

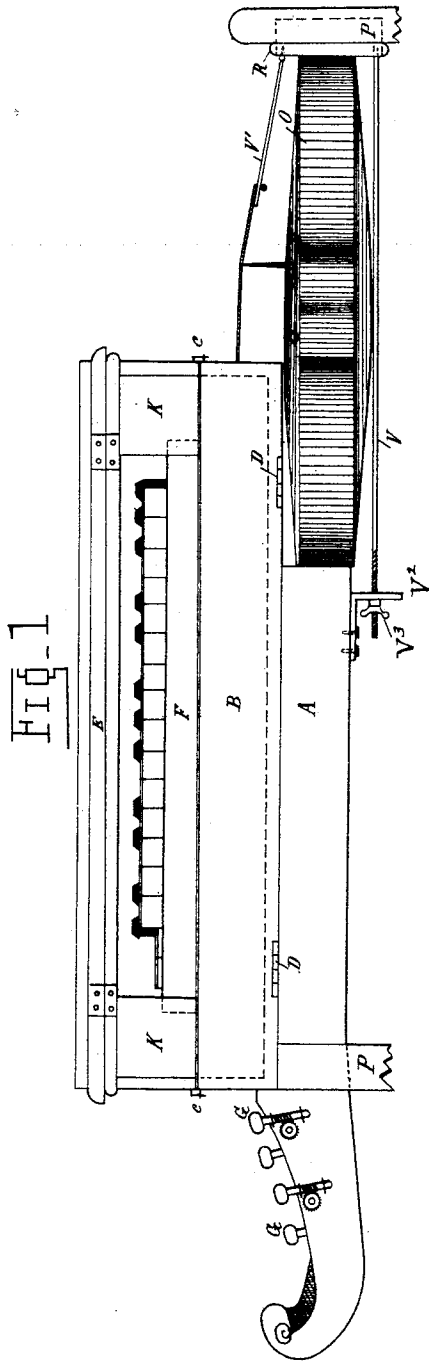
(No Model.)

2 Sheets—Sheet 1.

P. PEYNAUD.
MUSICAL INSTRUMENT.

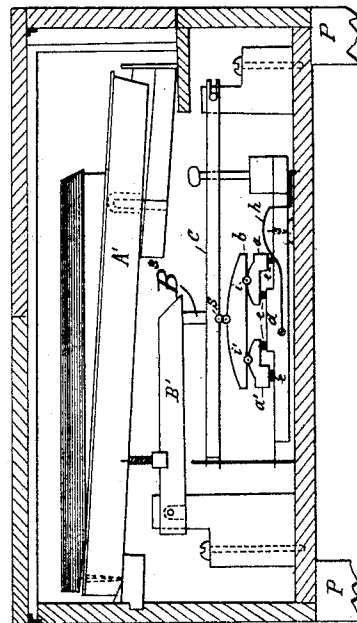
No. 471,225.

Patented Mar. 22, 1892.

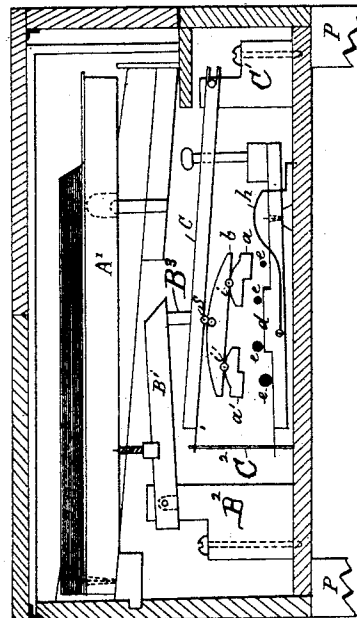


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II



FILE-3



2

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(No Model.)

2 Sheets—Sheet 2.

P. PEYNAUD.
MUSICAL INSTRUMENT.

No. 471,225.

Patented Mar. 22, 1892.

FIG-4

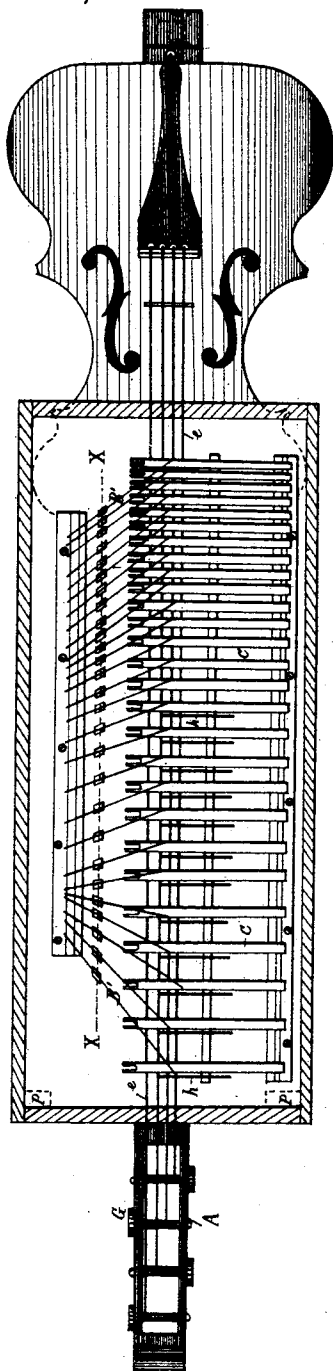


FIG-6

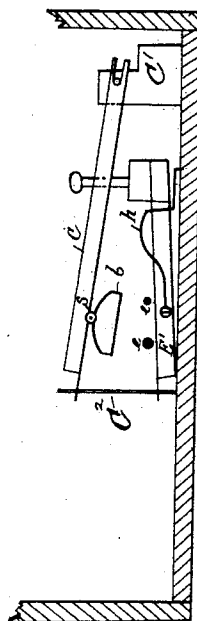
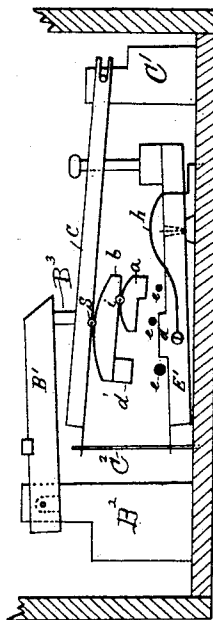


FIG-5



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UNITED STATES PATENT OFFICE.

PIERRE PEYNAUD, OF LE CAILLAN, FRANCE.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 471,225, dated March 22, 1892.

Application filed July 22, 1891. Serial No. 400,310. (No model.) Patented in France January 22, 1891, No. 210,858.

To all whom it may concern:

Be it known that I, PIERRE PEYNAUD, a citizen of the French Republic, residing at Le Caillan, in France, have invented certain new and useful Improvements in Musical Instruments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has been patented in France, No. 210,858, dated January 22, 1891.

The object of this invention is to produce an improved instrument of the violin kind in which the strings are operated by keys instead of by the direct manipulation of the fingers, two or more of the strings being simultaneously nipped between devices which the said keys actuate.

To this end the said invention consists in the construction and combination of devices hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 represents a side elevation of the musical instrument called a "claviviolé," embodying my invention. Fig. 2 represents a vertical transverse section through the same, showing the string-nipping devices inactive, the instrument being a four-string one. Fig. 3 represents a similar view with the said devices closed on the strings. Fig. 4 represents a plan view of the instrument, the casing and interior mechanism being in longitudinal section. Figs. 5 and 6 represent views similar to Fig. 2, but of a three-string and two-string instrument, respectively.

O designates an ordinary alto or other sounding case having in contact with its outer end a vertical board or piece R, from the lower end of which a rod V extends to and through a bracket V² on the bottom of a finger-board A, which is in contact with the inner end of the said case O. This rod is screw-threaded at the end which passes through the said bracket to receive a thumb-nut V³, whereby it may be drawn tighter or loosened at will. The said board or piece R sets into a recess of an upward extension of one of the legs P of the instrument. From its upper end the ordinary alto-piece V' extends to the strings *e*. The rod V counterbalances the tension of the strings, and thus aids in main-

taining the rigidity of the parts A O aforesaid.

B designates a side piece of the casing, connected by hinges D to the bottom piece thereof and opening downward to disclose the interior mechanism. When this piece is raised to close the case, catches *c* hold it in this upright position. K designates two pieces arranged at the ends of the mechanism-inclosing casing above the said hinged piece B, and E designates the top piece or cover of the casing, composed of plates hinged to the frame of the said casing. A considerable opening between the said parts B E K K leaves visible, as in Fig. 1, the set of keys A' and the board F, on which they are mounted. The set of keys illustrated is composed of those for thirty notes extending from "fa" to "si;" but by lengthening the mechanism-case room may be made to add new notes or to make the series begin with any note whatever. As shown in Figs. 2 and 3, the depression of any one of the keys A' carries down with it a lever B', which is attached by a screw to the under side of the said key and pivoted at one end to a standard B², raised from the bottom of the said casing. This lever is provided at its free end with a downwardly-extending stud B³, which rests upon a damper-lever C, having one end pivoted to a raised standard or block C', the other end being guided by an upright guide-rod C². To the under side of this lever a damper-block *b* is hung by a loose joint *s*. As shown in Figs. 2 and 3, two smaller blocks *a* and *a'* are hung at *i i* to the under side of this main block *b*, each of them being arranged to press on two of the instrument-strings *e*, which rest on the bridge E', upheld by the spring *h*. There is one such bridge for each one of the dampers. An enlargement *d* of the said bridge holds the two middle strings higher than the first and fourth, and the under faces of the blocks *a a'* are recessed to fit this construction, so that, as shown in Fig. 3, when the depression of the key forces the damper-blocks, through the action of the intervening mechanism, down on the strings all four of the latter will be securely nipped or clamped between the said blocks and the bridge. As shown in Fig. 5, a smaller block *d'*, not pivoted, may take the place of block *a'* aforesaid, the instrument then having but

three strings instead of four; or, as shown in Fig. 6, both of the blocks *a a'* may be dispensed with, the damper-block *b* pressing immediately on the two strings used in this form of the instrument. The bridge *E'* in this instance has no enlargement *d*. The strings *e* are attached at one end to the piece *V'* aforesaid and at the other end individually to tightening-screws *G*, which turn in or on the open tip of the finger-board *A*. As shown in Figs. 1 and 4, some of these tightening-screws are by preference horizontal and some vertical to allow space for a greater number.

When four strings are used, the first has the violin tone and is simply of steel wire. The second has the alto tone and is tuned an octave higher than the first. It has a light coating of glue outside of the steel wire and copper wire wound on the said coating. The third string, having the violoncello tone, is coated, like the second, with glue and has copper wire covered with silk wound on the said glue, a final winding of copper wire inclosing all. The fourth string has the counter-bass tone and is exactly like the third string, except that it has an additional winding of copper wire. Thus the strings regularly increase in size; but their tension is equal and they have the same force of sound. The winding and rewinding of the copper wire on the steel wire do not sensibly increase the resistance of the string as a whole, so that one string will be stretched as easily as another, and in stretching the counter-bass string there will be no danger of harming the instrument or of finding too great resistance to the action of the bow.

On the three-string violin the same air may be played on the first or violin string, on the second or alto string, on the third or violoncello string, on the fourth or counter-bass string, on the violin and alto strings together, on the alto and violoncello strings together, or on the violoncello and counter-bass strings together.

The clavivole embodying my invention, whether having two strings or three or four, differs from the monochord, the violin, and other like instruments in the composition of its strings and in the manner of operating the strings, which consists in pinching or clamping them between dampers and bridges, the said strings being immovable, instead of depressing movable strings by fixed keys; also, by the use of joints in the damper-

blocks and by the interval of an octave between the strings, which makes it possible to vibrate two strings at the same time and give the effect of two instruments playing together at the interval of an octave. The steel wires of the said strings should have their central or resisting parts equal in strength. The first or fundamental note of each string placed on the instrument should be obtained when the tension is equal for the four strings. This result is easily arrived at by using for each of the strings the same wire in size and quality as is used for the first string, copper wire in greater or less quantity being wound thereon, as described, and only the first string being left without covering or winding. The dampers, bridges, and actuating devices may of course be used with strings of very different composition from the above, as silk, catgut, or other construction of wire.

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

1. In a stringed instrument, a series of strings, in combination with a series of bridges, each of which extends transversely below the whole series of strings, a series of springs which support the said bridges, and a series of dampers and operating-levers, each damper being constructed to bind all the strings against one of the bridges as depressed by its lever, substantially as set forth.

2. In combination with the strings of a string instrument and bridges on which they rest, a set of damper-blocks, damper-levers, and keys for clamping the said strings against the said bridges, the said damper-blocks being jointed to their levers, substantially as set forth.

3. In combination with the strings of a string instrument, a set of dampers pressing thereon, each having a block loosely jointed to its lever, and additional blocks loosely jointed to the main block, substantially as set forth.

4. A damper provided with a jointed main block and having an additional block or blocks jointed to the said main block, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of June, 1891.

PIERRE PEYNAUD.

Witnesses:

EMILE KAUTER,
GUILLAUME ANTHONISSEN.