(No Model.) 5 Sheets—Sheet 1.

J. A. WESER.

PIANOFORTE.

No. 523,092. Patented July 17, 1894.

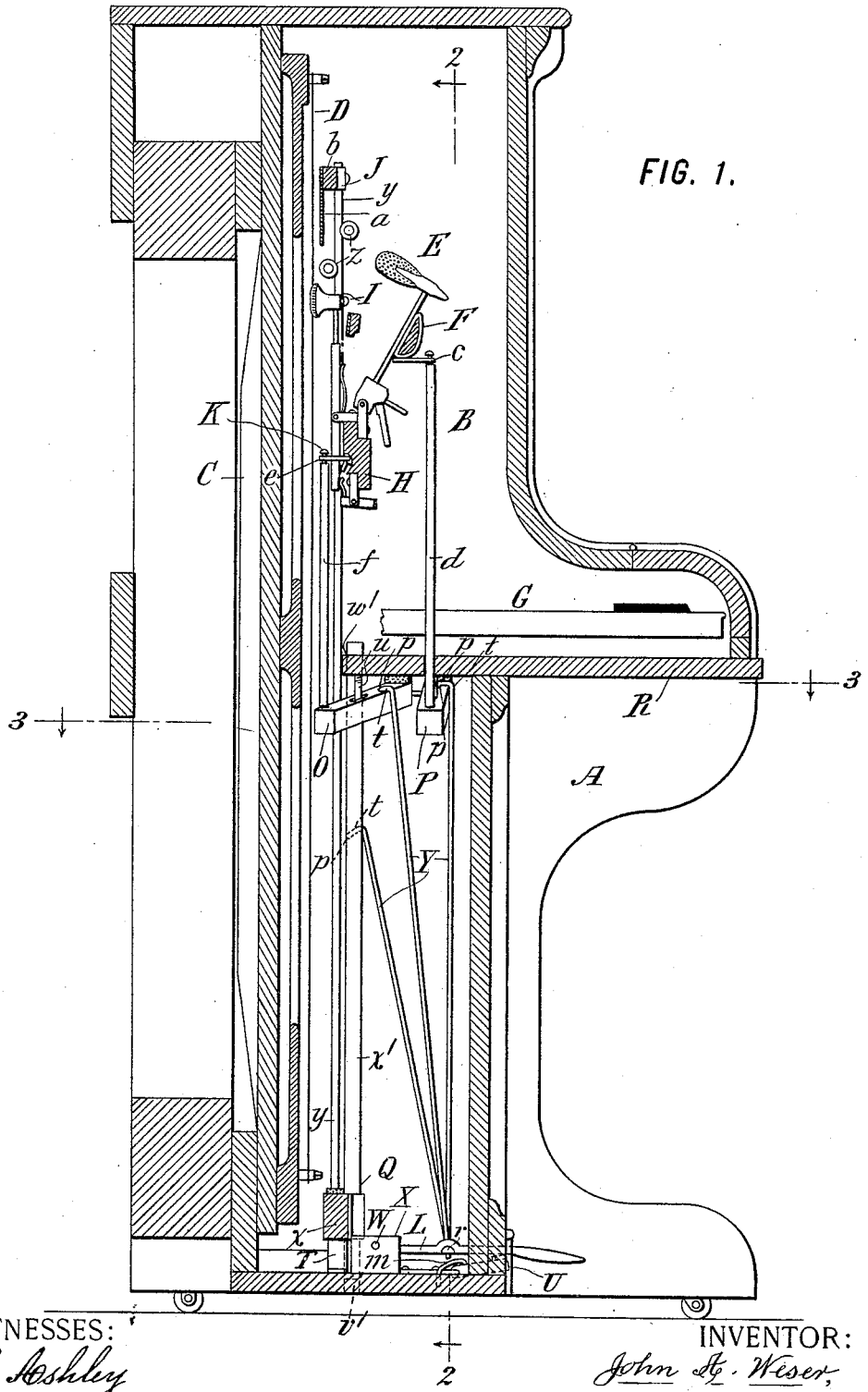

FIG. 1.

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H. W. Lloyd.

INVENTOR:
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By his Attorneys,
Arthur O. Draper & Co.

(No Model.)

5 Sheets—Sheet 2.

J. A. WESER.

PIANOFORTE.

No. 523,092. Patented July 17, 1894.

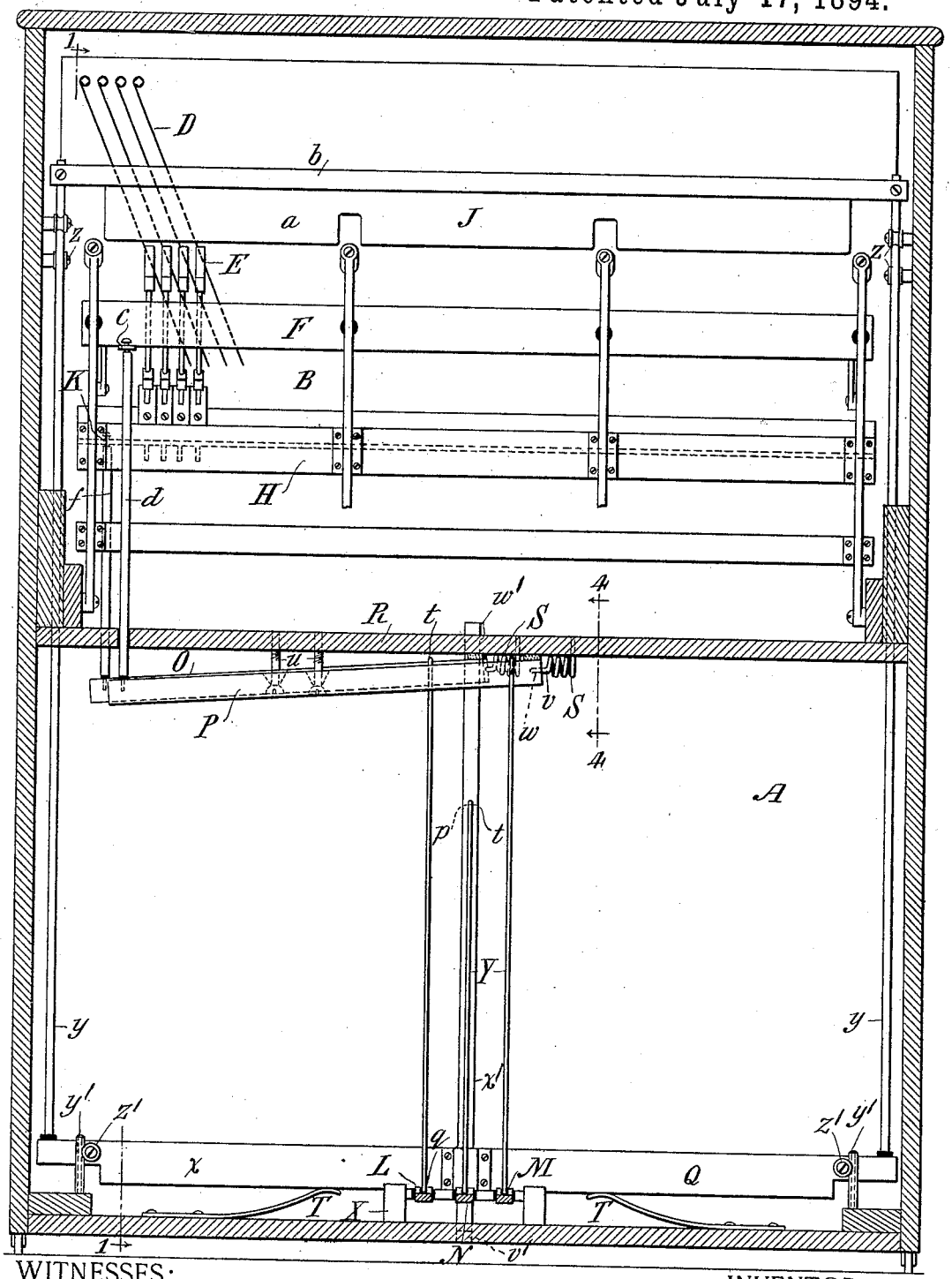

FIG. 2.

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(No Model.) 5 Sheets—Sheet 3.

J. A. WESER.

PIANOFORTE.

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FIG. 3.

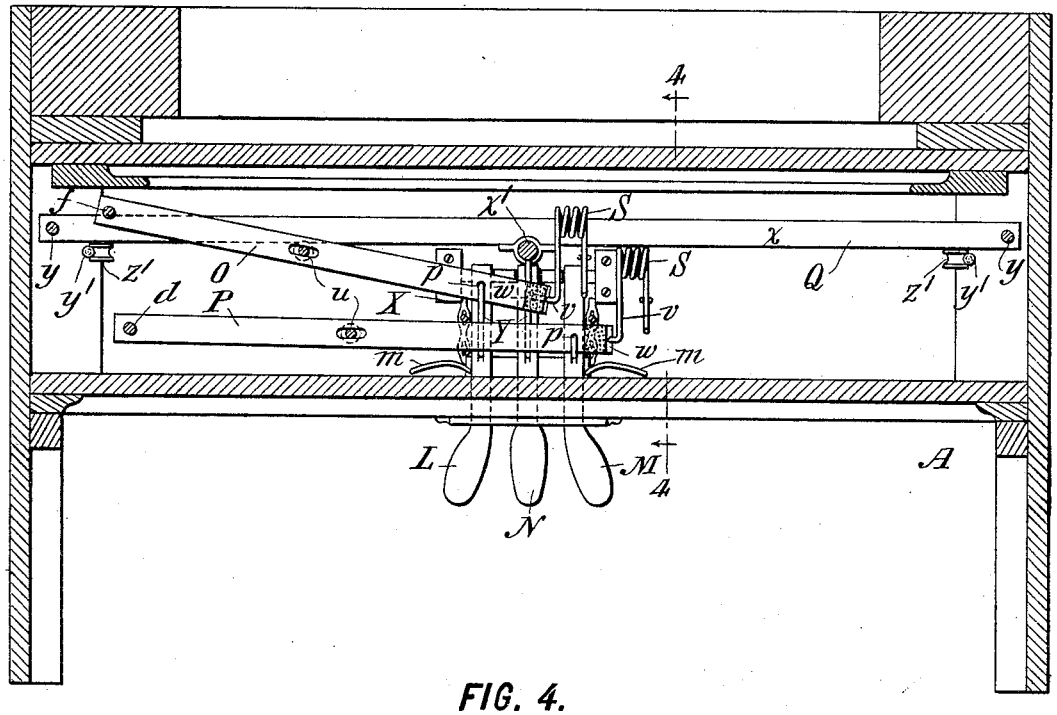
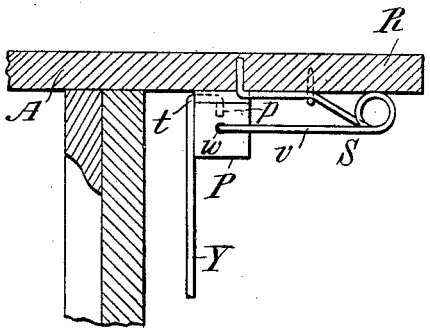


FIG. 4.



WITNESSES:
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(No Model.) 5 Sheets—Sheet 4.

J. A. WESER.

PIANOFORTE.

No. 523,092. Patented July 17, 1894.

FIG. 5.

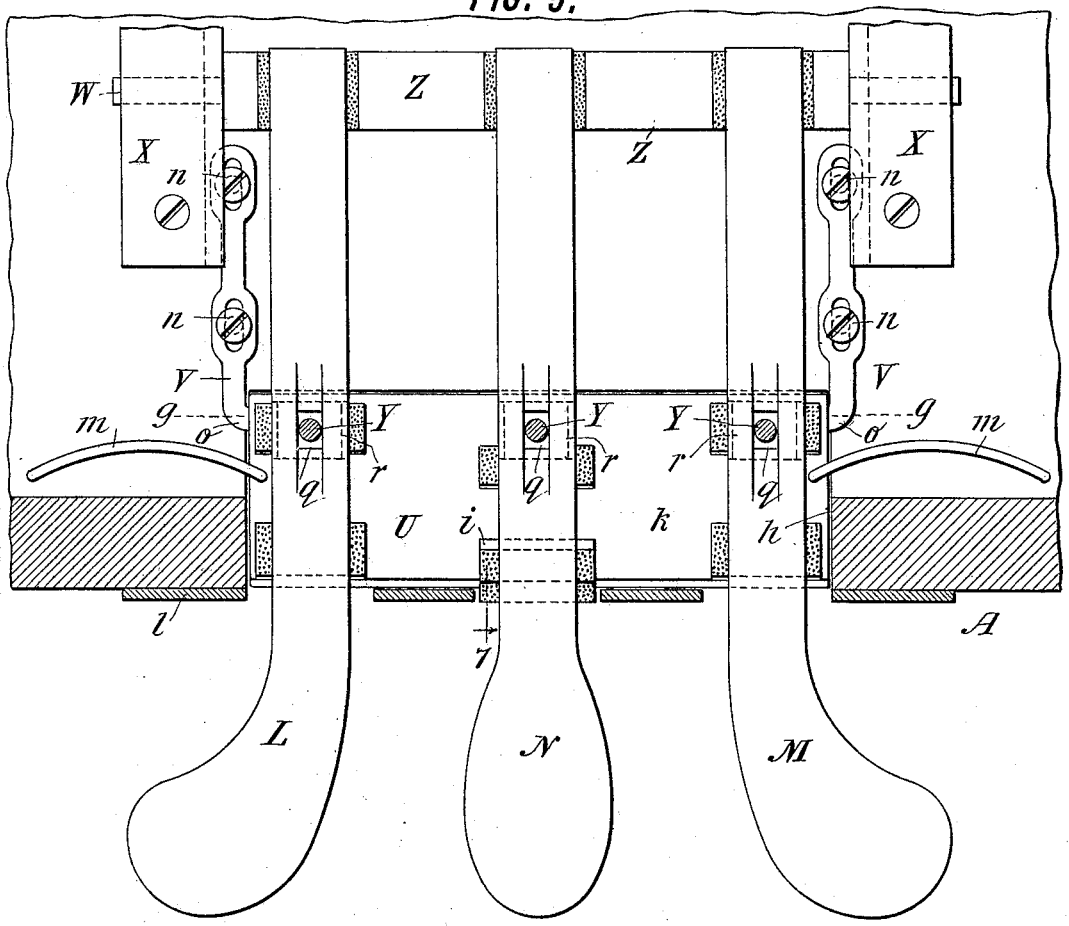
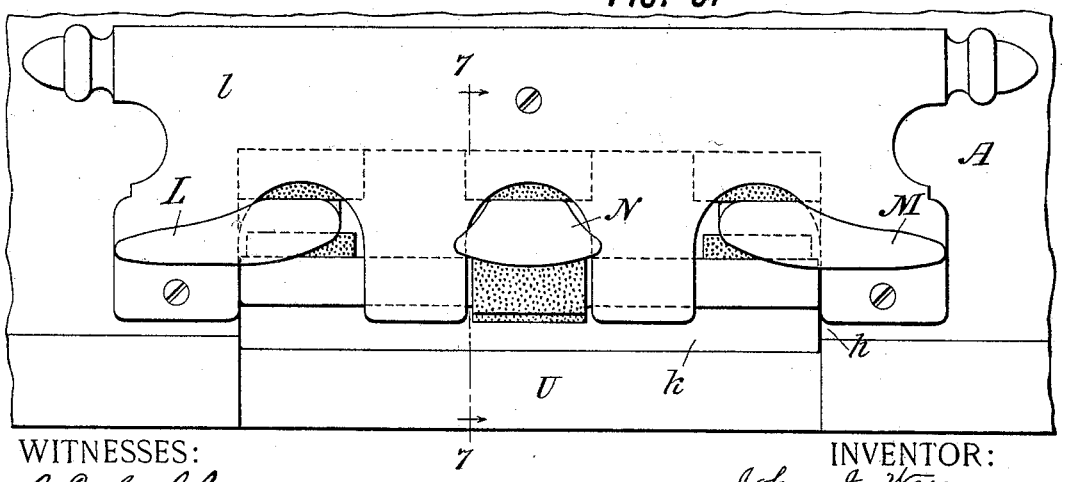


FIG. 6.



WITNESSES:

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(No Model.) 5 Sheets—Sheet 5.

J. A. WESER.

PIANOFORTE.

No. 523,092. Patented July 17, 1894.

FIG. 7.

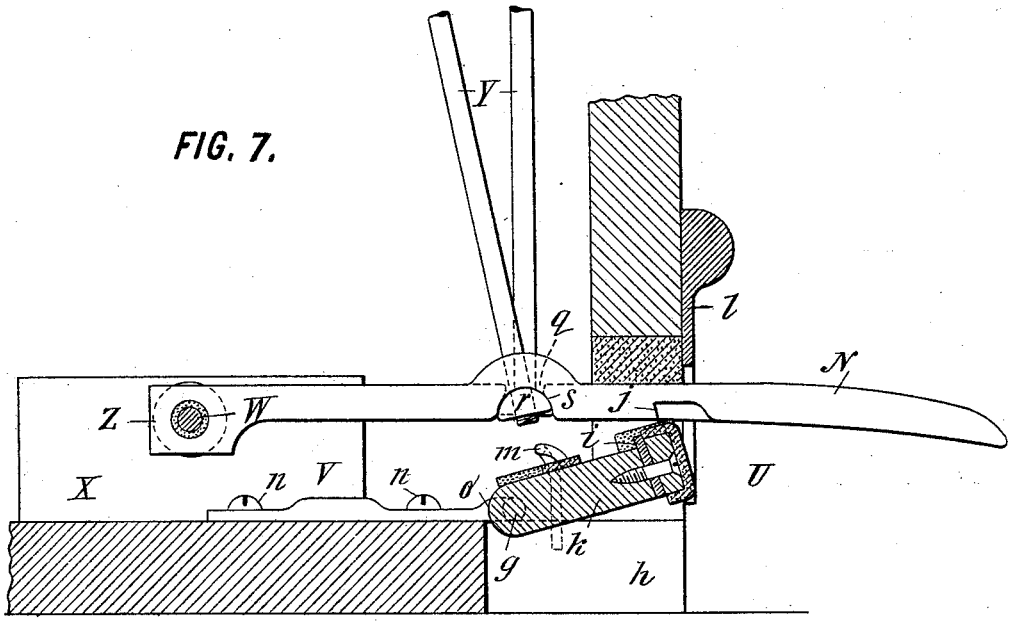
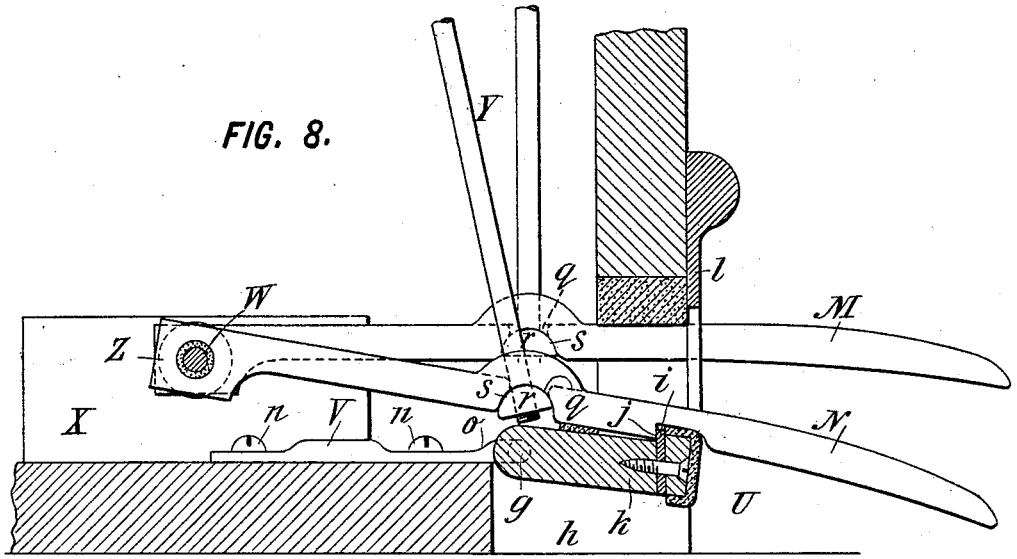


FIG. 8.



WITNESSES:

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H. W. Lloyd.

INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN A. WESER, OF NEW YORK, N. Y.

PIANOFORTE.

SPECIFICATION forming part of Letters Patent No. 523,092, dated July 17, 1894.

Application filed March 28, 1894. Serial No. 505,384. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. 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 Pianofortes, of which the following is a specification.

This invention relates particularly to pedal actions, and the parts operated thereby, for pianofortes, and it is especially adapted for use in upright pianos.

The object of the invention is to provide an improved pedal lock, means for preventing the entrance of mice into the piano, and improvements in the details of construction of the parts for transmitting the motion of the pedals.

Heretofore it has been customary to employ, in addition to the soft and forte pedals, an auxiliary pedal operating a harmonic device, as a thin felt stretched across in front of the strings and movable between these and the hammers, or for operating a sustaining device for maintaining the raised dampers from the keys temporarily, and means have been provided for locking one or more of the pedals in the active position, such lock being released by the initial action of another of the pedals.

According to my invention in its preferred form I provide an improved pedal lock for one of the pedals, usually the harmonic or auxiliary pedal, and I construct this lock to catch and hold the pedal to be locked pending ordinary operation of one or both of the other pedals and to be released by the extreme or maximum movement of either of these pedals. This lock is also made to serve as a mouse trap or aperture closer for the pedals when the latter are in the inactive position, preventing ingress of small animals through the pedal apertures, and thus avoiding inconvenience which has heretofore arisen from this cause. The arrangement of the pedal levers, and their springs, fulcrums and connecting links are improved, simplified and cheapened in construction.

In a pianoforte having a harmonic attachment and pedal, and constructed with my improvements, it is possible for the player to depress the harmonic damper or felt to its active position opposite the points of the strings struck by the hammers, and maintain it in this position while using the soft or the forte pedal intermittently, thereby obtaining the same relative modifications of tone with the harmonic effect as would ordinarily be obtained by the use of the soft and forte pedals without the employment of the harmonic device; and at any time the instrument can be restored to the normal condition by fully depressing either of the usual pedals and thereby releasing the harmonic pedal.

In the accompanying drawings, which illustrate the preferred form of my improvements as applied to an upright piano, Figure 1 is a vertical cross section of the piano, cut on the line 1—1 in Fig. 2 and looking in the direction of the arrow, only so much of the action being shown as pertains directly to the improved parts. Fig. 2 is a vertical longitudinal section thereof cut on the line 2—2 in Fig. 1 and looking in the direction of the arrow, the unessential portions of the action being omitted. Fig. 3 is a horizontal section thereof cut on the line 3—3 in Fig. 1, immediately below the key bottom and looking downwardly. Fig. 4 is a fragmentary cross section thereof on a larger scale, cut on the line 4—4 in Figs. 2 and 3 and looking in the direction of the arrow. Fig. 5 is a fragmentary plan view of the pedals on a larger scale. Fig. 6 is a fragmentary front elevation thereof. Fig. 7 is a fragmentary vertical cross-section cut on the line 7—7 in Figs. 5 and 6, and Fig. 8 is a similar view showing the middle pedal locked.

Referring to the drawings let A indicate the case of the instrument, B the action, C the sounding board, D the strings, E the hammers, F the hammer rest, G the keys, H the action rail, I the damper, J the harmonic device, K the damper lifter operated by the forte pedal, L the forte pedal, M the soft pedal, N the harmonic pedal, O the forte pedal lever, P the soft pedal lever, and Q the harmonic pedal frame.

The case A, strings, and action may be of any known or suitable construction; the damper I, lifter K and harmonic device J are of usual construction, the latter consisting of a narrow vertical strip of felt *a*, depending from a horizontal cross bar *b*, and suspended out of contact with the front of the strings

and normally above the point at which the hammers strike these, but when depressed passing below this point.

The rest F as usual is a swinging bar on which the hammers rest and which is tilted to an inward position by the soft pedal for producing diminuendo effects in playing. It has the usual ear *c* to which is coupled the vertical lever post *d*, by which the rest is lifted by the lever when the latter is actuated by its pedal.

The damper lifter K has the usual ear *e* to which is coupled the usual lever post *f*, by which the lifter is tilted when the forte pedal is depressed, whereby all the dampers are pressed off.

The levers O and P are each fulcrumed to the under side of the key bottom R, and detachably connected at their outer ends to their respective posts *f* and *d* and connected at their inner ends to their respective pedals L and M.

Springs S are provided for maintaining the levers in the inactive position.

The frame Q is connected to the cross bar *b* at top and to the auxiliary pedal N at bottom, for moving the former when the latter is actuated. Springs T serve to hold this frame and the harmonic device in the inactive position.

According to one feature of my present invention I provide an improved pedal lock U, which locks one or more of the pedals, and preferably also constitutes a mouse trap or closer for the pedal aperture. In its preferred form the lock U consists of a pivoted catch, fulcrumed on a horizontal axis *g* at its inner edge, working in a recess *h* in the bottom and front boards of the case A, and having a sear *i*, which engages a reciprocal nose or stop *j* on the under side of the pedal to be locked, in the construction shown the middle pedal. The fulcrum of the pedal is considerably at rear of that of the lock, and somewhat elevated thereabove, whereby the radius of the arc through which the stop *j* swings as the pedal moves is greater, than that of the arc through which the sear swings, and its direction is different from the direction of swing of the lock, whereby as the nose *j* passes at rear of the sear of the lock, and the latter rises in front of the nose, the two are prevented from upward movement by reason of the diverging directions of the arcs through which they respectively must swing to move upwardly. The engaging faces of the sear and stop are sufficiently undercut or inclined to preserve the lock in engagement with the pedal when the latter is once locked, but this inclination should be graduated to permit the depression of the lock past the nose of the pedal, upon the exertion of a slight downward pressure on the former, to free the pedal it is holding depressed. The lock preferably consists of a thin board *k* fitting the recess *h*, having a longitudinal bore at its rear edge, and carrying at its front edge a metallic strip constituting the sear, and an outer facing passing within the depending tongues of the pedal plate *l* between the spaces in this plate, and opposite these spaces having top felts engaging the under sides of the pedals. When the pedals are raised this board follows them up under the impulse of a retracting spring, or other suitable provision *m*, which maintains the board firmly against the pedals when these are in the inactive position, as seen in Figs. 6 and 7, thereby practically closing the pedal apertures.

It is best to adjustably mount the lock, for which purpose I provide adjustable pintles V having slotted bodies clamped by screws *n* to the top face of the bottom board, whereby either can be adjusted inwardly or outwardly, and having bent ends *o* entering the longitudinal holes in the rear of the board and serving as pivotal pintles on which the latter swings.

The nose *j* is best formed by notching the under face of its pedal sufficiently to permit the entrance of the sear into engagement with the nose.

I prefer to fulcrum all the pedals freely on a single fulcrum rod W, mounted at its ends in bearing blocks X, the pedals being spaced apart on this rod by intervening washers Z of the requisite width. By this means only two bearings are required for the fulcrum rod for all the pedals, and great strength and rigidity are obtained.

The lock is adjusted relatively to all the pedals to permit an extensive movement of either without affecting the locking operation, and to catch and lock the pedal only at its final or extreme movement, and to only unlock it at the final or extreme movement of either of the other pedals, whereby all pedals may be used freely, or the middle pedal may be locked and the others used freely, or it may be unlocked at any time by an extreme movement of any free pedal. The unlocking is best accomplished by depressing the lock by another pedal until its sear passes below the nose of the locked pedal. When this occurs the pedal released will rise to the normal position, and the lock will follow the rising pedals in all their movements until the middle one is again locked.

Another feature of improvement consists in the connection between the pedals and their links, the connections between the links and their levers and the construction of the latter. In this respect the links are constructed with hooked upper ends *t* removably engaging downwardly extending sockets *p* in the member to which the link transmits the motion of the pedal, and with screw threaded lower ends passing through holes *q* in the pedals and engaging rocking nuts tiltingly mounted at the under sides of the pedals. These nuts lettered *r* are preferably semi-cylindrical oblong pieces fitting in cylindrical sockets *s* in the pedals, while the holes *q* are elongated to permit rocking of the links let-

tered Y. Thus as the pedal moves its nut r rocks freely in its socket, while all danger of unscrewing of the nut is avoided because of the oblong construction of the latter. The detachable hooked ends t permit easy adjustment of the links, to accomplish which it is only necessary to unhook any link and then rotate it while its nut is engaged by the pedal, whereby the link can be screwed into or out of the nut to lengthen or shorten the link.

The improvement in the levers O and P consists in constructing each as a plain bar fulcrumed by a single vertical screw or equivalent provision u working in an enlarged hole, on the head of which screw the lever can tilt, omitting studs, guides or other lateral retaining provisions for preventing side swinging of the levers, and preventing any lateral displacement through the medium of the retracting springs S, which are, according to my invention, connected to the levers to both lift and guide them, and are preferably the only springs employed for lifting the levers and their pedals and connections. I prefer to construct these springs each as a coiled spring, one end of which is fastened to the under face of the key bottom and the other end of which has a laterally bent end v entering and engaging a longitudinal socket w in the end of its lever, whereby the upward force of the spring is exerted on the lever to lift it, and lateral swinging of the lever is prevented by the engagement of the socket over the end of the spring.

By employing a single spring S at the lever, the pedal and link can readily be detached therefrom, since it is only necessary to depress the lever until the hook of the link can be lifted out of its socket.

Another feature of improvement consists in the connection between the harmonic device and its pedal. Heretofore tilting levers have been used to transmit the motion of the pedal to the device. In my invention I provide a solid frame receiving the motion of the pedal connected rigidly to the cross bar b at top, suitably guided, and reciprocating when the pedal moves to lift or lower the felt a. This frame lettered Q is best constructed of a stiff cross board x at bottom, and rigid side rods y at sides, fixed to the board x and rising therefrom and fixedly connected to the bar b at top. To guide the frame Q I prefer to provide grooved rollers z engaging the side bars y at top, and grooved rollers z' engaging guide pins y' at bottom, as best seen in Fig. 2. The rollers and bars and pins are preferably constructed the latter as cylindrical members and the former with semi-circular grooves engaging these members, whereby guidance in all directions results. The rollers z are mounted on the side boards of the case at front and rear of the side rods in the construction shown, and the rollers z' are mounted at right angles to the others and on the face of the cross board x, whereby but one roller is required for each pin y'. The latter pins are best supported from the bottom board of the case. When thus mounted the frame Q can be easily and quietly reciprocated without any lost motion. It can be raised in any suitable manner as by one or more leaf springs T. Preferably a further guide for the frame Q is provided in the form of a cylindrical rod x' which is fixed to the cross board x and slides in vertical holes in the casing, that at top being the hole w' in the key bottom and that at bottom being the hole v' in the bottom board.

The connection between the auxiliary pedal and frame Q is best made by hooking the pedal link Y into a hook hole p near the upper part of the rod x'. In this way this pedal is lifted and sustained by the spring or springs lifting the frame.

In operation the pedals move independently as usual until that to be locked is fully depressed, when it is caught by the lock, and it, together with the frame Q and harmonic device are maintained in the depressed or active position until the lock is tripped. Meantime the other pedals are operated as circumstances require until the harmonic device is to be thrown out of action, to accomplish which either or both pedals are depressed until they strike and trip the lock, thus permitting all the pedals to rise to the inactive position and the board k to follow them up and close the pedal apertures.

It will be seen that my invention provides improvements in the construction of a piano which can be variously availed of, economically applied, and which will be effective and advantageous in operation; and it will be understood that the invention is not limited in its application to the particular details of construction, arrangement and combination herein set forth as the preferred form of the invention, as these may be modified in such respects as circumstances or the judgment of those skilled in the art may dictate without departing from the essential features of the invention.

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

1. In a pianoforte, the pedals, in combination with a pedal lock locking one of said pedals at the maximum depression thereof then permitting ordinary movement of the unlocked pedal, and released thereby at the maximum depression thereof.

2. In a pianoforte, a fulcrumed pedal, in combination with a lock therefor fulcrumed beneath and in front of the fulcrumed point of the pedal, substantially as and for the purpose set forth.

3. In a pianoforte, three pedals, in combination with a lock engaging and locking one of said pedals and operated by the depression of either of the other pedals to free that

locked, said lock when locking one of said pedals permitting ordinary movement of the other of said pedals.

4. In a pianoforte, three pedals, in combination with a lock locking one of said pedals, permitting ordinary movement of the other pedals, and operated by the complete depression of one of the other pedals to free that locked.

5. In a pianoforte, the combination with the pedals, of a swinging lock for locking one of the pedals, engaging the under face thereof and adjustably mounted relatively thereto, said lock having a sear, and the pedal locked thereby having on its under face a nose engaged by said sear when the parts are locked.

6. In a pianoforte, the combination with the pedals, and pedal apertures of a substantially horizontal swinging plate beneath the pedals moving against the under sides thereof up into and closing the pedal apertures when the pedals are raised, said plate free at its front edge.

7. In a pianoforte, the combination with the pedals, of a bottom board having a recess *h* beneath the pedals, and a substantially horizontal movable board *k* in said recess for closing the latter and the pedal apertures.

8. In a pianoforte, the combination with the casing, and a harmonic device, and pedal therefor, of a rigid frame Q within the casing, connected at top to said device and at bottom to said pedal, and transmitting the motion of the latter to the former.

9. In a pianoforte, the combination with the casing, a harmonic device, and a pedal therefor, of guideways in the casing, and a rigid frame moving in said guideways, connected to said device and to said pedal, and transmitting the motion of the latter to the former.

10. In a pianoforte, the casing in combination with a device J, a pedal N, a rigid frame Q, and a link Y, said frame constructed with cross board *x*, side rods *y*, and guiding post *x'*.

11. In a pianoforte, the casing, a device J therein, a pedal N for operating said device, and a frame Q for communicating the motion of the former to the latter, said frame consisting of a cross board *x*, vertical rods *y*, and rollers *z* for guiding said frame.

12. In a pianoforte, a pivoted pedal lever, in combination with a spring therefor engaging said lever, tilting it vertically, and locking it against lateral movement.

13. In a pianoforte, a pedal lever P having a socket *w*, in combination with a spring S having a bent end *v* entering said socket, said spring lifting said lever and guiding it laterally.

14. In a pianoforte, a normally non rotative pedal and pedal link, the former having an elongated socket of greater lateral length than its lateral width, and a link hole, and the latter having a screw-threaded end passing through and beneath said hole, in combination with an elongated nut of greater lateral length than its lateral width screwing upon the end of said link and entering said socket, whereby accidental unscrewing of said nut is prevented.

15. In a pianoforte, the combination with a pedal having elongated socket of greater lateral length than its lateral width, and a link hole, of a screw-threaded normally non rotative link passing through said hole, and a rocking nut of greater lateral length than its lateral width screwing on the end of said link and entering and rocking in said socket whereby accidental unscrewing of said nut is prevented.

16. In a pianoforte, the pedals, in combination with a pedal lock for locking one of said pedals, consisting of a vertically swinging plate mounted on an axis substantially parallel with the axes of the pedals, said swinging plate being mounted opposite the pedal to be locked, and crossing the under side of this and the adjacent pedal, and operated by the depression of the adjacent pedal to release the one locked.

17. In a pianoforte, the pedals, in combination with a pedal lock locking one of said pedals, consisting of a swinging member opposite the pedal to be locked, pivoted on a substantially horizontal axis extending substantially parallel with the axis on which the pedals are fulcrumed, and adjustable relatively thereto, and means for adjusting said swinging member relatively to the pedals.

18. In a pianoforte, the casing and pedals, in combination with a pedal lock consisting of a swinging member beneath the pedals engaging the one to be locked, and a pivotal connection for said member consisting of adjustable brackets V.

19. In a pianoforte, a pedal, and a case having an aperture through which said pedal passes in combination with a plate for closing said aperture swinging vertically therein against the under side of the pedal, and means for lifting said plate against the pedal, said plate mounted independently of and disconnected from said pedal.

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

JOHN A. WESER.

Witnesses:
WINFIELD S. WESER,
FRANCIS H. PEATY.