(No Model.)

5 Sheets—Sheet 1.

C. L. WESER.

MUSICAL INSTRUMENT.

No. 560,665. Patented May 26, 1896.

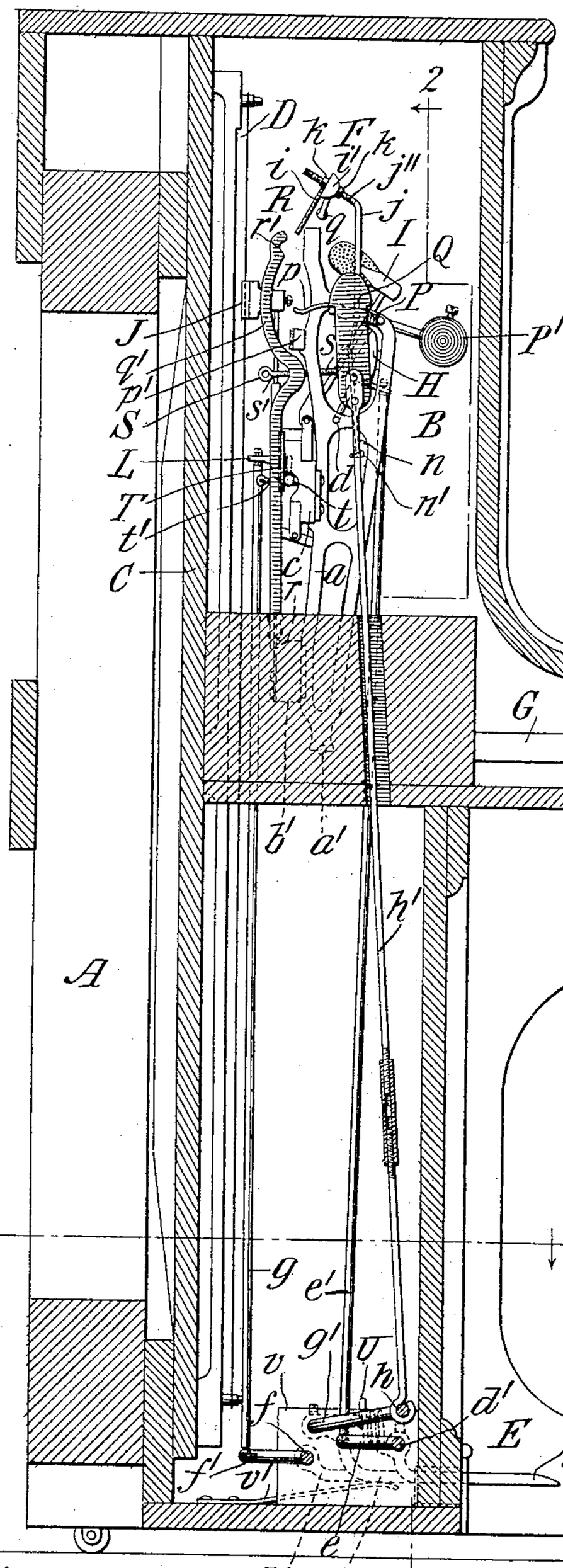

FIG. 1.

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B. E. Ashley

H. W. Lloyd.

INVENTOR:

Calvin L. Weser,

By his Attorneys,

Arthur G. Fraser & Co.

(No Model.)

5 Sheets—Sheet 2.

C. L. WESER.

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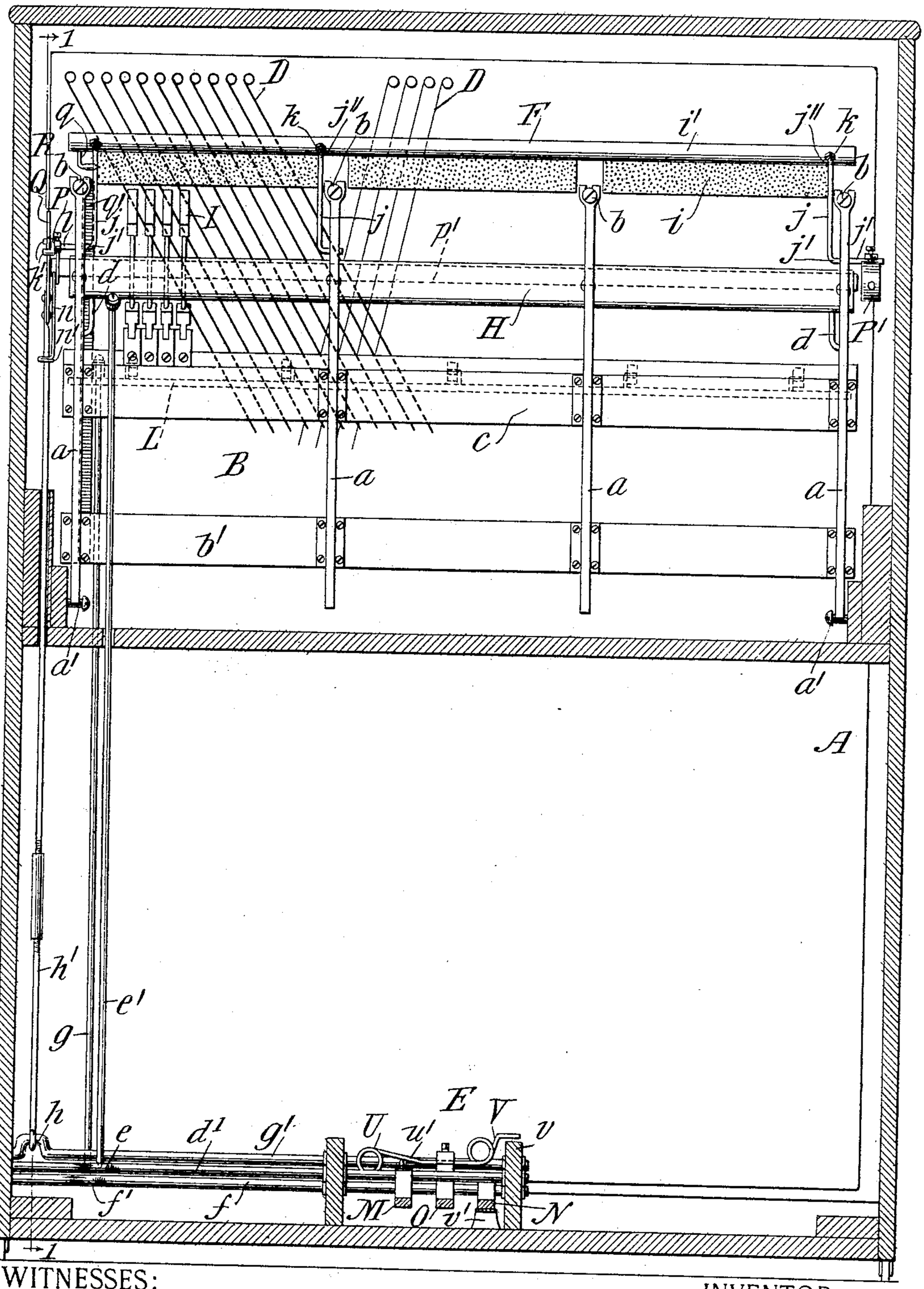

FIG. 2.

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(No Model.) 5 Sheets—Sheet 3.

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MUSICAL INSTRUMENT.

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FIG. 3.

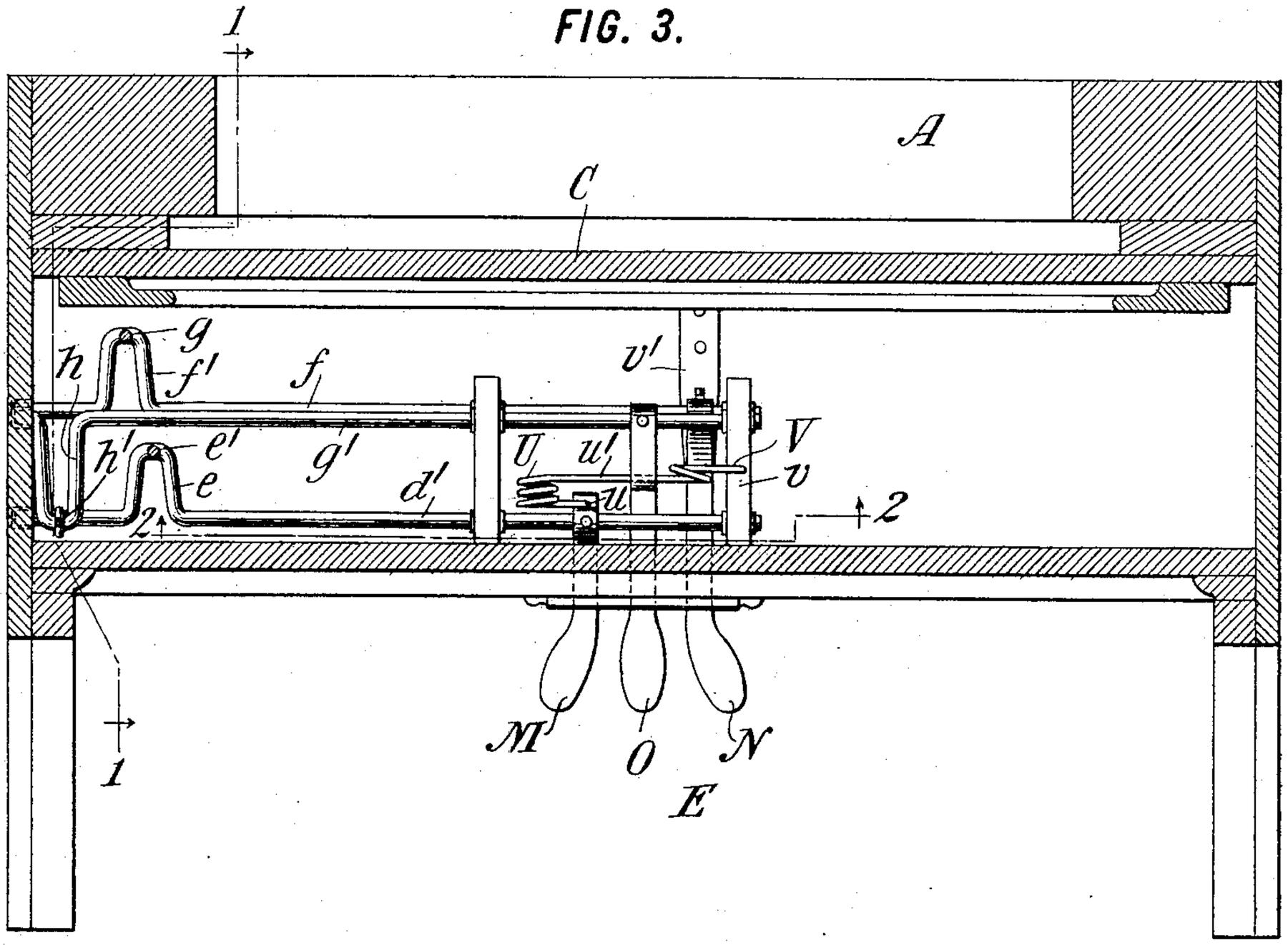
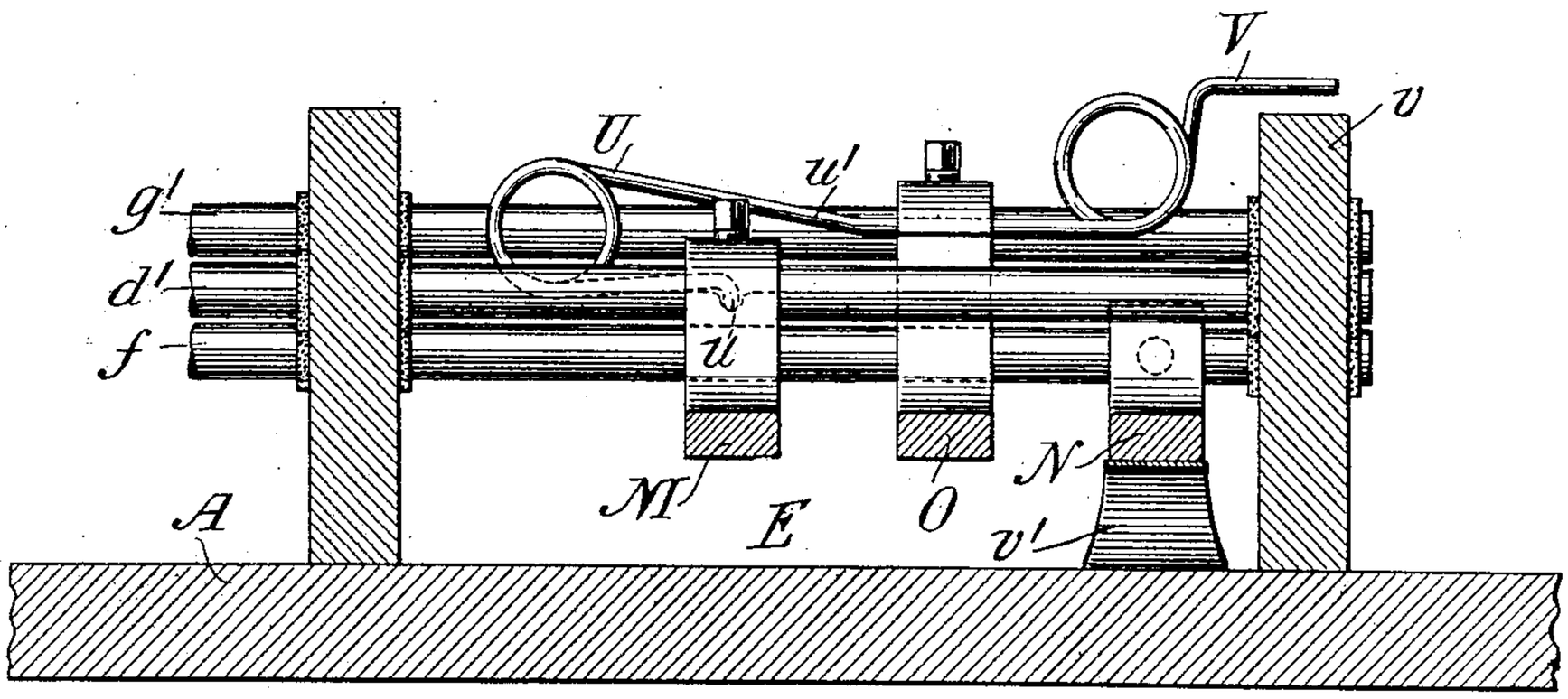


FIG. 4.



WITNESSES:

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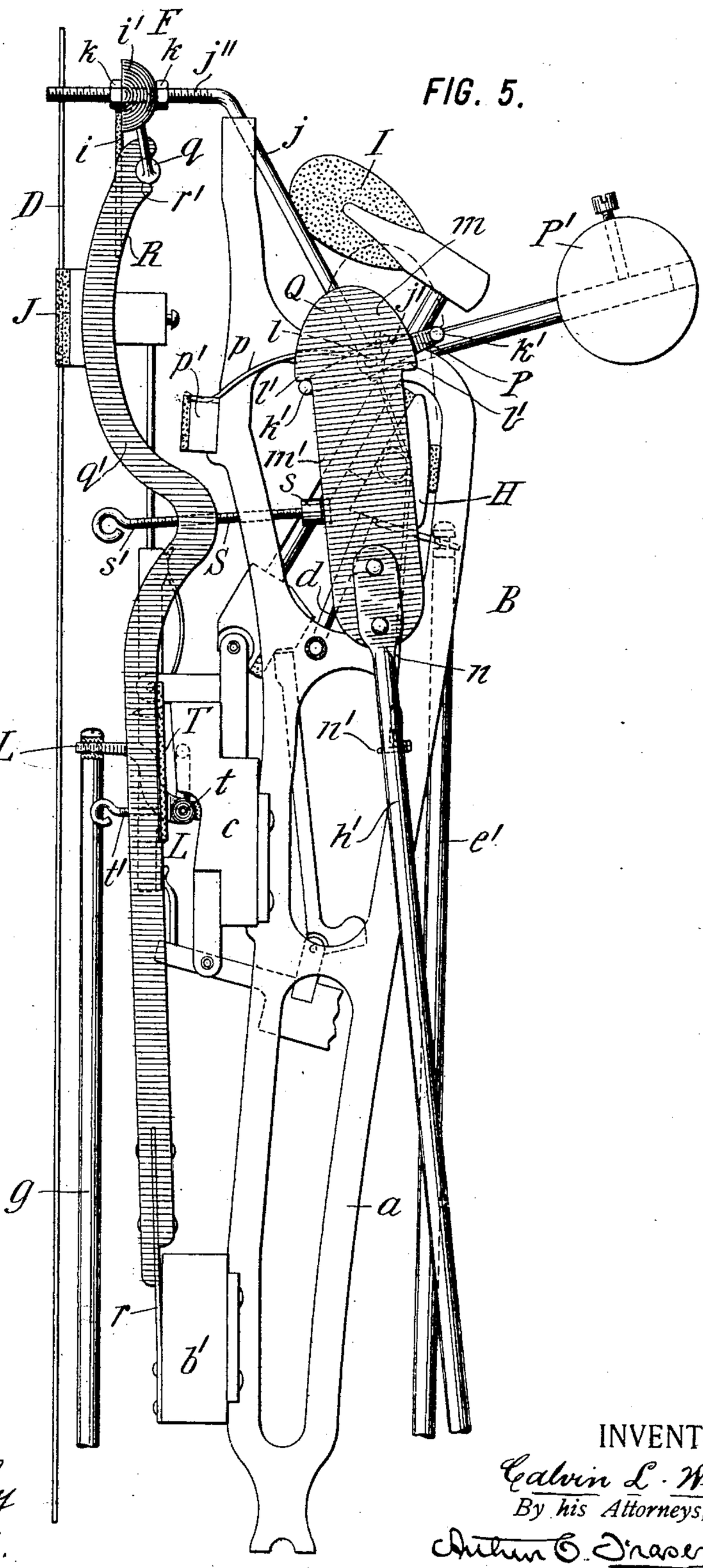
(No Model.) 5 Sheets—Sheet 4.

C. L. WESER.

MUSICAL INSTRUMENT.

No. 560,665. Patented May 26, 1896.

FIG. 5.



WITNESSES:

C. E. Ashley

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(No Model.)

5 Sheets—Sheet 5.

C. L. WESER.

MUSICAL INSTRUMENT.

No. 560,665. Patented May 26, 1896.

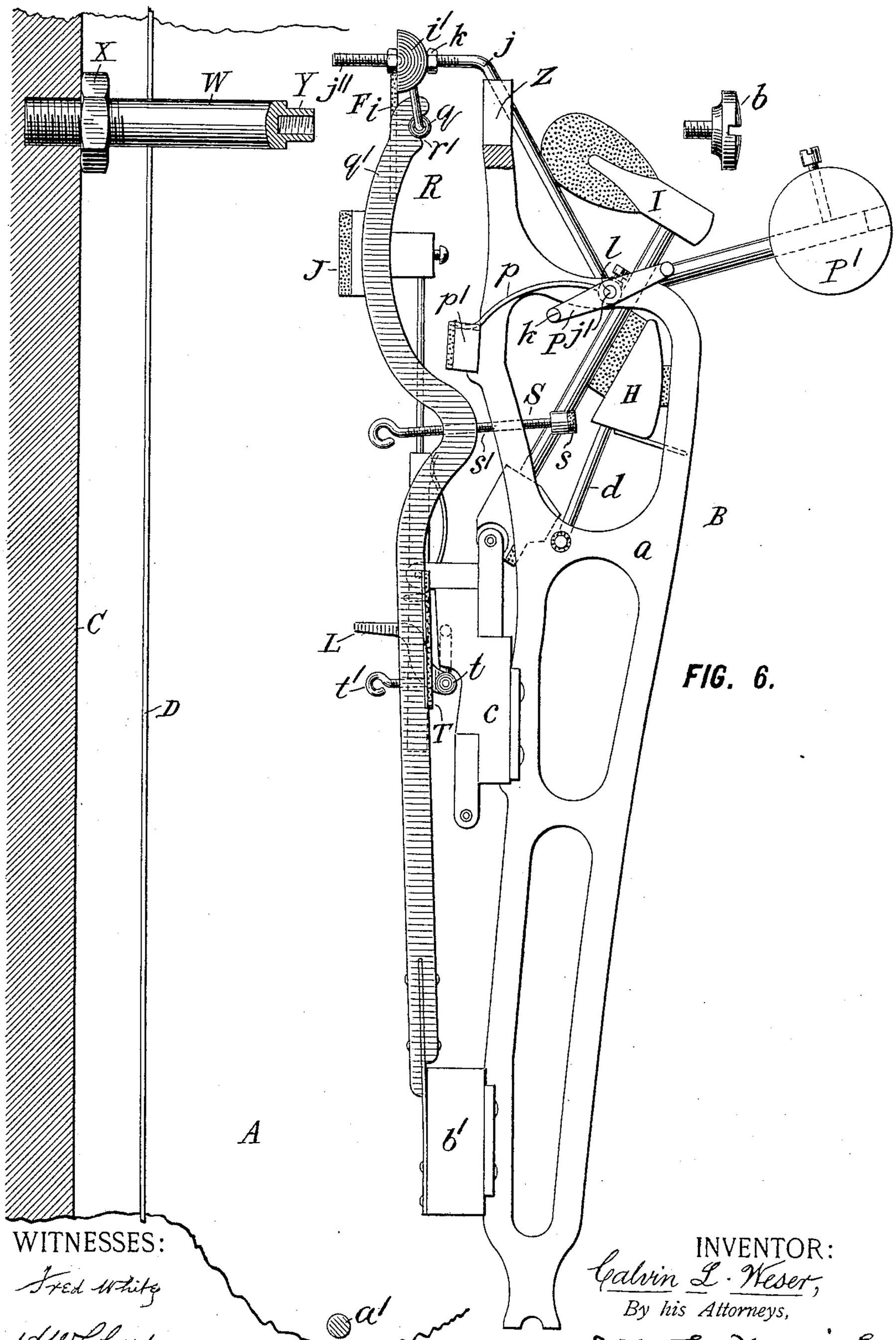

FIG. 6.

WITNESSES:

Fred White

H. W. Lloyd.

INVENTOR:

Calvin L. Weser,

By his Attorneys,

Burton & O'Neill & Co

UNITED STATES PATENT OFFICE.

CALVIN L. WESER, OF NEW YORK, N. Y.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 560,665, dated May 26, 1896.

Application filed February 26, 1895. Serial No. 539,730. (No model.)

To all whom it may concern:

Be it known that I, CALVIN L. WESER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Musical Instruments, of which the following is a specification.

This invention relates to musical instruments, and particularly to pianofortes, and aims to provide certain improvements in devices of this character.

Heretofore in pianofortes it has been usual to provide some harmonic device—as a muffler, for example—in addition to the usual action, and to provide an additional pedal for the operation of this device. The muffler has usually been movably mounted within the piano-casing, to be moved between the hammers and strings when in the active position, and to maintain it in this position locks have been provided on the muffler-pedal, holding this depressed, and thereby holding the muffler down. To release these locks, means operated by the other pedals, or special provisions on the muffler-pedal, have been employed. To give the requisite power to quickly restore the parts when unlocked, springs of considerable force have been used, and to obtain the necessary stability for parts of such constructions material of considerable weight has been required, so that in the releasing operation a considerable momentum is generated, creating a noticeable jar or thud as the parts are arrested at the inactive position, and to that extent impairing the effect when the instrument is used. With prior harmonic devices it has been necessary to so mount the device in the casing of the instrument that it could not easily be removed when access to the strings was required, and consequently somewhat interfered with tuning or other necessary adjustment or repair of the instrument.

My invention aims to provide an improved harmonic device which can be adjusted relatively to the strings, removed with the action, easily and quietly operated, locked in its active position independently of the pedals and released by any of the pedals of the instrument, and to provide improved means for operating the harmonic device, and improvements in the construction of certain parts of the instrument.

To this end in carrying out the invention in its preferred form I mount the harmonic device on or connect it with the action of the piano in such way that it can be removed therewith, and I provide means other than at the pedals for holding the harmonic device in its active position, preferably employing a catch therefor also carried on the action, and I provide a connection between the pedal and harmonic device, moving the latter to or from either position, movable independently thereof when desired, and separably coupled thereto, so that when the action is removed this connection can be easily freed; and I provide means for releasing the catch by the action of one or all the tone-moderating members of the instrument—such as the hammer-rest and the damper-lifter—and I provide means whereby the device can be operated without catching.

In the accompanying drawings, which illustrate a pianoforte to which my improvements are adapted, Figure 1 is a vertical cross-section of the instrument, cut on the line 1 1 in Figs. 2 and 3, showing the parts in the normal or inactive position. Fig. 2 is a vertical longitudinal section thereof, cut in the planes of the lines 2 2 in Figs. 1 and 3. Fig. 3 is a horizontal section thereof, cut on the plane of the line 3 3 in Fig. 1. Fig. 4 is a fragmentary vertical section on the same plane as Fig. 2, but on a larger scale, showing the pedals and their springs and rods; and Fig. 5 is a fragmentary view corresponding substantially to Fig. 1, but on a larger scale, showing the action in end elevation and a muffler in the active position. Fig. 6 is a fragmentary view showing a section of the case through one of the action-carrying posts and showing the action-frame and action in end elevation removed from the case and partly broken away.

Referring to the drawings, let A indicate the casing of a pianoforte; B, the action thereof; C, the sounding-board; D, the strings; E, the pedals; F, the harmonic device, and G the keys. These parts may be of any suitable construction, and as shown are in general of ordinary or well-known form. The action

shown consists of a frame composed of four vertical brackets *a*, the outer ones removably resting on pins *a'* in the casing and all fastened at top by screws *b*, the several brackets being connected longitudinally by the lower or small action-rail *b'* and the upper or large action-rail *c*.

The casing A is suitably extended usually by fixing in its sounding-board C permanently-attached action-frame-carrying posts W, which are tightly screwed home and then clamped by set-nuts X, or in any other manner rigidly and substantially irremovably connected to the casing. These posts project past and in front of the strings sufficiently to carry on their outer ends the action-frame, which is removably coupled to them in any suitable manner. In the construction shown the outer end Y of the post is reduced and fits into a fork or socket Z in the top of the adjacent bracket *a*, and the thumb-screw *b*, screwing loosely into the screw-threaded end of the post, holds the action-frame thereon, while the lower end of the frame rests removably or pivotally on the pins *a* at the side of the casing.

Loosening the screws *b* permits the lifting and forward removal of the action-frame and parts carried by it. These parts are ordinarily the hammer-rest H, which is pivoted to the bracket by arms *d*, the hammers I lying on this rest, the usual action parts for moving these hammers, the dampers J and their levers, and the damper-lifter L, the construction and operation of all of which are too well known to require description. When the action is removed, the strings are exposed, and when the action is in place the parts are in proper position for the operation of the instrument.

As usual, the pedals are three in number, the left-hand pedal M being the soft pedal, the right-hand pedal N the forte pedal, and the intermediate pedal O the muffler or harmonic pedal. The pedal M is fulcrumed on a shaft *d'*, having a crank *e*, which lifts when the pedal is depressed, thereby raising the rest-post *e'* to tilt the rest toward the strings. The forte pedal N is fulcrumed on a shaft *f*, having a crank *f'*, which lifts when the pedal is depressed, thereby lifting the damper-post *g* and tilting outwardly the damper-lifter L to throw the dampers off the strings. The muffler-pedal O is fulcrumed on a shaft *g'*, having a crank *h*, which falls when the pedal is depressed, thereby lowering the muffler-rod *h'* to operate the muffler.

The parts described may be of any suitable construction and may operate in any suitable manner, those described being shown merely as examples of one well-known construction with which my improvements may be employed.

I will now describe in their preferred form the several features of improvement introduced by my invention as applied to the construction of instrument shown.

One feature of improvement consists in mounting the harmonic device or muffler F on the action, or in connecting it thereto, in such manner that it can be removed therewith or by the removal thereof. This is preferably done, as shown, by connecting the muffler to the brackets *a* of the action, so that the former must move with the action. I prefer to mount the muffler-felt *i* on the usual longitudinal rod *i'* and connect this rod to swinging arms *j*, pivoted at *j'* to the brackets in such manner that by swinging the arms rearwardly the muffler will be brought toward the strings to the active position, and by swinging them forwardly the muffler will be tilted above the hammers to the inactive position. Any other suitable connection which will permit the movement of the muffler from an active to an inactive position and still serve to connect it to the action may, however, be substituted for this particular arrangement.

Fig. 5 shows the action-frame and muffler removed from the instrument. These parts constitute an improved attachment embodying in itself, as an independent structure, all the delicate mechanism of the instrument, so that by one act all this mechanism can be removed or applied, and it can be made independently of the manufacture of the other and larger portions of the instrument. This is an important improvement, since in piano manufacture it has long been the practice for specialists to manufacture the actions independently of the rest of the instrument and provide these actions to the makers of the cases, by whom, when the cases were finished, the actions have been applied. Heretofore the makers of the cases have been compelled to make and apply their own mufflers, but by my invention the muffler, being part of the action, can be made and applied in conjunction with the action and action-frame, thus insuring the necessary delicacy in its structure and adjustment and its proper relation to the other parts of the action and relieving the case-maker of the manufacture of so delicate a part of the instrument.

Another feature of improvement resides in making the muffler adjustable. This is best accomplished by mounting it on screw-threaded posts *j''*, penetrating the bar *i'*, and providing nuts *k*, screwed on this post against opposite sides of the bar and clamping the latter in position thereon. When the muffler is in the active position, these posts stand substantially at right angles to the strings, and any adjustment of the nuts must move the damper toward or from the strings. The posts are preferably part of the arms *j* or of any other provision supporting the muffler. Preferably each supporting-arm *j* has such an adjustable connection with the muffler, and the arms are disposed one at each end and a

third at the left-hand intermediate action-bracket, this being substantially the point of crossing of the bass and treble strings of the instrument, where an intermediate adjustment of the bar is particularly desirable.

Another feature of improvement relates to the connection between the muffler and its pedal and provides for the movement of the muffler to or from either of its positions by its pedal, for its movement independently of its pedal, and for easy disconnection between the muffler and pedal when the muffler is one removable with the action. In the character of muffler shown these several features of improvement are accomplished by constructing the muffler-carrier with a tilting yoke P, having shoulders k', mounted on the axis l of the arms j, swinging with these arms and movably engaging a coupling Q, connected to the upper end of the post h', preferably by a fixed connection, which coupler has reciprocal shoulders or faces l', adapted to engage with the shoulders of the yoke as the coupler is moved vertically by the post and thereby tilt the yoke and move the muffler. The coupler is preferably a flat plate or bar having a tapering or curved enlarged head m and a narrow body m', the latter fitting loosely within the yoke, so that it can swing from side to side thereof. When the muffler-post and its coupler rise with the raising of the muffler-pedal, the coupler is lifted with its faces l' above the higher of the two shoulders of the yoke, and in so raising it is swung into position to engage the higher shoulder when again depressed. When the pedal is depressed and the coupler brought down in engagement with this shoulder, it will tilt the yoke to the reverse position, throwing the shoulder it engages down and the other shoulder to the higher position. In doing so its head will pass slightly into the yoke, as seen in Fig. 5. This tilting of the yoke is transmitted through the muffler-carrier and correspondingly tilts the muffler. When the muffler-pedal is released, its spring raising it will also raise its post and the coupler until the latter is in the upper position, and in rising the latter will pass its head over the then uppermost shoulder of the yoke until its corresponding face l' is in position to engage this shoulder, when the coupler again descends. This shoulder being at the opposite side of the axis of the yoke, a second depression of the coupler will cause a reverse tilting of the yoke and consequently a reverse movement of the muffler. Thus one operation of the muffler-pedal will move the muffler in one direction, and should it remain so moved a second operation of the pedal will forcibly move it in the other direction.

Any suitable means for causing the coupler to first engage one side of the yoke and then the other may be utilized; but I prefer the throw-over device shown, which consists of a spring, rod, or equivalent projecting part n, which is connected to move with the movement of the muffler and connect it to move the coupler in the construction shown by being fixed at its one end to the yoke and having a hook or part at its other end engaging the post, rod, or link h' to swing the latter. This hook (lettered n') removably embraces the post. As the yoke swings to one position it distorts the spring n in that direction, thus giving to its hook a tendency to move the post away from the shoulder which the coupler is engaging. As soon as the upward movement of the coupler begins this tendency throws it to the other side of the yoke, so that when it reaches the top of its stroke its face adjacent to that side passes over the upper shoulder of the yoke. When it tilts the yoke on the next depression, the spring n will be distorted in the opposite direction and cause the reverse movement of the coupler as it ascends.

The connection between the coupler and yoke, or between any equivalent or suitable connection between the muffler and its pedal, is made separable or easily detachable in any suitable manner. I have shown the yoke as open on its outer side, so that by moving the action-frame laterally the yoke will pass free from the coupler.

For balancing the muffler I prefer to provide a counterweight P', so that the muffler shall be substantially counterbalanced or passive, and to give it a slight tendency to move toward the open position I prefer to provide a light spring p, that shown being fixed at one end to the muffler-support and bearing at its other end on the spring-rail p'; but any other or suitable arrangement may be used instead.

Another feature of my invention provides a catch for the muffler other than at its operating-pedal, so that it can be locked in position independently of its pedal, whereby the latter can always rise as soon as released and the muffler be kept in the active position. This catch may be arranged in any suitable manner and at any desired part of the instrument; but it is best provided on or adjacent to the action, and I prefer to construct it as shown in the drawings, wherein the catch (lettered R) consists of a nose and a hook, the one connected to the muffler and the other connected to the action and both disposed to engage when the muffler is in the active position and normally prevent its movement therefrom, but when disengaged to permit such movement. The nose preferably consists of a projection q, depending from the bar i' of the muffler, and the hook of a latch or bar q', movably carried by the rail b' or other suitable part of the action-frame and capable of swinging into the path of the nose, being given a tendency to swing in this direction by the spring r, by which it is fastened. The latch has a notch r' receiving the nose and embracing the latter with sufficient engagement to prevent movement of the muffler from the active position under ordinary conditions. To permit escape of the muffler when extraordinary force is exerted—as, for example, when the muffler-pedal is employed to

throw the muffler to the inactive position—the catch is constructed to yield and free the muffler under unusual force, this being accomplished in the construction shown by making the nose q cylindrical and the notch r' embrace sufficient of the nose to normally hold it, but not enough to hold it against an abnormal releasing force.

Another feature of improvement consists in means whereby the operation of one or of the other of the tone-moderating parts of the action shall through the movement of these parts throw the muffler out of operation. This may be accomplished in various ways, but I prefer to utilize the catch R for this purpose, and to this end I provide means on the catch which can be operated when the hammer-rest or the damper-lifter is moved, and when so operated will disengage the catch and free the muffler. Preferably the catch is provided with an adjustable projecting part or member S, consisting of a felted button s in the path of the rest H, and a screw-threaded shank s' screwing through the latch-bar q', so that when the rest is thrown forward it will strike the button and thereby throw the bar q' inwardly until the catch is free, thus providing for releasing the muffler by the soft pedal. To release it by the forte pedal I provide the bar q' with a bearing T opposite the horizontal rod t of the damper-lifter L, so that as the lifter is raised and swung rearwardly it will strike the bearing T, swing inwardly the bar q' and free the catch. The bearing T is adjusted by a screw t'.

Another feature of improvement consists in constructing the muffler-pedal with differential resistances to its movement and an improved spring for operating it, which preferably gives the several degrees of resistance desired. To permit operation of the muffler without locking it, I construct the muffler-pedal to move the same almost to the point of locking the muffler under comparatively slight spring resistance, and to mark the limit of this movement I interpose at or near this limit a much increased or relatively great spring resistance. This may be done in any suitable manner and through the use of any suitable elastic medium, but I prefer to use one spring for both functions, and also to utilize this spring for the added function of lifting one of the other pedals. This is best accomplished by the construction shown in Figs. 3 and 4, wherein the spring (lettered U) is a left-hand coiled spring having one end u bearing downwardly on the rear lug of the soft pedal M, and intermediate body portion u' bearing upwardly on a forward lug on the pedal O, and an elastic end V projecting beyond this lug, normally free during the movement of the pedal before the locking position of the muffler is obtained, but at the near approach to this position engaging a stop or face v, by which this end is arrested, so that further depression of the pedal involves the distortion of this end of the spring in addition to the distortion of the remainder thereof, thus suddenly and materially increasing the tension or resistance of the spring. The stop v is preferably the top face of the right-hand bearing of the pedal-rods. A leaf-spring v' is shown as employed for the forte pedal.

In operation the user of the instrument can normally depress either the soft or forte pedals without affecting the harmonic device and with no appreciable obstruction or resistance by reason of the presence of the muffler. The muffler can be operated independently of the other pedals and can be thrown toward and from the active position by a moderate depression of its pedal without blocking, being restored by the spring p as the pedal is released after each depression when it is not locked by the catch R. For prolonged use it will be depressed until locked and its pedal released, thus raising the coupler into position for throwing off the muffler. Should it not occur that either of the other pedals were used while the muffler was locked and the desirability of unlocking the muffler present itself, the user would effect the unlocking by the depression of the muffler-pedal again. On the other hand, should either of the other pedals have been called in play the muffler would have been unlocked and automatically restored to the inactive position, which operation would have thrown the yoke with its inner shoulder uppermost and tilted the coupler through the spring n until its inner face was over this shoulder, so that a following depression of the muffler-pedal would depress the muffler.

It will be seen that my invention provides improvements in pianofortes which can be variously and advantageously availed of in whole or in part, and which increase the scope and effectiveness of the instrument and the convenience and facility of its operation, and it will be understood that the invention is not limited in construction, operation, and arrangement to the particular form set forth and shown, since it may be availed of, either in whole or in part, according to such modification of either the construction, arrangement, or combination of any or all of the parts or features of improvement incident to the invention as circumstances or the judgment of those skilled in the art may dictate. For example, any means for holding the muffler in either or both of its positions may be employed when the connection between the muffler and its pedal is operative to throw the muffler both toward and from the active position, and also the muffler and its carrier may be of any construction with which a catch can be employed for locking it in its position.

What I claim is, in pianofortes and other similar instruments, the following-defined novel features and combinations, substantially as hereinbefore set forth, namely:

1. In pianofortes and the like, the combination with a removable action-frame and action, and movable hammers, dampers and a

movable damper-lifter carried by said frame, of a muffler pivotally mounted on said action-frame and removable therewith, said muffler movable into and out of the path of movement of the hammers, and operable independently of said damper-lifter, and means carried by said action-frame moving said muffler to one position thereon.

2. In pianofortes and the like, the combination with the strings, of a movable action and action-frame, a muffler opposite the strings and movable relatively thereto, and a support for said muffler mounted on, carried by, and movable with said action-frame, having screw-threaded posts carrying the muffler near its ends and another post intermediate of its ends, and nuts screwing on said several posts for adjusting the muffler relatively to the strings, whereby the adjustment of the muffler can be made at different points in its length, and the muffler and action-frame are movable together.

3. In pianofortes and the like, a muffler movable toward and from an active position, and means for holding it in the active position, in combination with a pedal for operating said muffler, and a connection between the muffler and pedal moving the former in either direction.

4. In pianofortes and the like, a muffler, means for holding the latter in one position, a pedal for operating the muffler and a connection between the pedal and muffler moving the latter in one direction at one stroke and in the reverse direction at a succeeding stroke.

5. In pianofortes and the like, a muffler movable into and out of an active position, means for moving said muffler, and a catch for the latter, holding it in the active position, and independent of the means for moving it.

6. In pianofortes and the like having an action and a harmonic device movable into and out of an active position, a catch for the latter, holding it in one of its positions, and operated by a moving part of the action, and when so operated releasing said device.

7. In pianofortes and the like, an action having a hammer-rest, and a muffler movable into the active position, in combination with means holding said muffler in the active position and operated to release said muffler when said hammer-rest is moved.

8. In pianofortes and the like, having an action containing a damper-lifter, and a muffler movable into and out of the active position, means for locking said muffler, and means operated by the damper-lifter for releasing said muffler.

9. In pianofortes an action having a hammer-rest and a damper-lifter, and a muffler, in combination with means holding the latter in one position, means operated by said hammer-rest when the latter is moved for releasing said muffler, and means operated by the movement of said damper-lifter for releasing said muffler.

10. In pianofortes and the like, a casing having fixed action-posts, and a removable action and action-frame separably connected to said posts, and movable hammers, dampers and a movable damper-lifter carried by said frame, in combination with a muffler carried by said action-frame and removable therewith, a spring carried by said action-frame and reacting against the latter and said muffler to move the latter to one position, a pedal for operating said muffler, and a separable connection between said pedal and muffler consisting of a part connected to said pedal and carried by said casing and a part connected to said muffler and carried by said action-frame, said parts having reciprocal provisions normally interengaging when said frame is carried by said posts and freely disengaging when said frame is removed therefrom.

11. In pianofortes and the like, a muffler and a pedal therefor, and means resisting the operation of said pedal with relatively small resistance during the initial operation of the pedal and relatively great resistance during the subsequent operation thereof.

12. In pianofortes and the like, a muffler, and a pedal for operating the latter, in combination with a spring resisting depression of said pedal with a slight resistance during the initial movement of the pedal, and with a suddenly-increased and relatively great resistance during the subsequent movement of the pedal.

13. In pianofortes and the like, a pedal, and a spring U for operating the latter, having two tensions, one an initial and relatively weak tension, and the other a secondary and relatively great tension.

14. In pianofortes and the like, a movable muffler and a catch R for holding the latter in one of its positions.

15. In pianofortes and the like a movable muffler and a yielding catch therefor normally holding the muffler in one position, and releasing it under force.

16. In pianofortes and the like a movable muffler, and means for operating it consisting of a tilting yoke P and a reciprocating coupler Q.

17. The improved attachment for pianofortes comprising an action-frame, an action carried thereby, a muffler movably carried by said frame, and a catch for said muffler holding the latter in position, said attachment adapted for application to a pianoforte.

18. The improved attachment for pianofortes comprising an action-frame having brackets and cross-rails, an action carried by said frame, and movable hammers, dampers and damper-lifter carried by the latter, and a counterbalanced muffler carried by said frame pivotally connected to said brackets and swinging into and out of position relatively to the action, and movable independently of said damper-lifter, said attachment adapted for use with a piano.

19. The improved attachment for pianofortes comprising an action-frame, an action

consisting of hammers, a hammer-rest, dampers, and a damper-lifter, carried by said frame, a harmonic device carried by said frame and movable into and out of an active position, and means carried by said action-frame controlling said harmonic device and operated by said action, substantially as and for the purpose set forth.

20. The improved attachment for pianofortes comprising an action-frame, an action carried thereby, and a counterbalanced muffler movably carried by said frame and movable into and out of an active position relatively to said action, and means for moving said muffler, said attachment adapted for application to a pianoforte.

21. The improved attachment for pianofortes comprising an action-frame, an action carried thereby, a muffler carried by said frame and movable into and out of an active position relatively to said action, means for moving said muffler, and a spring carried by said frame and reacting against the latter and said muffler, and tending to move the latter to an inactive position, said attachment adapted for application to a pianoforte.

22. In pianofortes, the strings and hammers, a muffler movable into and out of the path of the hammers, and means moving it, in combination with means holding said muffler in the active position independently of the means moving it.

23. In pianofortes, the strings and hammers, in combination with a counterbalanced muffler and means moving it into and out of the path of the hammers.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CALVIN L. WESER.

Witnesses:
JAMES H. KIRKLAND,
CHAS. VAN OPPEN.