No. 711,203. Patented Oct. 14, 1902.

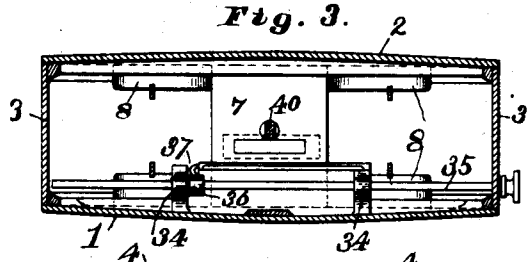
R. F. FLEMMINGS.

MUSICAL INSTRUMENT.

(Application filed July 24, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 3.



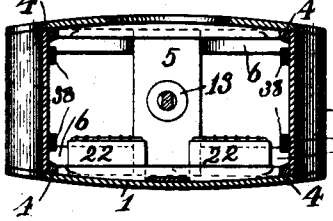


Fig. 4.

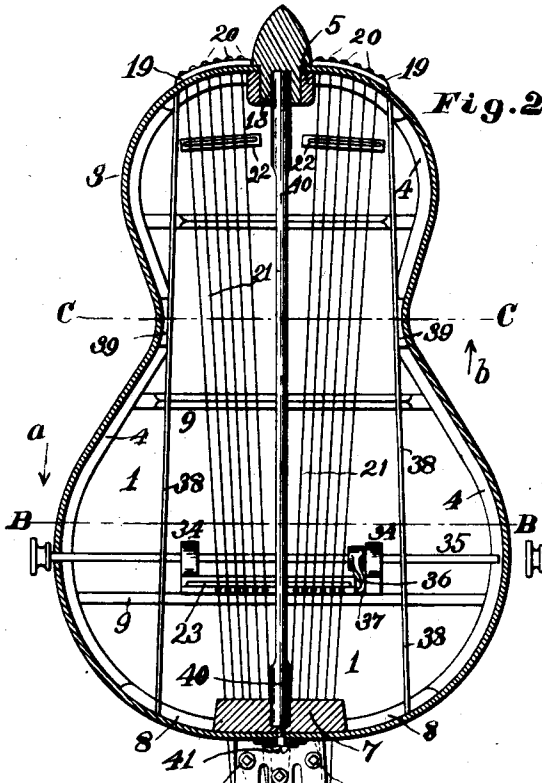


Fig. 2.

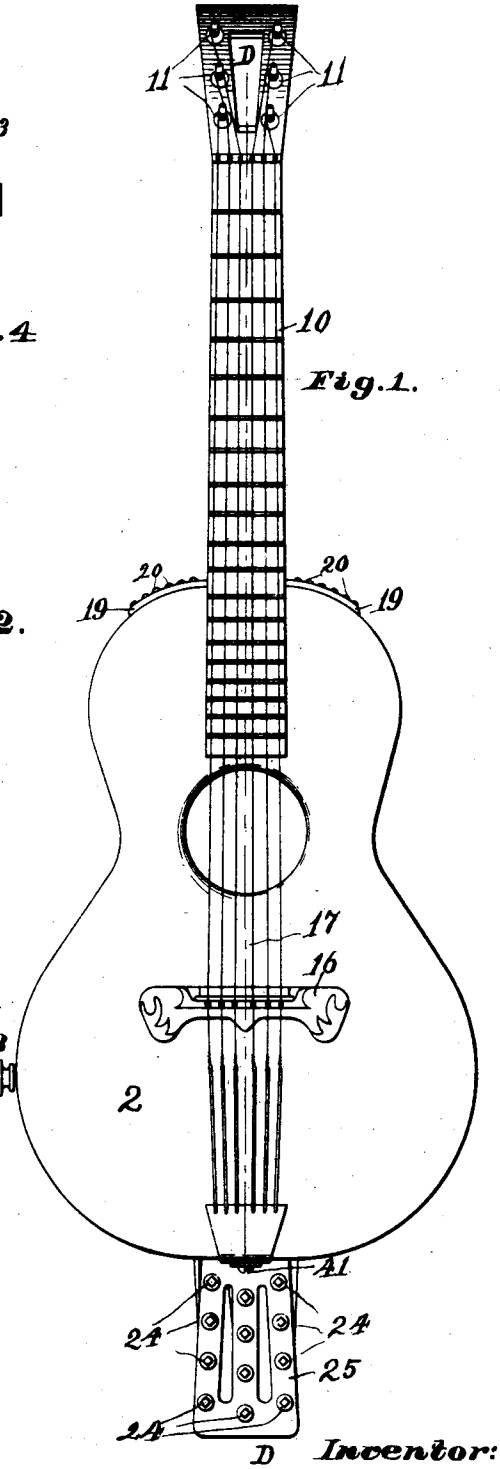


Fig. 1.

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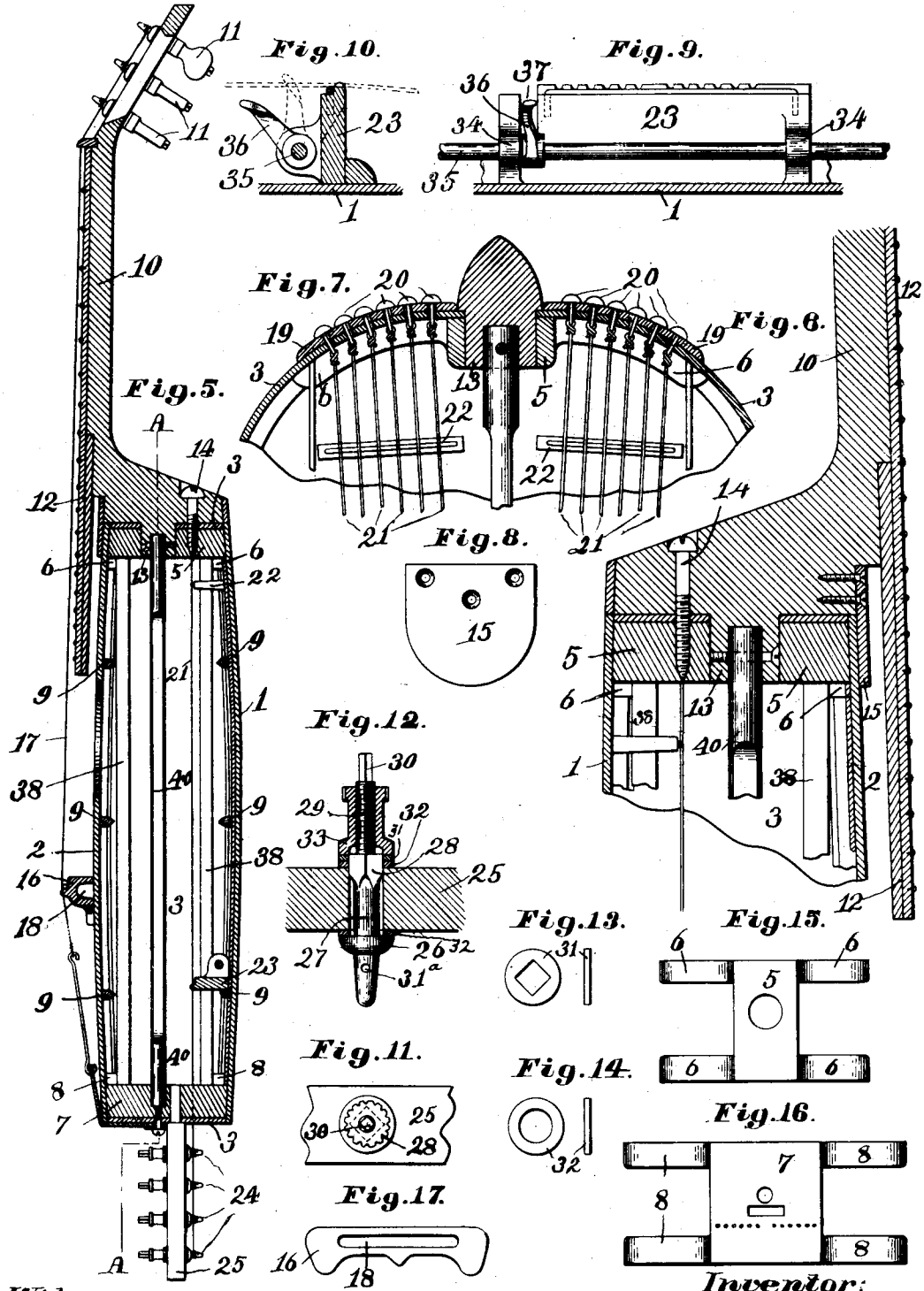
(No Model.) 2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

ROBERT F. FLEMMINGS, OF MELROSE, MASSACHUSETTS.

MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 711,203, dated October 14, 1902.

Application filed July 24, 1902. Serial No. 116,799. (No model.)

To all whom it may concern:

Be it known that I, ROBERT F. FLEMMINGS, of Melrose, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Musical Instruments, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to musical instruments, and especially to that class of stringed instruments in which the strings are vibrated by the fingers, is an improvement upon the invention shown and described in Letters Patent No. 338,727, granted to me March 30, 1886, and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings and to the claims hereto appended and in which my invention is clearly pointed out.

Figure 1 is a plan of a musical instrument embodying my invention. Fig. 2 is a sectional plan of the same, the cutting plane being on line A A on Fig. 5. Fig. 3 is a transverse section on line B B on Fig. 2 looking in the direction indicated by the arrow *a* on said Fig. 2. Fig. 4 is a transverse section on line C C on Fig. 2 looking in the direction indicated by the arrow *b*. Fig. 5 is a longitudinal section on line D D on Fig. 1. Fig. 6 is a partial section on line D D drawn to an enlarged scale. Fig. 7 is a partial section on line A A on Fig. 5. Fig. 8 is a plan view of the top bearing-plate of the neck. Figs. 9 and 10 are respectively an elevation and a transverse section of the lower inside bridge with the string-picking device mounted thereon. Figs. 11 and 12 are respectively a plan and a sectional elevation of the tuning-key for the inside strings. Fig. 13 represents a plan and edge view of the upper washer of said key, and Fig. 14 represents a plan and edge view of the other two washers of said key. Fig. 15 is an elevation of the inside head-block, to which the neck is secured, as hereinafter described. Figs. 6, 7, 8, 9, 10, 11, 12, 13, and 14 are drawn to an enlarged scale. Fig. 16 is an elevation of the inside foot-block, to which the foot tuning-key holder is secured; and Fig. 17 is an inverted plan of the outer bridge.

In the drawings, 1 represents the back, 2 the front, and 3 the side walls, of the body of the instrument, said parts being secured together by glue and the corner stay-strips 4 in a well-known manner.

The head-block 5 is provided with the four arms 6, which are curved to fit the curve of the inside of the head of the body of the instrument, said arms being glued to the back, front, and side of said body, as shown. A similar block 7, provided with four arms 8, is in like manner secured to the back, front, and side walls of the instrument at its foot or lower end.

The blocks 5 and 7 are cut from wood, with the grain extending lengthwise of the arms 6 and 8, and add very materially to the strength of the instrument.

The usual transverse stay-bars or stiffeners 9 9 are secured to the inside surfaces of the back 1 and front 2.

The neck 10 is of the usual construction, except as will hereinafter be described, and is provided with the tuning-keys 11, which may be of any well-known construction, and with the finger-board 12, of usual construction.

The neck 10 is secured to the body of the instrument by the circular hub 13, which fits closely into a correspondingly-shaped opening through the block 5, and the screw 14, which passes through the heel of said neck and screws into said block 5, as shown in Fig. 6.

The under portion of that part of the finger-board which projects over the front of the body of the instrument is firmly secured to the neck 10 for about one and three-fourths of an inch of the length thereof, but at a distance of about three-fourths of an inch outside of the extreme upper end of the body of the instrument, the surface to which it is secured being raised above the level of the top end portion of the front of the body of the instrument, while that portion of the neck between said point of attachment and the top end of said body is on a level with the outer surface of the front 2 and has firmly secured

thereto by screws the metal plate 15, which extends over and presses firmly upon the upper portion of the front 2, with a clear space between its outer surface and the inner surface of the finger-board.

The outer bridge 16 has formed in its under surface beneath the bearings of the string 17 a longitudinal recess 18, so that said bridge has two parallel bearings on the front of the instrument extending transversely thereof, which greatly improves the tone of the instrument.

The strings 17 are arranged and mounted substantially as in my before-cited patent.

The upper end of the body of the instrument has secured thereto two reinforcing-plates 19 19, one on each side of the heel of the neck, in each of which are set a series of headed studs 20, the shanks of which have formed in their inner ends eyes or perforations, in which the upper ends of the inner series of strings 21 are secured, said studs extending through the reinforcing-plates 19 and wall 3 of the body of the instrument, as shown in Fig. 7.

Two bridges 22 22, over which the strings 21 are strained near their connections to the studs 20, may be of any well-known construction.

The strings 21 extend from the bridges 22 22 to and over the bridge 23, thence through the block 7 and the lower portion of the wall 3 of the body of the instrument, and are wound upon the lower ends of the tuning-keys 24, set in the arm 25, which is secured to and projects from the lower end of the body of the instrument, as in my before-cited prior patent.

The keys 24 are of novel construction, and each consists of a main stem provided a short distance above its lower end with the annular flange 26 and having immediately above said flange a cylindrical section 27, expanding at its upper end into a short squared section 28, above said squared section a threaded section 29, and above this a squared section 30 to receive a wrench to turn said stem to wind the string upon the portion thereof which projects below the flange 26 and is wound in cross-section and provided with the eye or perforation 31^a, by means of which the string is made fast thereto. The section of said stem immediately above the flange 26 has fitted thereon three washers 31 and 32, and the threaded portion has fitted thereto the barrel-like nut 33, the lower end of which is chambered out to permit it to inclose a portion of the squared section 28 of the stem, as shown in Fig. 12. The upper end of the nut 33 is provided with a slightly-projecting milled head 34. The washer 31 has a square perforation, as shown in Fig. 13, of a size to fit the intermediate squared portion 28 of said stem, and the washers 32 are each provided with a circular opening of sufficient diameter to permit said washer to pass over said squared portion 28. The key-stem, with one of the washers 32 placed thereon and resting upon the flange 26, is passed through a hole in the arm 25. The other washer 32 is then placed over said stem, resting upon the arm 25. Then the washer 31 is placed in position on the washer 32 and surrounding the squared section 28 of said stem, and then the nut 33 is screwed down upon said washer with sufficient force to clamp the washers 32 to the arm 25 to prevent their revolving when the stem is turned to strain the string, the flange 26 and the washer 31 having sufficient friction upon the washers 32 to prevent the string slackening when turned, but not sufficient to prevent the stem being turned to strain said string when a force greater than the strain on the string is applied to the squared upper end of said stem.

The bridge 23 is secured in a fixed position to one of the stay-bars 9 and has formed on the side thereof toward the upper end of the instrument two ears 34 34, in bearings in which is mounted the rod 35, having mounted therein the picker-arm 36, one end of which rod projects through the side wall of the body of the instrument and is provided with a knob or other suitable means of rotating said rod and moving it endwise in its bearings. This tuning-rod and its picker-arm are of substantially the same construction as described in my prior patent before cited, except that the picker-arm 36 is of a slightly-different shape, necessitated by placing the rod 35 beneath instead of above the strings. The bridge 23 has a notch 37 cut in its side toward the rod 35 and contiguous to the right-hand ear 34, into which notch or recess the arm 36 is turned when not required in tuning the strings 21, thereby locking the same against accidental interference with said strings.

Four longitudinal stay-bars 38 38 connect the arms 6 6 of the block 5 with the arms 8 of the block 7, each of which is secured intermediate of its ends to blocks 39 39, which in turn are glued to the side wall 3 of the body of the instrument at its narrowest part, as shown in Fig. 2.

A central stay-rod 40 has one end securely attached to the boss 13 of the heel of the neck 10, and its other end is fitted to a hole in the block 7 and is firmly secured therein by the screw 41, substantially as in my prior patent.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a stringed musical instrument the combination with the body thereof composed of wooden front, back, and sides, of head and foot blocks, each provided with four laterally-projecting arms firmly secured in the interior of the body of the instrument, and reinforcing the attachment of said front and back to the side walls thereof.

2. In a stringed musical instrument the combination with the hollow body thereof, of the neck firmly secured to the smaller end of

said body; a finger-board attached to said neck at a point above the junction of said neck and body; and a plate firmly secured to said neck between the lower end of the union of the finger-board with said neck and the junction of said neck and body, and extending over and bearing hard upon the upper portion of the body front, with its outer face entirely separated from contact with the finger-board.

3. In a stringed musical instrument the combination with the hollow body thereof, of head and foot blocks each provided with four laterally-projecting arms, firmly secured in the interior of said body in positions to reinforce the connection between the front, back and side walls of the body of the instrument; and four longitudinal stay-bars connecting the ends of the laterally-projecting arms of said head and foot blocks and secured to the side walls at the narrowest part of said body.

4. In a stringed musical instrument the combination of a hollow body composed of front back and side walls; a pair of reinforcing-plates secured to the upper end of said body one on each side of the heel of the neck; two series of headed studs set in and projecting through said plates and the wall of said body, and each provided with an eye or perforation in its inner end, two series of strings connected at one end to said perforated and headed studs and extending longitudinally through the length of said body; two bridges resting upon the inner surface of the back of the instrument and supporting said strings near the head of said body; another bridge supporting said strings near the lower end of said body; and means for straining said strings arranged outside of said body.

5. In a stringed musical instrument the combination of a series of strings located within the hollow body thereof, a bridge for supporting said strings near the lower end of said body resting upon and secured to the back of said body, and provided with a pair of ears projecting laterally therefrom, and with the notch 37 contiguous to one of said ears; the rod 35 mounted in suitable bearings in said ears and extending through one side of said body; and the picking-arm 36 mounted upon said rod and arranged to operate as set forth.

6. In a stringed musical instrument having a series of strings located within the hollow body thereof, the combination with said hollow body, and internal strings, of the arm 25 projecting from the lower end of said body, and a series of tuning-keys set in said arm and composed of the following elements, viz., a central stem provided with the fixed annular flange 26; the cylindrical section 27; the squared sections 28 and 30, the threaded section 29, and the perforation 31^a; the two washers 32 having a circular perforation; the washer 31 having a square perforation; and barrel-like nut 33 provided with a chamber in its lower end as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 23d day of July, A. D. 1902.

ROBERT F. FLEMMINGS.

Witnesses:
N. C. LOMBARD,
J. H. STEVENSON.