G. C. MANNER.

Piano-Forte.

No. 167,403. Patented Sept. 7, 1875.

Fig: 1

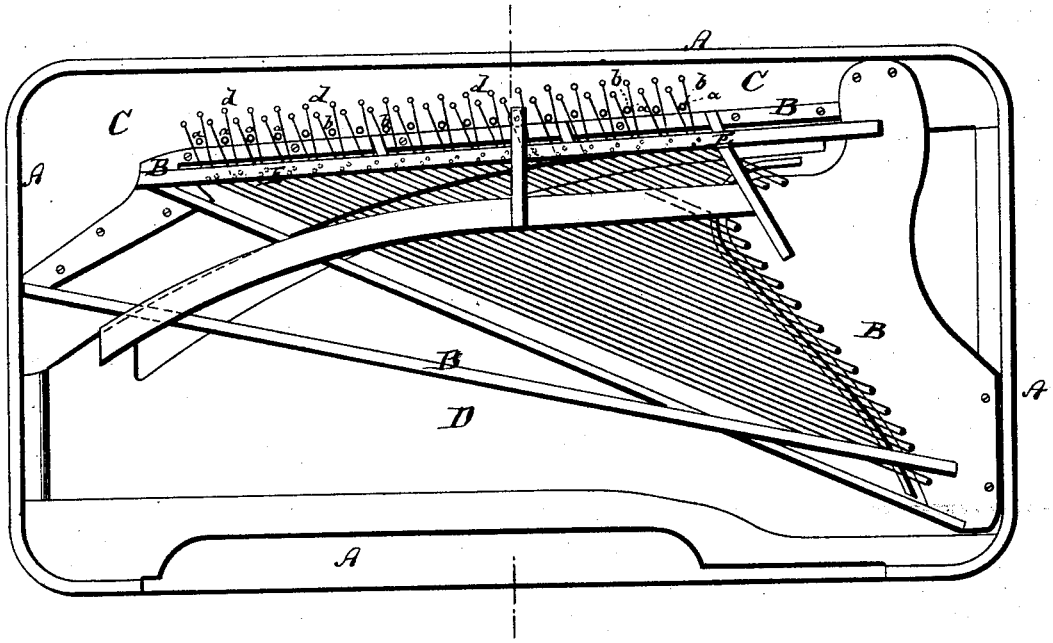


Fig: 3

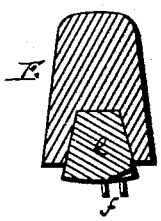


Fig: 4

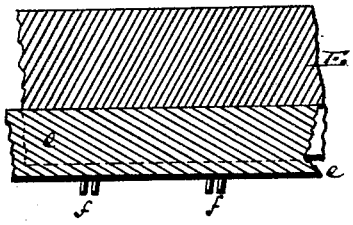
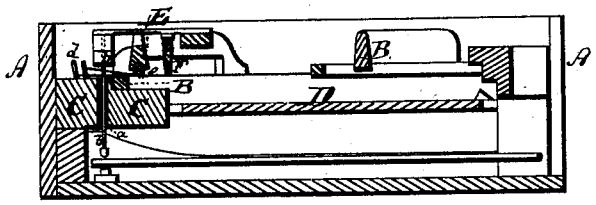


Fig: 2



Witnesses:

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Inventor

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UNITED STATES PATENT OFFICE.

GEORGE C. MANNER, OF MOTT HAVEN, NEW YORK.

IMPROVEMENT IN PIANO-FORTES.

Specification forming part of Letters Patent No. **167,403**, dated September 7, 1875; application filed March 20, 1875.

To all whom it may concern:

Be it known that I, GEORGE C. MANNER, of Mott Haven, in the county of New York and State of New York, have invented a new and useful Improvement in Piano-Fortes, of which the following is a specification:

Figure 1 is a top view of a piano-forte frame and wrest-plank, showing my improvement. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a detail vertical transverse section, on a large scale, of the bridge of my improved piano-forte; and Fig. 4, a vertical section of the same.

Similar letters of reference indicate corresponding parts in all the figures.

The object of this invention is to improve the location of the damper-lifters of a piano-forte, with a view to economizing space and to improving the condition of the strings.

Heretofore there was usually one of the following two methods employed for applying the lifting-pins, the first and oldest being to bring them forward of the frame and through the wooden bridge; the second being to put them through a slot of the iron frame directly in the rear of the bridge. The first of these methods was objectionable, chiefly because it caused the vibrating strings to come in contact with the lifter-wires. The second method, of putting the lifting-pins or lifters through a slot in the back of the bridge-bar, is objectionable, also, because it weakened said bar, and because it made it necessary to set the frame too far backward, thus enlarging the size of the instrument.

My invention consists in perforating the wrest-plank directly behind the metal frame for the reception of the several lifter-wires, thereby allowing me to use a narrower bar at the back of the iron frame, and to bring the tuning-pins as close as possible to said bar, this being of great advantage, not only inasmuch as it reduces the size of the whole instrument, but, also, inasmuch as it reduces the length of the string between the bridge and tuning-pin; and the expansion of the non-sounding portion of each string, which is most injurious to the instrument, will be limited to the smallest possible extent by reducing the length of the non-sounding portion of each string, which can only be done by bringing the tuning-pins close to the bridge with which the strings are in contact. The location of the lifters behind the iron frame has also several advantages in facilitating the application of the lifters with respect to the position of the strings and tuning-pins, making it also easier to gain access to the lifting-pins in case it is desired to repair or inspect the instrument. The second feature of my invention has reference to the inlay of the bridge. This inlay has heretofore usually been made of wood, ivory, or other non-sound-conducting substance, cut into shape and placed within a recess of the bridge proper. The necessity of cutting such an inlay made the same very expensive, and I, in order to overcome the expense and produce an inlay as desirable in every respect as those heretofore made, cast a rubber inlay directly in the frame, and vulcanize the rubber to harden it to the requisite extent. This will avoid the necessity of cutting, will make each inlay fit its frame with the greatest nicety, and be much less expensive than the inlay heretofore used.

In the accompanying drawing, the letter A represents the casing or shell of the instrument; B, the iron frame; C, the wrest-plank; D, the sounding-board. E is the bridge, formed at the back of the frame B, to terminate the sounding portion of the string. The wrest-plank C is perforated, as shown at *a*, for the reception of the lifters *b*, that carry the dampers F, the said lifters connecting with the keys of the instrument in the customary manner, so that they will be raised by the depression of the various keys, and raise the dampers accordingly.

It will be seen that, by placing the lifters *a a* behind the bridge E and frame B, I dispense with the necessity of bracing the bridge by a wide metal bar, and reduce, in fact, the whole metal frame in width, allowing, also, the back of the shell or casing A to be brought much further forward than it heretofore could be done. Using a narrow boundary for the frame B at the rear, I am also enabled to bring the tuning-pins *d* as close to the bridge E as possible, thereby reducing the length of the non-sounding portion of the strings between the bridge E and the said tuning-pins. The wrest-plank, being perforated behind the metal

frame—that is, at its thickest portion—constitutes an admirable guide for the lifters.

The bridge E contains, in a recess at its lower part, an inlay, *e*, (shown more clearly in Figs. 3 and 4,) which inlay I make of rubber, cast or molded in the metal bridge, or in an equivalent thereof, and provided with the necessary projecting pins *f f*, either while in a soft condition, or subsequent thereto in the mold. The rubber is hardened by vulcanization, in the usual plan, and thereby made to act as a non-conductor of sound, and as a reliable support for the strings.

I claim as my invention—

1. In combination with the bridge E, applied in front of and above the wrest-plank C, the perforated wrest-plank and the lifters *b b*, extending through the perforations of said wrest-plank and behind said bridge, all being so arranged that the strings pass beneath the bridge and above the wrest-plank, and that the lifters extend between the said bridge and the tuning-pins which project above the face of the wrest-plank, substantially as herein shown and described, and for the purpose specified.

2. The piano-bridge E, combined with the hard-rubber inlay *e*, cast or molded in the bridge, substantially as herein shown and described.

The above description of my invention signed by me this 18th day of March, 1875.

GEO. C. MANNER.

Witnesses:

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