneumatic, 33, which reverses the valve, 38, admitting atmospheric air through a screen 43 to the motor pneumatic, 30, causing it to be inflated and to close the valve, 40. By this means the expression of the accompaniment,—that is, the intensity or loudness with which it is played,—may be controlled by perforations alternating at the opposite sides of the perforated sheet for alternately registering with the extreme tracker duct mouths of the set, C, only a short aperture measured in the direction of travel of the sheet being necessary in each instance, because the valve which controls the communication of the high tension governor bellows with the chamber, 8^a, of the principal action will remain in the position to which it is moved in each instance until the reverse action of the motor pneumatic, 30, is caused by the arrival of an aperture at the opposite side of the paper at the corresponding tracker duct mouth. For effecting a like variation of the expression of the accompaniment at will, instead of by perforations in the controller sheet, the tubes, 35, and 36 are branched, branches, 35^a, 36^a, extending to valves, 41, and 42 mounted in any convenient position, as at the edge of the instrument, in front of the manual, as shown, so that the operator can open one or the other valve with the same effect as when the primary pneumatics are vented through the perforations of the controller sheet.

In order that the melody may not be improperly effected when in the construction herein shown is employed with a tracker board which is mounted for fast position by longitudinal movement, in view of the fact that the ducts for operating the pneumatics of the melody action are in two groups separated from each other at the tracker board the controller sheet for playing accompaniment and melody is made as fully shown in application of E. G. Clark, Serial No. 474,364, filed January 27, 1909,—that is, having two blank areas or lanes, 41, 41, separating the middle group of perforations pertaining to the accompaniment from the end groups pertaining to the melody, such lanes being of a width corresponding to the total number of steps of movement which may be made for transposition. As illustrated, it being intended to provide for transposition two steps in each direction from middle position, giving a total of five positions to which the tracker board may be adjusted, these lanes have an area which would be required for four rows

of apertures; and in order that the melody notes may be consecutive throughout the entire range or transposition, the four middle pneumatics of the melody action have each two duct connections, one leading from a tracker board duct of one group, and the other from a corresponding duct of the other group appropriated to the melody, two ducts being united at any convenient point for extension in a single duct to the pneumatic. This feature is fully set out and explained in detail in my said application Serial No. 474,364, above mentioned.

In view of the provision for transposition, the two end duct mouths of the set, B, of the tracker are extended longitudinally of the tracker, and the corresponding apertures of the perforated roll are also elongated transversely of the paper, so that registration of apertures with duct mouths may not be prevented by the movement for transposition. This feature is also fully shown and explained in said application Serial No. 474,364.

I claim:—

1. In an interior player piano, in combination with the manual keys, two pneumatic actions positioned for operating independently of each other upon the manual keys; a tracker board having separate groups of ducts communicating with said actions respectively, and a perforated controller sheet cooperating with such tracker board having perforations for separate portions of the music which are to be produced with different degrees of loudness, segregated in separate longitudinal zones of the sheet for traveling over said separate groups respectively.

2. In an interior player piano, in combination with the manual keys, two pneumatic actions for operating independently of each other upon the keys, one of said actions being positioned above the keys for acting upon the latter forward of their fulcrums, the other action being positioned above the keys and comprising means for engaging the keys for lifting them up rearward of their fulcrums; a tracker board having separate groups of ducts communicating with said actions respectively, and a controller sheet cooperating with such tracker board having perforations relating to different portions of the music which are to be produced with different degrees of loudness, segregated in separate longitudinal zones of the paper for traveling over separate groups of ducts respectively.

3. In an interior player piano, in combination with manual keys, a principal pneumatic action and a supplemental pneumatic action for operating independently of each other upon the keys; a tracker board having two sets of ducts terminating in two parallel rows of mouths at the edge of the tracker

board, one of said sets comprising separate groups of ducts communicating respectively with the principal action and with the supplemental action, and the other set having ducts communicating with the principal action only.

4. In an interior player piano, in combination with the manual keys, a principal pneumatic action and a supplemental pneumatic action for operating independently of each other upon the manual keys; a tracker board having a set of ducts comprising one group which communicates with the principal action, another group which communicates with the supplemental action, and a third group having provision for communication with both actions, and means for shifting communication of said third group from one action to the other.

5. In an interior player piano, in combination with the manual keys, a principal action and a supplemental action for operating independently of each other upon the manual keys; a tracker board having two sets of ducts terminating in two parallel rows of tracker mouths, one of said sets comprising a group of ducts communicating with the principal action, a second group communicating with a supplemental action, and a third group provided with means of communication with both actions, the other set having communication with the principal action only; means for shifting communication of the actions from one set of ducts to the other and for shifting the communication of said third group from one action to the other.

6. In an interior player piano, in combination with the manual keys, a principal action and a supplemental action mounted for operating independently of each other upon the keys; a tracker board having two sets of ducts terminating in two parallel rows of mouths, one set and a group of the other set communicating with the principal action only; a second group of the second set communicating with the supplemental action only, and a third group of said second set having means of communication with both actions; means for cutting off communication of the first set and the third group of the second set with the principal action.

7. In an interior player piano, in combination with manual keys, a principal action and a supplemental action mounted for operating independently of each other upon the manual keys; a tracker having two sets of ducts terminating in two parallel rows of mouths, the first set having communication with the principal action only, the second set having a group of ducts communicating with the principal action only, a second group communicating with the supplemental action only, and a third group having means of communication with both actions, the sec-

ond set being greater in number than the first and the excess comprising said second group, the first set and the first and third groups of the second set extending to a parting plane between the tracker board and a valve bar thereon; such bar and a single set of flexible tubes leading therefrom to the principal action, and adapted to be moved to shift the communication of said single set of tubes from one to the other of said two sets of tracker board ducts; a group of supplemental tubes from said third group of tracker board ducts leading to the supplemental action, and means with which the corresponding group of said tubes from the bar is provided intermediate said bar and the principal action for cutting off their communication with said action.

8. In an interior player piano, in combination with manual keys, a principal action and a supplemental action mounted for operating independently of each other upon the manual keys: a tracker having two sets of ducts terminating in two parallel rows of mouths, the first set having communication with the principal action only, the second set having a group of ducts communicating with the principal action only, a second group communicating with the supplemental action only, and a third group having means of communication with both actions, the second set being greater in number than the first and the excess comprising said second group, the first set and the first and third groups of the second set extending to a parting plane between the tracker board and a valve bar thereon; such slide and a single set of flexible tubes leading therefrom to the principal action and adapted to be moved to shift the communication of said single set of tubes from one to the other of said two sets of tracker board ducts; a group of supplemental tubes from said third group of tracker board ducts leading to the supplemental action; means with which the corresponding group of said tubes from the bar is provided intermediate said bar and the principal action for cutting off their communication with said action, means for putting the supplemental action into and out of service, and connections between said last mentioned means and the means for cutting off said group, adapted to actuate the latter means for cutting off said group when the supplemental action is put in service.

9. In an interior player, in combination with the manual keys, a principal pneumatic action and a supplemental pneumatic action for operating independently of each other upon the manual keys; a tracker board having a set of ducts comprising one group which communicates with the principal action, another group which communicates with the supplemental action, and a third group having provision for communication

with both actions; means for putting the second group into and out of action; means for shifting communication of the third group from one action to the other, and connections between said two means for operating them simultaneously in putting the second group out of action and shifting the third group into connection with the principal action.

10. In an interior player piano in combination with the hammer action, two pneumatic actions positioned and connected for operating independently of each other upon the hammer action; a tracker board having separate groups of ducts communicating with said pneumatic actions respectively, and a perforated controller sheet for co-operating with said tracker board, having perforations for different portions of the music which are to be produced with different degrees of loudness occupying areas which travel over said separate groups of tracker ducts respectively.

11. In an interior player piano in combination with the hammer action, a principal pneumatic action and a supplemental pneumatic action positioned and connected for operating independently upon the hammer action, a tracker board having two sets of ducts terminating in two parallel rows of mouths at the edge of the tracker board, one of said sets of ducts comprising separate groups of ducts communicating respectively with the principal action and with the supplemental action, the other set having ducts communicating with the principal action only.

12. In an interior player piano in combination with the hammer action, a principal pneumatic action and a supplemental pneumatic action positioned and connected for operating independently of each other upon the hammer action; a tracker board having a set of ducts comprising one group which communicates with the principal action, another group which communicates with the supplemental action, and a third group having provision for communication with both actions, and means for shifting communication of said third group from one action to the other.

13. In an interior player piano in combination with the hammer action, a principal pneumatic action and a supplemental pneumatic action for operating independently of each other upon the hammer action; a tracker board having two sets of ducts terminating in two parallel rows of tracker mouths, one of said sets comprising a group of ducts communicating with the principal pneumatic action, a second group communicating with the supplemental pneumatic action, and a third group provided with means of communication with both actions, the other set having means for communication

with the principal action only, and means for shifting communication of the actions from one set of ducts to the other and for shifting the communication of said third group from one pneumatic action to the other.

14. In an interior player piano, in combination with the hammer action, a principal action and a supplemental action mounted for operating independently of each other upon the hammer action; a tracker having two sets of ducts terminating in two parallel rows of mouths, the first set having communication with the principal action only, the second set having a group of ducts communicating with the principal action only, a second group communicating with the supplemental action only, and a third group having means of communication with both actions, the second set being greater in number than the first and the excess comprising said second group, the first set and the first and third groups of the second set extending to a parting plane between the tracker board and a valve bar thereon; such bar and a single set of flexible tubes leading therefrom to the principal action, and adapted to be moved to shift the communication of said single set of tubes from one to the other of said two sets of tracker board ducts; a group of supplemental tubes from said third group of tracker board ducts leading

to the supplemental action, and means with which the corresponding group of said tubes from the bar is provided intermediate said bar and the principal action for cutting off their communication with said action.

15. In an interior player piano in combination with the manual keys, two pneumatic actions for operating independently of each other upon the keys, one of said actions being positioned above the keys for acting upon the latter forward of their fulcrums, the other action being positioned above the keys and comprising means for engaging the keys for lifting them up rearward of their fulcrums; a tracker-board having separate groups of ducts occupying respectively different portions of the length of the tracker-board, and a controller sheet coöperating with such tracker-board having perforations for coöperating with the separate groups of ducts, correspondingly positioned at different portions of the width of the sheet.

In testimony whereof, I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 25th day of March, A. D. 1909.

MELVILLE CLARK.

In the presence of—

M. GERTRUDE ADY,
JULIA S. ABBOTT.