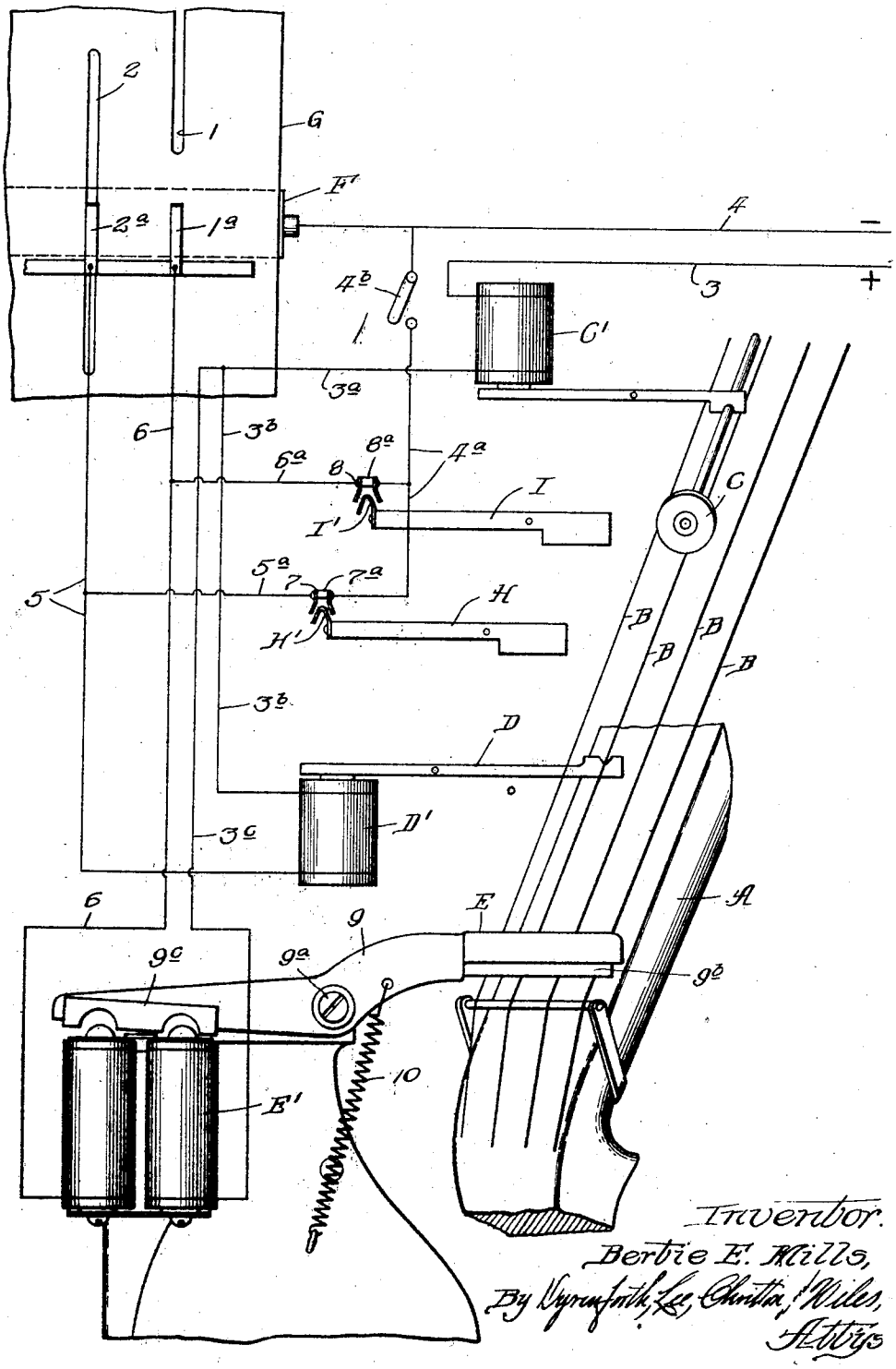
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VIOLIN DAMPER DEVICE

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UNITED STATES PATENT OFFICE.

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VIOLIN DAMPER DEVICE.

Application filed May 12, 1924. Serial No. 712,617.

To all whom it may concern:

Be it known that I, BERTIE E. MILLS, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Violin Damper Devices, of which the following is a specification.

This invention relates particularly to a damper-device which is especially useful in connection with electrically played violins, or electrically operated stringed instruments of the viol class.

The primary object is to provide simple and effective means for preventing an objectionable after tone in such an instrument.

In a well-known instrument of the type referred to, the note is sounded by means of a rotary bow which engages the string, and the fingering is performed by finger-levers controlled by electromagnets. The bow-magnet is in series with the finger-magnet. When the finger is disengaged from the string, the bow, due to lag, may not leave the string at the same instant. Thus, there may occur an after tone which does not correspond with the tone of the note struck.

According to the present invention, a single damper is employed which engages the strings in advance of the fingering devices. This damper normally engages all of the strings and prevents the sounding of an after tone, following the playing of any fingered note on any string. The arrangement is such, however, that when an open string note is sounded, the damper will be lifted from the strings, thus allowing the open note to be sounded, after which the damper returns to its normal position in engagement with the strings.

The invention may be usefully employed in a self-playing violin machine, in which a note-sheet controls the playing of the notes; or, it may be usefully employed in connection with an electrically operated stringed instrument, in which the playing of the notes is controlled from a console provided with a suitable key-manual.

The invention is illustrated in its preferred embodiment in the accompanying drawing, which shows diagrammatically a portion of a stringed instrument and the improved damper device applied thereto.

In the illustration given, A represents the neck-portion of a violin; B, the strings thereof; C, a rotary bow which is capable of moving to and away from the strings, the bow being operated by a suitable motor (not shown); C′, a bow-magnet; D, a finger; D′, a finger-magnet; E, a damper device; E′, an electromagnet controlling the damper; F, a metallic tracker bar, or roller, of a self-playing violin machine; and G, a note-sheet which is fed across the tracker-bar.

The note-sheet is shown provided with open string slots 1, and fingered string slots 2. The corresponding contacts are designated 1^a and 2^a. Referring to the electric circuits, the positive main is designated 3, and the negative main is designated 4. The conductor 3 connects with the winding of the magnet C′, and from said winding a conductor 3^a extends, which is provided with a branch 3^b leading to the magnet D′, and a branch 3^c leading to the magnet E′. From the magnet D′, a conductor 5 leads to the contact 2^a; and from the magnet E′, a conductor 6 leads to the contact 1^a.

When the brush, or contact, 2^a encounters the slot 2 corresponding with a fingered note, a circuit is closed, and current passes through the magnet C′, and through the magnet D′, thence to the brush 2^a and tracker-bar F to the negative main 4. In the mean time, the damper E remains in contact with all of the strings of the instrument, thus preventing the sounding of an after tone after the circuit has been interrupted. Such interruption of the circuit permits the finger D to be lifted from the string and permits the bow to be lifted from the string. As stated, however, there may be a lag in the lifting of the bow from the string, and thus the damper E will serve to prevent the sounding of an objectionable after tone.

When the brush 1^a encounters a slot 1 corresponding with an open string note, a circuit is closed through the magnet C′ and magnet E′, whereupon the magnet E′ lifts the damper E from the strings, permitting the open note to be sounded.

In the circuit diagram, 4^a designates a branch connected with the negative main 4 by means of a switch 4^b; 5^a designates a conductor leading from the conductor 5 to the branch 4^a; and 6^a designates a conductor leading from the conductor 6 to the branch 4^a. Interposed in the course of the conduc-

tor 5^a is a pair of switch points 7, these points being separated from each other by an insulating strip 7^a. Interposed in the course of the conductor 6^a is a pair of switch points 8, these points being separated by an insulation block 8^a.

H represents a key equipped with a contact member H′ which is adapted to close the circuit through the conductor 5^a when the key is depressed. I represents a key which is adapted to close the circuit through the conductor 6^a when the key is depressed. The keys H and I may be regarded as keys in a key-manual mounted on a suitable console. By employing keys and connections, just described, (assuming the switch 4^b to be closed) the circuits through the magnets C′, D′, and E′ may be controlled from the key-manual, which thus takes the place of the tracker-bar, note-sheet, and co-acting brushes. Thus, when the key H is depressed, a fingered note is struck, the damper E remaining on the strings; and when the key I is struck, an open note is sounded, and, at the same time, the circuit through the magnet E′ is closed, thus causing the damper E to be lifted.

The damper E is shown as comprising a lever 9 supported on a pivot 9^a; and a spring 10 which serves normally to hold the damper in contact with the strings. One end of the lever is equipped with a string-engaging member 9^b, which may be of rubber. The other end 9^c may constitute the armature of the electromagnet E′. When the magnet E′ is energized, the contact strip 9^b will be lifted clear from the strings, thus permitting an open note to be sounded.

The improved damper device is simple, readily controlled, and effective for its purpose. The construction and arrangement may be variously modified.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

1. In means of the character set forth, the combination with a plurality of strings, of a damper device normally engaging all the strings in advance of the fingering device, and means for actuating said damper device to free the strings from such engagement in the operation of playing upon any string as an open string.

2. In means of the character set forth, a single damper normally bearing upon all the strings, a magnet adapted to withdraw said damper, a circuit for said magnet, and means for closing said circuit in the operation of playing an open string note.

3. In means of the character set forth, a bow-magnet and a finger-magnet, a damper normally engaging all the strings of a stringed instrument, a damper-magnet, and circuits for said magnets and circuit-controlling means adapted to cause said bow-magnet and said damper-magnet to operate in playing an open string and to cause only said finger-magnet and said bow-magnet to operate in playing a fingered note.

4. In means of the character set forth, the combination with a plurality of strings, of a damper lever adapted to engage all of said strings, a damper-retracting magnet, and circuit-controlling means for the damper-magnet operating when closed to cause said magnet to retract said lever and free said strings.

BERTIE E. MILLS.