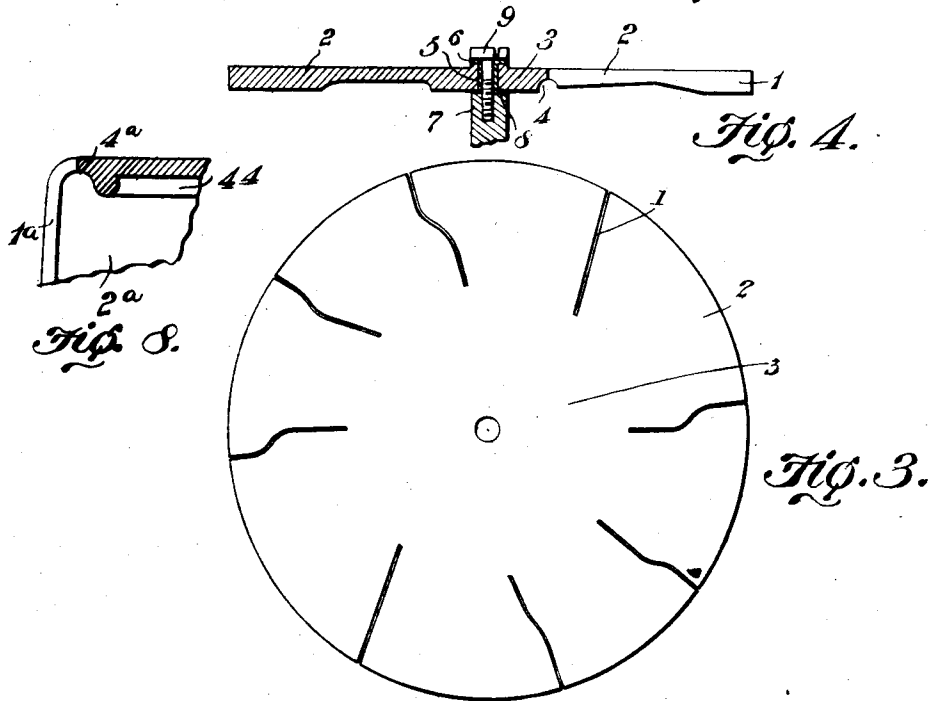
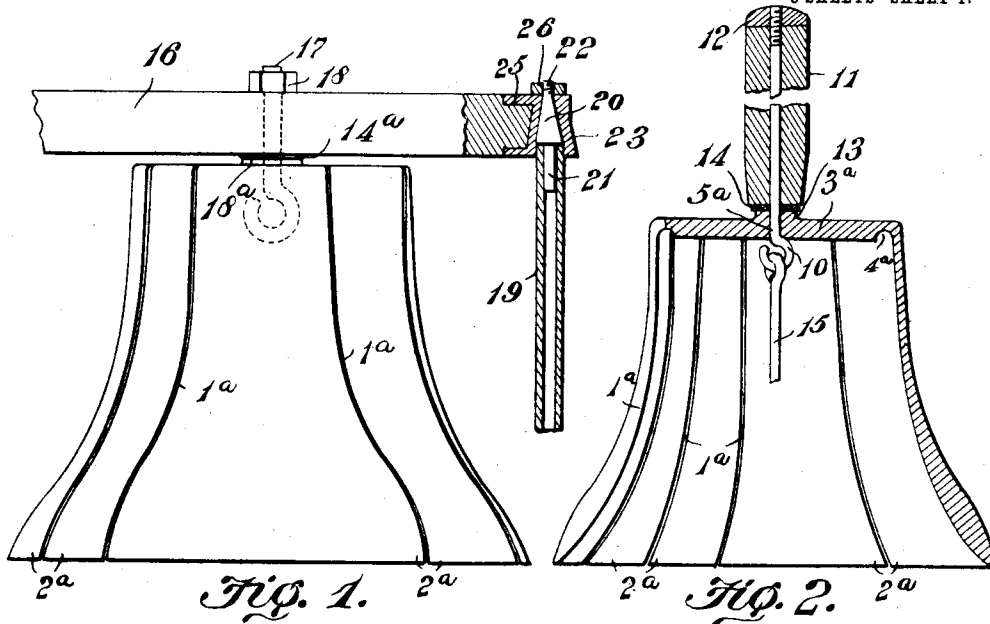


No. 870,025.

PATENTED NOV. 5, 1907.

E. J. ELSAS.
MUSICAL INSTRUMENT.
APPLICATION FILED MAR. 10, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

E. J. Elsas
H. C. Shepard

Edward J. Elsas, INVENTOR.

By

C. A. Snow & Co.
ATTORNEYS

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3 SHEETS—SHEET 2.

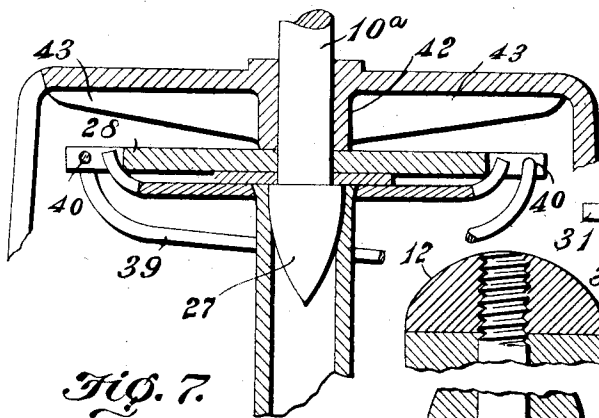


Fig. 7.

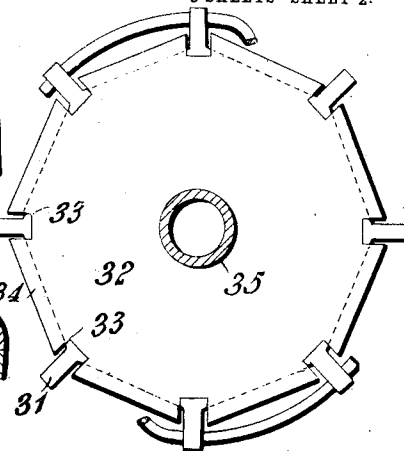
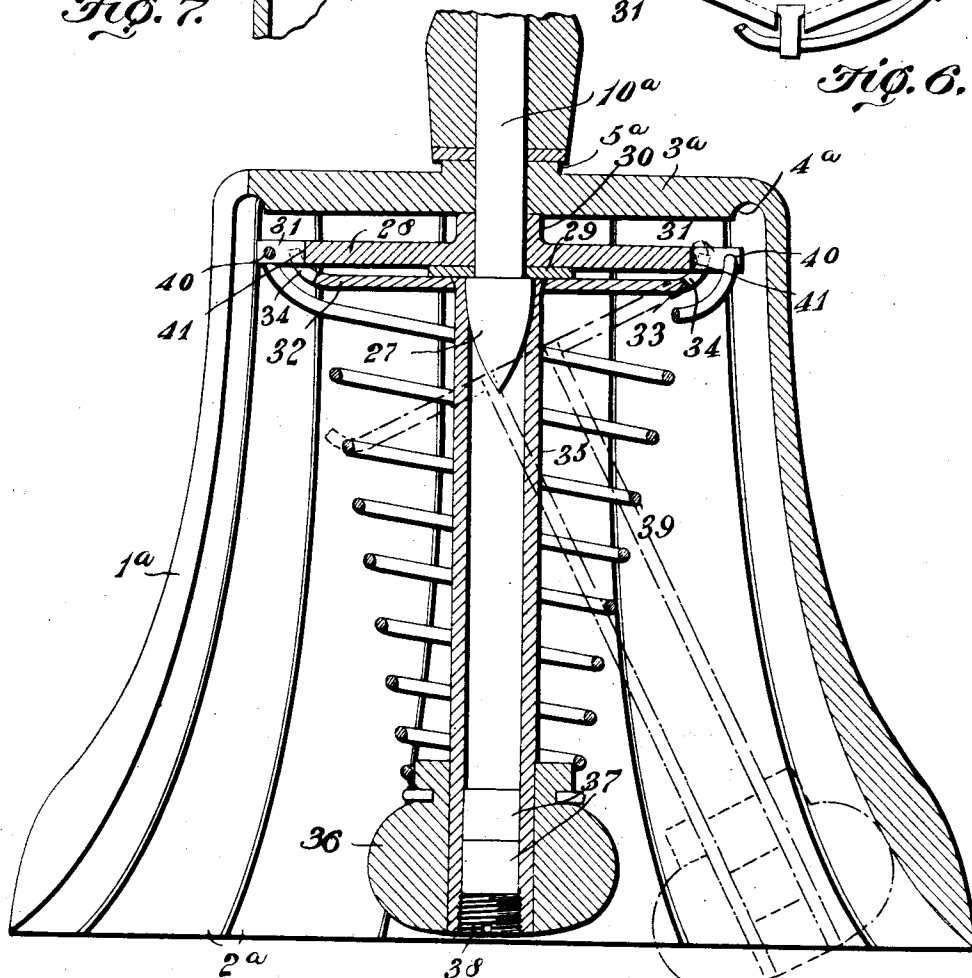


Fig. 6.



WITNESSES:

E. J. Elsas
H. A. Shepard

Fig. 5. Edward J. Elsas, INVENTOR

By

C. A. Snow & Co.
ATTORNEYS

E. J. ELSAS.
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3 SHEETS—SHEET 3.

Fig. 9.

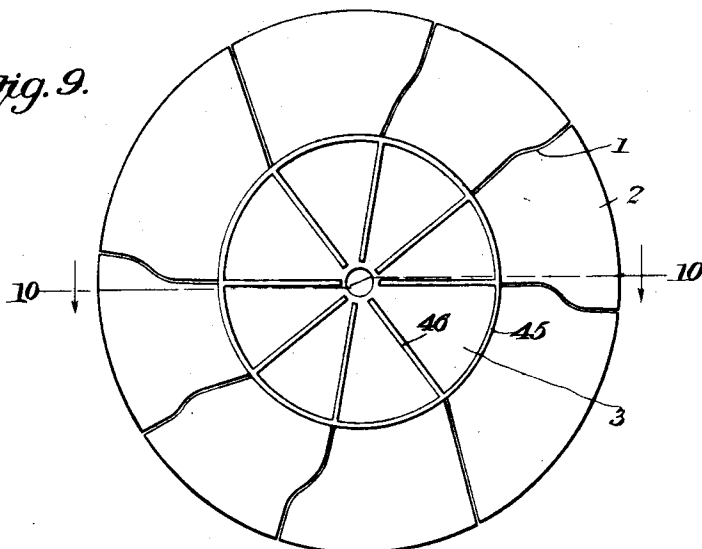


Fig. 10.

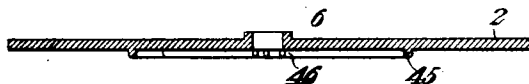


Fig. 11.

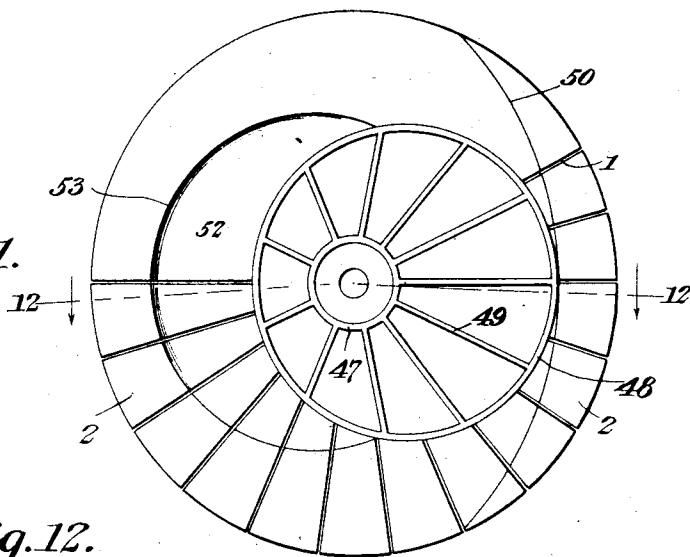
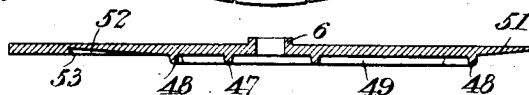


Fig. 12.



WITNESSES:

E. J. Elsas
H. A. Shepard

Edward J. Elsas INVENTOR

By

C. A. Snow & Co.
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD J. ELSAS, OF BLUE MOUND, MISSOURI

MUSICAL INSTRUMENT.

No. 870,025.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed March 10, 1906. Serial No. 305,369.

To all whom it may concern:

Be it known that I, EDWARD J. ELSAS, a citizen of the United States, residing at Blue Mound, in the county of Livingston and State of Missouri, have invented a new and useful Musical Instrument, of which the following is a specification.

This invention relates to musical instruments, and has for its object to embody the same in the nature of a bell or gong capable of being manipulated by means of a supporting handle and clapper, or by striking the same with one or more separate hammers, as in playing upon a xylophone.

While the device is capable of manipulation as a musical instrument, it also has the functions of a bell manipulation by hand or to be hung upon harness, the construction of the device being such that the sound given forth is melodious and not shrill and harsh as in an ordinary bell of one tone.

With these and other objects in view, the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described, shown in the accompanying drawings and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size and minor details may be made, within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings: Figure 1 is a side elevation of a bell of the present invention. Fig. 2 is a longitudinal sectional view of the bell arranged as a hand bell. Fig. 3 is a plan view of the invention embodied as a disk. Fig. 4 is a cross sectional view of Fig. 3. Fig. 5 is a longitudinal sectional view of the bell provided with an improved clapper. Fig. 6 is a detail underneath view showing the manner of mounting the clapper. Fig. 7 is a detail sectional view illustrating a modification. Fig. 8 is a fragmentary sectional view showing another modification. Fig. 9 is an inverted plan view of a modified arrangement of the disk form of the invention. Fig. 10 is a sectional view on the line 10—10 of Fig. 9. Fig. 11 is an inverted plan view of another embodiment of the invention. Fig. 12 is a cross sectional view on the line 12—12 of Fig. 11.

Like characters of reference designate corresponding parts in all of the figures of the drawing.

As embodied in Figs. 3 and 4 of the drawing, the present invention is in the nature of a flat disk having a series of radial slits 1 intersecting the outer periphery of the disk and terminating short of the middle thereof, thereby defining a series of wings 2 radiating from a circular centrally disposed body 3. By this arrangement, each part 2 is a vibrating element separate from the other vibrating elements, the series of

vibrating elements being of different widths and proportioned to give out sounds of different pitches, that is to say, each sounding element has a pitch differing from those of the other elements. While any number of sounding elements may be employed, I have shown eight in Fig. 3, pitched at diatonic intervals so as to produce an octave. A greater or less number of sounding elements may be employed according to the desired capacity of the device. It will of course be understood that no attempt has been made to show the exact proportions of the tongues in Fig. 3, as such proportions will of course vary under different circumstances.

In order that each sounding element may vibrate independently of the other elements, the disk is provided in its under side with an annular groove or channel 4 disposed at the inner ends of the sounding elements, thereby to reduce the thickness of the metal at the joint between each sounding element and the body 3 for the purpose of preventing, as far as possible, the transfer of vibrations from the sounding elements to the supporting body 3.

It is proposed to support the device from the center of the body 3, wherefore said body is provided with a central opening 5 in which is fitted an eyelet or bushing 6 of non-resonant material, such as lead or other material which may be cast or otherwise fitted in the opening 5. The device may be hung from an overhead support suitably connected to the bushing 5, or it may be supported upon a standard, such for instance, as shown at 7 in Fig. 4 of the drawing, said standard having its upper end bearing against an annular flange 8 at the lower end of the bushing, there being a suitable removable headed fastening 9 applied to the upper end of the standard and bearing against the upper flanged end of the bushing, whereby the device is supported without contact of the support with the material of the body.

In the embodiment of the invention just described, it is played upon or struck by means of a separate hammer or hammers manipulated by hand, as in playing a xylophone. The advantage of the present arrangement over an ordinary xylophone resides in the fact that the entire device may be cast in one piece and its several sounding elements are concentrically arranged around the body thereby affording a very compact device.

I also contemplate embodying the invention in the nature of a bell, as shown in Figs. 1 and 2 of the drawing, wherein 3^a designates the top or crown and corresponds to the body 3, as shown in Figs. 3 and 4. The barrel of the bell is provided with a series of substantially radial slits 1^a intersecting the lower edge of the

bell and also the part 3^a, thereby defining an annular series of separate sounding elements 2^a. At the point where the sounding elements 2^a connect with the part 3^a, the bell is reduced by an annular groove 4^a formed in the under side thereof so as to prevent as far as possible, the transfer of vibrations from the sounding elements to the body 3^a.

To adapt the invention as a hand bell, as shown in Fig. 2 of the drawings, an eyebolt 10 is passed through the opening 5^a and through a wooden handle 11, a suitable nut 12 being fitted to the outer threaded end of the eye-bolt so as to hold the handle against the top of the bell. By preference, the opening 5^a is surrounded by an upstanding boss or shoulder 13, and a non-resonant washer 14, such as leather, felt and the like, is interposed between the inner end of the handle and the boss 13, whereby the handle does not interfere with the resonant qualities of the bell. Any appropriate clapper 15 is loosely hung from the eye of the bolt within the bell, and the latter may be manipulated in the manner of an ordinary hand bell. The advantage of the present bell resides in the fact that the sounds given forth are melodious and not harsh and clanging, as in an ordinary bell.

It is also proposed to hang the bell from an overhead support, such for instance, as shown in Fig. 1, wherein 16 designates a portion of an overhead beam from which the bell is hung by means of an eyebolt 17 piercing the beam and having a nut 18 fitted to its upper end. This bolt is provided with a boss 13^a and has a nonresonant washer 14^a interposed between the boss and the beam. Each end of the beam is supported upon a tubular standard 19 having a removable conical head 20 upon its upper end, said head having a reduced pin 21 removably fitted within the standard, while the upper extremity of the head is threaded, as at 22. A metallic bracket 23 is provided with a conical opening receiving the conical head 20 and is provided in one side with a socket 25 receiving the adjacent end of the beam, there being a nut 26 fitted to the threaded end of the head so as to draw the bracket down tightly upon the beam. By this arrangement, the bell, the beam, the bracket and the head, are successively connected and may be removed as a whole from the supporting standards.

Another embodiment of the invention has been shown in Figs. 5 and 6 of the drawing, wherein the general features of the bell are the same as described for Figs. 1 and 2, and the bell is equipped with a preferred form of clapper to enable the swinging of the same in any direction for striking the respective tongues or grooves of the bell and to insure the returning of the clapper to the middle of the bell without striking the opposite side thereof after it has struck any one of the sections. In this embodiment, the bolt 10^a is provided at its inner end with an enlarged conical head 27. Between the head and the top of the bell there is an octagonal head 28 which is supported upon the head of the bolt, there being a nonresonant washer 29 interposed between the members 27 and 28. At the center of the member 28 there is an upstanding annular boss 30 to bear against the under side of the top of the bell against which it is drawn by means of the nut 12 so as to rigidly hold the bolt 10^a and the octagonal head 28 within the bell. At each of the eight corners of the

octagonal head, there is a radial projection 31. Beneath the member 28 there is an octagonal rocker plate 32 provided at each of its eight corners with a notch 33, each edge portion 34 of the plate between adjacent notches being bowed upwardly between adjacent projections 31 so as to have a rocking bearing upon the lower edge portion of the member 28. From the middle of the plate 32 there depends a tube 35 which is rigidly carried by the plate and receives the conical head 27. Upon the lower end of this tube there is a clapper 36, preferably of wood, and within the lower portion of the tube is a plurality of weights 37 retained therein by means of a removable threaded plug 38 fitted into the open lower end of the tube. Extending between the clapper and stationary head 28 there is a pair of helical springs 39, each of which has its upper end connected to a pair of the projections 31, preferably by being passed through perforations 40 therein.

With a bell constructed as thus described, the clapper may be manipulated by swinging the bell upon its handle, whereby the element 32 will rock upon one of the edges 41 of the head 28 instead of from the bolt 10^a as a center in order that the clapper may normally lie in line with the bolt and capable of striking the bell at the proper distance from the lower edge thereof. It will here be explained that the conical head 27 of the bolt 10^a is struck from the respective edges 41 as centers in order that the upper end of the tube 35 may swing down across the same without any restriction whatsoever on the part of the head, as indicated by the dotted position of the clapper.

Instead of employing the boss 30 upon the plate 28 to space the latter from the top of the bell, the same thing may be accomplished, as in Fig. 7, by means of a boss 42 upon the bell with the plate 28 bearing against the boss. In this arrangement, the top of the bell may be relatively thin and braced by means of integral radial webs 43.

In lieu of the groove 4^a of the disk shown in Figs. 3 and 4, and shown at 4^a in Figs. 2 and 5, an annular stiffening rib 44 may be employed, as shown in Fig. 8, as such rib stiffens the top of the bell sufficiently to prevent the vibrations of the tongues passing across the head of the bell. The same result is accomplished by the integral radial ribs 43 shown in Fig. 7 of the drawing, and the employment of such ribs permits of a considerable reduction in the thickness of the top of the bell.

In Figs. 9 and 10, there has been shown a modification of the arrangement shown in Fig. 3, and in lieu of the groove 4 of Figs. 3 and 4, there is provided an annular rib 45 and radial ribs 46 for the purpose of stiffening the central body portion of the disk so as to prevent vibrations of any of the tongues being carried into any of the other tongues.

Still another embodiment of the disk form of the invention has been shown in Figs. 11 and 12, wherein the disk is provided with a central concentric stiffening rib 47, an eccentric annular stiffening rib 48 with radial stiffening ribs 49 extending between the annular ribs 47 and 48. The disk is provided with substantially radial slits 1, as hereinbefore described, said slits extending inwardly from the outer periphery of the disk to the eccentric annular rib 48, whereby certain

of the tongues are relatively short and thereby pitched to high tones, while other tongues are relatively long and thereby pitched to lower tones. The pitches of the short tongues may be relatively raised by reducing the thickness thereof, as for instance, in the zone 5 bounded by the arcuate line 50 and the adjacent edge of the disk said reduced portion being clearly shown at 51 in Fig. 12. While the central portion of the disk is rendered rigid by the ribs, it is designed to further 10 guard against vibrating the entire disk by vibrations of the longer tongues, and this is accomplished by reducing the thickness of the inner end portions of the longer tongues, as shown at 52 in Fig. 12, in the zone bounded by the arcuate line 53 and the adjacent 15 portion of the annular rib 48.

While the slits in the bell and disk forms of the invention may be truly radial, it is preferred to deflect the intermediate portions thereof, as best indicated in Figs. 3 and 9, to vary the widths of intermediate 20 portions of the tongue for the purpose of giving each tongue a predetermined pitch.

Having thus described the invention, what is claimed is:

1. A musical instrument comprising a bell having a series of straight and curved slits extending from the crown plate to the lip thereof and sub-dividing the bell into sections proportioned to produce the tones of the diatonic scale. 25

2. A musical instrument comprising a resonant element having a series of curved and straight lines extending to the edge thereof from points adjacent its center and sub-dividing said element into sections proportioned to produce tones pitched at diatonic intervals. 30

3. A device of the class described comprising a resonant element provided with a series of diverging slits intersecting its outer edge and defining a series of vibratory sounding elements, and a central supporting body therefor, the resonant elements having different musical pitches. 35

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two 40 witnesses.

EDWARD J. ELSAS.

Witnesses:

J. M. MANLEY,
JAMES MURPHY.