

UNITED STATES PATENT OFFICE.

LOUIS BREITENMOSER, OF NAPOLEONVILLE, LOUISIANA.

PIANO-VIOLIN.

953,589.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LOUIS BREITENMOSER, a citizen of the Republic of Switzerland, and a resident of Napoleonville, Assumption parish, State of Louisiana, have invented certain new and useful Improvements in Piano-Violins, of which the following is a specification.

My invention is an improvement in violin pianos, and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

The object of the invention is to provide an instrument consisting of strings arranged and tuned like the strings of a piano and vibrated by a rubber instead of a hammer, and wherein the resulting tone will approach that of a violin.

Referring to the drawings forming a part hereof: Figure 1 is a front view of a portion of the improvement; Fig. 2 is a transverse section; Fig. 3 is a plan view; and Fig. 4 is a perspective view of one of the disks.

The embodiment of the invention shown in the drawings comprises a plurality of strings 1, which may be arranged and tuned in any suitable manner, preferably, however, in the same manner as those of a piano, and adjacent to each string, at the side thereof, is a rubber to be presently described in detail, which rubbers are by suitable mechanism moved into contact with their respective strings when it is desired to sound the notes which the strings represent.

Each of the rubbers consists of a disk 2, preferably of flexible resilient material, such as hard rubber, thin brass, steel, copper, celluloid, or any other suitable material, provided at its center with a transverse opening 3, and on the side adjacent to the string with an elastic cushion, in the form of a ring 4 of fibrous elastic material, such as rubber, upon which is placed a second ring 5 of thinner material having a high coefficient of friction, as, for instance, felt, drumskin, leather or the like. The peripheral edges of the rings are flush with the edge of the disk, and all of the disks are secured on a shaft 6, which is journaled in suitable bearings 7 on the frame 8 of the instrument. The outer end of the shaft is provided with a gear wheel 9, which meshes with a gear wheel 10 on a second shaft 11 journaled in bearings 12 on the frame and operated by any suit-

able means not shown. The shaft 11 is continuously rotated while the instrument is being played, and the disks are bent or tilted into contact with the strings by rollers 13 engaging the face of the disk on the opposite side from the rings. Each roller is journaled on the angular portion 14 of a shaft 15, and the shafts are all journaled on a plate 16 supported by the frame. The plate 16 is provided on its upper face at each edge with a longitudinal rib 17, and the ribs are provided at spaced intervals with transverse bearings, the bearings of one rib alining with the corresponding bearings of the other rib. The angular portion 14 before mentioned extends downwardly and then forwardly, as shown in Fig. 2, so that the axis of the roller is radial to the shaft 6, thus reducing the friction of the roller on its pivot pin 18 to a minimum. Each shaft 15 is provided at its opposite end with an angular portion 19, which extends laterally and downwardly, and at its extremity each portion is flattened and enlarged to form a head 23. A bar 20 is arranged between the plate 16 and the frame 8, and is provided on its rear face at each edge with a rib 21, and each rib is provided with spaced bearings, the bearings of one rib alining with the bearings of the other rib. A rod 22 is slidable in each pair of bearings, and each rod engages with its upper end the head 23 of the adjacent shaft 15 to oscillate the same, whereby to cause the roller to bend or tilt the edge of the disk against its string. The rods 22 correspond to the abstracts of a piano action and may be operated in the same manner by a key.

It will be understood that the machine may be applied to existing pianos, the hammers and operating mechanism of the piano, with the exception of the abstracts, being replaced by the disks and their operating mechanism, and that the instrument is played in the same manner as a piano is played.

In operation, the shaft 6 being rotated, when a key is depressed, the corresponding rod 22 is elevated and oscillates the shaft 15 adjacent thereto. The oscillation of the shaft swings the roller 13 into engagement with the adjacent disk, which is deformed so that the ring 5 is pressed against the string. As the disk is rotating the string will be vibrated and the vibrations of the

string will produce a sound resembling that of the violin string when the bow is drawn thereover.

The disks may be supplied with resin in any suitable manner, but it is preferably applied in a vehicle of ether or boiled linseed oil, the resin being powdered and the mixture applied with a brush. The disks should be rotated at a high rate of speed and strings of brass and copper are preferable to the ordinary strings. The disks are also preferably graduated in size according to the size of the strings, the larger disk being used for the larger strings.

I claim:

1. In a musical instrument, the combination with the strings, of a shaft journaled transversely thereof, a disk of resilient material secured to the shaft adjacent to each string, an elastic cushion on the face of the disk adjacent to the string, a shaft for each disk journaled in a plane perpendicular to the first named shaft, and provided at each end with an angular portion, a roller journaled on the angular portion at the end adjacent to the disk, and on an axis radial to the disk, the angular portion at the opposite end having a head, and a vertically movable rod for engaging the head to oscillate the shaft.

2. A device of the character specified, comprising the strings, a disk adjacent to each string and rotating on an axis transverse to the string, a common means for rotating the disks, an elastic ring on each of said disks on the face adjacent to the string, and an independent means for bending the edge of each of said disks toward the adjacent string to bring the ring into contact with the string, said means comprising a shaft having at each end an angular portion, a roller on one of said portions for engaging the disk, and a vertically movable rod for engaging the angular portion at the other end of the shaft.

3. A device of the character specified, comprising the strings, a disk adjacent to each string and rotating on an axis transverse to the string, a common means for rotating the disks, an elastic ring on each of said disks on the face adjacent to the string, and an independent means for bending the

edge of each of said disks toward the adjacent string to bring the ring into contact with the string, said means comprising a shaft having at one end a roller for engaging the disk, and at the other a head, and a vertically movable rod for engaging the head, the roller and head being offset laterally from the shaft.

4. A device of the character specified, comprising the strings, a disk adjacent to each string and rotating on an axis transverse to the string, a common means for rotating the disks, an elastic ring on each of said disks on the face adjacent to the string, and an independent means for bending the edge of each of said disks toward the adjacent string to bring the ring into contact with the string.

5. A device of the character specified, comprising the strings, a rotating rubbing wheel adjacent to each string, means for continuously rotating all of said wheels, and an independent means for moving each rubbing wheel into contact with the adjacent string, said means comprising a shaft having at one end a roller for engaging the wheel and at the other a head, the roller and head being offset laterally from the shaft, and a longitudinally movable rod for engaging the head.

6. A device of the character specified, comprising the strings, a rotating rubbing wheel adjacent to each string, means for continuously rotating all of said wheels, and an independent means for moving each rubbing wheel into contact with the adjacent string, said means comprising a roller journaled on an axis radial to the wheel, and means for moving the roller toward and from the wheel.

7. A device of the character specified comprising the strings, a flexible rubbing wheel adjacent to each string, means for continuously rotating said wheels, and independent means for bending each of said wheels whereby to bring the edge thereof into contact with the string for the purpose specified.

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Witnesses:

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