(No Model.)

G. O. STEARNS.

Octave Coupler for Musical Instruments.

No. 240,930. **Patented May 3, 1881.**

Fig. 1

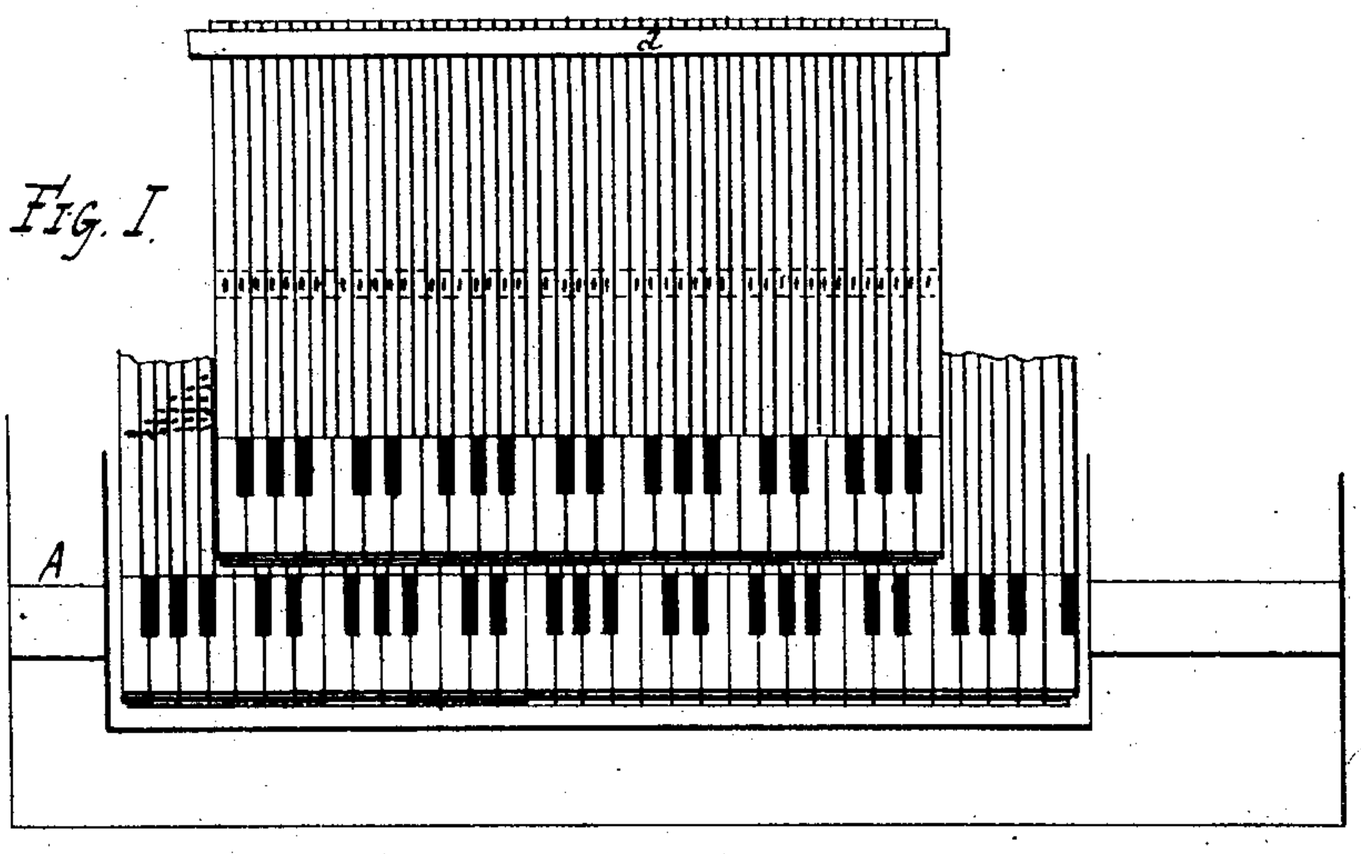


Fig. 2

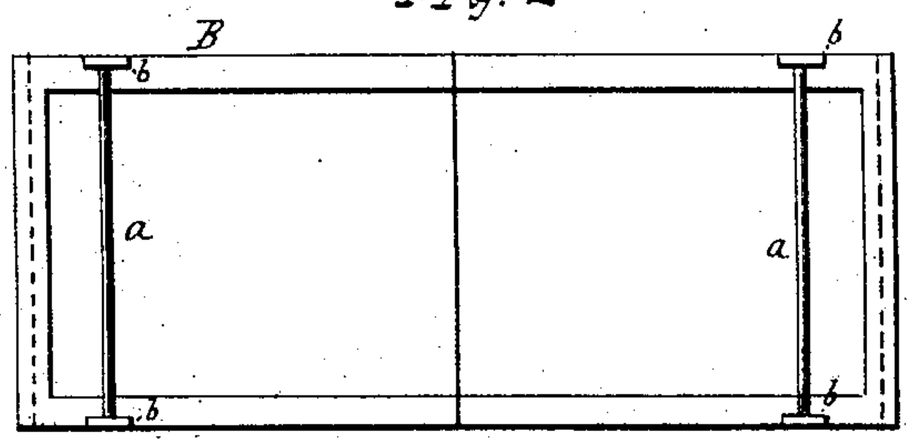


Fig. 3

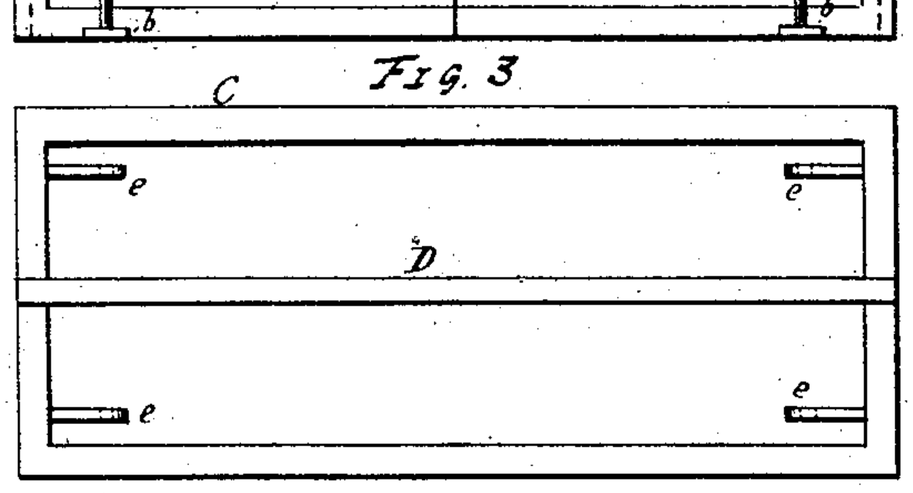


Fig. 5.

Fig. 4

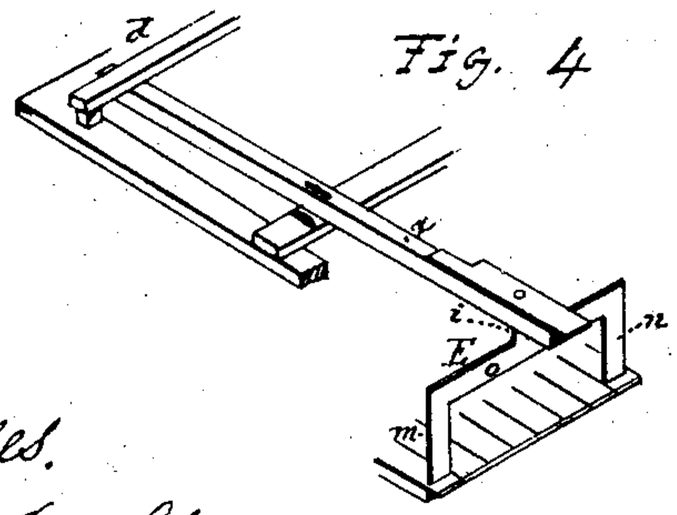
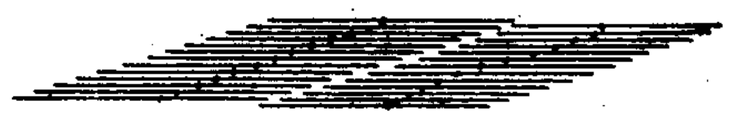


Fig. 6.



Witnesses.
Orrin L. Geralds
Mattby Fowler

Inventor
George O. Stearns,
by Geo. Gerry, atty

UNITED STATES PATENT OFFICE.

GEORGE O. STEARNS, OF NEW HAVEN, CONNECTICUT.

OCTAVE-COUPLER FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 240,930, dated May 3, 1881.

Application filed February 16, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE O. STEARNS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new, useful, and Improved Octave-Coupling Attachment to Musical Instruments, of which the following is a description.

My invention is designed for pianos, but is applicable to other instruments, its object being to enable a musical composition to be played in octaves with the same facility that it is played in single notes.

The invention consists, principally, in the arrangement of a bank of keys above the ordinary keys in an instrument, each of which operates two keys in the lower bank an octave apart; in a coupler connecting a key in the upper bank with a key and its octave in the lower bank, and in other minor devices for carrying my object into effect, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a perspective view of a part of an upper bank of keys and of the front ends of the lower or ordinary bank. Fig. 2 is a view of the base or support of the sliding frame, on which the upper bank of keys is pivoted; and Fig. 3 is a view of the sliding frame. Fig. 4 is an enlarged view of an upper key, of the front ends of eight lower keys, of the coupler attached to an upper key and resting on a lower key and its octave, and of a part of the sliding frame. Fig. 5 is a side view of an upper key, of a cross-section of the pivot-rail, and of a spiral spring to hold up the front end of the key. Fig. 6 is a top view of the couplers.

To enable others to make my improved attachment so that it will operate in the manner contemplated, I will describe it in detail.

In Fig. 1 portions of two banks of keys are shown, one above the other, and also lines to indicate parts of a piano-case. The line A indicates the position, relative to the keys, of the "name-board," as it is commonly called. A longitudinal opening in this board is made, through which the upper bank of keys move as they are drawn out and moved back within the case. The lower bank of keys are the ordinary keys of a piano.

The frame B, Fig. 2, is the base or support of the attachment, and is itself supported by pieces or strips of sheet metal, indicated by a central transverse line and by broken lines across the ends of the frame. These strips of sheet metal are fastened to the frame, pass between the keys in the lower bank, and rest on the piano-case. The frame is also strongly braced by stays extending to the case or frame of the piano, the stays not being shown. The like rods *a a* extend across the frame, and are held above it by the metal pieces *b*, which are attached to the fame.

The sliding frame C, Fig. 3, is made of the same size as the frame B, and is furnished with the rail D, to which the upper bank of keys are pivoted in the usual manner. The perforated metal pieces *e* are attached to the under side of the frame, and are formed to bring the perforations below the frame, the perforations being indicated by dots. The rods *a a* fit into these holes or perforations, and the frame C can move freely on the rods over the frame B, the metal pieces *e* being placed in a position to allow the requisite movement. The cross-bar *d*, Figs. 1 and 4, extends across the inner ends of the keys, and is connected to the frame C by short posts, one of which is shown in Fig. 4. Into the under side of the bar holes are made, into which spiral springs are inserted to hold up the front ends of the keys, as shown in Fig. 5. The upper bank of keys is pivoted to the rail D, Fig. 3, in the usual manner, their inner ends being under the spiral springs in the bar *d*, as shown in Fig. 5. Underneath the keys the couplers are attached. The couplers E, one of which is shown in Fig. 4, consist of the straight levers *o;* of the legs or parts *m* and *n*, the legs being long enough to prevent the lever *o* hitting the keys between the legs as they force down the keys under them; of the central upwardly-projecting parts *i*, made of sufficient length to prevent the keys over the lever *o* hitting it as they are moved downward. All the parts of the couplers are made in one piece of thin sheet metal, or they may be cast.

For convenience in illustration in the enlarged view, Fig. 4, the coupler is shown connected to the upper key near its front end, and resting on the lower keys near their ends.

In practice the front coupler is attached to the upper key at *x*, Fig. 4, and as the sliding frame is drawn out it is brought near the name-board or line A, Fig. 1.

The couplers are fastened to the upper keys

by making transverse slots on the under side of the keys, lining the slots with thin felt, and by making holes through the upright parts *i* of the couplers, through staples which pass into the keys, holding the ends of the upright parts against the bottoms of the slots. Thus fastened either end of a coupler may drop below the other, and a slight motion back and forth of its lower parts is secured, but one coupler cannot hit another.

The couplers are arranged one back of another, each back coupler resting on the keys immediately above the keys on which the coupler immediately in front of it rests. This plan of arrangement is followed until there are couplers enough to operate a key and its octave and the intermediate keys and their octaves in the lower bank. The number required to be so arranged is thirteen, and this number constitutes a bank of couplers. As many banks of couplers are arranged in this manner as the keys in the lower bank require, the legs of the several couplers in the upper banks nearest the legs of the several couplers in the next lower bank resting on the same keys and in front of them. Fig. 6 is a top or plan view of two banks of couplers arranged as above described. The dots on the keys in Fig. 1 indicate the couplers extending over the lower keys. The couplers are described as resting on the keys under them, but a narrow space may be left between them. The couplers being thus arranged, it is obvious that the sliding frame C may be made in two parts, if desired, and that the upper banks of couplers may be drawn out by themselves. It is also obvious that the number of keys in the upper bank will be less than the number of keys in the lower bank by the number of keys in an octave.

When instruments are made with the attachment the rail to which the upper keys are pivoted may be immovable and part of the frame of the instrument, the upper keys being arranged farther back, as in an organ; and when the rail forms a part of a sliding frame a pedal or knee-piece may be used to move it.

The octave-coupling attachment being constructed as above described, a musical composition may be played on the upper bank of keys in octaves or on the lower bank in single notes, as desired.

Knowing that octave-coupling attachments have before been made,

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An octave-coupling attachment composed of a bank of keys having couplers E, one to each key, consisting of the straight levers *o*, parts *m* and *n*, and centrally-projecting upright parts *i*, all combined and arranged as described, and adapted to be placed upon and used in connection with another bank of keys, whereby, if one key of the upper bank be depressed, two keys an octave apart upon the lower bank will be operated, all as set forth.

2. In an octave-coupling attachment, the base B, supported by strips of sheet metal passing between the lower keys and resting on the case of the instrument, and provided with the rods *a a*, in combination with the sliding frame C, having the perforated metal pieces *e* and pivot-rail D, substantially as set forth.

3. In an octave-coupling attachment, the coupler E, consisting of the straight lever *o*, of the parts *m* and *n*, and of the centrally-projecting upright part *i*, substantially as set forth.

GEORGE O. STEARNS.

Witnesses:
GEORGE TERRY,
DANIEL S. GLENNEY, Jr.