F. HARRIS.
Piano-Violin.

No. 210,028. Patented Nov. 19, 1878.

Fig. 1.

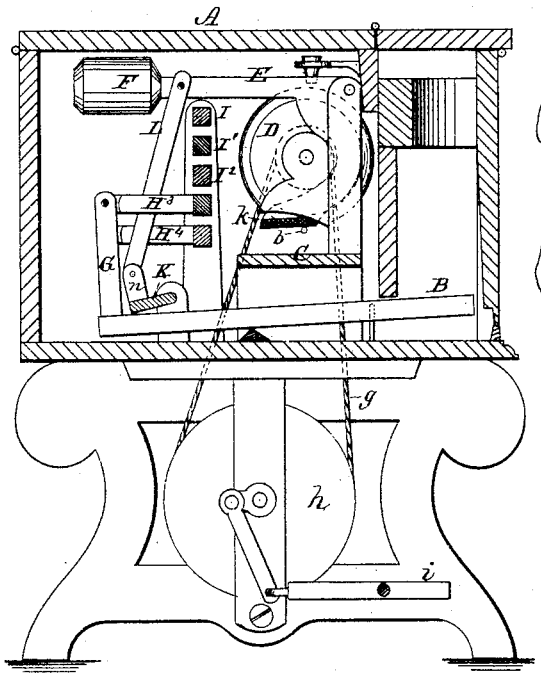


Fig. 2.

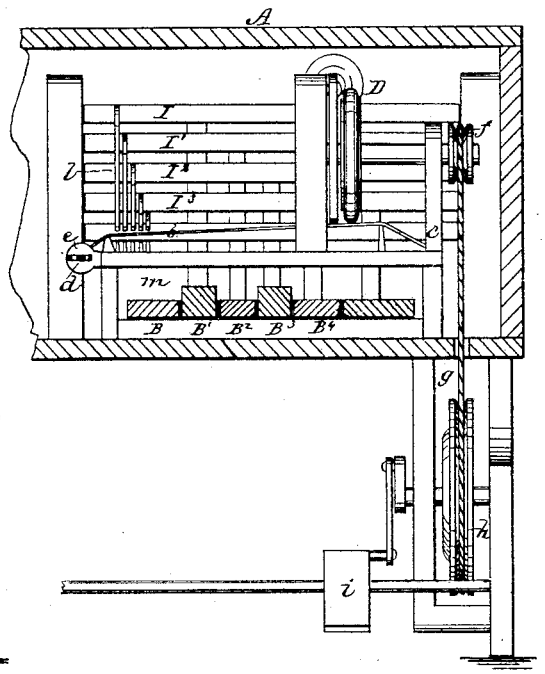


Fig. 3.

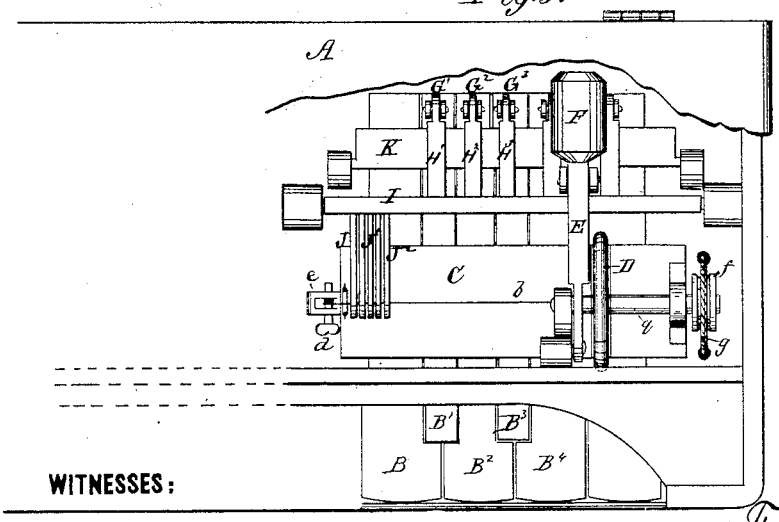
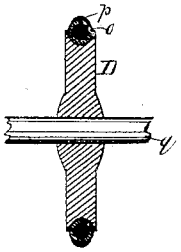


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRADELSHON HARRIS, OF LOUISIANA, MISSOURI.

IMPROVEMENT IN PIANO-VIOLINS.

Specification forming part of Letters Patent No. **210,028**, dated November 19, 1878; application filed April 9, 1878.

To all whom it may concern:

Be it known that I, FRADELSHON HARRIS, of Louisiana, in the county of Pike and State of Missouri, have invented a new and Improved Combination-Fiddle; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a vertical transverse section. Fig. 2 is a vertical longitudinal section. Fig. 3 is a plan view, with the upper portion of the case broken away, showing a part of the operating devices, of which the rest are a mere reduplication; Fig. 4, a sectional detail of the bowing-disk.

The object of my invention is to provide an improved musical instrument which shall combine the gamut of the violin with that of the violoncello or bass-viol, so as to enable a single performer to simultaneously execute, by means of keys, both parts which have been heretofore allotted to these separate instruments.

To this end my invention consists in combining with the ordinary cat-gut strings a revolving bow or disk, having an elastic periphery, charged with rosin, and stops, muffling-pads, or mutes, to deaden the sound except when the muffling-pad is raised by a key, which at the same time depresses a finger upon the finger-board to make the desired note upon the string.

In the drawing, A represents the case of the instrument, which is supported upon legs, and is of the same general construction found in the ordinary square or rectangular piano. B is the key-board, which is also similar to that of a piano, and from which the individual keys B^1 B^2 B^3 B^4, &c., extend back into the case, and are pivoted at *a* to form levers. Just above the keys and within the case is arranged the sounding-board C, upon which are arranged the cat-gut strings of the violin and violoncello, only one of which, however, is shown, as at *b*. These strings are secured at one end of the sounding-board by a tail-piece, *c*, as usual, and at the other end are provided with pegs *d*, arranged in a head, *e*, for tuning up the strings. All of the strings are arranged in the arc of a circle, and just above them, and in constant contact with them, is arranged a revolving disk, D, having an elastic periphery, with a surface of silk or hair charged with rosin. This disk serves to perform the function of a bow, and it is rotated through a small pulley, *f*, on the same shaft therewith, by means of a band, *g*, and larger band-wheel *h*. This wheel is designed to be rotated by a treadle mechanism, *i*. As the strings are fixed and the bow-disk D is also fixed, it will be seen that the latter rotate always in contact with all of the strings; and to prevent the sounding of any, a foot, *k*, provided with a muffling-pad, is arranged to rest upon the string, and arrest its vibration at all times except when lifted. This foot is pivoted to a portion of the frame-work of the device, and is provided with a horizontal right-angular arm, E, having a weight, F, which always holds the foot against the string. At the rear ends of the keys B^1 B^2, &c., are pivoted vertical bars G G′, &c., which at the top connect with arms H H′, &c., rigidly attached to a vertical series of horizontally-arranged rock-shafts, I I′, &c. Upon the opposite sides of these rock-shafts from the arms H H′, &c., are arranged similar arms, J J^1 J^2, &c., from each of which depends a finger, *l*, which descends to a position near the finger-board and immediately over one of the strings, so that a downward movement of the finger causes it to descend upon the string and press it against one of the subjacent frets *m* to form a note.

To secure the simultaneous lifting of the muffling-foot and formation of the note, a continuous rock-bar, K, is extended across the rear ends of all of the keys, and the rock-bar has an arm, *n*, attached to a lifting-bar, L, which in turn is connected with the weighted arm E above. Now, when a key, B^1, is depressed, its rear end lifts the vertical bar G′, rocks shaft I′, and depresses the finger of the arm J^1, to cause it to descend upon and hold the string to its fret. At the same time, also, the rear end of the key rocks the bar K, lifts vertical lifting-bar L, and weighted arm E, which removes the muffling-pad from that string. These muffling-pads correspond to the number of strings. For the notes formed by the open strings the keys are geared simply to operate the muffling-pad, without being con-

nected with the rock-arms and fingers, so that the simple releasing of the string in such cases makes the desired note.

To increase the power of the instrument, a swell is attached, which consists simply of a pedal having connection with a cut-off or door to the case, which door is opened for a heavier tone and closed for a softer one.

To restore the keys and connections to the position from which they are removed in the act of performing, the vertical bars G G′, &c., are each weighted.

In arranging the sounding-board in the case it should be made removable, and the tuning-pegs may be placed upon the outside of the case, or arranged to be operated from any convenient position.

The shortest strings of the instrument will be arranged as shown, and the longest ones for the violoncello will be arranged in front of the short ones, extending past the fingers *l* of the short ones, so as to involve no conflict in their respective mechanism.

In constructing the bowing-disk I arrange about a grooved pulley a rubber tube, *o*, to form a soft elastic seat, and upon the outer surface of the rubber tube I attach the silk or hair face *p*, which is charged with rosin from a cup maintained in a seat, *q*, arranged immediately above the disk.

Among the advantages which my improved instrument possesses over the ordinary violin or violoncello are, that there can never be any false notes as long as the instrument is in tune; the bowing is also always steady and uniform; a note may be held for any length of time, and a larger sounding-board is provided for the treble-strings.

Having thus described my invention, what I claim as new is—

1. A musical instrument consisting of a series of strings, a set of keys with several fingers in each set, arranged to operate upon the same string, a revolving bowing-disk, and a set of muffling-pads corresponding to the strings, all combined and arranged substantially as shown and described.

2. The combination, with the sounding-board having frets *m*, and with violin-strings mounted above the same, of the series of rock-shafts I, having arms H and J, the vertical weighted bars G, and the keys B, substantially as shown and described.

3. The combination, with the operating fingers and keys, of a continuous rock-bar, K, extended over the ends of the keys, the lifting-bar L, and weighted arm E, carrying the muffling-pad, substantially as and for the purpose described.

4. The bowing-disk consisting of a wheel or pulley, having a rubber tube about its periphery, with a face of silk or hair charged with rosin, substantially as and for the purpose described.

The above specification of my invention signed by me this 4th day of April, 1878.

FRADELSHON HARRIS.

Witnesses:

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EDWD. W. BYRN.