

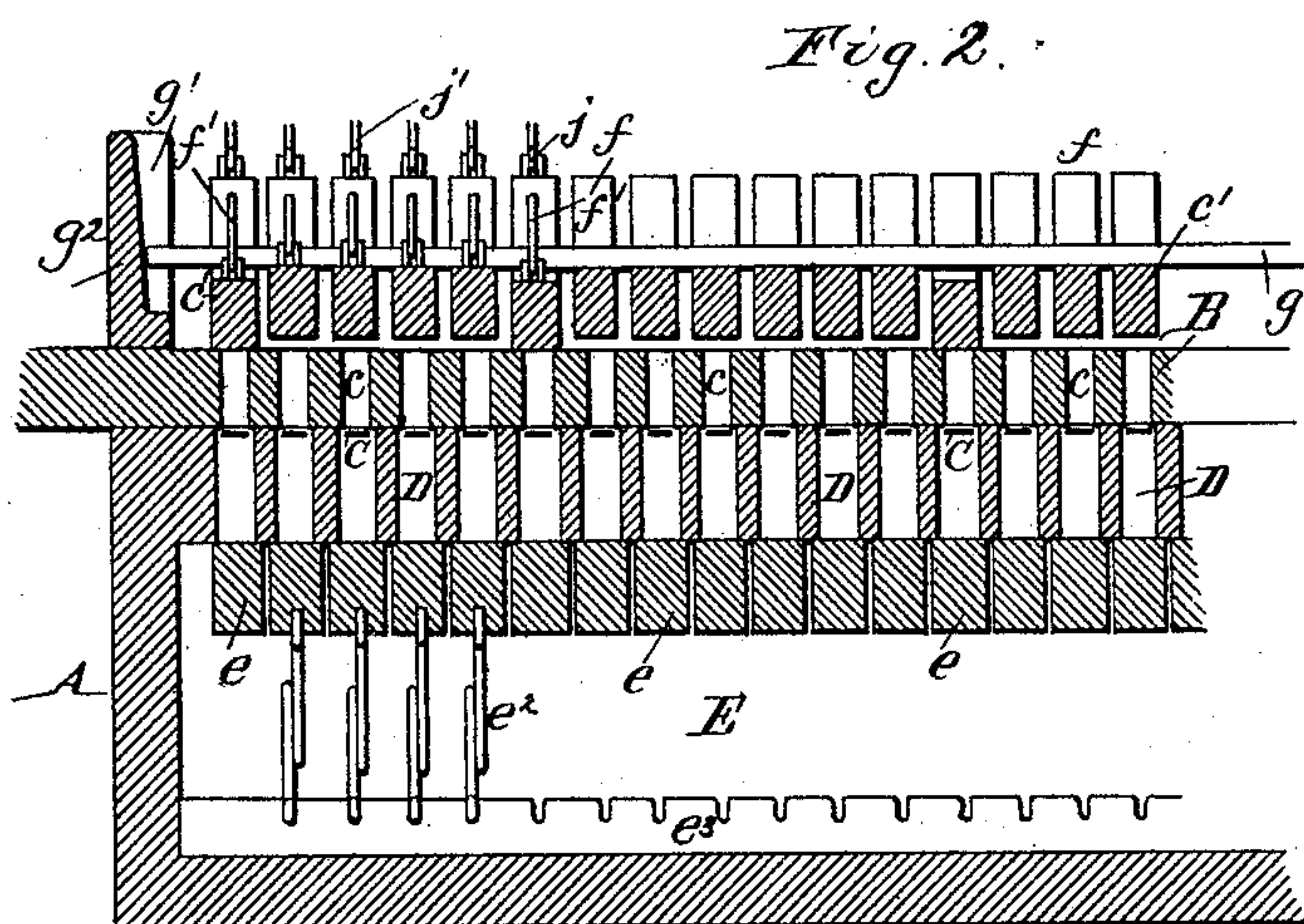
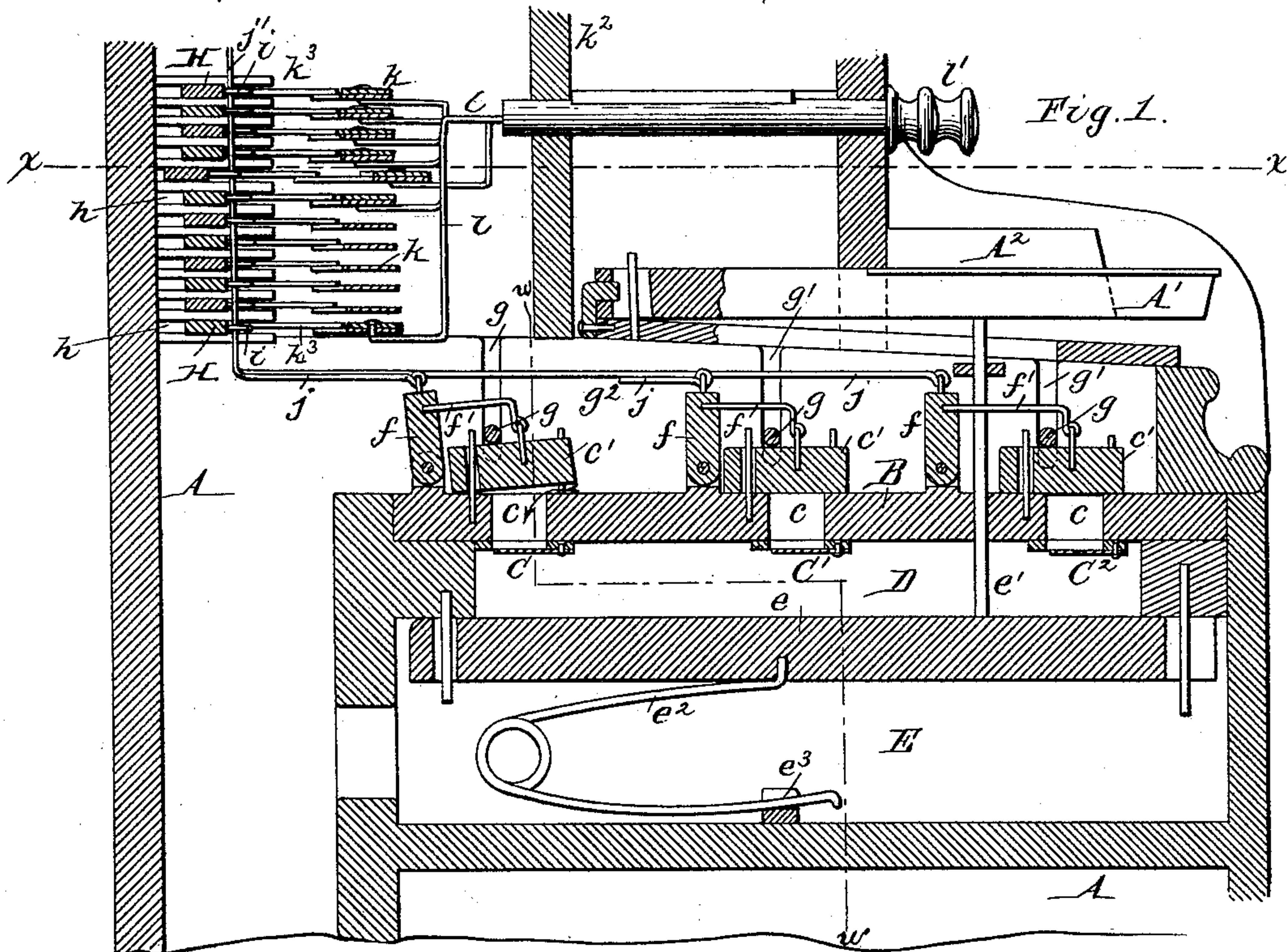
(No Model.)

3 Sheets—Sheet 1.

M. PHILIPPS,  
TRANSPOSING KEY BOARD FOR MUSICAL INSTRUMENTS.

No. 466,907.

Patented Jan. 12, 1892.



Witnesses:

Theo. L. Popp.  
Emil Neuhart.  
Friedrich, Gustav, Wilhelm.

Martin Philipps Inventor.

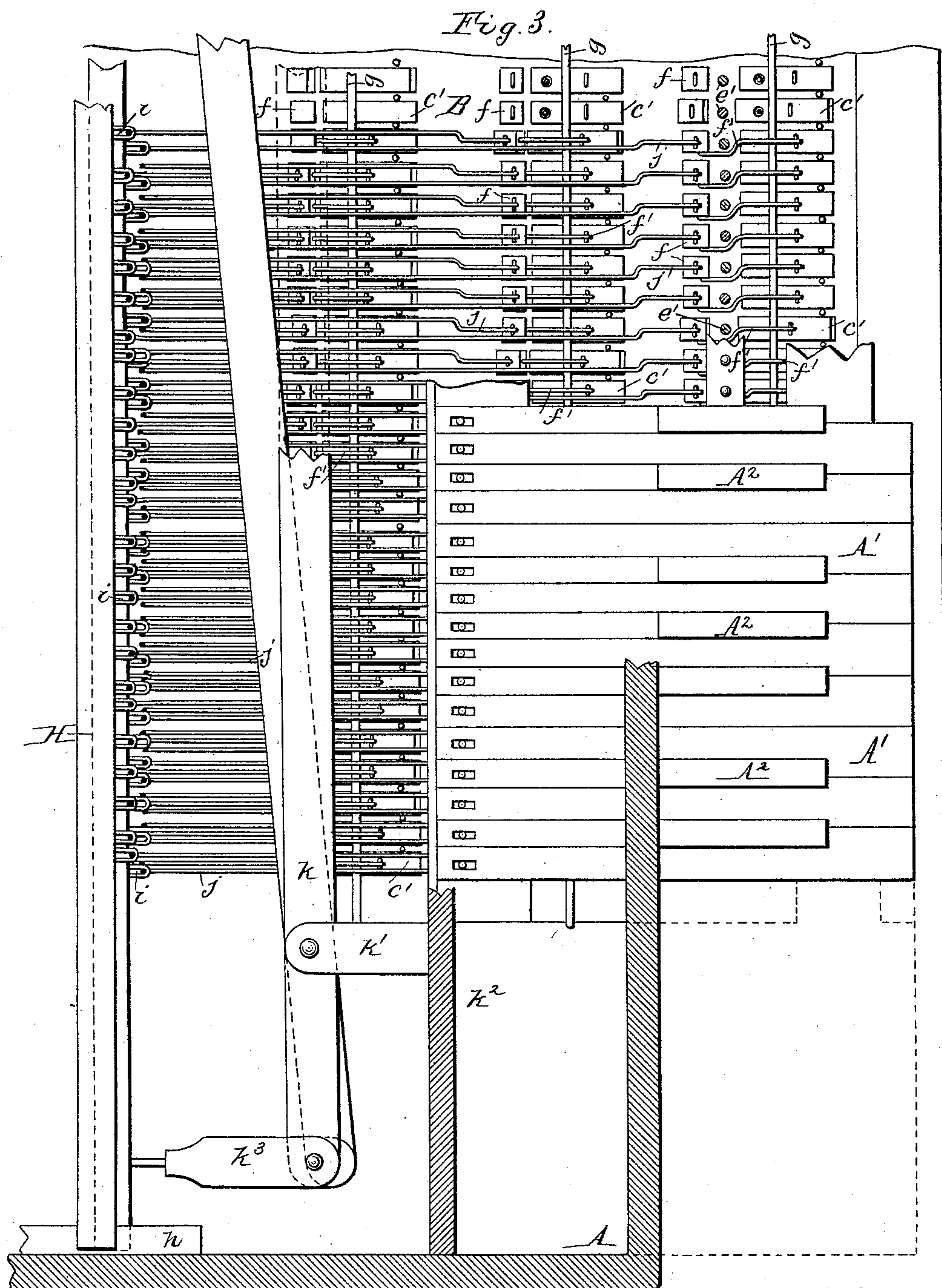
By Wilhelm Bommert.  
Attorneys.



(No Model.)

3 Sheets—Sheet 2.

M. PHILIPPS,  
TRANSPOSING KEY BOARD FOR MUSICAL INSTRUMENTS.  
No. 466,907. Patented Jan. 12, 1892.



Witnesses:

Emil Neuhart.

Friedrich, Gustav, Wilhelm.

Martin Philipps Inventor

By Wilhelm Bonnet.

Attorneys.

(No Model.)

3 Sheets—Sheet 3.

M. PHILIPPS,  
TRANSPOSING KEY BOARD FOR MUSICAL INSTRUMENTS.  
No. 466,907. Patented Jan. 12, 1892.

Fig. 4

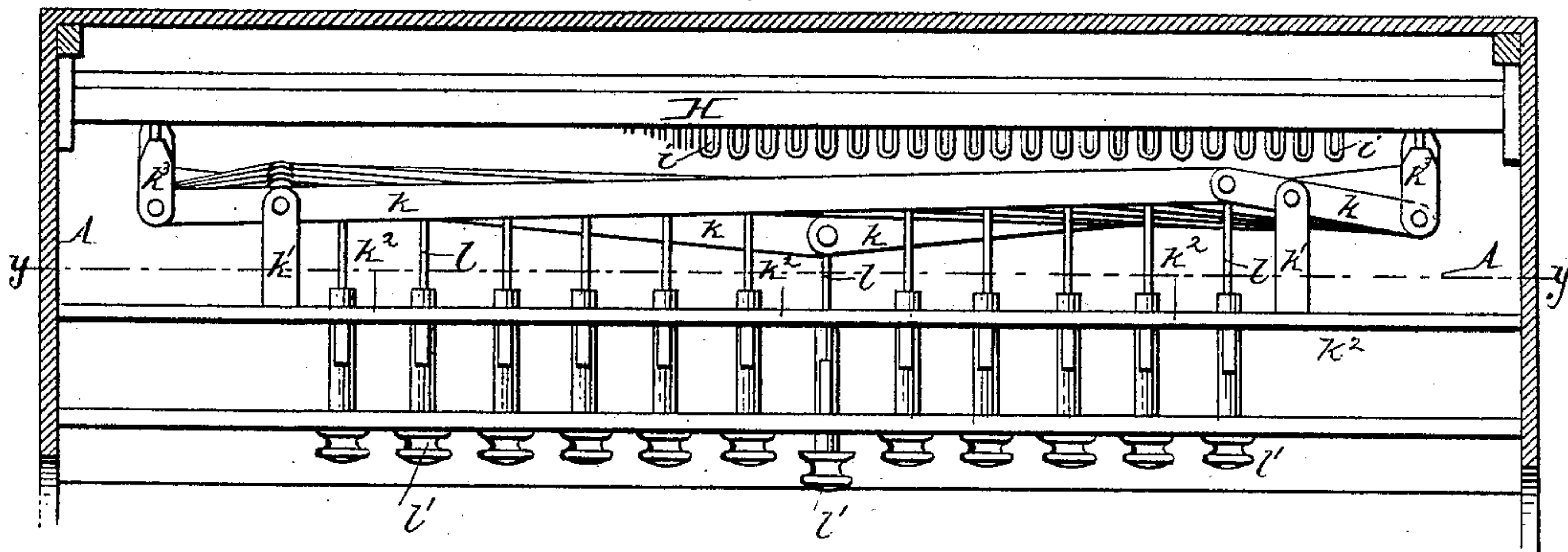


Fig. 5.

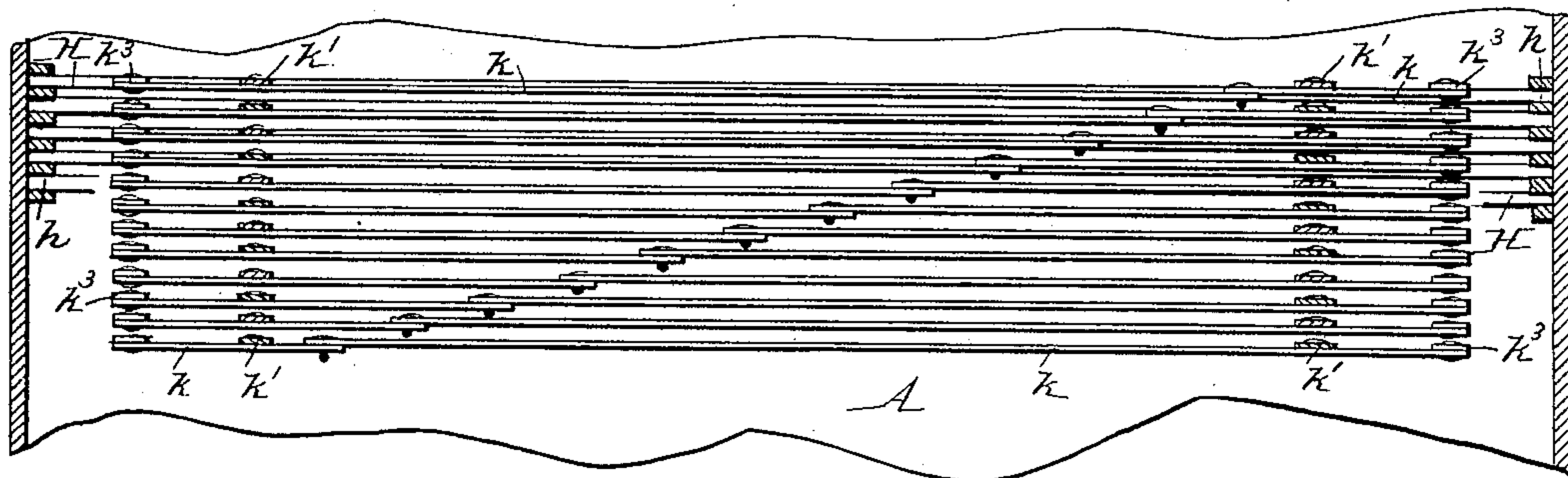


Fig. 6.

C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E	C
C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	E	F	
E	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C	C#	D	D#	

Emil Neuhart.  
Friedrich, G. Wilhelm

Witnesses.

Martin Philipps Inventor  
By Wilhelm Bonnd.  
Attorneys.



# UNITED STATES PATENT OFFICE.

MARTIN PHILIPPS, OF BUFFALO, NEW YORK.

## TRANSPOSING KEY-BOARD FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 466,907, dated January 12, 1892.

Application filed August 29, 1891. Serial No. 404,094. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN PHILIPPS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York; have invented new and useful Improvements in Transposing Key-Boards for Musical Instruments, of which the following is a specification.

This invention relates to that class of key-boards for musical instruments which are provided with transposing or shifting mechanism whereby each of the white keys may be connected with either of the sound-producing parts representing its natural tone, its sharp, or its flat, thus enabling all of the twelve scales to be played upon the white keys alone, like the scale of C upon an ordinary piano or organ, and greatly lessening the difficulty of learning to play the instrument. A transposing key-board of this general character is described and shown in Letters Patent of the United States No. 354,733, granted to me December 21, 1886.

The object of my present invention is to devise such an arrangement of the sound-producing instrumentalities as will permit the use of a simple and comparatively inexpensive connecting mechanism between the keys and the sound-producing parts.

In the accompanying drawings, consisting of three sheets, Figure 1 is a transverse section of the upper portion of a reed-organ to which my improvements are applied. Fig. 2 is a fragmentary vertical section in line *ww*, Fig. 1, with the transposing mechanism omitted. Fig. 3 is a horizontal section in line *xx*, Fig. 1, with a number of the keys omitted. Fig. 4 is a top plan view, on a reduced scale, of the equalizing mechanism of the transposing-bars. Fig. 5 is a vertical section in line *yy*, Fig. 4, looking rearward. Fig. 6 is a partial diagram showing the relative arrangement of the reed-valves and their corresponding reeds.

Like letters of reference refer to like parts in the several figures.

A represents the upper part of the frame or casing of a reed-organ.

A' represents the white keys, and A<sup>2</sup> the black keys. The keys are pivoted at their rear ends upon the key-board frame by vertical pins in a common manner.

B is a reed-board, preferably arranged below the keys, and C C' C<sup>2</sup> represent three separate sets or rows of reeds attached to the reed-board, and which are arranged at the lower ends of air apertures or passages *c*, formed in the reed-board. To the upper ends of these passages are applied valves *c'*, which are pivoted at their rear ends to the upper side of the reed-board, so that they can swing upward to open the air-passages *c*. Each set of reeds C C' C<sup>2</sup> forms a separate and distinct series of sounds of several octaves. The reeds of the several sets or rows, which are in line with each other transversely of the rows, produce a triplet of sounds, corresponding, respectively, to the natural tone of a key, its sharp, and its flat, and each of such groups of three communicates with an independent wind-chest D.

E is an air-trunk or main wind-chest, arranged underneath the individual wind-chests D, and with which the latter communicate.

*e* are valves applied to the lower ends of the wind-chests D for preventing or permitting the passage of air through the same, and which are connected with the keys corresponding to their respective reeds by rods *e'*, as shown in Figs. 1 and 3. Each valve *e* is retained in a closed position by a spring *e*<sup>2</sup>, having its respective arms secured to the valve, and a stationary horizontal board *e*<sup>3</sup>, secured to the casing of the instrument. Upon depressing a key the valve *e*, connected therewith, is opened and air is allowed to pass through the corresponding wind-chest and caused to sound that reed of the triplet of reeds whose valve *c'* is open.

In the position of the valves represented in Fig. 1 the valve of the rearmost reed is open, so that the latter is sounded while the valves of the other two reeds are closed, so that they are not sounded. The valve of each reed is operated by an upright arm *f*, pivoted at its lower end to the top of the reed-board behind the pivot of the valve and with which the valve is connected by a wire or rod *f'*, so that upon swinging the arm *f* backward on its pivot the valve is lifted and opened. The valves of each set of reeds when released are automatically closed by a rod *g*, resting loosely upon all of the valves in the set and guided with its end portions in upright slots



or ways  $g'$ , formed in horizontal end pieces or boards  $g^2$ . These rods are raised in their ways when the valves are opened, and they descend and close the valves by gravity when the valves are released.

H represents a series of twelve shifting or transposing bars arranged in the rear portion of the organ-casing, one above the other, and whereby the valves of those reeds or sound-producing parts are opened which constitute the desired scale. Each of these transposing-bars represents one of the twelve scales, and is connected with the valves of those reeds only which produce the sounds of such scale. These transposing-bars slide horizontally and are guided with their ends in ways or grooves  $h$ , formed by projecting ledges secured to the end walls of the organ-casing, as shown in Figs. 1, 3, 4, and 5. Each transposing-bar is provided at its front edge with a series of horizontal loops, staples, or elongated eyes  $i$ .

The arm of each reed-valve is provided with a rearwardly-extending actuating-rod  $j$ , which is provided at its rear end with an upright extension  $j'$ . These extensions pass upwardly through the staples or loops of the transposing-bars, so that upon shifting backwardly a transposing-bar the extensions  $j'$ , encircled by such bar, are also moved backward and caused to open the valves controlled thereby. The elongated loops permit the extensions to move in those loops of the bars which are not shifted, thereby avoiding the shifting of any of the other bars and the opening of the valves of reeds which do not belong to the desired scale. Upon returning a shifted transposing-bar to its normal position the open valves are released and closed by gravity, the closing of the valves being assured by the rods resting upon the same.

The transposing-bars may be shifted from the front of the instrument by any convenient means; but they are preferably shifted by an equalizing mechanism constructed as follows: Each transposing-bar is provided with two shifting-levers  $k$ , arranged near opposite ends thereof, each lever being fulcrumed between its ends upon a bracket  $k'$ , secured to the inner side of the front board  $k^2$  of the organ-frame. The outer arms of each pair of levers are pivoted to short studs  $k^3$ , secured to the front edge of the transposing-bar near its ends, and the inner arms of said levers are both connected to a shifting rod or stop  $l$ , passing through the front board  $k^2$  and terminating in a handle or knob  $l'$ . Both levers of each transposing-bar are thus swung on their pivots simultaneously upon moving the stop in or out, thereby shifting both ends of the bar evenly and uniformly and preventing binding or cramping of the bar. In order to permit the twelve stops of the twelve transposing-bars to be arranged side by side in a single row and at the same time prevent interference of the several equalizing-levers, it is necessary to locate the connecting-pivots of

each pair of levers out of line, as shown in Fig. 5; and for this purpose the inner arm of one of the levers of each bar is made longer than that of the other lever of the pair, and the outer arms of the levers are properly proportioned relatively to the inner arms to equalize the movement of the bars at both ends. The knob of each stop bears a letter or other character corresponding to the scale represented by the stop.

The reeds of the three sets are preferably arranged in the relation shown in the diagram represented in Fig. 6, and the valves of the reeds are so connected with their corresponding key-levers that the natural tone of each key-lever is produced by a reed in one of the three groups or sets and its sharp and flat by reeds belonging, respectively, to the other two groups, and arranged in the same transverse row or line with the reed producing the natural of the key-lever. By this arrangement when the stop representing the scale of C is withdrawn the white keys sound the tones of said scale and the black keys produce the same accidentals as those of an ordinary keyboard.

When the key-board is set for a given scale containing sharps, the black keys upon my improved instrument immediately above those white keys which have been changed to tones produced by black keys upon an ordinary instrument in such scale are transposed half a tone below such white keys - that is, to the natural tone of such transposed white keys. For example, when the key-board is set for the key of G those black keys upon an ordinary key-board which produce the sound of F-sharp in such scale are in my instrument transposed to F natural, so that if the latter accidental should occur in a piece of music written in the key of G they can be produced without changing the key-board. When the key-board is set for a given scale containing flats, the black keys upon my instrument immediately below those white keys which have been changed to tones produced by black keys upon an ordinary instrument in such scale are transposed a half-tone above such white keys; in other words, to the natural tone of such transposed white keys. Thus when the key-board is set for the key of F those black keys on ordinary instruments which produce the sound of B flat in such scale are in my instrument transposed to B natural.

When the key-board is set for any of the remaining scales not cited as examples, the transpositions of the black keys are as follows: In the scale of D the black keys ordinarily representing F-sharp and C-sharp sound F and C natural, respectively. In the scale of A the black keys ordinarily representing F-sharp, C-sharp, and G-sharp sound F, C, and G natural, respectively. In the scale of E the black keys ordinarily representing F-sharp, C-sharp, G-sharp, and D-sharp sound F, C, G, and D natural, respectively. In the scale of B the black keys ordi-



narly representing F-sharp, C-sharp, G-sharp, D-sharp, and A-sharp sound F, C, G, D, and A natural, respectively. In the scale of B-flat the black keys ordinarily representing B-flat and E-flat sound B and E natural, respectively. In the scale of E-flat the black keys ordinarily representing B-flat, E-flat, and A-flat sound B, E, and A natural, respectively. In the scale of A-flat the black keys ordinarily representing B-flat, E-flat, A-flat, and D-flat sound B, E, A, and D natural, respectively. In the scale of D-flat the black keys ordinarily representing B-flat, E-flat, A-flat, D-flat, and G-flat sound B, E, A, D, and G natural, respectively. In the scale of G-flat the black keys ordinarily representing B-flat, E-flat, A-flat, D-flat, G-flat, and C-flat sound B, E, A, D, G, and C natural, respectively.

I claim as my invention—

1. In an organ, the combination, with the stationary frame and its series of white keys arranged in diatonic progression, of sound-producing parts arranged in independent sets of groups, each comprising a succession of different sounds, and transposing mechanism whereby said keys can be connected with those sound-producing parts of each of said sets which produce either their natural tone, their sharp, or their flat, enabling all the diatonic scales to be played upon the white keys alone, substantially as set forth.

2. The combination, with the keys, of sound-producing parts arranged in independent sets or groups comprising a succession of different sounds, independent wind-chests each connected with one sound-producing part of each of said sets or groups, a common wind-chest connected with all of said auxiliary wind-chests, and transposing mechanism, substantially as described, whereby the keys are changeably connected with those sound-producing parts of each set which produce either their natural tone, their flat, or their sharp, substantially as set forth.

3. The combination, with the keys, of sound-producing parts arranged in independent sets or groups comprising a succession of different sounds, valves controlling the passage of air to said sound-producing parts, shifting mechanism, substantially as described, for opening the desired valves of either set, independ-

ent wind-chests, each connected with one of the sound-producing parts of each of said sets, a common wind-chest connected with all of the independent wind-chests, and valves operated by the keys which control the passage of air through said independent wind-chests, substantially as set forth.

4. The combination, with the keys and a set of sound-producing parts, of wind-chests for said sound-producing parts, valves controlling the passage of air thereto, and transposing-bars, each representing a scale and each connected with the valves of the sound-producing parts constituting the scale represented by the transposing-bar, substantially as set forth.

5. The combination, with the keys and a set of sound-producing parts, of wind-chests for the same, valves controlling the passage of air to the sound-producing parts and having actuating arms or extensions, and sliding transposing-bars provided with staples or loops, through which the arms or extensions of said valves pass, substantially as set forth.

6. The combination, with the keys and a set of sound-producing parts, of wind-chests connected with said sound-producing parts, valves controlling the passage of air thereto, movable transposing-bars connected, respectively, with the valves of the sound-producing parts comprising the scale represented by the same, a sliding rod or stop, and an equalizing device connecting the transposing-bars with said stops, whereby the bars are evenly moved in their ways, substantially as set forth.

7. The combination, with the keys and a set of sound-producing parts, of a wind-chest connected with said sound-producing parts, valves controlling the passage of air thereto, transposing-bars connected, respectively, with the valves of the sound-producing parts comprising the scales represented by the bars, and each provided with a set of equalizing-levers for evenly shifting the bars, and stops or sliding rods connected with said equalizing-levers, substantially as set forth.

Witness my hand this 15th day of August, 1891.

MARTIN PHILIPPS.

Witnesses:

CARL F. GEYER,  
FRED. C. GEYER.