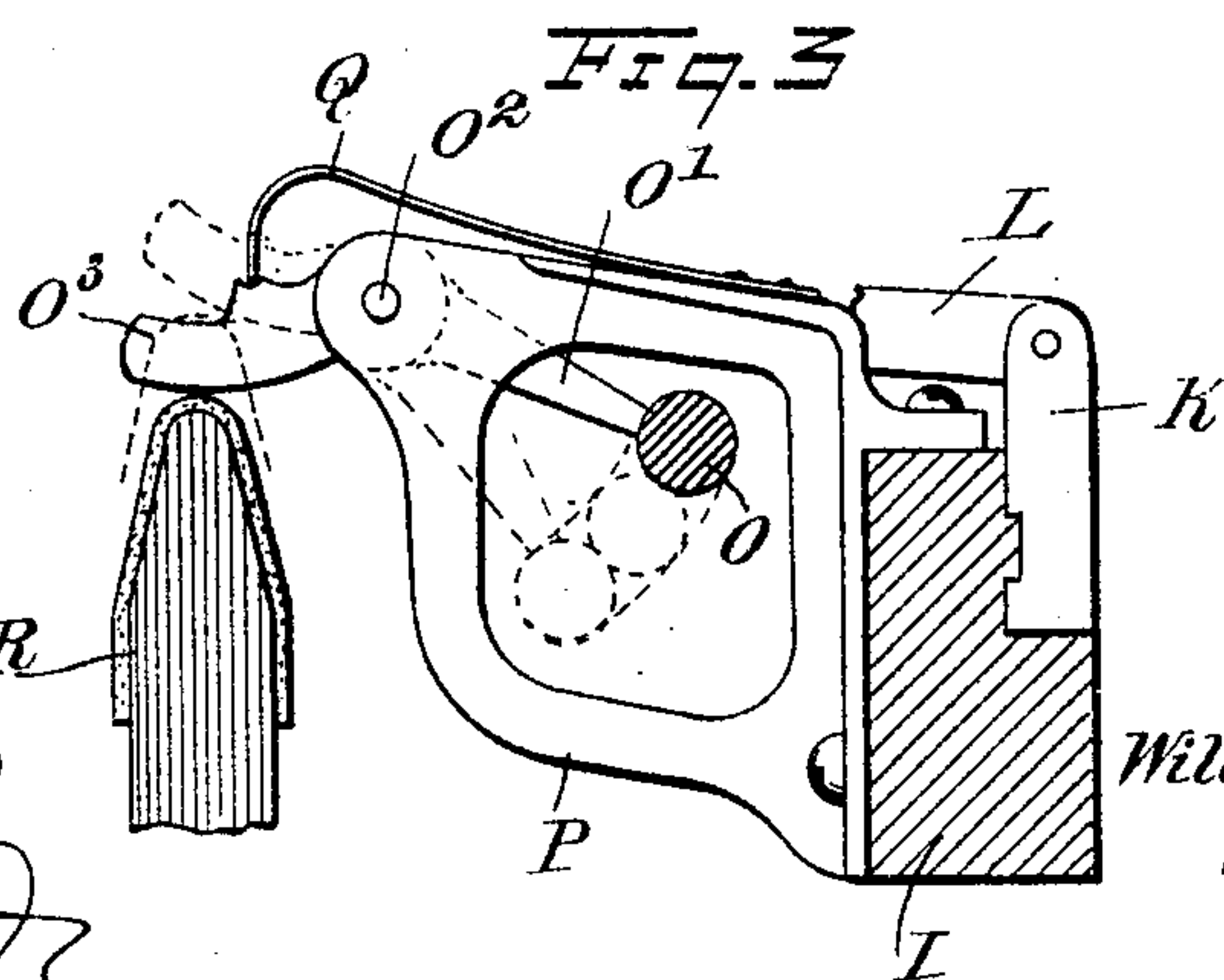
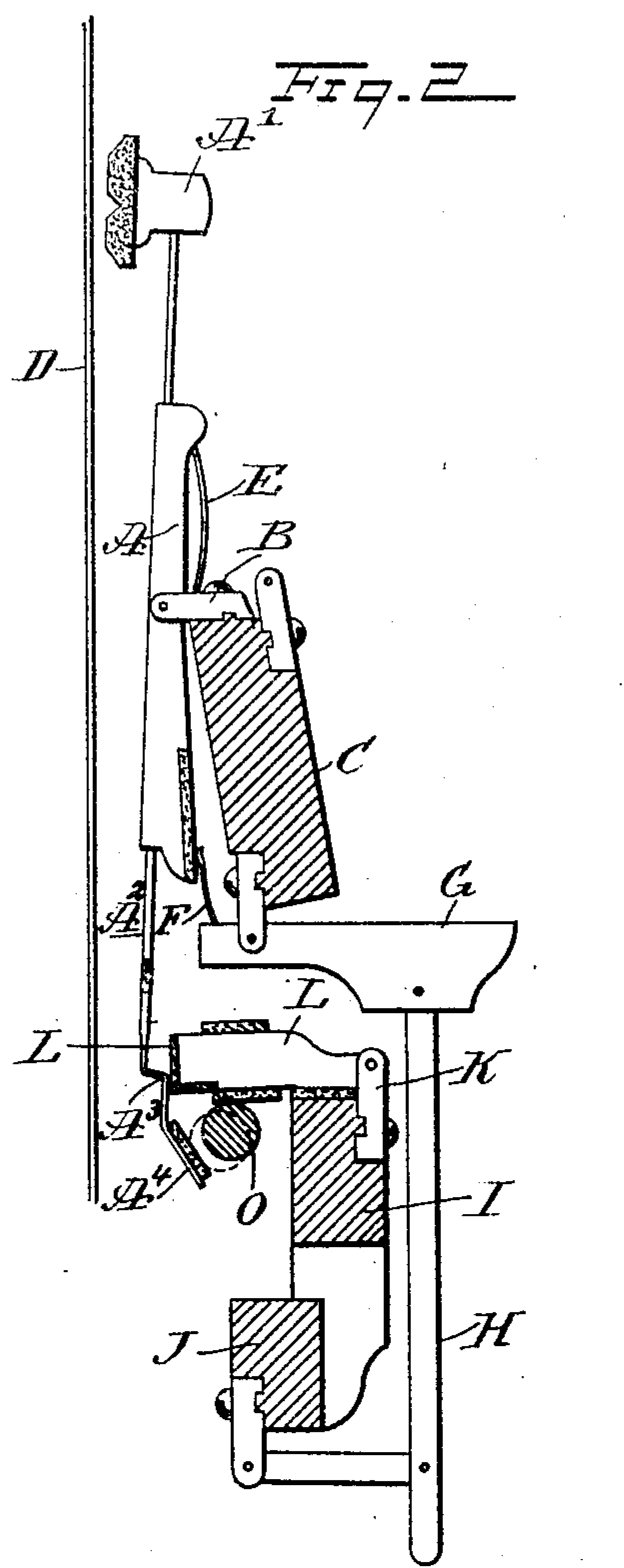
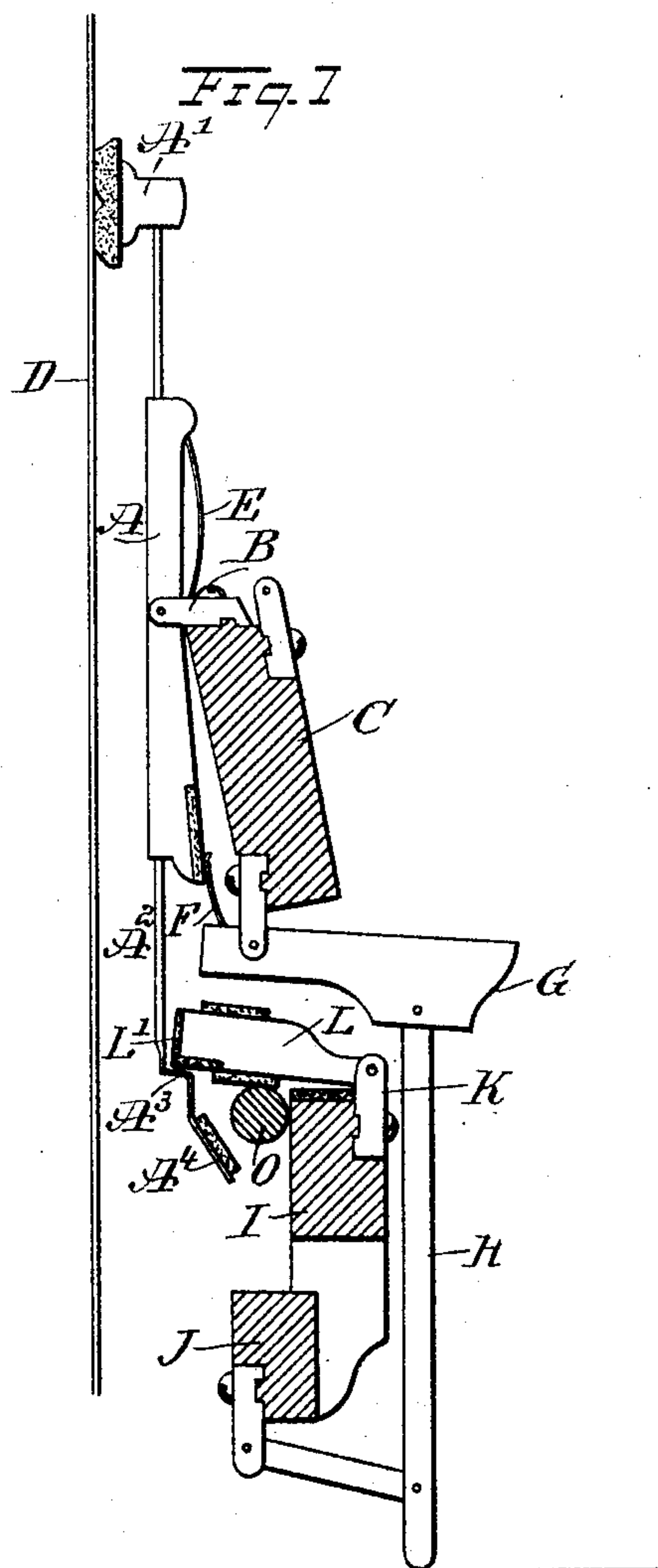


W. A. EARHART.
PIANO DAMPER ACTION.
APPLICATION FILED NOV. 25, 1903.

2 SHEETS—SHEET 1.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM A. EARHART, OF PITTSBURG, PENNSYLVANIA.

PIANO DAMPER-ACTION.

SPECIFICATION forming part of Letters Patent No. 780,944, dated January 24, 1905.

Application filed November 25, 1903. Serial No. 182,605.

To all whom it may concern:

Be it known that I, WILLIAM A. EARHART, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Piano Damper-Action, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved piano damper-action for both upright and grand pianos arranged to automatically damp the strings not sounded at the time to keep the unused strings from vibrating in unison with the strings sounded by the hammers.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as arranged for an upright piano, the rails and damper-rod being in section and the dampers in a closed position—that is, in contact with the strings. Fig. 2 is a like view of the same, showing the damper open out of engagement with the string. Fig. 3 is an enlarged side elevation of the mechanism for operating the damper-rod from the pedal, the rail and damper-rod being shown in section. Fig. 4 is a side elevation of the improvement as arranged for a grand piano, the rail and damper-rod being shown in section and the damper closed or in engagement with the string. Fig. 5 is a like view of the same, showing the parts in position when the damper is open; and Fig. 6 is a sectional side elevation of the mechanism for actuating the damper-rod from the pedal, the rail and damper-rod being shown in section.

In the action for upright pianos, as shown in Figs. 1 and 2, the damper-lever A is fulcrumed in the usual manner on a flange B, attached to a center rail C, and the upper end of the damper-lever A is provided with the

usual felted damper-head A', normally engaging a string D by the action of a damper-lever spring E. The lower end of the damper-lever A is engaged by a damper-spoon F, held on a jack rocker or wippen G, connected by a rod H in the usual manner with the piano-key.

The damper-lever A is provided at its lower end with a depending rod A², having an offset A³ and a felted angular terminal A⁴, as plainly shown in Figs. 1 and 2.

On a rail I, preferably supported from a lower flanged rail J, is secured a flange K, on which is fulcrumed a gravity-arm L, having its free felted end L' normally standing above the offset A³, as plainly shown in Fig. 1, the said arm L being normally held in an uppermost position by a rod O, held at each end on an arm O', (see Fig. 3,) mounted to swing on a pivot O², carried by a bracket P, attached to the rail I. The arm O' is provided with an extension O³, pressed on by a spring Q to hold the rod O and with it the arm L normally in an uppermost position, as shown in Fig. 1. The extension O³ is adapted to be engaged by the ordinary damper-pedal bar R of the pedal mechanism, so that when the pedal is pressed half-way down and the pedal-bar R rises correspondingly then it acts on the extension O³ and swings the same upward against the tension of the spring Q to cause the arm O' to swing downward and with it the rod O. When this takes place, the arm L swings downward by its own weight, so that its free end L' moves in front of the offset A³ whenever the corresponding piano-key is played and the damper-lever A actuated.

As soon as the arm L drops in front of the offset A³ it locks the damper-lever A in an open position and holds it against return movement, as will be readily understood by reference to Fig. 2. The damper-lever A remains in this open position until the pedal is released, so that the pedal-bar R in its downward movement allows the spring Q to return the arm O' and the rod O to their normal uppermost positions and the upward movement of said rod swings the arm L upward out of engagement with the offset A³ to unlock the

damper-lever A and to allow the spring E thereof to move the damper-lever into its closed position. (Shown in Fig. 1.)

When the pedal is pressed all the way down, then the downward swinging motion given to the rod O causes the latter to move in engagement with the terminal A⁴, thus imparting a rearward swinging motion to all the damper-levers A to open the same.

When the pedal is released and the pedal-bar R moves downward, then the spring Q returns the arm O' and the rod O to their normal uppermost positions, whereby all the arms L are swung upward out of engagement with the offsets A³ to allow the damper-levers A to swing into a closed position by the action of their springs E.

By the arrangement described the damper-lever A for a pressed key swings individually open when the pedal is pressed half-way down, and the damper-lever remains in this position until the pedal is released. When the pedal is pressed all the way down, then all the damper-levers A are swung into an open position and remain so until the pedal is released.

In grand pianos, as illustrated in Figs. 4, 5, and 6, the arm L' works on an offset A⁵, directly formed on the damper-lever A⁶, and the rod O⁴ is normally in a lowermost position. Now when the pedal is pressed half-way down then the pedal-bar R' rises to the position shown in Fig. 6, and when a key is now played then the corresponding damper-lever A⁶ is caused to swing upward into an open position or out of engagement with its string, and at the same time the gravity-arm L' swings downward at its rear end under the offset A⁵ (see Fig. 5) to lock the damper-lever A⁶ against return movement.

When the pedal is released and the pedal-bar R' moves downward back to its former position, then the rod O⁴ is free to swing downward and in doing so imparts a return swinging motion to the arm L' to unlock the damper-lever A⁶ and allow the same to return to its normal closed position. (Shown in Fig. 4.)

From the foregoing it will be seen that in the arrangement described for both upright and grand pianos the strings not played remain damped by the dampers when the pedal is pressed half-way down, and hence the damped strings do not vibrate sympathetically with the strings that are sounded, and all undue sounds or noises are thus completely avoided.

The parts of the damper-action are provided wherever necessary with felt, as indicated in the drawings.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A piano damper-action, comprising a damper-lever adapted to be swung out of contact with the string by the piano-action when a key is played, said lever being provided with a rod having an offset and an angular

terminal, a gravity-arm adapted to drop in front of the said offset to lock the damper-lever out of contact with the string, a pivoted and spring-pressed arm, a rod carried by the said arm, and adapted for engagement with the gravity-arm and the angular terminal of the rod carried by damper-lever, and a pedal for engaging the said pivoted arm, as set forth.

2. A piano damper-action, comprising a damper-lever adapted to be swung out of contact with the string by the piano-action when a key is played, said lever being provided with a rod having an offset, a gravity-arm adapted to drop in front of the offset of the rod of the damper-lever to lock said lever in the position to which it has been moved, a pivoted and spring-pressed arm, a rod carried by said arm and adapted for engagement with the gravity-arm to raise it out of engagement with the offset of said rod, and a pedal for operating said pivoted arm, as set forth.

3. A piano damper-action, comprising a damper-lever provided with an offset and adapted to be swung out of contact with the string by the piano-action when a key is played, an arm adapted to automatically move into engagement with the offset of the damper-lever to lock it in the position to which it has been moved, a swinging rod adapted for engagement with the said arm to move it out of engagement with the offset of the damper-lever, and a pedal for operating the damper-rod, as set forth.

4. In a piano, the combination with the ordinary damper-pedal of a piano, of a damper-lever provided with an offset and adapted to be swung out of contact with the string when a key is played, a gravity-arm adapted to automatically move into engagement with the damper-lever to lock it in the position to which it has been moved, and a swinging rod for operating the said arm to release the damper-lever, said rod being operated by the pedal, as set forth.

5. A piano damper-action, comprising a damper-lever adapted to be swung out of contact with the string by the piano-action when a key is played, a swinging arm for locking the damper-lever out of contact with the string, a swinging and spring-pressed rod for operating the swinging arm when swung in one direction, and the damper-lever when swung in the opposite direction, and a pedal for swinging the said rod against the action of its spring, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. EARHART.

Witnesses:

SAMUEL J. CUTHBERT,
S. G. SIPE.