

(No Model.)

W. S. MOSES.  
REED ORGAN.

3 Sheets—Sheet 1.

No. 604,070.

Patented May 17, 1898.

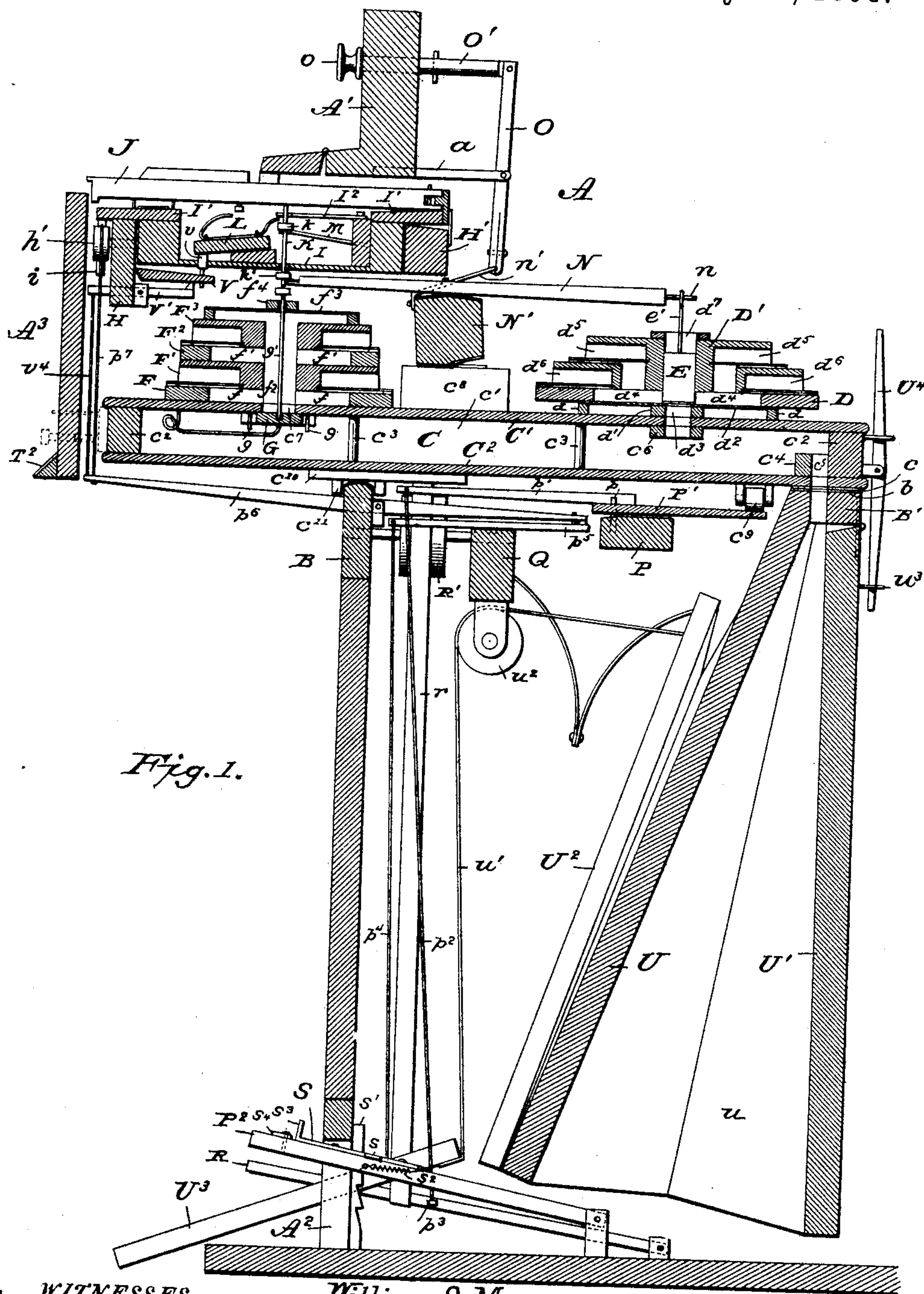


Fig. 1.

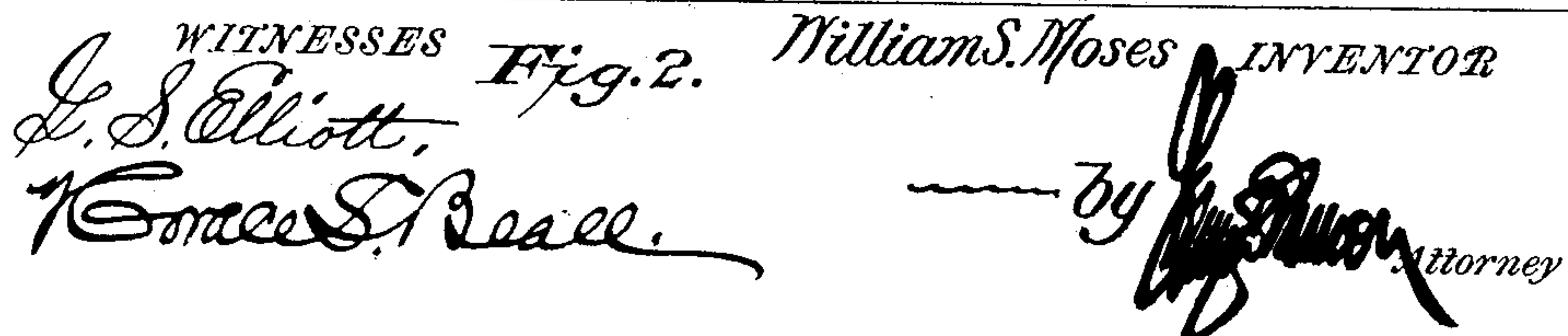
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3 Sheets—Sheet 2.

Patented May 17, 1898.

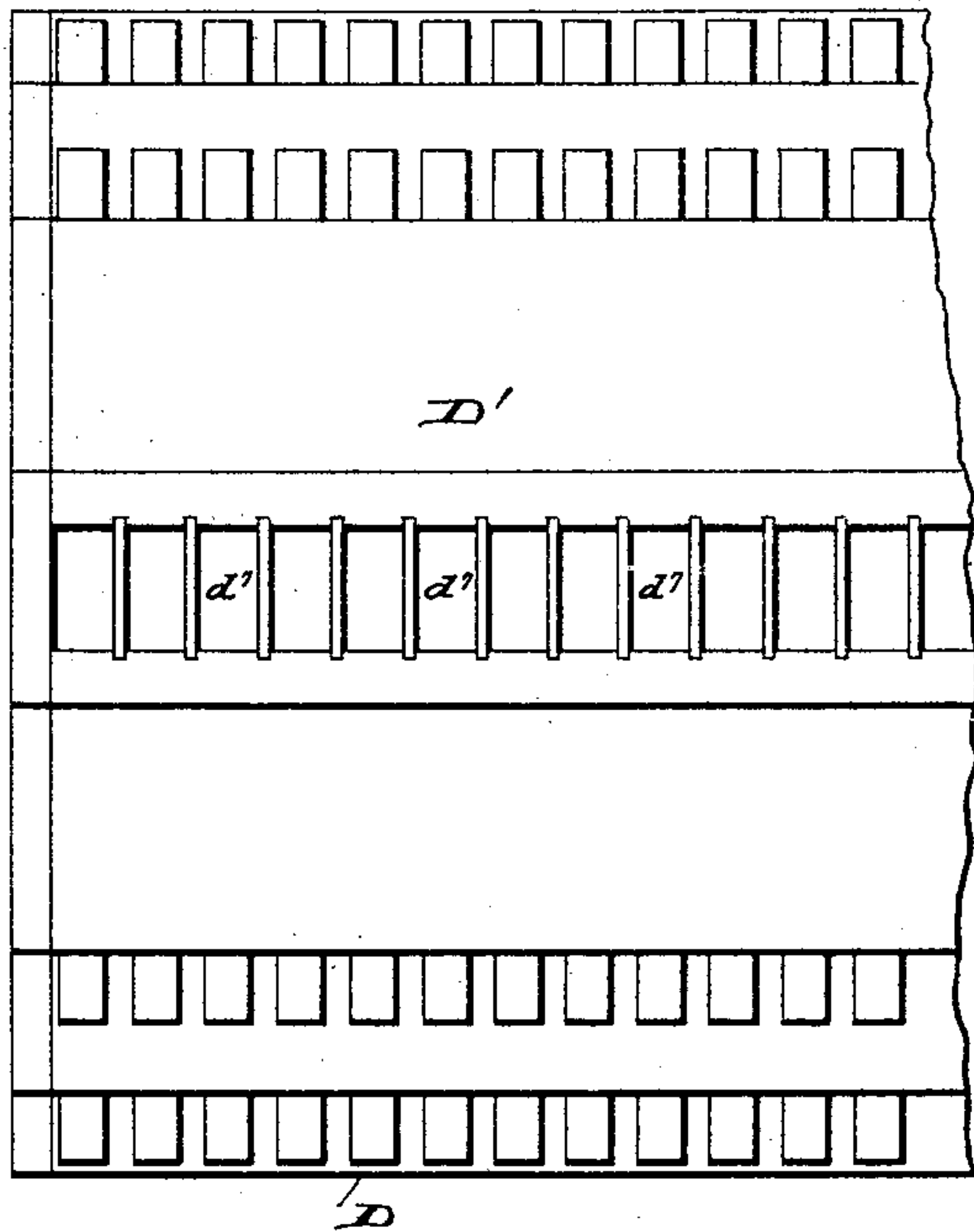


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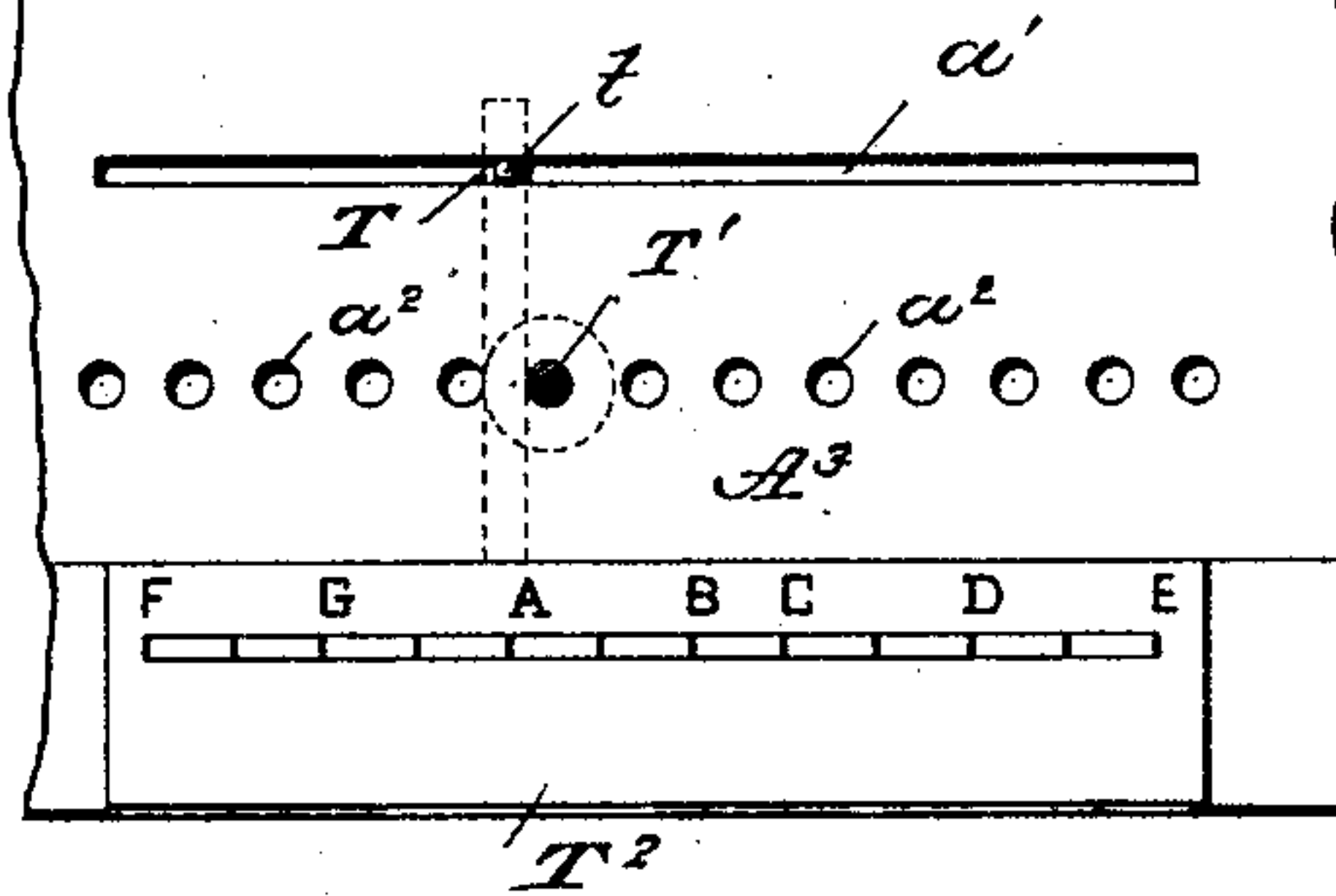
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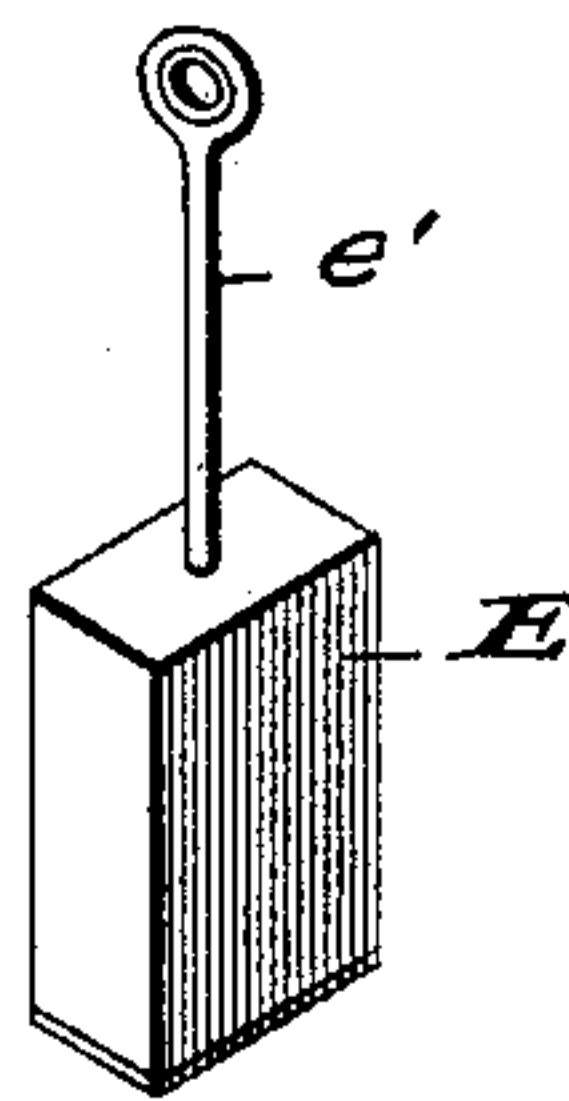
*Fig. 3.*



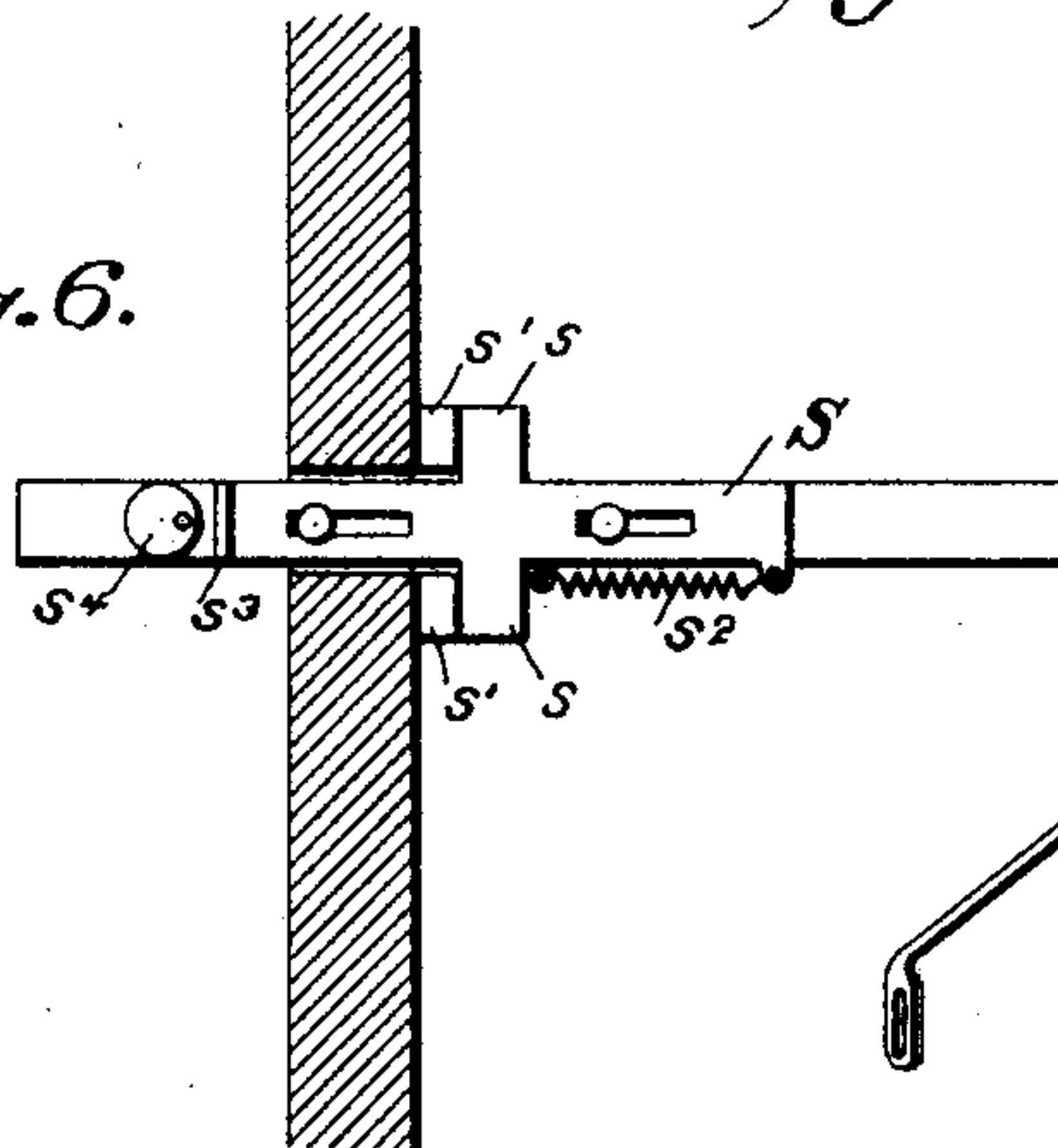
*Fig. 5.*



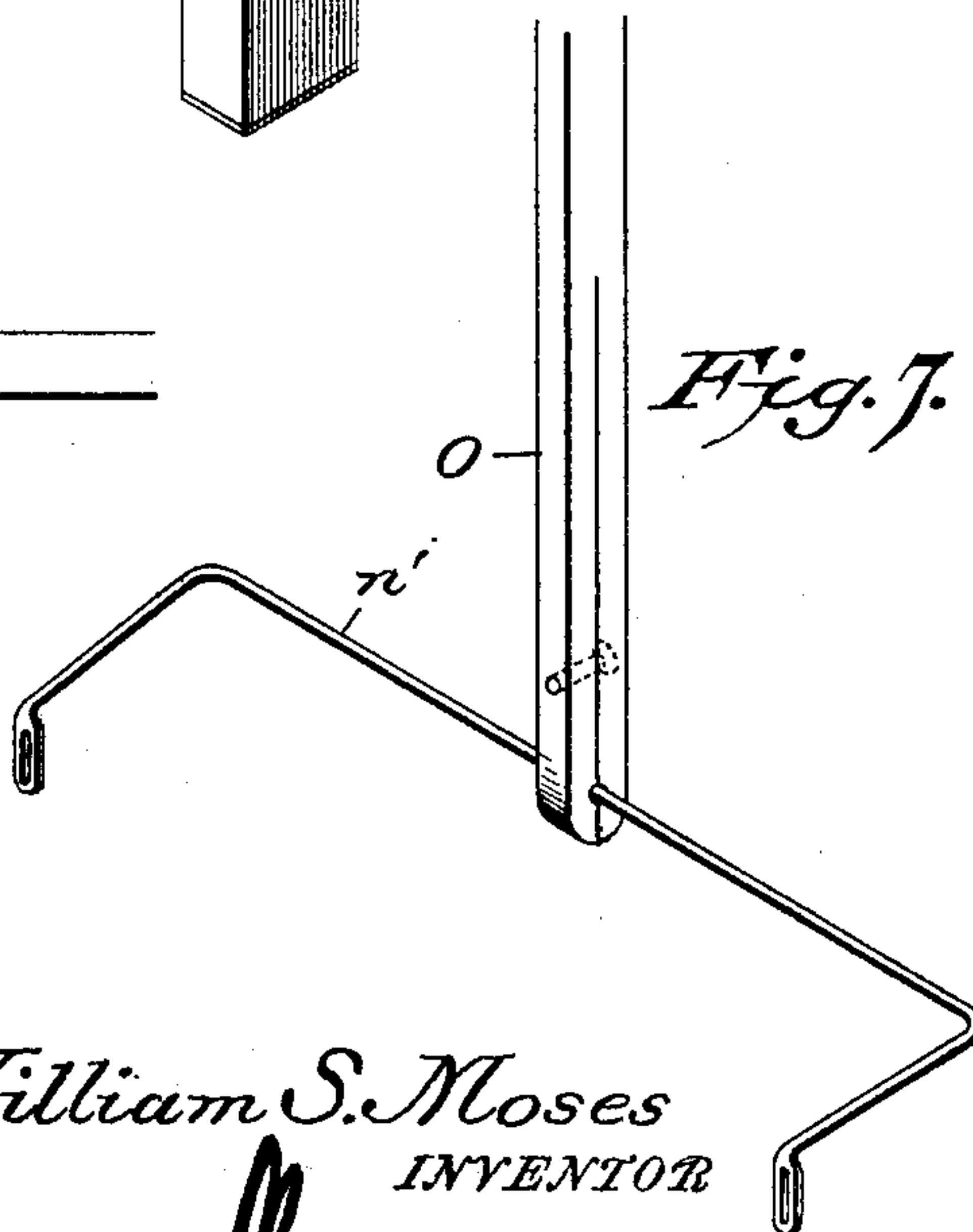
*Fig. 4.*



*Fig. 6.*



*Fig. 7.*



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# UNITED STATES PATENT OFFICE.

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## REED-ORGAN.

SPECIFICATION forming part of Letters Patent No. 604,070, dated May 17, 1898.

Application filed September 3, 1896. Renewed June 17, 1897. Serial No. 641,184. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. MOSES, a citizen of the United States of America, residing at Tracy, in the county of Lyon and State of Minnesota, have invented certain new and useful Improvements in Reed-Organ; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to reed-organs, and is designed more particularly as an improvement upon the construction illustrated and described in my application for patent dated November 29, 1895, in which a movable supplemental keyboard is employed for transposing music into different keys. The present invention is designed to accomplish the same purpose by the peculiar construction and arrangement of the parts, whereby the tone mechanism can be shifted either to the right or the left with relation to the regular keyboard, which contemplates simplifying the mechanism of the organ and obviating the use of the supplemental keyboard.

The invention consists in the improved construction of the tone mechanism and in the manner of shifting the same with respect to the regular keyboard.

The invention further consists in combining with the two independent sets of reeds certain mechanism by which one set can be thrown out of operative engagement with the tracker-pins of the keyboard.

The invention further consists in improved mechanism for operating the coupler-boards and in the mechanism for tilting the supporting-frame of the keyboard to regulate the depression of the tracker-pins; and the invention further consists in the details of construction, all as will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical transverse sectional view of a reed-organ constructed in accordance with my invention. Fig. 2 is a front elevation of the organ, the

board at the forward end being removed. Fig. 3 is an enlarged plan view of the set of reeds located at the rear part of the organ. Fig. 4 is a detail perspective view of one of the pistons of the reed mechanism. Fig. 5 is a front elevation of the devices for indicating the adjustment of the tone mechanism with respect to the regular keys. Fig. 6 is a detail view showing the mechanism for locking the foot levers or pedals. Fig. 7 is an enlarged perspective view showing the manner of connecting one of the operating-levers to the movable tone mechanism.

The organ frame or casing is of any approved construction, the front being suitably ornamented to present a neat and attractive appearance.

Between the side pieces A A of the organ-casing are rigidly secured two longitudinal beams B and B', which support the movable tone mechanism in its normal position, the upper edge of the beam B being rounded to reduce the friction, while the upper edge of the beam B' is provided with a pad b, which, in connection with a pad c on the under side of the lower board of the sounding-chamber, forms an air-tight joint when the tone mechanism is in its normal position resting upon the said longitudinal beams.

The sounding-chamber C, which forms part of the tone mechanism, consists of upper and lower sounding-boards C' and C'', respectively, connected to each other by end pieces c' and side pieces c'', with intermediate sounding-posts c'' properly positioned. At the rear part of the sounding-chamber is a supplemental strip c'', having a slot c'' therein, which registers with a similar slot in the lower sounding-board and with a vertical opening b' through the beam B', which leads to the exhaust mechanism, hereinafter described, the slot being provided to insure communication at all times between the air-exhaust mechanism and movable sounding-chamber. Upon the upper sounding-board of the sounding-chamber are mounted two sets of reeds.

At the rear part of the organ are longitudinal strips d d' and an intermediate longitudinal strip d'', which are secured upon the sounding-board C' and support a diaphragm or supplemental sounding medium d'', having centrally a longitudinal series of rectan-



gular openings which register with a similar series of openings in the strip  $d'$ , sounding-board  $C'$ , and reinforcing-strip  $c^6$ , secured to the under side of said sounding-board, forming passage-ways  $d^3$  for the purpose herein-  
 5 after specified. Upon the diaphragm is placed a pipe-board  $D$ , having a longitudinal series of transverse slots or pipes  $d^4$ , the center portions of which are on a line with the corre-  
 10 sponding series of passage-ways  $d^3$ , and upon this pipe-board is mounted a reed-board  $D'$ , having reed-chambers  $d^5$  and  $d^6$  at each side, which communicate with the pipes  $d^4$  and  
 15 as shown. The reed-board  $D'$  is provided centrally with a longitudinal opening divided by plates into a series of vertical rectangular openings  $d^7$ , which register with the openings  $d^3$ , but slightly larger than the latter, the di-  
 20 vision-plates resting upon the diaphragm  $d^2$ . Within each vertical opening  $d^7$  is located a piston  $E$ , operated, as hereinafter described, to cut off communication between the pipes  $d^4$  and vertical opening  $d^3$ , which leads to the  
 25 sounding-chamber  $C$ , the lower end of said piston having a pad which, when the piston is lowered to rest upon the diaphragm  $d^2$  and cover the opening  $d^3$ , will form an air-tight connection at this point.  
 30 At the forward part of the organ upon the sounding-board  $C'$  is a pipe-board  $F$ , similar to the pipe-board  $D$ , the pipes  $f$  thereof communicating with a series of openings  $c^7$  in said sounding-board, and upon this pipe-board is  
 35 mounted a reed-board  $F'$ , a second pipe-board  $F^2$ , and a second reed-board  $F^3$ . The reed-boards  $F'$  and  $F^3$  are provided centrally with a longitudinal series of openings which register with the central portions of the pipes or  
 40 transverse slots of the pipe-boards and with the opening  $c^7$ , said reed-boards also having reed-chambers, which communicate with the pipes  $ff'$ , and vertical openings  $f^2$ , formed by the openings in the several parts, the open-  
 45 ings  $f^2$  communicating with the sounding-chamber  $C$  by way of the corresponding series of openings  $c^7$  in the upper sounding-board. Communication between the reeds and the sounding-chamber  $C$  is closed or cut  
 50 off by a series of independent valves  $G$ , which bear against the under side of the sounding-board  $C'$  and are guided by pins  $g$ , said valves being held normally against their seat by spring-rods  $G'$ , said rods also serving as sup-  
 55 ports for said valves. The valves  $G$  are provided with operating-rods  $g'$ , which are seated in recesses therein and pass up through the openings  $c^7$  and  $f^2$  and through a diaphragm or supplemental sounding medium  $f^3$ , mount-  
 60 ed upon the upper reed-board  $F^3$ , the diaphragm having a reinforcing-strip  $f^4$  with packings, through which the rods pass, and the upper ends of said rods being provided with enlarged bearing surfaces or heads, for  
 65 the purpose hereinafter specified.

$H$  and  $H'$  designate longitudinal beams which are secured to the side pieces  $A A$  of

the organ-casing, and upon these beams the supporting-frame of the keyboard mechanism rests when in its normal position. This  
 70 supporting-frame  $I$  consists of a horizontal board which is hollowed out centrally in its upper side and is provided with extensions  $I'$ , which rest upon the beams  $H$  and  $H'$ , the beam  $H'$  being beveled rearward on its upper  
 75 edge, as shown, to permit said supporting-frame to be tilted, as hereinafter described.

The finger-keys  $J$  of the instrument are mounted upon the supporting-frame  $I$  in the usual manner and engage with tracker-pins  
 80  $K$ , guided by apertures in a horizontal plate  $I^2$ , said tracker-pins having the usual collars  $k$ , with which the wires of the ordinary coupler-boards  $L$  engage, and the lower ends of  
 85 these tracker-pins pass through the supporting-frame  $I$  and engage the upper ends of the operating-rods  $g'$  of the forward reeds. A plate  $M$  is secured to the supporting-frame  $I$  and provided with spring-fingers which en-  
 90 gage the under side of the collars  $k$  to hold the tracker-pins  $K$  normally against the under side of the finger-keys  $J$ . Near the lower end of each tracker-pin  $K$  is secured a collar  $k'$ , and these collars engage the forward ends of  
 95 a series of levers  $N$ , centrally fulcrumed upon a horizontal rock-bar  $N'$ , hinged at its ends to blocks  $c^8$ , mounted upon the upper board of the sounding-chamber  $C$ . The rear ends  
 100 of the levers  $N$  are provided with projecting pins  $n$ , which engage eyes in the piston-rods  $e$  of the rear set of reeds, said eyes being preferably provided with bushings.

It will be here noted that the depression of a finger-key will move the corresponding  
 105 valve of the forward reeds and elevate the corresponding piston of the reeds at the rear part of the organ, the operation being effected through the intervention of the tracker-pin  
 110  $K$  and lever  $N$ , with which it is in engagement. Now in order to throw the rear reeds out of operation when desired I provide mechanism for this purpose consisting of a lever  
 115  $O$ , fulcrumed at an intermediate point to a bracket or arm  $a$ , projecting rearward from the upper front board  $A'$  of the organ-casing, the lower end of said lever being connected  
 120 to the rock-bar  $N'$ , while the upper end is connected to an operating-rod  $O'$ , which extends through the front board  $A'$  and has a pull-knob  $o$  attached to its forward end. As  
 125 the rock-bar  $N'$  is carried by the movable tone mechanism of the organ, the connection of the lever  $O$  therewith is made by a looped wire  $n'$ , Fig. 7, having a straight portion which plays in a transverse aperture formed in the  
 130 lower end of said lever, the lower end of the lever being preferably split, as shown, to provide for the ready attachment and detachment of the parts. When the operating-rod  $O'$  is pulled upon, it will rock the cross-bar  
 135  $N'$  backward through the intervention of the lever  $O$  and connection  $n'$ , and the backward movement of said bar will carry the levers  $N$  with it, thereby moving said levers out of an



operative position with respect to the collars  $k'$  of the tracker-pins.

In transposing music into different keys the tone mechanism hereinbefore described is shifted to the right or to the left in contradistinction to moving the supplemental keyboard, as in the application hereinbefore referred to. To accomplish this, the rear part of the tone mechanism is tilted upward to disengage it from the exhaust mechanism and is supported upon friction-rollers. The pedals, connected to the tone mechanism by straps, are then manipulated to make the proper adjustment, certain devices being provided for indicating the adjustment, all of which I shall now proceed to describe.

P designates a horizontal beam which is secured between the side pieces A A of the organ-casing, and upon this beam is fulcrumed a board P', the rear edge of which forms a bearing for friction-rollers  $c^9$ , journaled in brackets secured to the under side of the rear part of the tone mechanism or sounding-board C<sup>2</sup>, pins  $p$  being provided to hold said board against lateral movement. To the forward end of the board P' is secured a projecting arm  $p'$ , to the outer end of which is connected a depending rod  $p^2$ , which passes through an opening in a foot lever or pedal P<sup>2</sup>, the lower end of said rod having an adjusting-nut  $p^3$ , against which the pedal abuts to operate the rod. To the pedal P<sup>2</sup> is attached a second rod  $p^4$ , which extends upward and is connected to one end of a lever  $p^5$ , fulcrumed on a beam Q, extending across the organ-casing, the rear end of this lever engaging the rear end of a long lever  $p^6$ , fulcrumed in brackets attached to the beam B and connected to the supporting-frame of the keyboard by a cord or flexible connection  $p^7$ , which passes over a guide-roller  $h'$ , having a bearing in the longitudinal beam H. The cord is not connected directly to the supporting-frame I, but to a depending arm  $i$ , secured thereto. By the arrangement just described a depression of the pedal P<sup>2</sup> will first act upon the lever  $p^6$  to tilt the supporting-frame of the keyboard, which will carry the tracker-pins K out of engagement with the valve-rods  $g'$  and levers N of the tone mechanism, after which the pedal, by engaging the nut  $p^3$ , will operate the board P' to incline the tone mechanism and support the rear part of the same upon said board by way of the friction-rollers  $c^9$ . When the parts are in this position, the tone mechanism can be shifted to the right or to the left by means of pedals R R, which are connected to opposite ends of the sounding-board C<sup>2</sup> by belts  $r$ , which pass over suitable guide-rollers R'.

It will be understood that the forward part of the tone mechanism slides upon the beam B, and in order to reduce the friction strips  $c^{10}$  are secured to the under side of the sounding-board C<sup>2</sup> at each end thereof to rest upon the beam, said strips carrying lugs or guides

$c^{11}$ , which lap the sides of the beam and prevent forward or backward movement of the tone mechanism.

In order to hold the pedal P<sup>2</sup> depressed and permit the removal of the foot to operate one of the pedals R, I provide said pedal with a sliding plate S, Fig. 6, having lateral projections  $s$ , which engage rack-bars  $s'$ , secured to the inner side of the front board A<sup>2</sup>, said plate being connected to a spring  $s^2$  to insure such engagement and is provided at its forward end with an upward projection  $s^3$  to provide means by which the plate can be operated to disengage the said rack-bars. In front of the projection  $s^3$  is a cam  $s^4$ , which can be turned against the projection to hold the sliding plate out of operation when desired.

The proper adjustment of the tone mechanism with respect to the keyboard is indicated or determined by a pointer  $t$ , projecting through a slot  $a'$  in the front board A<sup>3</sup> from a vertical strip T, secured to the forward end of the sounding-chamber C, and in connection with this pointer a removable pin T' is used and passed through any one of a series of perforations  $a^2$  in the front board to engage either side of the vertical strip T. A scale-plate T<sup>2</sup> is secured to the front board A<sup>3</sup> above or below the series of holes  $a^2$  to indicate the particular key in which the music will be played.

The bellows or exhaust mechanism of the organ is constructed similar to that shown in my prior application for patent, presenting a stationary board U, swinging board U', folded leather  $u$ , and supplemental bellows U<sup>2</sup>. The supplemental bellows are connected to pedals U<sup>3</sup> by cords  $w'$ , which pass over guide-rollers  $w^2$ , journaled in brackets depending from the beam Q. The swinging board of the bellows operates a lever U<sup>4</sup>, which is pivoted to the sounding-chamber C and connected to the valves or mutes of the reed-chambers, as in the aforesaid application, but not shown herein. As the sounding-chamber C is movable, the lower end of the lever U<sup>4</sup> plays in a wire loop  $w^3$ , attached to the swinging board U'.

The coupler-boards L are tilted into an operative position by a board V, hinged to the beam H and provided at its inner end with threaded pins  $v$ , which bear against the under side of said coupler-boards, the board V being engaged by a lever V', and said lever is operated by a foot-lever or pedal V<sup>2</sup> through the intervention of a long lever  $v^2$ , short lever  $v^3$ , and connecting-rods  $v^4$  and  $v^5$ . (See Fig. 2.) The construction and arrangement of the levers  $v^2$  and  $v^3$  are the same as the construction and arrangement of the levers  $p^5$  and  $p^6$ , which tilt the keyboard-frame, and are shown in the sectional view Fig. 1. The pedal V<sup>2</sup> is also provided with the locking mechanism shown in Fig. 6 of the drawings in order to hold the coupler-boards in an operative position and permit the feet of the operator to be free to pedal the bellows.



It will be noted that the depression of the pedal  $P^2$  to engage the sliding plate with the upper notch in the rack-bars  $s'$  will slightly tilt the forward part of the supporting-frame of the keyboard upward, and in this position the depression of the finger-keys will not open the valves E and G to their fullest extent, thereby reducing the volume of tone. Should a further modulation of the tone be desired, the reeds at the rear part of the organ can be thrown out of engagement by manipulating the rod  $O'$ , as hereinbefore described.

From the foregoing description, in connection with the accompanying drawings, the operation of the several parts of my improved reed-organ will be readily understood, and it will be noted that the keyboard is extended a few keys at each side to provide supplemental keys which will act upon the end reeds when the tone mechanism is shifted to the right or to the left.

In further describing the sounding-chamber C it may be said that when the exhaust mechanism is worked there will be a tendency for the sounding-boards to move toward each other, but the posts  $c^3$  so neutralize or connect said boards that they will vibrate in unison, and thus reinforce the tone of the instrument. Without the posts the suction would overcome the vibration and prevent the tones being reinforced. Both sounding-boards vibrate, and thus form what may be termed a "compound" sounding-board.

Having thus described my invention, I do not wish to be limited to the particular construction of the parts herein shown and described, but reserve the right to change or modify such construction within the spirit and scope of my claims.

I claim—

1. In a musical instrument of the character described, the combination with the exhaust mechanism, of a sounding-chamber movable sidewise and communicating with said exhaust mechanism by way of a slot and opening registering with each other, a transverse series of reeds mounted on the sounding-chamber and communicating therewith by valved openings, and headed operating-rods for operating the valves; together with a keyboard, having tracker-pins adapted to engage the headed operating-rods immediately below, substantially as shown and described.

2. The combination in a reed-organ, of the sounding-chamber having openings in the upper sounding-board thereof, a diaphragm supported a suitable distance above the sounding-board and having a series of openings which communicate with the openings in said sounding-board, a pipe-board having a corresponding series of pipes, and a reed-board having reed-chambers which communicate with the pipes and a series of vertical openings on a line with the corresponding open-

ings in the diaphragm; together with pistons located within said vertical openings, and means for operating the pistons from a keyboard, substantially as shown and for the purpose set forth.

3. In a reed-organ, the combination, of the tone mechanism movable sidewise, a tilting keyboard adapted to operate the reeds of the tone mechanism; together with a single foot lever or pedal connected to the tone mechanism and keyboard for tilting them in opposite directions, and supplemental means for shifting the tone mechanism, substantially as shown and described.

4. In a reed-organ, the combination, of the tone mechanism movable sidewise, a tilting keyboard adapted to operate the reeds of the tone mechanism, a foot lever or pedal connected to the keyboard and to interposed means for tilting the rear part of the tone mechanism, and independent pedals connected to the ends of the tone mechanism by belts which pass over suitable guide-pulleys, substantially as shown and described.

5. In a reed-organ, the combination with the movable tone mechanism carrying friction-rollers, a tilting board forming a bearing for the friction-rollers, and an arm secured to said tilting board and connected to a pedal; together with a tilting keyboard connected to said pedal by interposed levers and connections, substantially as shown and for the purpose set forth.

6. In a reed-organ, the combination with the movable tone mechanism carrying friction-rollers, a tilting board forming a bearing for the friction-rollers, an arm secured to said tilting board and connected to a depending rod the lower end of which is passed through an opening in a foot-pedal, an adjustable stop attached to the lower end of the rod; together with a tilting keyboard connected to said pedal, and supplemental means for shifting the tone mechanism, substantially as shown and for the purpose set forth.

7. In a reed-organ, the combination with a foot lever or pedal, of a sliding plate mounted thereon and provided with lateral extensions and at its forward end with a toe portion, stationary rack-bars with which the lateral extensions of the plate engage, and a spring for causing such engagement, substantially as shown and described.

8. In a reed-organ, a device for holding the foot levers or pedals depressed, consisting of a sliding plate mounted on the pedal and provided at its forward end with an upturned portion and at its sides with extensions, rack-bars with which said extensions engage, and a spring for causing such engagement; together with a cam located on the pedal to engage the end of the sliding plate, substantially as shown and for the purpose set forth.

9. In a reed-organ, the combination with the coupler-boards, of a hinged board, screws



adjustable upon said hinged board and in engagement with said coupler-boards, a centrally-fulcrumed lever one end of which is in contact with said hinged board, and interposed levers and rods connecting the first-mentioned lever to a foot lever or pedal, substantially as shown and described.

10. In a reed-organ, the combination with the two sets of reeds and keyboard having tracker-pins with rigid collars, of levers operating one set of reeds by engaging said collars, a rock-bar upon which the levers are fulcrumed, a lever connected at one end to the rock-bar, and an operating-rod connected to the other end of the lever, substantially as shown and for the purpose set forth.

11. In a reed-organ, the combination with the two sets of reeds mounted upon a movable sounding-chamber, of a keyboard having tracker-pins with rigid collars, levers operating one set of reeds by engaging said collars, a rock-bar upon which the levers are fulcrumed, said rock-bar having a looped wire attached thereto; together with a pivoted lever in sliding engagement with the rock-bar, and an operating-rod connected to the opposite end of said lever, substantially as shown and for the purpose set forth.

12. In a reed-organ the combination with a movable sounding-chamber or wind-chest and fixed bellows or exhaust mechanism, of connection between the parts and means for disengaging the sounding-chamber from the bellows and means for moving laterally the sounding-chamber substantially as shown and for the purpose set forth.

13. In a reed-organ the combination with a movable sounding-chamber or wind-chest and a fixed bellows or pumping device, of separable connections between the sounding-chamber and bellows and means for detaching or separating the connections so that the sounding-chamber may be moved laterally substantially as shown and for the purpose set forth.

14. In a reed-organ, the combination with the exhaust mechanism or bellows, of a keyboard both mounted immovably upon the frame of the instrument, of a wind-chest or sounding-chamber movable longitudinally with respect to the frame, means for operating the valves or pistons of the sounding-chamber carried thereby so as to engage with the keys of the keyboard substantially as shown and for the purpose set forth.

15. In a reed-organ the combination with the exhaust mechanism, of a wind-chest or sounding-chamber movable relative to the exhaust mechanism, of reeds, and valve or piston operating means carried by the sounding-chamber; together with a keyboard fixedly mounted upon the frame, substantially as shown and for the purpose set forth.

16. In a reed-organ, the combination with the exhaust mechanism or bellows, of a wind-chest or sounding-chamber movable laterally relative to said exhaust mechanism, openings

connecting the bellows and sounding-chamber; the openings registering, substantially as shown and for the purpose set forth.

17. In a reed-organ the combination of a sounding-board having the tone mechanism mounted thereon and means for moving the same sidewise, a keyboard carried by the frame of the instrument so as to occupy a fixed position, of exhaust mechanism also occupying a fixed position with respect to the frame; together with mechanism for shifting the tone mechanism with respect to the keyboard, and the bellows or exhaust mechanism substantially as shown and for the purpose set forth.

18. In a reed-organ, the combination of the tone mechanism movable sidewise, a keyboard occupying a relatively-fixed position with respect to the tone mechanism; together with exhaust mechanism and means for changing the position of the tone mechanism with respect to the keys and exhaust mechanism substantially as shown and for the purpose set forth.

19. In a reed-organ, a wind-chest movable laterally with respect to a fixed keyboard and bellows, said wind-chest having openings in its inclosing boards, valves or pistons operating in conjunction with said openings and connections between the valves or pistons and the keyboard; together with air-passages for establishing communication between the bellows and wind-chest, substantially as shown.

20. In a reed-organ the combination with the keyboard and bellows of a wind-chest or sounding-chamber moving laterally with respect thereto, said wind-chest or sounding-chamber having openings in the inclosing boards, valves or pistons therefor, connections with the valves or pistons, and keyboard, and means for connecting the bellows and wind-chest or sounding-chamber substantially as shown and for the purpose set forth.

21. In a reed-organ or similar instrument, the combination with a wind-chest movable laterally with respect to the keyboard and bellows, of tone mechanism connected with the wind-chest so as to be moved in conjunction with the same, substantially as shown.

22. In a reed-organ or similar instrument, the combination with the keyboard and bellows of ordinary construction, of a wind-chest or sounding-chamber supported so as to be movable laterally with respect to the keyboard and bellows, substantially as shown and for the purpose set forth.

23. In a reed-organ the combination with a movable sounding-chamber and fixed bellows, of connections between said parts and means for tilting the sounding-chamber to effect a disengagement of the connections and means substantially as shown for moving the sounding-chamber when tilted for the purpose set forth.

24. In a reed-organ the combination with a



keyboard, sounding-chamber and bellows of  
connecting means, the sounding-chamber be-  
ing supported so that it may be raised or tilted  
and when so moved will disengage the con-  
5 nections carried thereby from the keyboard  
and bellows substantially as shown and for  
the purpose set forth.

In testimony whereof I affix my signature  
in presence of two witnesses.

WILLIAM S. MOSES.

Witnesses:

CHAS. W. MAIN,  
K. A. JONES.