

C. PETITCLERC.
Upright-Piano Actions.

No. 156,308.

Patented Oct. 27, 1874.

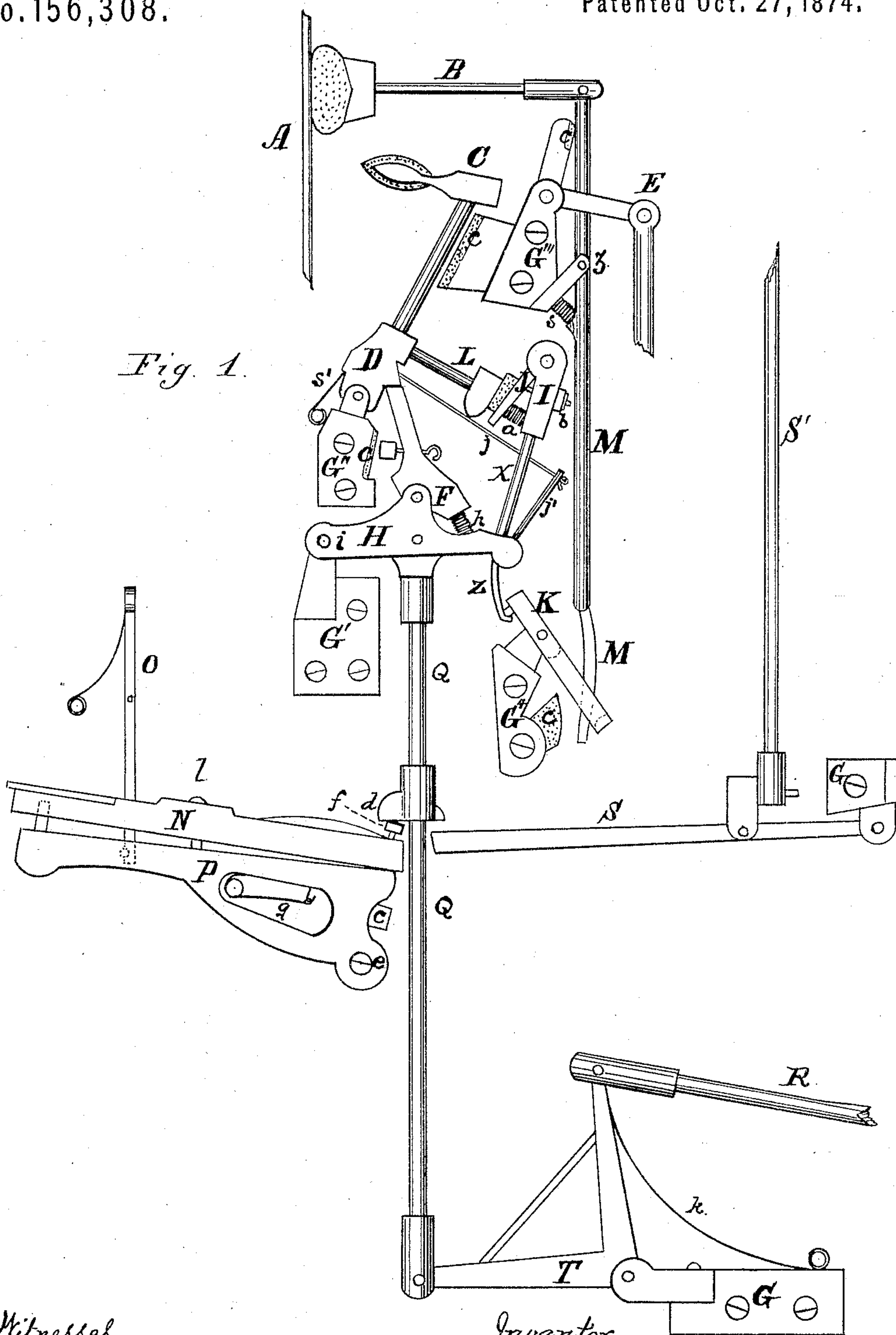


Fig. 1.

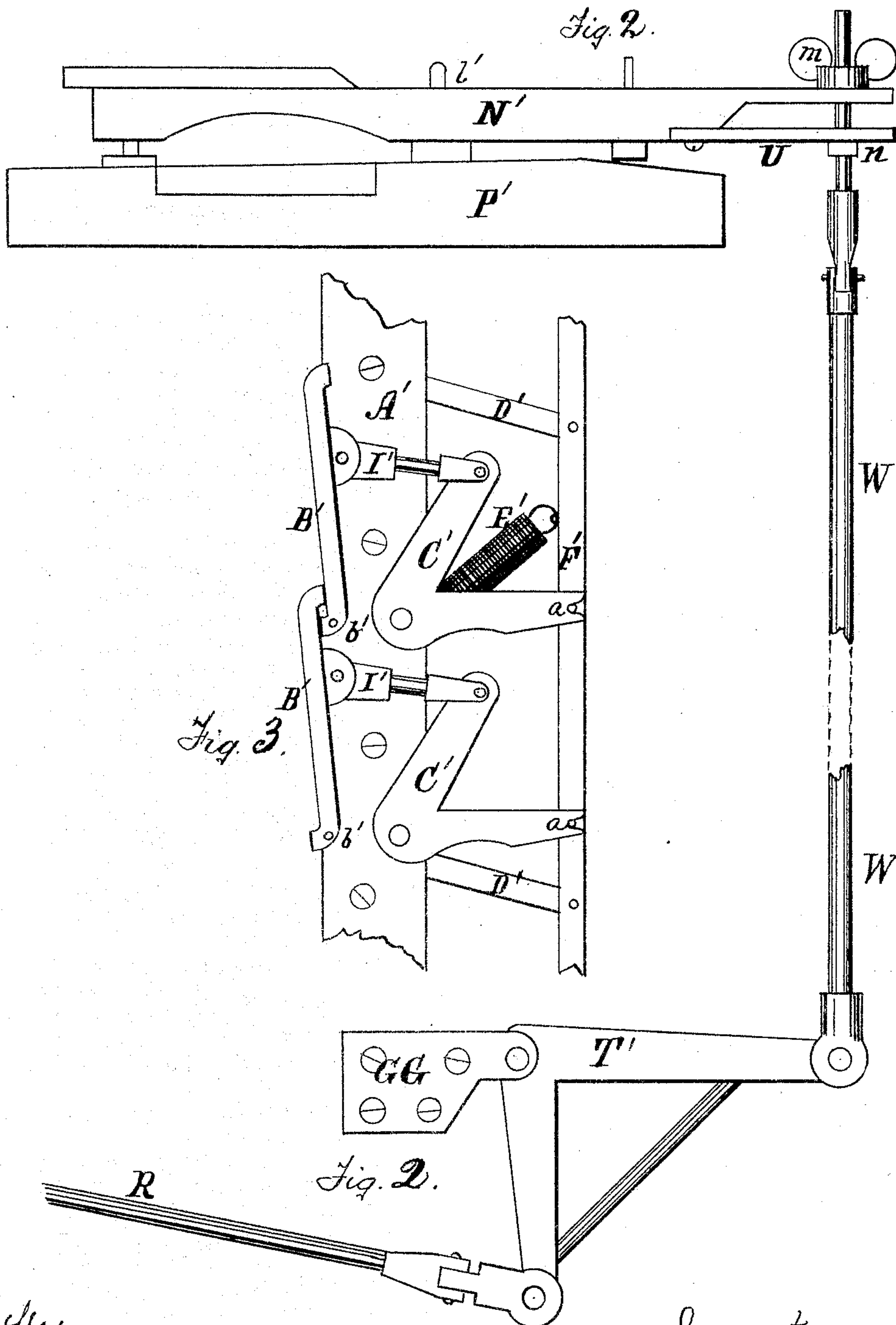
Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES PETITCLERC, OF PARIS, FRANCE.

IMPROVEMENT IN UPRIGHT PIANO ACTIONS.

Specification forming part of Letters Patent No. **156,308**, dated October 27, 1874; application filed July 16, 1874.

To all whom it may concern:

Be it known that I, CHARLES PETITCLERC, of Paris, France, have invented certain new and useful Improvements in Upright Grand Pianos; and do hereby declare the following to be a full, clear, and exact description of the same, so as to enable others skilled in the art to which it appertains to make and use my said improvements, reference being made and had to the accompanying drawings, which form part of this specification, and in which—

Figure 1, Sheet 1, is a vertical side elevation of the entire action of one key of my upright grand piano, showing clearly the double chair, hinged key-board, and methods of transmitting motion from key to hammer and damper, taken in connection with Sheet 2. Fig. 2, Sheet 2, shows the continuation of the wires and triangles of transmission up to the key-board, being a continuation of Sheet 1. It also shows the forking of the key. Fig. 3, Sheet 2, shows the mechanism of the blinds at the back of the piano, being a side view of the same, the side of the piano nearest to the observer's eye removed.

Similar letters of reference indicate like parts in all the figures.

My invention aims at the production of an upright grand piano, which shall take up no more room than a common piano, and in which the performer can be so seated as to have his face toward the audience and his hands visible to them, the wires being arranged behind him.

The objections to this form of piano have been many and great, owing to the heavy action of the keys, requiring great strength on the part of the performer; then, too, the vibrations coming vertically from behind have been so sonorous as to almost deafen him and prevent him from hearing himself play; then, also, great difficulties have had to be encountered in turning the instrument.

The advantages of room, economy, strength of tone, and beauty of adornment are readily to be comprehended.

For the better information of the public I will proceed to describe the construction of my improvement.

Figs. 1 and 2 show a side view, taken through

my piano, of the action of one key. N', Fig. 2, is the key pivoted at V'. P' is the key-board. The rear end of the key is forked, as shown, by cutting it away below, and fastening an elastic piece of metal, U, to it. Through this forked end passes the transmission-wire W, which has a button, n, below the piece U, and is provided with a regulating thumb-screw, m, on top.

This arrangement is of great importance, as it enables the convenient regulating of any looseness or play of the action.

The transmission-wire W passes vertically downward, and attaches by a pivot-joint to the transmission-triangle T', pivoted to the butt G G. To the opposite arm of this triangle attaches the wire R, which continues along backward, and slightly inclined from the horizontal in the base of the piano, and at the rear attaches to the upper arm of a second triangle, T, controlled by the spring k. To the horizontal arm of the triangle T is fastened the main rod Q of the action, which, passing up perpendicularly in the upright casing of the piano, operates the hammer, as hereinafter to be described.

The entire mechanism displayed in Fig. 2 of Sheet 2 is to be located in a casing in front of the main case, and between the two the performer sits; but the methods of transmission may be altered and the key-board located as desired.

By consulting the drawing it will be seen that a depression of the key will be followed by an elevation of the main rod Q, by the natural action of wires and triangles, and by the system of joints I have obviated the play of the action most materially.

Instead of using the key-board P', depicted upon Sheet 2, Fig. 2, I use largely that represented on Sheet 1. P being the board, and N the key, the board is hinged at e, and held ordinarily by a rod, O, or like device, so that a button, f, on the rear extremity of the key, takes under a heel, d, on the main rod Q, serving to elevate it when the key is played upon. By a deflection of the rod O this key-board is allowed to fall into a vertical position, laying bare the wires and bridge, and enabling the ready tuning of the wires. S S' displays another method of transmitting motion to the

main rod Q, the rod S' being supposed to continue up to a key-board above. (Not shown.)

Having now explained the various methods of elevating the main rod Q it remains for me to show how, by its elevation, the hammer and damper are operated.

Lying midway across the rod Q is the escapement-lever H, a lever of the third order, fulcrumed at *i* to the butt G', and by a center-pin attached to main rod Q. Pivoted to this lever, directly above the main rod, is the escapement F, whose upper extremity is pressed constantly against the nose of the hammer D by the spring *h*. This escapement and its lever H are both functionally broken connections between main rod and hammer, serving to transmit motion. The escapement is provided with an adjustable button to cushion it against the hammer-butt G. Pivoted to butt G is the hammer-nose D, carrying hammer C, which strikes the wire A and produces the sound.

The garniture of the hammer is modified somewhat by additional envelopes.

The main rod, escapement-lever, escapement, and hammer are portions of the action of most pianos.

I have now to explain a mechanism somewhat intricate, but by whose aid, after much labor, I have succeeded in producing repeated notes quickly, readily, and easily. I refer to my double-check I. It consists of two parts, one fixed, one movable, forming an angle, hinged at apex together, but separated at base by a spiral or other spring. I is the fixed part, which is rigidly connected to the right side of the escapement-lever by the rod X, and rises directly up from it. J is the movable part, carrying a cushion, which presses against the right arm L projecting laterally from the nose of the hammer. There is also a regulating-button, *b*, upon the chair or check.

Such being the construction, it acts in aid of the escapement for the ready production of repeated notes. When the hammer is resting back upon the cushion *e* on the damper-butt G'', the right arm L pressing hard upon the movable part J of chair compresses its spring, the hammer is thus doubly cushioned. Now, when the key is struck, the end of the escapement-lever carrying the double chair or check being deflected in a larger arc than that portion carrying the escapement, it follows that the double chair has a greater motion imparted to it than the escapement, and its hinge piece J is pressed so much harder upon the right arm L that the chair-spring *a* is compressed to such a point that its elastic force overcomes the resistance, which is the weight of the hammer communicated through the right arm L, and the spring recoils in aid of the escapement, and both together act upon the hammer to throw it up and against the wire at the slightest touch of the key.

j is a string or gum band attached to the hammer-nose, and to an arm, *j'*, on the es-

capement-lever, and serves to control the blow of the hammer, as does also spring *s'* on hammer-butt G''.

The damper B is thrown off the wires by an arrangement with the pedals as in the ordinary way, as shown by the rod and lever E in Fig. 1. It is also operated, in connection with the key, by the following contrivance: The main wire M of the damper is fulcrumed at *z* to damper-butt G''', and is kept ordinarily pressed on the wire by the spring *b* upon the butt G'''. Depending from H below the free extremity of the escapement-lever H is the hook Z, which hooks upon a stud on the upper end of the damper forked levers K, pivoted to a butt, G⁴. Through the forks of this lever runs the lower end of the main wire M. Now, when the escapement-lever is raised the hook Z deflects outward the upper end of lever K, which throws in the lower end of wire M, and, consequently, raises the damper, as will be readily understood.

I construct the main casing of the piano with a back covered with cloth as high as the performer's head, and above that level I arrange a set of blinds, B' B', Fig. 3, of any number, controllable by a foot-lever.

The blinds B' B' are pivoted to frame-work A' by pivots *b'*. (Shown in Fig. 3, Sheet 2.) Each blind has a knee, C', connected, by rods I', to it, which knees are pivoted to frame-work, and connect to a rod, F', acting in connection with a treadle. This rod is connected, by pivot-arms D', to the frame-work, and also by the spring E', so that, when the rod F' is raised, the knees, turning also, throw out the blinds, and the rod is drawn back by the spring, thus closing the blinds again.

Having thus fully described my invention, what I claim, and desire to secure Letters Patent of the United States, is—

1. The key N', forked at its rear extremity, in combination with the wire W, the button *n*, and the tightening-screw *m*, to take up any looseness or slackness in the action, substantially as specified.

2. The hinged key-board P, made movable for greater convenience in tuning the piano, substantially as described.

3. The hammer-check I, provided with the hinged jaw or part J and spring A, constructed as described and shown.

4. The forked damper K, in combination with the escapement-lever H, the hook Z, the damper-rod M, and damper B, for the elevation of the damper, substantially as described.

5. The combination of the knees C' and rods I' with the pivoted blinds B' B' and the treadle-rod F', the latter being connected, by bars D' and spring E', to the frame-work A', the whole constructed and arranged to open or close the blinds, as specified.

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Witnesses:

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