C. E. & A. F. ROGERS.
Upright-Piano Actions.

No. 199,314. Patented Jan. 15, 1878.

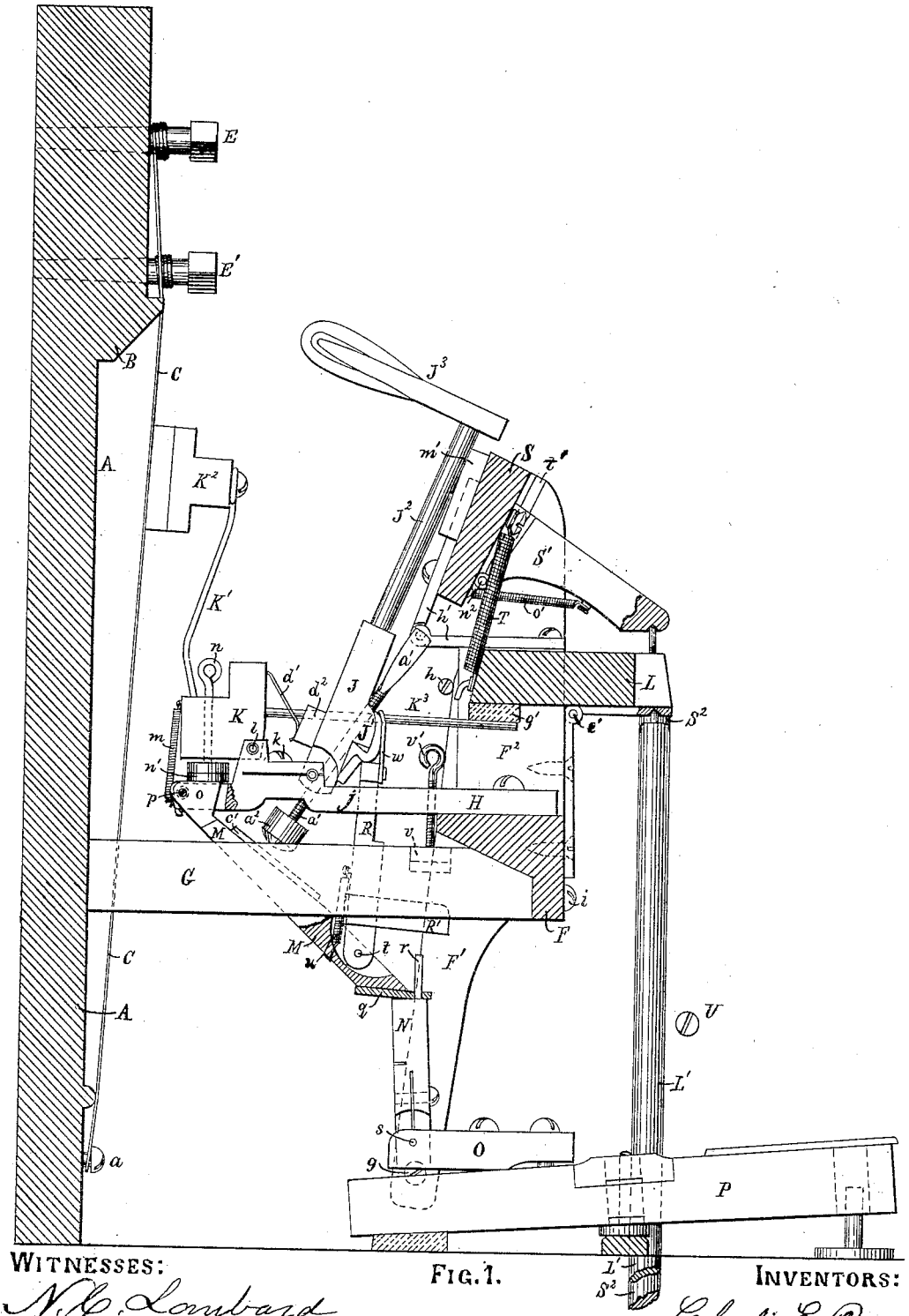

FIG. 1.

WITNESSES:
N. P. Lombard
E. N. Hemmenway.

INVENTORS:
Charles E. Rogers
Alfred F. Rogers.

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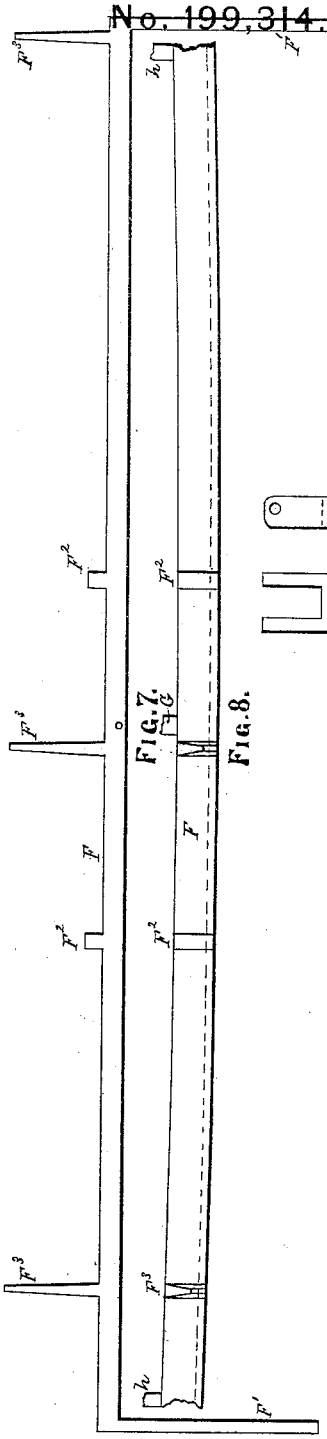

FIG. 7. FIG. 8.

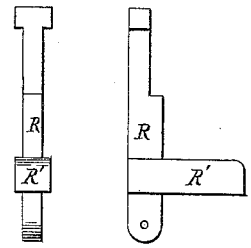

FIG. 6. FIG. 5.

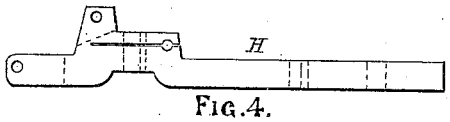

FIG. 4.

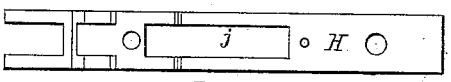

FIG. 3.

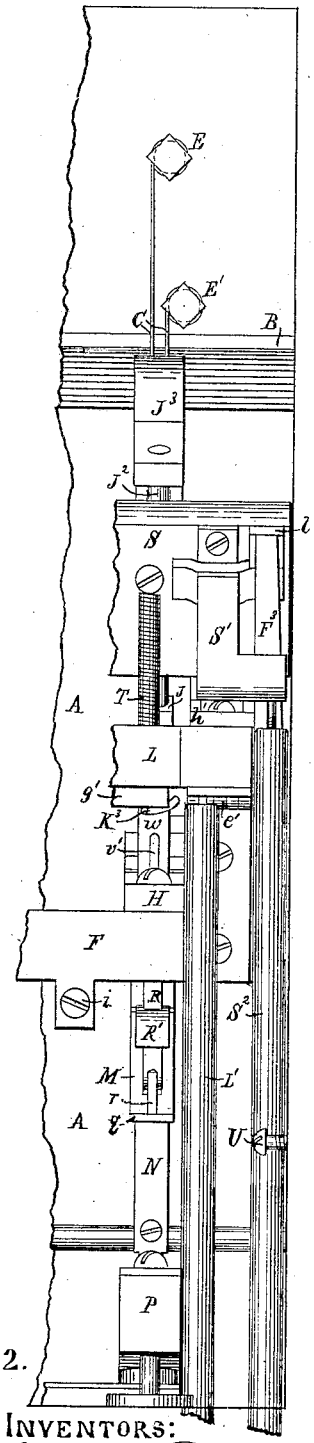

FIG. 2.

WITNESSES:
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INVENTORS:
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UNITED STATES PATENT OFFICE.

CHARLES E. ROGERS AND ALFRED F. ROGERS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN UPRIGHT-PIANO ACTIONS.

Specification forming part of Letters Patent No. **199,314**, dated January 15, 1878; application filed March 30, 1877.

To all whom it may concern:

Be it known that we, CHARLES E. ROGERS and ALFRED F. ROGERS, both of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pianos, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to the action, and is more especially applicable to that class of pianos known as "upright pianos;" and it consists, first, in the use of a metal action-rail made slightly concavo-convex, as seen in plan, in combination with a stop or rest at each end of said rail set in or secured to the case or projecting from the string-plate, and another in the middle of the length of said rail, so arranged relative to said rail that the ends of the rail will come to a bearing upon the end stops before the middle stop and the rail come in contact, and a screw for securing the rail to the middle stop, as will be described.

Our invention further consists in the use of a metal action or flange rail provided with a radius-arm at either end thereof, through the ends of which said rail is pivoted to the case, in combination with three stops or bearings for the inner edge of said rail to rest against, and a single screw for securing it to one of said stops, and thus hold it firmly in position.

Our invention further consists in the use of an action or flange rail provided with a radius-arm projecting downward from either end thereof, two or more lugs or blocks projecting upward from the opposite side, to which are hinged the loud and soft pedal rails, and two or more upwardly-projecting arms, to serve as back-rests for the soft-pedal rail.

Our invention further consists in the use of a flange secured to the action-rail, and adapted to support all of the several parts of the action for a single key.

Our invention further consists in the use of a flange provided with bearings for the pivots of the hammer-butt, the "damper," and the lever for operating the "jack," and also having formed therein, between the bearing of the hammer-butt and the action-rail to which said flange is secured, a slot or mortise, through which the jack passes to reach the shoulder of the hammer-butt, as will be described.

Our invention further consists in the use of a peculiarly formed and arranged lever adapted to operate the jack and the damper, and also to serve, in combination with an adjustable button, as the back-check for the hammer.

Our invention further consists in the use of a long screw extending downward through the hammer-butt, just in the rear of the shoulder thereon, parallel with or slightly oblique to the center line of the hammer-stem, and carrying at its lower end a button, to serve, in combination with the jack-operating lever, as the back-check for the hammer.

Our invention further consists in the use of a damper stud or butt provided with a damper-wire and a pedal-wire at right angles, or nearly so, to the damper-wire, and adapted to be operated by the loud-pedal rail, and a regulating-screw passing through said damper-butt, and provided with a button, through which the motion of the key is imparted to the damper, to remove it from contact with the string.

Our invention further consists in the use, in combination with a flange provided with bearings for the hammer, damper, and jack-operating lever, and a vertical slot or mortise through the same between the hammer and the rail, to which the flange is secured, of a jack pivoted to the jack-operating lever below the flange, and adapted to pass through the slot in the flange to reach the shoulder of the hammer-butt, and provided with an arm projecting therefrom at right angles, or nearly so, below said flange, in combination with an adjusting-screw passing vertically, or nearly so, through the flange, and carrying at its lower end a button adapted to engage with said right-angle arm to trip the jack.

Our invention further consists in the use in an upright piano of a single series of flanges, each carrying a hammer, damper, jack, and lever for operating the jack, and secured to a single rail placed in front of the action, or on the opposite side thereof from the strings, in combination with a loud and a soft pedal rail, both hinged to or mounted upon said action-rail, as will be described.

Our invention further consists in the use of a loud or soft pedal rail hinged to the action or flange rail, in combination with a pedal-rod

leading directly therefrom to the pedal without the interposition of levers.

Our invention further consists in the use of a soft-pedal rail hinged to the action or flange rail in front of the action, so as to serve as a back-rest for the hammer and control the length of its stroke, in combination with a lever or arm hinged thereto, and adapted to receive and rest upon the upper end of the pedal-rod, and a spring so applied to said arm and pedal-rail as to tend to expand or open said hinge and force the end of the arm down onto the pedal-rod in whatever position the pedal-rail may be placed.

Figure 1 of the drawings is a transverse section of a portion of an upright piano sufficient to illustrate our invention. Fig. 2 is a front elevation of a portion of the same instrument, showing one string, the action pertaining thereto, and short pieces of the action-rail and the loud and soft pedal rails, and the means of operating the same. Figs. 3 and 4 are, respectively, a plan and an elevation of the flange. Figs. 5 and 6 are, respectively, a side elevation and a front elevation of the jack. Fig. 7 is a front elevation of the flange-rail, and Fig. 8 is a plan of the same.

F is the action or flange rail, made of metal, with its front and rear edges slightly curved, as shown in plan in Fig. 8, and provided at each end with a downwardly-projecting radius-arm, F^1, and upon its upper side two lugs or blocks, F^2, and two or more arms, F^3, the purpose of which will hereinafter appear.

The rail F is pivoted to the case of the instrument (not shown) by two fulcrum-pins, passing one through the lower end of each of the radius-arms F^1, as shown partly in dotted lines at *g*, Fig. 1.

The inner edge of the rail F has bearings at its two ends against a stop, *h*, set in or secured to the case, or a projecting lug on the string-plate, and at or near the center of its length upon the arm or lug G projecting from the string-plate A, to which it is secured by means of the screw *i*, the three bearings being so arranged relative to each other and the rail that the ends of the rail will come in contact with the stops *h* a little before the center of the rail comes in contact with the stop G, in such a manner that the spring of the rail, caused by bringing its center to bear upon the stop G by means of the screw *i*, will prevent any rattle or movement of the rail during the playing of the instrument.

H is the flange, secured to the rail F in a horizontal position, and projecting therefrom toward the strings, as shown, and provided with the slot *j*, for the passage of the jack R, and to receive the lower end of the hammer-butt J, and bearings for hanging the hammer-butt, the damper, and the lever for operating the jack.

The bearing for the pivot of the hammer-butt is split horizontally, and provided with the adjusting-screw *k*, in a well-known manner.

K is the damper stud or butt, pivoted, at *l*, to the flange H, and carrying the damper-wire K^1, to the upper end of which is secured the damper K^2, made of wood, faced with felt in the usual manner, and also provided with the wire K^3, projecting therefrom in a horizontal, or nearly horizontal, direction toward the key-board, in a position to be acted upon by the loud-pedal rail L for the purpose of throwing the dampers out of action by placing the foot upon the treadle.

The damper K^2 is held in contact with the strings, when not removed by the action of the treadle or the movement of the key, by means of the spring *m*, and its position is regulated by means of the regulating-screw *n*, carrying at its lower end the button n^1, against which the heel *o* of the lever M acts to retract the damper when the key is depressed. The lever M is pivoted at *p* to the flange H, and, extending obliquely downward, is connected at its lower end with the upper end of "sticker" N by means of the leather strap *q*, glued to the lower end thereof, and the pin *r* set in said sticker. The sticker N is pivoted at *s* to the adjustable rocking bed O, secured upon the key P, constructed, arranged, and operating in the usual manner.

R is the jack, made in the form shown in Figs. 5 and 6, and pivoted at *t* to the lower end of the lever M, near its connection to the sticker or striker N, its upper end passing through the slot *j* in position to engage with the shoulder J^1 of the hammer-butt J, with which it is held in contact by the spring *u* until disengaged therefrom by the arm R′ coming in contact with the button *v*, (shown in dotted lines in Fig. 1,) said button being attached to the lower end of the screw *v′* passing through the flange H, as shown.

The shoulder J^1 of the hammer-butt J is felted and leathered in the usual manner, and the upper end of the jack R is connected thereto by the strap or bridle *w*, to prevent the jack from falling away from the hammer-butt.

A long adjusting-screw, a^1, is passed downward through the hammer-butt in a position slightly oblique to the center line of the hammer-stem J^2, and carrying at its lower end the spherically-ended button a^2, which, acting in combination with the felt *c′* secured upon the upper surface of the lever M, serves as the back-check for the hammer.

A spring, d^1, secured at one end to the damper-stud K, and bearing at its other end upon the felt d^2, secured to the hammer-butt J, serves to throw the hammer J^3 backward and hold it in contact with the back rest when the pressure is removed from the key.

The loud-pedal rail L is hinged at e^1 to the front side of the lugs or blocks F^2 in the position shown in Fig. 1, with its front edge resting upon the upper end of the pedal-rod L^1, which extends downward directly to and connects with the pedal without the interposition of levers.

The joint *e′* of the hinge, about which the

rail L may oscillate, is located at or near the middle of its width, so that when the front edge is raised by pressing upon the pedal the back edge will be depressed, and, pressing upon the wire K^3, remove the damper K^2 from the string, the under side of the back edge of the rail L having secured thereto a strip of felt, g', to bear upon the wire K^3 and prevent noise when the parts come in contact.

The lugs or blocks F^2 extend up through notches cut in the back edge of the rail L to or slightly above its upper surface, and have secured to their upper ends one leaf of a butt-hinge, h', to the other leaf of which is secured the soft-pedal rail S in position to rest against the inclined back edges of the arms F^3, with a piece or pieces of felt, t', interposed between, and provided with a strip of felt, m', against which the hammer-stems J^2 rest when the key is not depressed.

A spring, T, is secured at one end to the front side of the rail S, and at the other end to the rear edge of the rail L, and serves the double purpose of holding the front edge of the rail L always in close contact with the upper end of the pedal-rod L′, and to hold the rail S in contact with the arms F^3.

S^1 is an arm or lever, pivoted at n^2 to the rail S near the middle of its length, and having applied thereto the spring o', which tends to move the outer end of said lever downward and keep it in contact with the upper end of the pedal-rod S^2, which extends downward therefrom directly to and connects with the soft pedal without the interposition of levers.

It will readily be seen that, by removing the pedal-rods L′ and S^2 and the single screw i, the whole action may be swung outward till the radius-arms F^1 of the rail F rest against the stop U, thus rendering all of the strings conveniently accessible for repairs without otherwise disturbing the action.

It will also be seen that all of the regulating-screws are so arranged as to be conveniently accessible from above without disconnecting or removing any portion of the action.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. A metal action-rail, made concavo-convex, as seen in plan, in combination with three stops or bearings upon its concave side and a fastening-screw for securing said rail to the central stop or bearing, all arranged and adapted to operate substantially as and for the purposes described.

2. A metal action or flange rail, provided with a radius-arm at either end thereof, through the ends of which said rail is pivoted to the case, in combination with three stops or bearings for its inner edge to rest against and a screw for securing said rail to the middle bearing, substantially as described.

3. The action or flange rail F, having formed thereon or secured thereto two radius-arms, F^1, projecting downward from its under side, two lugs or blocks, F^2, and two or more arms, F^3, projecting upward from its upper side, all arranged and adapted to operate substantially as and for the purposes described.

4. The flange H, secured to the rail F, and projecting therefrom toward the strings, and adapted to support all the several parts of the action, except the key and sticker, substantially as described.

5. A flange, H, provided with bearings for the pivots of the hammer-butt, the damper, and the jack-operating lever, and with the slot j, for the passage of the jack, substantially as and for the purposes described.

6. The lever M, pivoted at p to the flange H, and provided with the heel o and the strap q, and means of connection with the jack at t, substantially as described.

7. In combination with the lever M, constructed and arranged as set forth, and provided with the felt c', secured to the upper surface thereof, the long adjusting-screw a^1, passing through the hammer-butt, as shown, and carrying at its lower end the button a^2, all arranged and adapted to operate substantially as and for the purposes described.

8. The damper-stud K, provided with the damper-wire K^1, carrying at its upper end the damper K^2, and also with the wire K^3, projecting from said stud at right angles, or nearly so, to the damper-wire K^1, in combination with the oscillating pedal-rail L and the spring m, substantially as described.

9. The damper-stud K, provided with the regulating-screw n and button n^1, in combination with the lever M, provided with the heel o, and the spring m, secured at one end to the damper-stud K and at the other end to the lever M, substantially as described.

10. In combination with the flange H, provided with slot j, and adapted to support the hammer, the damper, and the jack-operating lever M, the jack R, pivoted to the lever M, and adapted to project upward through the slot j, and to engage with the shoulder J^1 of the hammer-butt J, substantially as described.

11. The jack R, provided with the arm R′, and having its upper end formed as shown in Figs. 5 and 6, in combination with the flange H, provided with the slot j and the adjusting-screw v' and button v, all arranged and adapted to operate substantially as and for the purposes described.

12. The combination, in an upright piano, of a single series of flanges, each carrying a hammer, a damper, a jack, and a jack-operating lever, and all secured to a single flange-rail, located in front of the action, or on the opposite side thereof from the strings, a loud-pedal rail, and a soft-pedal rail, both hinged to, or mounted upon, said flange-rail, substantially as described.

13. The combination, in an upright piano, of the flange-rail F, a loud or soft pedal rail hinged thereto, and a pedal-rod leading directly from said loud or soft pedal rail downward between the keys, and adapted to con-

nect directly to the pedal without the interposition of levers, substantially as described.

14. The combination of the flange-rail F, the soft-pedal rail S hinged thereto, and provided with the hinged or pivoted arm S^1, the spring o^1, and the pedal-rod S^2, all arranged and adapted to operate substantially as described.

15. The combination of the flange-rail F, the loud-pedal rail L, and soft-pedal rail S, both hinged to the rail F, and the spring T, secured at one end to the rail L and at the other to the rail S, all arranged and adapted to operate substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 27th day of March, A. D. 1877.

CHARLES E. ROGERS.
ALFRED F. ROGERS.

Witnesses:
N. C. LOMBARD,
E. A. HEMMENWAY.