J. CLARK.

COUPLING ATTACHMENT FOR PIANOS.

No. 108,685. Patented Oct. 25, 1870.

FIG. 1.

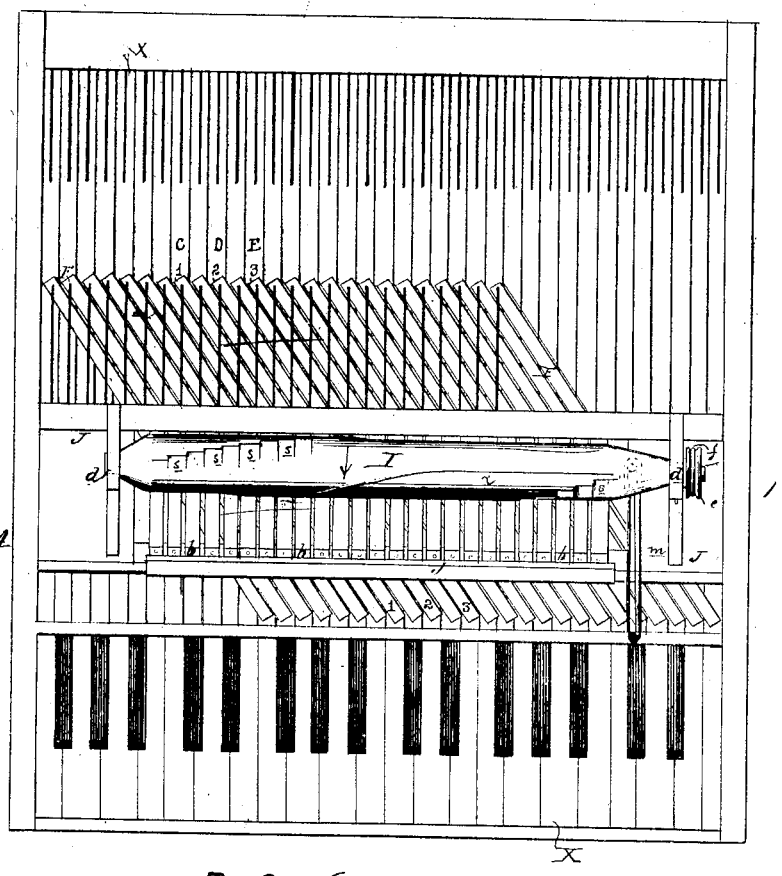

FIG. 2.

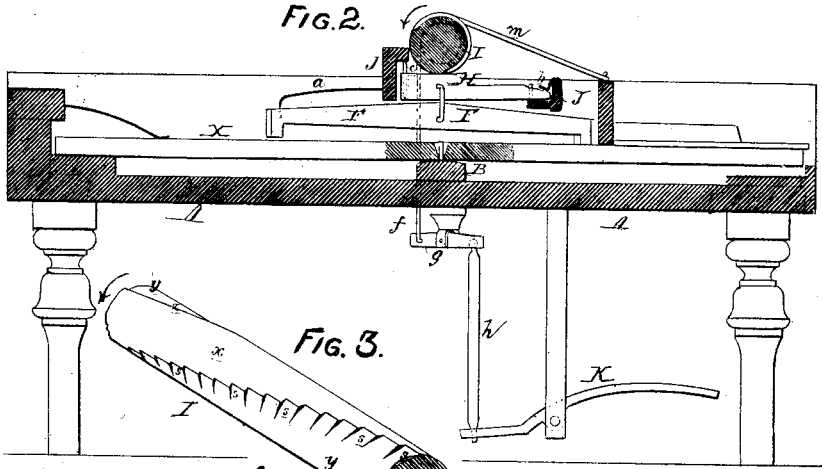

FIG. 3.

WITNESSES { Wm. A. Clark. Thos. McClain

John Clark By his attys. Howson & Sons

United States Patent Office.

JOHN CLARK, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND ALFRED ADAMSON, OF SAME PLACE.

Letters Patent No. 108,685, dated October 25, 1870.

IMPROVEMENT IN COUPLING-ATTACHMENTS FOR PIANOS.

The Schedule referred to in these Letters Patent and making part of the same.

I, JOHN CLARK, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Pianos, of which the following is a specification.

Nature and Object of the Invention.

My invention consists of a certain combination of levers, arms, and spiral roller, arranged within a piano, directly over the keys, and so controlled by a pedal, or its equivalent, that any key when struck may be caused to sound its octave; in other words, any note or chord that is struck will be repeated in the next octave, so that any air or composition can be played in octaves with as much ease and rapidity as in single notes, all of which will be fully described hereafter.

Description of the Accompanying Drawing.

Figure 1 is a plan view of sufficient of a piano to illustrate my invention;

Figure 2, a transverse vertical section of the same; and

Figure 3, a detached perspective view of part of the improvement.

General Description.

A represents the frame or case of an ordinary piano, and

X the keys, pivoted as usual to a rail, B, which extends longitudinally across the interior of the case.

The improvement which I have devised for controlling the keys in the manner above referred to consists of an arrangement of diagonal levers F, arms H, and a roller or cylinder, I, the whole being connected to and supported by a frame, J, which is secured to the key-frame, or to the case of the piano, at a point above the keys and their pivot-rail B.

The levers F are of the form best observed in fig. 2, and are arranged diagonally across the keys of the piano in such a manner that one end of each lever shall rest upon one of the keys at the rear of the pivot-rail, and the opposite end of the same lever upon the corresponding key of the next octave above, at the front of the pivot-rail.

This will be best understood on referring to fig. 1, where it will be seen that each diagonal lever rests upon two keys, the levers marked 1, for instance, resting upon the key C, and also upon its octave C above, while the lever 2 rests upon the key D and its octave, and so on to the top of the scale.

The levers F are steadied and maintained in a proper position in respect to the keys by means of springs *a*, which project from the rear of the frame J, and each of the said levers is pivoted, at a point directly, or nearly so, over the pivots of the keys, to one of the arms H, there being as many of the latter as there are levers.

The arms H are in turn pivoted to the frame J at the points *b*, and are steadied at their opposite ends by guide-pins *c* of the said frame.

The arms H serve the double purpose of holding the diagonal levers in place, and of pushing them down onto the keys, as hereafter described, when octaves are to be struck.

Both the arms and the levers, when not otherwise acted upon, are permitted to rise and fall freely, as the keys are struck, without sounding octaves. If one or more of the arms be pressed upon, however, so as to hold down their levers upon the keys, the latter will, on being struck, sound their octaves.

When the levers 1, 2, and 3, for instance, are held down, and the keys C, D, and E, upon which the rear ends of the said levers rest, are struck, the corresponding keys C, D, and E of the next octave above, upon which the front ends of the levers rest, will likewise be sounded.

In order to hold down the required number of levers upon the keys of the piano, I employ the roller or cylinder I, which extends across the whole number of levers and arms H, turns freely in bearings *d d* of the frame J, and has at one end a pulley, *e*, upon which is wound a cord, *f*, the latter being attached to a lever, *g*, connected by a rod, *h*, to a pedal, K, by means of which the roller or cylinder can be caused to make any part of or a complete revolution. Instead of the pedal K, a knee-stop, or lever to be operated by the knee, might be employed to operate the roller.

A gum or other spring, *m*, so acts upon the roller as to return it to a certain determined position whenever the pressure upon the pedal is relieved.

The roller is arranged immediately above and close to the arms H, so that it may press upon the latter as it is rotated; but as it would not answer the purpose intended if all the arms and levers were held down at one time, the said roller must be so constructed as to hold down the required number of levers only, at any part of the scale, while all the rest are relieved.

In order to accomplish this purpose, the roller is formed with a spiral enlargement, *x*, and plain portion, *y*, the spiral enlargement acting upon and pushing down the arms and levers successively, as it is brought over them, on rotating the roller by means of the pedal, while, when the plain portion *y* is brought over the said arms and levers, the pressure upon the same will be immediately relieved, so that the keys which they control can be struck without sounding octaves.

It will be observed, on reference to figs. 1 and 3, that the edge of the spiral enlargement *x*, which acts upon the arms H, in order to depress the same, is divided into a series of steps, *s*, arranged directly over and corresponding in number to the said arms. The face of each step *s* is parallel with the axis of the roller, so that by this arrangement any twisting strain upon the arms and levers is prevented.

The rear edge *z* of the spiral enlargement, from

which the pressure upon the arms is relieved, might also be formed into steps; but this is not essential.

My invention, as above described, is arranged for the treble only; but the roller might be made of sufficient length to extend across the whole number of keys, the bass as well as the treble, or a separate roller and levers might be used for the bass; but as it is seldom necessary to sound chords in the bass, the attachment to the treble keys will in most cases be found sufficient.

The operation of the treble attachment is as follows:

When the pedal or knee-step is slightly pressed, the first octave in the treble is brought into action by the motion of the roller, so that any key or chord struck in the first octave will be repeated in the second or next octave above. An increased pressure of the pedal will bring the second octave into action, and relieve the first, so that keys or chords struck in the second will be repeated in the third, and so on up the scale.

The roller is so shaped that it will hold but one octave of levers down on the piano-keys at one time, in any part of the scale, and so that when the pedal is not pressed the keys will be entirely relieved, so as to enable the piano to be played as usual with single notes.

If without pressing the pedal any chord is struck, and the keys are then held down, the same chord may be repeated by merely pressing the pedal.

Among the advantages of my invention may be mentioned the following:

Grace-notes, such as shakes, turns, trills, &c., can be played in octaves with as much ease and rapidity as in single notes.

Full double chords, that is, the full chords of two octaves, can be struck at once with one hand, in any part of the treble, or in any part of the key-board, if the arrangement be adapted to the bass also.

Chords and notes can be reached, and musical effects produced, which could not possibly be performed on the ordinary piano.

It will be apparent that other devices may be substituted for the cylinder I, in order to throw any desired portion of the series of coupling-levers into or out of operation, without departing from the main feature of my invention.

Claims.

1. The arrangement above the keys of a piano of a series of independent arms and levers, H and F, and devices, substantially as described, whereby any desired portion of the series of arms and levers may be caused to operate together, substantially as described.

2. The combination, with the said arms and levers, of a roller or cylinder, I, for the purpose specified.

3. The said roller, with its plain portion *y* and spiral enlargement *x*, when one or both edges of the latter are formed into steps *s*, as set forth.

4. The said roller, controlled by a pedal, or its equivalent, and spring, as specified.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN CLARK.

Witnesses:

WM. A. STEEL,

HARRY SMITH.