(No Model.) 2 Sheets—Sheet 1.

J. P. RICHARDSON & G. F. DYER.

DAMPER ACTION FOR PIANO FORTES.

No. 481,121. Patented Aug. 16, 1892.

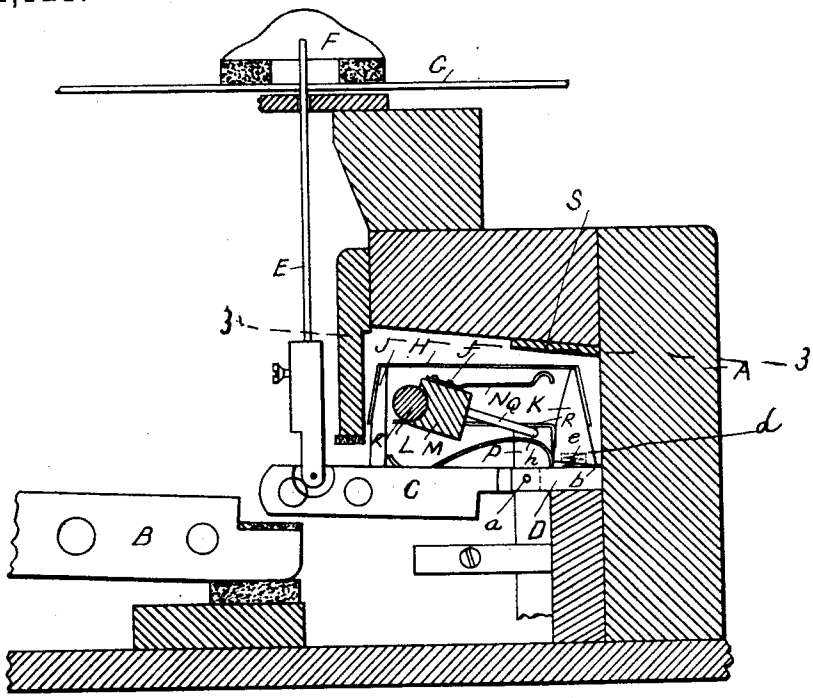

Fig. 1.

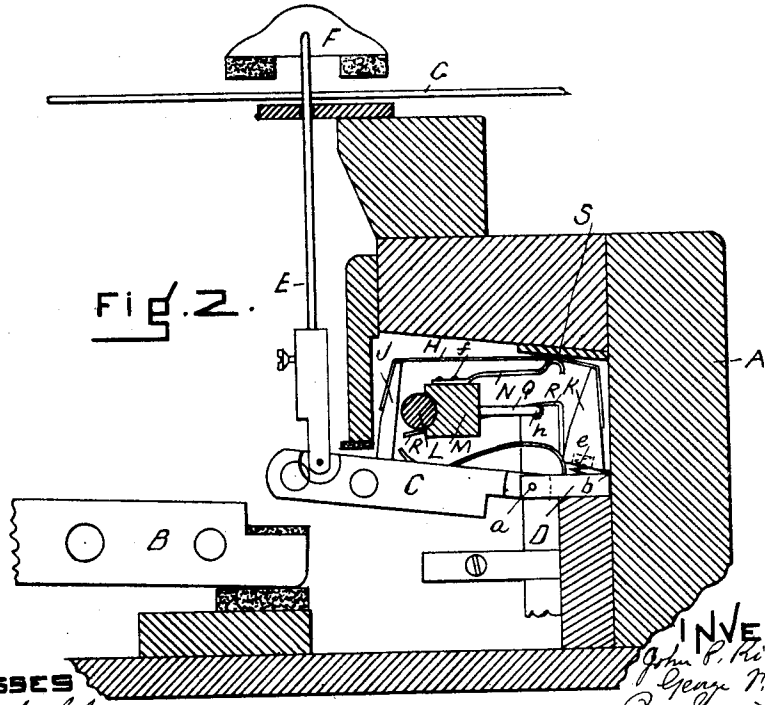

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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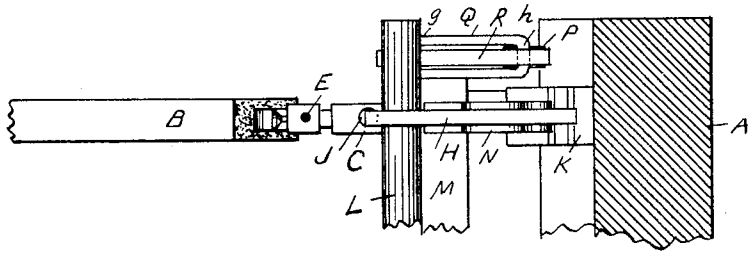

Fig. 3.

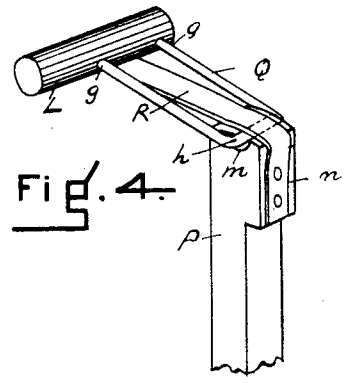

Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN P. RICHARDSON AND GEORGE F. DYER, OF CAMBRIDGE, ASSIGNORS TO THE MASON & HAMLIN ORGAN AND PIANO COMPANY, OF BOSTON, MASSACHUSETTS.

DAMPER-ACTION FOR PIANOFORTES.

SPECIFICATION forming part of Letters Patent No. 481,121, dated August 16, 1892.

Application filed October 13, 1890. Serial No. 367,992. (No model.)

To all whom it may concern:

Be it known that we, JOHN P. RICHARDSON and GEORGE F. DYER, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Damper-Actions for Pianofortes, of which the following is a full, clear, and exact description.

This invention relates to improvements in damper-actions of pianofortes, in which any one or more of the strings of the pianoforte can be left free to vibrate, and thus its tone prolonged or continued after the key has been released by the player; and the invention consists of a damper-lever of a pianoforte, a strip of flexible or yielding material connected by one end to the damper-lever and by its other end to a spring-arm on a suitable support, and a spring or bar secured on a suitable pivoted support and arranged to press said flexible or yielding strip against a bearing or stop, all substantially as hereinafter fully described, reference being had to the accompanying sheets of drawings, in which—

Figures 1 and 2 are vertical cross-sections of a portion of the framework of a pianoforte with the damper-action and the present invention applied thereto in side elevation, the two views representing the parts in different positions. Fig. 3 is a plan view below line 3 3, Fig. 1. Fig. 4 is a detail perspective view.

In the drawings, A represents in cross-section a portion of the framework of a pianoforte supporting the various parts, of which B is the rear end of the key, C the damper-lever pivoted at *a* to the flange D, secured to the framework, E the damper-wire, F the damper, G the string, all arranged substantially as usual in pianofortes and needing no more particular description herein.

H is a strip of cloth or tape or of any suitable flexible sheet material secured at one end to an upright arm or post J of the damper-lever and by its other end to an upright arm K, pivoted at *b* to the flange D, which arm has in its under side a socket *d*, in which is a light spiral spring *e*, bearing against the end of the socket and the top of the flange. The spring pressing upward or against the arm K swings it back or to the right to keep the flexible strip taut.

L is a round rod or bar pivoted at each end in the side or end frames of the framework (not shown in the drawings) and above the levers, and has rigidly secured to it on one side along its length a strip of wood M, on top of which wooden strip is secured a spring N by screws at *f*, which extend back from the bar in line with and below the flexible strip H, as shown in Fig. 1 more particularly, the parts being in such figure in their normal position.

P is an upright bar or rod adapted to slide up and down in suitable guideways, (not shown,) and arranged to be connected in any suitable manner with a pedal of the pianoforte for operation thereof or arranged to be operated in any suitable manner.

Q is a wire loop, its ends *g* being secured in the rod, its loop end *h*, which is at right angles to its length, lying in a groove or socket *m* in the upper end of the bar P.

R is a flat spring secured at *n* to the side of the bar P and extending over its upper end and the loop *h* of wire and pressing by its free end against the under side of the rod L, acting by its pressure to hold the bar, and through the looped wire the spring N, down, as shown in Fig. 1.

The operation of the parts is as follows: The key having been played, it raises the damper-lever and its damper into the position shown in Fig. 2, and while held in this position the bar P is raised by the pedal, which, through the looped wire Q, swings the rod L upon its pivot and raises the free end of the spring N upward for it to press up against the under side of the flexible strip H and hold it firmly against the under side S of the part T of the frame, as shown in Fig. 2. The key then being allowed to fall at its inner end, the damper-lever will still be held up and its damper from the string, by the holding of the strip by the spring, allowing the string to vibrate freely independently of the movements of the key. Releasing the pedal, the bar drops from the pressure of the spring R,

freeing the spring N from its bearing on the strip H, allowing the damper-lever to fall and its damper to return to and rest on the string. The strip is made of flexible material, so it can bend or yield when the key is played and also when the spring N presses up against it, and to always keep it taut the spring *e* in the arm K is applied thereto. The strip H, being made of flexible or yielding material, allows the keys to be freely played without interfering with the usual movements of the damper-levers, and also to allow of such free movements if the springs N are raised and pressed against the yielding strips—as in one case the spiral spring—although for the purpose of keeping the strip taut, it is so weak as not to offset appreciably the action of the damper-lever, and as when the rod L is operated to affect by a spring N one of the damper-levers all the springs will press their respective strips against the bearing, and as each of such strips will be held at a point near its rear end it will have no effect upon the damper-lever either way, so that such damper-levers will be free to move as usual.

There is shown in the drawings only one damper-lever and damper with this invention applied thereto; but in a pianoforte each damper-lever would have its independent strip and spring, &c.; also only one rocking bar L would be used and supported at each end on the frame of the piano, but having a series of separate springs, one to each damper-lever, and connected to a suitable pedal to be operated by the foot in any of the usual ways.

In lieu of a series of springs, one bar, of a length to extend over the damper-levers and connected to the rocking bar L, could be used, and also, if desirable, its edge, which would bear against the strips, could be yielding by having a strip of india-rubber or felt, &c. The rear end of the strip can be secured to a spring-arm attached to the damper-lever in lieu of an independent support.

Having thus described our invention, what we claim is—

1. In combination, a damper-lever, a flexible or yielding strip attached thereto by one end, a spring-arm having the strip secured thereto by its other end, a bearing or stop, and mechanism for holding said flexible or yielding strip against said bearing.

2. In combination, a damper-lever, a flexible or yielding strip attached thereto by one end, a spring-arm having the strip secured thereto by its other end, a bearing or stop above said strip, and a spring attached to a suitable support adapted to be moved into position for said spring to hold said strip against said bearing, for the purpose specified.

3. In combination, a damper-lever, a flexible or yielding strip attached thereto by one end, a spring-arm having the strip secured by its other end, a bearing or stop above said strip, and a spring attached to an arm pivoted to a suitable support, for the purpose specified.

4. In combination, a damper-lever, a flexible or yielding strip attached thereto by one end, a spring-arm having the strip secured by its other end, a bearing or stop above said strip, and a spring attached to an arm pivoted to a suitable support, and mechanism for operating said pivoted arm.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JOHN P. RICHARDSON.
GEO. F. DYER.

Witnesses:
EDWIN W. BROWN,
CARRIE E. NICHOLS.