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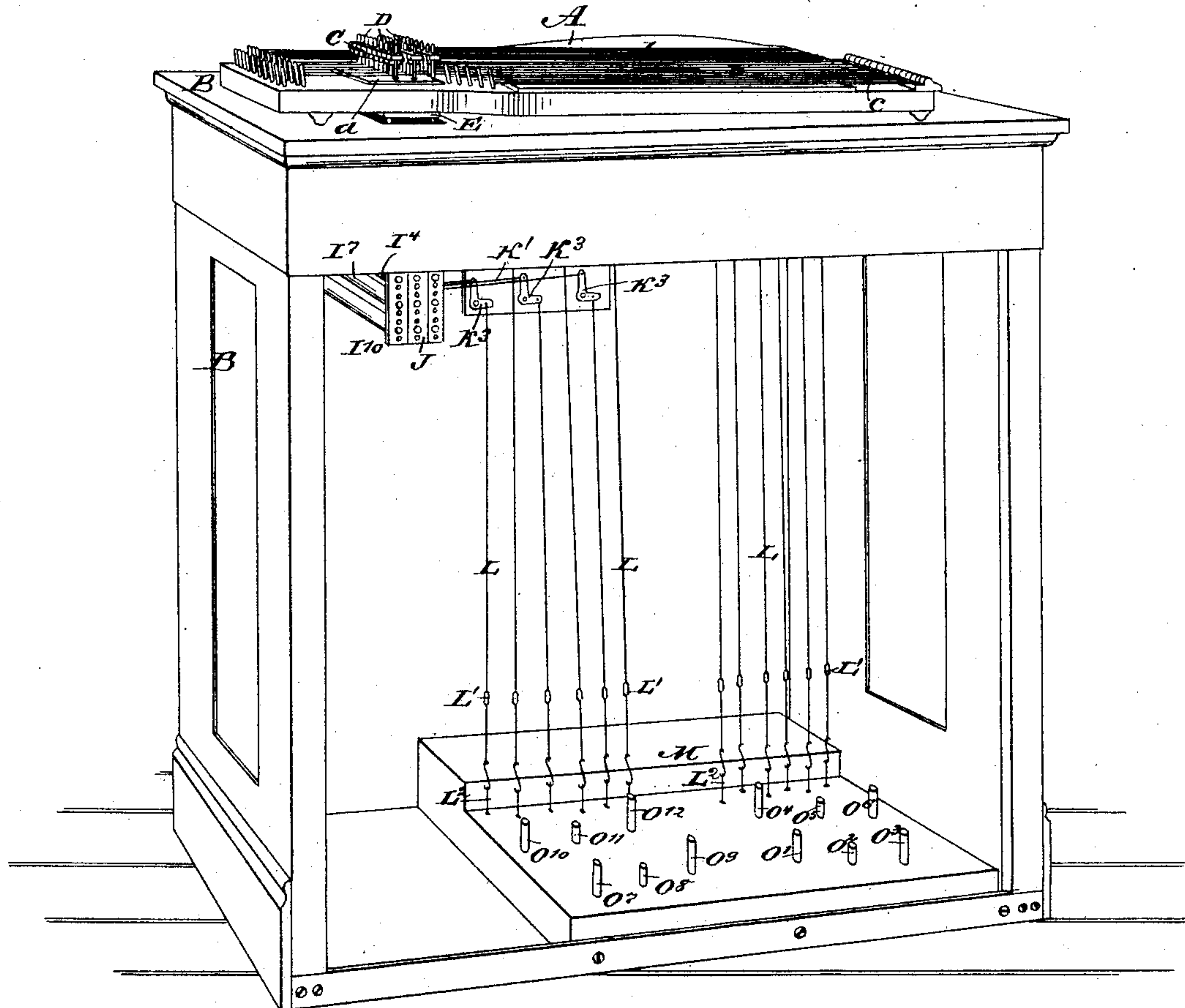
F. WIGAND.

PEDAL ZITHER.

No. 370,582.

Patented Sept. 27, 1887.

Fig. 1.



WITNESSES :

WITNESSES:
Arthur Berger
L. Sedgwick

INVENTOR:

BY *F. L. Rigand*
Munn & Co
ATTORNEYS.

(No Model.)

5 Sheets—Sheet 2.

F. WIGAND.

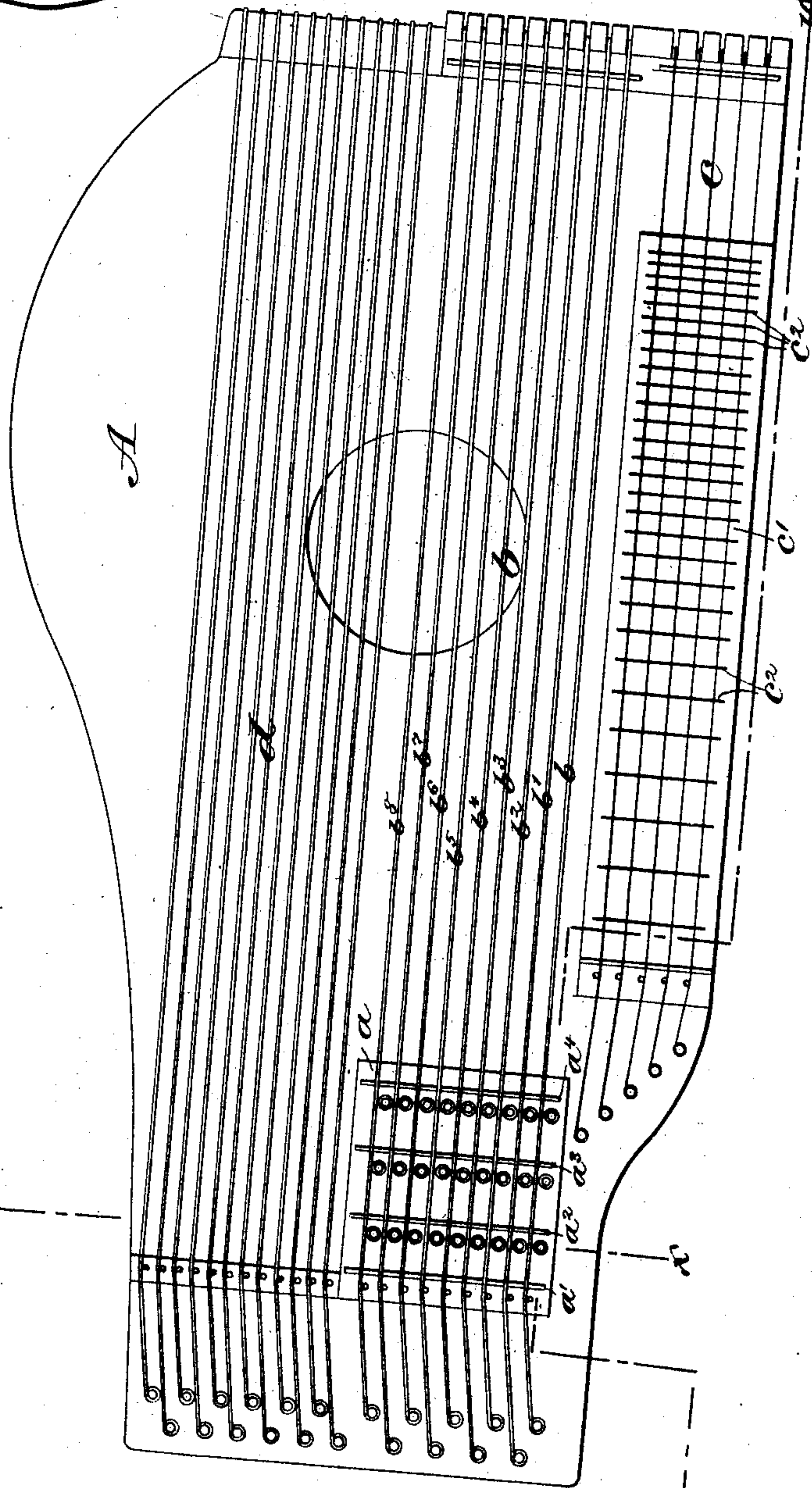
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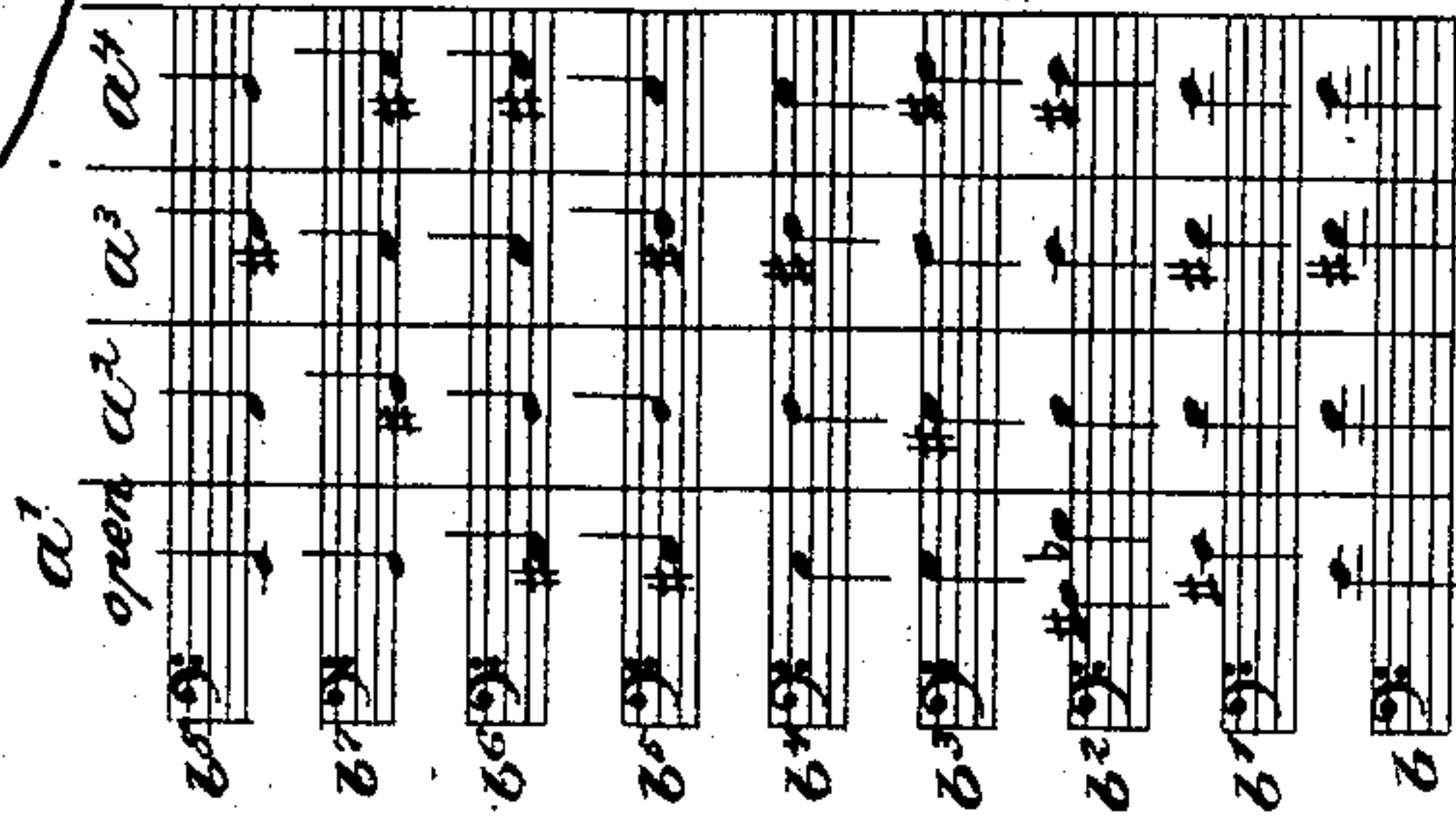
Fig. 2.

B



WITNESSES:

Wm. B. Dyer
C. Sedgwick



INVENTOR:

F. Wigand
Munn & Co

BY

ATTORNEYS.

(No Model.)

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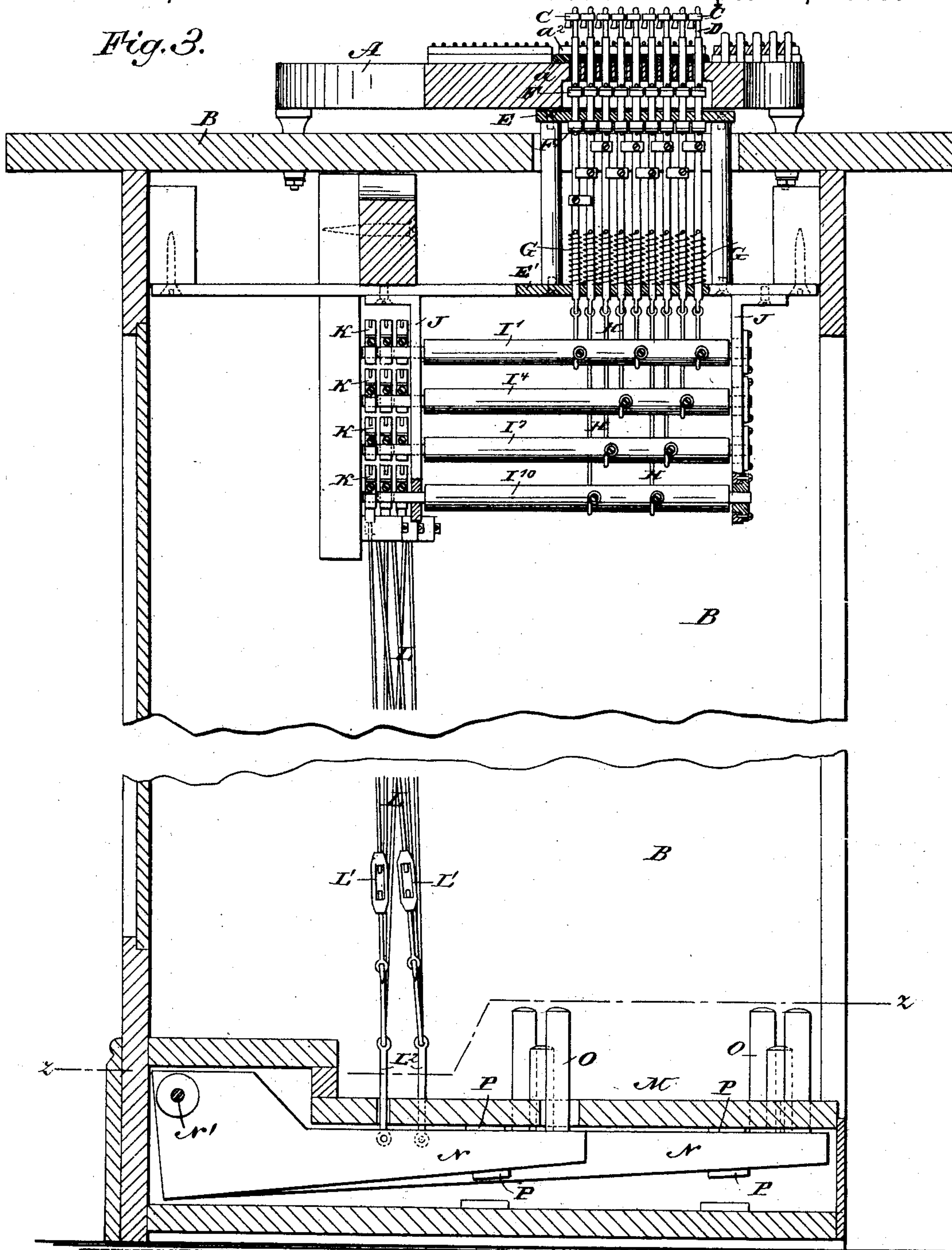
F. WIGAND.

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Patented Sept. 27, 1887.

Fig. 3.



WITNESSES:

Otto Berger
C. Sedgwick

INVENTOR:

F. Wigand
BY *Munn & Co.*
ATTORNEYS.

(No Model.)

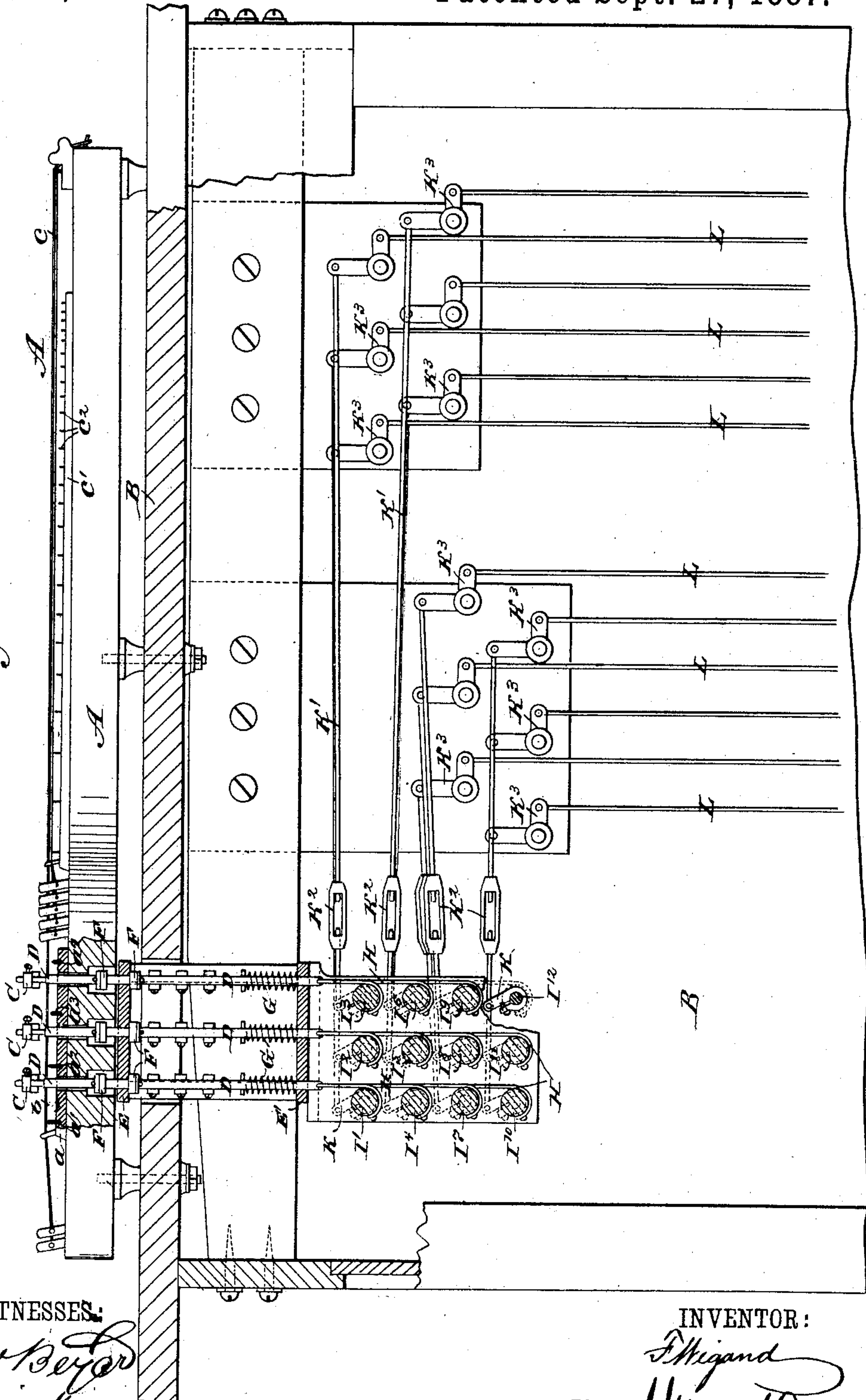
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F. WIGAND.
PEDAL ZITHER.

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Fig. 4.



WITNESSES:

Photo Meyer
C. Sedgwick

INVENTOR:

F. Wigand

BY

Munn & Co.

ATTORNEYS.

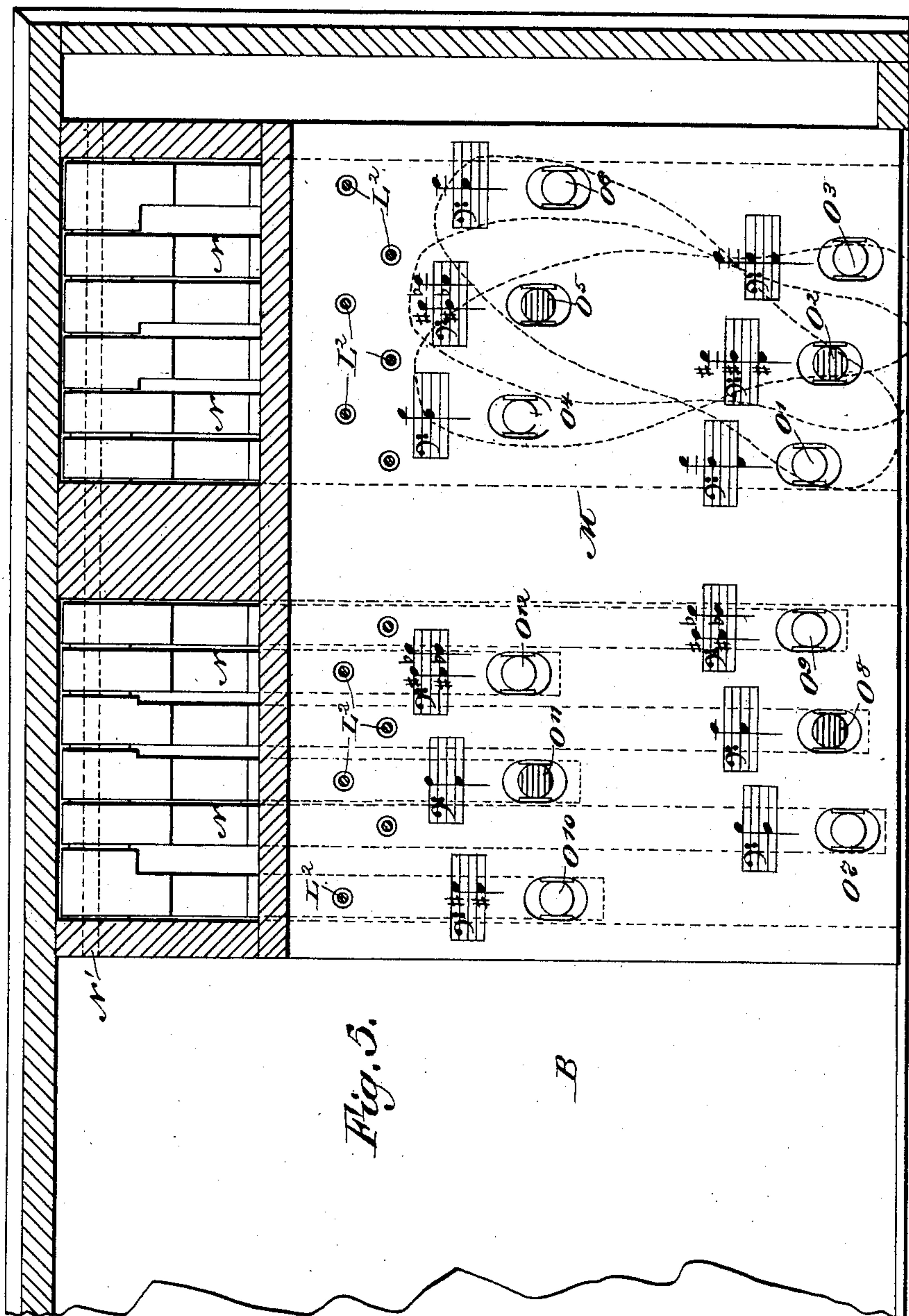
(No Model.)

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F. WIGAND.
PEDAL ZITHER.

No. 370,582.

Patented Sept. 27, 1887.



WITNESSES:

Wm. Beyer
C. Sedgwick

INVENTOR:

F. Wigand
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

FERDINAND WIGAND, OF BROOKLYN, NEW YORK.

PEDAL-ZITHER.

SPECIFICATION forming part of Letters Patent No. 370,582, dated September 27, 1887.

Application filed March 22, 1886. Serial No. 196,105 (No model.)

To all whom it may concern:

Be it known that I, FERDINAND WIGAND, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Pedal-Zither, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved zither on which the performer is enabled to produce harmonious sounds in chords of all characters by the use of pedals.

The invention consists of a zither provided with an additional key-board having four or more frets for the pedal-strings, and of buttons which are covered with felt, one of said buttons being placed above each pedal-string near each fret and attached to a rod connected with the pedals operated upon by the feet of the performer.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view showing my improved pedal-zither. Fig. 2 is a plan view of the same. Fig. 3 is a vertical cross-section of the same on line $x x$, Fig. 2. Fig. 4 is a longitudinal vertical section of the same on the line $y y$, Fig. 2. Fig. 5 is a sectional plan view of the pedal-box on the line $z z$, Fig. 3.

Heretofore the zither comprised on its face the finger-strings, usually five in number, and the accompanying strings, twenty or more in number, of which the former were operated upon with a metal ring attached to the thumb of the right hand of the performer, while the latter were played upon with the four remaining fingers of the same hand. The finger-strings were supported above a key-board provided with a number of frets and operated, according to the value of the tone to be produced, by the fingers of the left hand.

In my improved zither A, which is mounted on a suitable stand, B, the above-described arrangement on the face of the instrument is the same, with the addition of a key-board, a , provided with four or more frets, a' , a^2 , a^3 , and a^4 , directly under the first nine accompanying or

pedal strings, b , b' , b^2 , b^3 , b^4 , b^5 , b^6 , b^7 , and b^8 . The finger-strings c are arranged in the usual manner over a key-board, c' , provided with the regular number of frets c^2 , and the remaining stationary or bass strings d are an additional contra octave to extend the bass to the lower-toned passages of music, and are the same as in the common zither now in use. I prefer to have these strings d independent, so as to be enabled to play a certain harmony when the bass notes are not to be extended.

Over each pedal-string, and near each of the three frets a^2 , a^3 , and a^4 , is placed a brass button, C C, covered on its lower edge with felt, and attached by means of a set-screw to a vertical rod, D, in such a manner that the felt on the button C does not touch the respective pedal-string $b b'$, &c., when in its normal position; but when the button is pressed downward by the means hereinafter described the felt of the button C will come in contact with the corresponding pedal-string, b , and press the same down upon the nearest fret a^2 , a^3 , or a^4 on the key-board a , thus changing the tone of the respective pedal-string.

It will be seen that when the buttons C are in their normal positions the pedal-strings have the full value of their respective tones; but when one of the buttons C near the fret a^2 is pressed down upon its string the tone of the latter is raised the value of a half-note, and when one of the buttons C near the fret a^3 is pressed down upon its pedal-string the value of the tone of said pedal-string is raised one full note, and by pressing down a button C near the last fret, a^4 , the value of the tone of its respective pedal-string is raised a full note and a half-note, so that the performer is enabled to produce harmonious tones in chords of all characters by pressing the respective buttons upon the pedal-strings singly or in combinations corresponding to the chord to be produced. The chromatic scale shown in Fig. 2 gives the value of each pedal-string for each of the frets a' , a^2 , a^3 , a^4 . This pressing down of the buttons on the pedal-strings in different combinations is accomplished by the device now to be described. The vertical rods D, to which the buttons C are attached, pass through apertures in the key-board a , and through apertures in the upper shell of the zither A without touching the said key-board or the shell.

The rods D are guided by being passed through apertures in the cross-pieces E and E', attached to the stand B.

Above and below the cross-pieces E are stops 5 F, one of which is attached to each rod D to limit the up-and-down movements of the rods D. A spring, G, coiled around each rod D, rests with its lower end on the upper edge of the cross-piece E', while the upper end of each 10 spring rests against a pin passing through the corresponding rod D. The lower end of each rod D is connected with a cord, H, which is wound upon and secured at its end to a roller, I, mounted in standards J, attached to 15 the under side of the cross-piece E'. As it requires twelve of these rollers I to accommodate all the rods D, of which there are twenty-seven, the arrangement is such that three rollers I are placed in a horizontal 20 plane corresponding to the cross-rows of the rods D, and four rollers I are placed in a vertical line, one below the other, as shown in Fig. 4, corresponding to the frets a^2 , a^3 , and a^4 . The cords H, attached to rods D, 25 carrying the buttons C near the fret a' , and corresponding to the pedal-strings b , b^4 , and b^8 , are wound upon the roller I. The cords H for the buttons C near the fret a^3 of the same strings are wound upon the roller I², and the 30 cords H for the buttons C near the fret a^4 of the above-mentioned pedal-strings are wound upon the roller I³ in a similar manner. The cords H for the buttons C corresponding with the pedal-strings b' and b^5 are wound upon the rollers 35 I⁴, I⁵, and I⁶, corresponding to the frets a^2 , a^3 , and a^4 . The cords H for the buttons C corresponding with the pedal-strings b^2 and b^6 are wound upon the rollers I⁷, I⁸, and I⁹, corresponding to the frets a^2 , a^3 , and a^4 , and the 40 corresponding cords H for the buttons C corresponding with the pedal-strings b^3 and b^7 are wound upon the rollers I¹⁰, I¹¹, and I¹², corresponding with the frets a^2 , a^3 , and a^4 of the key-board a .

Each of the rollers I is provided with a 45 crank-arm, K, which is connected by a horizontal rod, K', provided with an adjustable nut, K², with the bell-crank lever K³, pivoted to a suitable bracket attached to the stand B. 50 Each bell-crank lever K³ is connected by a vertical rod, L, provided with an adjustable nut, L', with a short link, L², pivotally attached to its respective pedal N, pivoted to a rod, N', secured to the pedal-box M, in the 55 lower part of the stand B.

Each of the pedals N is provided on its outer end with a foot-piece, O, projecting upward, and with felt stops P, attached to the upper and lower sides of each pedal, so as to deaden 60 the noise made by the pedals in their up-and-down movement. The foot-pieces O', O², O³, O⁴, O⁵, and O⁶ are operated by the right foot, and the foot-pieces O⁷, O⁸, O⁹, O¹⁰, O¹¹, and O¹² are operated upon by the left foot of the performer, and, as the foot-pieces O² and O⁵ and 65 the foot-pieces O⁸ and O¹¹ are shorter than the foot-pieces surrounding them, the performer

is enabled to reach two diagonal foot-pieces with one foot—as, for instance, O' and O⁶, or O⁹ and O¹⁰.

The arrangement of the foot-pieces O of the 70 treadles N in connection with the rollers I, operating the buttons C on the rods D, is as follows: When the foot-piece O' is pressed down, it turns the roller I' by means of the 75 connections L² L', the bell-crank lever K³, the rod K', and the crank-arm K, and the roller I' pulls the buttons C downward upon the pedal-strings b , b^4 , and b^8 , near the fret a^2 of the key-board a , so that the value of the tone 80 of the said pedal-strings is raised one-half tone. As soon as pressure is removed from one of the pedals O, the corresponding rod D is pressed upward by its spring G, thus lifting the corresponding button C to its normal po- 85 sition. The different rollers I are turned in a similar manner by pressing on the corresponding foot-pieces N, so that when, for instance, the foot-piece O⁵ is pressed down with the right foot it turns the roller I⁵ and thereby 90 presses the respective buttons C on the pedal-strings b' and b^5 near the fret a^3 , whereby the tone of the pedal-strings b' and b^5 is raised one full note.

Two foot-pieces may be pressed down at the 95 same time with one foot, so that when, for instance, the foot-pieces O⁹ and O¹⁰ are pressed down by the left foot the rollers I⁹ and I¹⁰ are turned, thus pressing the respective buttons C upon the pedal-strings b^2 and b^6 near the fret 100 a^4 , and the pedal-strings b^3 and b^7 near the fret a^2 . Thus it will be seen that one or two foot-pieces O can be pressed down by either the right or the left foot, and three or four foot-pieces can be pressed down by the use of both 105 feet. This enables the performer to produce any harmonious tone on the pedal-strings, as before described.

The connection between the vertical rods D, carrying the buttons C, and the pedals N, 110 provided with the foot-pieces O, may be varied; but I prefer the construction shown and described.

Having thus fully described my invention, I claim as new and desire to secure by Letters 115 Patent—

1. The combination, with a pedal-zither, of a number of the bass-strings provided with a key-board having frets, substantially as herein shown and described,

2. In a pedal-zither, the combination of 120 pedal or bass-strings and their key-board having frets with buttons operating on the pedal-strings, substantially as herein shown and described.

3. In a pedal-zither, the combination of 125 pedal or bass-strings, a key-board under the said strings, and frets on the said key-board with buttons adapted to operate on each of the said strings near each of the frets of the 130 key-board, substantially as herein shown and described.

4. In a pedal-zither, the combination of the pedal or bass-strings and their key-board hav-

ing frets with buttons attached to rods operated by means of suitable devices attached to the pedals, substantially as herein shown and described.

5 5. In a pedal-zither, the combination, with pedal or bass-strings, a key-board under the said strings, frets on the said key-board, and buttons of which one is placed above each of the said pedal or bass strings near each fret
10 on the said key-board, of rods on which the said buttons are secured and pedals connected with the said rods by suitable devices, substantially as herein shown and described.

15 6. In a pedal-zither, the combination, with pedal or bass-strings, a key-board under the said strings, and frets on the said key-board, with buttons, of which one is placed above each of the said pedal-strings near each fret on the said key-board, of rods on which the said
20 buttons are fastened, connected by means of cords with rollers, each of which is operated by a corresponding pedal connected with said

roller by suitable devices, substantially as described and set forth.

7. In a pedal-zither, the combination, with 25 buttons adapted to operate on the pedal-strings, of rods on which the said buttons are mounted and adapted to slide vertically in suitable bearings, and of stops and spiral springs on the said rods with rollers connected with the
30 said rods by cords and with pedals connected with the said rollers by suitable devices, substantially as described and set forth.

8. In a pedal-zither, the combination of rollers, connected by cords with rods carrying 35 buttons adapted to operate on the pedal-strings, with pedals corresponding with the said rollers and connected with the same by suitable devices, substantially as described and set forth.

FERDINAND WIGAND.

Witnesses:

THEO. G. HOSTER,
C. SEDGWICK.