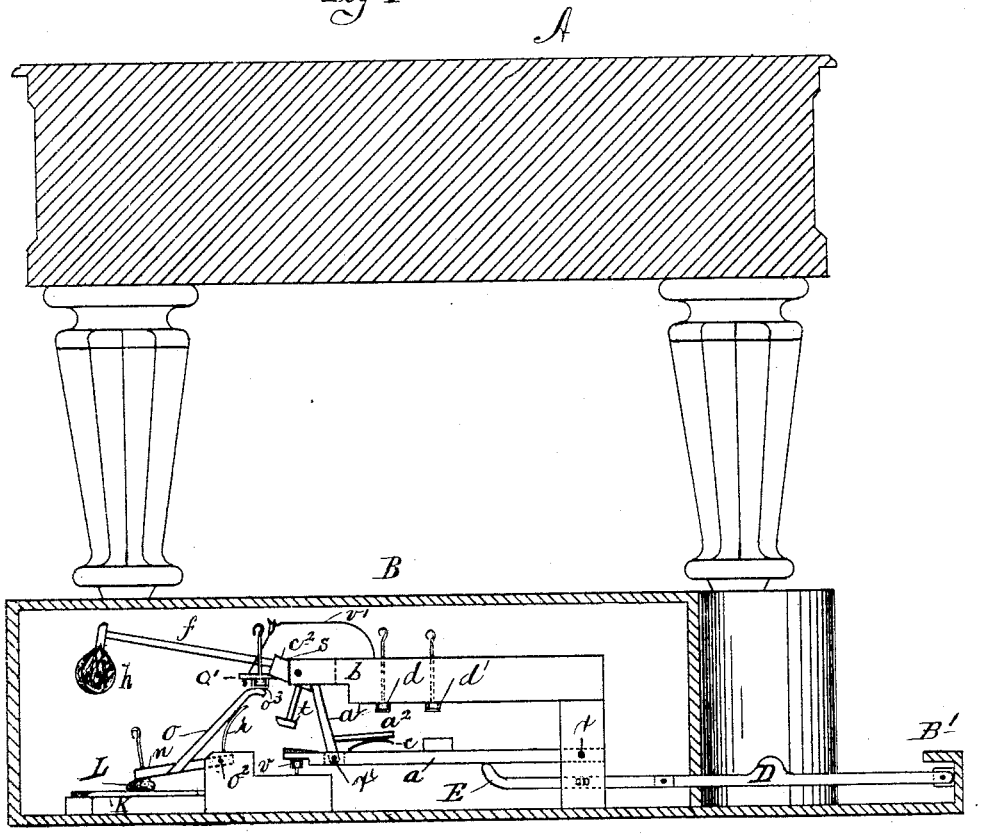
2 Sheets—Sheet 1.

W. J. BECKER.

Pedal-Piano.

No. 212,885. **Patented Mar. 4, 1879.**

Fig 1



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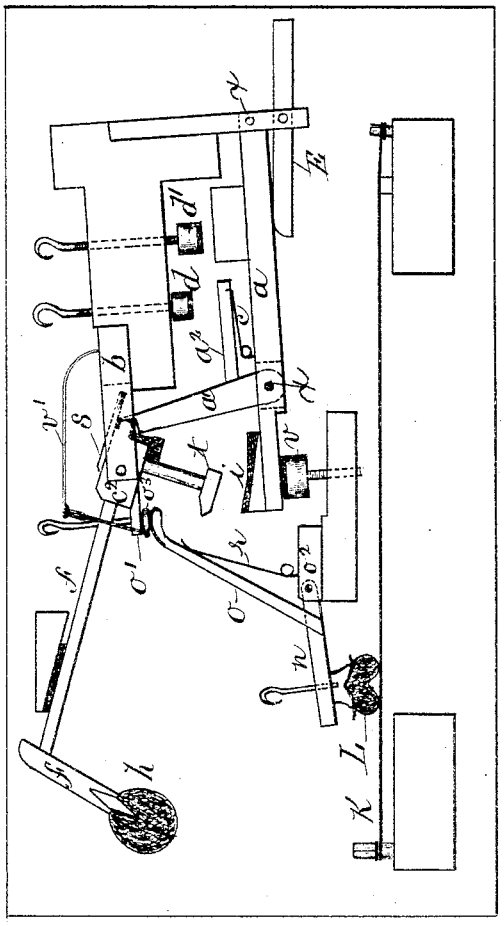
2 Sheets—Sheet 2.

W. J. BECKER.

Pedal-Piano.

No. 212,885. Patented Mar. 4, 1879.

Fig 2



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UNITED STATES PATENT OFFICE.

WILLIAM J. BECKER, OF ALBANY, NEW YORK, ASSIGNOR TO J. AUGUSTUS REED AND ALBERT P. STEVENS, OF SAME PLACE.

IMPROVEMENT IN PEDAL-PIANOS.

Specification forming part of Letters Patent No. **212,885**, dated March 4, 1879; application filed November 8, 1877.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH BECKER, of Albany, county of Albany, and State of New York, have invented new and useful Improvements in Pedal-Pianos, which improvements are clearly set forth in the annexed specification and in the accompanying drawings.

The object of my invention is to provide for certain improvements in the arrangement and construction of the pedals and action of pedal-pianos, whereby more powerful effects may be produced and a better action obtained.

I am aware that the use of foot-pedals in combination with and connected to the action of an ordinary piano-forte is old; but that is not at all my plan, and my improvements are not intended to be applied to a piano-forte so constructed, but to a piano-forte made to be placed under an ordinary piano-forte, and which is to be played by foot-pedals only, in conjunction with a piano or reed-organ standing over it, both instruments being played by one performer.

The drawings consist of two sheets and two figures.

Figure 1, Sheet 1, is a vertical cross-section view of a piano-forte resting on the top of a case which contains the action and necessary parts of the second or pedal piano-forte, showing in the latter the action devices and the connection therewith of the foot-pedals. Fig. 2, Sheet 2, shows a side elevation of the action and the parts in detail thereof employed in the pedal-piano, detached therefrom.

Like letters refer to like parts in the different figures.

In Fig. 1, A represents the upper or ordinary piano; B, the lower or pedal piano, with one end open, exposing a portion of the action therein contained, and with the provision of a front extension, B′, for the hanging and operation of the pedals D. E is a lever, connected by its outer end to the pedal D. *a* is the jack-lever, pivoted at *x*. a^1 is the jack, pivoted in jack-lever *a* at *x′*. a^2 is a trip-arm on jack a^1. *c* is a spring under trip-arm a^2. *d* is a regulating-button for trip-arm a^2. *d′* is a regulating-button for jack-lever *a*. *b* is a bifurcated support for the hammer-butt c^2, between the arms of which it is pivoted so as to swing freely. *f* is the hammer-arm. *h* is the hammer; K, the strings; L, the damper; *n*, the damper-arm, hinged at o^2; *o*, the damper-arm lever. o^1 is a forwardly-projecting arm on hammer-butt c^2. o^3 is a regulating-button for damper-arm lever *o*. *r* is a throw-spring for damper-arm lever *o*. *s*, Fig. 2, is a backwardly-projecting arm on hammer-butt c^2. *t* is a hammer-check. *v* is a regulating-button to jack-lever *a*. *v′* is a lifting-spring attached by a flexible loop to arm o^1 on hammer-butt c^2.

A prominent object of my improvements is to provide for a heavily-strung piano-forte, so constructed that it may be advantageously and safely played upon by the use of the foot-pedals alone, as an auxiliary instrument of great power to one standing over or upon it, which is played upon by the same performer, he using his hands and feet simultaneously on both instruments.

It is obvious that a piano-forte action which is to serve the above-named purpose, and continue in a serviceable condition under the often-times rough usage which its connection with foot-pedals entails, must be constructed especially for such service.

My pedal-piano consists of certain parts, such as the iron frame, sounding-board, &c., which are common to all pianos. It is well known, however, that if the frame and strings are placed solidly, as near the floor as they can be, greater sonority and depth of tone is produced; therefore, to take advantage of that fact, and to provide for conveniently operating the hammers by the pedals, so that both hammer and damper shall be held off from the strings by continuing the pressure of the foot upon the pedal after the hammer has struck, my action is made down-striking and located over the strings. This arrangement calls for some novelties in the construction of the action, which I will describe as I explain the operation of it.

By the depression of the end of the pedal D, attached to lever E, one end of the latter is thrown up against the under side of jack-lever *a*, lifting it up suddenly, and carrying up vertically the jack a^1. Said lever E may be dispensed with in a change of construction, where-

in the jack-lever *a* would be extended outwardly far enough to permit of attaching the end of the pedal D thereto. A notch on the side of the jack a^1 next to hammer-butt c^2, near its upper end, as seen in Fig. 2, engages in a notch on the end of said hammer-butt, throwing up the latter, and so driving the hammer *h* with a sudden blow against the strings K. To regulate the height when down of jack-lever *a*, so that the notch on the jack may correctly interlock with that on the hammer-butt without lost motion, the button *v* is raised or lowered by turning it and the screw upon which it is mounted; and the upthrow of said jack-lever is regulated by turning the button *d'*, so as to raise or lower it, and when the jack-lever is thrown up it will come to a stop against it. When the hammer is thrown down, as hereinbefore described, the jack a^1 slips off from its catch-notch on the rear end of the hammer-butt as the hammer reaches its extreme downward position, the jack a^1 being caused surely to so slip off by the striking of the end of the trip-arm a^2 against button *d*, which can be adjusted to any desired height by turning it on the screw which holds it in place. After the hammer has struck its blow it partly rebounds, and is partly lifted up by the spring *v'*, attached by a loop to arm o^1; but so long as the pedal is held down by the foot of the player the hammer is held in a partially-elevated position away from the strings by the bearing of the under side of arm *s* on hammer-butt c^2 upon the extreme end of jack a^1, which, in this position of the parts of the action, assumes nearly a vertical position, so being held by the contact of lever a^2 and button *d*, as heretofore set forth, and by the operation of the padded end *i* of the jack-lever *a* against the hammer-check *t*. Upon letting the foot-pedal rise, the parts of the action reassume the position shown in Fig. 2.

The damper L is operated as follows, viz: In the end of arm o^1 on hammer-butt c^2 is secured by an adjusting-screw the button o^3. This bears upon and presses down the end of damper-arm lever *o* as the hammer moves downward, thus lifting the damper off the strings, and so retaining it until the hammer is allowed to return to its extreme upward position, as heretofore explained. The damper will then drop onto the strings, the spring *r* throwing it down. The proper bearing action of the hammer-butt to operate the damper can be secured by moving button o^3 from or toward arm o^1.

The proposed combination of the two pianos, as hereinbefore set forth, offers to students of music, and to accomplished players, greatly-increased facilities for the practice and study of the art.

To persons studying organ-playing this arrangement offers every mechanical facility for such study afforded by the use of an organ, for, while leaving the entire key-board of the upper instrument to the use of the hands only, the same chords there produced may be with great additional power reproduced upon the pedal-piano. This effect cannot be obtained from a mere connection of pedals with the action of a hand-played piano.

In the combination of the two instruments, as before explained, it is not necessary that the lower one be constructed entirely separate from the upper one; and I do not claim that mode of construction and arrangement only, for a case may be made deep enough to contain both actions and both sets of strings; but such an arrangement of two separate instruments is most desirable, as being less complicated and less cumbersome.

I do not claim the combination of two separate instruments to be played upon, as above described, for that is not new; but

What I claim as my invention is—

1. The combination of pedals D, case projection B', lever E, jack-lever *a*, jack a^1, trip-arm a^2, and buttons *d* and *d'*, substantially as described, and for the purpose set forth.

2. The combination of pedals D, jack-lever *a*, jack a^1, trip-arm a^2, and buttons *d* and *d'*, substantially as set forth.

3. The combination of jack-lever *a*, jack a^1, trip-arm a^2, buttons *d* and *d'*, hammer-butt c^2, arm *s*, hammer-arm *f*, and hammer *h*, constructed and arranged substantially as described.

4. The combination of jack-lever *a*, hammer-check *t*, hammer-butt c^2, arm o^1, button o^3, damper-arm lever *o*, damper-arm *n*, and damper L, substantially as set forth.

5. The combination of damper L, damper-arm *n*, damper-arm lever *o*, and throw-spring *r*, constructed and arranged substantially as set forth.

6. The combination of pedal D, jack-lever *a*, jack a^1, trip-arm a^2, buttons *d* and *d'*, bifurcated support *b*, spring *c*, with hammer-butt c^2, arm *s*, hammer-check *t*, arm o^1, spring *v'*, button o^3, hammer-arm *f*, hammer *h*, strings K, damper L, damper-arm *n*, damper-arm lever *o*, support o^2, and spring *r*, substantially as described.

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Witnesses:
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