H. A. Leaman,

Piano Action,

No. 19,857. Patented Apr. 6, 1858.

Fig. 2.

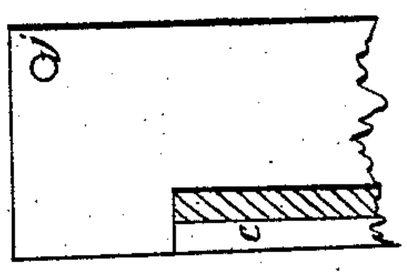
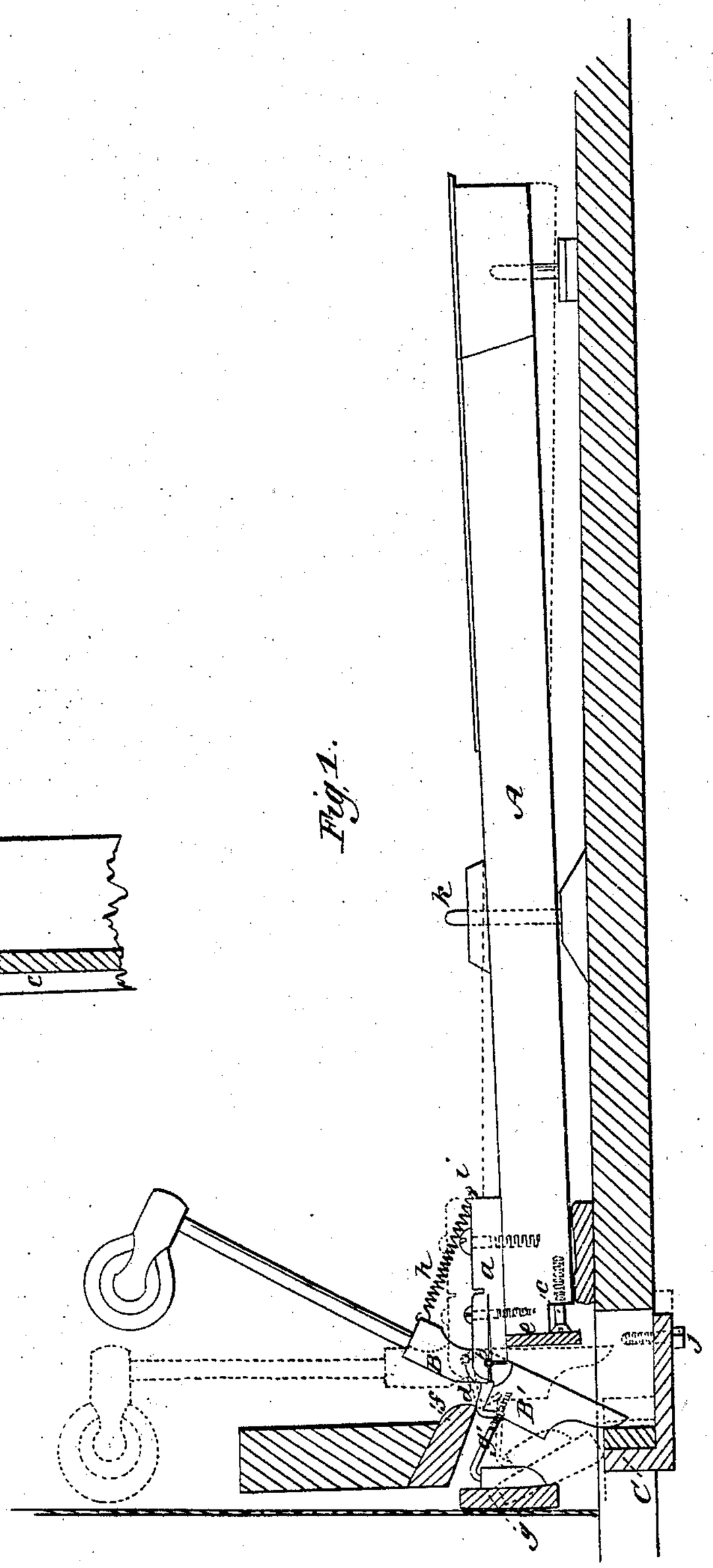


Fig. 1.



UNITED STATES PATENT OFFICE.

HENRY A. LEAMAN, OF NEW YORK, N. Y.

PIANOFORTE-ACTION.

Specification of Letters Patent No. 19,857, dated April 6, 1858.

To all whom it may concern:

Be it known that I, HENRY A. LEAMAN, of the city, county, and State of New York, have invented a new and Improved Piano-forte-Action; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side view of the action. Fig. 2, is a plan of a portion of the damper lever.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists mainly in a certain arrangement of the several parts of the action for upright piano-fortes, by which I am enabled to take out with any one of the keys, all the moving parts of the action which belong to that key, without disturbing any other part of the action.

To enable others to make and use my invention I will proceed to describe its construction and operation.

A, is the key having secured on the top of its rear end, the block *a*, in which is received the pivot *b*, of the butt B, B′ of the hammer, which pivot connects the hammer with the key. The hammer butt B, B′, is extended downward in a nearly straight form behind the rear extremity of the key, as indicated by B′, for the purpose of enabling the regulating screw C, and damper *g*, to be applied as will be presently described. The notch *d*, is in the back side of the butt, nearly opposite the pivot *b;* and over the bottom face of the said notch, which occupies a nearly horizontal position, there is situated a stationary rail *f*, which extends the whole length of the key board, and which serves, by preventing the upward movement of the back part of the butt when the pivot *b*, is raised by the depression of the front end of the key, to cause the hammer to be thrown back against the string by the said depression.

The regulating screw C, which serves to adjust the hammer to prevent it blocking against the string, screws into the lower part of the rear end of the key, which is recessed to make room for it, and the head of the said screw is covered by a piece of thick cloth or felt *e*, which is attached to the end of the key, so as to be interposed between the regulating screw and hammer butt. The screw operates to allow the hammer to strike with greater force, when screwed farther into the key, and vice-versa, as the farther it is screwed in, the farther it allows the lower part of the hammer-butt below the pivot *b*, to move forward when the hammer is operated upon by the key.

g, is the damper whose stem *g′*, screws into the back of the hammer-butt below the bar *f*, and pivot *b*. This arrangement of the damper causes it to bear against the string when the hammer falls far enough forward away from the string, the weight of the hammer serving to hold the damper against the string, and the damper serving to support the hammer when not in operation, and thus dispensing with the rail generally employed for the hammer to rest upon. The screw on the stem of the damper enables the damper to be used as a means of regulating the depth or height of the key, and the length of stroke of the hammer. A spring *h*, connecting the upper part of the hammer-butt with a pin *i*, in the block *a*, serves to pull the hammer from the spring as soon as the rear end of the key is allowed to fall by the release of its front end from the pressure of the finger. The pressure of the damper can be regulated by screwing its stem farther into or out from the hammer-butt.

In order to provide in a simple manner for throwing off the dampers I employ a lever C, which is movable horizontally on a pivot *j*, at one end, as shown in the plan Fig. 2, and has its other end connected with the pedal, so that when drawn forward by the pressure of the foot on the pedal, it will prevent the lower part of the hammer-butt from moving back far enough to permit the damper to touch the string.

The operation of the action is illustrated by showing it in Fig. 1, in two conditions, viz, at rest and in the act of striking, the former condition being represented in black and the latter in red outline. It will be seen that in both these conditions the working face of the notch *d*, is in contact with the edge of the rail; and in the whole operation it never leaves it. The depression of the front end of the key, at the time that it commences to throw back the hammer by the action of the face of the notch against the rail *f*, as already described, draws the damper away from the string. As soon as the key is set free the spring *h*, draws the

hammer away from the string and moves the damper toward it, and at the same time exerts a tendency to depress the rear end of the key through the weight of the hammer and damper, both of which are attached to the key, will be generally sufficient for this purpose.

This action constitutes a perfect repetition action, as from the operation of the face of the notch *d*, and the rail *f*, the hammer is always in condition to strike, provided there is any room under the key to depress it. It is extremely simple and cheap of construction and not liable to get out of order, but above all it permits of any key being removed with the hammer damper and regulating screw belonging to it for repair or adjustment; all that is necessary to effect this being to lift the key off its fulcrum pin *k*, and draw it forward with all the parts attached, to which operation there is no obstacle as the bearing is removed from its usual position in front of the hammer, where it would prevent such action, to a position below the key.

What I claim as my invention and desire to secure by Letters Patent, is

1. The attachment of the hammer of an upright piano-forte action to the rear extremity of the key and the arrangement of the notch *d*, in the back side of the butt B, of such hammer so that the working face of the notch will operate substantially as described in contact with the edge of a stationary bar *f*, and by such operation cause the hammer to move back to strike the string when the front end of the key is depressed.

2. In combination with the attachment of the hammer to the rear extremity of the key, I claim the attachment of the damper to the hammer butt below the pivot *b*, which attaches the hammer to the key, substantially as herein specified whereby it is made to serve as a stop to the hammer or means of regulating the length of stroke of the hammer and depth or level of the key as herein described.

3. I claim the application of the regulating screw *c*, in the rear end of the key to operate in combination with a portion B′, of the hammer butt extended below the pivot which attaches the butt to the key, substantially as herein described.

4. I claim the arrangement of the damper lever C, behind the downwardly extended portion B′, of the hammer-butt substantially as and for the purpose specified.

HENRY A. LEAMAN.

Witnesses:

W. TUSCH,

W. HAUFF.