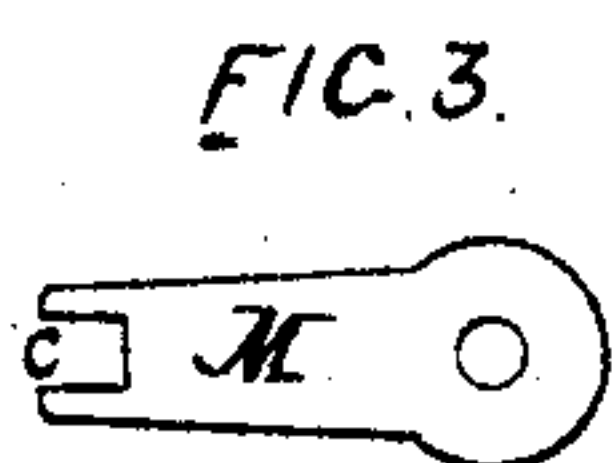
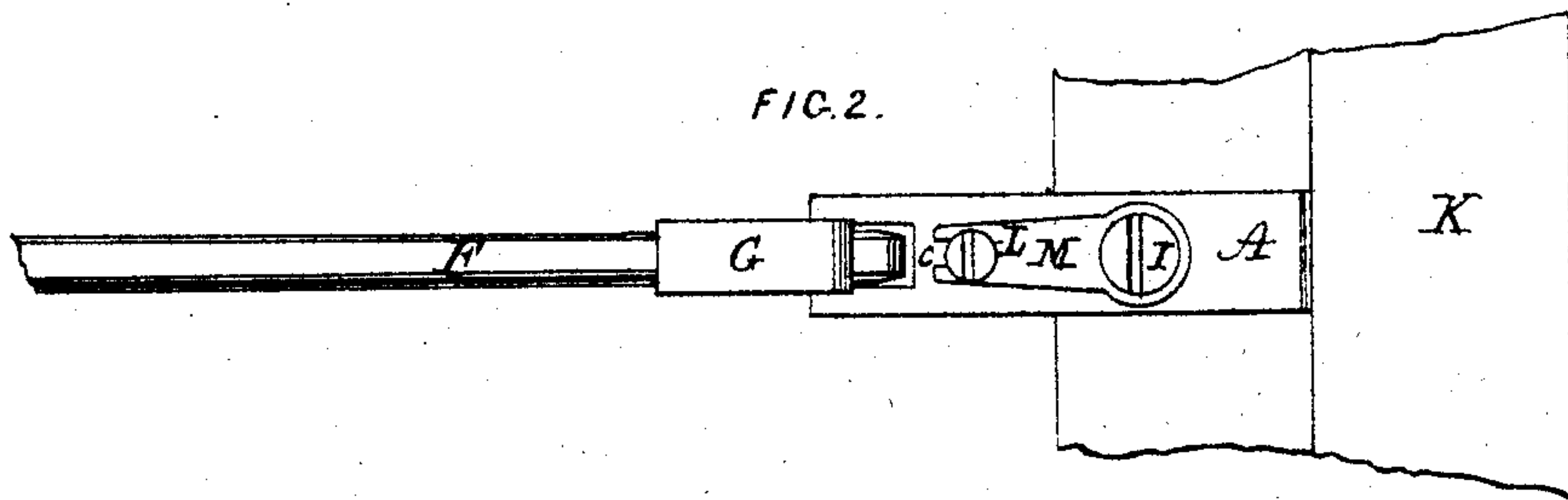
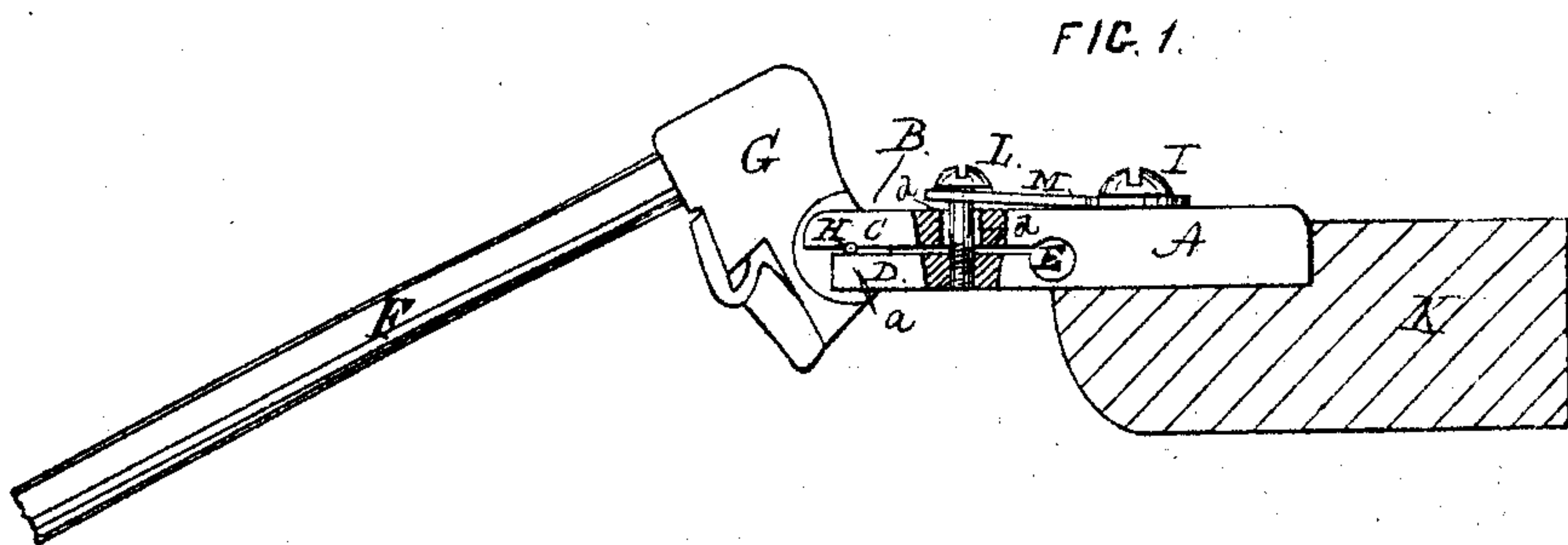


Piano-Forte Actions.

No. 145,417.

Patented Dec. 9, 1873.



Witnesses.
J. P. M^cElroy.
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UNITED STATES PATENT OFFICE.

ALBERT K. HEBARD, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN PIANO-FORTE ACTIONS.

Specification forming part of Letters Patent No. **145,417**, dated December 9, 1873; application filed September 13, 1873.

To all whom it may concern:

Be it known that I, ALBERT K. HEBARD, of Cambridge, Middlesex county, in the State of Massachusetts, have invented an Improvement in Piano-Forte Action, of which the following is a specification:

This invention relates to the joints of piano-forte actions, but more particularly to that part of the actions of piano-fortes called the flange; and consists of a flat metal spring properly secured on the top part of the flange, the spring acting, through the regulating-screw upon the under portion of the split end of the flange, in such a manner as to give to the hammer-stem pin an elastic or yielding bearing-surface, thereby preventing "sticking," so-called, and also rattling or noise.

In the accompanying plate of drawings my improvement in piano-forte actions is illustrated, Figure 1 being a side view of the flange and hammer-stem with my attachment; Fig. 2, a top view of the same; and Figs. 3 and 4, plan and edge views, respectively, of the spring itself.

A in the drawings represents a flange, such as is generally used in the manufacture of piano-forte actions, with the end B sawed or split horizontally into two parts, C and D, as far as the hole E, which hole E is bored sufficiently near the bottom part of the flange to give an elasticity or spring to the part D. F and G, respectively, show the hammer-stem and butt, hung by pin H to the flange between the two parts C and D; I, the screw securing the flange A to rail K; and L, the regulating-screw. So far, the above is the common flange in use, with the exception, in this instance, that the portion of the flange where the pin H turns in its bearing is not "bushed;" M, a flat spring, secured at one end by the screw I on the upper side of flange A; at its other end is a slot, c, through which passes the regulating-screw L. The regulating-screw L also passes freely through the upper part, C, of flange A, as shown at d, and screws into the lower part, D. The spring M, when in its natural position, and secured to the flange A by screw I, is, as shown in Fig. 4, elevated at its end f; and, when properly adjusted, is screwed down by the regulating-screw sufficiently to cause the proper upward pressure and firm-

ness of the part D against the pin H, by the elasticity of the spring, and yet leaving space enough between the end of spring and the flange to allow of further downward movement of the spring, if desired, for any purpose. In regulating the flange A, without any spring attachment for the right movement of the hammer-stem and butt, the screw L is turned in sufficiently to cause the requisite tightness between the two parts C and D on the pin H, so that the butt G will be free to play, and yet not loose enough to allow of a noise or rattle. When so fixed, the parts C and D are rigid, as it were, as regards each other, being prevented from movement by the regulating-screw; and, if any moisture or dampness is in the air, the wood of which the flange is made is more or less affected accordingly, and expanding or swelling the two parts C and D, obviously brings them nearer together, thus creating more friction on the pin H, and causing it to "stick," by reason of the rigidity, as above stated; and, if it becomes too dry, the pin in its bearing-surface is loose and rattles more or less. Now, with the spring attached to the flange, as above described, these troubles are entirely obviated. The regulation of the movement of the hammer-stem is performed as in the usual way, but the bearing up against the pin of the lower part, D, is controlled by the elasticity of the spring M; and, if dampness or dryness should affect the two parts C and D, they would not bind on the pin H or rattle, because the spring, being of sufficient elasticity, would allow the lower part, D, ample movement either upward or downward to relieve the additional pressure caused by the swelling of the wood upon the pin H, or preserve to the bearing the requisite pressure to prevent noise or rattle.

By the use of the spring M many advantages are attained, among which are the following: The bushing around the pin is dispensed with, saving, thereby, expense in manufacture, as the bearing or friction against the pin H is always firm and elastic enough to prevent noise, and yet be free for the proper movement of the hammer-stem. The hammer-stem butt can easily be removed from the flange, if desired, as, by bearing down on the butt, the parts C and D can be separated suf-

ficiently to allow the pin free movement from its position without altering the adjustment of the regulating-screw, which heretofore has been impossible. The end of the spring M, where secured to the flange, serves also as a washer to the screw-head, preventing its sinking into the flange, and holding it firmer on the rail. Also, there is no sidewise movement to the hammer-stem, as the pin H, on which the hammer-stem swings, has, for its bearing-surface, the hard wood of the flange, rather than, as formerly, the cloth bushing.

I am aware that a metallic arched spring has been arranged between the parts composing the butt-hinge; such I therefore disclaim. My spring is secured on the top surface of the butt-hinge by a screw, and its front slotted end embraces the set-screw, and has a

tendency to raise or force up said screw, carrying with it the lower portion of the butt-hinge, and preventing what is termed "sticking" and all rattling noise.

I claim as my invention—

The flat spring M, secured upon the upper surface of the flange A, its slotted free end embracing the set-screw L, for drawing up the section D, to operate in connection with the hammer, substantially as described, for the purpose specified.

The above specification of my invention signed by me this 5th day of August, A. D. 1873.

ALBERT K. HEBARD.

Witnesses:

J. P. McELROY,

EDWIN W. BROWN.