

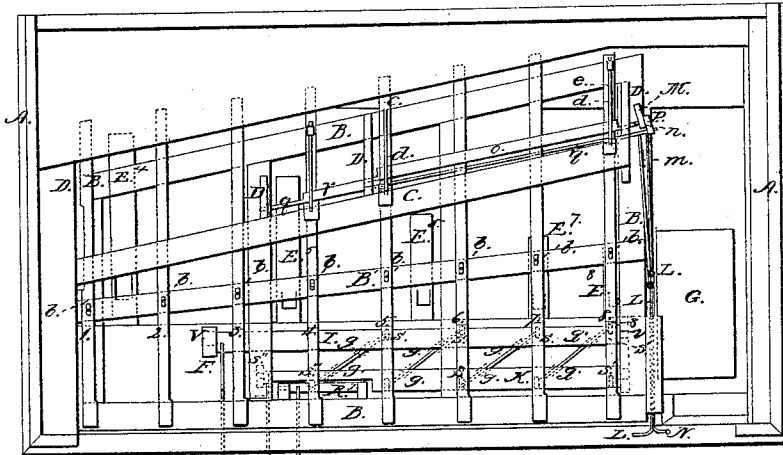
J. M^cDonald,

Piano Attachment,

N^o 9,304,

Patented Oct. 5, 1852.

Fig. 1.



H. J. R.

Fig. 2.

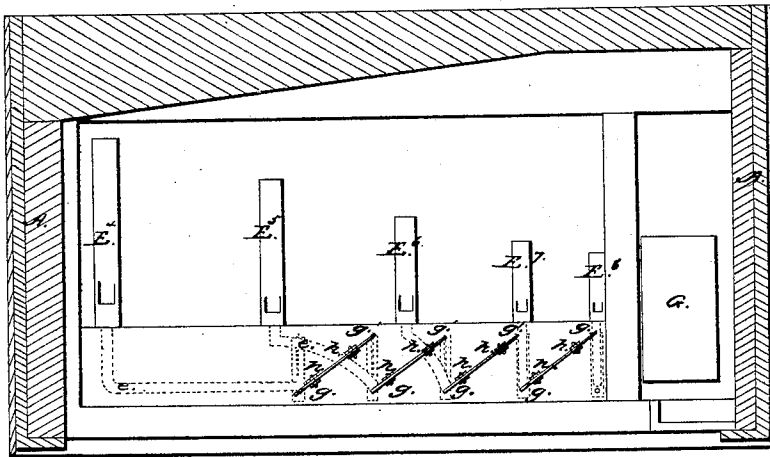
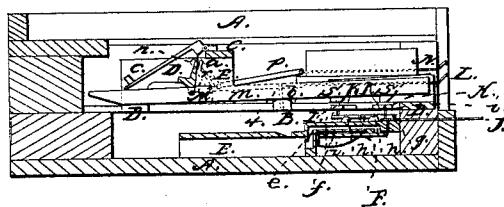


Fig. 3.



UNITED STATES PATENT OFFICE.

JAS. McDONALD AND JNO. McDONALD, OF NEW YORK, N. Y.

PIANOFORTE.

Specification of Letters Patent No. 9,304, dated October 5, 1852.

To all whom it may concern:

Be it known that we, JAMES McDONALD and JOHN McDONALD, of the city, county, and State of New York, have invented certain new and useful improvements in the mode of effecting the combination of the flute-pipes or pipes of an organ or of wind-pipes of similar construction to organ-pipes with a horizontal pianoforte, (the said pipes and their appurtenances we denominate "the Euterpean attachment";) and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of the interior of a pianoforte in which the Euterpean attachment is contained the strings and certain other parts of the pianoforte being omitted for the purpose of showing more distinctly those parts which constitute the invention. Fig. 2 is a horizontal section taken through the case below the playing parts of the pianoforte. Fig. 3 is a transverse section of the whole of the parts shown in Fig. 7.

Similar letters of reference indicate corresponding parts in each of the several figures.

A, A, represents the case of the instrument.

B, B, B, is a frame resting on supports at about halfway between the top and bottom of the case. On the bar or rail B of the said frame all the pianoforte keys, 1, 2, 3, 4, 5, 6, 7, and 8, are hung working on pins *b*, *b*. One key only of each octave is shown.

C is a rail which rests on suitable supports, D, D, placed on the frame, B, B, B. It carries the striking hammers, *c*, *c*, *c*, only three of which are represented. They are operated upon by jacks, *d*, *d*, *d*, on the keys in the usual manner.

E⁴, E⁵, E⁶, E⁷, E⁸, are a set of flute pipes arranged horizontally at the bottom of the case A, A, below and entirely clear of the playing parts of the pianoforte, one pipe only of each octave being represented. They correspond in pitch with the pianoforte keys represented by the same numbers as they themselves bear.

F (in front of the bottom of the case) is the windchest, from which there are passages *e*, *e*, shown in dotted lines in Fig. 2, and one shown in section in Fig. 3, through which air is admitted to the pipes when the valves, one of which is indicated by *f*, are opened.

G, represents the bellows from which there is a pipe or passage leading to the windchest. The bellows is operated by a pedal upon which the player treads with his foot.

At the top of the windchest there is arranged a series of small levers in pairs each pair being indicated by *g*, *g*¹. Each of these levers is hung on a pin in a bearing, *h*, and the back end of the front lever *g*. Each pair overhangs the front end of the corresponding back lever, *g*¹, so that when the back end of the back lever is pressed down it produces the same effect on the corresponding front lever as if its own front end were pressed down. These pairs of levers correspond in number with the flute pipes except that the highest pipe E⁸, does not require them, its valve being operated upon without by a vertical pin. The levers are so arranged that the back end of each back lever *g*¹, is immediately under a vertical sliding pin *i*, which is suspended under the pianoforte keys by the rail I, and the front end of the corresponding front lever, *g*, is under a vertical sliding pin *i*¹, which is suspended under the pianoforte keys by the rail K, and by the rail R¹, see Fig. 1. Each piano-key from, 4, upward has two blocks S, S¹, under it near the front end, see Fig. 3, except the one operating on the lower octave of the organ pipes, which only requires the block S¹. The front end of each lever *g*, rests upon a vertical sliding pin *k*, which passes through the top of the windchest and operates on one of the valves *e*, and each block S, S¹, is over the sliding pin *i*¹, that is over the lever *g*, being pressed down by the piano key operates on the valve of the pipe whose pitch corresponds with that of the pianoforte string upon which it operates, so that the block S¹, plays the flute in the same pitch as the piano, the block S, playing the flute an octave lower than the piano.

H, is a rod which passes through the front

plinth of the instrument and connects with the rail, I, which is suspended at each end by a pin through the blocks V, that rests upon the windchest F. This rail has a number of holes bored in it to correspond with the same number of levers in which the vertical pins i , are placed (which are seen in Fig. 3). This rod H, acts as a stop by pulling it outward causes the rail I, to be turned back bringing the vertical sliding pin i , directly under the block S which causes the flute to play an octave lower in pitch than the piano by pressing upon the piano keys, and by pushing it inward causes the rail I, to be turned forward which carries the pin i , from beneath the block S, thereby detaching the flute from the piano.

J is another rod which passes through the front plinth of the instrument and connects with the rail K, which is suspended in the same manner as rail I having holes bored in it to correspond with the number of keys from key 5 to key 8 into which the vertical pins i^1 , are placed, which is also seen in Fig. 3. This rod J, also acts as a stop. By pulling it outward causes the rail K, to turn backward, bringing the vertical pins i^1 , under the block S^1 , which causes the flute to play from key 5 to key 8 the same pitch as the piano, by pressing on the piano key. By pushing it inward causes the rail K, to turn forward, which carries the pin i^1 , from beneath the block S^1 , thereby detaching the flute from the piano.

R is another rod which passes through the front plinth of the instrument and connects with the rail R^1 , which is suspended in the same manner as the rail, I, having holes bored in to correspond with the numbers of levers from key 4 to key 5 in which a corresponding number of vertical pins i^1 , are placed which is also seen in Fig. 3. This rod R also acts as a stop. By pulling it outward causes the rail R^1 , to turn backward bringing the vertical pin i^1 , under the block S^1 , causing the flute to play from key 4 to key 5 the same pitch as the piano. By pushing it inward causes the rail R^1 to turn forward thereby detaching the flute the key 4 to key 5.

L is a rod which connects by means of a link m , to a crank or lever M, on a small spindle n , which is hung in bearings in front of the hammer jacks d, d . This spindle carries a tab o , which from the pianoforte key 5, to the key 8, which includes all the notes from pitch C in music, to the upper notes. The rod L acts as a stop and when pushed inward throws up the tab o , which throws all the hammer jacks behind it out of connection and uncouples the pianoforte from pitch C to the upper note.

N is a rod which connects by means of a link p , to a crank or lever P on a small spindle q , but carries a tab, r , similar to o ,

but shorter, extending from the pianoforte key 4, to key 5, including all the notes in music from middle C to B. The rod N forms a stop and by pushing it inward the tab r , is thrown up against the hammer jacks which are behind it and they are thrown out of connection, uncoupling the piano from middle C to B. The hammer jacks all resume their positions ready for operation upon the rods L and N being drawn back and the tabs being withdrawn from them.

Having described the mechanical construction of the various parts we will proceed to describe their operations and the changes which the character of the instrument is made to assume by the shifting of the stops.

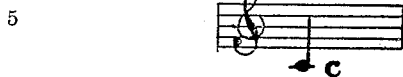
The piano and the flute may be made to play in the same pitch by pulling outward the stops L, and N, so as to allow the hammer jacks to operate, and pulling out the stops J and R to allow the operation of the blocks S^1 , upon the vertical pins i^1 , and pushing inward the stop H, to prevent the operation of the blocks S, upon the vertical pins i . The flute may be made to play with the piano an octave lower than the piano by pushing in the stops J, and R, to uncouple or prevent the operation of the blocks S^1 upon the vertical pins i^1 , and pulling out the stop H, to allow the blocks S, to operate upon the vertical pins i , the hammer jacks being all in operation. The flute may be made to play in the same pitch as the piano and an octave lower at the same time by pulling out the stops H, J, and R, so as to allow the blocks S and S^1 to operate on the vertical pins i and i^1 . The hammer jacks are supposed to be in operation in Fig. 3, the tabs being turned downward, but in Fig. 1 they are supposed to be detached the tab being thrown back. The flute may be entirely detached from the piano and the piano made to play alone by pushing in the stops H, J, and R, by which the vertical pins i , and i^1 , are not operated upon. The piano may be detached and the flute played alone by pulling out the J, and R, and pushing in the stops L, and N, and by pulling out the stop H, has the same effect a concert and octave flutes together or in other words make two organ stops with one stop of pipes.

The piano and flute may be as two separate instruments the melody upon the flute and the accompaniment on the piano by detaching the piano from



to the upper C which has been before described is effected by pushing in the stops

L, J, and R, and by pulling out the stop H, causes the flute to play from



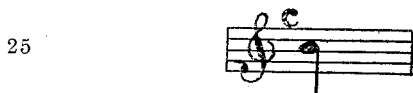
to



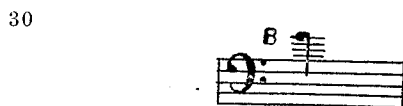
15 By this arrangement the accompaniment does not interfere with the flute, as the flute note



is played on the piano key 5 or



which allows the piano bass to extend to



35 The piano and flute may be played in this manner, the accompaniment upon the piano and the melody upon a concert and octave flutes together, by pulling out the stop J, in addition to the above.

40 The pipes and wind chest arranged as

shown occupy no material increase in the depth of the case. The bellows also is contained inside of the case under the sounding board. The air as it escapes from the pipes acts upon the sounding board of the piano and improves the tone of the pipes. Also the tone of the pipes acts upon the strings and improves the tone of the piano.

We have a piano finished with the above attachment in our wareroom and it gives 50 satisfaction to all who have heard it.

What we claim as our invention and desire to secure by Letters Patent is—

1. The combination of the wind chest F and flute or other similar wind pipes E⁵ E⁶ E⁷ E⁸ with the horizontal pianoforte action in the manner substantially as set forth to wit: the pipes being placed horizontally at the bottom of the case below the pianoforte action and the wind chest placed below the front ends of the pianoforte keys in such a manner as to allow the valves to be operated directly by the said keys.

2. The manner of opening the valves of the flute or wind pipes to play an octave 65 lower than the piano, either at the same time that they are being played at the same pitch as the piano or not, by means of the series of levers *g*, *g*¹, *g*, *g*¹, arranged and operated upon by the blocks S, S¹ upon the 70 vertical pins, *i*, *i*¹, *i*, *i*¹ under the piano key.

In testimony whereof we have hereunto signed our names before two subscribing witnesses this 28th day June, 1852.

JAS. McDONALD.
JOHN McDONALD.

Witnesses:

A. D. MUNN,
S. H. WALES.