(No Model.)

C. L. WESER.

PEDAL ACTION FOR PIANO FORTES.

No. 422,477. Patented Mar. 4, 1890.

Fig. 1.

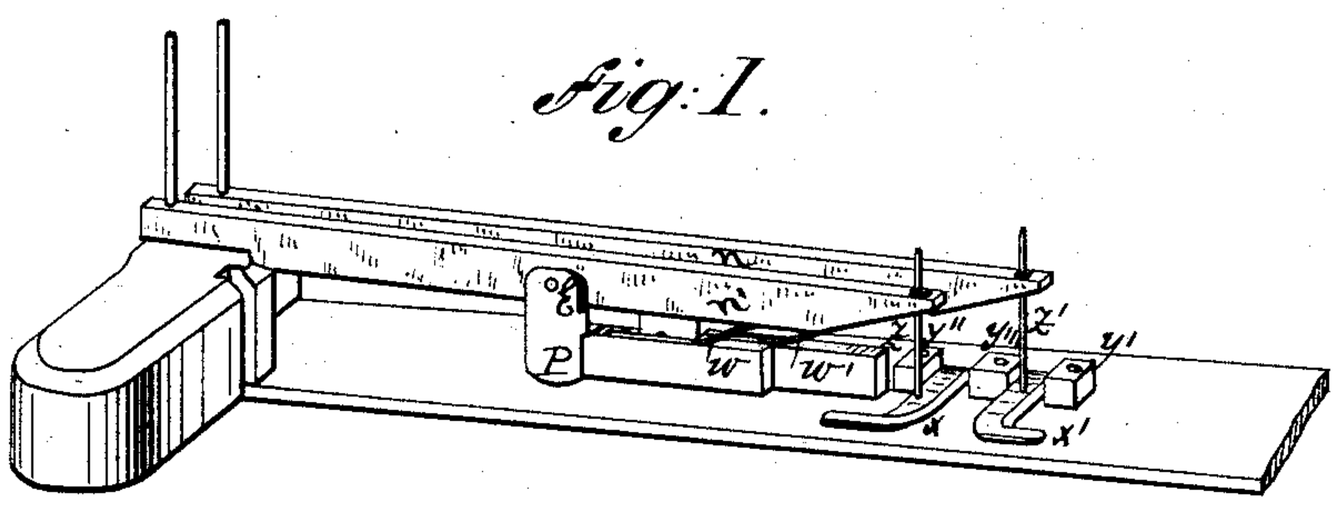


Fig. 2.

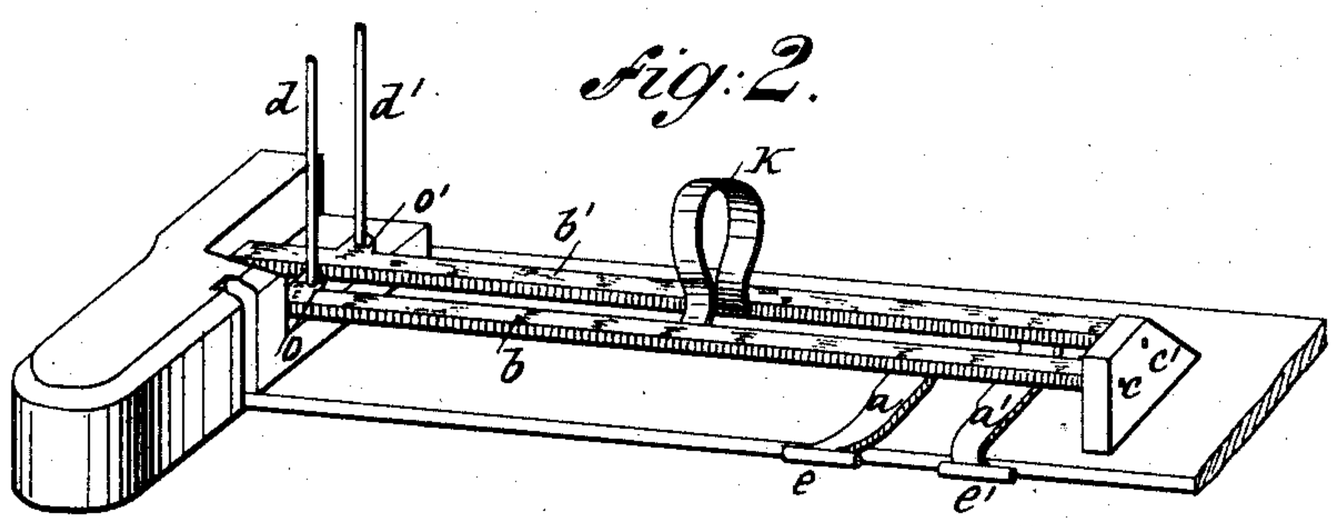


Fig. 3

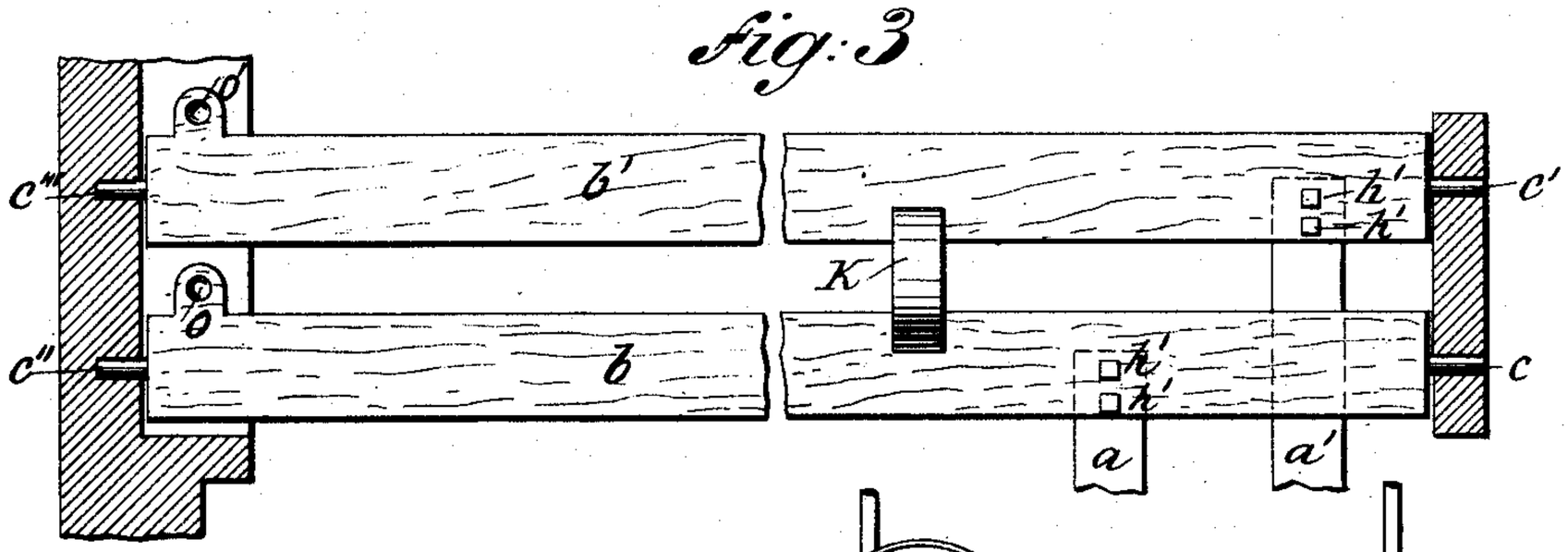
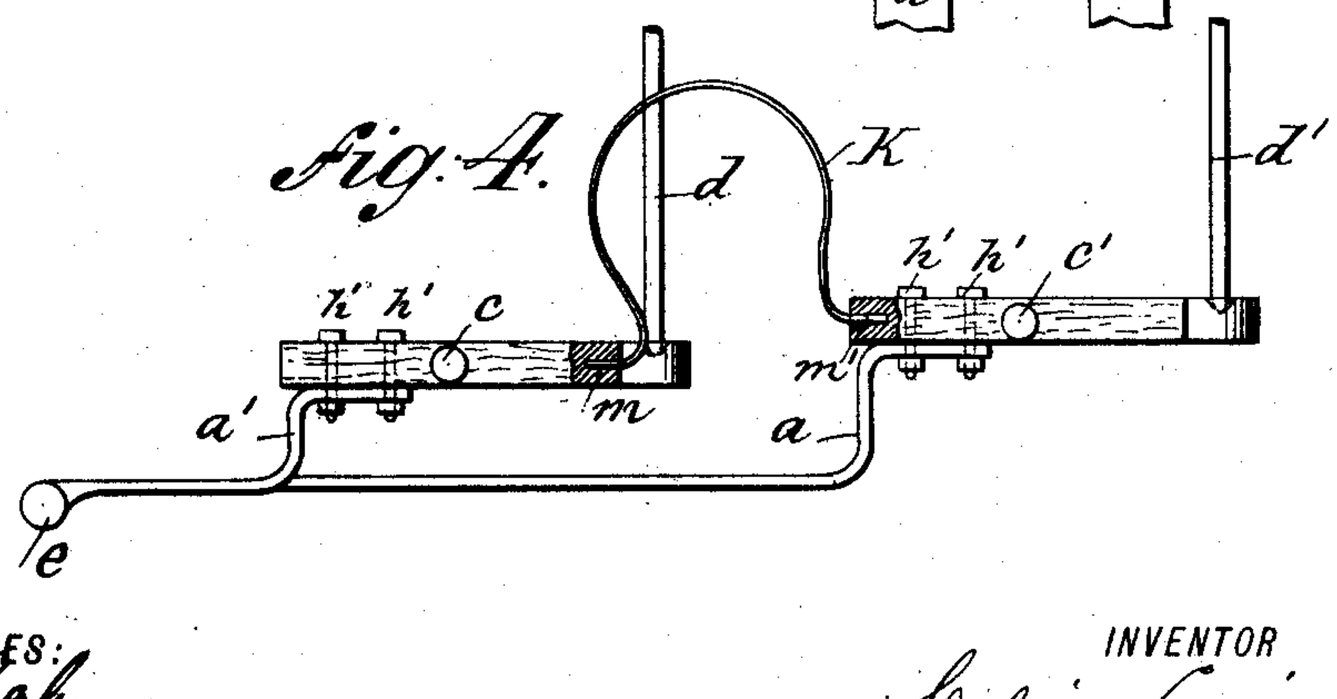


Fig. 4.



WITNESSES:
Arthur Colby
Charles H. King

INVENTOR
Calvin Lewis Weser
BY
Frank L. King
ATTORNEY

UNITED STATES PATENT OFFICE.

CALVIN LEWIS WESER, OF NEW YORK, N. Y.

PEDAL-ACTION FOR PIANO-FORTES.

SPECIFICATION forming part of Letters Patent No. 422,477, dated March 4, 1890.

Application filed February 7, 1889. Serial No. 299,017. (No model.)

To all whom it may concern:

Be it known that I, CALVIN LEWIS WESER, a citizen of the United States, and a resident of New York city, New York, have invented certain new and useful Improvements in Pedal-Actions for Piano-Fortes, of which the following is a specification.

My invention provides an improved pedal-action for piano-fortes.

In the accompanying drawings I have shown my invention and the old and unimproved form of action now in use.

Figure 1 is a perspective view of the present form of pedal-action now commonly employed. Fig. 2 is a perspective view of my improved pedal-action and the bottom of a piano-forte. Fig. 3 is a plan view of a similar action, and Fig. 4 is an end view of same.

When the letters are duplicated in the different views, they refer to similar parts.

I will proceed to describe my improved pedal-action with reference to Figs. 2 to 4, wherein *b b'* are tilting or oscillating bars pivoted in blocks at *c c' c'' c'''*, as shown.

d d' are vertical rods connecting with the tilting bars and also with the upper part of the action. The purpose of the vertical rods and their movement is precisely the same as in the old form of pedal-action, and the mechanism with which they ultimately connect being well known it is unnecessary to show.

a a' are the pedal-feet proper, firmly connected to the tilting bars by screws or bolts, as *h'*. Instead of bolts, I may sometimes use a set-screw arrangement, in order that there may be latitude regarding the points on the tilting bars where the pedal-feet are united. It will be observed that I have shown some of the pedal-feet (in some of the views) provided with a step or elbow. I do not confine myself to the straight pedal-foot or the stepped one, but may use them in any combination in the same instrument, depending upon conditions and size of instrument, &c., which I will hereinafter explain.

K is a spring operating between the two tilting bars and adapted to restore each to its normal position when the pedal-feet are released.

m m' are the termini of the spring in juxtaposition with each of the tilting bars.

o o' are crank-arms upon the tilting bars, on which rest the ends of the rods *d d'*.

e e' are cylindrical cross-bars, upon which the performer's feet rest in operating the pedals.

The object of my improvement in pedal-actions is to do away with many, if not all, of the defects of the old system. These faults are defective bearings between the different joints of the action, causing squeaking and rattling, lost motion caused by originally loose jointings becoming more so by wear, and finally the many elements required to complete the whole action and the consequent expense, which is lessened by my simpler action.

The object of the pedals *a a'* in piano-fortes is to transmit their movement to the end of the piano, and then raise the rods *d d'* vertically, these in turn lifting the damper and hammer rails, respectively.

In my improved action, Figs. 2, 3, and 4, I substitute in the place of the levers *n n'*, Fig. 1, heretofore used, the tilting bars *b b'*, hinged or pivoted at each extremity either by hinges (their equivalents) or pins, which play into blocks at *c c' c'' c'''*, as shown. These pins may be lubricated or the journals may be bushed, if preferred, so that no noise can be evolved from this portion of the action. The pedal-feet are attached, as shown, directly to the tilting bars by screws or bolts, as *h'*, or other firm and solid connections. This direct connection of the pedal-feet to the longitudinal pieces *b b'* is entirely new and is a great improvement over the method now in use, as shown in Fig. 1. All pedal-feet are now themselves hinged close to the bottom board of the upright piano, making two bearings to each foot, and the feet are connected by distinct and separate pieces *z z'* to the rods or levers to transmit the motion. It is obvious that with so many parts and centers as are used by the present method not only is the cost considerable, but there is much opportunity for wear and distracting noises. The right-hand or loud pedal-foot *a'*, Fig. 2, differs from the other foot, in that it shows a step to raise it somewhat above the plane of the left-hand pedal-foot.

I do not confine myself to either form of pedal-foot. The dimensions of the space at

the bottom of the upright piano-forte vary with almost every style in the market, so that in some cases it will be necessary to combine the two forms in all their possible combinations.

If the tilting bars *b b'* be made of cast metal, the pedal-feet *a a'* can easily be cast integrally with them, making each all in one piece, which would be an economy; or a set-screw can be used to fasten a separate foot to the bar at any point desired.

In the old form shown in Fig. 1 it will be seen that the centers of revolution for the pedal-feet *x x'* are not in the same vertical planes with those of the levers *n n'*. These levers are connected to the pedal-feet by the wires *z z'* at points considerably in front of their centers of revolution. When, therefore, piano-forte pedals as now made are put in operation, Fig. 1, the said levers are not only moved vertically up and down by the movement of the pedal-feet, but are impelled (so far as their play in the slots of the posts, as P, will permit them) to revolve around the same centers of revolution as the pedal-feet themselves. There is consequently great rubbing and friction on the inner sides of the posts, which give rise in a short time to "squeaks" and noises. Another result is that the levers *n n'*, in their attempts to revolve around the centers of revolution named, constantly press on the top of the posts, and thus loosen them at their bases, and they also wear in the sockets. It will be understood that these troubles are all obviated in my improved action. The bars receive a positive motion directly from the pedal-feet, thus avoiding the twisting motion so objectionable in the old form of action. In practice it is found that after a comparatively little use these posts become loosened in the joints and thus rattle or turn around and put the pedal-action out of order. My improved action entirely does away with posts and any such difficulty.

There is no part of an upright piano-forte which yields more annoyance (trifling to the manufacturer, if he can visit the instrument, but mysterious and alarming to the inexperienced purchaser) than the present form of pedal-action. The bottom board of an upright piano is made of comparatively thin wood, and of itself acts as a sounding-board to exaggerate all of the noises incident to the machinery of the pedal-action. To this is added the multiplying of all sounds by the sounding-board proper of the piano. An ideal pedal-action should be essentially noiseless. To be noiseless the fewest possible elements and centers should be used, and there should be, if possible, no two surfaces which slide against each other. In the old form of pedal-action I find the four bearings *y y' y'' y'''*, by which the pedal-feet are centered, the wires *z z'*, connecting the pedal-feet *x x'* to the levers *n n'*, the two springs *w w'*, against which the lower surfaces of the levers *n n'* violently rub and chafe whenever the pedal-action is used, and the pins, such as E, running through each post and lever. In my improved pedal-action, Figs. 2, 3, and 4, it will be observed that the only places where there is bearing or friction are at the extremities of each bar *c c' c'' c'''*. The movement in these bearings is very limited. One spring K takes the place of the two springs *w w'* in the old form of pedal-action. Moreover, my spring K tends to press the two rods apart, and thus always keeps them firmly pressed in their bearings, even when after long use the said bearings may become worn. It will be observed, also, that when my single spring is compressed there is no sliding or grating against any other surface. The force of the spring is evolved from its upper half, which is entirely free from the other machinery. The operation of my spring is therefore entirely noiseless and must remain so.

The tilting bars *b b'* may be made of wood, metal, or any suitable material. The shape also need not be limited to that shown. If that shape be used, wood being the material, three or more thick veneers glued together would insure the bar against warping. If metal be used, a pedal-foot may be cast in one piece with the tilting bar, instead of joining them by set-screws or otherwise.

There are many sizes of upright piano-fortes and much variation in the available space between the plate and the case-front where the pedal-action belongs. When the space is limited, the tilting bars may be of heavier material and not nearly so broad. They may then be placed so near together that the right-hand pedal-foot may be made without the step, but matching the left pedal-foot. When so made, it yields another improvement in my form of pedal-action arising from the shorter radius employed by having the pedal-foot connected directly to the tilting bar as contrasted with the long detached pedal-foot now commonly employed, as shown in Fig. 1. The arc described when the performer presses upon the front of the pedal-foot belongs to a larger circle than in my improved action.

I do not confine myself to any shape for the anterior portion of the pedal-foot—viz., that which projects beyond the case. I believe, however, that the form shown in the drawings, having the curved terminations *e' e* cylindrical, or nearly so, in form, is a considerable improvement. Pedal-feet are invariably nickel or silver plated. The wear comes upon that portion of the anterior termination of the pedal-foot where the performer's foot bears upon it tangentially. It is obvious that if the curved surface at that point be very sharp the line of wear (the performer's foot being placed almost constantly at the same place) will be very much narrower and less marked than if the curve were flatter. Moreover, as the curved surfaces *e e'* approximately are cylinders, and the worn surface

when it appears is a narrow one and nearly straight, the effect produced is that of the shading which is always noticed when light falls upon a polished cylindrical surface. To the eye of a person at an ordinary distance the worn surface could not be distinguished from an effect of light and shade. The wearing off of the plating on pedal-feet occurs very soon if the instrument has constant use, and any device which will conceal this defect or limit it in extent is a considerable improvement to the piano.

What I claim, and desire to have secured by Letters Patent of the United States, is—

1. A pedal-action for upright piano-fortes, consisting of the combination, with the upright action-rod and pedal-foot, of a tilting bar extending longitudinally of the piano, mounted in bearings so as to be free to oscillate, having the pedal-foot joined to it and projecting forwardly, and formed with a crank-arm engaging said action-rod.

2. A pedal-action for upright piano-fortes, consisting of the combination, with the upright action-rod and pedal-foot, of a tilting bar extended longitudinally of the piano, bearings receiving the opposite ends of said bar, whereby the latter is free to oscillate, the pedal-foot joined to said bar near one end and projecting forwardly, and a crank-arm formed on said bar near its opposite end, projecting reawardly and engaging said action-rod.

3. A pedal-action for upright piano-fortes, consisting of the combination, with the upright action-rod and pedal-foot, of a tilting bar extended longitudinally of the piano, mounted in bearings so as to be free to oscillate, having a pedal-foot joined to it and projecting forwardly and formed with a crank-arm engaging said action-rod, and a spring bearing laterally against said tilting bar and acting to raise the pedal-foot and take up looseness in the bearings.

4. A pedal-action for upright piano-fortes, consisting of the combination, with the upright action-rods and pedal-feet, of two tilting bars extended longitudinally of the piano, mounted in bearings so as to be free to oscillate, formed with crank-arms engaging the respective action-rods, and the respective pedal-feet joined to said bars, and a single spring acting against both said bars and tending to lift their pedal-feet.

5. A pedal-action for upright piano-fortes, consisting of the combination, with the upright action-rods and pedal-feet, of two tilting bars extended longitudinally of the piano, mounted in bearings so as to be free to oscillate, formed with crank-arms engaging the respective action-rods, the respective pedal-feet joined to said bars, and said bars formed, respectively, with oppositely-projecting lugs, and a single spring reacting against said lugs, respectively, and tending to oscillate both bars in the same rotative direction and to lift the pedal-feet.

6. A pedal-foot for piano-fortes, terminated by the rounded cross-piece, as *e*, as and for the purpose described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of February, 1889.

CALVIN LEWIS WESER.

Witnesses:
WM. B. KRUG,
JOHN A. WESER.