

J. RICHMOND.
CHIME PIANO.
APPLICATION FILED FEB. 13, 1911.

1,016,094.

Patented Jan. 30, 1912.

2 SHEETS—SHEET 1.

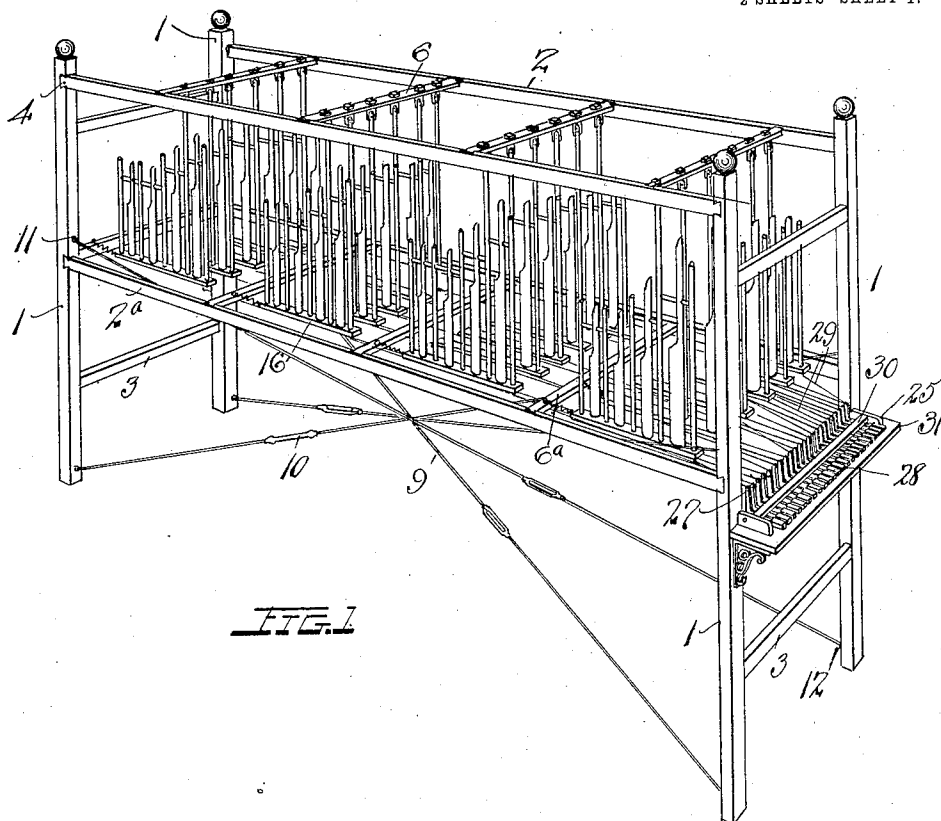


FIG. 1

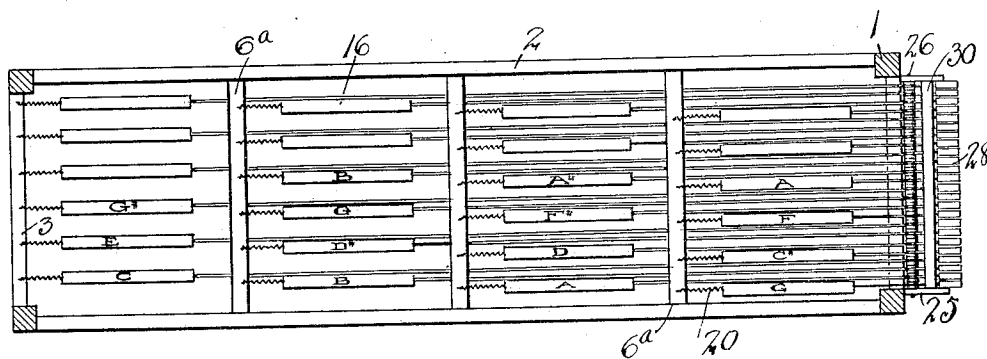


FIG. 2

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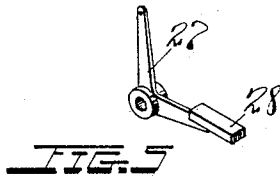
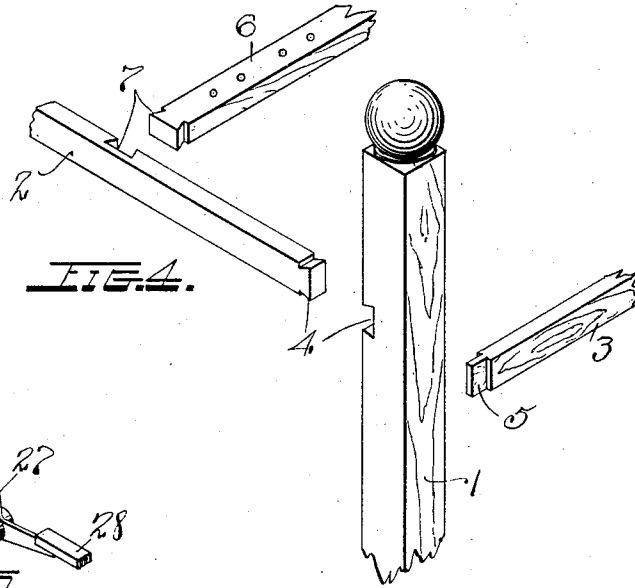
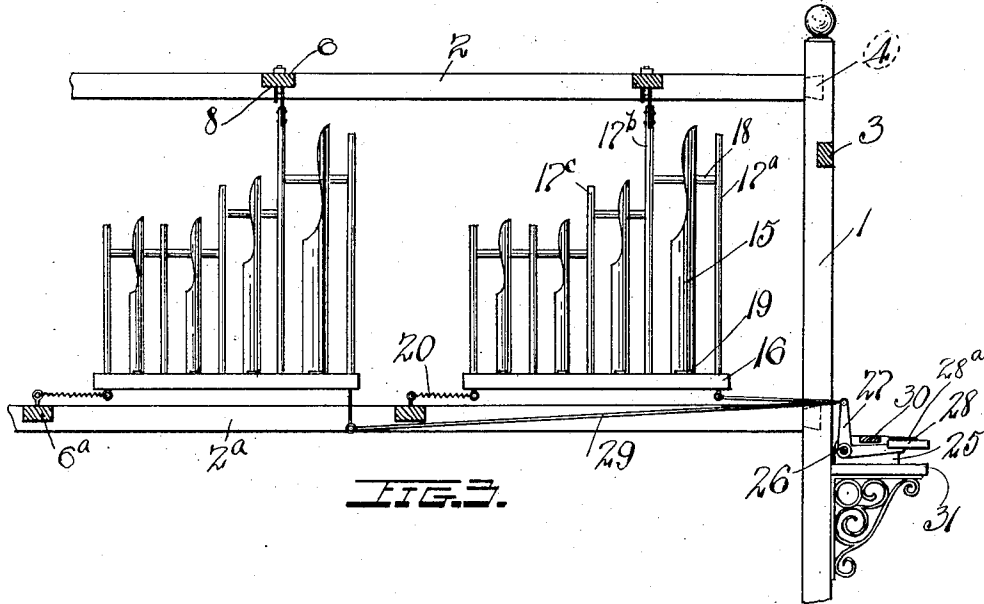
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Witnesses

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CHIME-PIANO.

1,016,094.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES RICHMOND, a subject of the King of Great Britain, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Chime-Pianos, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to musical instruments and particularly to that class of instruments known as chimes.

The objects of the invention are to provide a very simple, strong and easily dismountable frame work or support for holding the sounding members in position to be sounded, which frame work or support can be very easily and expeditiously taken to pieces and packed into small compass for transportation or storage. Another object of the invention is to provide a device of this character having improved means for actuating the sounding members whereby new, peculiar, and pleasing results may be obtained, and this with less exertion than has heretofore been required in devices of this kind.

One embodiment of my invention is illustrated in the drawings accompanying and forming a part of this specification, in which:

Figure 1 is a perspective view of the complete instrument; Fig. 2 is a cross sectional view of the same taken just above the chime frames and looking downwardly; Fig. 3 is a longitudinal vertical section taken through the front end of the instrument showing the keyboard and the method of connecting the sounding members thereto; Fig. 4 a detail view illustrating the method of connecting together the various parts of the frame; Fig. 5 a perspective view of one of the keys.

Describing the parts by reference characters, the frame of the instrument comprises four vertical corner posts 1 connected together by horizontal side members 2 and 2^a and spaced apart by horizontal end braces 3. The side members are connected to the corner posts by dovetail joints as shown at 4, the rabbeted portions of which are formed in the outside edges of the corner posts and extend therein to a depth only sufficient to bring the outer surface of the side members substantially flush with the surfaces of the posts, while

the connections between the end braces 3 and the corner posts are by means of the simple mortise and tenon joints shown at 5.

In order to hold the side members together transversely of the frame and to prevent the end braces from being drawn out of engagement with the end posts, cross bars 6 and 6^a are provided which are secured to opposite side members 2 and 2^a respectively by means of the dovetail joints shown at 7. The rabbets of these joints extend downwardly from the top surface of the side members for a portion of their depth only, as shown at 8 in Fig. 3, so as to bring the upper surfaces of the cross bars flush with the upper surfaces of the side members and to prevent the cross bars from falling through the frame, thus permitting them to be used as supports for the sounding members hereinafter described.

It is thought that the method of assembling the frame members will be obvious from the foregoing description since the parts are assembled in the order named.

In order to stiffen the frame and prevent racking or warping of the same, diagonal tension members or wires 9 are provided as shown in Fig. 1, each of said wires being provided with a turn-buckle 10 by means of which its tension can be adjusted. The upper end of each wire is preferably connected to the appropriate corner post at a point slightly above the lower side member 2^a as shown at 11 and the lower end thereof is secured near the foot of the diagonally opposite corner post as shown at 12.

The sounding members are illustrated more particularly in Fig. 3 and consist of metallic, resonant tubes 15 mounted in frames which are suspended from the cross bars. In the form which I employ, the frame consists of a base member 16 having a plurality of upright standards 17^a, 17^b, 17^c, etc., carried thereby and connected by transverse pins 18 upon which are hung the sounding tubes 15. These tubes are of substantially quill shape and have apertures in the upper ends thereof through which the pins 18 pass, and have their bifurcated lower ends 19 loosely mounted in slots in the base member 16, as illustrated in the patent to Deagan, granted March 6, 1900, No. 644,817. These tubes are usually made of aluminum, although I do not desire to restrict myself to the use of this metal inasmuch as brass, bell metal, silver, steel or other suitable

metals or alloys may be used within the scope of my invention. I have illustrated four such tubes upon each frame, two of said tubes being tuned in unison and the other tubes making octaves therewith, although it is obvious that other numbers of tubes may be used and that other musical intervals may be adopted. These frames are supported by flexibly connecting one of the upright standards to the cross bars 6 and the tubes are sounded by shaking these frames in a fore and aft direction so as to cause the tubes to rattle about in the recesses in the base members. These sounding units are suspended in banks as shown in Figs. 1 and 2 with their base members parallel to each other and to the side members 2 and substantially in the same horizontal plane. These banks are separated by the cross bars 6^a carried by the lower side members 2^a, and the rear ends of the base members are connected to the adjacent cross bars 6^a by means of springs 20. At the front end of the supporting frame I attach a pair of brackets 25 and through these brackets I pass a horizontal rod or bolt 26. Upon this bolt I sleeve a plurality of bell crank levers 27 equal in number to the sounding units and carrying upon their horizontal arms the flat keys 28. The ends of the other arms of the levers are connected to the base members of the sounding units by means of the trackers 29 so that the depression of each key will draw its attached sounding unit forwardly against the tension of the spring 20 and the release of that key will permit the spring 20 to retract the same. Above the horizontal arms of the bell crank levers and in the rear of the keys 28 I provide a horizontal stop board 30 to limit the upward movement of the keys, and below the keyboard I preferably arrange a horizontal shelf 31.

The units comprising each bank are preferably staggered with reference to those in the adjacent banks, as shown in Fig. 2, so as to set each unit squarely in front of its key and to lessen the interference between the trackers and the sounding units. This construction also assures the reciprocation of the frames in the direction of their length without twisting and side swinging such as would tend to render the action of the tubes irregular and impair their tone.

The musical interval between the different sounding units and therefore between the different keys of the keyboard can be arranged in many different ways, although I prefer to form the same as shown in Fig. 2 according to the usual chromatic scale, omitting the chromatic notes between the intervals of lowest pitch. Such arrangement however, and the number of sounding units to be employed is, however, entirely a matter of personal choice and is not a necessary

part of my invention. The characters carried by the frames in Fig. 2 indicate the arrangement of notes which I prefer to employ since this arrangement brings the frames and keys into regular chromatic relation, and simplifies their assembling. In playing upon this instrument the most pleasing effects are obtained by vibrating the keys rapidly either singly or in combinations to form consonant chords since the effect gained in this manner is more pleasant than that derived from a single depression of the keys and since my arrangement of keys and springs permits a very steady and uniform shaking of the frames. The half notes may obviously be indicated upon the key board by suitably coloring the keys or in any other convenient manner. I prefer, however to form the keys as in the usual piano keyboard with the chromatic keys of less length than the others, as illustrated at 28^a in Fig. 3. If desired, the vertical lever arms 27 of these keys can be made slightly shorter than those of the other keys in order that the frames may be shaken with more uniform violence.

While I have illustrated the resonant members herein as made in the peculiar manner disclosed in the Deagan patent above referred to and have described them as "chimes" it will be understood that I do not propose to be limited to this particular type of resonant member but declare my invention to extend to any type of resonant body which is adapted to be sounded upon shaking provided that the method of supporting and shaking these bodies be that herein disclosed by me. My invention relates to the method of supporting and shaking these bodies and is entirely independent of the forms of the bodies themselves and where I have employed the word "chimes" in my claims I mean any resonant body adapted to be sounded by being shaken excepting as the claims specifically recite the nature and construction of that body. It will, therefore, be understood that, while I have necessarily described my invention in detail, I do not propose to be limited to such details except as the same may be positively included in the claims hereto annexed or may be rendered necessary by the prior state of the art.

Having thus described my invention, what I claim is:

1. In a musical instrument, in combination, a frame having a plurality of resonant members flexibly secured thereto, a keyboard carried by said frame and having keys thereon corresponding to said resonant members, and connections between said keys and said resonant members whereby a movement of each key will serve to shake its corresponding resonant member.

2. In a musical instrument, in combination,

tion, a supporting frame having a plurality of frames flexibly secured thereto, said frames being provided with chimes, a key-board carried by said supporting frame and

5 having a plurality of keys corresponding in number to said frames, and connections between each of said keys and its corresponding chime frame whereby a movement of said key will cause a movement of said frame and sound the chimes carried thereby.

10 3. In a musical instrument, in combination, a supporting frame having a plurality of frames flexibly suspended thereon, said frames being provided with chimes, a key-board carried by said frame and having a plurality of keys corresponding to said frames and connections between each of said keys and its corresponding chime frame whereby a movement of said key will shake said chime frame and sound the chimes carried thereby.

15 4. In a musical instrument, in combination, a supporting frame having a plurality of chime-carrying frames flexibly suspended thereon, chimes mounted on said carrying frame, a plurality of keys carried by said supporting frame and corresponding in number to the chime frames, means connecting each key with its corresponding chime frame whereby a movement of said key will shake said frame and rattle the chimes carried thereby, and yielding means connecting said chime frames and said supporting frame for returning said chime-frames to their original position after actuation by said keys.

20 5. In a musical instrument, the combination, with a supporting frame, of a plurality of carrying frames hung therein in parallel relation to each other and to said supporting frame, resonant members mounted on said carrying frames and adapted to be sounded as said frames are shaken; a key board carried by said supporting frame at the end thereof, means connecting each of said keys with one of said carrying frames for moving the same in the direction of its length, and yielding means opposing such motion and acting to return said carrying frames to their original position after actuation by the keys.

25 6. In a musical instrument, the combination, with a rectangular carrying frame, of a plurality of chime supporting frames hung therein in banks, said carrying frames being parallel with each other and with the length of the supporting frame the frames in each bank being staggered with reference to those in the adjacent banks, resonant members mounted on said carrying frames and adapted to be sounded as said frames are vibrated, a key-board carried by one end of said supporting frame, and having a plurality of keys corresponding in number to said frames and in alinement therewith, and

connections between each of said keys and its corresponding carrying frame whereby a suitable actuation of the key will shake that frame.

70 7. In a musical instrument, in combination, a rectangular frame having supporting posts and horizontal side members between said posts and cross bars connecting said side members, a plurality of chime carrying frames hung from the upper of said cross bars and having their base members in substantially the same plane with each other and with the cross bars connecting the lower pair of side members, chimes carried by said supporting frames and adapted to be sounded as said frames are vibrated, a key board at one end of said frame and having a key operatively connected to each of said chime frames, and a spring connecting each of said chime frames to the adjacent cross bar and yieldingly opposing the action of the corresponding key.

80 8. In a musical instrument, in combination, a rectangular frame having supporting posts and horizontal side members between said posts and cross bars connecting said side members, a plurality of chime carrying frames hung from the upper of said cross bars and having their base members in substantially the same plane with each other and with the cross bars connecting the lower pair of side members, said base members being parallel with each other and with said side members, chimes carried by said supporting frames and adapted to be sounded as said frames are vibrated, a key board at one end of said frame and having a key in alinement with each of said chime frames, a tracker connecting each key with its corresponding chime frame, and a spring connecting each of said chime frames to the adjacent cross bar.

9. In a musical instrument, the combination, with a rectangular supporting frame, of a plurality of carrying frames flexibly supported in parallel relation to each other within said frame, resonant members mounted upon said carrying frames and adapted to be sounded as said frames are shaken, a horizontal rod carried by one end of said supporting frame transverse to said carrying frames, a plurality of bell-crank levers sleeved upon said rod and having horizontal arms provided with keys, said bell crank levers also having vertical arms to each of which one of said carrying frames is connected, and a spring connecting each of said carrying frames to a stationary portion of said supporting frame and yieldingly opposing the action of the corresponding key.

10. In a musical instrument, the combination, with a rectangular supporting frame, of a plurality of carrying frames flexibly supported in parallel relation to each other within said frame, resonant members mount-

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ed upon said carrying frames and adapted to be sounded as said frames are shaken, a horizontal rod carried by one end of said supporting frame transverse to said carrying frames, a plurality of bell-crank levers sleeved upon said rod and having horizontal arms provided with keys, there being a lever for each carrying frame having an upright arm in alinement therewith, a tracker connecting said frame and said arm, and a spring connecting each of said carrying frames to a stationary portion of said supporting frame and yieldingly opposing the action of the corresponding key.

11. In a musical instrument, the combination, with a supporting frame, of a plurality of carrying frames flexibly suspended thereon, resonant members mounted upon said carrying frames and adapted to be sounded as said frames are shaken, a horizontal rod mounted at the front of said supporting frame and having a plurality of levers sleeved thereon adjacent to each other, said levers having forwardly extending substantially horizontal portions forming keys and also having the other arms rigidly attached thereto, a tracker connecting each of said

carrying frames to one of said lever arms, and means limiting the movement of said keys in both directions.

12. In a musical instrument, the combination, with a supporting frame, of a plurality of carrying frames flexibly suspended thereon, resonant members mounted upon said carrying frames and adapted to be sounded as said frames are shaken, a horizontal rod mounted at the front of said supporting frame and having a plurality of levers sleeved thereon adjacent to each other, said levers having forwardly extending substantially horizontal arms having keys at their outer ends and also having other arms extending at an angle thereto, trackers connecting said last arms to said carrying frames, a horizontal shelf attached to said supporting frame beneath said keys, and a horizontal stop board above said first arms at the rear of said keys.

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

JAMES RICHMOND.

Witnesses:

HARRY D. GROVES,
A. J. HEDDING.