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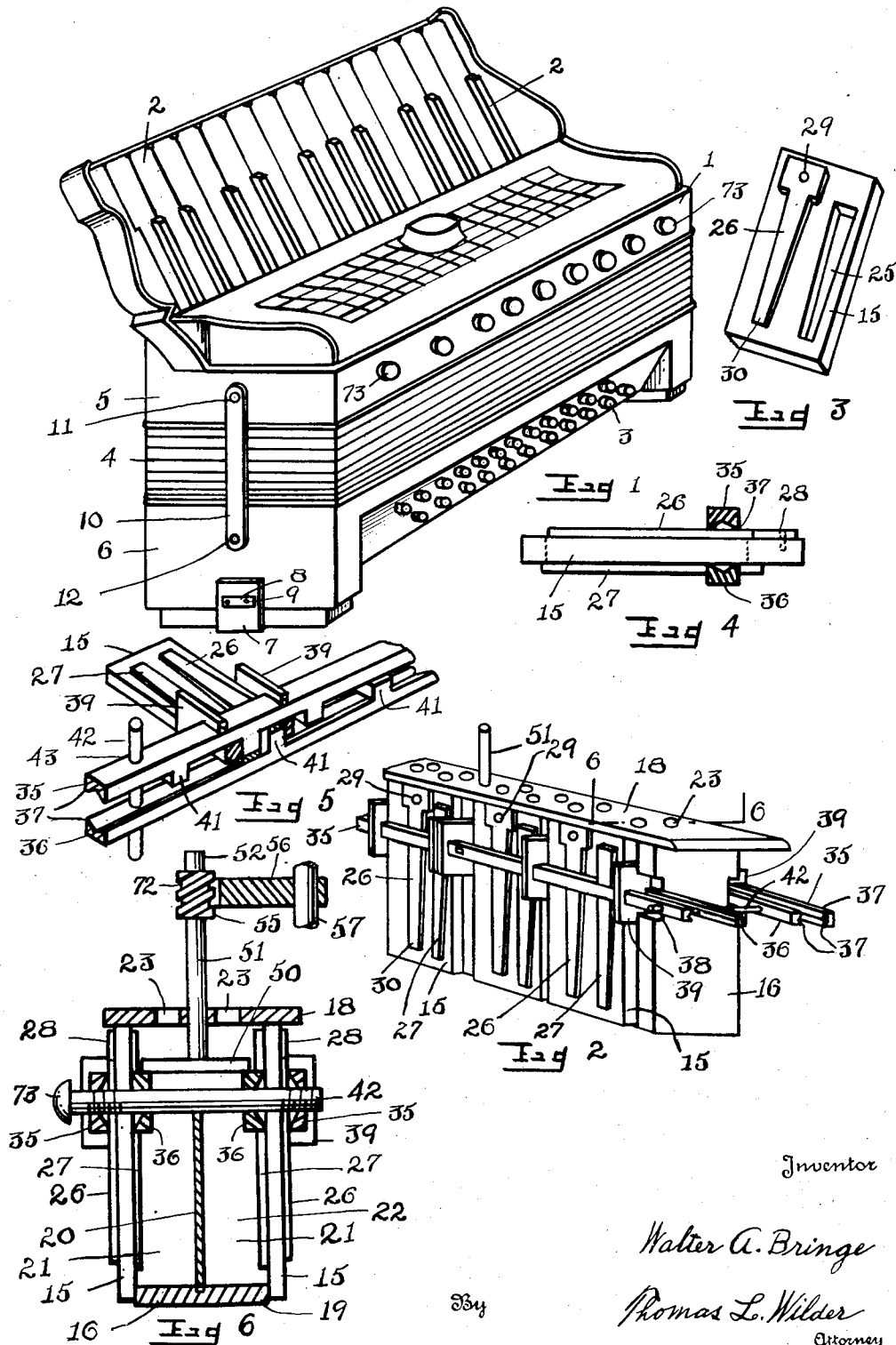
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TUNABLE REED FOR ACCORDIONS

Filed Oct. 23, 1937

2 Sheets-Sheet 1



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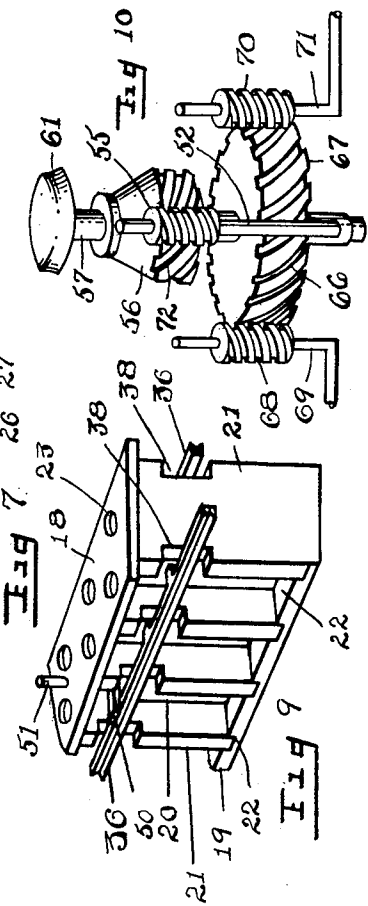
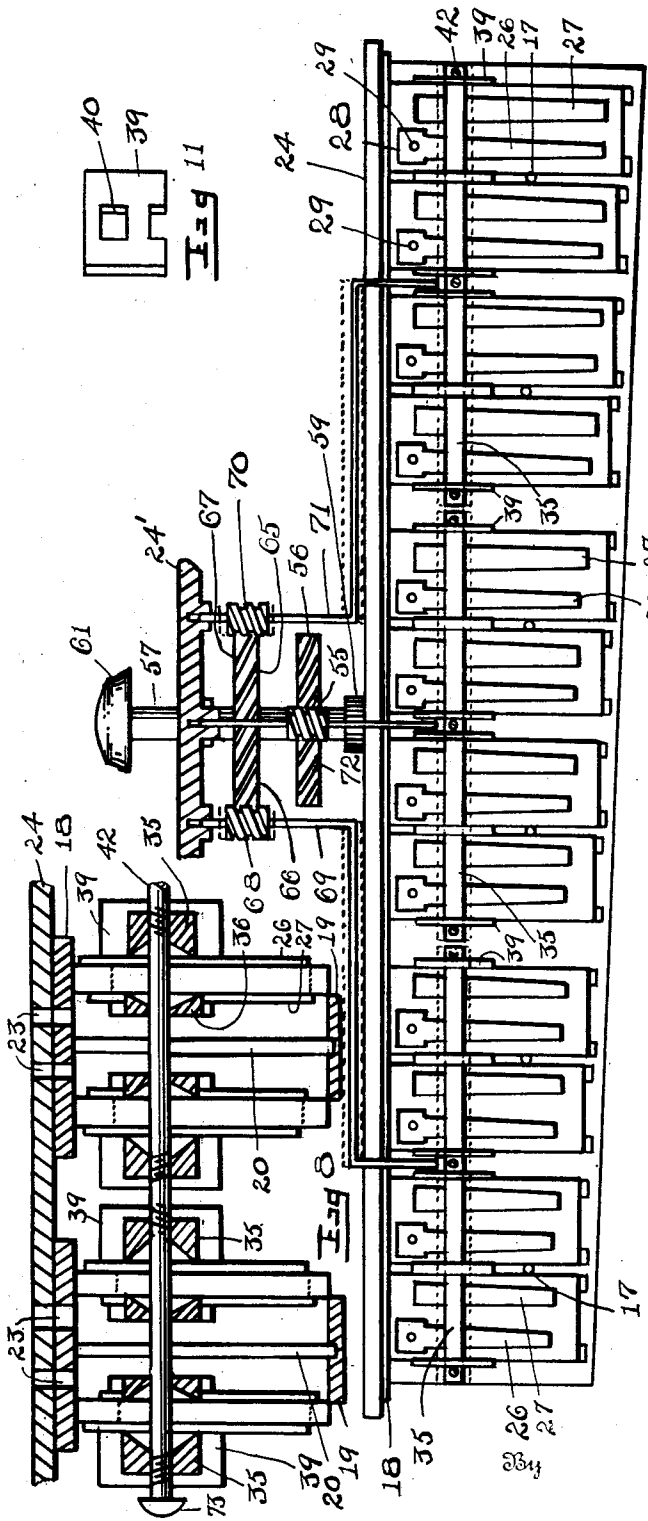
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UNITED STATES PATENT OFFICE

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TUNABLE REED FOR ACCORDIONS

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4 Claims. (Cl. 84-376)

My invention relates to a tunable reed for accordions and I declare the following to be a full, clear, concise and exact description thereof sufficient to enable anyone skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings in which like reference characters refer to like parts throughout the specification.

The object of the invention is to provide a reed for an accordion which can be adjusted to change the pitch of the sound from a standard pitch of A 440 to one half tone below said standard or one fourth tone above the same.

The means for adjusting the change in pitch will eliminate the filing of the reeds as heretofore for accomplishing the same purpose.

Moreover, the change in pitch by the present device will allow the operator of the accordion to change the same at will. Heretofore, the reeds were tuned to pitch by filing the same at center thereof for lower pitch and at the vibrating end for a higher pitch by the manufacturer when assembling the accordion. Due to the uneven thickness of the reed after filing the same it would not produce the true tone. The present invention overcomes this defect in filing for tone purposes by the use of clamping members which can be adjusted along said reeds to govern the amount of vibration thereof.

The object of the invention will be understood by referring to the drawings in which,

Fig. 1 is a perspective view of an accordion having a tunable reed installed therein.

Fig. 2 is a perspective view of one of the reed blocks showing the means for adjusting the pitch of the reeds, parts being in section and parts being broken away.

Fig. 3 is a detail view showing a perspective of one of the reed frames and a reed applied thereto.

Fig. 4 is a detail view showing a side elevation of one of the reed frames and other parts in section.

Fig. 5 is a detail view showing a perspective of one of the reed frames with the reed adjusting bars mounted thereon, parts being in section and parts being broken away.

Fig. 6 is a section taken on the line 6, 6 of Fig. 2.

Fig. 7 is an elevational view of one of the reed blocks showing the reed frames mounted thereto and the mechanism for adjusting the pitch of the reeds applied thereto, parts being broken away and parts in section.

Fig. 8 is an enlarged view showing a transverse section through two of the reed blocks.

Fig. 9 is a detail view showing a perspective of one of the reed blocks and part of the reed adjusting means applied thereto, parts being broken away and parts in section.

Fig. 10 is an enlarged detail view showing a perspective of the mechanism for adjusting certain bars that control the pitch of the reeds employed, parts being broken away.

Fig. 11 is a detail view showing a perspective of a plate employed.

Referring more particularly to the drawings the casing of an accordion is represented at 1 and comprises the usual piano keys 2, base buttons 3, bellows 4 disposed between parts 5 and 6 of the casing, a base strap 7 fastened at each end by plates 8 and rivets 9 to the casing 1 and under which the player slips his arm to aid in holding the accordion.

Bellows straps 10, 10 are fastened on each end of the casing 1, whereby the hold parts 5 and 6 and bellows 4 in nonoperating position. To this end each of the straps 10, 10 is fastened permanently at 11 to the part 5 of casing 1 and the opposite end is secured by a glove fastener at 12 to part 6 of casing 1.

There is also the usual reed frames 15 that are secured to a reed block 16 in any suitable manner as by small nails 17 and wax disposed about the edges.

Reed block 16 is made with a top part 18, lower part 19, a wall or partition 20 which divides the block longitudinally and a plurality of cross partitions 21 which form a plurality of chambers 22 on each side of the central wall 20. Apertures 23 are made in top part 18 to allow for the compressed air admission to the respective chamber therebeneath.

Each of the reed frames 15 is made of metal and rectangular in form. A plurality of these are mounted to reed block 16 to conform to the number of notes in the accordion. Furthermore, each frame 15 is a little longer in size than its next adjacent frame 15, whereby to conform to the notes of the several scales. Each accordion has also a plurality of reed blocks 16 which are suspended within casing 1 from top part 24 in the usual manner. Moreover each frame 15 has cut therethrough two open recesses 25, 25. Said recesses 25, 25 taper slightly towards one end and are disposed alongside to each other.

Each of the recesses 25 is covered on one side by a reed 26 and on the other by a leather strip 27. Reed 26 is of thin metal and has an en-

larged end 28. A pin or rivet 29 is projected through end 28, whereby to bolt it to frame 15. Its vibrating end 30 will fit within the contiguous part of recess 25 therebeneath, whereby it can vibrate in and out of its respective recess as the air strikes thereagainst. Leather strip 27 is parted and its parts glued or otherwise fastened to one of the clamping bars 35 hereinafter mentioned and moves therewith although it is sufficiently large to cover recess 25 therebeneath to whatever position bar 29 moves. It will appear, therefore, that a reed 26 lies alongside a leather strip 27 on the same side of frame 15; that there are two reeds 26 and two leather strips 27 to each frame 15, although alternating with one another on opposite sides of frame 15.

The parts that are novel embody the means for controlling the amplitude of vibration of each reed 26. This means comprises two clamping bars 35, 36 disposed on opposite sides of the several reed frames 15 and running transversely across the vibrating parts of the reeds 26. The movement of said clamping bars 35, 36 longitudinally with respect to several reeds 26 will govern the amplitude of vibration thereof. Upper clamping bar 35 is made a little thicker than under bar 36 to give strength to the part where most needed. Furthermore, each of the clamping bars 35, 36 has a longitudinally V shaped groove cut therein, whereby to provide knife edges 37 for contacting reeds 26. Knife edges 37 give a more sensitive touch and will anticipate any unevenness that might occur in a flat surface if such were used on the contacting surfaces of bars 35, 36.

Elongated notches or recesses 38 are made in the edges of cross partitions 21 of reed block 16, whereby to allow for the transverse movement of under bar 36 of clamping bars 35, 36. In order to cover said recesses 38, whereby air will be unable to escape therepast, plates 39 are mounted on bar 35 and move therewith. To this end rectangular apertures 40 are made in said plates 39 for the projection and close fitting of bar 35. Furthermore, said plates are disposed contiguous to the lateral sides of each reed frame 15 and extend therebelow and laterally sufficiently far to overlap recesses 38 in whatever position clamping bars 35 and 36 assume.

The means for sliding clamp bars 35, 36 in predetermined position longitudinally relative to the several frames 15 contemplates lugs 41 formed integral with said bars 35, 36. Lugs 41 project in each instance into one of the adjacent recesses 25 of each reed frame 15 and on the side thereto opposite the location of reed 26, whereby said recesses 25 will serve as guide grooves when moving clamping bars 35 and 36 relative to frames 15. This longitudinal movement of bars 35, 36 will control as above stated, the amplitude of vibration of the several reeds 26 or pitch. When moved towards the free ends of reeds 26, the pitch will be higher and conversely when moved toward the secured end the pitch will be lower.

The means for holding bars 35, 36 in clamping position with frames 15 therebetween embodies rods 42. Each of the rods 42 is projected through the cooperating clamping bars 35, 36 of each reed frame 15. Three such rods 42 located at equal distances apart are used for each set of clamping bars 35, 36. The number of sets of clamping bars 35, 36 corresponds to the number of octaves of notes in the accordion.

Said rods 42 are threaded at 43 to cooperate

with the threads of bar 35, whereas they have a smooth or turning fit with bar 36 whereby to move bar 35 towards or away from the cooperating clamping bar 36 which is stationary relative thereto.

Moreover, said rods 42 extend sufficiently far to project through the several reed blocks corresponding to 16 which are used in an accordion and suspended from part 18 as heretofore mentioned.

The means for adjusting each set of clamping bars 35, 36 relative to reeds 26 embodies a cross bar 50 which is welded or otherwise secured to the upper edges near the center of the inner clamping bars 36, 36, of each set. A vertically disposed rod 51 is fastened securely at its lower end to cross bar 50 by engaging with a tight fit an aperture therein. The upper part of rod 51 is bent at the proper angles to bring its opposite end 52 adjacent a central control mechanism hereinafter described.

The cross partitions 21 on reed block 16 are disposed in such manner that there will be left ample space therebetween for the disposition and vertical movement of cross bar 50. Furthermore, the central partition 20 common to all the chambers 22 is cut away for the location and vertical movement of said cross bar 50.

Referring again to end 52 of rod 51, a worm gear 55 is mounted tightly thereto and meshes with a sector or fan shaped worm gear 56 mounted to turn with master shaft 57 which has a bearing at 59 in upper part 24 of casing 1. Furthermore, the extended part of upper end 52 of rod 51 has a bearing in upper part 24 of casing 1. A knob 61 is fixed to turn shaft 57.

When turning knob 61 and, therefore, shaft 57 to the right worm gear 55 and its intermediately connected clamping bars 35, 36 will be elevated to lower the pitch of the reeds 26 and vice versa when turned to the left.

The means for compensating for the difference in lengths of reed frame 15, whereby all said reeds 15 will be simultaneously tuned to the same pitch contemplates the use of a worm gear 65 mounted to turn on master shaft 57. Worm gear 65 has threads 66 of one size on its peripheral edge covering one half the surface thereof and of a larger size 67 on the other half. Worm threads 66 will mesh with corresponding worm gear 68 to move with rod 69, whereby to effect the least vertical movement of clamping bars 35, 36 at the left shown in Fig. 7. Worm threads 67 will mesh with worm gear 70 fastened to move with rod 71, whereby to effect the maximum movement of bars 35, 36 at the right in Fig. 7, whereas the worm threads 72 on sector gear 56 will be intermediate in size between threads 66 and 67 to engage said worm gear 55 to effect a mean vertical movement of the middle set of bars 35, 36 shown in Fig. 7.

In operation, the user of the accordion will be enabled to tune the instrument by first turning knobs 73 which are fastened to the ends of rods 42 that project beyond casing 1. The turning of rods 42 will move clamping rod 35 away from its stationary cooperating rod 36, whereby to allow for the vertical movement of the set of bars 35, 36. Turning all nine of said knobs 73 will release the three sets, whereupon the central control knob 61 will be turned to the right or left in accordance with the desired pitch. The turning of knob 61 will, as heretofore explained, elevate or lower simultaneously the several sets of clamping bars 35, 36 across the reeds 26. By 75

turning knob 61 to the right the several sets 35, 36 will be elevated to lower the pitch of reeds 26, whereas turning knob 61 to the left, the several sets of clamping bars 35, 36 will be lowered to 5 higher the pitch.

After tuning the reeds 26 by turning knob 61 in the proper direction, all of the knobs 71 on rods 47 will be turned to move the several clamping bars 35 toward stationary cooperating bars 36 to 10 clamp and hold the said bars to adjusted position.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is as follows:

1. In a tunable reed for accordions, clamping 15 members comprising bars movable relative to a plurality of the reeds of said accordion, a worm gear having different sized threads on its peripheral edge, members connecting said clamping members with said worm gear, whereby the turning 20 of said worm gear will move said clamping members relative to said reeds to determine the pitch thereof.

2. In a tunable reed for accordions, reeds, bars 25 having lugs thereon for engaging said reeds, members having slots in which said lugs move, other members having guide groove in which one of said bars moves, screw bolts for holding said bars in predetermined relation to each other, worm gears mounted on said accordion, members 30 connecting said bars with said worm gears, other

worm gears mounted on said last named members for engaging said first named worm gears and a shaft supporting certain of said worm gears, whereby the turning of said shaft will turn said worm gears to move said bars to determine the 5 pitch of said accordion.

3. In a tunable reed for accordions, reeds, bars having knife edges thereon for engaging said reeds, members having slots in which said bars will move worm gears mounted on said accordion, 10 rods connecting said worm gears with said bars, other worm gears meshing with said first named gears, a shaft supporting said last named worm gears and said last named worm gears having threads of different sizes, whereby the said shaft 15 will move said bars relative distances to determine the pitch of said accordion.

4. In a tunable reed for accordions, a clamping member comprising bars, a screw member for holding said bars relative to said reeds, a worm 20 gear having threads of different sizes thereon, other worm gears meshing with said first named worm gear, rods connecting said last named worm gears with said clamping bars for moving thereof, and a shaft supporting said first named worm 25 gear, whereby the turning of said shaft will move said clamping bars relative to said reeds to vary the pitch thereof.

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