

E. Zachariae,

Piano Pedals.

N^o 80,021

Patented Feb. 2 1869.

Fig: 1.

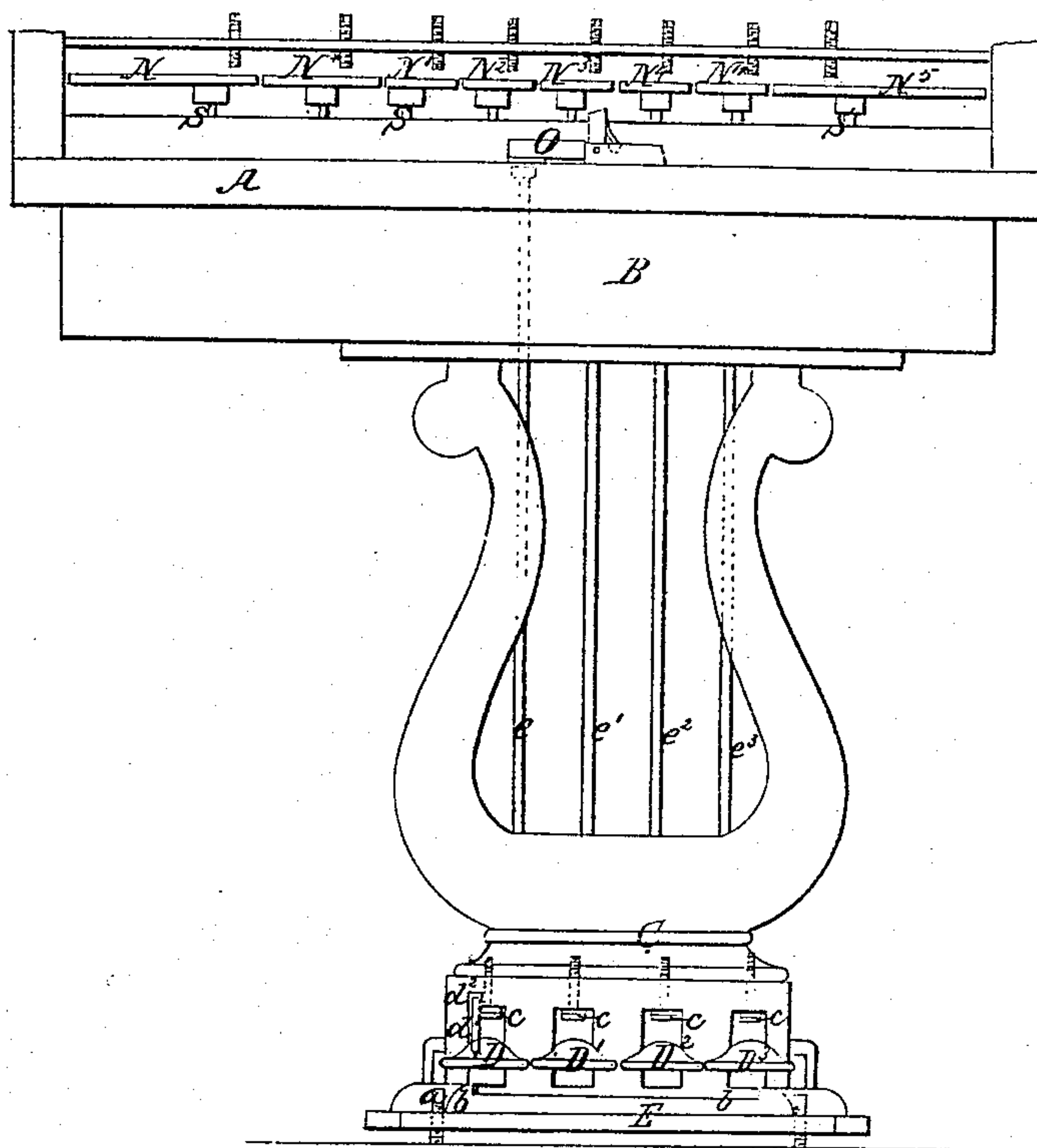
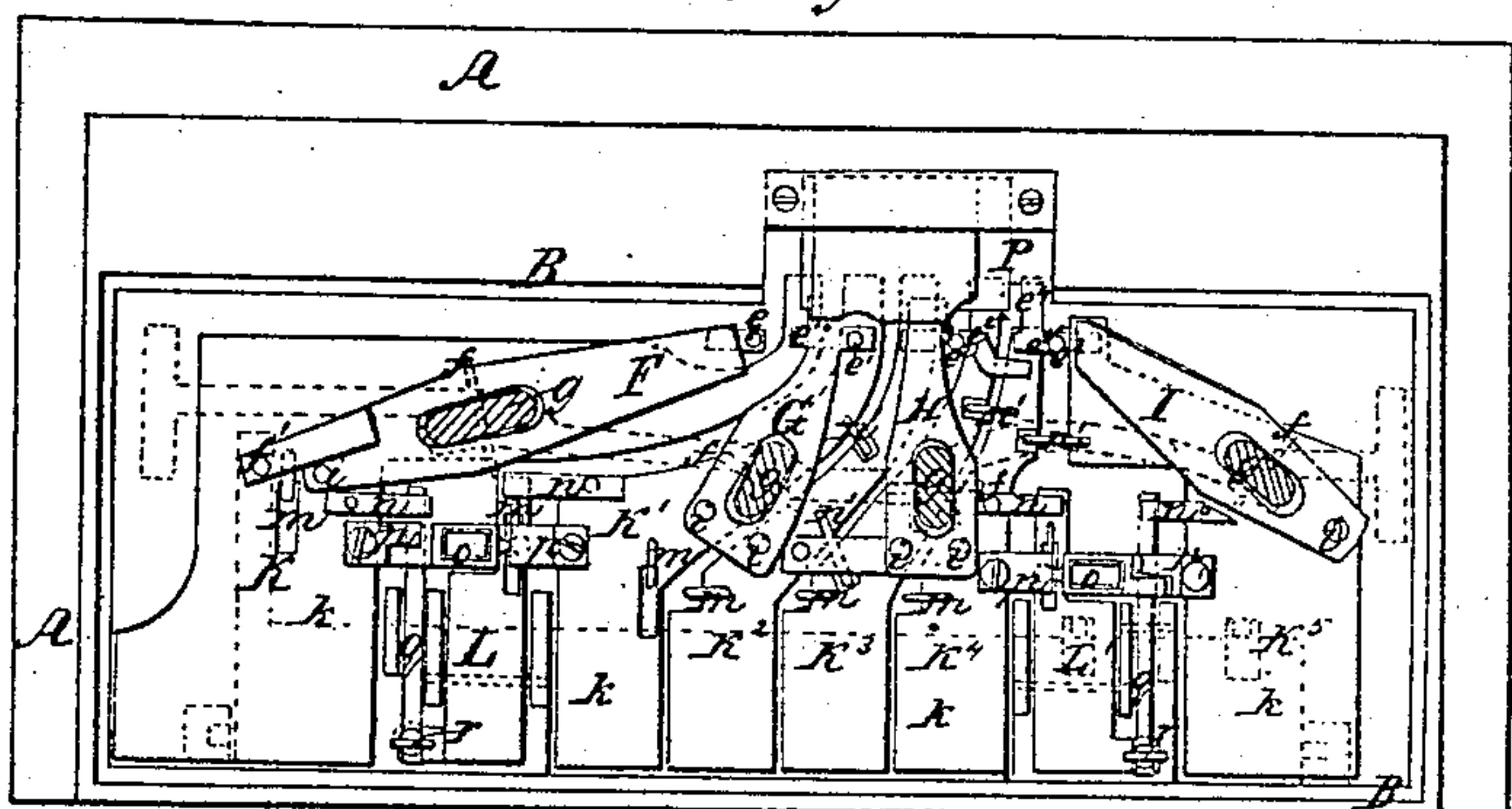


Fig: 2.



Witnesses
A. Keller
A. Kinnick

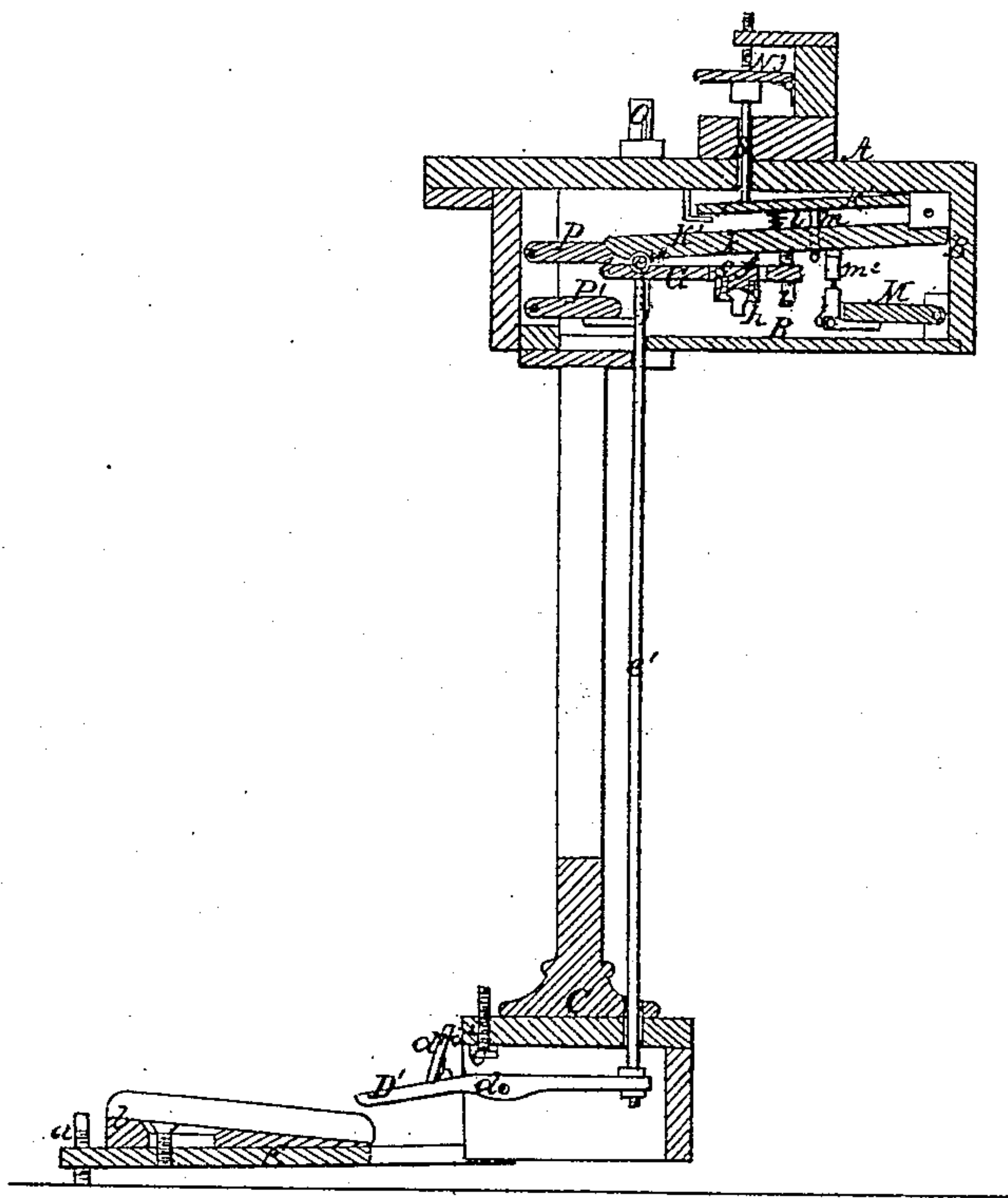
Inventor
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N^o 86621.

Patented Feb. 2. 1869.

Fig. 3.



Witnesses;
a Seller
a Kinner.

Inventor;
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United States Patent Office.

EDWARD ZACHARIAE, OF LOEHNBERG, NEAR WEILBURG, PRUSSIA.

Letters Patent No. 86,621, dated February 2, 1869.

IMPROVEMENT IN PEDALS FOR PIANOS, &c.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EDWARD ZACHARIAE, of Loehenberg, near Weilburg, Nassau, Kingdom of Prussia, have invented a new and useful Improvement in Pedals for Piano-Fortes, &c.; and I 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 front view of my invention, showing the application of it to a piano.

Figure 2 is an inverted plan and partial section of the principal mechanism contained in a box on the under side of the piano-chest.

Figure 3 is a vertical transverse section taken on the line *x x* in figs. 1 and 2.

Similar letters of reference indicate corresponding parts throughout all the figures.

The object of my invention is to construct pedals for pianos, whereby the performer is enabled to operate the dampers with more freedom and variation than heretofore, and to greatly increase the effect of the performance; and, to this end,

The invention, firstly, consists in connecting the pedals with a mechanism enclosed in a box on the under side of the piano-chest, whereby the said pedals can be operated by the feet of the performer in two directions, that is, both upwardly and downwardly.

The invention, secondly, consists in a peculiar arrangement of levers, whereby the dampers may be lifted from the strings, in sections, at the will of the performer, which could not be accomplished with the pedals as generally constructed.

To enable others skilled in the art to make and use the same, I will proceed to describe my invention, with reference to the drawings.

A is the bottom of a piano, to which a box, B, is attached, containing the principal mechanism.

To this box a proper frame, C, extending downward, is secured, for the reception of the pedals D D¹ D² D³. These pedals are constructed similar to those heretofore used.

For the better operation of them, an adjustable foot-board, E, is also attached to the frame C, which may be adjusted by means of set-screws, *a*, and an inclined board, *b*, so as to suit any performer.

c are stops, which serve to prevent the pedals from being raised too high.

The pedals D D¹ D² D³ are operated by the performer's feet in two directions, as will be shown.

When it is desired to raise them, it is done by resting the foot on the adjustable board E, and working the pedals on the under side by means of the fore part of the foot. Each one of the pedals may also be raised to one or more positions, as will be explained more particularly hereafter.

The depression of the pedals is accomplished in the usual manner, with a varied result in the operation of the dampers.

The pedals, having their fulcrum at *d*, are provided with rods, *e e¹ e² e³*, rising upward into the box B, and operating the levers F G H I, when the pedals are raised, and the levers, K, K¹, K², K³, K⁴, and K⁵, when the pedals are depressed.

The result of the action of each pedal being distinct, I will show their action separately, and as they come in succession, after having described the principal portion of the mechanism.

The levers F G H I are situated inside of the box B, and, being levers of the first order, have their fulcrum at *f*, in the wooden lugs *g*, said lugs being firmly secured to an iron bar, *h*, which stretches nearly the whole length of the box B, and is shown in blue lines in fig. 2.

One end of these levers is operated by the pedal-rods, while the other is provided with adjustable pins, *i*, which act in turn on the combination-levers K K¹ K² K³ K⁴ K⁵.

These levers consist of two hinged boards, *k k'*, which are kept apart by the springs *l*.

The boards *k'* are provided with stops, *m*, which extend through slots in the boards *k*, and serve to hold the boards in a proper position.

Next to the lever K is the lever L, which is not operated directly by the pedal, but receives motion from the levers K and K¹ by means of projecting pieces, *n*, and by the action of a jack, *o*, which is held in suspension by brackets *p*, secured respectively to the levers K K¹.

q is a lever, turning on an independent fulcrum, and is acted upon by the projecting piece *n*, fast on lever K, thereby carrying the lever L with it by means of the adjustable connecting-pin *r*.

L' is a lever, of similar construction as L, and is also operated in the same manner, by the levers K⁴ K⁵.

Right below the above-described levers is a rocking-board, M, which is acted upon by the lever F and arm *m'*, and which transmits motion to the levers L' and K⁵, by means of jacks, *m''*, as shown in fig. 3, and in blue lines in fig. 2.

N, N¹, N², N³, N⁴, N⁵, N^{*}, and N^{1*}, are levers, situated in the inside of the piano-chest, in close proximity to and on level with each other, for the purpose of lifting the corresponding dampers in the usual manner, by means of jacks.

O is an angular rocking-lever, which is operated by the pedal D, for the purpose of shifting the key-board.

I will now proceed to show the operation of the pedals, and the result derived therefrom.

The pedal D may assume three positions, when raised.

When it reaches the first position, which is attained by a slight pressure of the foot on the under side of the pedal, one end of the lever F has been depressed, while the other end, which is provided with the pin *i*, has been raised, thereby lifting the combination-levers K and L until the upper boards *k'* strike the bottom of the piano-chest and lift the levers N N^{*}, by means of

the upright lifting-rods s , which causes the dampers that are in connection with these levers to be lifted off the strings.

An increased pressure of the foot on the pedal F will overcome the action of the springs l , which tend to keep the boards k k' apart, and allow the lever F , by means of the tail-piece f' , to lift the rocking-board M , which again lifts the levers K^2 and L' , by means of the jacks m^2 , and also the levers N^2 N^{1*} , which finally lift the dampers in connection with them.

The pedal D having now gained the second position, and being checked from rising further by the action of the springs l of the levers K^2 and L' , may yet be raised still further, by applying a still greater pressure, whereby the boards k of the levers K^2 and L' are lifted still further, and carry with them the levers K^4 and K^3 , by means of the bars n' , which latter levers lift the levers N^4 and N^3 , thereby relieving another section of strings of their respective dampers.

Thus it will be understood how the performer may operate the dampers of certain sections of strings, independently or together, to increase the effect of the play.

In depressing the pedal D , the angular lever O is operated, whereby the shifting of the key-board is effected.

It is sometimes desirable to keep the pedal D in its depressed position for some, during which the performer may want to operate other pedals with the same foot. To enable him to effect this, a spring-pawl, d' , is secured to the upper side of the pedal, which pawl may be forced into a recess, d^2 , in the frame C , by a slight pressure of the performer's foot, whereby the pedal is kept in its depressed position.

The pedal D may assume three positions when raised, and three positions when depressed, producing a different result by its action on the levers.

The upright rod e^1 is provided with a cross-bar, e^{1*} , at its upper end, so that it will operate the lever G , when the pedal D^1 is raised, and the levers K and K^1 , when the pedal is depressed.

It will be seen from the drawings that the operation is similar to the one described above, yet effecting a different combination of certain sections of dampers.

The pedal D^2 may assume three positions in moving upward, and two positions when depressed, producing also a different combination of certain sections of dampers, as may be seen from the drawings, its rod e^2 being also provided, at its upper end, with a cross-bar, e^{2*} , so that it will operate the lever H , when the pedal D^2 is raised, and the levers K^2 , K^3 , and K^4 , when depressed.

The pedal D^3 has three positions in its upward motion, and but one position when depressed.

The upright rod e^3 is also provided with a cross-bar,

e^{3*} , at its upper end, whereby the lever I is operated when the pedal is raised. But if the pedal D^3 is depressed, it operates the levers K^1 and K^5 directly, and the remaining levers K K^1 K^2 K^3 , L and L' , through the interposition of the rocking-board P , by means of a short bar, e^1 , extending from the cross-bar e^{3*} , and by the jacks o and the projecting pieces n . Thus it will be seen that the pedal D^3 , when depressed, works like an ordinary pedal, thereby giving the performer who is not yet familiar with my improved pedal-arrangement, a chance to perform as usual.

A still greater variety of motions, whereby the dampers are lifted from the strings in series, may be obtained by enabling the performer to work two pedals with one foot, which is effected by arranging the pedals as shown in fig. 1.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of mechanism, substantially as shown and described, with the pedal D , whereby either one or a series of dampers may be operated for the purpose herein set forth.

2. The construction of the pedals D D^1 D^2 D^3 , in such manner as that said pedals may be operated both in an upward and downward direction, to control the action of the dampers, substantially as herein shown and described.

3. The combination of the pedals with a series of levers, whereby one or more stops are obtained in both the upward and downward motions of the pedals, substantially as and for the purpose herein described.

4. The peculiar form and arrangement of the pedals, whereby the performer is enabled to operate two pedals with one foot, without changing the position of the latter.

5. The adjustable foot-board E , applied to the pedals of a piano, substantially as herein shown and described.

6. The combination of the pawl with the pedal D , for holding the latter in position, substantially as shown and described.

7. The construction of the combination-levers K K^1 K^2 K^3 K^4 K^5 , and L and L' , substantially as herein shown and described.

8. The combination-levers K K^1 K^2 K^3 K^4 K^5 , L and L' , in connection with the levers N N^1 N^2 N^3 N^4 N^5 N^6 , the levers F G H I , and the interposing rocking-boards M and P , all substantially as and for the purpose herein set forth.

In testimony whereof, I hereunto set my hand, this 24th day of September, 1868.

EDWARD ZACHARIAE.

Witnesses:

F. WIRTH,
P. BARTHEL.