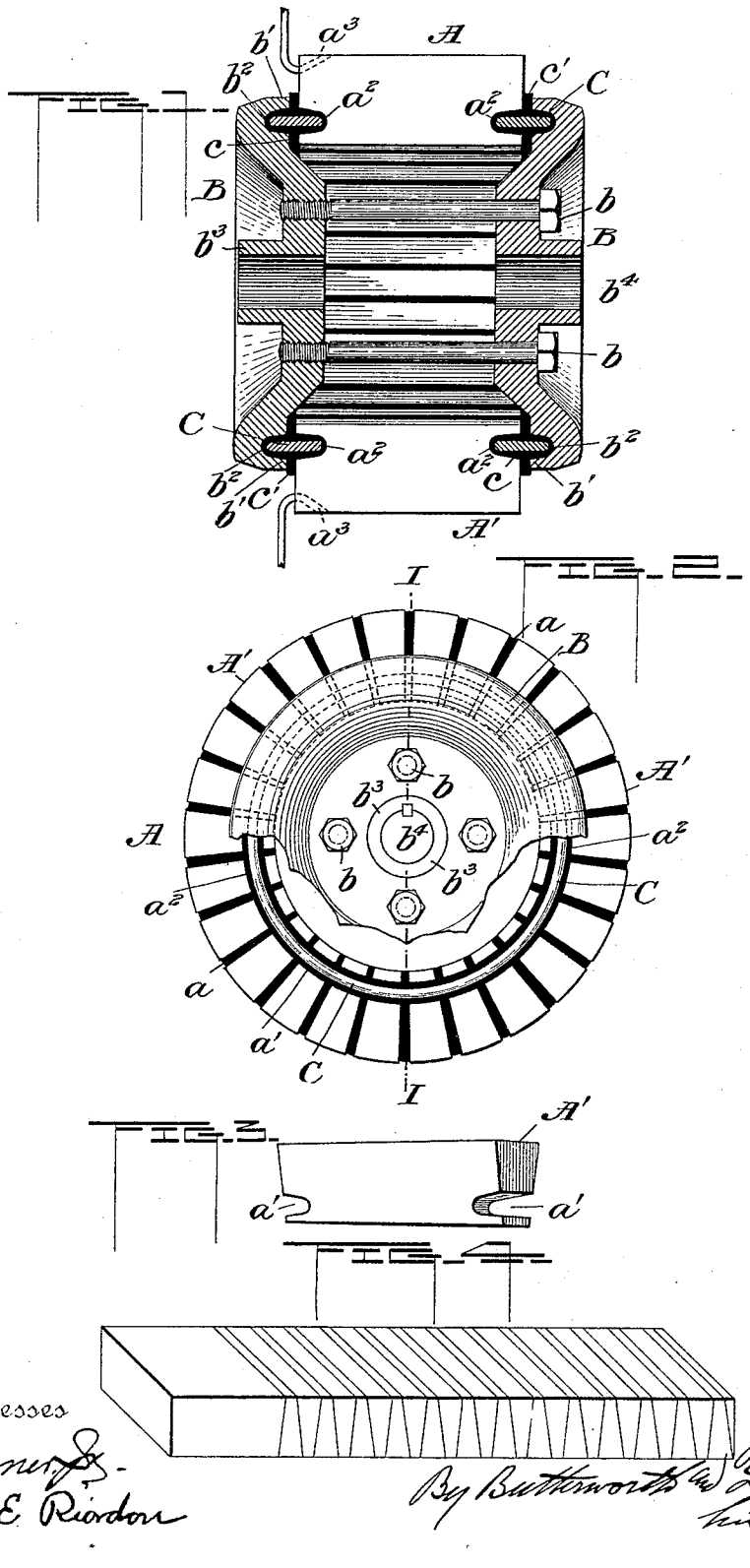
(No Model.)

J. C. FYFE.

COMMUTATOR.

No. 522,052. Patented June 26, 1894.



Witnesses
I. A. Connolly
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Inventor
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THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LOUIS JEAN MARIE DUVIVIER, OF NEVERS, FRANCE.

MOVABLE KEYBOARD.

SPECIFICATION forming part of Letters Patent No. 522,048, dated June 26, 1894.

Application filed June 10, 1893. Serial No. 477,185. (No model.)

To all whom it may concern:

Be it known that I, LOUIS JEAN MARIE DUVIVIER, fabricant, a citizen of the Republic of France, residing in Nevers, (Nièvre,) France, have invented a Movable Keyboard Applicable to Double Basses and Bass-Viols or Violoncellos, of which the following is a specification.

The invention forming the object of the present invention relates to a movable keyboard applicable to double basses and bass viols or violoncellos and designed to facilitate the study, holding and playing of these instruments. This keyboard is represented in the annexed drawings, in which—

Figure 1 represents a transverse section of the said keyboard. Fig. 2 is a plan showing the distribution or arrangement of the keys. Fig. 3 is a perspective view of the whole of a double bass having the keyboard in question placed upon its neck. Fig. 4 is a side elevation and front view of a trestle employed to support the double bass when the keyboard is employed. Fig. 5 represents in plan and side elevation a support for preventing the bridge from being forced over and thrown down by the action of the pressing pieces or dampers worked by the keyboard. Fig. 6 illustrates a detail of the mode of suspending the bow underneath the keyboard. Fig. 7 is a detail view of the reed box.

The keyboard in question is formed by a box A in which is inclosed a series of keys B pivoted on a bearer *a* and having their tail ends connected by rods or wires *b* of adjustable length to levers C pivoted at *c* whose extremities being provided with pressing pieces or dampers *p* are respectively opposite to the strings 1, 2, 3, of the instrument the neck D of which fits into a recess in the lower part A′ of the box A. Springs *r* fixed on the bearer *a* and pressing against a stop or shoulder *b′* on the wires *b* constantly tend to cause the keys B to return to their normal position and move the levers C out of contact with the strings of the instrument. A glazed lid or cover E hinged at *e* covers the keys B and protects the mechanism from dust when the instrument is not in use.

The keyboard proper is of limited length *x*—*y* (see dotted lines Fig. 2) while the levers C diverge and form several layers crossing one another so as to reach the strings 1, 2 and 3 at the points where they require to press them down and shorten them in accordance with the sounds to be produced. The dampers *p* are covered with leather and are of different shapes corresponding to the levers C to which they belong and according to the plane or position of the latter relatively to the strings. Under each of these strings opposite to the dampers a strip of leather is glued to the neck D in order that the strings may be held down properly.

At the upper part of the box A, Figs. 1 and 7, there may be provided a small box F containing as many free reeds *m* as there are keys on the keyboard. Each reed cell is provided with a valve *n* which is raised to allow the wind from a bellows (which bellows may be operated by a pedal adapted for the purpose) to pass through the cell and act upon the reed. Rods *f* connect the keys of the key-board with the valves controlling the reeds whereby each key, as it is depressed, opens the valve of the reed which is in unison with the note of the instrument which is sounded in consequence of the depression of that key.

At the lower part of the box A of the keyboard there is a space reserved for the bow *d* and another for the rosin box *g*. The hairs of the bow are protected and its handle is conveniently placed for the player. It is supported at each extremity by hooks *d′* and *d²* (Fig. 6) attached underneath the box A at its hinder end. The hook *d²* is the one on the right hand of the player. The rosin box *g* is hung on a pivot *g′* on the front of the keyboard (see Fig. 1 and the dotted lines Fig. 2.)

The box A of the keyboard may be connected to the neck of the instrument in any suitable manner. A suitable number of pins may be placed upon the neck so as to engage under small bolts *o* fixed underneath the box Fig. 1 and correspondingly distributed throughout its length.

To prevent the bridge G of the strings of the instrument from being thrown down by the pressure of the dampers *p* of the keyboard this bridge is stayed or propped by a support H Figs. 3 and 5 provided with a hook

then placed in a lathe and trimmed, and the annular grooves a^2 cut or otherwise formed in the faces or ends thereof. The parts being assembled, as in Fig. 1, and the bolts b turned to draw the two caps together, the insulation, which is fresh, will be pressed into the grooves of the caps and the grooves of the cylinder. When the insulation is dry the band or strap which holds the segments together may be removed, thereby finishing the commutator.

It will be seen that by forming the grooves in the ends or faces of the segmental cylinder the entire surface of the commutator may be used to advantage without any material loss, or the necessity of having the segments very little if any longer than the width of the brushes. As described I prefer to make these segments from hard-drawn copper bars, as such bars are less liable to have flaws and to wear unevenly as would occur were the segments formed from a casting. I do not, however, wish to confine myself to any particular kind or shape of material from which the segments may be made. Instead, however, of forming the annular grooves after the segments have been arranged in a cylinder, the grooves may be formed in each segment separately and then properly secured together; or the bar, such as is shown in Fig. 4, may have a groove formed in the center of the edges thereof so that by cutting said bar, as indicated, the segments will be completed and ready for assembling same. The segments may also be formed from a long bar having a segmental cross-section by merely cutting the pieces the proper length.

I might, in some instances, dispense with the annular ring C and form a flange integral with the cap, but I prefer to use the construction shown as this provides better insulation between the caps and the segments.

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

1. A commutator composed of segments insulated from each other and arranged in the form of a cylinder and provided with an annular groove in the face or end thereof, a metallic assembling ring adapted to fit into said groove and insulated from the segment, caps located on opposite sides of the segments and insulated from said segments and ring, the said caps adapted to secure the assembling ring in the grooves of the segments, substantially as described.

2. A commutator composed of segments insulated from each other and arranged in the form of a cylinder and provided with annular grooves in the faces or ends thereof, caps arranged on the opposite sides of the segments and having annular grooves therein oppositely arranged to the grooves of the segments, a metallic assembling ring arranged to engage the grooves of the segments and grooves of the caps, the said assembling ring being insulated from the grooves and caps, and means connecting the two caps for securing the parts together, substantially as described.

3. A commutator composed of segments insulated from each other and arranged in the form of a cylinder and provided with annular grooves in the faces or ends thereof, in combination with caps arranged on the opposite sides of the segments and having annular grooves therein oppositely arranged to the grooves of the segments, an assembling ring arranged to engage the grooves of the segments and grooves of the caps, the said ring being insulated from the grooves and caps, and bolts connecting the two caps for securing the parts together, substantially as described.

4. A commutator composed of segments insulated from each other and arranged in the form of a cylinder and provided with tapering annular grooves in the faces or ends thereof, in combination with caps arranged on the opposite sides of the segments and having tapering annular grooves therein oppositely arranged to the grooves of the segments, a metallic assembling ring arranged to engage the grooves of the segments and grooves of the caps, the said ring being insulated from the segments and caps, and means connecting the two caps for securing the parts together, substantially as described.

5. A commutator composed of segments insulated from each other and arranged in the form of a cylinder and provided with annular grooves in the faces or ends thereof, in combination with caps arranged on the opposite sides of the segments and having annular grooves therein oppositely arranged to the grooves of the segments, a metallic assembling ring arranged to engage the grooves of the segments and grooves of the caps, the said ring being insulated from the grooves and caps, and bolts connecting the two caps for securing the parts together, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. FYFE.

Witnesses:
JNO. L. BLAINE,
CHAS. F. BOWEY.

Corrections in Letters Patent No. 522,052.

It is hereby certified that in Letters Patent No. 522,052, granted June 26, 1894, upon the application of John C. Fyfe, of Chicago, Illinois, for an improvement in "Commutators," errors appear in the printed specification requiring correction, as follows: In line 60, page 1, the word "and" should be stricken out; and in line 50, page 2, the word "segment" should read *segments;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 3d day of July, A. D. 1894.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.

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