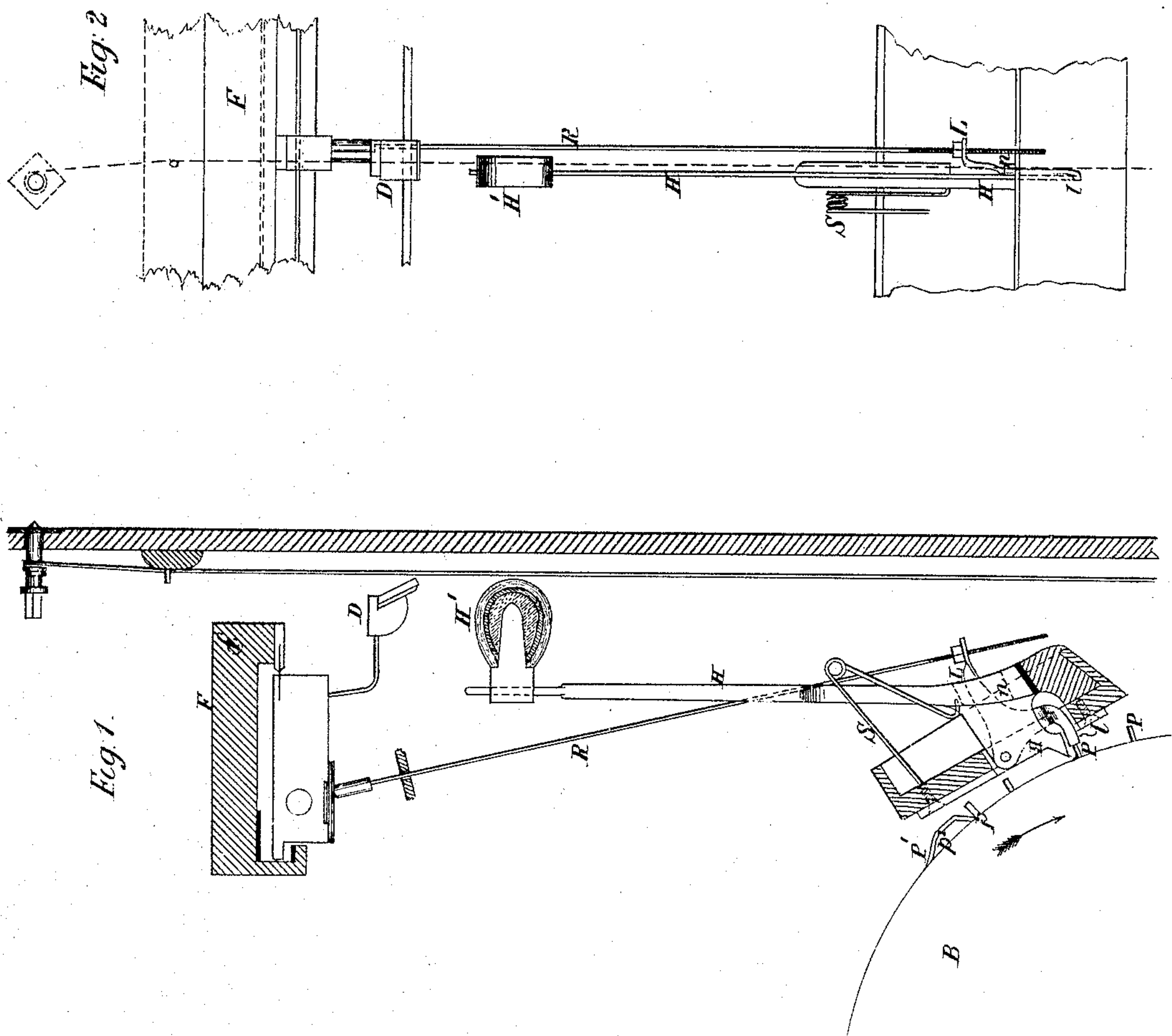


D. IMHOF.

Damper-Actions for Automatic Musical Instruments.

No. 157,754.

Patented Dec. 15, 1874.



Witnesses;
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UNITED STATES PATENT OFFICE.

DANIEL IMHOF, OF LONDON, ENGLAND.

IMPROVEMENT IN DAMPER ACTIONS FOR AUTOMATIC MUSICAL INSTRUMENTS.

Specification forming part of Letters Patent No. 157,754, dated December 15, 1874; application filed September 11, 1874.

To all whom it may concern:

Be it known that I, DANIEL IMHOF, of No. 547 Oxford Street, London, in the county of Middlesex, England, have invented an Improvement in Automatic Musical Instruments; and do hereby declare that the following description, taken in connection with the accompanying sheet of drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to secure by Letters Patent—that is to say:

My invention relates to means of damping or sustaining the notes produced by the strokes on strings, bells, springs, and other sounding bodies of hammers worked automatically by pegs or projections on a revolving barrel or other traveling-surface; and in order that my invention may be understood, I will refer to the accompanying sheet of drawings, showing its application to an automatic stringed instrument.

Figure 1 represents a side view of one of the strings with its hammer and damper worked by pegs on a revolving barrel, part of the barrel, sound-board, and framing of the instrument being shown in section. Fig. 2 represents a back view of the hammer and damper, the sound-board being supposed to be removed.

B is a portion of the cylindrical barrel, which is made to revolve in the direction of the arrow, so that a peg, P, upon it, as it passes under or past the inclined nose of the hammer-lever H, causes the hammer-head H' to be withdrawn from the string, and when the peg has passed the nose of the hammer-lever a spring, S, impels the hammer-head against the string, and causes it to sound.

So far the construction and operation of the parts are of ordinary and known kind, and form no part of my invention.

D is a damper, also of ordinary construction, mounted and stopped on a frame, F, which frame may be pivoted at f, and may be caused to rock on its pivots so as to withdraw all the dampers from the strings, according to the mode usually adopted in piano-fortes.

The novel construction and arrangement for operating the damper D by the movement of the barrel B is as follows: The damper-rod R is connected with an adjusting-nut to one arm of a bell-crank lever, L, mounted by the side of the hammer-lever H on the same axis. The other arm of the lever L is turned a little to one side, at l, so as to present a nose in the same plane with and immediately behind or next to the nose of the hammer-lever. The lever L rests in a notch in the side of the hammer-lever H, on the lower shoulder thereof, n. When a peg, P, of the barrel passes the nose of the hammer-lever, so as to raise the hammer from the string, the shoulder n of the notch in the hammer-lever, acting on the lever L, raises the rod R and withdraws the damper D from the string. The peg P having passed the nose of the hammer-lever, the hammer is discharged, striking the string; but the same peg P having now come under the nose l of the damper-lever, as shown in Fig. 1, keeps up the damper until the peg has passed that nose, whereupon the damper again falls against the string and stops its vibration. Thus, after the stroke of the hammer on the string, the sound of the latter is sustained, while the peg P passes the nose l of the damper-lever. When it is desired that a note should be sustained for a longer period, I make the peg of the kind shown at P', consisting of a simple peg, p, succeeded by a peg, p', of staple form, with sloping terminations. The peg p raises the hammer and discharges it, as already described, afterward sustaining the damper while it passes the nose l, but before the peg p has cleared the said nose l the hammer is again lifted by the staple p', the shoulder of the notch in the hammer-lever keeping the damper up until the staple-peg p' passes the noses of both the hammer and the damper levers. The rear of the staple-peg p' being sloped off, the hammer, instead of being discharged suddenly from it so as to strike the string, is allowed by the passage of the sloped portion to move gradually toward the string without striking it.

Although in the drawings I have shown the damping apparatus applied to a string, it is obvious that a similar construction and arrangement are applicable when sounding-bodies other than strings, such as bells or

springs, are employed. It may also be readily understood that a similar construction and arrangement are applicable when the acting pegs, instead of being on a revolving barrel, are on a plane or other traveling surface.

Having thus described the nature of my said invention, and the best means I know of carrying it out in practice, I claim—

1. The combination of the damper-lever L with the hammer-lever H of an automatic musical instrument, so that when the hammer is raised to strike the damper is also raised, and after the hammer has struck the damper is for a time held off by the peg, which raises the hammer, permitting the struck note to sound, substantially as herein described.

2. The compound projection P', consisting of the peg *p*, which, effecting the stroke of the hammer, raises the damper, and of the sloped portion *p'*, which, by again raising the hammer, keeps off the damper, thereby sustaining a prolonged note on an automatic musical instrument, substantially as herein described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses this 27th day of July, 1874.

DANIEL IMHOF.

Witnesses:

OLIVER IMRAY,
JNO. P. M. MILLARD.