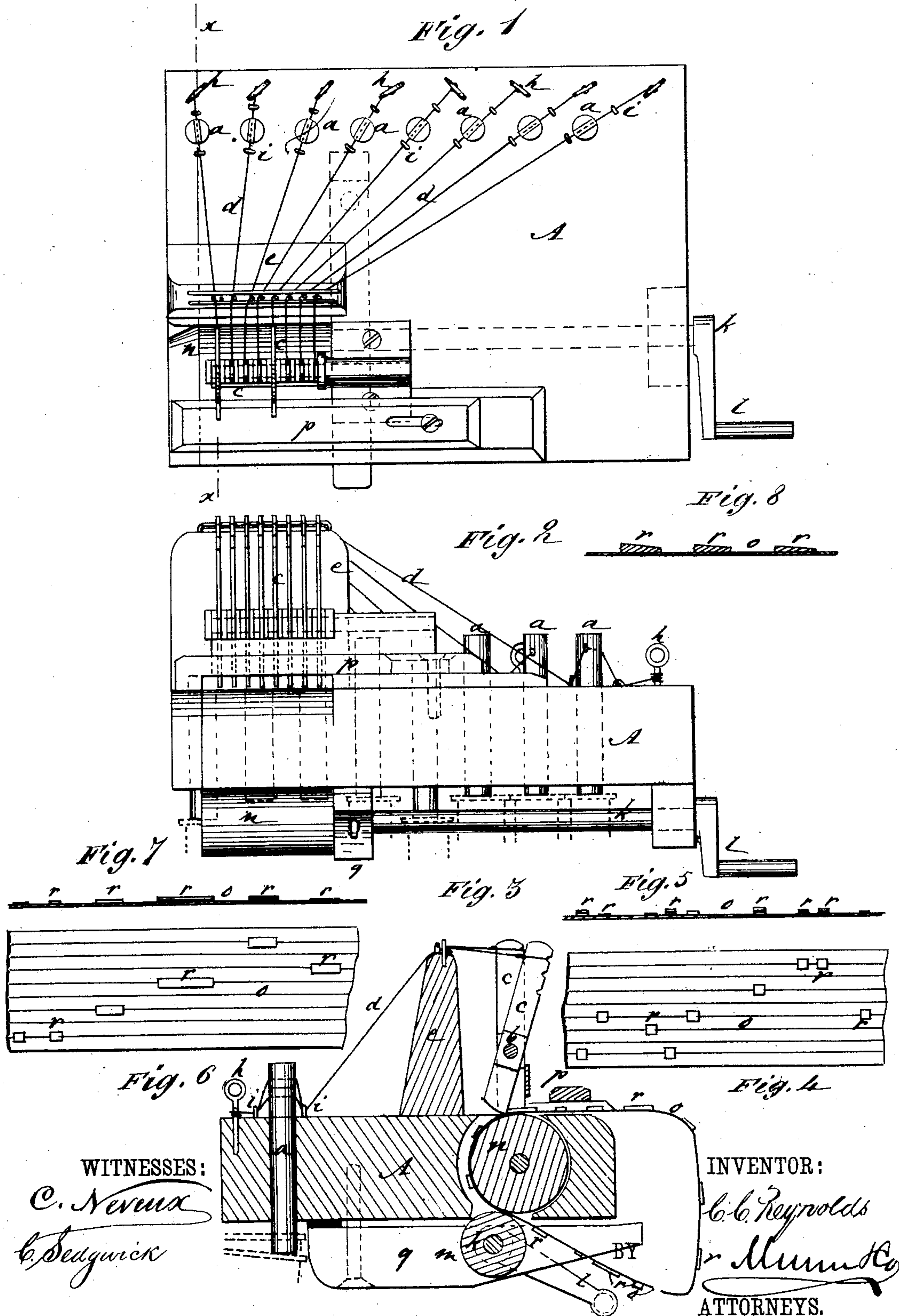


C. C. REYNOLDS.
Key-Board Attachment for Musical Instruments.

No. 223,387.

Patented Jan. 6, 1880.



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UNITED STATES PATENT OFFICE.

CHRISTOPHER C. REYNOLDS, OF KELSEYVILLE, CALIFORNIA, ASSIGNOR TO
HIMSELF AND WILLIAM G. YOUNG, OF SAME PLACE.

KEY-BOARD ATTACHMENT FOR MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 223,387, dated January 6, 1880.

Application filed May 27, 1879.

To all whom it may concern:

Be it known that I, CHRISTOPHER C. REYNOLDS, of Kelseyville, in the county of Lake and State of California, have invented a new and Improved Attachment for Pianos and Organs, of which the following is a specification.

My improvements relate to piano and organ attachments for use in connection with prepared music-sheets to play the instrument by turning a crank, or by any suitable motor.

The object of the invention is to render the apparatus more simple, to permit of one tune being played for any desired length of time, and to regulate the tone, length, and expression of the notes accurately.

I make use of an apparatus fitted with keys or pins that are caused to slide vertically by connections from levers which are operated upon by projections on the surface of an endless belt or music-sheet.

The extent of movement imparted to the keys is regulated by the thickness of the projection, whereby a light or heavy blow is struck, and the effect of crescendo and diminuendo produced.

Figure 1 is a plan view of the attachment. Fig. 2 is a side view. Fig. 3 is a vertical transverse section on line *xx* of Fig. 1. Figs. 4 and 5 represent the music-sheet in a form adapted for a piano. Figs. 6 and 7 represent the music-sheet as made for organs. Fig. 8 represents a variation in the music-sheet, referred to hereinafter.

Similar letters of reference indicate corresponding parts.

The base or support A, which carries the mechanism, is adapted for attachment by any suitable means upon the key-board of the instrument to cover the keys to the extent of one or more octaves. The vertical pins *a*, which are fitted to slide loosely in the base A, will rest upon the keys of the instrument, as illustrated by Fig. 3, wherein such keys are shown by dotted lines.

At one side of base A is fixed a rod, *b*, upon which are hung, in a vertical position, a series of levers, *c*, corresponding in number to the pins *a*. From each lever *c* a cord, *d*, passes over the bridge *e* to its respective pin or note.

These cords *d* pass through the upper projecting ends of pins *a*, and are connected beyond the pins to keys *h*, set in base A, so that by turning the keys the cords are wound and tightened. At each side of the pins the cords pass through eyes or staples *i'* fixed on base A, whereby, when the cords are drawn upon, the pins *a* are depressed.

Beneath base A is a shaft, *k*, having a crank-handle, *l*, at one end, and carrying at the other end a feed-roller, *m*, which is contiguous to a second feed-roller, *n*, that is hung loosely in an aperture in base A, beneath the lower ends of levers *c*. These feed-rollers are to be covered with rubber or other elastic material, and are used for moving the endless belt or music-sheet *o*. The sheet *o* is an endless belt of flexible material, such as cloth or paper, slightly wider than the space occupied by levers *c*, and having projections *r* upon its outer surface, which projections, by contact with levers *c*, move the said levers and depress the pins *a*, which movements are regulated by the position, length, and depth of projections, and are repeated as long as the belt is moved.

p is a guide on base A, beneath which the belt passes, and the belt is inserted and removed from one end of base A. The support *q* of the shaft *k* consists of a spring-arm, which gives way to the projections *r*, so that they pass the feed-rollers without injury.

The music-belt shown in Figs. 4 and 5 is for use with a piano. The projections *r* in this case are of the same length.

With organs the note is continued so long as the key is depressed, which I accomplish by making the projections *r* of the required length, as shown in Figs. 6 and 7. The force of the blow is regulated by making the projections *r* more or less thick, and by having the surface of the projections inclined an expression may be given to the tone resembling that attained by the human touch.

In Fig. 8 I have shown three projections, *r*, arranged to strike the same note in succession, first heavily, then lighter, and softly by the last projection, and also in diminuendo at each stroke. The reverse arrangement will give the reverse or crescendo effect. The ends of levers *c*, which come in contact with the

projections, are beveled to a knife-edge, so that they clear instantly as the projections pass.

This attachment is simple and durable. The
5 necessary arrangement of the notes on the music-sheet does not require repetition to continue that special tune, as the endless form permits its reuse repeatedly; and by the described arrangement of projections the flexibility and expression of the human touch
10 are more nearly approached than in any mechanical attachment heretofore used.

If desired, the music-sheet may be made no wider than the compass of the music requires.

15 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In an attachment for stringed or wind instruments adapted to be operated by a music-sheet prepared substantially as described, 20 the pins *a*, levers *c*, cords *d*, and feed-rollers *n*, combined for operation substantially as and for the purposes specified.

2. In an attachment for keyed musical instruments, the feed-rollers *m n*, levers *c*, bridge 25 *e*, cords *d*, pins *a*, keys *h*, and staples *i*, combined substantially as described and shown, and for the purposes set forth.

CHRISTOPHER COLUMBUS REYNOLDS.

Witnesses:

W. G. YOUNG,

W. P. CLENDENIN.