

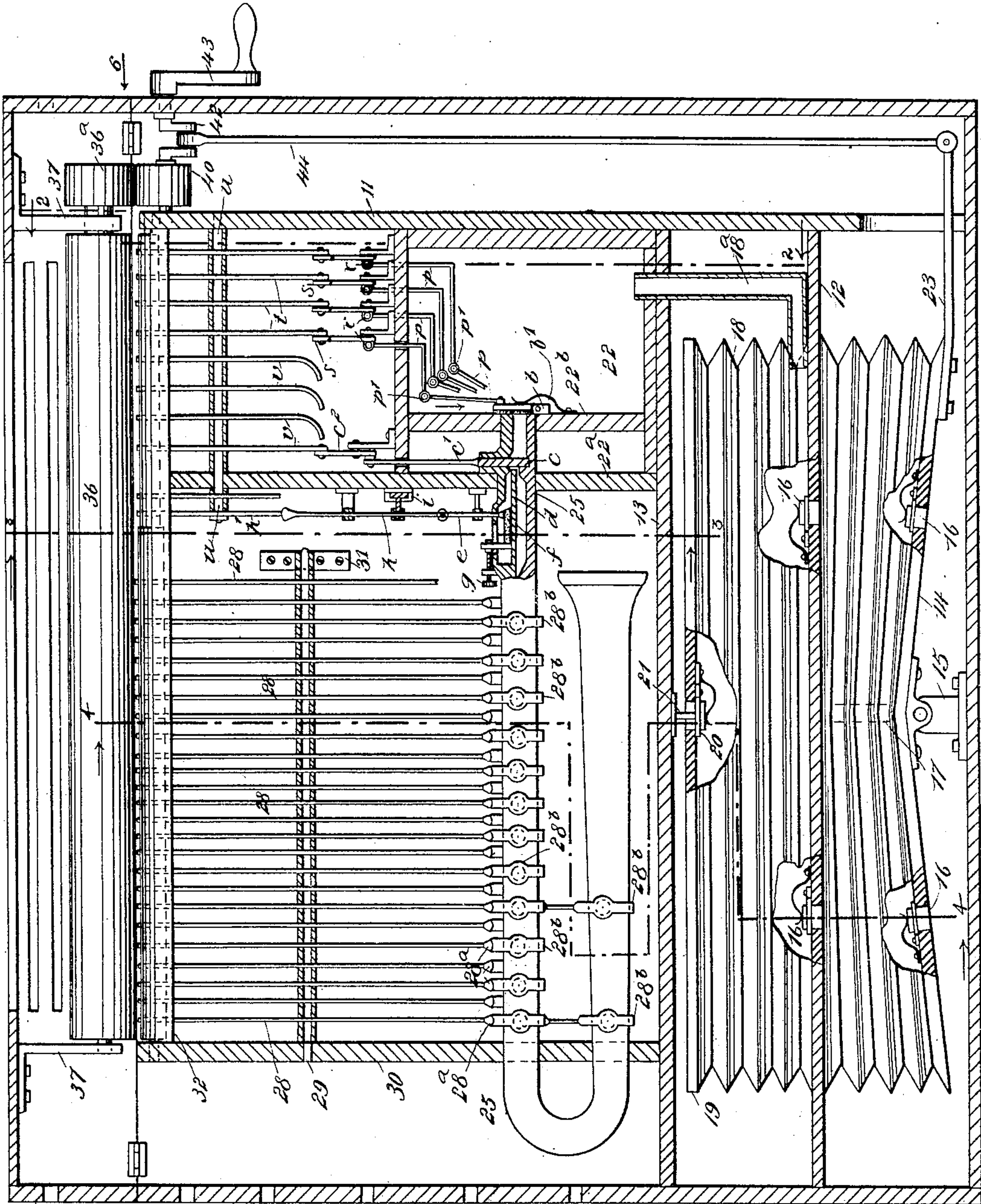
(No Model.)

3 Sheets—Sheet 1.

W. LANGENFELD.
COMPOSITE MUSICAL INSTRUMENT.

No. 561,004.

Patented May 26, 1896.



WITNESSES:

Geo. C. Chumey
Wm. L. Patton

FIG 1

INVENTOR

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(No Model.)

3 Sheets—Sheet 2.

W. LANGENFELD.
COMPOSITE MUSICAL INSTRUMENT.

No. 561,004.

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Fig 2

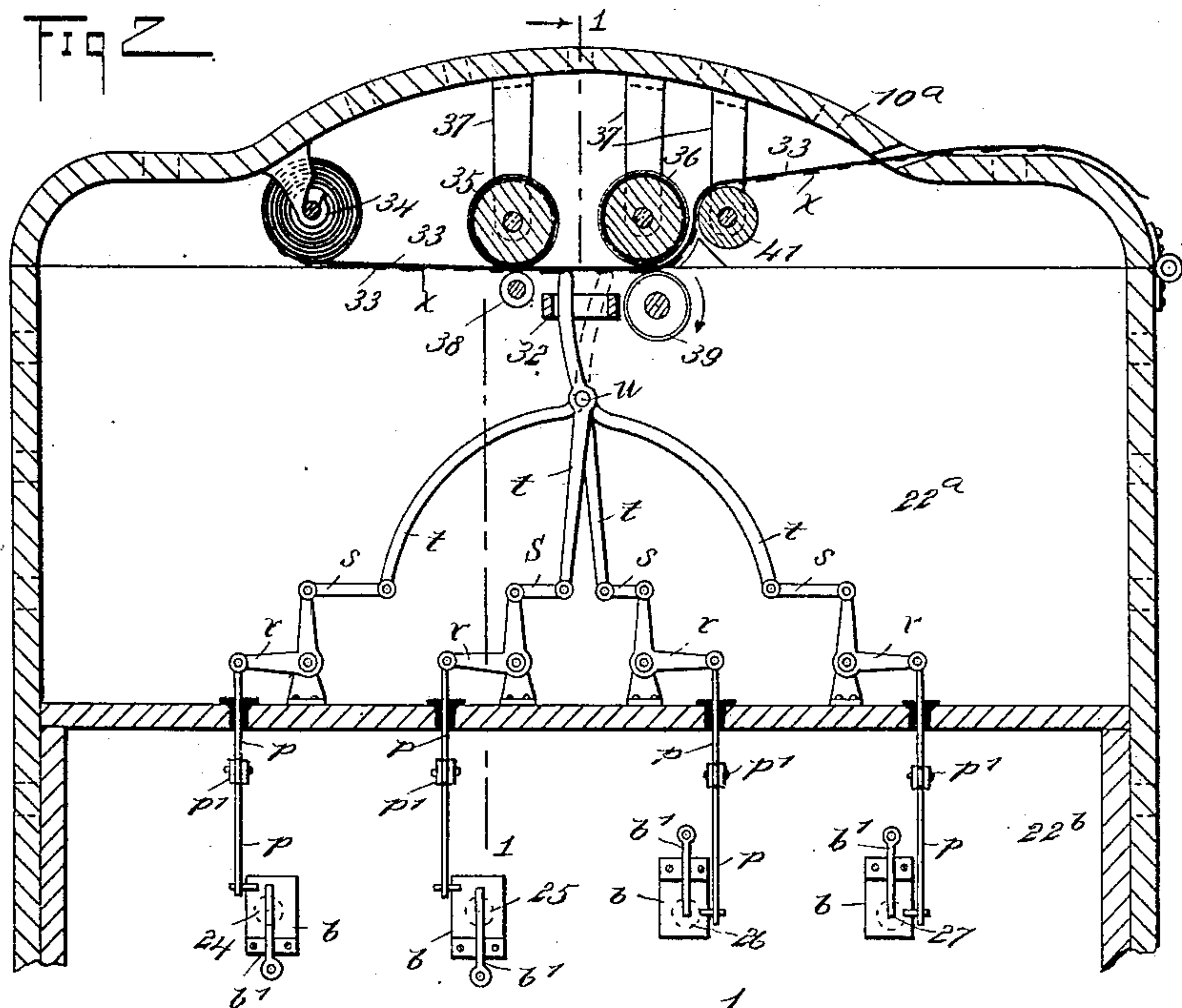
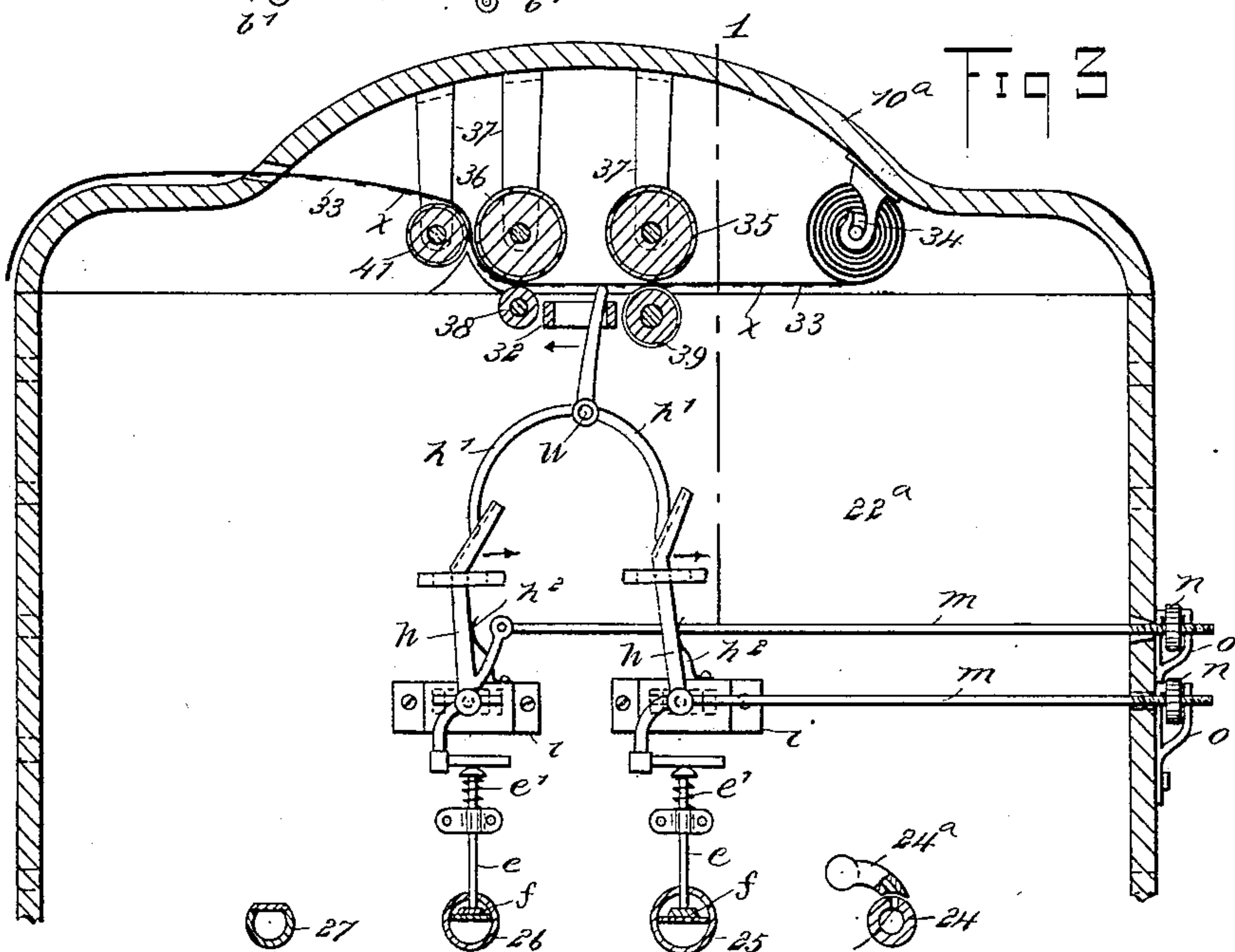


Fig 3



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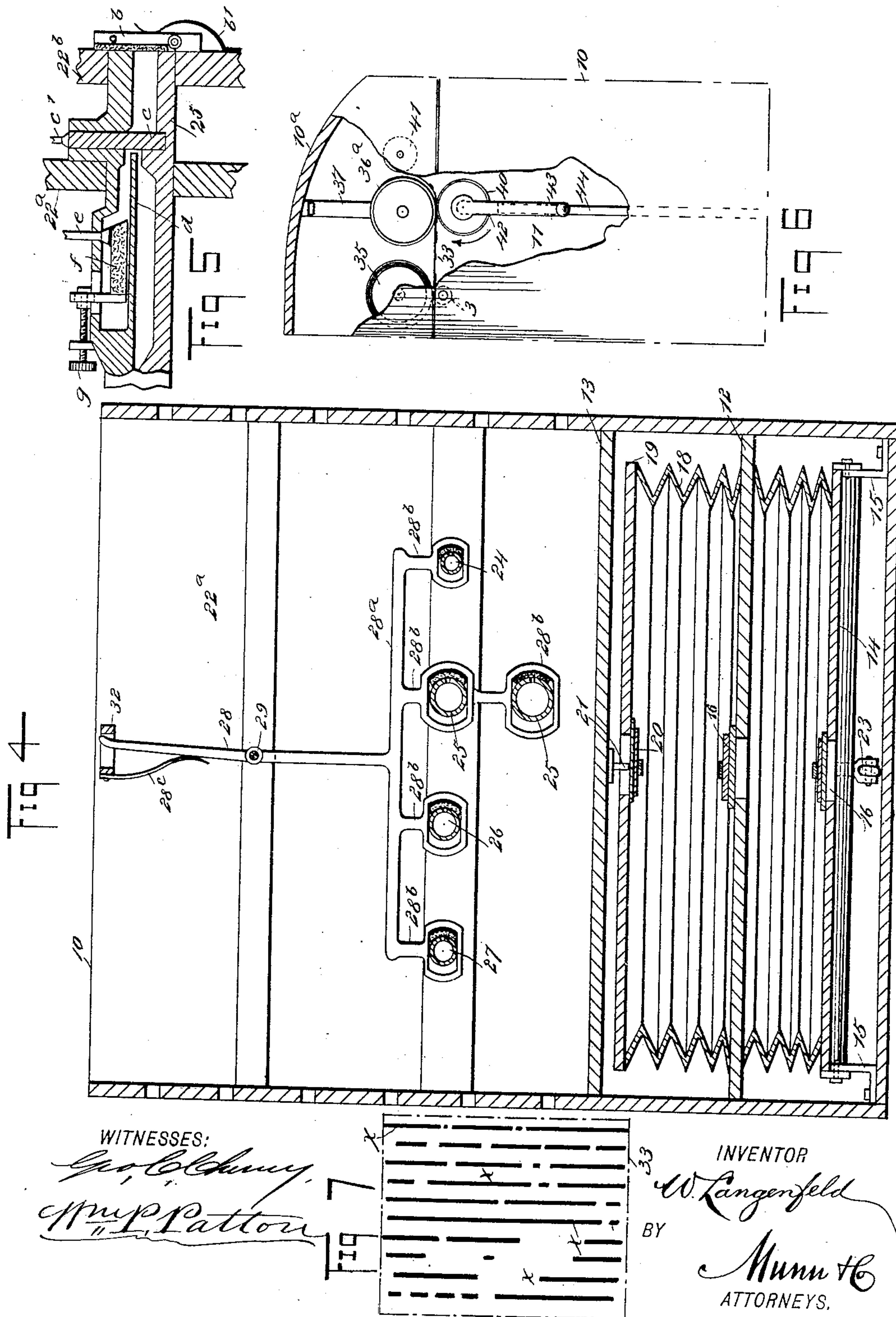
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W. LANGENFELD.
COMPOSITE MUSICAL INSTRUMENT.

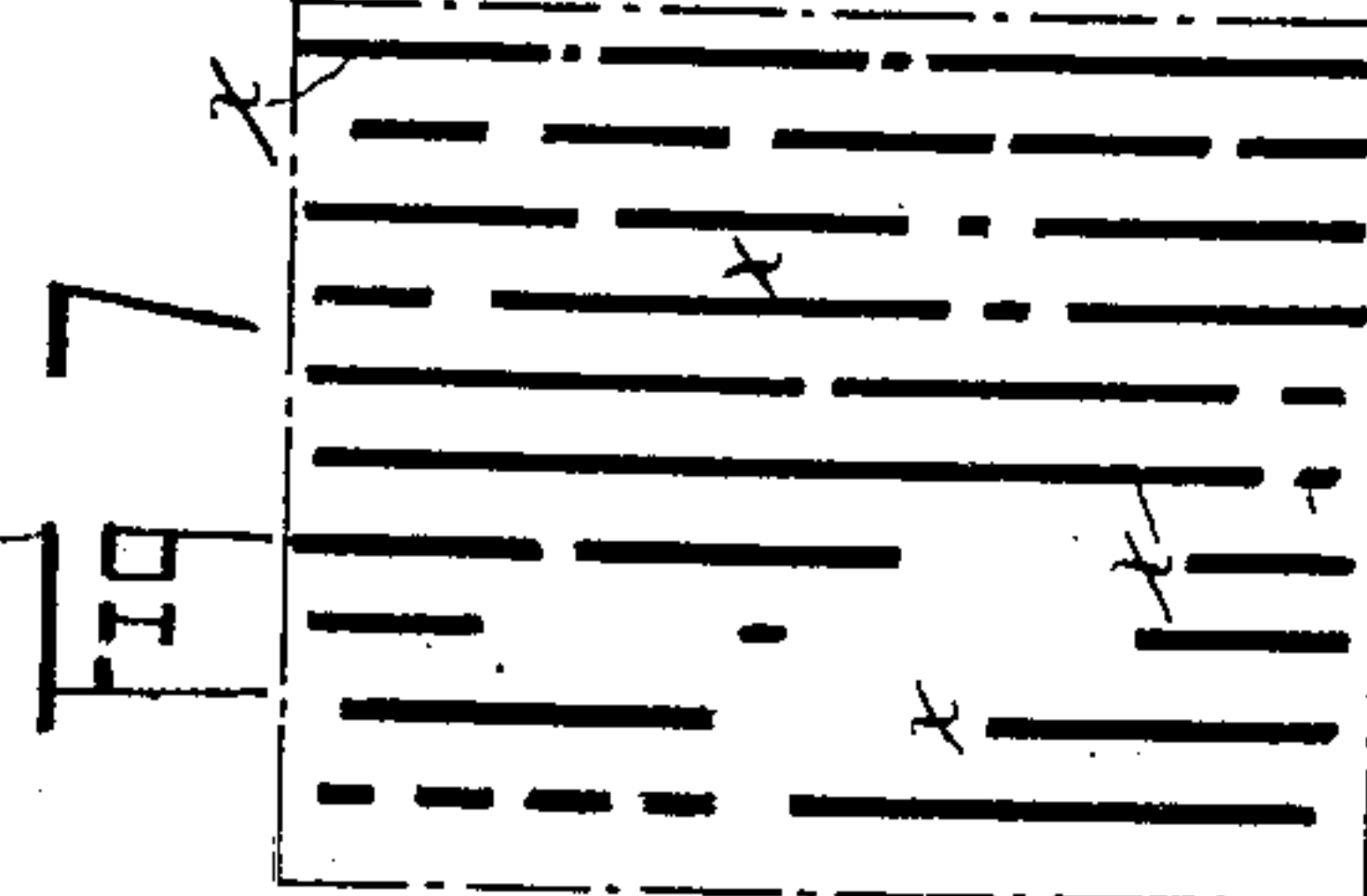
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WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM LANGENFELD, OF HALBUR, IOWA.

COMPOSITE MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 561,004, dated May 26, 1896.

Application filed July 8, 1895. Serial No. 555,286. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LANGENFELD, of Halbur, in the county of Carroll and State of Iowa, have invented a new and Improved Composite Musical Instrument, of which the following is a full, clear, and exact description.

This invention relates to a novel musical instrument of the orchestrion type, and has for its object to provide a composite wind instrument which is adapted to mechanically play musical compositions by jointly blowing and moving the keys of a number of different wind instruments, so as to produce musical tones in harmony, the mouthpieces of some of said instruments having vibratile reeds, others being blown by the projection of an air-jet directly into a perforation of the instrument—as, for example, the several instruments comprising the orchestrion may be fifes, flutes, flageolets, clarinets, and oboes, or other large wind instruments having reeds where the wind is introduced to produce musical tones—the wind for blowing all the different instruments in concert being supplied by bellows and the keys of the several instruments actuated in proper time by a longitudinally-moved flexible sheet having projections at proper intervals on its surface which engage and rock levers that are connected with the keys and valves of the different instruments.

The invention consists in the construction and combination of parts, as is hereinafter described, and indicated in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side view of the composite musical instrument substantially on the line 1 1 in Figs. 2 and 3. Fig. 2 is a transverse sectional view taken substantially on the line 2 2 in Fig. 1. Fig. 3 is a transverse sectional view of the main portion of the instrument essentially on the line 3 3 in Fig. 1. Fig. 4 is a transverse sectional view substantially on the line 4 4 in Fig. 1. Fig. 5 is a detached and enlarged longitudinal sectional view of the mouthpiece of a large reed instrument, showing the preferred means for graduating pressure on the reed to simulate the ac-

tion of the human lips in blowing such an instrument. Fig. 6 is an end elevation in part of the composite musical instrument, a portion of its case being removed to expose working parts seen in direction of arrow 6 in Fig. 1; and Fig. 7 is a lower side view of a portion of a flexible sheet, having series of projections on it for actuating portions of the composite musical instrument when said sheet is longitudinally moved.

A preferably rectangular case 10 is provided of sufficient capacity to hold in relative positions the different musical wind instruments that are to be blown in concert, the working mechanism for said instruments being also contained in operative position, as will be hereinafter described. The case 10 is furnished with a hinged lid 10^a, that is preferably given an upward swell or arched form, as shown in Figs. 2 and 3, and the lid is hinged to the case along one side edge of the latter.

An upright transverse partition 11 is erected in the case 10 at a suitable distance from what may be regarded as the front end wall of the case, and two parallel-spaced and horizontal division-walls 12 13 are introduced below the vertical center of the case, as clearly shown in Fig. 1. In the space between the wall 12 and bottom wall of the case 10 a wind-bellows is located, and for efficiency in service it is preferred to construct the bellows in two sections that are joined endwise; but a single bellows may be used. To economize space and simplify the construction of the two-part bellows, the bottom 14 of the same is made in one piece, and the partition-wall 12 is utilized for the top of the bellows. The folding leather portion of the bellows is joined to the top and bottom 12 14 in the usual manner, and the bottom 14 is supported to rock endwise on pivots seated in brackets 15 or by other means.

Valves 16 are introduced in the bottom of the two-part bellows, so as to admit air at each side of a central partition 17, (shown in dotted lines in Fig. 1,) and in the top 12 similar valves are located for the escape of air into a receiver 18, the valves being of the ordinary form. The receiver 18 consists of a collapsible receptacle having a flexible body attached to the top 12 of the bellows at its lower edge, and fastened at its upper edge

to the weighty cap-plate 19, forming the top of the receiver. A safety-valve 20 is located in the cap-plate 19, and the receiver is so proportioned in dimensions that when it is distended to nearly its maximum capacity the safety-valve will be opened, if an excess of air is introduced, by the impact of said valve on a depending finger 21, formed on or attached to the under side of the horizontal division-wall 13, as clearly indicated in Figs. 1 and 4.

Above the division-wall 13, and adjacent to the upright partition 11, there is a wind-chest 22 introduced, which is of considerably less height than the space afforded between the wall 13 and upper edge of the case 10. One wall 22^a of the chest, which is parallel with and farthest removed from the upright partition 11, is upwardly extended nearly the height of the case 10 above the horizontal wall 13. From the receiver 18 an air-conducting pipe 18^a extends to the chest 22, for conveyance of air under pressure thereto, and, as shown, the double bellows is provided with an arm 23, which projects through a vertical slot in the partition 11 to be vibrated by means which will be hereinafter described.

In the main compartment of the case 10, above the horizontal wall 13, different musical wind instruments are located, and supported by cross-bars or other means. Any desired number of said instruments may be supplied within the capacity of the case 10, and for convenience in arranging other working parts these may be advantageously placed in horizontal rows.

To illustrate the construction of the composite musical instrument, four different wind instruments have been selected, and these are represented in a horizontal row, suitably spaced apart in Fig. 4, 24 indicating a flute, 25 an oboe, 26 a clarinet, and 27 a flageolet, all of said instruments excepting the flute having a reed strip in the mouthpiece or end for induction of air. The end portions of the wind instruments shown that receive air are suitably shaped for engaging with the upright wall 22^a and pass through perforations in the wall 22^b, that is secured in the wind-chest substantially parallel with the wall 22^a, as shown in Fig. 1.

If a flute (indicated at 24) is supplied as one of the set of instruments, air should be conducted to the usual mouth-orifice *a* by means of a tubular blowpipe 24^a, that enters the wind-chest and is thus adapted to convey a blast of air to the mouth-orifice, the blowpipe being properly bent and arranged to project the air-jet in a correct manner for producing clear musical tones with the flute.

The oboe, that is indicated at 25 in Figs. 1 and 3, being a large wind instrument usually furnished with a return-bent bell portion and a reed tongue-piece at the air-receiving end of the main portion of the instrument, is selected to indicate the preferred means for the automatic mechanical control of the reed

tongue-piece, which device can be advantageously used for graduating pressure on the reed, and thus simulate the action of the human lips when reed instruments are blown in the ordinary way, the lip action of the performer being resorted to for modulating tone and producing artistic gradations of sound while executing music with such an instrument.

Referring to Figs. 1 and 5, where the air-receiving end of the oboe 25 is shown, it will be seen that the barrel of the "mouthpiece," as said part of the instrument is for convenience designated, has a spring-pressed valve *b*, that closes the passage for air from the chest 22 into the body of the instrument. The said valve *b*, that is normally held closed by its spring *b'*, is opened at correct intervals of time by mechanism which will be hereinafter described, and it may here be mentioned that the other instruments of the set which are to be played in concert have each such an air-induction valve *b*, as shown clearly in Fig. 2.

It is essential in the mechanical rendition of music with wind instruments that means be supplied for critically graduating the volume of air introduced at the mouthpieces of the same, and as the valves *b*, which are flap-valves, will not so control the pressure of air it is preferred to provide supplementary slide-valves *c* for said purpose. The valves *c*, that are supplied one for each wind instrument, are of similar form and are arranged in like manner as the one shown in Figs. 1 and 5, so that the description of the one illustrated will answer for all. Each valve *c* consists, essentially, of a slide-block held in a vertical groove or channel formed to receive it in the mouthpiece-body, and is vertically reciprocated to graduate the size of the air-inlet leading to the chamber of the mouthpiece above which the tongue-piece or reed *d* is situated. The valves *c* of all the instruments are operated by the reciprocation of an upright rod *c'*, attached to each one, these rods receiving motion from other mechanism, which will presently be described.

The reed *d* for each reed instrument is fastened at one end to the wall of the chamber it occupies and has its front end located, as usual, over a transverse wall of said chamber of the mouthpiece, so that a blast of air will produce a resonant singing sound, which in each instrument is controlled in regard to volume and range or musical compass by suitable keys that are in correct time automatically actuated for opening or closing them by devices that will be described in their proper order.

The device for controlling the vibration of the tongue-piece or reed *d* in each of the reed instruments, which in the present construction of the composite musical instrument are represented by the oboe 25 and clarinet 26, as has been already mentioned, is clearly shown in Figs. 1, 3, and 5, and essentially comprises an upright presser-rod *e*, supported

to slide on the vertical wall 22^a by a bracket-arm or other means. The lower end of the rod *e* presses on a cushion-piece *f*, that is rendered longitudinally adjustable by the connection of its rear end with an upright arm working in a slot in the top wall of the mouthpiece-chamber, an adjusting-screw *g*, that swivels at its rear end in the upper end of said arm and has threaded engagement with a fixed nut on the mouthpiece, serving to move the cushion toward the free end of the reed *d* or retract it, as may be necessary, it being evident that if the cushion is forwardly adjusted and then pressed upon by the rod *e* the vibration of the reed will be changed in degree, so as to permit an alteration in tone, making the same higher or lower, as may be necessary, for the correct rendition of a musical composition that is being executed on the composite musical instrument.

The upper ends of the rods *e*, as shown in Fig. 3, are each pressed upon by a limb that is a horizontal projection on the rocking lever *h*, which is slidably supported on the bracket-box *i*, secured on the upright wall 22^a. The boxes *i* and levers *h*, which are substantially alike for each instrument 25 26, have such a relative position with regard to the reeds of said instruments that when the upper ends of the levers are moved a limited degree in direction of an adjacent arrow in Fig. 3 the rods *e* will be correspondingly depressed and the vibration of the reeds or tongue-pieces controlled thereby. It will be seen that a lateral adjusting-rod *m* is extended from each lever *h*, passing through the side of the case 10, and having a nut *n* on the threaded projecting portion so sustained in brackets *o* that the rotation of either nut will slide the attached arm on the bracket-box, and thus adapt the limb of the lever to exert more or less pressure on the rod *e*, with which it is in contact.

The instruments 24, 25, 26, and 27 have the usual number of keyholes provided for each, with keyes therefor and means to automatically move said keys so as to open in correct time appropriate keyholes in each instrument for the proper execution of music to be played simultaneously on all the instruments mentioned. To this end a correct number of pivoted levers 28 are provided, which are preferably hung on the same pintle-rod 29, that is horizontally supported at its ends by engagement with a transverse wall 30 and a bracket-arm 31, or in any other way that may be preferred.

The levers 28 may be spaced apart by washers, as shown in Fig. 1, and at their lower ends have lateral limbs 28^a, as shown in Figs. 1 and 4, each of said limbs being furnished with a depending yoke 28^b, that loosely embraces the body of an appropriate instrument, and the yokes are so elongated that when the levers they are attached to are rocked the yokes will be longitudinally moved. The yokes 28^b are so relatively positioned that a

cushion or pad on the inner surface of each yoke may, by a proper movement of its actuating-lever 28, be pressed over the keyhole in the instrument it is to cover, and this disposition of parts is the same for all the keyholes in the several instruments. Each lever 28 is upwardly extended above the pintle-rod 29 of sufficient length to locate its free upper end near the upper edge of the case 10, said end portions of the several levers passing loosely through spaced transverse slots formed to receive them in what may be termed a "keyboard" 32.

The keyboard 32 extends from the upper part of the transverse wall 30 to the similar partition-wall 11 and is thereto secured, and it will be noticed in Fig. 1 that the upper extremities of the levers 28 are all slightly projected above the keyboard.

The spring-pressed and normally-closed air-controlling valves *b*, which are seated over the air-inlet ends of the mouthpieces on the instruments 24, 25, 26, and 27, are each furnished with a link *p*, that is pivoted at its lower end on the flap-valve it is to move and passes through the upper wall of the wind-chest 22, loosely engaging a suitable packing device, the upper end of each link being pivoted to an end of an angle-lever *r*, that is supported to rock on the top wall of the chest. The other member of each angle-lever *r*, and which is shown as upwardly projected in Fig. 2, is jointed to one end of a link *s*, that in a like manner is jointed to the lower end of an angle-lever *t*, all of said angle-levers being preferably pivoted on a single pintle-rod *u*, which is supported at its ends in or on the upright transverse walls 11 and 22^a, spacing-washers intervening each adjacent pair of levers to hold them properly separated.

In order to arrange the levers *t* in the relative position shown and described, it is necessary that all of the links *p* be jointed, as at *p'*, and have their upper members bent so that they may respectively connect with the lower members of the angle-levers *r*, as best shown in Fig. 1, where some of the links appear broken and laterally extended at their lower ends to adapt them all to connect with the flap-valves *b*, that are all located in the same vertical plane.

The valves *c* and their upright rods *c'* have a loose connection formed at the upper ends of the latter with bell-cranks *c''* and upright levers *v*, the latter being so formed near their lower ends that they may be respectively pivoted by said ends to the upright rods named, and, as shown in Fig. 1, the levers *v* are supported to rock on the pintle-rod *u* along with the levers *t*, but nearer the partition-wall 22^a. The pintle-rod *u* is preferably extended rearwardly through the partition 22^a, and on said extension of the rod two angle-levers *h'* are mounted to rock, the lower ends of said levers having a loose bearing on the upper end portions of the angle-levers *h*, the upper mem-

bers of the latter being suitably inclined and shaped to receive the extremities of the levers h' , as represented in Figs. 1 and 3. The angle-levers h are both spring-pressed, as at h^2 , so as to hold them in assured contact with the lower limbs of the angle-levers h' , and the rods e are furnished with heads that are engaged by weak springs e' , which are introduced between the bracket-supports of the rods and the said heads, as indicated in Fig. 3, this provision serving to keep the rods and limbs of the levers h in assured contact.

The springs b' of the flap-valves b , which hold them normally closed, prevent the accidental vibration of the levers t , and, as shown in Fig. 2, all said levers have their upper ends into contact with the same ends of the slots in the keyboard 32, through which they pass and project above the keyboard substantially in alinement with the upper ends of the levers 28.

When the instrument is not in operation, the springs h^2 , that press the angle-levers h toward the levers h' , hold the upper ends of the latter in contact with the ends of the slots they occupy in the keyboard 32 and in alinement with the levers t . It will be seen in Fig. 4 that a spring 28^c is projected down from the keyboard 32 in contact with the edge of the lever 28, and this provision is made for all of said levers. The lower ends of said springs 28^c by their force tend to hold the yokes 28^b on the lower ends of the levers 28 in such relative positions opposite the keyholes in the instruments that such keyholes will all be closed, which is their normal condition. When the composite musical instrument is at rest, all the levers 28 will, by means of the springs 28^c , be held at the same end of the slots in the keyboard 32, so that normally the upper extremities of the levers 28 and the other levers h' and t will be alined at like ends of the slots in the keyboard 32.

A flexible sheet 33 is provided for actuating the angle-levers of the flap-valves and slide-valves and also for rocking the levers 28 to open the keyholes in the wind instruments 24, 25, 26, and 27 at correct intervals of time. Said sheet may be of any suitable material, and has properly-arranged projections x formed on its surface which is nearest to the upper ends of the levers 28, h' , and t when arranged for service. The flexible sheet (shown in part in Fig. 7) has the projections x disposed in spaced rows, the distance between which is equal to the spaces between the upper ends of adjacent levers 28, h' , and t , so that if the sheet is moved close to the ends of said levers and the projections on it made to successively bear on and rock the levers and hold them rocked during such an enforced contact of said projections the keys and valves of the wind instruments will be moved in accord with such an engagement of the projections x with the levers.

The preferred means for supporting and longitudinally moving the flexible sheet 33 is

clearly shown in Figs. 1, 2, and 3, and comprises the following-described parts: The flexible sheet is supported in a close-rolled condition on a roller 34, that is removably supported on brackets depending from the under side of the lid 10^a near one side of the case 10, said roller extending the length of the keyboard 32 and parallel with it. Two main feed-rollers 35 and 36 are journaled in depending brackets 37, that hang from the top of the lid 10^a and are located at each side of the keyboard 32 when the lid is closed.

The rollers 35 36 may be and preferably are faced with slightly elastic material which will adapt them to take hold of the sheet 33 that they are to move, and below each of said rollers other rollers 38 39 are journaled at their ends in the transverse partitions 11 and 30, as indicated in Figs. 1, 2, and 3. The paired rollers 35 38 and 36 39 are so spaced apart in couples that the flexible sheet 33 will be frictionally engaged therewith and drawn between both pairs of rollers if the roller 39 is rotated in direction of the curved arrows in Figs. 2 and 6. The roller 36 is furnished with a friction-pulley 36^a, that is located in the space between the front pendent bracket 37 and front end wall of the lid, and the journal of the roller 39 is also projected toward the front end wall of the case 10 and journaled at its extremity in said wall, as clearly shown in Fig. 1.

A friction-pulley 40 is secured on the forward journal extension of the roller 39, which pulley has driving contact with the upper pulley 36^a, so that a rotation of pulley 40 will cause the rollers 39 and 36 to move toward each other and draw the flexible sheet 33 between them, passing it over the idler-roller 41 and thence out of a slot in the lid of the case 10, as shown in Figs. 2 and 3. A double crank 42 is formed in the forward journal extension of the roller 39 between the pulley 40 and the front end wall of the case 10, and outside of the said wall a crank-handle 43 is formed or secured on the journal extension of the roller 39, affording means for manually operating the feeding-rollers and longitudinally moving the sheet 33.

The arm 23, which projects into the space between the partition 11 and the front wall of the case 10, is connected with the double crank 42 by a rod 44, which has its ends loosely engaged with said crank and the end of the arm, as shown in Fig. 1, this connection of parts adapting the crank-handle 43 to vibrate the arm 23 and pump the bellows in an obvious manner.

There may be any desired number of flexible sheets 33 provided, and each sheet may have its surface projections x arranged to correctly move the key-yokes 28^b , so as to play one or more musical compositions consecutively, and it will be evident that the act of turning the crank-handle 43 will so move all parts of the composite musical instrument that a musical composition represented by

the projections x and their relative arrangement will be correctly executed on said instrument.

It will be apparent that by the removal of one flexible sheet 33 and substitution of another one differently arranged as to its projections x different musical compositions may be successively played with the set of wind instruments blown in concert.

To permit the free escape of sound-waves from the body of the case 10 and lid of the same, a number of slots or other openings are produced therein, as shown in the drawings.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a plurality of musical wind instruments, of means for supplying air to the said instruments for sounding them in concert, valves for admitting the air to the mouthpieces of said instruments, and valves for graduating the influx of air to the instruments, substantially as described.

2. The combination with a plurality of supported musical wind instruments having reed mouthpieces, of a source of air-pressure, means for conveying the air to said mouthpieces to sound the instruments in concert, and a device producing graduated pressure on the reeds, substantially as described.

3. The combination with a plurality of supported musical wind instruments having keyholes, and keys therefor, of means for conveying air to said instruments to sound them in concert, mechanism adapted to automatically operate the keys for producing music, valves for admitting air to the mouthpieces of said instruments, and valves for automatically graduating the influx of air to the said instruments, substantially as described.

4. The combination with a plurality of musical wind instruments having mouthpieces provided with reeds, of means for conveying air to said instruments to sound them in concert, valves for admitting air to the mouthpieces of said instruments, and means for producing graduated pressure on the reeds, substantially as described.

5. The combination with a plurality of musical wind instruments having mouthpieces provided with reeds, of means for supplying air to said instruments to sound them in concert, valves for graduating the influx of air to the instruments, and means for producing graduated pressure on the reeds, substantially as described.

6. The combination with a plurality of musical wind instruments having reed mouthpieces and keyholes and supported in a case, a wind-chest connected with the mouthpieces of said instruments, and an air supply under pressure communicating with the wind-chest, of an automatically-operated set of keys for each instrument which are adapted for simultaneous movement, valves for admitting air to the mouthpieces of said instruments,

and valves for graduating influx of air to the instruments, substantially as described.

7. The combination with a plurality of musical wind instruments supported in a case and having reed mouthpieces and keyholes, a wind-chest connected with the mouthpieces of said instruments, and an air supply under pressure communicating with the wind-chest, of an automatically-operated set of keys for each instrument which are adapted for simultaneous movement, automatically-operated valves for admitting air to said instruments, automatically-operated valves for graduating the influx of air, and a device producing graduated pressure or simulating lip action on the reeds, substantially as described.

8. The combination with a plurality of musical wind instruments having keyholes and mouthpieces provided with tongue-pieces or reeds, of an air supply under pressure for blowing the instruments simultaneously, sets of keys for each instrument adapted for simultaneous automatic movement to produce music, and a device producing graduated pressure or simulating lip action on the reeds, substantially as described.

9. The combination, with a case, a bellows therein, and a wind-chest receiving air under pressure from the bellows, of a plurality of musical wind instruments having mouthpieces furnished with reeds and connected by said mouthpieces with the chest, and a device producing graduated pressure or simulating lip action on the reeds, substantially as described.

10. The combination with a case, a bellows therein, and a wind-chest receiving air under pressure from the bellows, of a plurality of musical wind instruments having mouthpieces furnished with reeds and connected with the wind-chest, an automatically-operated set of keys for each instrument adapted to open the keyholes they normally cover at predetermined intervals of time, and a device producing graduated pressure on the reeds, substantially as shown and described.

11. The combination with a case, a bellows therein, a wind-chest receiving air under pressure from the bellows and means for actuating said bellows, of a plurality of musical wind instruments having mouthpieces supplied with reeds and connected at said mouthpieces with the wind-chest, valves for admitting air to the mouthpieces valves for graduating the influx of air to the instruments, and means for automatically operating all said valves at correct intervals of time, substantially as described.

12. The combination with a case, bellows therein, a wind-chest receiving air under pressure from the bellows, and means for actuating the bellows, of a plurality of musical wind instruments each having its mouthpiece connected with the wind-chest, and each instrument having a series of keyholes, valves admitting air to the mouthpieces of the instruments, valves graduating influx of air to the

instruments, vibratile keys for the keyholes, and mechanism adapted to automatically move in unison the air-controlling valves and the keys of each instrument, substantially as described.

13. The combination with a case, and a device for supplying air under pressure, of a plurality of musical wind instruments having mouthpieces provided with reeds, the said instruments being supported in the case and each having keyholes formed at intervals in its body, means for connecting the wind-supply device with the mouthpieces of the instruments, valves for graduating the flow of air to the instruments, means for producing graduated pressure on the reeds keys for the keyholes in each instrument, said keys having pivoted levers, a movable sheet having projections for moving the key-levers and valves, to produce music when the instruments are blown, and means for moving the sheet over the ends of the key-levers, substantially as described.

14. In a composite musical instrument substantially as described, the reed-controlling device for the mouthpiece of each musical wind instrument, comprising a presser-rod, a pad on the reed, whereon the presser-rod seats, means for longitudinally adjusting the pad on the reed, and mechanism operated by a movable sheet which automatically moves the presser-rod for graduating pressure on the reed, as specified.

15. In a composite musical instrument substantially as described, the reed-controlling mechanism for the mouthpiece of each wind instrument thereof, comprising a longitudinally-adjustable pad on the reed, a screw adapted to move the pad and hold it, an upright presser-rod seated on the pad, a spring-pressed bell-crank lever adapted to bear on the rod when said lever is rocked, an angle-lever the lower end of which contacts with the upper limb of the bell-crank lever, and a movable sheet having projections that are adapted to rock the angle-lever and cause the graduated depression of the presser-rod, as specified.

16. In a composite musical instrument substantially as described, the wind-controlling device for each musical wind instrument

thereof, comprising the flap-valve at the inlet end of the mouthpiece, the vertically-slidable gate-valve in said mouthpiece, links and angle-levers connected with said valves, and a movable sheet having projections that contact with the angle-levers and when longitudinally moved rock said levers, correspondingly moving the valves, as specified.

17. In a composite musical instrument, the combination with a case having a lid, a bellows in the case, a wind-chest, and a plurality of musical wind instruments having reeds in the mouthpieces thereof and all the instruments having keyholes, the said mouthpieces being connected with the wind-chest, of valves admitting the air-blast to the mouthpieces, valves graduating the influx of air to the instruments, keys for the keyholes having pivoted levers, bell-cranks and links connected with the valves, a slotted keyboard loosely receiving the upper ends of the key-levers and bell-crank levers, and a longitudinally-movable sheet having projections adapted to contact with and rock the bell-crank levers and key-levers operating the said valves, and the keys of the sets of instruments, substantially as set forth.

18. In a composite musical instrument, the combination with a case, a bellows therein, a plurality of musical wind instruments supported in the case above the bellows and all having keyholes, a wind-chest receiving air blown by the bellows and transmitting the same under pressure to mouthpieces of the wind instruments, spring-closed valves controlling the air passing from the wind-chest to the mouthpieces, spring-pressed key-levers having yokes, and pads on said yokes adapted to normally close the keyholes, links and angle-levers adapted to move the air-controlling valves, a roller-supported flexible sheet having projections which contact with the upper ends of the key-levers and angle-levers, and means for rotating said rollers and longitudinally moving the sheet, as specified.

WILLIAM LANGENFELD.

Witnesses:

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CHARLES WALLERSCHIED.