No. 683,093. Patented Sept. 24, 1901.

F. W. WOOD & E. H. STILES, JR.

NOTE SHEET FOR STRINGED MUSICAL INSTRUMENTS.

(Application filed Dec. 24, 1900.)

(No Model.)

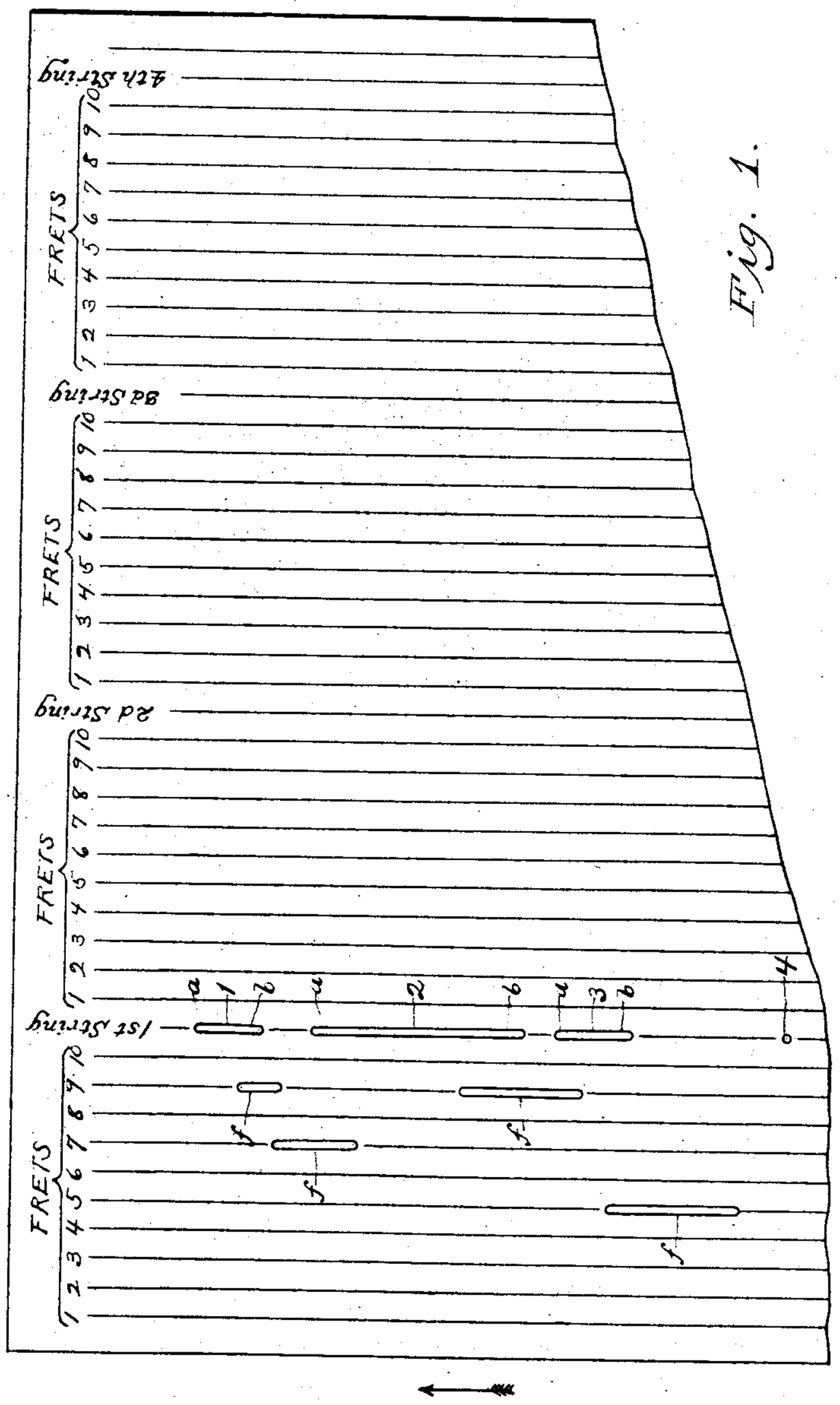

Fig. 1.

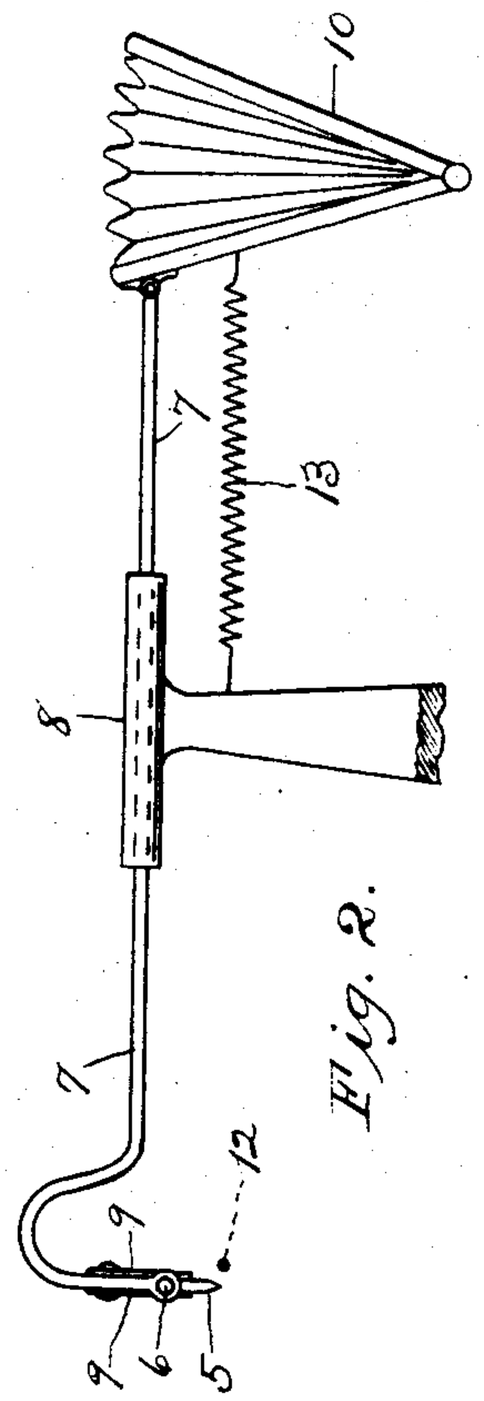

Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERICH WILLIAM WOOD AND EDWARD H. STILES, JR., OF KANSAS CITY, MISSOURI; SAID WOOD ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-THIRD TO SAID STILES.

NOTE-SHEET FOR STRINGED MUSICAL INSTRUMENTS.

SPECIFICATION forming part of Letters Patent No. 683,093, dated September 24, 1901.

Application filed December 24, 1900. Serial No. 40,944. (No model.)

To all whom it may concern:

Be it known that we, FREDERICH WILLIAM WOOD and EDWARD H. STILES, Jr., citizens of the United States, and residents of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Note-Sheets for Stringed Musical Instruments, of which the following is a specification.

Our invention relates to improvements in perforated note-sheets for use in the automatic playing of musical instruments, and more especially the playing of stringed instruments in which the strings are "picked" by suitably-actuated reciprocating fingers.

Our invention consists in a novel note-sheet used in connection with a reciprocatory picker or pickers and with a mechanism for depressing the strings of the instrument at the frets, said mechanism being controlled by certain perforations in the note-sheet and the movements of the picker being controlled by certain other perforations in the note-sheet, the picker being mounted so as to pick a string at both its advancing and retreating movements, the effect of which is that every perforation in the pickers' lines of the note-sheet will cause two separate notes to be sounded by the picker, the first note being sounded when the perforation first crosses the opening in the tracker-bar and the next note being sounded when the same perforation passes off said opening, thereby cutting off the operating fluid from the usual picker-operating mechanism. In all note-sheets of which we are aware a single perforation can produce but one note in the instrument with which the sheet is used.

We will proceed to describe our invention with reference to the accompanying drawings, in which—

Figure 1 represents a portion of a note-sheet perforated in accordance with our invention and designed for playing a four-stringed instrument with ten frets. In this drawing the perforations for one string only are shown. Fig. 2 represents a preferred form of picker for use in connection with the present improvement in note-sheets. A brief description of this picker will be necessary in order to make plain the operation of our invention.

The picker-tip 5 is pivotally connected at 6 to the end of the picker-rod 7 and is normally held in the position shown by two small flat springs 9, whose upper ends are secured to the picker-rod. Said rod is mounted slidingly and non-rotatably in a stationary sleeve 8.

10 designates a bellows for reciprocating the rod 7; but other devices than the bellows may of course be employed for this purpose.

12 designates a transverse section of one of the strings of the instrument. Movement of rod 7 in either direction causes the string 12 to be sounded, the tip 5 being pushed or swung laterally in order to pass the string. A spring 13 is attached to the bellows 10 for acting in opposition to the outer air-pressure which collapses the bellows, it being customary to operate this bellows by exhausting the air therefrom.

The perforations *f f f f* in lines 5, 7, and 9 control the fretting mechanism in the same manner that the perforations in "string-line" control the picker. Supposing the sheet to be moving in the direction indicated by the arrow at the left, when the advancing end *a* of perforation 1 passes over the pneumatic tracker-bar, electrical contact, or other device the picker moves across the string and sounds a certain note and remains in that position until the end *b* of perforation 1 crosses the tracker-bar. Before this occurs, however, perforation *f* in line 9 acts by causing the string to be pressed upon fret 9, thereby changing the pitch of the string. Now when the end *b* of perforation 1 passes off the tracker-bar the operating force will be interrupted and the picker-actuating device 10 will automatically cause its picker to recross the string, this motion being effected by the spring 13 or other suitable device. It will thus be seen that the string has been sounded twice by the sole action of perforation 1, the second note being different from the first on account of the action of perforation *f* in line 9. In the same manner when perforation *f* in line 7 reaches the tracker-bar the string will be

fretted and then sounded by perforation 2, and when the end *b* of perforation 2 passes off the tracker-bar the picker will again sound the string by its reverse movement. Two notes will be struck by each of perforations 3 4, and so on throughout the piece of music. The note-sheet will be provided with three more sets of lines for the other three strings of the instrument. It will be noticed that the perforations 1 2 3 are of different lengths, some of them being extended in order to cause the succeeding note to be struck.

Having now fully described our invention, what we claim as new, and wish to secure by Letters Patent of the United States, is—

1. In a stringed musical instrument, the combination, with reciprocating pickers which strike the strings at the advancing and retreating movements of the pickers, and with any preferred fretting mechanism, of a music-sheet provided with a plurality of lines of perforations for controlling the pickers for the strings, and a plurality of perforations for controlling the fretting-fingers for changing the tones of the strings, said perforations for controlling the pickers for the strings being each of sufficient length to embrace the time for sounding two consecutive notes, whereby one of the notes is caused to be sounded by the advancing end of the perforation, and the next note is caused to be sounded by the retreating end of the same perforation; substantially as described.

2. In a stringed musical instrument, the combination, of a music-sheet provided with a series of lines of perforations, comprising as many groups of said lines as there are strings to be depressed at the frets, one line in each group containing perforations for controlling the pickers for the strings, the remaining lines in each group corresponding in number to the number of frets, and perforations in said lines for controlling the fretting-fingers for changing the tones of the string, each of said perforations for controlling the pickers being of such a length as to embrace the time for sounding two consecutive notes; a reciprocatory picker which picks the string at the advancing and retreating movements of the picker, and any preferred fretting mechanism; said note-sheet and said picker coacting to cause two notes to be sounded by each of said perforations for controlling the pickers, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

FREDERICH WILLIAM WOOD.
EDWARD H. STILES, JR.

Witnesses:
OLIVE M. VAN DORSTON,
K. M. IMBODEN.