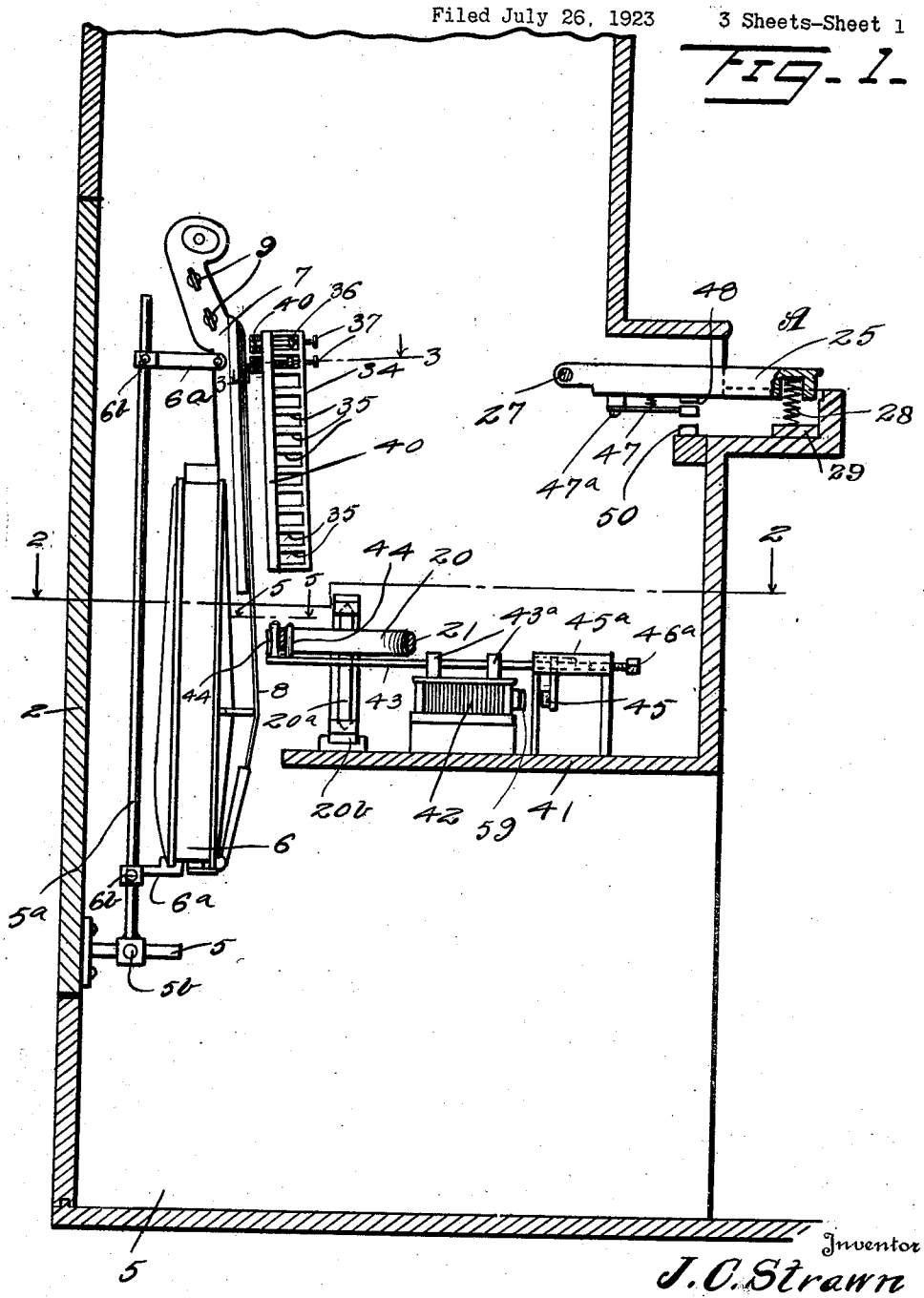
March 23, 1926. 1,577,501

J. C. STRAWN

VIOLIN PIANO

Filed July 26, 1923 3 Sheets-Sheet 1

Fig. 1.



Inventor

J. C. Strawn

By A. Randolph Jr.

Attorney

March 23, 1926. 1,577,501

J. C. STRAWN

VIOLIN PIANO

Filed July 26, 1923 3 Sheets-Sheet 2

Fig. 2.

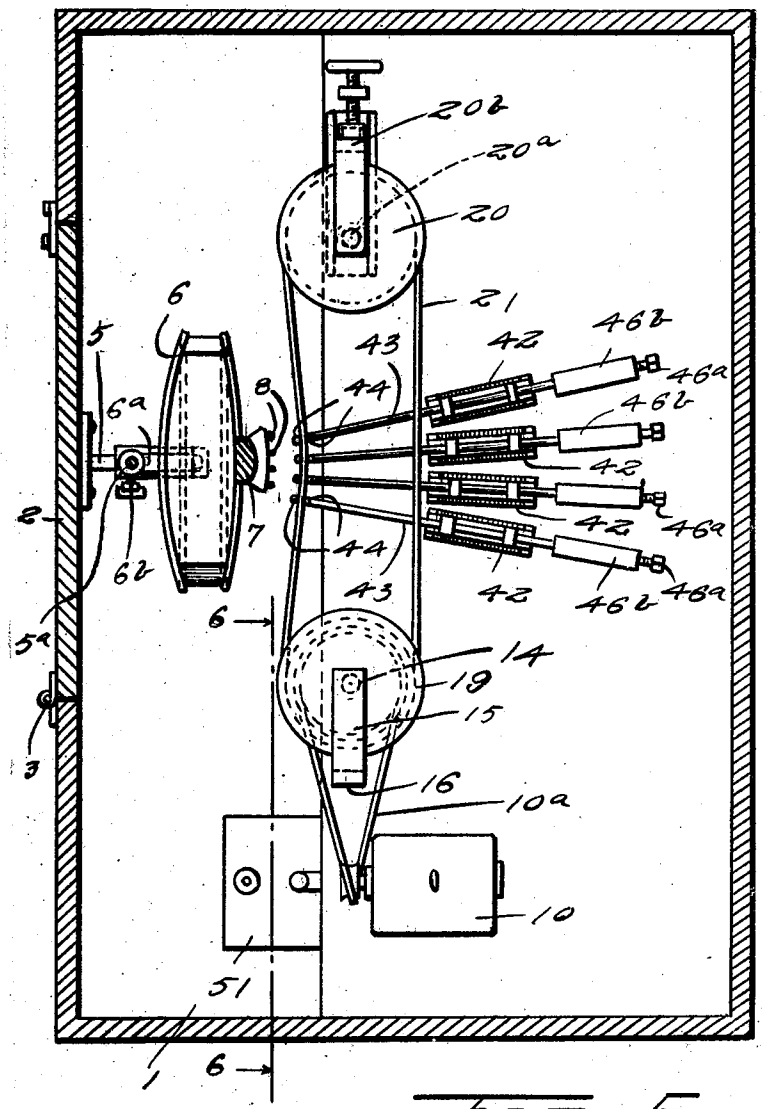
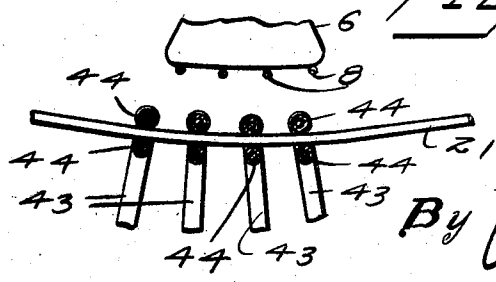


Fig. 5.



Inventor
J. C. Strawn.

By Randolph & Co. Atty.

March 23, 1926. 1,577,501

J. C. STRAWN

VIOLIN PIANO

Filed July 26, 1923 3 Sheets-Sheet 3

FIG. 3.

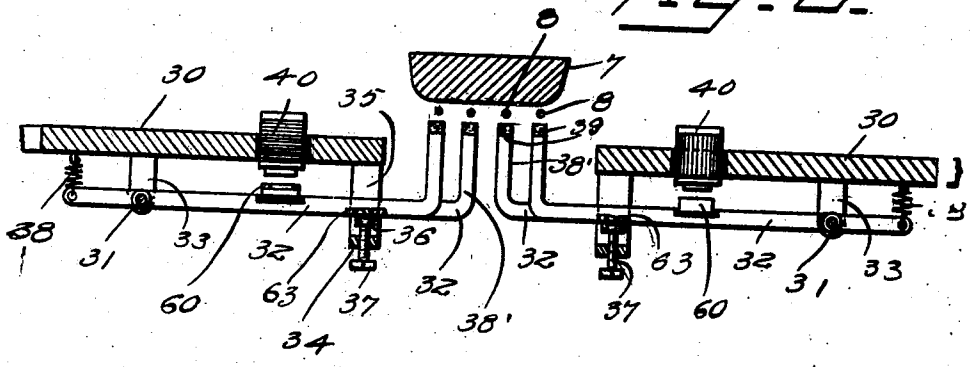


FIG. 4.

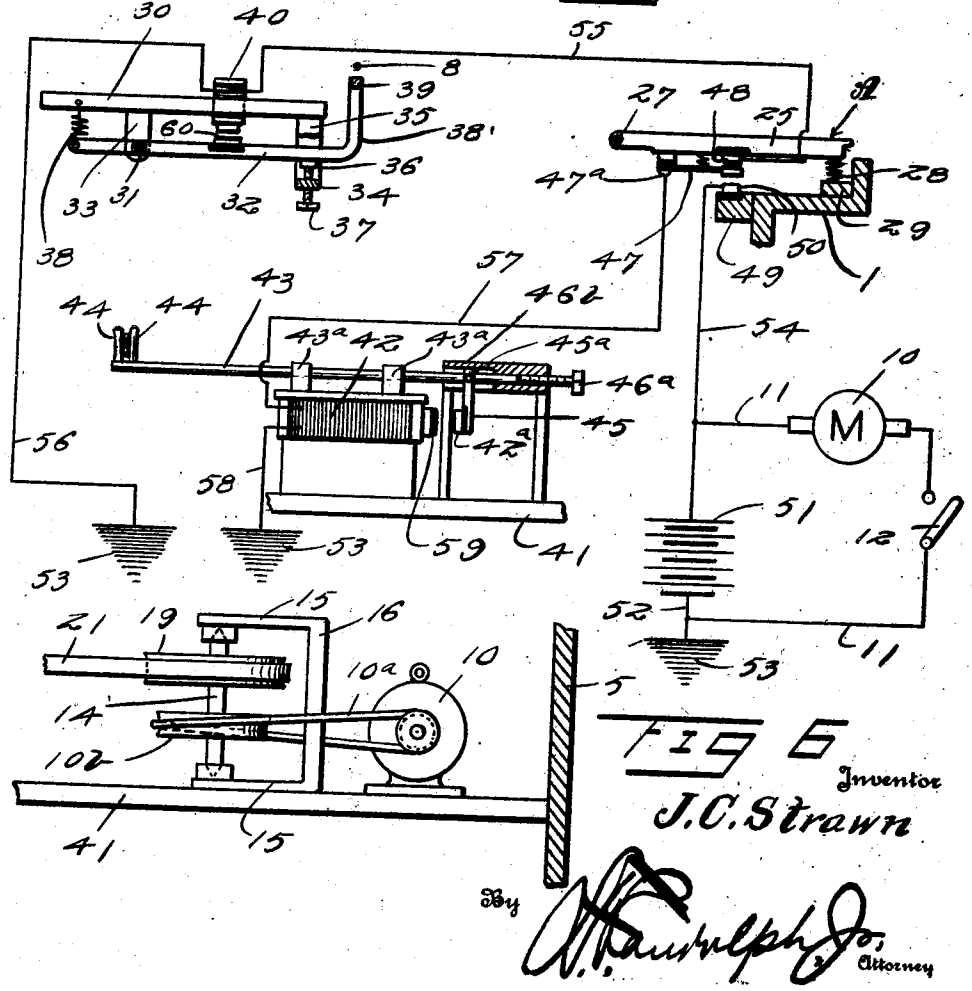


FIG 6

Inventor

J. C. Strawn

By

Attorney

Patented Mar. 23, 1926. 1,577,501

UNITED STATES PATENT OFFICE.

JESSE C. STRAWN, OF BUFFALO SPRINGS, TEXAS.

VIOLIN PIANO.

Application filed July 26, 1923. Serial No. 653,951.

To all whom it may concern:

Be it known that I, JESSE C. STRAWN, a citizen of the United States, residing at Buffalo Springs, in the county of Clay and State of Texas, have invented certain new and useful Improvements in Violin Pianos, and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a violin piano.

It is aimed to provide a novel construction of the same general character as that disclosed in Letters Patent of the United States No. 1,300,894, issued to me on April 15, 1919, for a violin piano.

It is particularly aimed to improve the construction disclosed in that patent to the end that better tones and music may result and also to the end that its operation or fingering will be easier.

It is further aimed to provide novel magnetic means whereby strings of the violin will be simultaneously fingered and engaged by a bow-belt.

Various additional objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a view of my improved violin piano in vertical section;

Figure 2 is a horizontal section taken on the plane of line 2—2 of Figure 1;

Figure 3 is a cross sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a view showing the electric parts in diagram;

Figure 5 is a section taken substantially on the line 5—5 of Figure 1, and

Figure 6 is a sectional view taken substantially on the line 6—6 of Figure 1.

Like reference characters designate like or similar parts in the different views.

In carrying out the invention, a suitable casing is provided as at 1 which is preferably shaped substantially like a piano casing. Attached to a door 2 hinged as at 3 to the rear wall of the casing, preferably removably and adjustably is a violin 6 having the usual neck 7, strings 8 and tuning keys 9. A stud 5 is fastened to the interior of door 2 and mounted on upstanding rod 5^a for lateral adjustment at 5^b. Brackets 6^a are removable from and vertically adjustable at 6^b on rod 5^a and carry violin 6.

Instead of the bow-belt operating mechanism as used in my said patent but which may here be used if desired, I preferably employ an electric motor 10, receiving its current through wires 11 from any suitable source such as a storage battery 51 under control of a switch 12. As is obvious suitable connection utilizing a transformer may be used to operate the device from a source of city or other commercial usually high voltage current. Motor 10 drives a belt 10^a trained about a pulley 10^b carried by an upstanding shaft 14 journaled in arms 15 of a bracket 16 suitably fastened within the casing. A pulley or drum 19 is secured to shaft 14 and is arranged in spaced relation to a pulley 20 disposed on the opposite side of the violin. Trained over the pulleys 19 and 20 and positioned in peripheral grooves thereof as shown is a suitable bow belt 21 adapted to be moved against and transversely of the strings 8 to produce sound. Pulley 20 is carried by an upstanding shaft 20^a in a bearing 20^b adjustable to appropriately tension the bow belt.

The parts mentioned or their substantial equivalents are employed in the device of my said patent and have been shown so as to facilitate an understanding of the construction and operation of my improvements and which will now be described.

The bow belt 21 may have its outer or string-engaging surface provided with any suitable hard substance which will properly vibrate the violin strings. For instance such substance may be of patent leather, wire strands or strings, hair as in my patent aforesaid or otherwise.

The instrument has a keyboard as at A consisting of a suitable plurality of keys 25 pivoted at their inner ends as to a bar 27 of the casing 6 so that they may be depressed at their outer ends. Such keys 25 are depressible against the tension of coil springs 28 carried by a bar 29 of the casing 1. The keys are normally horizontally disposed and after being depressed against the tension of the springs 28, are restored to horizontal position by said springs.

Means is provided whereby the strings 8 will be fingered and belt 21 moved into proper engagement with the fingered strings, through the depression of said keys. To this end, one or more racks or panels 30,

preferably two of wood or other suitable material, are suitably supported within the casing 6 and preferably one on each side of the neck of the violin. Each rack has a pin or rod 31 on which a plurality of fingers 32 are pivoted, and which fingers are spaced from panels 30 through the medium of lugs 33 on the rack. A guide frame 34 is carried by each rack and provided with slots or openings 35 through which the fingers 32 pass. The downward movement or depression of the fingers is controlled through the adjustment of followers 36 located within the slots or openings 35. These followers are slidably mounted as they are carried by screws 37 swiveled thereon and screw threaded to the frame 34. Contractile springs 38 are connected to the fingers 32 in order to normally urge them away from the strings 8. The outer ends of the fingers are curved or deflected as at 38′ in order that their free ends will engage the strings 8. Such free ends may carry felt or equivalent material at 39 if desired.

Mounted on the panels 30 are coils or electro-magnets as at 40 each arranged to attract a separate finger 32 in order to thereby engage it with the string 8 coacting therewith. In order to compactly dispose these magnets 40, the fingers 32 differ somewhat in shape as shown.

A table 41 forms part of the casing 1 and is located therein. On this table, solenoids or electro-magnets 42 having field coils are mounted in cooperative relation with suitably guided and mounted bow-belt shifting arms 43. The arms 43 slide through lugs 43ª on and insulated from magnets 42 and are provided with upstanding rollers as at 44 in order to engage the run of the bow-belt adjacent to the strings 8. At the rear ends of the arms 43, arms 45 are adjustably fastened thereto by set screws 45ª. Arms 45 depend and carry insulated plugs or armatures 42ª which are adapted to be attracted by the magnets 42. Rearward movement of arms 43 is limited by set screws 46ª adjustably mounted in sleves 46ᵇ supported on table 41.

Carried at the under surface of each key 25 is a spring metal or other conductor arm 47 being fastened to the keys by binding posts at 47ª. The keys carry contacts 48 normally spaced from but adapted to engage the arms 47 and a bar of the casing 1 as at 49, below the arms 47, carries a conductor bar 50 which extends below all of the keys 25 and is adapted to be engaged individually by all of the arms 47. Electricity from any suitable source is adapted to be utilized to energize the magnets 40 and 42 for instance the electric battery 51 of suitable voltage and amperage. This battery is suitably located within the casing 1 and one of its terminals, usually the negative as at 52 is grounded at 53. A conductor 54, usually from the positive pole of the battery 51, leads to the conductor strip 50. A conductor 55 leads from each contact 48 to one of the coils or magnets 40 and thence as a conductor 56 to ground 53. A conductor 57 leads from each binding post 47ª to one of the magnets 42 and from the same as a conductor 58 to ground 53.

In addition to using the cushions or sound deadening devices as at 39 on the fingers 32, such devices may be used wherever desired otherwise in the instrument, for instance at 59 where the parts 45 engage the magnets 42, at 60 where the fingers 32 engage the magnets 40 and at 63 on fingers 32 where engaged by the followers 36.

With switch 12 closed the motor 10 constantly operates to impart continuous motion to the bow-belt 21. The keys 25 are individually and appropriately depressed as in a piano and as each key is depressed, the contacts 50, 47 and 48 momentarily engage thus energizing simultaneously one of the magnets 40 and one of the magnets 42. As a result, the finger 32 associated with the last mentioned magnet 40 is moved by that magnet 40 into engagement with the adjacent string 8 and simultaneously the rod 43 coacting with the energized magnet 42 moves the belt 21 at a portion thereof into contact with the same string 8, thus resulting in the production of the proper tone or sound. As each key 25 is individually wired with a magnet 40 and a magnet 42 as previously described and the contacts 47 individually engage contact 50 as they engage their associated contact 48, such keys are adapted for independent and successive operation similar to the operation of keys.

It may be mentioned that the keys 25 can be made of any appropriate material usually of wood, and when white are covered with celluloid and when black are merely painted or stained. The keys may be alternately white and black if desired but similarly connected electrically with the parts of the apparatus.

Various changes in the details may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:—

1. A violin piano having a violin, a movable belt bow, common to all the strings thereof, means to drive said belt bow, keys, string-engaging fingers, arms to shift the belt into engagement with the strings, and electro-magnetic means simultaneously operable through operation of a key to move a finger and the belt into engagement with the same string.

2. A violin piano having a violin, a movable belt bow common to all the strings thereof, means to drive said belt bow, keys, string-engaging fingers, arms to shift the

belt into engagement with the strings, and electric means simultaneously operable through operation of a key to move a finger and the belt into engagement with the same string.

3. A violin piano having a violin, a movable belt, keys, violin strings engaging fingers, a table, arms slidable on said table to shift the belt into engagement with the violin strings, electro-magnets on said table one associated with each arm, electro-magnets one associated with each finger, and means operable through actuation of a key to simultaneously close an electric circuit through one of each group of electro-magnets and thereby simultaneously move the finger and the belt into engagement with the same string.

4. A violin piano having a violin, a movable belt, keys, violin strings engaging fingers, a table, arms slidable on said table to shift the belt into engagement with the violin strings, electro-magnets on said table one associated with each arm, electro-magnets one associated with each finger, means operable through actuation of a key to simultaneously close an electric circuit through one of each group of electro-magnets and thereby simultaneously move the finger and the belt into engagement with the said string, and means disposed on opposite sides of the violin each supporting a plurality of said fingers.

5. A violin piano having a violin, a movable belt bow common to all the strings thereof, means to drive said belt bow, a panel, fingers pivoted to said panel and adapted to engage the strings of the violin, an electro-magnet on the panel to actuate each finger, and means operable to simultaneously close an electric circuit through said magnet and to move the belt bow into corresponding engagement with the strings, a guide frame on the panel for said fingers and means carried by the guide frame to limit the movement of the fingers.

6. A violin piano having a violin, a movable belt bow, keys, violin string engaging fingers, arms to shift the belt into engagement with the violin strings, electro-magnets associated with said fingers and said arm, a contact on each finger, conductor arms on each finger normally spaced from the contacts, a conductor strip on the violin piano normally spaced from the conductor arms, said strips, arms and contacts being normally spaced apart and adapted for engagement upon depression of a key, conductors extending from said strip, arms and contacts and including said electro-magnet, a plate in the circuit to which some of the conductors lead, a source of electric energy from which one of the conductors extend, and another conductor from the source of energy being connected to said plate.

In testimony whereof I affix my signature.

JESSE C. STRAWN.