(No Model.)

J. R. PERRY.

PIANO ACTION.

No. 528,209. Patented Oct. 30, 1894.

Fig. 1.

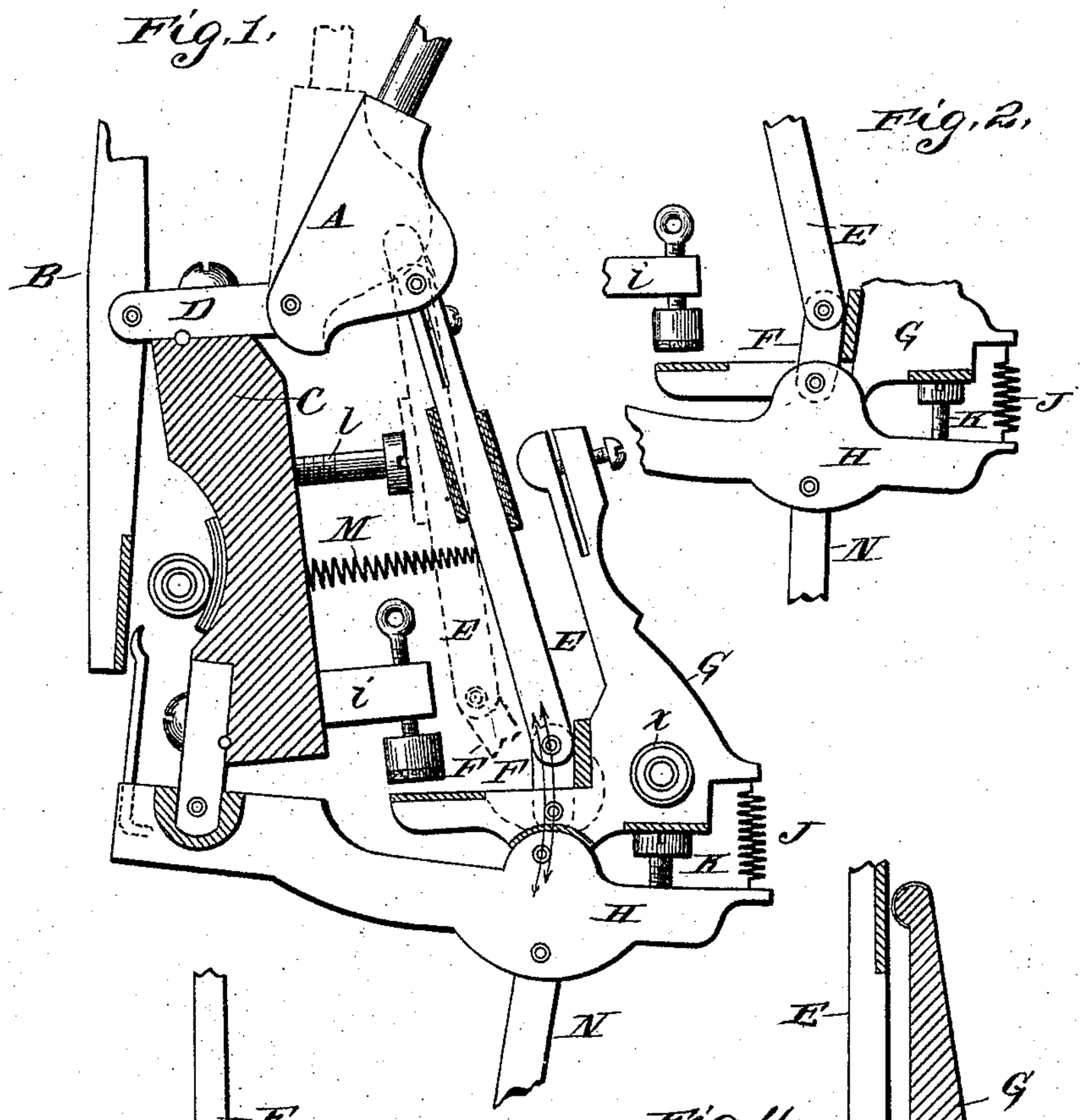


Fig. 2.

Fig. 3.

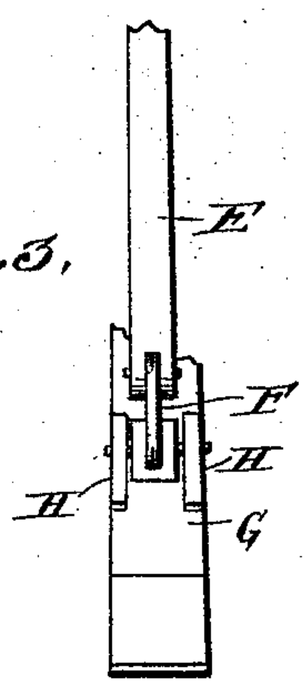
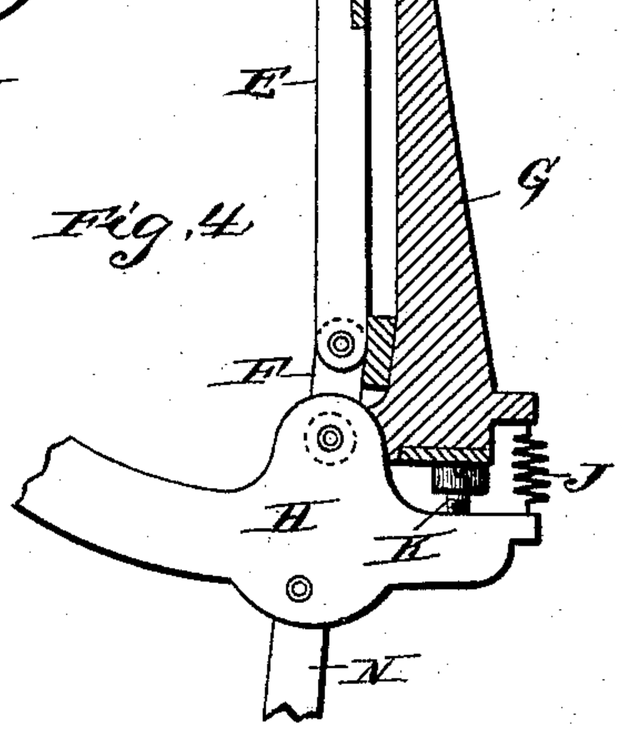


Fig. 4.



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PIANO-ACTION.

SPECIFICATION forming part of Letters Patent No. 528,209, dated October 30, 1894.

Application filed August 2, 1893. Serial No. 482,206. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH R. PERRY, a resident of the city of Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Piano-Actions; and I do hereby declare that the following is a full, clear, and exact description, which would enable skilled persons to make and use the same.

My invention relates to what are termed "upright pianos" more especially, but it may be applied to various kinds by slight modifications.

It has for its object to facilitate the rapidity of stroke and the certainty of checking the same and holding it firmly after the hammer has rebounded away from the string, and also regulating the distance of the rebound from the same, as well as making a definite mechanical certainty of the stroke. I effect these objects by the use of a vibrating arm or lever, placed intermediately between the links and the actuating lever, in such way that it becomes a rigid part of the mechanism for a time, but will become free to vibrate at the proper time required in making the hammer stroke.

The essential part of the invention consists in first connecting the link or links to the said vibrating lever (which lever is made of any suitable form) and in turn connecting the said vibrating lever and arm to the actuating lever of the piano action, which may be done by forming a common pivot for the lower link, the vibrating lever and actuating lever, by means of a pin passing through all the parts, or by connecting the vibrating lever with a distinct and separate pin, which is not essential so far as the result is concerned in the operation thereof, as will be seen by the explanation of the methods shown in applying this invention in practice; also by providing a check regulating screw to the same, reference being had to the drawings forming a part of this specification.

Figure 1 is a side elevation of an action full size in which A is the hammer butt, and B the string damper connected to the action rail C by means of the flange D. Links E and F are connected together and pivoted to the hammer butt A in the usual way. Figs. 2, 3 and 4 represent modifications.

In Fig. 1, a vibrating lever G is so shaped as to be made to act against the link E. The said lever G is pivoted to an actuating lever H, the lower link F having been first secured to the said vibrating lever G. This vibrating lever G is substantially the same in construction as the vibrating jack lever patented to me heretofore, No. 485,650, filed December 14, 1891, Serial No. 415,073, but is here used to the performance of a different function, viz: to form a connection from the hammer butt, the lower and upper links and the actuating lever in operating the action and checking the same against a regulating screw. To the action rail C, and by means of a flange, I pivot the lever H in the usual way, and place a buffer *i* on the same action rail, placing a spring J at the front ends of the levers H and G to react in bringing the vibrating lever G into its normal place after each stroke. I also place into the end of the lever H a regulating screw K for the purpose of adjusting the vibrating lever G in its relation to the link E. In the action rail C I place a flat headed smooth screw *l*, which is intended to be driven into the rail to any suitable distance to regulate the contact of the upper link E and hold it in check by means of the pressure of the upper end of the vibrating lever G when forced against it in making a stroke, the link E being packed with cloth as shown. Against the action rail C I place a spring M resting with one part against the link E to cause it to react rapidly when in action. The pitman N is attached to the lever H in the usual way and extends to the keys (not shown).

In Fig. 2 the same parts occur and are operated the same way as in Fig. 1, the only difference being that the pin forming the pivot is made to pass through the lever H, vibrating lever G and the lower link F thus forming a common center or pivot for operating all the parts, while the results are identical.

Fig. 3 shows a top view of the manner of forming the same in which E is the upper link, F the lower link, G is the vibrating lever and H H show the ears or lugs of the actuating lever with the pins forming the pivots of the joints.

Fig. 4 shows the vibrating arm G pivoted through the actuating lever H and the lower link F omitting the part which extends under

the buffer *i*, in Fig. 1 and for the purpose of showing the manner in which it may be used to act against the link E without the said buffer and simply by the use of the regulating screw K and the reacting spring *j*. The X on lever G is to show a lead weight to act in bringing the same to its normal place after each hammer stroke with certainty and rapidity.

The operation of this action would be as follows: When the actuating lever H is forced up by the pitman, it, in turn acts upon the vibrating lever G and its links F and E forcing the hammer against the string, but just as it comes nearly in contact with the same, the arm of the vibrating lever G is forced against the link E and its other end comes into contact with the buffer *i* which unlocks the joint of the lower link and allows the hammer to strike the wire, and rebound. At the same instant the link E comes against regulating screw *l* and holds the hammer and all parts of the action in check until the key is released when the parts acted upon by the reacting springs *j* and *m*, assume their natural positions ready for another stroke. If the arm of the vibrating lever G is made long enough, and properly regulated by means of the screw K there will be little pressure exerted against the buffer *i* and it, the buffer, may be dispensed with altogether if desired, while the lever's vibrating function will still remain and be useful to regulate and take up any lost motion or wearing of the packing, which would change the position of the levers, and requires regulation, which could not be done by a permanently rigid appliance. The essential part of this invention then consists in a means of uniting and connecting the links E and F to a vibrating lever, which is susceptible of being regulated, and of connecting the whole mechanism in a compact form.

The links E and F show the action before a stroke, and E E show it when held against the regulating screw after striking.

Having thus fully described my invention and shown the methods by which it may be applied to a piano-action, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. In a piano action the links E and F pivoted together and in turn link F pivoted to a vibrating lever as G, the said vibrating lever pivoted to an actuating lever as H for the purpose specified.

2. A vibrating lever G having a jointed jack pivoted thereto said arm or lever pivoted to an actuating lever as H and having an arm extending from said first named pivot so as to come in contact with an unlocking device or buffer as *i*, in the manner shown and specified.

3. In a piano forte action the actuating lever H having vibrating lever G and link F pivoted together the said link F pivoted to link E and link E pivoted to the hammer butt all in combination with regulating check screw L of action rail C in the manner and for the purposes specified.

4. A vibrating arm or lever G having a jointed jack secured thereto and to an actuating lever as H, all secured together by means of a common pivot or pin passing through link F of the jointed jack, arm G and actuating lever H, in the manner and for the purpose specified.

5. The vibrating arm or lever G having a jointed jack attached thereto, a reacting spring connecting the arm G with an actuating lever H and a regulating screw, the actuating lever and the said vibrating lever pivoted together and with the jack, pivoted to the actuating lever forming a common pivot for the lever G, lever H and jack link F, all combined for the purpose named.

6. A vibrating lever as G having a reacting spring said lever pivoted to an actuating lever which contains a regulating screw, said vibrating lever having a jointed jack pivoted thereto and also to the hammer butt, the said jointed jack having a reacting spring acting against the action rail C, all arranged and combined for the purpose specified.

7. A vibrating lever as G having the jointed jack pivoted thereto and to actuating lever H, said lever G having reacting spring J, and regulating screw K secured to lever H, the jointed jack pivoted to hammer butt A having a flange D, which is secured to the action rail C, the check L reacting spring M and buffer *i*, all combined to operate in the manner and form named.

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