(No Model.)

A. MONTANELLI.

ELECTRICAL MUSICAL INSTRUMENT.

No. 490,358. Patented Jan. 24, 1893.

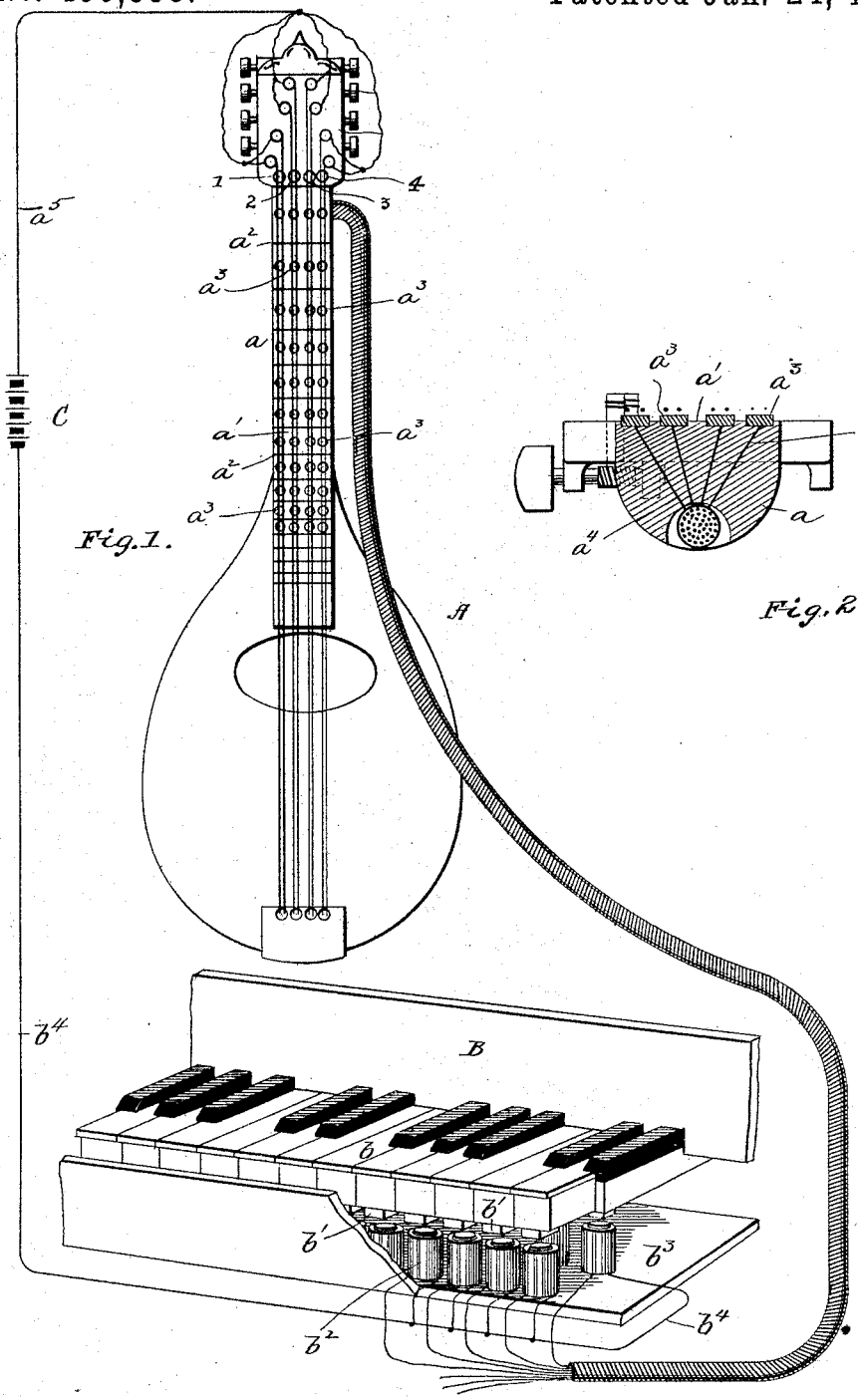

Fig. 1.

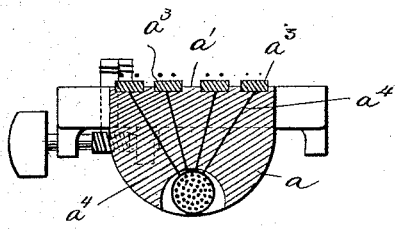

Fig. 2.

WITNESSES:

Frank S. Ober

James F. Kavanagh.

INVENTOR

Anacleto Montanelli

BY Munn & Rosenbaum

ATTORNEY.

UNITED STATES PATENT OFFICE.

ANACLETO MONTANELLI, OF PORTLAND, OREGON.

ELECTRICAL MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 490,358, dated January 24, 1893.

Application filed May 31, 1892. Serial No. 434,915. (No model.)

To all whom it may concern:

Be it known that I, ANACLETO MONTANELLI, a subject of the King of Italy, residing in Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Electrical Musical Instruments, of which the following is a specification.

This invention relates to musical instruments which are operated through the agency of electric currents, the object being to provide simple and convenient means for producing the same tones on a plurality of instruments simultaneously while but one of the instruments is operated manually.

The invention consists of the apparatus and combinations hereinafter described and claimed.

The details of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 represents in a semi-diagrammatical manner the primary instrument and the keyboard of a secondary instrument with electrical connections between the two, and Fig. 2 is a section of the neck of the primary instrument.

Referring to the drawings by letter, A represents a primary instrument which is to be operated or played manually. As here shown it is a mandolin, but it may be a stringed instrument of any kind, such as a guitar, zither or banjo.

a represents the neck of the instrument upon the face of which the usual row of frets on the keyboard a' is located.

The instrument here shown has four strings, which for the purposes of this invention must be metallic or covered with metal, so that they will conduct electricity. Between the frets a^2 are placed rows of four metallic contact heads or pieces a^3 which are located directly under the respective strings. Each head has connected with it an electric conductor a^4 which extends through the neck of the instrument and is led in any suitable manner to the extreme end thereof where all of the conductors from the heads are joined together into a cable and extend as one structure to a secondary instrument B. The individual conductors to the cable are, of course, all insulated. Each of the strings of the instrument is connected electrically with a common return conductor a^5 in the manner shown. This conductor a^5 connects with one pole of a battery C.

The secondary instrument here taken for an example is an organ or piano, the keyboard of which is only represented in the drawings. To the under side of each key *b* is attached a soft iron bar b' constituting the armature of the electro-magnet b^2. One magnet or combination of magnets for each key is provided and they are supported in any suitable manner upon a frame, as b^3, as shown. The wires extending from the heads on the keyboard of the mandolin through the cable to the secondary instrument connect respectively with these electro magnets and after passing around the magnets they lead to a common wire or electrode b^4, which connects with the terminal of the battery C opposite that to which the conductor a^5 is connected. Owing to the location of the heads a^3 upon the neck of the mandolin, each of them represents a certain key or note and the corresponding keys or notes on the two instruments are the ones which are electrically connected together.

In operation the primary instrument A is played in the usual manner and as the strings are pressed against the neck of the instrument at various points to produce the different tones, electric circuits are completed by the strings making contact with the heads a^3, the magnets controlling the keys of the secondary instrument corresponding with those played on the primary instrument are thereby energized and said keys are drawn downward and open the air passages to the reeds of the organ or cause the hammers to strike the strings of a piano. In this way the same tones are produced on both instruments simultaneously.

It is obvious that branch circuits may be run from the primary instrument to another piano or organ, or to a xylophone, chimes, zither or other similar instruments or any number of them at will and all operated simultaneously in the manner above described. In all of such instances the magnets would be arranged to throw levers which would operate hammers or other devices in an obvious way.

My invention is not confined to any particular manner of running the electrical conductors or supporting them. The return wire a^4 may form a part of the large cable with the

other conductors, if desired, and the whole cable should preferably be constructed flexibly so that the primary instrument could be moved about at will. The cable might also terminate at each end in a head or rigid strip provided with a series of pins or sockets which could be readily adjusted to or removed from points or sockets on the instruments to be played, at will. It is obvious that my invention is subject to many modifications of this nature and I therefore do not limit myself to any particular construction.

What are known as the open notes in an instrument of the kind illustrated are played without pressing the strings against the frets at all and in order to provide for the simultaneous production of such tones on the secondary instrument, I have placed contact heads 1, 2, 3, 4, beneath the strings on the head of the primary instrument above the frets which may be pressed by the player whenever the open tones of the instrument are sounded and these contacts will connect by wires which pass through the cable with the others to magnets controlling corresponding notes on the secondary instrument. Or, if the open tones of the strings are produced by using the seventh fret of the next string lower instead of the open string, the push buttons 1, 2, 3, 4, are not necessary.

Having thus described my invention, I claim:

1. The combination of a primary stringed instrument, a secondary instrument, electrical contacts or heads located adjacent to the strings of the primary instrument, electro-magnets controlling the keys of the secondary instrument, and electric circuits connecting said contacts or heads with the magnets respectively, the strings of the primary instrument being electrical conductors for the purpose set forth.

2. The combination of a primary stringed instrument electrical contacts located beneath the strings, above the key-board and on the head of the instrument, a secondary instrument and electro magnets controlling the keys thereof, and electric circuits connecting said contacts with respective magnets, the strings of the primary instrument being electrical conductors.

3. A guitar, violin, mandolin or other stringed primary instrument in which the tones are determined by pressing the strings against the head of the instrument, in combination with electric contacts located under the strings, a secondary instrument, electric circuits extending from said contacts to the tone producing devices respectively of the secondary instrument and a common return circuit from said tone producing devices to the strings of the primary instrument, the said strings being electrical conductors, for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ANACLETO MONTANELLI.

Witnesses:
RUFUS MERRIAM,
C. H. MERRIAM.