



# UNITED STATES PATENT OFFICE.

CHARLES F. OLIVER AND GEORGE W. JACKSON, OF LYNN, MASSACHUSETTS.

## PIANOFORTE.

Specification of Letters Patent No. 4,019, dated May 1, 1845.

*To all whom it may concern:*

Be it known that we, CHARLES F. OLIVER and GEORGE W. JACKSON, of Lynn, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Pianofortes, of the construction and operation of which the following description and accompanying drawings constitute a full and exact specification.

Figure 1, of the said drawings, represents a top view of a pianoforte, as it appears when the lid or cover of the case is removed, excepting that only such strings and keys as are necessary to the elucidation of our improvement, are exhibited, the remainder being omitted, they being only repetitions of such as are to be described.

A, denotes the frame, upon which the strings are usually stretched, and B, the bridge over and upon which they generally rest in their passage from the hitch pins at *h* to the straining screws, there being, generally speaking, two of the said strings (viz *a, a*), for each key hammer.

The object of our improvement is to produce by the striking upon one key, the effect that usually results from striking it, and the eighth or any other particular key beyond it; in order that those persons who find it difficult to reach an octave upon the series of keys, may readily produce the same result by striking one single key.

Our invention is not intended to be limited to the striking of octaves, as it will be evident, that a pianoforte can be readily arranged, so that the effects of any two keys of the series may be similarly produced. In order to illustrate the nature of our invention, we will suppose that the first key hammer (*c*) of the bass, operates upon one, two or more strings, *a, a*, in the usual manner. We will further suppose, that the strings *b, b*, are those belonging to the other extremity of the octave, or that they are sounded by means of the hammer of the eighth key, on the right of that first mentioned. In order to accomplish this, as is well known, the little finger of one hand must be pressed on one key, and the thumb on the other, the operation requiring a considerable and often very inconvenient stretching of the hand, besides being attendant with difficulties and dangers, well known to pianists. In order to effect the two sounds by means of one key, we arrange by

the side of the wire or string, *a*, and at a little distance from it, another or supplementary string or wire (*d*), which is carried and sustained over a supplementary bridge C, arranged and constructed in such manner, as to permit the passage and vibration of the string, *a*, over it, without contact therewith; the said bridge having suitable contrivances applied to it for the purpose of sustaining the supplementary string at the same level with the strings *a, a*. This supplementary string, is of the same length, or, is tuned so as to emit the same sound, or as near the same, as may be desired, as that of the strings *b, b*, or at the other extremity of the octave. The hammer (*c*), is made wide enough to strike at the same time upon the strings *a, a*, and the supplementary string, so that when its key is struck, a double sound, corresponding with those of the two extremes of the octave, is produced. As the leather pads upon the end of the hammers of the extremities of an octave, generally require different degrees of elasticity or softness, in order to produce the same effect by means of a single hammer, and when the supplementary string or strings are used for the purpose above set forth, we vary the elasticity of the pad of the hammer; making that portion thereof which strikes the highest note of the octave, or the supplementary string, harder or less elastic than the remainder, or that which sounds the strings *a, a*, and we accomplish this in various ways; that which in all probability will be found to be the most simple and efficient, being represented in Fig. 2, which denotes a vertical section of the hammer head and strings over it. The top part of the head is cut down, as seen at *e*, so as to admit of two thicknesses of leather over it; the same being intended to act against the strings, *a, a*, while that part of the cushion or pad of the hammer head, which strikes the string *d*, is composed of but one thickness *f* of leather. The supplementary strings may be played on, or their vibration may be arrested at pleasure, whenever desirable; the said vibration being prevented when the hammers are thrown up, by a damper D, arranged over each supplementary string, and connected to a bar E, extending over the strings, and having a suitable mechanical arrangement applied to it, by which it may be raised and lowered by the foot of the player, applied to a pedal at

pleasure, and thereby turn the damper off or down upon the supplementary string, as may be desirable.

Having thus set forth our invention, we shall claim—

1. One or more supplementary strings (*d*), damper D, and bridge C (or other analogous contrivance for supporting the strings and checking their vibration as above set forth), in combination with the string *a*, or strings *a*, *a*, and hammer beneath the same; the supplementary string being arranged, tuned and operating with respect to the strings *a*, *a*, of a note, and struck by the same hammer, substantially in the manner above specified.

2. We also claim the making—the pad of the hammer head, of different degrees of elasticity, or harder in that part of it, directly beneath, and which acts upon, the supplementary string, (*d*), than it is in the part or parts, beneath, and which strike the other strings (*a a*); the same being for the purpose above explained.

In testimony whereof, we have hereto set our signatures this fourteenth day of February—A. D. 1845.

CHARLES F. OLIVER.  
GEORGE W. JACKSON.

Witnesses:

R. H. EDDY,  
CULLEN WHIPPLE.