

G. H. DAVIS.
 PEDAL MECHANISM.
 APPLICATION FILED APR. 29, 1907.

935,967.

Patented Oct. 5, 1909.
 4 SHEETS—SHEET 1.

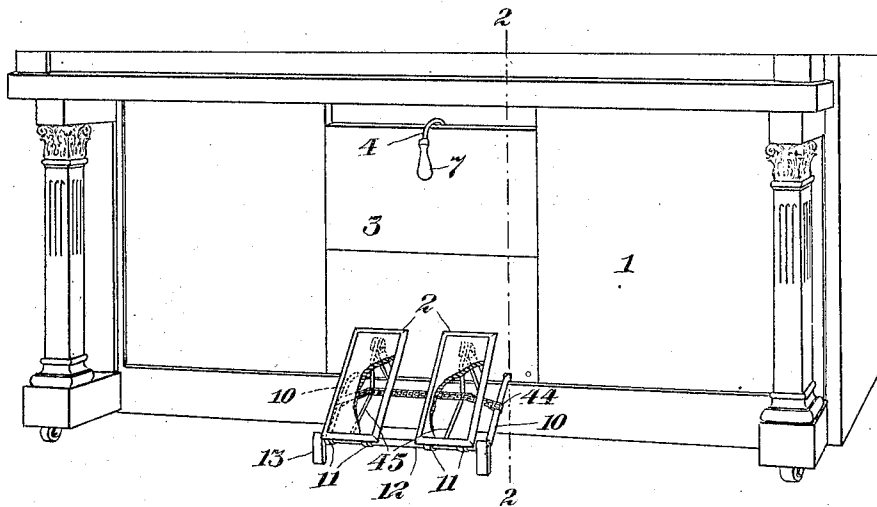


Fig. 1.

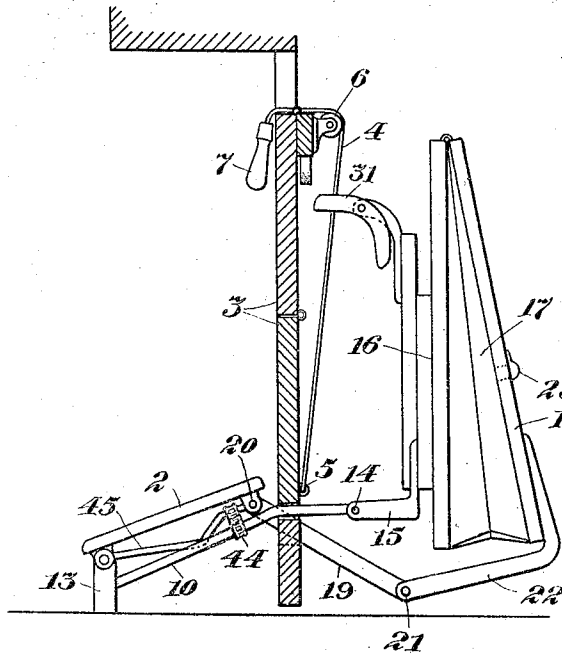


Fig. 2.

Witnesses:
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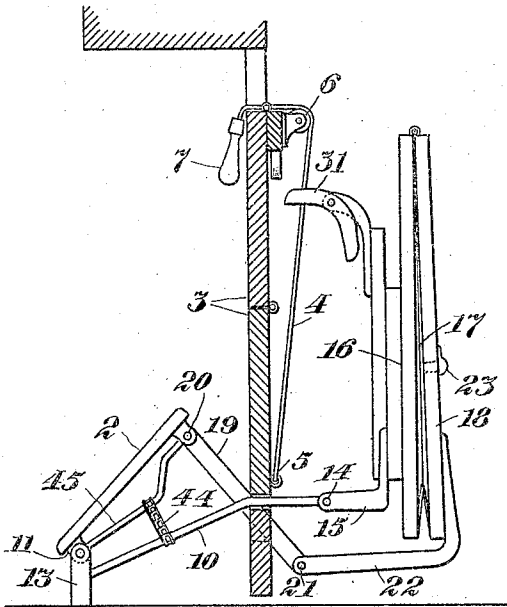


Fig. 3.

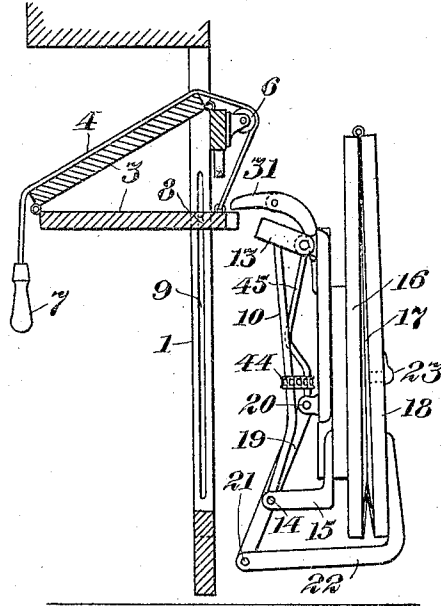


Fig. 4.

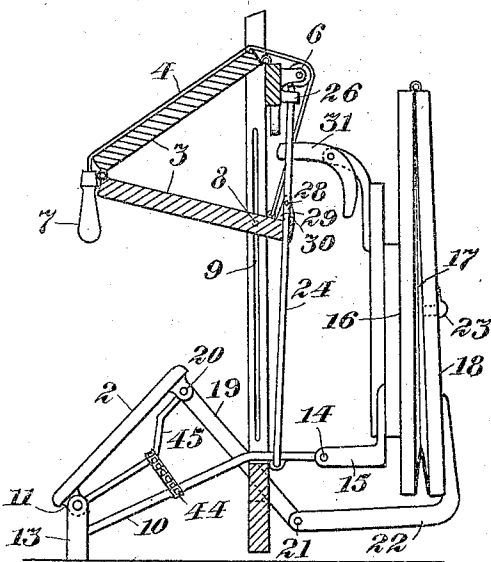


Fig. 5.

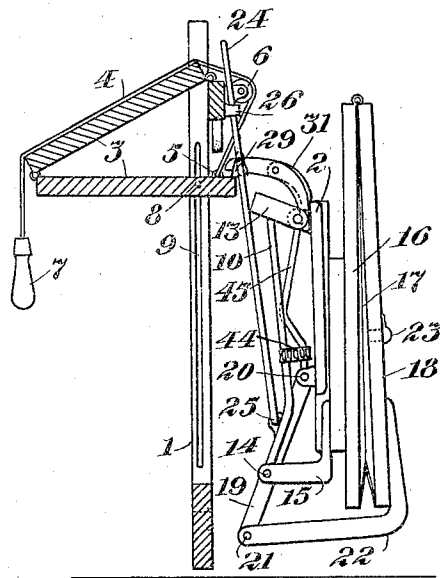


Fig. 6.

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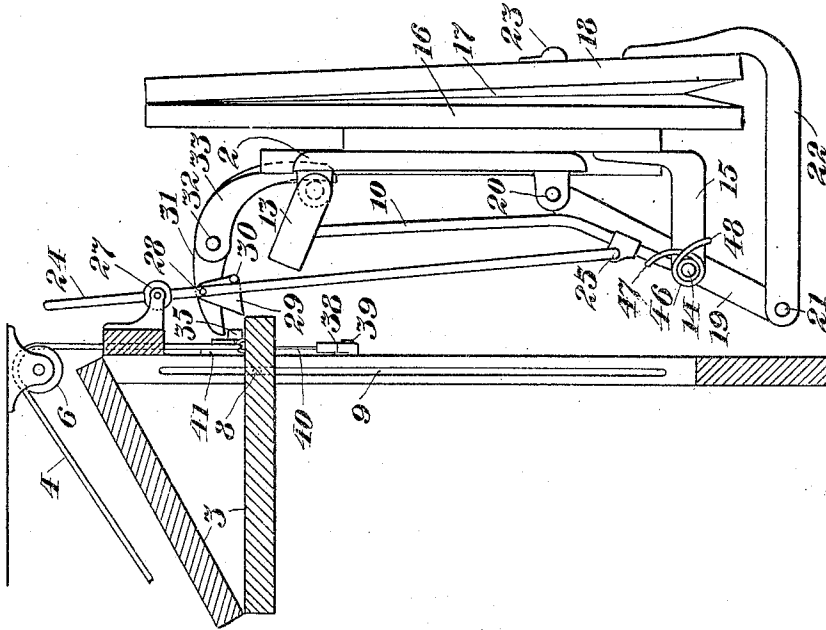


Fig. 8.

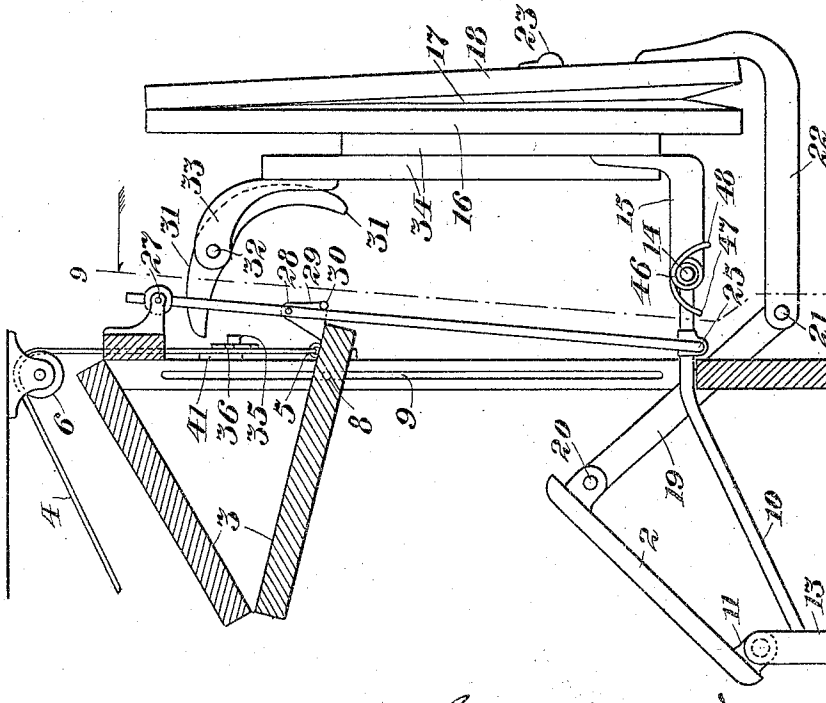


Fig. 7.

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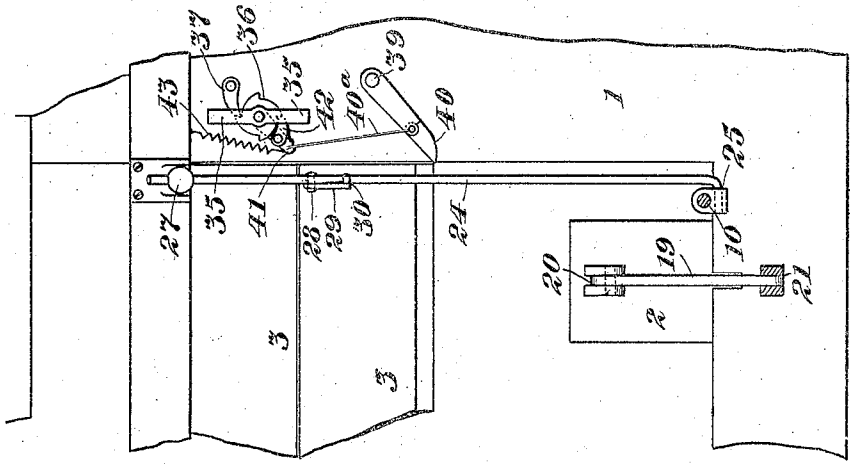


Fig. 10.

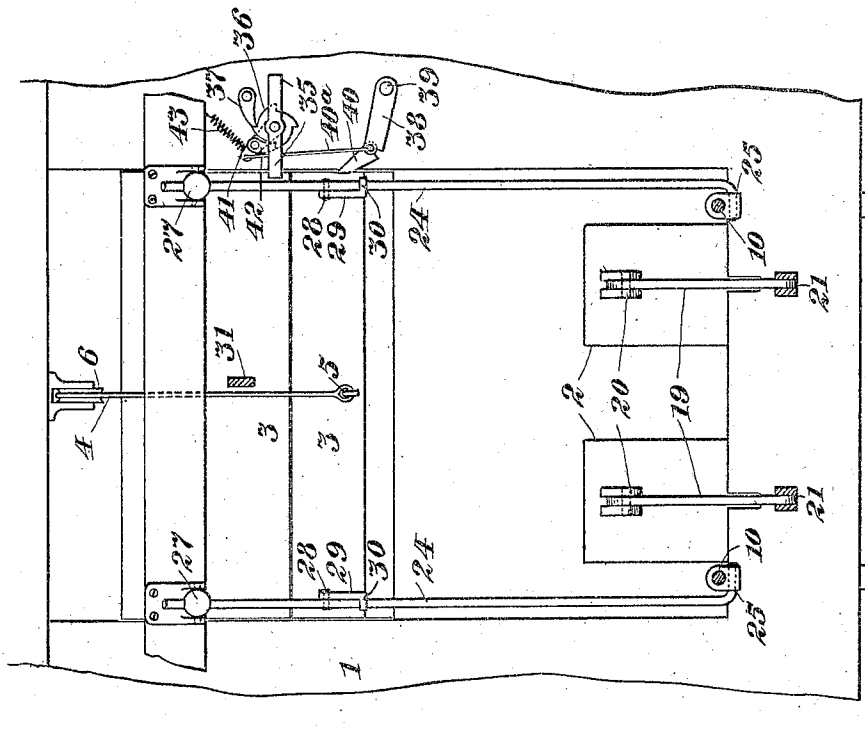


Fig. 9.

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UNITED STATES PATENT OFFICE.

GEORGE HOWLETT DAVIS, OF WEST ORANGE, NEW JERSEY.

PEDAL MECHANISM.

935,967.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed April 29, 1907. Serial No. 370,771.

To all whom it may concern:

Be it known that I, GEORGE HOWLETT DAVIS, a citizen of the United States, and a resident of West Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Pedal Mechanism, of which the following is a specification.

My improvements relate to automatic means for raising and lowering or for doing either one of these operations in connection with the pedals of a musical or other instrument in which the pedals are adapted to be telescoped or made to disappear within the instrument, and further relate to means for controlling the fall of said pedals as same are lowered.

In the accompanying drawings which illustrate certain specific embodiments of my improvements, Figure 1, is a front elevation of an instrument showing the pedals thereof partially cut away and provided with my invention; Fig. 2 is a vertical section partly in elevation on the line 2—2 in Fig. 1; Fig. 3 is the same as Fig. 2 with the exception that the pedal is shown in its released and raised position and the related parts positioned accordingly; Fig. 4 shows the same parts as Fig. 3, but with the door raised and the pedals and related parts telescoped or elevated within the instrument; Figs. 5 and 6 are views corresponding respectively to Figs. 3 and 4 but showing in addition to said figures automatic means for elevating the pedals within the instrument; Figs. 7 and 8 are enlarged views analogous to Figs. 5 and 6, but differ in showing different means for checking or opposing the fall of the pedals; Fig. 9 is a view in elevation and in section of the parts shown in Fig. 7 as the same would appear on a plane passed through 9—9 on that figure looking in the direction of the arrow; and Fig. 10 is a copy of the right-hand portion of Fig. 9 with the exception that the stop mechanism is shown in different position.

Describing now my improvements by reference to the specific embodiments thereof shown in the drawings and of which the novel features will be pointed out in the claims, 1 is a wall of the case of an instrument, in this instance the front wall of the case of a piano-player, having pedals 2 adapted to be raised and lowered through an opening, hereinafter called the pedal open-

ing, in said front wall of the instrument and which opening is controlled by a door 3. The particular form of door shown consists of two superposed sections hinged together by their transverse abutting edges and with the top of the first section hinged to the case of the instrument. The door is operated by a cord 4, secured to its lower section at 5, and extending up within the instrument over a guide or pulley 6 and out through an opening in the case of the instrument, where the cord terminates in a handle 7. Pulling the handle 7 will obviously raise the door by folding two parts on each other into the position shown in Fig. 4. To guide the lower section of the door, projecting pins 8 are provided one from each side of said lower section. These pins travel in grooves 9, formed in the side-edges of the instrument next the pedal opening.

The pedals 2 are supported by and operatively connected with what may be called pedal supporting arms 10, one on each side, as best shown in Fig. 1. In the specific devices illustrated, the pedals are thus supported by and connected with the arms 10 by means of pivotal connections 11 between the bottom edges of the respective pedals with a rod 12 which rod is secured between two feet 13, which latter in turn are secured, each to one of the arms 10. The pedal supporting arms 10 are pivoted at their other ends within the instrument, so that they may be raised and lowered into and out of the instrument and in this particular case are pivoted at 14 to angle irons 15, which in turn are secured to the stationary board 16 of a bellows 17. In the specific devices shown, the bellows 17 is intended to represent the main operating bellows of a mechanical player and is operated from the pedals 2. For this purpose each of the pedals is operatively connected with the movable board 18 of the bellows by means of an operating arm 19 pivotally secured at one end 20 to the pedal and at its other end 21 to a right-angled lever 22 on the movable board 18 of the bellows. The bellows 17 being as stated one to operate a mechanical player is in consequence an exhausting bellows and consequently has an exhaust valve 23 which permits the escape of the air contents of the bellows when the same is contracted, but which is closed and seals the bellows, when same is expanded.

An inspection of the drawings for example Figs. 3 and 4 will show that the parts thus far described are so related that the pedals 2 and the pedal supporting arms 10 with related parts can be elevated bodily through the pedal opening into the position in the instrument shown in Fig. 4. This can of course be done by hand but it is an object of my improvements to accomplish the raising or lowering or both the raising and the lowering of the pedals and pedal supporting arms and related parts automatically from the operation of a door, *e. g.* the door 3 controlling the pedal opening in the instrument. I will accordingly proceed to describe the automatic means shown for accomplishing these functions.

The automatic means for elevating the pedals from the raising of the door comprises (see Figs. 5 to 8 and especially Figs. 7 and 8) a pair of lifting rods 24 located uprightly within the instrument and connected pivotally, each by its lower end to the respective pedal supporting arms 10 at 25. The upper ends of the lifting rods 24 are each reciprocatingly guided in stationary sleeves 26 (see Figs. 5 and 6) or in swivel sleeves 27 (see Figs. 7 and 8) mounted inside the instrument. Pivoted at 28 on each of the lifting rods 24 is a stop 29, disposed end-wise to the plane of the pedal opening and projecting forward toward said opening so that the door 3 in the act of raising it will catch under said stop 29 as shown in Fig. 7 and will thereby act through the lifting rod 24 to elevate the pedal supporting arms 10 together with the pedals and other related parts into the position shown in Fig. 8. To prevent the pivoted stop 29 from swinging on its pivot 28 during the act of raising the pedals by the door as described, a lug 30 is provided on each stop projecting from the stop behind each lifting rod 24.

As the door 3 is elevated, carrying in contact with it the stops 29 and elevating the pedals as described, it will be noted from a comparison of Figs. 7 and 8 that on account of the in-swinging of the lower end of the rods 24, the stops 29 on said rods will gradually move away from the supporting edge of the door 3, until (the parts being so designed) said door is raised sufficiently far to completely elevate the pedal parts, when the stops 29 will be entirely clear of the door. Hence the door is free to be raised still higher for a purpose later on to be described. The door operating cord 4 may now be released to drop the door, thereby closing the pedal opening with all the pedal parts elevated inside the instrument. Thus a simple pull on the cord 4, when the pedals are down in playing position, acts to raise the door and at the same time automatically elevate the pedals into the instrument, and

releasing the cord, drops the door over the pedal opening. Should it now be desired to lower the pedals into playing position, this operation is likewise effected automatically from the operation of the door by the following mechanism. An arm 31 is pivotally mounted within the instrument so that its lower end shall be positioned behind the pedal supporting arms 10 and related parts when they are in elevated position within the instrument, see Fig. 8. The pivoted arm 31 is further so positioned that its upper end projects forward within the range of movement of the door 3 so that when said door is sufficiently raised, it will strike said pivoted arm 31 and cause its lower end to press forward and by contact with the pedal parts, throw them forward out of their elevated position and start them to fall through the pedal opening. In this particular construction the lower end of the pivoted arm 31 strikes against the cross rod 12 of the pedal parts to throw them forward as explained above.

Assuming that the pedal parts are in elevated position within the instrument and it is desired to lower them into playing position, it will be apparent from the foregoing that it is only necessary to raise the door 3 until it strikes against the pivoted arm 31 to start said pedal parts to fall through the pedal opening and which thereafter continue to fall by their own weight into playing position. In other words, a simple elevation of the door brings about an automatic lowering of the pedal parts.

I will now describe what may be called selective means, making it impossible for any one in raising the door for the purpose simply of elevating the pedal parts to at the same time operate the pivoted arm 31 of the pedal lowering means by raising the door too high. These selective means comprise in the construction shown (see particularly Figs. 9 and 10, also compare Figs. 7 and 8) a stop-bar 35 integrally secured in central position on a four-tooth ratchet wheel 36, which in turn is pivoted inside the instrument adjacent to the side-edge of the pedal opening therein, so that when the stop-bar 35 is horizontal the end thereof will project beyond the side-edge of said opening into the path of the door and at a point where the door will strike said projecting end of the stop-bar 35 before it can contact with pivoted arm 31 of the pedal lowering mechanism. (See Figs. 8 and 9.)

Pivotally secured to the inside of the instrument is the pawl 37 adapted to coact with the teeth of the ratchet wheel 36 to prevent clockwise rotation of said ratchet wheel, in other words to prevent the projecting end of the stop-bar 35 when struck from below by the door in the act of raising it from being moved out of horizontal position (see 133.

Fig. 9). The projecting end of the stop-bar 35 therefore acts as a rigid stop to prevent elevation of the door beyond the point necessary to throw the pedal parts back into elevated position. The door cannot be raised higher and cannot contact with the pivoted arm 31 of the pedal lowering mechanism.

To provide automatic means to withdraw the stop-bar 35 from its projecting position (Fig. 9) to permit the door to be raised high enough to operate the pivoted arm 31 of the pedal lowering mechanism, I provide a nose-arm 38 having a pivoted nose-piece 40 adapted when struck from above to carry the arm 38 rigidly with it, and when struck from below to simply pivot freely out of the path of the object striking it without affecting the arm 38. This nose-arm 38 so constructed is pivoted at 39 to the instrument so that its pivoted nose-piece 40 projects beyond the side-edge of the pedal opening, whereby when the door is raised it will simply brush the pivoted nose out of its path without moving the arm 38, whereas when the door is lowered it will not only press the nose-piece out of its path but will also carry along with it the arm 38 about its pivot 39.

Connecting the arm 38 with the ratchet wheel 36 is a rod 40^a secured at one end to the arm 38 and at its other end to a pivotally supported crank-arm 41. Pivotally mounted on said crank-arm 41 and engaging the ratchet-wheel 36 is a pawl 42.

Normally to hold the nose 40 of the arm 38 extended in the path of the door is a spring 43 connecting the crank-arm 41 with any suitable stationary part of the instrument, as shown in Figs. 9 and 10.

Describing now the operation in full of the selective means, it will be understood as explained above, that when the stop-bar 35 is in horizontal position (Fig. 9) its projecting end effectively stops elevation of the door above it, because of the engagement of the pawl 37 with the ratchet wheel 36. In other words it permits the door to be raised sufficiently high to lift the pedal parts into their elevated position but not high enough to operate the pedal lowering arm 31. The door having been dropped into closed position, after the pedal parts have been thus elevated within the instrument, it strikes in its fall against the top of the pivoted nose 40 of the arm 38 which as explained the spring 43 keeps normally extended in the path of the door. The effect of the door in its fall so striking the nose 40 is to swing the arm 38 about its pivot downward and thereby pull on the rod 40^a to swing the crank-arm 41 and its pivotally carried pawl 42 likewise downward against the action of the spring 43. Since the pawl 42 is in engagement with the ratchet wheel 36, it by its movement compels said ratchet wheel to rotate in an anti-clockwise direction and the proportion of parts is

such that the swing of the arm 38 causes the ratchet wheel 36 to make a quarter turn, in other words, causes the stop-bar 35 carried by said ratchet wheel to move into the vertical position shown in Fig. 10 and consequently out of the path of the door. The door of course continues to fall after striking the nose arm 38 until completely closed.

The pedal parts now being located within the instrument, when the door is next raised it will be for the purpose of lowering said parts into playing position, and this can be accomplished by the simple act of raising the door until it contacts with and operates the pedal lowering arm 31, which the door can now do because as explained, the previous lowering of the door has operated to move the stop-bar 35 out of its horizontal projecting position into the vertical position shown in Fig. 10. The pedal parts accordingly fall through the pedal opening into playing position. The door operating cord 4 being then released, the door falling of its own weight will again strike against the nose lever 38 (which as stated is always normally held in the path of the door by the spring 43) and by so striking said nose-lever gives the ratchet 36 another quarter turn in an anti-clockwise direction and consequently turns the stop-bar 35 from the vertical position of Fig. 10 into its horizontal projecting position. In other words, the pedals are now down and the door closed with the stop-bar 35 in projecting position so that when the door is again elevated to telescope the pedals within the instrument, it cannot be raised beyond the point necessary to accomplish this result;—that is to say, cannot be raised to operate the pedal lowering arm 31.

The effectiveness of the selective means to make the simple raising of the door automatically selective either to raise or lower the pedal parts as may be desired, will now be apparent.

To act as a check and control on the pedal parts as they fall from their elevated into their playing position I provide means as follows: Thus referring particularly to Figs. 1 to 6, I provide a connecting band 44, in this particular case an endless chain, connecting the pedals 2 with the pedal supporting arms 10. This band connection is such that it holds the pedals against the pedal supporting arms in the position which they occupy relative to each other when the pedal parts have been elevated inside the instrument, and acts so to bind said pedals and arms together throughout the fall of these parts into playing position, as shown in Fig. 2. The result is that the pedal parts do not fall suddenly but are checked and fall gradually because they are opposed by the bellows 17 which fill and inflate in the course of the fall, as shown in Fig. 2. The

connecting band is adapted to be then released to permit the pedals to be operated freely on the pedal supporting arms. For this purpose, I so form the parts inclosed by the connecting band, that said band may be moved into another position on said parts less widely separated and where in consequence the band will be loose enough to permit free operation of the pedals relative to the pedal supporting arms 10. Thus, for this purpose I may provide a rod 45 carried by each pedal and by which said pedals are adapted to be connected as explained above, to their supporting bars 10 by a band 44 inclosing said rods 45 and said bars 10. At the upper part of the pedals (see Fig. 2) the inclosed parts are so proportioned that the band 44 binds the rods 45 against the bars 10 in the relative position which they occupy when the pedal parts are elevated. Below this position of the band (see Fig. 2), the pedal rods 45 are inclined toward the bars 10 so that when the band is located at the bottom of the incline it incloses the parts so loosely that the pedals can be freely operated relative to the bars 10 to play the instrument. In the particular construction shown the connecting band 44 takes the form of a metal chain which has the feature of dropping by its own weight when the pedal parts are elevated into the position shown in Fig. 4 where it will bind the pedal rods 45 and consequently the pedals 2 against the pedal supporting arms 10. Moreover, said chain continues to bind the pedal rods and pedals against the arms 10 when the pedal parts are caused to fall and until said parts reach their playing position in Fig. 2 and the pedals are operated. In this way the fall of the pedal parts is cushioned and checked by the inflation produced thereby of the bellows 17.

When the pedals 2 are pressed by the feet to begin playing the instrument, the first downward pressure causes the chain 44 to slide by its own weight down the incline (Fig. 2) of the parts it surrounds, into a position at the bottom of the incline in the pedal rods 45 in which position as previously explained, the pedals are freely operative to play the instrument. When the pedal parts are again elevated within the instrument the chain as before automatically descends into its binding position, ready to act the next time the pedals are lowered to check, control and cushion their fall with the bellows 17.

As either a separate or additional fall-control means, I also show spiral springs 46 (see Figs. 7 and 8) located at the pivotal connection of the pedal supporting bars 10 with the angle arms, 15, with their free ends 47 and 48 hooked respectively under the bar 10 and the angle iron 15.

When the pedal parts are allowed to fall

from their elevated position in Fig. 8, the springs 46 act to oppose and counterbalance the weight of the pedal parts and therefore to check the suddenness and violence of their fall. Moreover when the pedal parts are being elevated from their playing position in Fig. 7, these springs 46 have the additional function of assisting said elevation, since they constantly act in the direction of elevating the pedal parts. Less pulling effort is therefore required to be exerted on the door-operating cord 4 to raise the door and from it the pedal parts as heretofore explained.

Having thus described my invention, what I claim is:—

1. In combination, a pedal-supporting member adapted to be raised and lowered through an opening in an instrument; a bellows; a pedal carried by said pedal-supporting member and operatively connected with said bellows; and a releasable band connection between the pedal and the pedal-supporting member adapted to bind them together in the position relative to each other which they occupy when the pedal and its supporting member have been raised into the instrument.

2. In combination, a pedal-supporting member adapted to be raised and lowered through an opening in an instrument; a bellows; a pedal operatively supported on the pedal-supporting member; an operative connection between the bellows and pedal; and a releasable band connection between the pedal and its supporting member adapted until released to bind them together and prevent operation of the pedal.

3. In combination, a pedal-supporting member adapted to be raised and lowered through an opening in an instrument; a bellows; a pedal operatively supported on the pedal-supporting member an operative connection between the pedal and bellows; and a band connection between the pedal and the pedal-supporting member adapted to be moved into different positions, in one of which it secures the pedal inoperatively to its supporting member and in another position releases the pedal to be operated on its said supporting member.

4. In combination, a pedal-supporting bar adapted to be raised and lowered through an opening in the instrument; a bellows, a pedal operatively supported on the pedal-supporting bar an operative connection between the pedal and bellows, a rod carried by the pedal and having a portion approaching the supporting bar when the pedal is in operative position; a band connection between the pedal supporting bar and the rod carried by the pedal, adapted when in the position on said parts which it occupies by gravity when the pedal and its supporting bar are raised into the instrument, to bind

the pedal rod collapsed inoperatively against the pedal supporting bar and further adapted when the pedal and its supporting bar have been lowered, to gravitate into a position on the pedal rod and pedal supporting bar where those parts approach each other and the band connects them loosely to permit the pedal to operate.

5. In combination, a pedal-supporting bar adapted to be raised and lowered through an opening in an instrument; a bellows a pedal operatively supported on the pedal supporting bar an operative connection between the pedal and bellows a pedal rod carried by the pedal and having a portion approaching the supporting bar when the pedal is in operative position; a band connecting the pedal rod and the pedal supporting bar, the relative conformation of said rod and bar being such that when the bar has been raised into the instrument and the band is in the position on said rod and bar which it by gravity assumes, said band binds the parts inoperatively collapsed on each other, whereas if the band be raised into a position above said binding position, the conformation of the bar and rod at said new position of the band is such that it loosely connects them to permit operation of the parts on each other.

6. In combination, a pedal supporting bar adapted to be raised and lowered through an opening in an instrument, a bellows, a pedal operatively supported on the pedal supporting bar, a rod carried by the pedal, an operative connection between the pedal and bellows, a movable band surrounding the pedal supporting bar and rod, which band, when in the position on said parts it assumes, by gravity, when the supporting bar is raised, is adapted to bind the pedal inoperatively against its supporting bar, the said rod having a portion inclined toward the supporting bar at a point above the binding position of the band, so that when the supporting bar has been lowered, the band is free to gravitate down the incline of the rod and when in this position no longer binds the pedal inoperatively to its supporting bar.

7. In combination, a pedal-supporting bar adapted to be raised and lowered through an opening in an instrument; a pedal operatively supported on the pedal supporting bar and adapted to operate the instrument; a rod carried by the pedal a movable band inclosing the pedal supporting bar and rod, which band, when in the position on said parts which it gravitates into when the supporting bar is raised into the instrument, is adapted to bind the pedal inoperative against its supporting bar; the said rod above the binding position of the band being inclined toward the pedal-supporting bar so that when the supporting bar has been lowered the band can gravitate down the incline of the rod carried by the pedal and when in

this position no longer binds the pedal inoperatively to its supporting bar.

8. In combination, a pedal-supporting member adapted to be raised and lowered through an opening in an instrument; a pedal operatively supported on the pedal-supporting member and adapted to operate the instrument a rod carried by the pedal; and a band surrounding said rod and the pedal-supporting member and movable to different positions thereon, in one of which positions said band has a binding action on the parts to secure the pedal inoperatively to its supporting member and in another position releases the pedal to be operated on its said supporting member.

9. In an instrument provided with an opening, a pedal adapted to be raised and lowered through said opening, a pivoted arm, and a door controlling the opening of the instrument and adapted in the act of opening it to actuate the said pivoted arm and through the latter move the pedal out of its raised position in the direction of the pedal opening.

10. In an instrument, the combination of a pedal adapted to be raised and lowered through a pedal opening in said instrument; a door hinged to the top of said opening and composed of superposed hinged sections; a door operating cord attached to a bottom section of the door and extending up within the instrument and out through an opening therein; and pivoted means adapted to be engaged and actuated by a section of said door when the door is raised to move the pedal out of its raised position and start same to fall through the pedal opening.

11. In an instrument, the combination of a pedal adapted to be raised and lowered through an opening in the instrument; a vertically operated door adapted to control said opening; an angle lever pivotally supported at its middle and having one of its arms extending horizontally in the path of the door where it will be struck in raising the door and having its other arm located to actuate the pedal from behind to start same to fall from its raised position.

12. In combination a pedal adapted to be raised and lowered through a pedal opening in an instrument; a lifting rod connected at its lower end with the pedal and having its upper end reciprocally guided and adapted when lifted to raise the pedal into the instrument; a vertically raised door controlling the pedal opening; and a lug on the lifting rod adapted to be engaged by said door in the act of raising it and when so engaged to lift the rod and raise the pedal into the instrument.

13. In combination a pedal adapted to be raised and lowered through a pedal opening in an instrument; a lifting rod connected at its lower end with the pedal and having

its upper end reciprocatingly guided and adapted when lifted to raise the pedal into the instrument; a vertically raised door controlling the pedal opening; and a movable
 5 lug on the lifting rod normally projecting into the path of the door adapted when engaged from below by the door to lift the rod and elevate the pedal into the instrument and when engaged from above by the door
 10 to move out of its path.

14. In combination, a pedal-supporting member pivoted to be raised and lowered through a pedal opening in an instrument; an upright lifting rod pivoted below to the
 15 pedal supporting member and reciprocatingly guided above; and a lug pivotally suspended on the lifting rod to normally project forward into the path of the door, said
 20 lug having a projection behind the lifting rod and adapted when engaged from below by the door in the act of raising it to lift the rod and raise the pedal supporting member into the instrument and when engaged
 25 from above by the door in the act of lowering it to pivot out of the path of said door.

15. In combination, a pedal member pivoted to be raised and lowered through a pedal opening in an instrument; a vertically
 30 operated door adapted to control the pedal opening; an upright lifting rod pivotally connected at its lower end to the pedal member, a lug carried by the rod and adapted to be engaged by the door when the latter is raised whereby to lift the rod and thereby
 35 elevate the pedal member into the instrument, and a swiveled guide for the free end of the rod, whereby the latter may move vertically and rearwardly to carry its lug away from the door and clear of the door
 40 when the rod has been lifted high enough to raise the pedal member into the instrument.

16. In combination, a pedal member pivoted to be raised and lowered through a pedal
 45 opening in an instrument; a vertically operated door adapted to control the pedal opening; an upright lifting rod pivotally connected at its lower end to the pedal member, a lug carried by the rod and adapted to
 50 be engaged by the door when the latter is raised whereby to lift the rod and thereby elevate the pedal member into the instrument, a swiveled guide for the free end of the rod whereby the latter may move vertically
 55 and rearwardly to carry its lug away from and clear of the door when the rod has been lifted high enough to raise the pedal member into the instrument; and a pivoted member adapted to be actuated about its
 60 pivot by the door when the latter is raised above the point necessary to elevate the pedal member into the instrument and when so actuated is adapted to move said pedal member in the direction of the pedal opening.

65 17. In combination, pedal parts pivotally

supported to be raised and lowered through a pedal opening in an instrument; a vertically
 70 operated door adapted to control the pedal opening; an upright rod having a connection with the pedal parts and adapted to be engaged by the door in the act of raising it and when so engaged, to be lifted by the
 75 door to raise said parts into their elevated position, said member being supported to move out of engagement with and to be free of said door when the pedal parts have been
 80 fully elevated; and a pedal lowering member adapted to be engaged by the door when raised above the position required to fully elevate the pedal parts and when so engaged,
 85 to throw the pedal parts out of their elevated position.

18. In combination, pedal parts pivotally supported to be raised and lowered through
 85 a pedal opening in an instrument; a vertically operated door adapted to control the pedal opening; an upright rod having a connection with the pedal parts and adapted to be engaged by the door in the act of raising
 90 it and when so engaged to be lifted by the door to raise said parts into their elevated position, said member being supported to move out of engagement with and to be free of said door when the pedal parts have been
 95 fully elevated; a pedal lowering member adapted to be engaged by the door when raised above the position required to fully elevate the pedal parts and when so engaged,
 100 to throw the pedal parts out of their elevated position; and a movable stop adapted to be projected into the path of the door above the position it occupies to fully elevate the pedal
 105 parts and below the pedal lowering member, and connected with the door to be moved by its fall into projecting position, when the pedal parts are down, and to be withdrawn
 110 from said projecting position when the pedal parts are raised within the instrument.

19. In combination, pedal parts adapted to be raised and lowered through a pedal
 110 opening in an instrument; a pivoted arm, and a door controlling the pedal opening and adapted in the act of opening, to actuate the pivoted arm; said pivoted arm adapted to engage and move the pedal parts out of
 115 their raised position and in the direction of the pedal opening.

20. In combination, pedal parts adapted to be raised and lowered through a pedal
 120 opening in an instrument; a door controlling the pedal opening, a pivoted arm in the path of the door; said pivoted arm being so located as to engage and move the pedal parts out of their raised position and start same
 125 to fall through the pedal opening; and means adapted yieldingly to oppose the fall of the pedal parts.

21. In combination, pedal-parts supported to be raised and lowered through a pedal
 130 opening in an instrument; a door manually

operable to cover and uncover said opening; and means actuated by the door in uncovering the opening to move the pedal parts out of their raised position.

22. In combination, pedal-parts supported to be raised and lowered through a pedal opening in an instrument, a door movable to cover and uncover said opening, manually operable means for moving the door to uncover the opening; means actuated by the movement of the door to raise the pedal parts through said opening, and means also actuated by the movement of the door for moving the pedal parts out of their raised position.

23. In combination with a musical instrument casing pedal-parts adapted to be moved into and out of said casing, and means coöperating with said pedal parts within the casing and extending without the casing in reach of the player of the instrument, and adapted to be operated to move the pedal-parts relative to the casing as described.

24. In combination, a pedal supporting member adapted to be raised and lowered through an opening in an instrument, a bellows, a pedal carried by said pedal supporting member and operatively connected with said bellows, and releasable connecting means between the pedal and its supporting member serving to bind these elements together in the position relative to each other which they occupy when the pedal and its supporting member have been raised into the instrument.

25. In an instrument provided with an opening, a door therefor, a pedal adapted to be raised and lowered through said opening, and means coöperatively associated with the door and with the pedal and operating to engage the pedal when the latter is raised within the instrument to move the pedal out of its raised position and start the same to fall forward in the direction of the pedal opening during an opening movement of the door.

26. An instrument provided with an opening, a door therefor, a pedal adapted to be raised and lowered through said opening, and a pivoted arm coöperatively associated with the door and with the pedal, said arm being located in the path of movement of the door so as to be actuated during an opening movement of the door to cause it to engage and move the pedal out of its raised position and start the same to fall through the pedal opening.

27. In combination, an instrument casing having an opening, a door therefor, pedal parts supported to move independently of the door from a position within the casing, through said opening to a position outside the casing, and means operated by the opening of the door for engaging and moving the pedal parts forward.

28. In combination, an instrument having an opening, a door therefor, pedal parts supported to move independently of the door from a position within the casing, through said opening to a position outside the casing, and means operated by the opening of the door for moving the pedal parts through said opening.

29. In combination, an instrument having an opening, a door therefor, pedal parts supported to move independently of the door from a position within the casing, through said opening to a position outside the casing, and means operated by the opening of the door for moving the pedal parts through said opening to a position within the casing.

30. In combination, an instrument having an opening, a door therefor, pedal parts supported to move independently of the door from a position within the casing through said opening to a position outside the casing, means operated by the opening of the door for moving the pedal parts through said opening, and an operating device for the door extending outside the casing in reach of the player of the instrument.

31. In a musical instrument, the combination of a casing, a door in the casing, a swinging support, a pedal mechanism mounted thereon, and means connecting the door and support, whereby the movement of the door causes the pedal mechanism to swing in and out of the casing.

32. In a musical instrument, the combination of a casing, a door in the casing, a swinging support, a pedal mechanism mounted thereon, and means detachably connecting the door and support, whereby the movement of the door causes the pedal mechanism to swing in and out of the casing.

33. In a musical instrument, the combination of a casing, a door in the casing, a swinging support, a pedal mechanism mounted thereon, guides on the casing, a door having sliding engagement with said guides on the casing, and means connecting the door and swinging pedal support.

34. In a musical instrument, the combination of a casing, a door in the casing, a swinging support, a pedal mechanism mounted thereon, guides on the casing, a door having sliding engagement with the guides on the casing, and means detachably connecting the door and swinging pedal support.

35. In a musical instrument, the combination of a swinging support, a pedal mechanism pivotally mounted thereon, a pivoted link connected to the support, raising and lowering mechanism and means for detachably connecting the link with the raising and lowering mechanism.

36. In a musical instrument, the combination of a swinging support, a pedal mechanism pivotally mounted thereon, a pivoted

link connected to the support, a spring arranged to normally exert a lifting action on said support, raising and lowering mechanism and means detachably connecting the
5 link with the raising and lowering mechanism.

In witness whereof, I have signed my

name to the foregoing specification in the presence of two subscribing witnesses.

G. HOWLETT DAVIS.

Witnesses:

ESTELLE J. PICKFORD,
WALTER F. BURKE.