

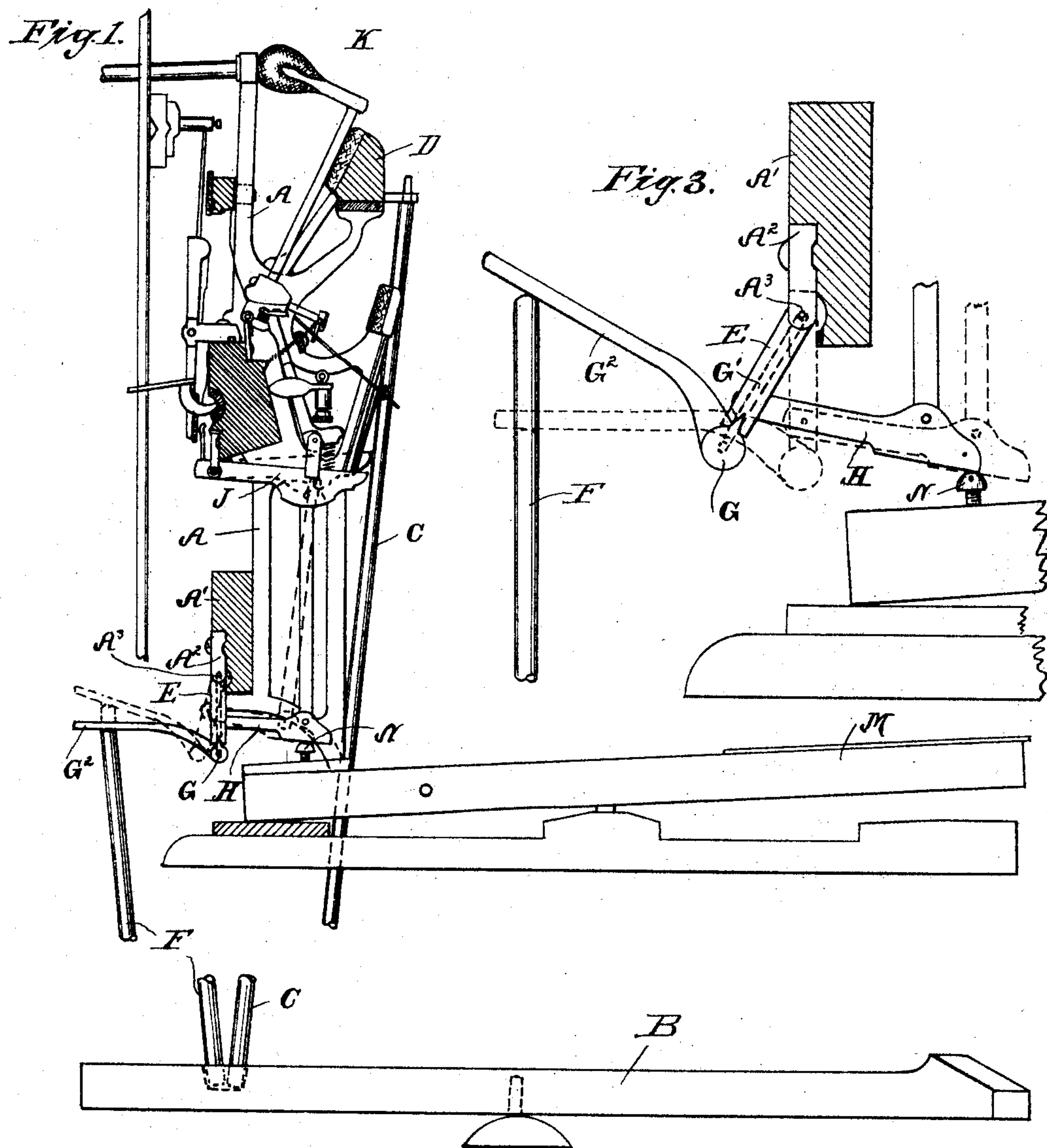
**No. 622,782.**

**Patented Apr. 11, 1899.**

**A. RICHTER.**  
**PIANO.**

(Application filed May 7, 1898.)

(No Model.)



**WITNESSES:**

R. H. Newman.

M. F. Boyle

INVENTOR

August Richter

BY

Thomas Drew Stetson

ATTORNEY.



# UNITED STATES PATENT OFFICE.

AUGUST RICHTER, OF NEW YORK, N. Y.

## PIANO.

SPECIFICATION forming part of Letters Patent No. 622,782, dated April 11, 1899.

Application filed May 7, 1898. Serial No. 679,988. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST RICHTER, a citizen of the United States, residing in the borough of Manhattan, in the city and State of New York, have invented a certain new and useful Improvement in Pianos, of which the following is a specification.

My invention applies to all the varieties of upright pianos and relates to the provisions for softening the tone, which when carried to a great extent is sometimes designated "mute." I employ, as in other mechanisms for this purpose, a movable hammer-rail which restrains the backward movement of the hammer and is connected to the pedal, so that on depressing the pedal the rail will be moved upward toward the hammers and prevent them from falling back to the limit required for full effect. The reduced movement of the hammers being produced by the same amount of movement of the key as before induces a tendency to lost motion in the key when the soft pedal is in action, the first part of the movement of the key being of no effect and the last part only acting on the hammer-action. Many efforts have been made to overcome this difficulty and induce a uniform but less motion of the hammer with each portion of the movement of the key—in other words, to cause the key, and consequently the finger of the player upon the key, to feel the resistance of the action the same as in ordinary playing, the resistance being less, but continuous throughout the whole movement of the key. One of the modes whereby the lost motion is avoided is to shift the comparatively fixed centers of the back ends of the horizontal levers, ordinarily designated "tongues," moving them backward when the soft pedal is depressed. The rods extending upward from the keys, generally designated "extensions," being correspondingly moved backward and the tongues being now acted upon by the capstan-screw nearer its front end than before there will be a smaller motion of the extension, and consequently the required smaller movement of the hammer, while it is continuous throughout the whole movement of the key. I have devised a new construction of the mechanism by which it is effected. I provide separate pendent links, one for each key, extending downward from the ordinary

transverse rail to the corresponding tongues and operate the whole series of such pendent links by a single bar mounted below and engaging with a sufficient notch in the lower ends of such links and moved backward when it is required to make the tone soft.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a general side elevation of the entire mechanism. This shows the parts in their ordinary positions, allowing the piano to give its full tone. Fig. 2 is a corresponding rear view of a portion. Fig. 3 is a corresponding view of certain parts on a larger scale. This shows the position of these parts when the soft pedal is in action.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A A, &c., are fixed portions of the piano, special parts being designated by supernumerals, as A', when necessary. B is the soft-pedal lever, and C is the lifter-rod, sometimes called a "dowel," which rises when the front end of the pedal is depressed and lifts the hammer rail or rod D, thereby restraining the drop of the hammers. These, as also the mechanisms in the vicinity of the hammers, may be of any ordinary or suitable construction.

A' is the ordinary extension-rail.

A<sup>2</sup> are the ordinary "flanges," screwed firmly upon the rail and each carrying a horizontal pivot A<sup>3</sup>, which serves as the center of motion for one of the pendent links E. The lower end of each link is deeply notched or forked, the fork being lined with cloth, and receives the narrow upper edge of the single bar of steel G, which latter extends the whole width of the piano-action and engages with the whole series of links, so that all the links E and the tongues H, pivoted thereto a little above the forks, are moved forward and backward simultaneously. This lost-motion rail G is connected by hooks G' to eyes A<sup>4</sup> in the back face of the extension-rail. An arm G<sup>2</sup> extends rearward from the lost-motion rail and is engaged by a lifter rod or dowel F, the lower end of which is stepped in a socket near the rear end of the soft-pedal lever B.



M is one of the series of keys, and N is the corresponding screw, having a smoothly-rounded top, usually termed a "capstan-screw," by which the motion when the front end of the key, which is the right in Fig. 1, is depressed communicates the motion by acting on the under face of the tongue H.

It will be seen that when the soft pedal B is depressed to lift the ordinary dowel C, and consequently the hammer-rail D, it also, through the dowel F, draws backward the lost-motion rail G and the entire series of links E, so that the entire series of tongues H are correspondingly moved backward without shifting the position of the capstan-screw N, from which the motion is received, or the wippen J, through which the motion is communicated to the action above. It follows that the shifting of the lost-motion rail backward reduces the leverage, and by shifting all the tongues H rearward uniformly reduces the motion imparted to the wippens J, and consequently to the hammers K. On liberating the soft pedal B the parts all resume their previous positions.

One advantage due to my construction is the absence of the liability of the parts to warp. The lost-motion rail G and its hooks G' are of metal and not subject to warping. The wood in the several links E may warp to the fullest extent ever liable to occur and, by reason of their smallness individually, without appreciably affecting the action.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The rail G may be larger or smaller than shown. It is important only that it shall be sufficiently stiff to maintain its form and that its upper edge shall be thin, so that it shall fit gently but snugly in the forked ends of the series of links E.

I claim as my invention—

1. In lost-motion mechanism for pianos, the combination with the keys, capstan screws and tongues, of a series of independent links E, connected to the tongues and engaged with a single movable rod G serving as a lost-motion rail, and connections to the latter from the pedal B, all arranged to serve substantially as herein specified.

2. In a lost-motion mechanism for pianos, the combination with the keys, capstan screws and tongues, of a series of independent links E connected to the tongues, a lost-motion rod G engaged with said tongue and suspended

by hooks G' to centers above, and connections between the rearwardly-extending arm G<sup>2</sup> on said rail and the pedal B, all arranged for joint operation substantially as herein specified.

3. In lost-motion mechanism for pianos, the combination with the keys, capstan screws and tongues, of a series of independent links connected to the tongues and engaged with a lost-motion rod G connections to the latter from the pedal B, and also with means operated by the same pedal for changing the position of the hammer-rail D, all arranged for joint operation substantially as herein specified.

4. In a piano, keys each adapted to be depressed to an invariable extent, and a shifting hammer-rail adapted to limit the extent of motion of the several hammers, in combination with a series of tongues serving leverwise between the keys and the hammers and with a pendent link E for each tongue, a movable lost-motion rod extending transversely of the piano engaged with capacity for easy disengagement with a series of links, and means connected with the soft pedal for automatically moving such rod backward and upward, adapted to both change the leverage of the tongues and also raise and lower their rear ends by the motion of the soft pedal, all substantially as herein specified.

5. In lost-motion mechanism for pianos, the combination with the keys, capstan screw-contacts and tongues, of a series of independent links E connected to the tongues and vertically recessed at their lower ends, a lost-motion rail G having a flange engaging said tongue-recesses, and connections between the rod and pedal B, all substantially as herein specified.

6. In lost-motion mechanism for pianos, the combination with the keys, capstan screw-contacts and tongues, of a series of independent links E connected to the tongues a lost-motion rail G engaging said tongues and having a rearwardly-extending horizontal arm G<sup>2</sup> and connections between the arm and the pedal B, all arranged for to serve substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

AUGUST RICHTER.

Witnesses:

MARY F. BOYLE,  
J. B. CLAUTICE.