Aug. 4, 1953 A. L. SCHILLING 2,647,430

MUTING BAR FOR ELECTRICAL MUSICAL INSTRUMENTS

Filed Sept. 25, 1950 2 Sheets-Sheet 1

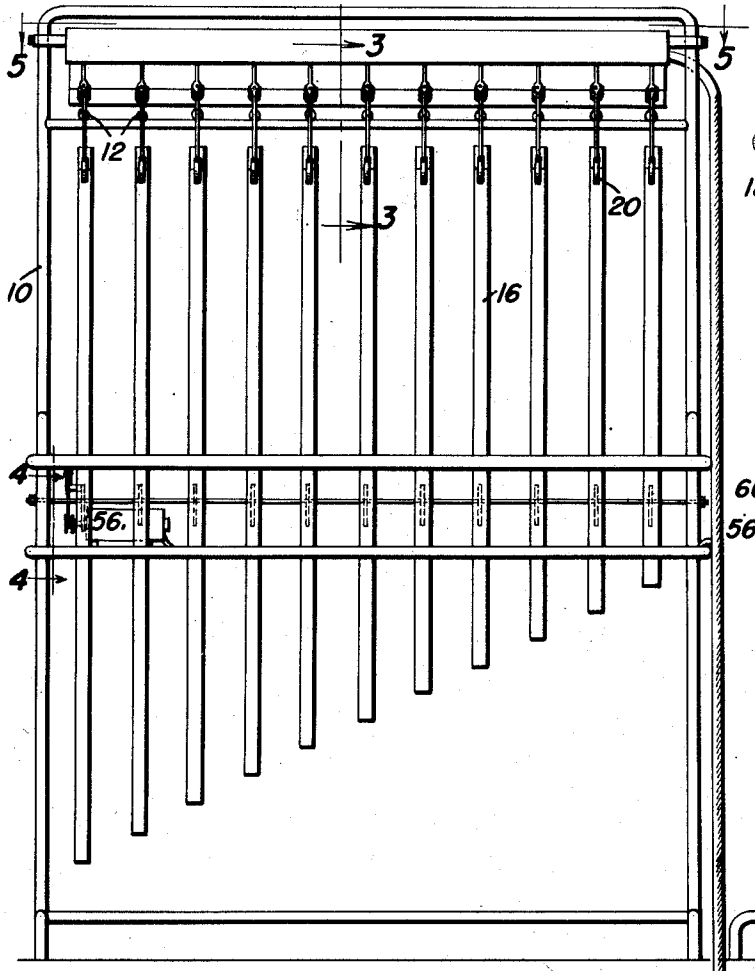


Fig. 1

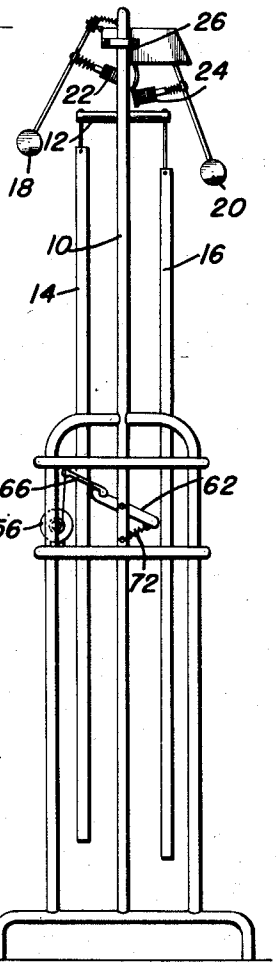
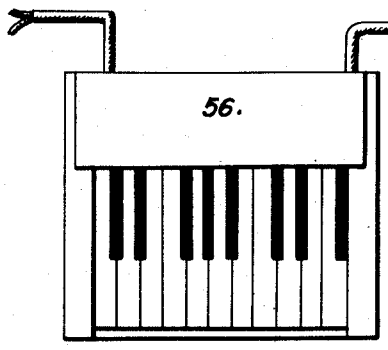


Fig. 2



Arden L. Schilling
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Aug. 4, 1953 A. L. SCHILLING 2,647,430

MUTING BAR FOR ELECTRICAL MUSICAL INSTRUMENTS

Filed Sept. 25, 1950 2 Sheets-Sheet 2

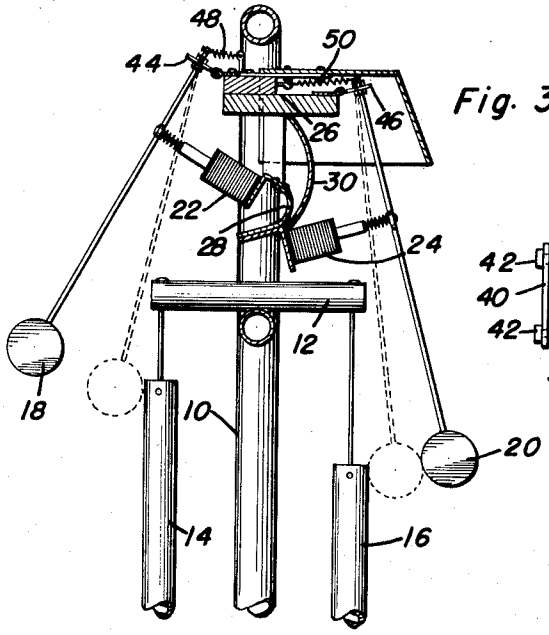


Fig. 3

Fig. 5

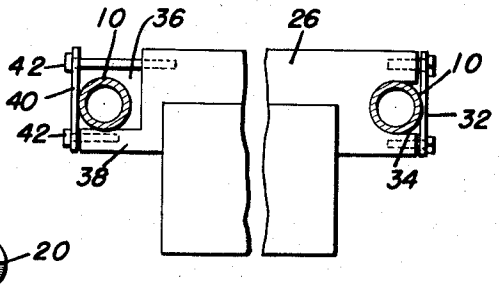


Fig. 4

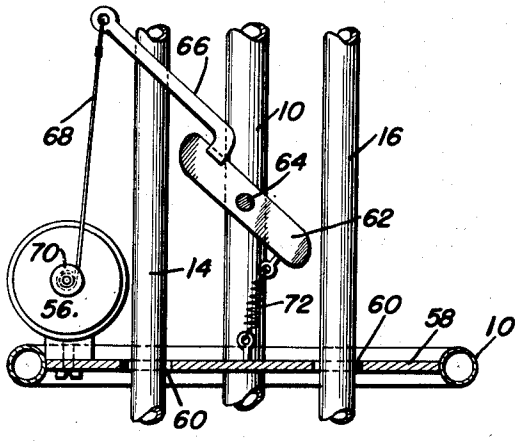


Fig. 7

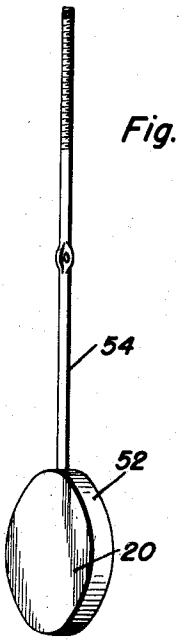
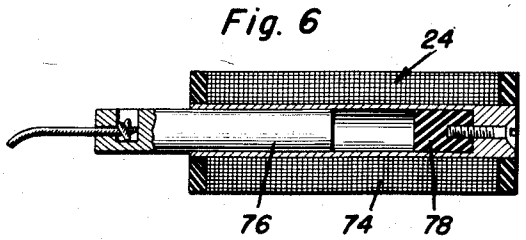


Fig. 6



Arden L. Schilling

INVENTOR.

BY Thomas A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Aug. 4, 1953

2,647,430

UNITED STATES PATENT OFFICE

2,647,430

MUTING BAR FOR ELECTRICAL MUSICAL INSTRUMENTS

Arden L. Schilling, Decatur, Ind.

Application September 25, 1950, Serial No. 186,659

8 Claims. (Cl. 84—405)

1

This invention relates to the class of musical instruments and more particularly to electrically actuated chimes and the like.

An object of this invention is to provide simple means which may be readily installed on the framework from which opposed rows of chimes depend for actuating the chimes.

Another object of this invention resides in the provision of a simple though highly efficient muting bar for use in muting opposed rows of chimes.

Still further objects of the invention reside in the provision of the means for simply and easily installing solenoid actuated structure means for actuating a set of chimes.

Other objects of the invention reside in the provision of an electrical musical instrument that is simple in construction, strong, durable, highly efficient in operation, capable of being played from a simple keyboard, and which instrument is relatively inexpensive to manufacture.

These, together with the various ancillary objects of the invention which will become apparent as the following description proceeds, are attained by this electrical musical instrument, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example, wherein:

Figure 1 is a side elevational view of the preferred form of the invention;

Figure 2 is an end elevational view of the device, shown in Figure 1;

Figure 3 is a sectional detail as taken along line 3—3 in Figure 1;

Figure 4 is another vertical sectional detail as taken along line 4—4 in Figure 1;

Figure 5 is a horizontal sectional detail as taken along line 5—5 in Figure 1;

Figure 6 is a sectional detail view showing the construction of the solenoids for actuating the striker members; and

Figure 7 is a perspective view showing the construction of one of the striker members.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 generally designates a tubular frame having a plurality of transverse bars 12 from which depend opposed rows 14 and 16 of chimes.

For actuating the chimes 14 and 16 striker members provided in opposed rows as indicated at 18 and 20 are provided and these striker members are actuated by solenoids also arranged in rows as indicated at 22 and 24. The solenoids 22 and 24 depend from the support member 26 and are secured to plates 28 and 30 respectively. The member 26 is hingedly secured to the frame 10 by means of the plate 32 which is detachably secured about the frame 10, the frame 10 being received within recess 34 formed in one end of the member 26. The other end of the member 26 is provided with a notched portion as at 36 so that the extension 38 of the member 26 may engage another portion of the frame 10 when it is desired to rotate the member 26 to lock it in place. A plate 40 and bolts 42 are provided for lockingly holding the member 28 in engagement with the other portion of the frame 10.

2

The strikers 18 and 20 are secured to the support member 26 by means of individual hinge elements 44 and 46 through which hinge elements there are attached springs 48 and 50 for continuously urging the strikers out of engagement with the chimes 14 and 16. The strikers 18 and 20 each consists of disks 52 of similar material which are secured to the ends of the shafts 54.

There is provided a keyboard 56 for actuating the solenoids and the keyboard is electrically operatively connected to the solenoids and to a suitable source of electrical power. One of the keys in the keyboard 56 is provided for actuating the prime mover comprising an electrical motor as indicated at 58 which is mounted on a horizontal support plate 59 which is provided with apertures 60 through which the chimes 14 and 16 extend. The motor 58 is provided for actuating the muting bar 62 which is mounted on a shaft 64 rotatably journaled in the frame 10. A lever 66 is secured to the muting bar 62 and has one end of a line 68 secured thereto, the other end of the line being secured to a drum 70 driven by the motor 58. Hence, upon actuation of the motor 58 rotation of the drum 70 will cause the muting bar to engage the chimes 14 and 16. A spring 72 is terminally secured to the muting bar and to the plate 59 to continuously urge the muting bar 62 out of engagement with the chimes.

Referring now more particularly to Figure 6 it will be seen that each of the solenoids 22 or 24 are provided with coils 74 in which the core 76 extends. An insulative rubber or other resilient stop 78 is positioned within the confines of the coils 74 in order that when the solenoid is actuated and the core 76 pulled inwardly, the core 76 will not contact a rigid member so as to create an unpleasant noise.

Since from the foregoing the construction and

advantages of this electrical musical instrument are readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiment shown and described, but all suitable modifications and equivalents may be readily resorted to falling within the scope of the appended claims.

Having described the invention what is claimed as new is:

1. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, and electrical circuit means including said keyboard switch means for activating said solenoids and said muting bar.

2. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, electrical circuit means including said keyboard switch means for activating said solenoids and said muting bar, said means for actuating said muting bar comprising a lever attached to said muting bar, a motor carried by said frame, a drum driven by said motor, and a line terminally secured to said drum and to said lever.

3. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, electrical circuit means including said keyboard switch means for activating said solenoids and said muting bar, a horizontal support plate secured to said frame, said chimes extending through apertures in said plate, said means for actuating said muting bar including a lever attached to said muting bar, a motor carried by said plate, a drum driven by said motor and a line terminally secured to said drum and to said lever.

4. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, circuit means including said keyboard switch means for activating said solenoids and said muting bar, a horizontal support plate secured to said frame, said chimes extending through apertures in said plate, said means for actuating said muting bar including a lever attached to said muting bar, a motor carried by said plate, a drum driven by said motor, a line terminally secured to said drum and to said lever, said resilient means including a spring terminally secured to said muting bar and said plate.

5. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, circuit means including said keyboard switch means for activating said solenoids and said muting bar, said solenoids depending from a support member, hinge means for rotatably securing one end of said support member to said frame and locking means at the other end of said support members rigidly securing said member to said frame.

6. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, circuit means including said keyboard switch means for activating said solenoids and said muting bar, said solenoids depending from a support member, hinge means for rotatably securing one end of said support member to said frame and locking means at the other end of said support members rigidly securing said member to said frame, said means for actuating said muting bar comprising a lever attached to said muting bar, a motor carried by said frame, a drum driven by said motor, and a line terminally secured to said drum and to said lever.

7. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, circuit means including said keyboard switch means for activating said solenoids and said muting bar, said solenoids depending from a support member, hinge means for rotatably securing one end of said support member to said frame and locking means at the other end of said support members rigidly securing said member to said frame, a horizontal support plate secured to said frame, said chimes extending through apertures in said plate, said means for actuating said muting bar

comprising a lever attached to said muting bar, a motor carried by said plate, a drum driven by said motor, and a line terminally secured to said drum and to said lever.

8. An electrically actuated musical instrument comprising a tubular frame having depending therefrom opposed rows of chimes, resiliently mounted strikers for each of said chimes, solenoids for actuating said strikers, a shaft journaled in said frame, a muting bar secured to said shaft, means for actuating said muting bar by urging said muting bar into engagement with said chimes, resilient means continuously urging said muting bar out of engagement with said chimes, keyboard switch means, circuit means including said keyboard switch means for activating said solenoids and said muting bar, said solenoids depending from a support member, hinge means for rotatably securing one end of said support member to said frame and locking means at the other end of said support members

rigidly securing said member to said frame, a horizontal support plate secured to said frame, said chimes extending through apertures in said plate, said means for actuating said muting bar comprising a lever attached to said muting bar, a motor carried by said plate, a drum driven by said motor, a line terminally secured to said drum and to said lever, said resilient means comprising a spring terminally secured to said muting bar and said plate.

ARDEN L. SCHILLING.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,034,001	Durfee	July 30, 1912
2,456,321	Rhodes	Dec. 14, 1948
2,463,543	Kunz	Mar. 8, 1949
2,528,663	Mitchell	Nov. 7, 1950
2,540,925	Zimmerman	Feb. 6, 1951