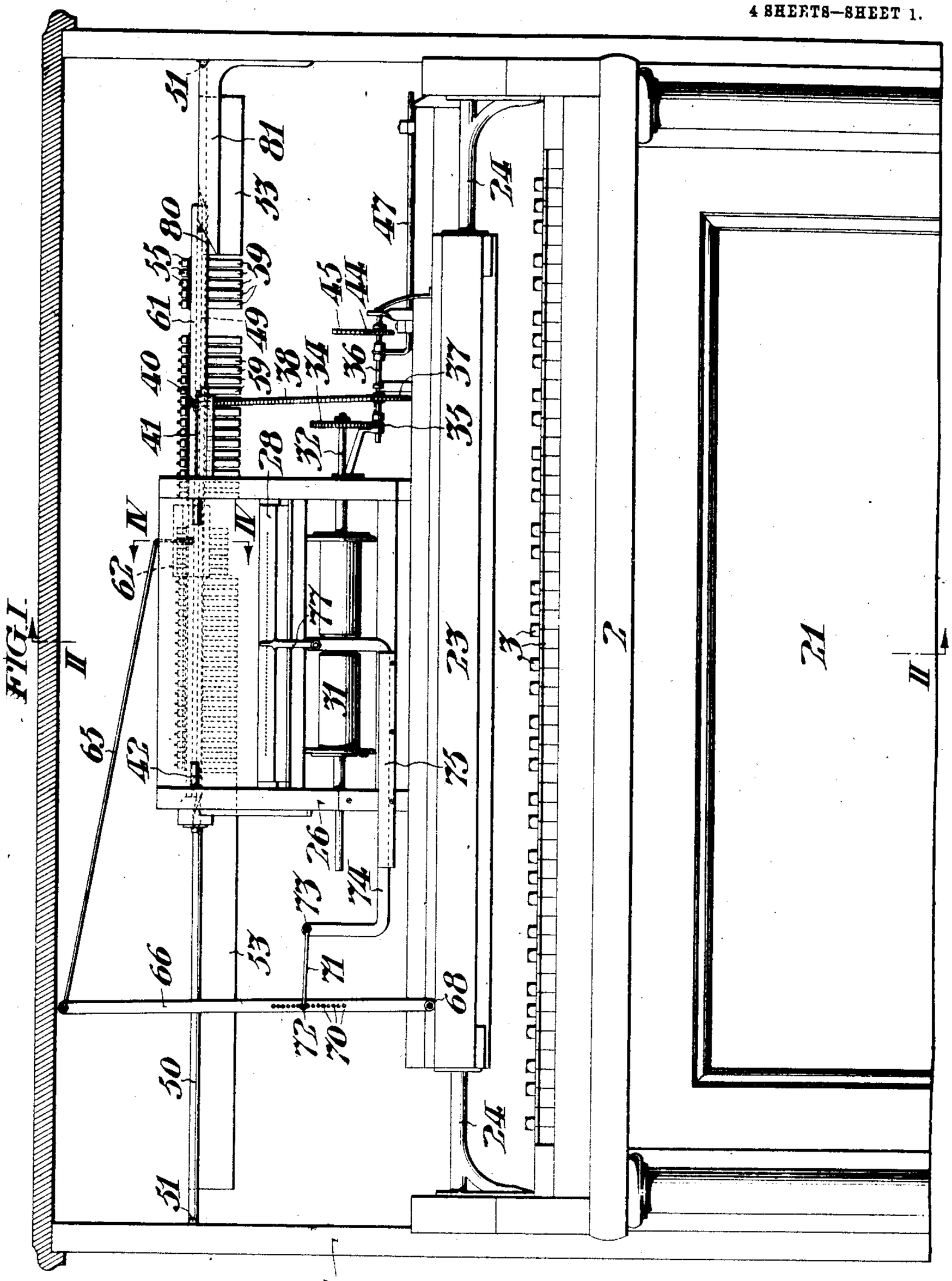
No. 869,678. PATENTED OCT. 29, 1907.

P. WUEST, JR.

MECHANICALLY CONTROLLED SOLO ACCENT DEVICE FOR MECHANICAL MUSICAL INSTRUMENTS.

APPLICATION FILED JUNE 15, 1904.

4 SHEETS—SHEET 1.



WITNESSES:

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John C. Bergner.

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by Paige, Paul & Fraley

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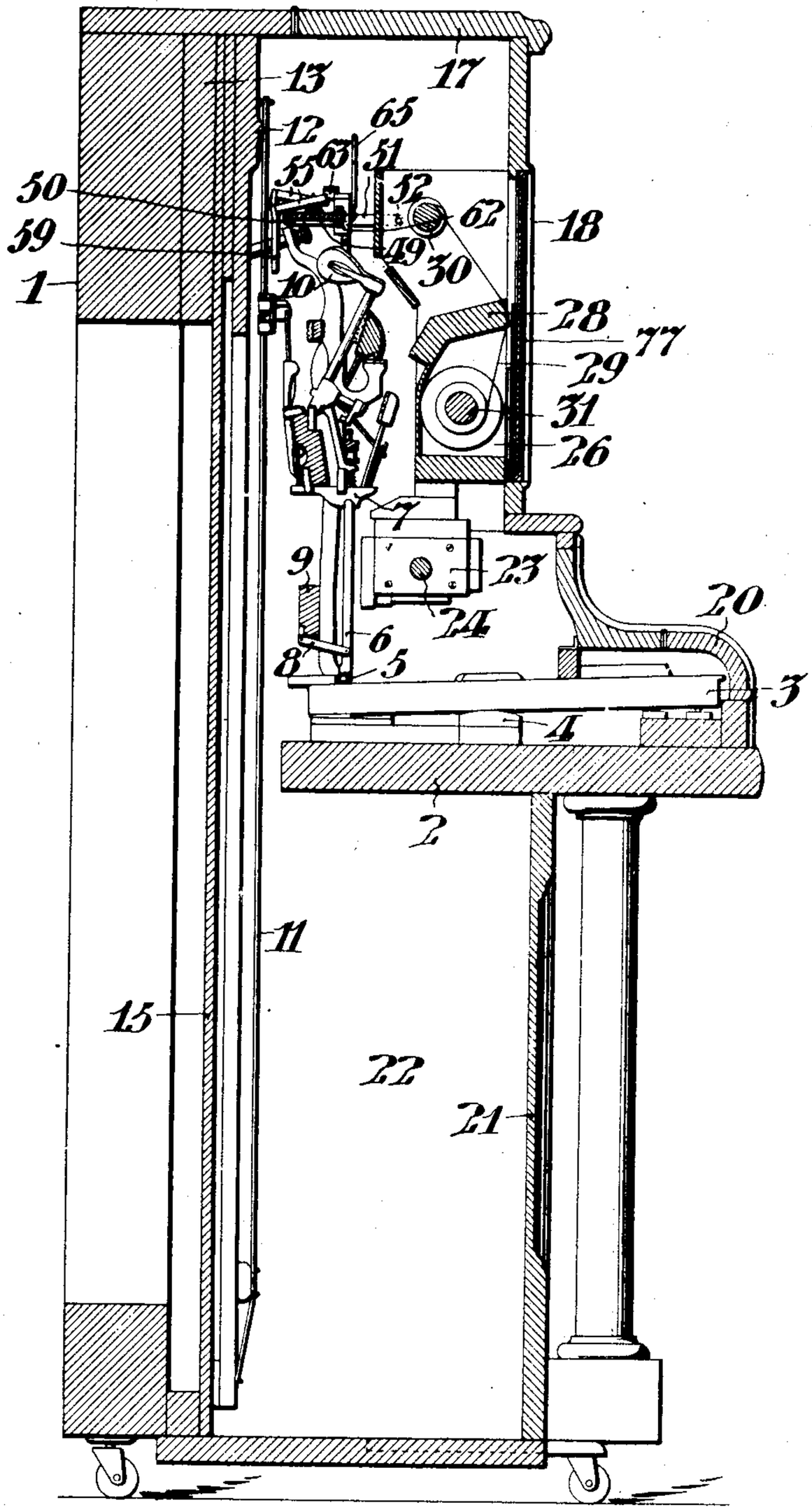
4 SHEETS—SHEET 2.

FIG. II.



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4 SHEETS—SHEET 3.

FIG. III.

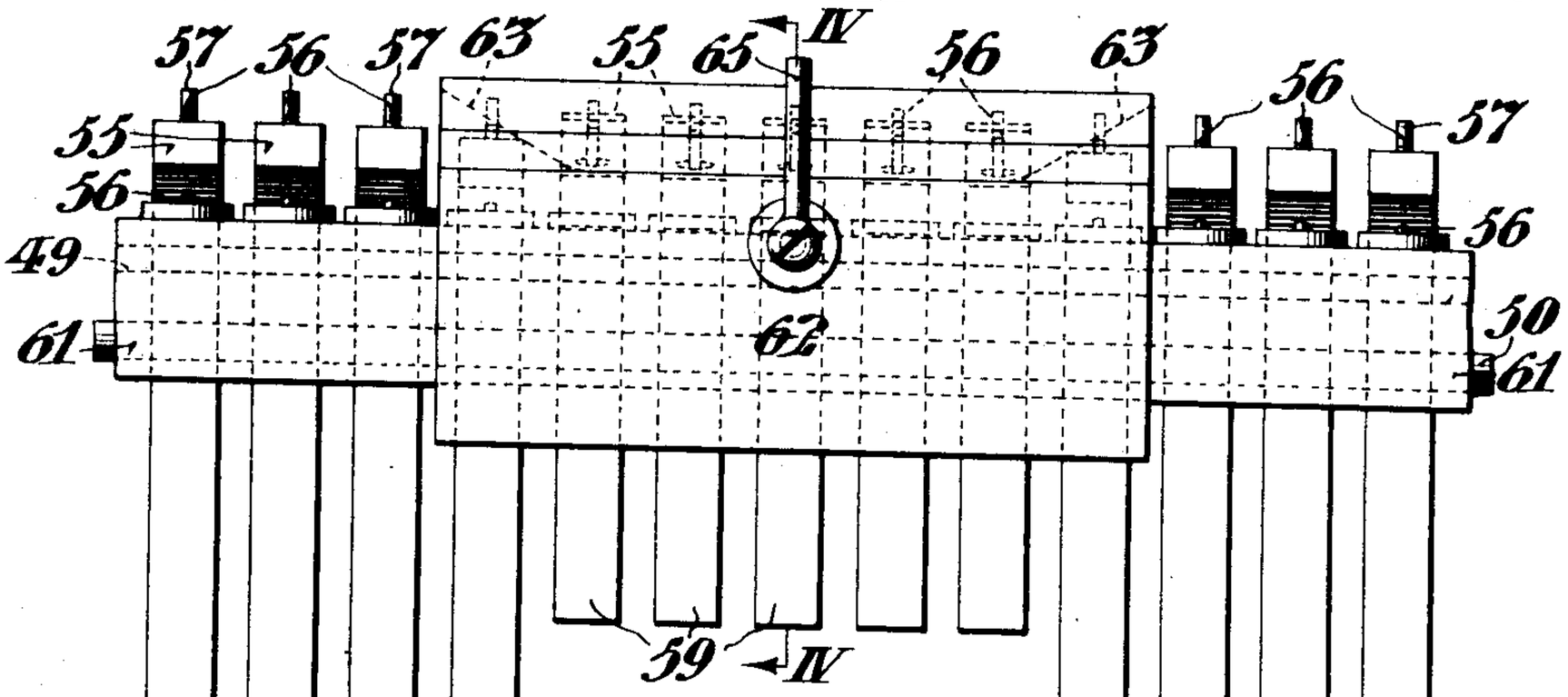
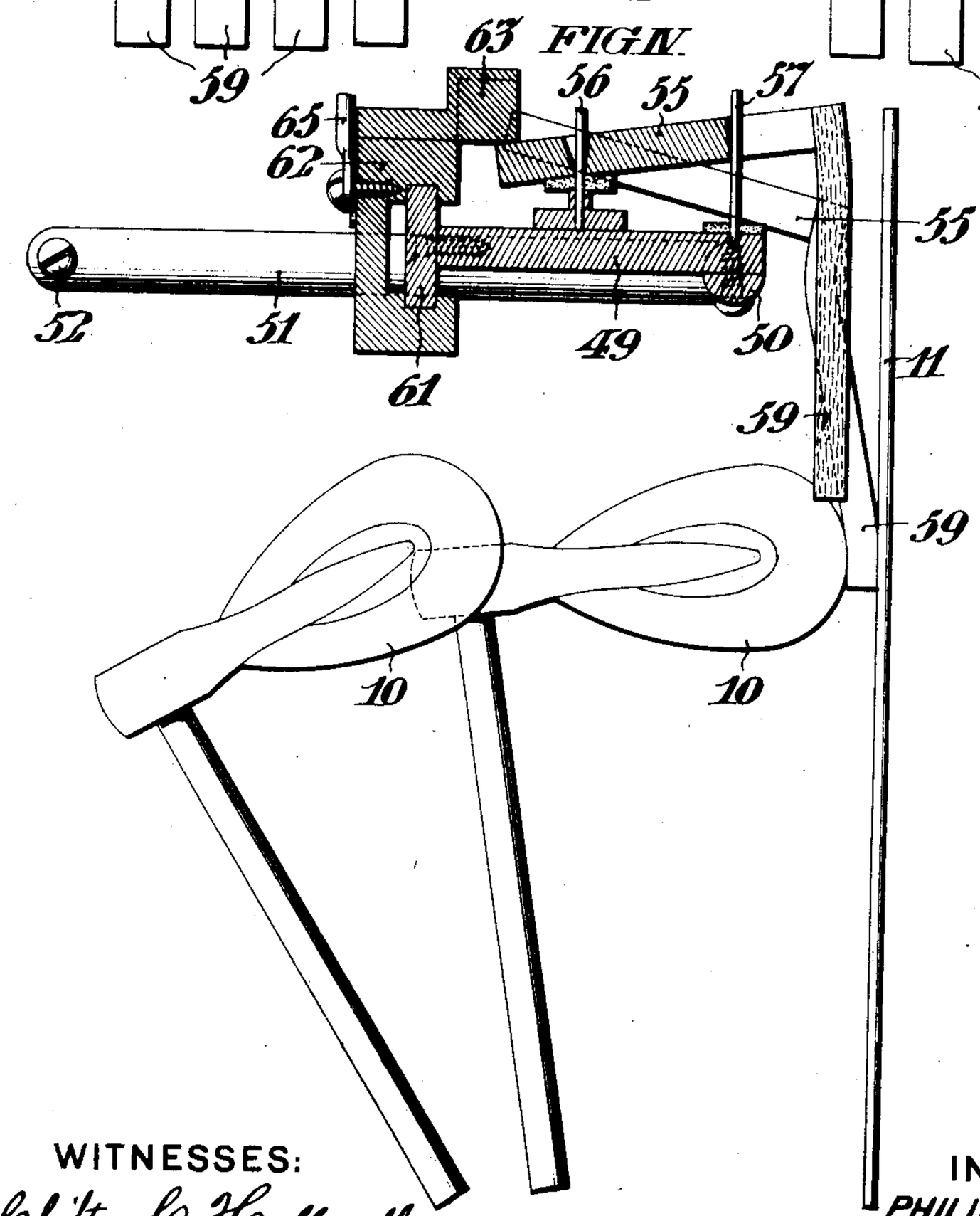


FIG. IV.



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4 SHEETS—SHEET 4.

FIG. V.

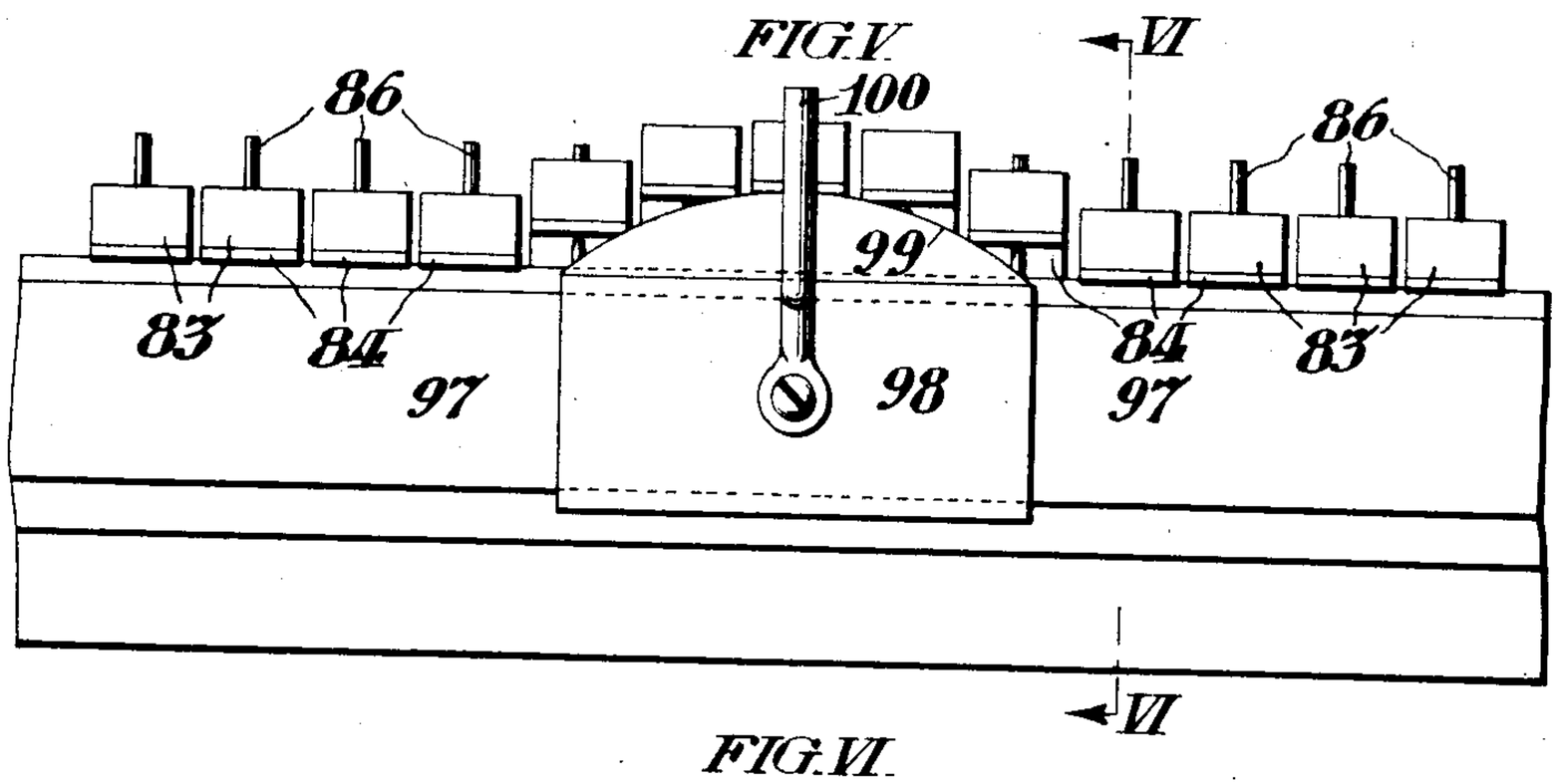
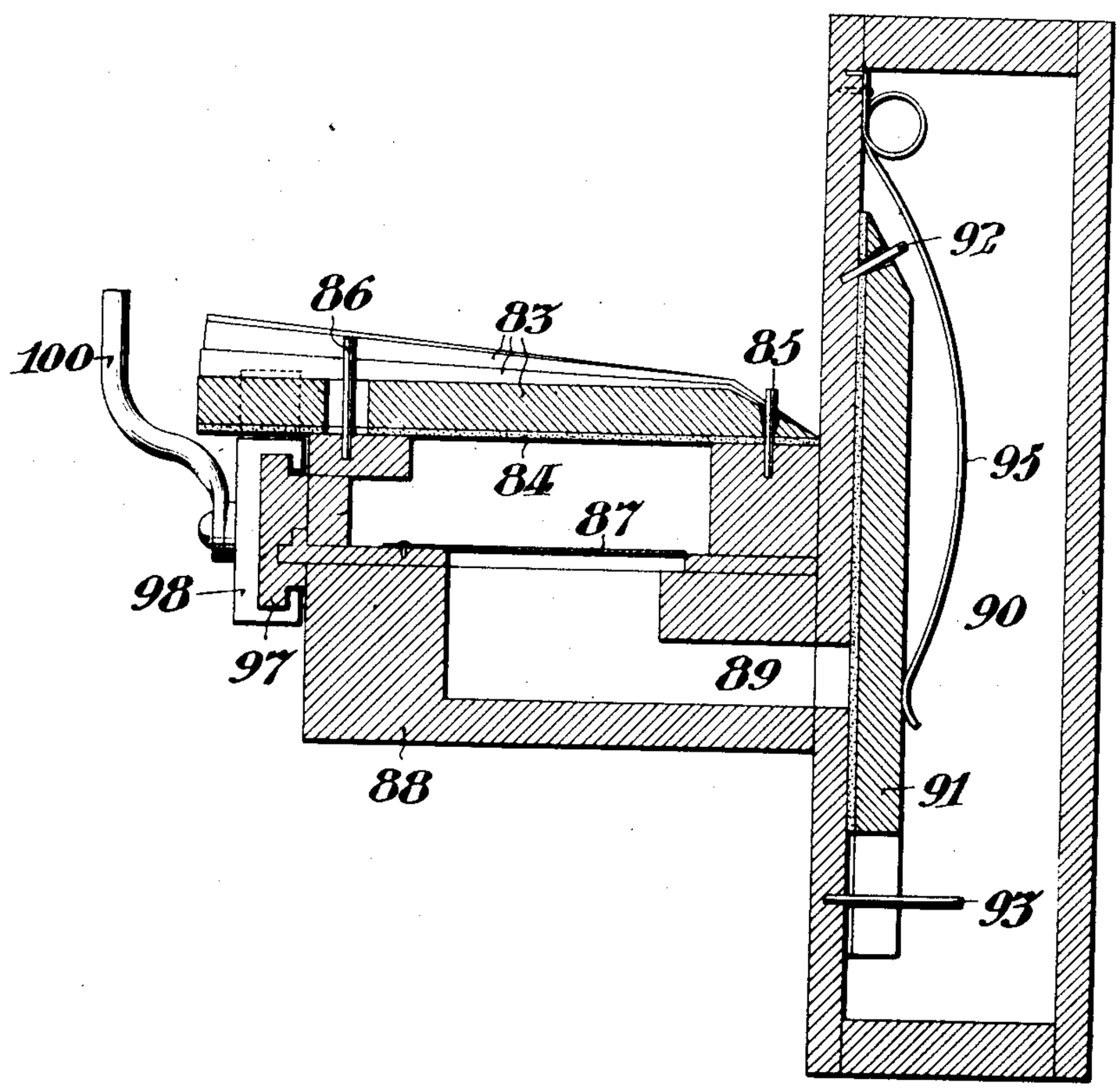


FIG. VI.



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UNITED STATES PATENT OFFICE.

PHILIP WUEST, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE AUTO-MANUAL PIANO ACTION COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

MECHANICALLY-CONTROLLED SOLO-ACCENT DEVICE FOR MECHANICAL MUSICAL INSTRUMENTS.

No. 869,678. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed June 15, 1904. Serial No. 212,684.

To all whom it may concern:

Be it known that I, PHILIP WUEST, Jr., of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Mechanically-Controlled Solo-Accent Devices for Mechanical Musical Instruments, whereof the following is a specification, reference being had to the accompanying drawings.

My improvements are particularly designed to be utilized in connection with automatic playing mechanism for pianos and organs, although not necessarily limited to such use. As such mechanism is usually constructed it does not comprise any means for differentiating the effect of a group of digitals struck simultaneously representing the elements of a chord, so that it is impossible to produce a solo effect with the treble notes sounded simultaneously with the base notes.

The principal object of my invention is to provide means to vary the intensity of operation of the individual sounding devices of a group constituting the elements of a chord, which are simultaneously operated; so that a selected member of said group may be accented as compared with the others to produce a solo effect.

My invention comprises the combination with a series of sounding devices, (for instance piano strings or organ reeds;) of a series of individual damping devices, so related to the individual sounding devices as to vary the intensity of operation of the sounding devices, in accordance with their position; and, means independent of the digitals which are arranged to change the position of said damping devices at the will of the operator. It is also characteristic of my invention that this change in the position of the damping devices is capable of chromatic variation, as distinguished from devices which have heretofore been employed, according to which such change can only be effected in relation to comparatively large and arbitrarily fixed groups. By chromatic variation, as used here and in the claims, I mean a continuous variation in which the successive steps correspond in intervals to the chromatic scale.

As hereinafter described, the damping devices comprise individual levers respectively related to the individual sounding devices, and conveniently controlled by a carriage provided with means to reciprocate it to affect different levers or groups of levers in said series. Said carriage is conveniently so arranged as to contemporaneously affect several adjoining levers, and is provided with means whereby it may be shifted at the will of the operator, in correspondence with the shifting of the solo part in the composition being played; so that a group of sounding devices including those employed in the treble part may be relieved of the damping effect and be accordingly accented as compared with the other elements of the chord which are affected by the damping devices.

As hereinafter described, the means for operating the damping devices is conveniently associated with an indicator arranged to manifest the particular sounding device or group of them upon which the damping devices are at any instant effective; said indicator moving in correspondence with the movement of said carriage.

My invention comprehends the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings, Figure I, is a front elevation of the upper portion of a piano conveniently embodying my improvements. Fig. II, is a sectional view of a piano taken on the line II, II, in Fig. I. Fig. III, is a fragmentary front elevation showing, on a larger scale, the details of the mechanism indicated in Fig. I. Fig. IV, is a sectional view taken on the line IV, IV, in Figs. I and III, showing, on a larger scale, details of the mechanism indicated in Fig. II. Fig. V, is a fragmentary front elevation similar to Fig. III, but showing a modified form of my invention, applicable to reed instruments. Fig. VI, is a sectional view taken on the line VI, VI, in Fig. V.

In said figures; the piano casing 1, comprises the key frame 2, on which the digitals 3, are supported by the balance rail 4. Each of said digitals 3, is provided with an adjustable stud 5, in operative relation with an extension rod 6, depending from the jack whip 7, and pivoted to an extension lever 8, fulcrumed on the small action rail 9, in connection with a hammer 10, arranged to strike the string 11, on the metallic string frame 12, which latter is provided with the usual wood back supports 13, and sounding board 15. Said casing also comprises the usual upper lid 17; the removable front panel 18, inclosing the hammer action; the hinged cover 20, for the manual comprising the digitals 3; and, the removable front panel 21, inclosing the chamber 22, below the key frame 2; wherein the main bellows, chest, etc., of the playing mechanism may be conveniently mounted.

The playing mechanism comprises the pneumatic valve chest 23, provided with suitable supports 24, projecting from the respectively opposite ends of the casing 1. Said chest 23, supports the music box 26, provided with the tracker bar 28, over which a note sheet 29, may be progressed from the note sheet spool 30, to the take

up roller 31; by any convenient mechanism attached to the latter. For instance, as shown in Fig. I, the shaft 32, of said roller 31, is provided with the gear wheel 34, arranged to be engaged by the pinion 35, on the counter shaft 36. Said shaft 36, is provided with the gear wheel 37, connected by the band 38, with the wheel 40, on the shaft 41; which latter is arranged in axial alinement with the shaft 42, in the respectively opposite ends of the music box 26, to support and rotate said note sheet spool 30. Said shaft 36, is also provided with the gear wheel 44, connected by the band 45, with any suitable form of motor, and is arranged to be shifted back and forth, by means of the slide rod 47, which is provided with any suitable means to effect its manual reciprocation; to alternately effect the positive rotation of the take up roller 31, and the note sheet spool 30.

The frame 49, is conveniently supported, in front of the strings 11, by the rod 50, having outwardly turned arms 51, and arranged to oscillate vertically on pivots 52, at the opposite ends of the piano casing. Said frame 49, may be provided with muffler strips 53, common to a plurality of the strings 11, and interposed between said strings and their hammers 10, when the frame 49, is lowered, as shown in Fig. I. Said frame 49, carries a series of damping levers 55; respectively related to the individual strings 11; each lever being provided with a pivot pin 56, a guide pin 57, and 59; strip of resilient material such as soft leather or felt, a which latter, in accordance with the position of the lever which carries it, is shifted to and from a position between the string 11, and the hammer 10, so that, when interposed, the hammer blow is deadened or damped and when withdrawn the full effect of the hammer blow is manifested upon the string 11. Said frame 49, is provided with the rail 61, upon which the carriage 62, is mounted for longitudinal reciprocation. Said carriage has the inclined cam 63, overhanging the outer ends of the levers 55, so as to uplift and render inoperative, any selected group of five of them; as indicated in Figs. III and IV; so that, in accordance with the position of said carriage, the strings 11, having individual damping devices, are either relieved from or subjected to the damping effect. Said carriage 62, may be shifted to any desired location on said rail 61, at the will of the operator, by any convenient means; for instance, as shown in Fig. I, said carriage is connected by the link 65, with the lever 66, whose lower end is fulcrumed at 68, upon the chest 23. Said lever is provided with a series of apertures 70, in one of which the link 71, is secured by its pivotal connection 72. The opposite end of said link 71, is connected by the pivot 73, with the slide bar 74, which is mounted to reciprocate in the guide 75, on the front of the music box 26, and is conveniently provided with an index point 77, extending in the region of the tracker bar 28.

The arrangement above described is such that as the note sheet 29, is progressed over said tracker bar 28, the operator may shift said index point 77, in correspondence with the location of the apertures representing the solo notes of the composition being played, with the result that the strings 11, local to the region corresponding with said treble apertures, are freed from the damping devices, whereas other strings are affected by the damping devices, so that the full effect of the hammers 10, is manifested upon the strings corresponding with the treble perforations, while a less effect is manifested upon the strings corresponding with the other elements of the chords being played; thus producing an accented or solo effect.

If it is desired to free all of the strings from the control of the damping devices, the index 77, may be shifted to the right hand side of the music box 26, and, the carriage 62, being thus caused to ride up the incline 80, on the bracket 81, projecting from the casing 1; the entire frame 49, is uptilted on its pivots 52, and all of the strips 53, and 59, are thereby raised from their normal position between the hammers 10, and strings 11.

Although I find it convenient to operate the damping levers 55, by means of the cam 63, which overhangs their outer ends; it is to be understood that a carriage may be so constructed and arranged as to otherwise operate such levers. For instance, in Figs. V, and VI, the series of levers 83, being provided with strips of resilient material such as felt or soft leather 84, are pivoted at one end on pins 85, and guided on pins 86, at the other end, in such relation to the reeds 87, within the reed chest 88, as to damp or mute the sound of the latter when in their lower position, and permit the full sound of the latter in their upper position. Said reeds 86, are adapted to be operated by the exhaust of air through the individual passages 89, in the bottom of said chest 88, which communicate with the main exhaust chest 90, under the control of the valve levers 91, which latter are pivoted at their upper ends on respective pins 92, and guided at their lower ends on respective pins 93, and normally held in closed position by respective springs 95.

The rail 97, is conveniently supported on said chest 88, and traversed by the carriage 98, which has the cam incline 99, arranged to uplift said levers 83, and is arranged to be shifted by the link 100, similar to the links 65, above described.

As shown in Fig. VI the levers 83 are arranged to mute all the reeds 87 except such as are uplifted by the carriage 98. It is obvious that the degree of normal closure by the lever 83 may be altered so as to convert the muting effect into a damping effect, but in an organ, or an analogous instrument, I prefer to employ the parts in the relation shown in the drawings, because in operating the solo effect it is usually desirable to employ two stops of the organ simultaneously; only one of which is intended to play the solo and is therefore fitted with the device which I have described, in which the damping effect is exaggerated to the extreme case of muting. As a result, when a chord is struck the entire chord will play on one stop (preferably a soft one) while only the solo will sound on the solo stop.

Although for convenience of the operator of the automatic playing mechanism above described, the slide bar 74, is provided with the index point 77, adjacent to the tracker bar 26, it is to be understood that the means for operating the carriage which trips the levers, and, the means for manifesting the particular sounding device or group of them upon which the damping devices are at any instant effective, may be otherwise located or controlled.

I do not desire to limit myself to the precise details of construction and arrangement above described, as it

is obvious that various modifications may be made therein without departing from the essential feature of my invention which is the solo accenting device controlled independently of the digitals and capable of chromatic variation.

I claim:—

1. The combination of a series of sounding devices provided with corresponding digitals and operating mechanism; a series of damping devices independent of said digitals and operating mechanism, respectively related to individual sounding devices, and arranged to affect the same in accordance with their position; and means independent of the digitals and operating mechanism whereby the position may be altered of successively and chromatically selected individual damping devices or small continuous groups thereof, substantially as set forth.

2. The combination of a series of sounding devices provided with corresponding digitals and operating mechanism; a series of damping devices independent of said digitals and operating mechanism, respectively related to individual sounding devices, and arranged to affect the same in accordance with their position; means independent of the digitals and operating mechanism, whereby the position may be altered of successively and chromatically selected individual damping devices or small continuous groups thereof; and an indicator whereby such alteration of position is visually indicated, substantially as set forth.

3. The combination of a series of sounding devices provided with corresponding digitals; automatic playing mechanism: a series of damping devices independent of said digitals and playing mechanism, respectively related to individual sounding devices and arranged to affect the same in accordance with their position; means independent of the digitals and playing mechanism whereby the position may be altered of successively and chromatically selected individual damping devices: and an indicator in accordance with which the movement of the damping devices is both controlled and indicated, substantially as set forth.

4. The combination of a series of sounding devices provided with corresponding digitals and operating mechanism; a series of damping devices independent of said digitals and operating mechanism, comprising levers respectively related to the individual sounding devices, and arranged to affect the same in accordance with their position; and means independent of the digitals and operating mechanism, whereby the position may be altered of successively and chromatically selected individual levers or small continuous groups thereof, whereby all of said sounding devices, with the exception of such selected individual or continuous group, may be simultaneously damped, substantially as set forth.

5. The combination of a series of sounding devices; a series of damping devices, comprising levers respectively related to the individual sounding devices and arranged to affect the same in accordance with their position: and means whereby the position may be altered of successively selected individual damping devices, or small continuous groups thereof, such means comprising a rail, and a carriage arranged to traverse said rail in operative relation with said levers.

6. The combination with a series of sounding devices; of a series of damping devices, comprising levers respectively related to the individual sounding devices; strips of resilient material respectively carried by said levers and arranged to affect the operation of said sounding devices in accordance with their position; and, means arranged to change the position of said levers, comprising a rail and a carriage arranged to traverse said rail in such relation with said levers as to raise and lower said strips, between the sounding devices and their operating means, substantially as set forth.

8. The combination with a series of sounding devices; of a series of damping devices, comprising levers respectively related to the individual sounding devices, arranged to affect the latter in accordance with their position; means arranged to change the position of said levers, comprising a movable rail adjacent to said levers, a carriage arranged to traverse said rail in operative relation with said levers, and, means arranged to engage the carriage and move said rail and thereby contemporaneously change the position of all of said levers, substantially as set forth.

9. The combination with a series of sounding devices; of a series of damping devices, comprising levers respectively related to the individual sounding devices; strips of resilient material respectively carried by said levers and arranged to affect the operation of said sounding devices in accordance with their position; and, means arranged to move said rail and thereby contemporaneously change the position of all of said levers, substantially as set forth.

10. The combination with a series of sounding devices; of a series of damping devices, comprising levers respectively related to the individual sounding devices, arranged to affect the latter in accordance with their position; means arranged to change the position of said levers comprising a rail, means supporting said rail for oscillatory movement, a carriage arranged to traverse said rail in operative relation with said levers; and, means arranged to engage the carriage and move said rail and thereby contemporaneously change the position of all of said levers, comprising an incline arranged to be encountered by said carriage, substantially as set forth.

11. The combination with a series of sounding devices; of a series of damping devices, comprising levers respectively related to the individual sounding devices, arranged to affect the latter in accordance with their position; means arranged to change the position of said levers, comprising a rail and a carriage arranged to traverse said rail in operative relation with said levers; a manually operative member; and, connections between said carriage and said manually operative members, substantially as set forth.

12. The combination with a series of sounding devices; of a series of damping devices, comprising levers respectively related to the individual sounding devices, arranged to affect the latter in accordance with their position; means arranged to change the position of said levers, comprising a rail and a carriage arranged to traverse said rail in operative relation with said levers; a manually operative member; connections between said carriage and said manually operative member; and, an indicator arranged to indicate the location of said damping devices; said indicator being movable in correspondence with the movement of said manually operative members, substantially as set forth.

13. The combination with a series of sounding devices provided with corresponding digitals; a series of damping devices respectively related to the individual sounding devices, each of said damping devices being provided with means for throwing it into or out of action; and means under the control of the operator and independent of the digitals, whereby the control of the damping devices may be successively and chromatically effected during the playing of the instrument, substantially as set forth.

14. In an automatic piano, the combination of strings; digitals; a solo accenting device, comprising a set of dampers for the strings; and means independent of the digitals under continuous control of the operator to successively and chromatically actuate individual dampers or small groups thereof, so as to relieve the corresponding strings from the damping effect.

15. In an automatic piano, the combination of strings; digitals; a solo accenting device comprising a set of dampers for the strings; means independent of the action whereby all of said dampers may be simultaneously actuated to damp all of said strings; and means independent of said digitals under continuous control of the operator, whereby a plurality of said individual dampers may be

successively and chromatically actuated to relieve their strings of the damping effect.

16. In an automatic piano, the combination of strings; digitals; a solo accenting device comprising a set of dampers for the strings; means independent of said digitals under continuous control of the operator whereby a plurality of said individual dampers may be successively and chromatically actuated to relieve their strings of the damping effect; and means independent of the action mechanism whereby all of the dampers may be simultaneously actuated to relieve all of the strings from their damping effect.

In testimony whereof, I have hereunto signed my name, at Philadelphia, Pennsylvania, this 11th day of June 1904.

PHILIP WUEST, JR.

Witnesses:
ARTHUR E. PAIGE,
E. L. FULLERTON.