(No Model.)

G. STECK.

PIANO.

No. 365,412. Patented June 28, 1887.

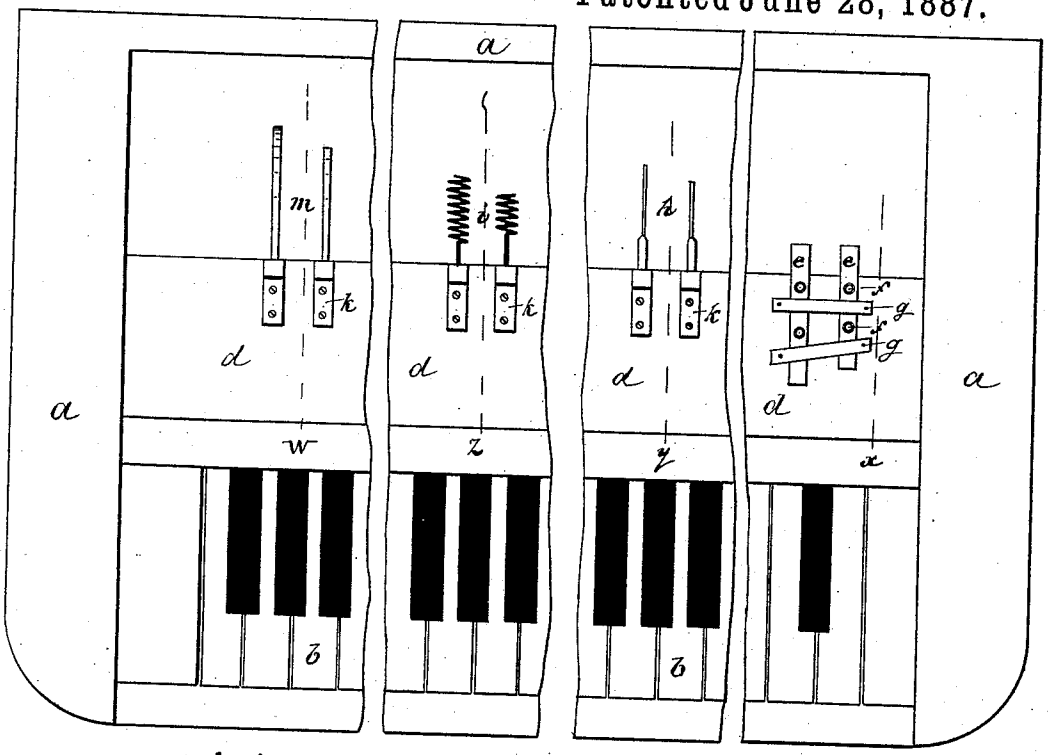


FIG. 1.

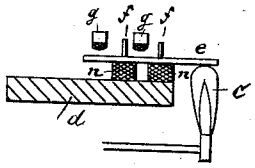


FIG. 2.

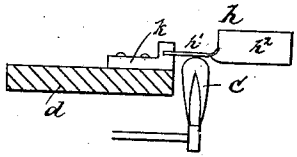


FIG. 3.

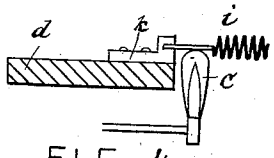


FIG. 4.

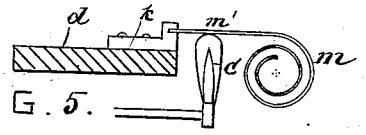


FIG. 5.

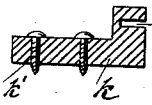


FIG. 8.

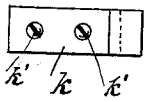


FIG. 7.

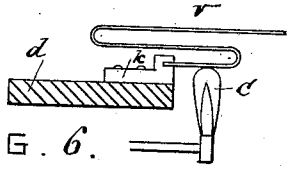


FIG. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE STECK, OF NEW YORK, N. Y.

PIANO.

SPECIFICATION forming part of Letters Patent No. 365,412, dated June 28, 1887.

Application filed July 31, 1886. Serial No. 209,641. (No model.)

To all whom it may concern:

Be it known that I, GEORGE STECK, of the city of New York, in the county of New York, and State of New York, have invented a new and Improved Piano, of which the following specification is a full, clear, and exact description.

This invention relates to a musical instrument operated by keys similar to a piano.

The invention is designed to enable beginners and students to practice upon an instrument operating and having the same tones as the piano, but without having the intensity of such tones.

The invention consists in the various features of improvement hereinafter more fully pointed out.

In the accompanying drawings, Figure 1 shows the plan of part of a square piano with my improved arrangement. Fig. 2 is a cross-section at line *x*, Fig. 1. Fig. 3 is a cross-section at line *y*, Fig. 1. Fig. 4 is a cross-section at line *z*, Fig. 1. Fig. 5 is a cross-section at line *w*, Fig. 1. Fig. 6 shows a modification. Figs. 7 and 8 are plan and side views of the metal plate *k*.

The letter *a* represents the frame of a musical instrument built similar to a piano-forte and provided with keys *b* and with an ordinary grand or square action which throws hammers *c* upward and against the sounders. These sounders are attached to the sounding-board *d* and overlap such sounding-board at its rear edge, so as to be accessible to the hammers. I prefer to employ four different classes of sounders—one for the highest notes, two for the central notes, and one for the bass notes. The sounders of each class vary in length, so as to produce the different notes. The highest notes are produced by metal (preferably steel) plates *e*, of rectangular form and straight, and perforated at two places for the admission of two headless pins, *f*, projecting upwardly from sound-board *d*. Buttons or pads *n*, of a soft material, are placed around these pins between the sounding-board *d* and the metal plates *e*. Upon these pins *f* the plates *e* are free to move up and down.

In order to prevent plates *e* from being thrown beyond the upper edge of the pins, I employ two check-rails, *g*, attached to sound-board *d* at right and left of plates *e* and extending at right angles across such plates. These check-rails are placed parallel to sound-board *d* and at such a distance above the same and the plates *e* as to permit a sufficient up-and-down movement of plates *e*, though preventing such plates from slipping off the pins *f*. If it is desired to remove or replace plates *e*, it is simply necessary to unfasten check-rails *g*, when all the plates *e* may be slipped off pins *f*.

The second class of notes are produced by flat metal bars *h*, bent or twisted in a peculiar way. These bars are twisted upon themselves, so that the front section, *h'*, stands at right angles to the rear section, h^2. The rear sections are, moreover, of greater width than the front section. These bars *h* are secured to the sounding-board in the manner hereinafter described and in such a way that such front sections lie flat or parallel with the sound-board, while their rear sections stand at right angles thereto. In this way the bars *h* may be placed closely together and still their rear or sounding sections, h^2, will possess sufficient body for the production of a rich tone. The hammers *c* strike bars *h* directly in front of the twisted portion—that is, on the rear end of front or horizontal section, *h'*, and thus a sufficient surface for contact between hammer and bar is established.

The third class or baritone notes are produced by bars *i*, the after parts of which form spiral springs of uniform diameter from end to end, but of different length. These bars are attached to the sound-board at their front end, as will be hereinafter described, while their rear or spiral end is free or unsupported, thus permitting free vibration.

The fourth or bass class of notes are produced by bars *m*, the after parts of which are bent similar to helical springs, and are attached with their straight shanks *m'* to the sound-board, as shown. These bars are struck by the hammers preferably directly in front of the coils. The connection between the sound-board *d* and the bars *h*, *i*, *m*, and *v* is produced by a small intermediate metal plate, *k*, slotted at one edge, k^2, for the admission of inner ends or shanks of the bars *h*, *i*, *m*, and *v*, which are soldered into said slots. At right angles to such slots two screw-holes, *k'*, are made in plate *k*, through

which the screws are passed, by means of which the plate is secured to sounding-board *d*. I have found that by the use of these plates *k* the vibration of bars *h*, *i*, *m*, and *v* is considerably augmented.

Fig. 6 shows a metal bar, *v*, bent backward and forward upon itself. This bar may possibly be employed for producing some of the lower notes.

By substituting metal bars for the usual strings in a piano I produce an instrument which while giving the exact tones desired has not the intensity of sound, and is therefore particularly adapted for beginners, students, or for practice.

I am aware of Patent No. 166,635, granted to A. Schoenhut, August 10, 1875, for an improved reed-organ attachment, and do not claim the construction therein described; but

I do claim—

The combination of case *a*, keys *b*, hammers *c*, and sound-board *d* with the perforated plates *e* and headless pins *f*, projecting upward from sound-board *d* and entering perforated plates *e*, so that such plates have free up-and-down motion, and with fixed check-rails *g*, extending at right angles over plates *e*, parallel to sound-board *d*, substantially as set forth.

GEORGE STECK.

Witnesses:

ROBT. H. ROY,

HENRY E. ROEDER.