

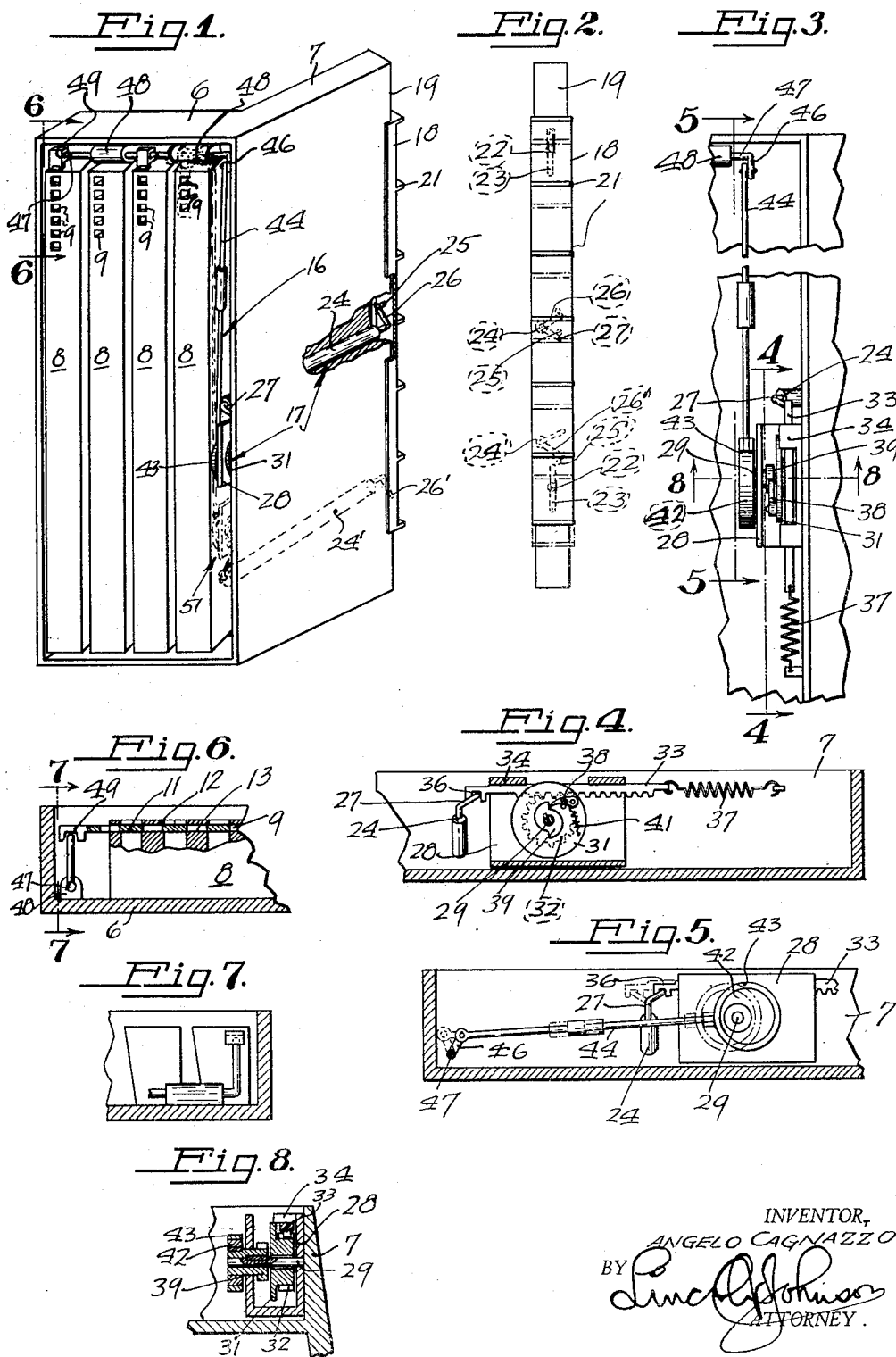
April 12, 1932.

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1,853,799

ACCORDION

Filed March 19, 1930



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ACCORDION

Application filed March 19, 1930. Serial No. 437,009.

This invention relates to improvements in accordions.

It is one of the objects of the invention to provide a silencer mechanism to silence one of the reed blocks of an accordion, or render it operative at will, the mechanism being adapted to be actuated by a comparatively short hand stroke of the player, longitudinally to the key-board and always in the same direction, regardless whether the reed block is being silenced, or opened; furthermore, the mechanism may be operated at any point on the key-board without removing the hand from the keys of the accordion.

Another object of the invention is to provide a hand plate slidable alongside the edge of the key-board of the accordion, and provided with longitudinally spaced projections to be engaged by the hand of the player at any point of the key board; the hand plate being so connected to a slidable reed block silencer, that the silencer is moved either into or out of the reed block by the movement of the hand plate, in one and the same direction; the hand plate being automatically returned in the opposite direction, after each actuation of the silencer and during the released return movement of the hand plate the same is disconnected from the silencer moving mechanism, thus leaving the silencer in position in spite of the return movement of the plate.

Other objects and advantages are to provide an accordion that will be superior in point of simplicity, inexpensiveness of construction, positiveness of operation, and facility and convenience in use and general efficiency.

In this specification and the annexed drawings, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms; and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

The invention is clearly illustrated in the accompanying drawings, wherein

Fig. 1 is a perspective view of an end of

the accordion, showing the bottom face of the key-board and the reed boxes, the bellows being removed.

Fig. 2 is a face view of the hand plate as mounted on the edge of the key-board.

Fig. 3 is a fragmental view of the key-board end of the accordion, showing the silencer actuating mechanism.

Fig. 4 is a sectional view of the one way operative connection between the shaft of the silencer actuating mechanism and the rack and pinion mechanism that is operated by the hand plate, the section being taken on the line 4—4 of Fig. 3.

Fig. 5 is a sectional view of the eccentric silencer actuator, the section being taken on the line 5—5 of Fig. 3.

Fig. 6 is a fragmental sectional view of the silencer in the reed block, the section being taken on the line 6—6 of Fig. 1.

Fig. 7 is a fragmental sectional plan view showing the crank pin operating the silencer, the section being taken on the line 7—7 of Fig. 6; and

Fig. 8 is a sectional view of the connection of the silencer actuating eccentric to the rack operated disc, the section being taken on the line 8—8 of Fig. 3.

The function of a silencer in an accordion is to render silent the reeds in one or more of the reed blocks of an accordion, by closing the air passages leading into the said reed block. For this purpose the air openings of the reed block are to be covered or uncovered at will. Such silencing is used particularly in the accordion in connection with one of the reed blocks that produces a sound an octave lower than the other reed blocks. Some of the previous attempts to operate a silencer for this reed block, have provided actuating mechanisms which necessitate the removal of the hand from the keys, others need a hand stroke in one direction to cause the covering of the air openings of the reed block, and the movement of the hand in the opposite direction to cause the uncovering of said openings. The removal of the hand from the key-board results in losing time and count in the music. The back and forth movement of the hand results in confusion and loss of time,

because the player is usually unable to keep in mind the last position of the actuating mechanism, and of the direction of the next stroke to operate the silencer.

5 In the construction hereinafter described, I provide a silencer actuating mechanism, the operation of which does not require the removal of the hand from the keys of the accordion, and which is operated by hand move-
10 ments in the same direction, regardless whether the silencer is to be moved into or out of the reed block. After each actuation of the silencer the outer operating mechanism is automatically returned to its original posi-
15 tion, leaving the silencer in the adjusted position, and the subsequent manipulations of the outer operating mechanism are all performed in one direction only.

In carrying out my invention I make use
20 of the end plate 6 of the accordion, from an edge of which angularly extends the usual key-board 7, on which in turn are located the accordion keys in the customary manner. On the inner face of the end plate 6 are mounted
25 reed blocks 8 containing the vibrating reeds. A flow of air passes thru openings 9, whenever the usual bellows of the accordion is manipulated.

In order to render a reed block silent, or
30 inoperative the air openings 9 thereof are to be covered. For this purpose a silencer plate 11 is utilized. The silencer plate is slidable in a longitudinal slot 12 at the air openings 9 and has apertures 13 thereon disposed to
35 register with the air openings 9, when the silencer 11 is partly withdrawn from the slot 12. When the silencer 11 is moved into the slot 12 of the respective reed block 8, then the apertures 14 are advanced into the closed
40 spaces between the adjacent air openings 9, and the solid portions of the silencer 11 cover the openings 9 to prevent the passage of air therethrough, whereby the respective reed block 8 is rendered inoperative.

45 The silencer 11 is moved into and out of the reed block 8 by a silencer actuating mechanism 16, which in turn is operated by an operating mechanism 17. The two groups of mechanisms 16 and 17 are so connected to
50 each other that the operating mechanism 17 is operative only in one direction, and is automatically returned in the other direction without engaging the actuating mechanism in this latter direction. The operating mech-
55 anism 17 is connected to the inner face of a hand plate 18 which is slidable alongside the longitudinal edge 19 of the keyboard 7. The silencer 11 is moved either into or out of the reed block 8 whenever the hand plate 18
60 is moved downwardly, viewing Fig. 1 of the drawings.

The hand plate 18 is slightly shorter than the edge 19, however it extends substantially the entire length of the row of keys on the
65 key-board, so that it may be engaged by the

hand or palm of the player, at any point of the length of the key-board. To facilitate the manipulation of the hand plate 18 a plu-
70 rality of longitudinally spaced transverse projections or ribs 21 are provided on the outer faces of the hand plate 18, which are readily engageable by the hand. The hand plate 18 is guided and held on the key-board edge 19 by means of pins 22 extending from
75 the inner face of the hand plate 18 into longitudinal guide slots 23 in the edge 19.

The operating mechanism 17 includes a shaft 24 rotatably supported within the key-
80 board 7 and extends transversely from the outer edge 19 to the interior of the accordion. On the outer end of the shaft 24 is a crank lever 26, the free end of which abuts against a pin 25 extending from the rear or under
85 face of the hand plate 18, so that the reciprocating movement of the hand plate 18 is conveyed thru the lever 26 and is converted into rotary motion of the shaft 24 and transmitted to another crank lever 27 on the inner end
90 of the shaft 24, and vice versa. A right angle bracket 28 is secured on the inner face of the inner end of the key-board 7. In this bracket 28 is rotatably supported a stub shaft 29, on which in turn is rotatable an annular
95 disc 31. On the face of the disc 31 adjacent the key-board 17 is fixed a pinion 32, with which is meshed a rack 33, the latter being guided and held in meshing position by means of a flange 34 of the bracket 28. It
100 is to be noted that the rack 33 reciprocates parallel to the key-board 7. From an end of the rack 33 projects at right angles, a U-shaped hook 36 with which the free end of the lever 27 is engaged. To the other end of
105 the rack 33 is attached an end of a coil spring 37, the other end of which latter is secured to the key-board 7. It is to be noted that the levers 26 and 27 extend at substantially 180° relatively to each other, therefore when the
110 hand plate 18 is moved downwardly, viewing Fig. 1, the rack 33 is moved oppositely, or upwardly by the lever 27. The rack 33 is moved by the hand plate 18 against the action of the spring 37, and during its move-
115 ment it rotates the pinion 32 and the disc 31 therewith. When the hand plate 18 is released the spring 37 urges the rack 33 back to its original position, whereby the plate 18 is returned to its starting position, and the disc 31 is rotated in the opposite direction.

120 The disc 31 is connected to the shaft 29 by means of a pawl 38 and a ratchet wheel 39, the latter being keyed to the shaft 27. The pawl 38 is pivoted on the face of the disc and is urged against the periphery of the wheel
125 39 by means of a spring 41. It is to be noted that the ratchet wheel 39 is formed in the shape of a cam with two diametrically opposite teeth to be engaged by the pawl 38, when the disc 31 is rotated in contra-clock-
130 wise direction, viewing Fig. 4. When the

disc 31 is rotated in the opposite direction the pawl 31 slips or rides on the periphery of the wheel 39 without rotating the same. The silencer actuating mechanism 16 is operated through the shaft 29, therefore it is actuated only when the disc is rotated in said contra-clockwise direction. In other words, movement is transferred to the actuating mechanism 16 only when the hand plate 18 is moved downwardly, viewing Fig. 1, during the return movement of the hand plate 18, the shaft 29 is not rotated, and the actuating mechanism 16 remains in its adjusted position.

The shaft 29 is rotated always in the same direction, but the silencer 11 must be moved successively in opposite directions. In order to operate the silencer 11 successively in opposite directions, an eccentric 42 is fixed on the shaft 29, to the eccentric band 43 of which is attached a connecting rod 44. The free end of the connecting rod 44 is pivotally secured to the free end of a lever 46 extending at right angles to a crank pin 47, which latter is journaled in bearings 48 on the inner face of the end plate 6 of the accordion. It is to be noted that the connecting rod 44 extends alongside one of the end reed blocks 8 substantially in parallelism therewith to the end of the block, while the crank pin 47 is disposed across opposite ends of the blocks 8 substantially at right angles to the rod 44.

The outer end of the silencer 11 is formed in a U-shaped hook 49 to engage the crank of the pin 47 and be reciprocated thereby as the pin 47 is rocked. As the eccentric 42 is rotated the connecting rod 44 is reciprocated to rock the pin 47 and slide the silencer 11 into and out of the slot 12 in the respective reed block 8. It is to be noted the mechanisms are so adjusted that the rod 44 is stopped at the ends of its respective up and down strokes, viewing Fig. 1. The length of the longitudinal slot 23 is such that it limits the down movement of the hand plate 18, to a stroke corresponding to a half revolution of the disc 31, so that the eccentric 42 is moved 180°, from the full line position to the dotted line position shown in Fig. 5. Each of the successive full manipulations of the plate 18 in one direction, always accomplishes a full stroke of the rod 44, resulting in the proper movement of the silencer 11 to cover or uncover the air openings 9. The automatic returning of the hand plate 18 by the action of the spring 37 leaves the position of the silencer 11 unaffected. Hence the player of the accordion does not have to move the hand plate back and forth. Furthermore, the hand plate 18 may be readily engaged and operated by a slight hand movement alongside the edge of the key-board at any point relatively to the row of keys, without necessitating the removal of the hand from the keys.

The afore-described silencer or dampener

mechanism is connected to one set of reed blocks 8. In some instances it is desirable to dampen or silence another set of reeds. In order to allow the independent silencing of the different sets of reed blocks, I provide another silencing mechanism denoted in its entirety by the numeral 51, which operates silencers 11 in the second set of reed blocks 8. The mechanism 51 is similar to the first described mechanism except that the shaft 24' thereof has a crank lever 26' on the outer end thereof extending at substantially right angles to the crank lever 26. A pin 25' on the inner face of the plate 18 abuts against the lever 26' only when the plate 18 is moved upwardly, beyond the return or release position of the first crank lever 26. The operating mechanism 51 includes all the elements described in connection with the first described mechanism, and operates similarly, except that the pawl 38 and ratchet 29 in the second mechanism, are reversed, that is, arranged to be operated by the shaft 24' when the latter is rotated in a direction opposite to the operative direction of the shaft 24.

Consequently when the plate 18 is moved downwardly, viewing Fig. 1, the shaft 24 is rotated to operate one set of silencers, but the pin 25' moves away from the crank lever 26' leaving the latter free and inoperative. When the plate 18 is automatically returned to its neutral position, then the crank lever 26 is turned by the pin 25, but the pin 25' merely moves into abutting relation to the crank lever 26'. On the other hand, when the plate 18 is moved upwardly from its neutral or released position, the pin 25' turns the crank lever 26' to actuate the other set of silencers, at the same time the pin 25 is moving away inoperatively from the crank lever 26. Thus a single movement in one direction operates only one set of silencers, after which the plate 18 is automatically returned to its neutral position by the respective operating mechanism; and a single movement of the plate 18 in the opposite direction operates only the other set of silencers, the plate 18 being automatically returned to its neutral position by the other operating mechanism. In this manner each silencer is actuated by a single movement, always in the same direction for the same silencer and by moving the plate 18 into its opposite extreme position, both sets of silencers are operated, and the released plate 18 is returned to its neutral position by the last actuated operated mechanism.

Having thus described this invention, what I claim and desire to secure by Letters Patent is:

1. The combination with an accordion having reed blocks with air openings thereon, and a key-board, of a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air open-

ings to silence one of the reed blocks; an actuating mechanism connected to the silencer to slide the same to cover and uncover said openings; and means extended thru the key-board and connected to the plate, to operate the actuating mechanism in either direction by the sliding of the plate in one direction and to automatically return the plate in the other direction without operating the actuating mechanism.

2. The combination with an accordion having reed blocks with air openings thereon, and a key-board, of a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air openings to silence one of the reed blocks; an actuating mechanism connected to the silencer to slide the same to cover and uncover said openings; and means extended thru the key-board and connected to the plate to operate the actuating mechanism successively in opposite directions by successive movement of the plate in one direction and to automatically return the hand plate from its operative position after each actuation, without operating the actuating mechanism.

3. The combination with an accordion having reed blocks with air openings on each reed block, and a key board, of a hand plate slidable alongside the longitudinal edge of the key-board, being slightly shorter than the said longitudinal edge, a plurality of spaced transverse projections extending outwardly from the slide handle to be engaged by the hand of the player, a silencer slidable over the openings of one of the reed blocks to render said reed block inoperative; means connecting the silencer to the hand plate to move the silencer into or out of silencing position upon the sliding of the plate in one direction, and means to automatically move the hand plate in the opposite direction, when the same is released, without moving the silencer.

4. The combination with an accordion having reed blocks with air openings on each reed block, and a key-board, of a hand plate slidable alongside the longitudinal edge of the key-board, being slightly shorter than the said longitudinal edge, a plurality of spaced transverse projections extending outwardly from the slide handle to be engaged by the hand of the player, a silencer slidable over the openings of one of the reed blocks to render said reed block inoperative; a silencer actuating mechanism; and means to operatively connect the actuating mechanism to the hand plate, when the same is moved in one direction, and to automatically move the plate in the released position thereof independently of the actuating mechanism.

5. The combination with an accordion having reed blocks with air openings thereon, and a key-board, of a hand plate slidable successively in the same direction from a normal po-

sition of rest alongside the longitudinal edge of the key-board, a silencer slidable in opposite directions to cover and uncover the air openings in one of the reed blocks; a single continuous actuating mechanism connected to the hand plate and to the silencer to slide the silencer to cover the air openings when the hand plate is moved in one direction from a normal position and to uncover the openings when moved in the same direction from said normal position, said hand plate being flat and parallel with the said edge of the key-board; and a plurality of longitudinally spaced projections extended outwardly from the hand plate to be engaged at will by the hand of the player.

6. The combination with an accordion having reed blocks with air openings on each reed block, and a key-board, of a hand plate slidable alongside the longitudinal edge of the key-board, being slightly shorter than the said longitudinal edge, a plurality of spaced transverse projections extending outwardly from the slide handle to be engaged by the hand of the player, a silencer slidable over the openings of one of the reed blocks to render said reed block inoperative, said operating means comprising a crank transversely disposed in the key-board having an end thereof connected to the hand plate, a rack and pinion mechanism on the inside of the key-board adapted to engage the actuating mechanism when moved in one direction by the hand plate, and resilient means to automatically return the said rack and pinion mechanism and said hand plate into inoperative position independently of the actuating mechanism.

7. The combination with an accordion having reed blocks with air openings thereon, and a key-board, of a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air openings to silence one of the reed blocks; an actuating mechanism connected to the silencer to slide the same to cover and uncover said openings; means extended thru the key-board and connected to the plate to operate the actuating mechanism in either direction by the sliding of the plate in one direction and to automatically return the plate in the other direction without operating the actuating mechanism, said operating means comprising a crank transversely disposed in the key-board having an end thereof connected to the hand plate, a rack and pinion mechanism on the inside of the key-board adapted to engage the actuating mechanism when moved in one direction by the hand plate, and resilient means to automatically return the said rack and pinion mechanism and said hand plate into inoperative position independently of the actuating mechanism.

8. The combination with an accordion having reed blocks with air openings thereon,

and a key-board, of a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air openings to silence one of the reed blocks; an
 5 actuating mechanism connected to the silencer to slide the same to cover and uncover said openings; means extended thru the key-board and connected to the plate to operate the actuating mechanism in either direction
 10 by the sliding of the plate in one direction and to automatically return the plate in the other direction, without operating the actuating mechanism, said actuating mechanism comprising a crank pin journaled above the
 15 reed blocks and engaged with the silencer to move the same; a connecting rod connected to the crank pin to rotate the same, and an eccentric to reciprocate the connecting rod, said eccentric being turned a half a revolution
 20 everytime the hand plate is slid in one direction and remaining stationary when the hand plate is released and returned in the other direction.

9. In an accordion having reed blocks with
 25 air openings thereon and a key-board; a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air openings to silence one of the reed blocks, a crank pin journaled adjacent the reed
 30 blocks to move the silencer into and out of silencing position; an eccentric adjacent the side of one of the reed blocks connected to the crank pin to rock the pin successively in opposite directions; operating means connect-
 35 ing the eccentric to the hand plate to turn the eccentric as the hand plate is slid in one direction, and to release said eccentric as the hand plate is returned in inoperative position in the other direction; and resilient means to automatically return said operating means
 40 and said hand plate to the inoperative position.

10. In an accordion having reed blocks with air openings thereon and a key-board;
 45 a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air openings to silence one of the reed blocks, a crank pin journaled adjacent the reed blocks to move the silencer into
 50 and out of silencing position; an eccentric adjacent the side of one of the reed blocks connected to the crank pin to rock the pin successively in opposite directions; a crank transversely journaled in the key-board having an
 55 end thereof connected to the hand plate, a rack slidable on the inner end of the key-board and being connected to the other end of the crank; a rotary disc mounted on the inside of the key-board, a pinion fixed concentrically on the disc meshing with the rack,
 60 a ratchet wheel on the shaft of the eccentric, and a pawl pivoted on a face of the disc to engage said ratchet wheel when the disc is rotated in one direction by the sliding of the
 65 plate, and resilient means to automatically

return said rack and said hand plate into a released position rotating the disc in the opposite direction freely from said ratchet.

11. In an accordion having reed blocks with air openings thereon and a key-board;
 70 a hand plate slidable alongside the longitudinal edge of the key-board, a silencer slidable over the air openings to silence one of the reed blocks, a crank pin journaled adjacent the reed blocks to move the silencer into and out
 75 of silencing position; an eccentric adjacent the side of one of the reed blocks connected to the crank pin to rock the pin successively in opposite directions; a crank transversely journaled in the key-board having an end
 80 thereof connected to the hand plate, a rack slidable on the inner end of the key-board and being connected to the other end of the crank; a rotary disc mounted on the inside of the key-board, a pinion fixed concentrically
 85 on the disc meshing with the rack; coacting elements on the disc and on the eccentric to cause the turning of the eccentric as the disc is rotated in one direction by the sliding of the hand plate, and to allow the free rotation
 90 of the disc in the other direction as the rack and the hand plate are returned in the opposite direction; and resilient means to automatically return said rack and said hand plate to the starting position thereof after
 95 each actuation of the silencer.

12. The combination with an accordion having reed blocks with air openings thereon and a key board, of a hand plate slidable on
 100 an edge of the keyboard; a silencer slidable over the air openings of one of the reed blocks, a second silencer slidable over the air openings of another reed block, an actuating mechanism connected to the first silencer to slide the same to cover and uncover the respective
 105 openings; a second actuating mechanism connected to the second silencer to slide the same to cover and uncover the openings of the second reed block; and means, for each actuating mechanism, extended thru the keyboard
 110 to connect the respective actuating mechanism to the plate, to operate only one of said mechanisms every time the plate is moved in one direction from its neutral position, and to operate only the other mechanism every time
 115 the plate is moved in the opposite direction beyond its neutral position, each of said mechanisms being adapted to automatically return the plate to its neutral position after each operation.

13. The combination with an accordion having reed blocks with air openings thereon and a keyboard, of a hand plate slidable on
 120 a longitudinal edge of the keyboard alongside the keys of the keyboard, a silencer slidable over the air openings of one of the reed blocks, a second silencer slidable over the air openings of another reed block, an actuating
 125 mechanism connected to the first silencer to slide the same to cover and uncover the re-

spective openings; a second actuating mechanism connected to the second reed block; and means, for each actuating mechanism extended thru the keyboard to connect the respective
 5 actuating mechanism to the plate, to operate only one of said mechanisms every time the plate is moved in one direction from its neutral position, and to operate only the other
 10 mechanism every time the plate is moved in the opposite direction beyond its neutral position, each of said mechanisms being adapted to automatically return the plate to its neutral position after each operation.

14. The combination with an accordion
 15 having reed blocks with air openings thereon and a keyboard, of a hand plate slidable on a longitudinal edge of the keyboard alongside the keys of the keyboard, a silencer slidable over the air openings of one of the reed
 20 blocks, a second silencer slidable over the air openings of another reed block, an actuating mechanism connected to the first silencer to slide the same to cover and uncover the respective openings; a second actuating
 25 mechanism connected to the second reed block; means, for each actuating mechanism extended thru the keyboard to connect the respective actuating mechanism to the plate, to operate only one of said mechanisms every
 30 time the plate is moved in one direction from its neutral position, and to operate only the other mechanism every time the plate is moved in the opposite direction beyond its neutral position, each of said mechanisms being
 35 adapted to automatically return the plate to its neutral position after each operation, said means of connection being disposed entirely within the keyboard, and means on the said edge of the keyboard slidably engaged with the plate to slidably hold the plate
 40 on said edge.

15. In combination with an accordion having a reed block with air openings therein; a silencer slidable successively in opposite
 45 directions over the air openings to cover and uncover the same; means comprising a single continuous connection to actuate said silencer; and a plate slidably mounted adjacent the edge of the keyboard and operatively
 50 connected to the angle continuous connection for sliding the silencer, said plate being movable successively along the length of the keyboard in the same direction from a predetermined position of rest to actuate the silencer.

16. In combination with a reed block of an
 55 accordion, of a slide reciprocable successively in opposite directions on the reed block to change the octave thereof; means comprising a single continuous connection
 60 to move said slide; and a hand plate adjacent the keyboard of said accordion reciprocable along the length of the keyboard successively, in the same direction to actuate said slide thru said single continuous con-
 65 nection.

17. In combination with a pair of reed
 blocks of an accordion, of a slide reciprocable successively, in opposite directions on
 70 each reed block to change the octave of each block; means comprising a single continuous connection to move each slide; and a hand
 75 plate adjacent the keyboard of said accordion reciprocable along the length of the keyboard, successively, in one direction from a set position of rest, and in an opposite direction from said set position of rest to actuate the respective reed block slides thru said means.

18. In combination with a reed block of an
 accordion, of a slide reciprocable successively, in opposite directions on the reed block to
 80 change the octave thereof; means comprising a single continuous connection to move said slide; and a hand plate adjacent the keyboard of said accordion and extended substantially the full length thereof reciprocable along the length of the keyboard, successively, in the same direction to actuate
 85 said slide thru said means.

19. In combination with a pair of reed
 90 blocks of an accordion, of a slide reciprocable, successively, in opposite directions on each reed block to change the octave of each block; means comprising a single continuous
 95 connection to move each slide; and a hand plate adjacent the keyboard of said accordion and extended substantially the full length thereof, reciprocable along the length of the keyboard, successively, in one direction from a set position of rest and in an opposite direction from said set position of rest to actuate the respective reed block slides thru said means.

20. In combination with an accordion having a keyboard thereon and a reed block there-
 105 in, of a slide having a one stroke backward or forward movement on the reed block to cover or uncover the reed block openings when moved; a hand plate adjacent the keyboard of said accordion extended substantially
 110 the full length thereof, having a two stroke backward and forward movement, and a single continuous connection between the reed block slide and hand plate, adapted to be actuated by the hand plate to effect a one
 115 stroke movement of the reed block slide.

In testimony whereof, I have hereunto set my hand at San Francisco, California, this
 14th day of March, 1930.

ANGELO CAGNAZZO. 120