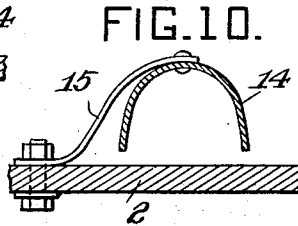
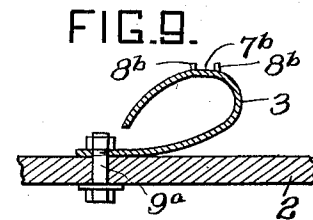
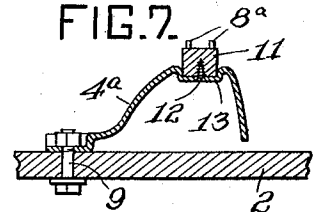
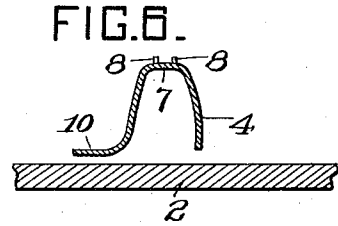
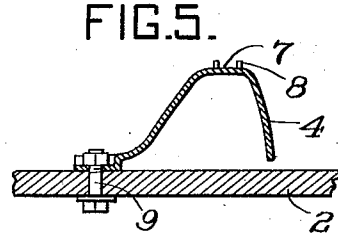
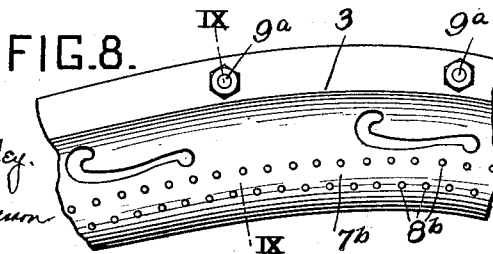
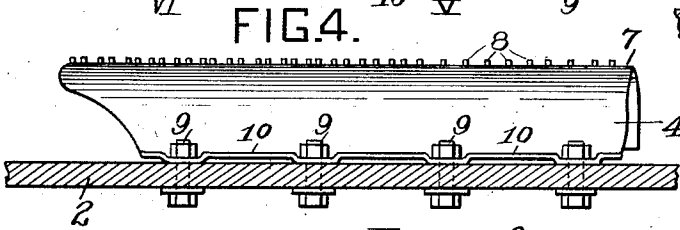
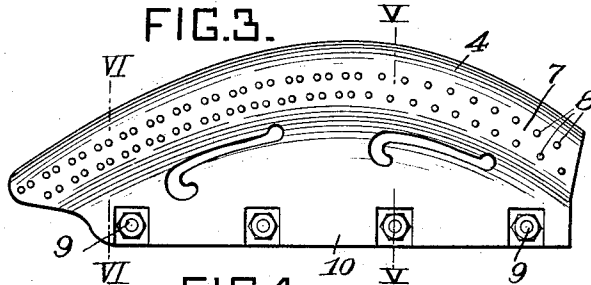
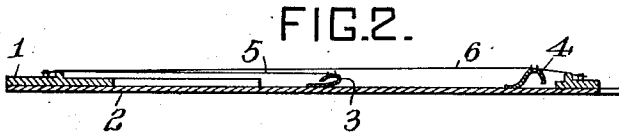
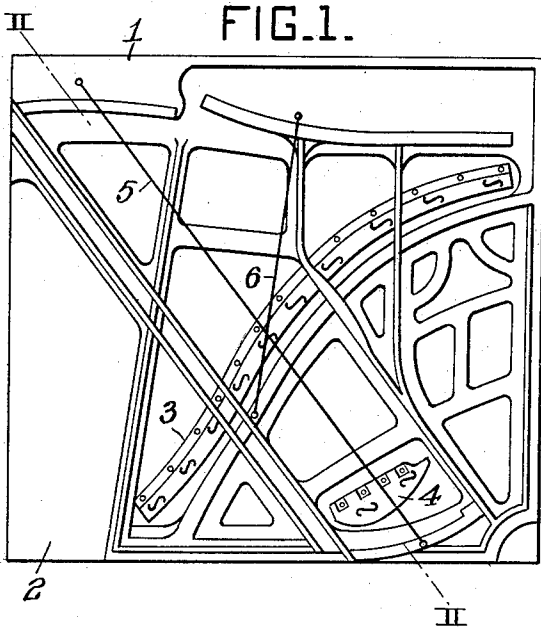


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PIANO BRIDGE.
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1,064,017.

Patented June 10, 1913.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GEORGE SCHROEDER, OF PITTSBURGH, PENNSYLVANIA.

PIANO-BRIDGE.

1,064,017.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed October 30, 1912. Serial No. 728,711.

To all whom it may concern:

Be it known that I, GEORGE SCHROEDER, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Piano-Bridges, of which improvements the following is a specification.

My invention relates to the construction of bridges which are secured to the sounding board of a piano, and adapted to transmit the vibrations of piano strings to such board. As ordinarily constructed such bridges are made of a plurality of strips of wood glued together into a solid and unyielding structure, which is incapable of any appreciable vibration.

The object of my invention is to construct piano bridges of metal of such a character and in such forms as will enhance and prolong the tone of the strings, and will diminish the overtones.

In the accompanying drawing, which forms part of my specification, I have illustrated several forms of my invention.

Figure 1 of the drawing is a view of the front of a sounding board for an upright piano, showing the usual arrangement of frame, strings, and bridges, the bridges shown being constructed according to the teachings of my invention; Fig. 2 is a sectional view taken on the line II—II, Fig. 1; Fig. 3 is an enlarged detail view of my preferred form of base bridge; Fig. 4 is a side view of the bridge shown in Fig. 3; Fig. 5 and 6 are sectional views taken on the lines V—V and VI—VI, Fig. 3; Fig. 7 is a view similar to Fig. 6, showing a modification in the attachment of the pins to the bridges; Fig. 8 is an enlarged detail view of a portion of the treble bridge shown in Figs. 1 and 2; Fig. 9 is a sectional view taken on the line IX—IX, Fig. 8; and Fig. 10 is a transverse sectional view of a bridge showing a modification in form, which may be applied to either base or treble bridges.

In the several figures like numerals are used to designate like parts.

In the general construction of upright pianos, as illustrated in Figs. 1 and 2, a cast metal frame 1 is placed above the wood sounding board 2, and two bridges, the treble bridge 3 and the base bridge 4, are secured to the sounding board 2. The base

and treble strings 5 and 6, respectively, are secured at each end to the frame 1 and bear respectively upon the bridges 4 and 3.

My preferred form of base bridge 4 is illustrated in Figs. 3, 4, 5, and 6, and consists of metal cast or molded so as to be of substantially constant thickness throughout. In cross section (see Figs. 5 and 6) the bridge is bell-shaped, the open end, which faces the sounding board, being narrower at the ends of the bridge than at the central portion thereof. On the top or crest 7 of the bridge the desired number of pins 8 are cast or otherwise formed, it being understood that the crest is so curved as to produce the proper scale length of wires. The said bridge is preferably secured to the sounding board 2 by means of a single line of bolts 9, extending along one side of the bridge; and in order to give the sounding board greater freedom for vibration the ledge between the bolts is preferably raised, as shown particularly in Figs. 4 and 6. With the same end in view and also in order to give the bridge itself free vibratory action, one side thereof is, as shown in Figs. 5 and 6, unsupported by and unconnected to the sounding board or any other surrounding structure.

In Fig. 7 I have illustrated a modification of structure, wherein the pins 8^a are secured to a strip of wood 11 or other material, which in turn may be secured to the bridge 4^a by means of screws 12. In order to provide a secure base for said strip 11 the crest or top of the bridge has a trough 13 formed therein.

The treble bridge 3, which is illustrated on enlarged scale in Figs. 8 and 9, is made of metal so formed as to inclose a hollow oval space of substantially constant cross section throughout. The general longitudinal shape of the treble bridge 3 is the same as like bridges heretofore constructed of wood. As in the case of the base bridge 4, described above, the bridge 3 is also secured to the sounding board 2 preferably by means of a single line of bolts 9^a, and the edge 14 is unsupported so as to be free to vibrate. Also the crest 7^b is provided with a series of pins 8^b of any preferred construction.

In the modification of structure illustrated in Fig. 10, the metal bridge 14, which may be either a base or treble bridge, is sub-

stantially semi-circular in transverse section, having both sides free to vibrate, and having its concavity facing the sounding board. This form of bridge may be supported by a plurality of brackets 15, one of which is shown herein.

While various metals may be used in the construction of the bridges which I have just described, I find that the objects of my invention are more fully attained by constructing the base bridge of a uranium steel alloyed either with copper or bell metal, and by constructing the treble bridge of vanadium steel.

It will be observed of my invention that all of the forms of bridges are hollow and that they are constructed in such a manner as to be free to vibrate. Resulting from this construction I find that the volume of the tone is increased and its duration lengthened. These results I believe to be due to the fact that the bridge itself vibrates independently of the vibration of the sounding board, and that the bridge transmits vibration of greater amplitude to the sounding board than are transmitted by the usual wooden bridges. I also find that, by the use of my improved bridges, undesirable overtones of the strings are materially diminished. While not stating it as a fact I believe that the vibration of the bridges themselves is largely responsible for such diminution of overtones.

On account of the results incident to my invention, it will be readily understood that its application to base bridges is very desirable, it being well known that, as pianos are now constructed, the volume of the base

notes is in no manner commensurate with the volume and tone of the treble notes.

I do not wish to limit myself to the forms and details of construction shown herein, for obviously many changes may be made by those skilled in the art without departing from the spirit of my invention.

I claim as my invention:

1. The combination of a piano sounding board, and a bridge secured directly to said board, said bridge being constructed of hollow curved vibratory metal.

2. The combination of a piano sounding board, a bridge constructed of hollow-vibratory metal of sheet form, and means for securing said bridge to said sounding board, one edge of said bridge remaining unconnected to any surrounding structure and free to vibrate.

3. The combination of a piano sounding board, and a metal bridge secured to said board, said bridge being of bell form in cross section having its open end facing the sounding board and having one side free to vibrate.

4. The combination of a piano sounding board, a hollow bridge constructed of vibratory metal, and a single line of securing members attaching said bridge to said board, one side of said bridge being free to vibrate.

In testimony whereof I have hereunto set my hand.

GEORGE SCHROEDER.

Witnesses:

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FRANCIS J. TOMASSON.