

O. H. MOEN.  
MUSICAL INSTRUMENT.  
APPLICATION FILED APR. 3, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

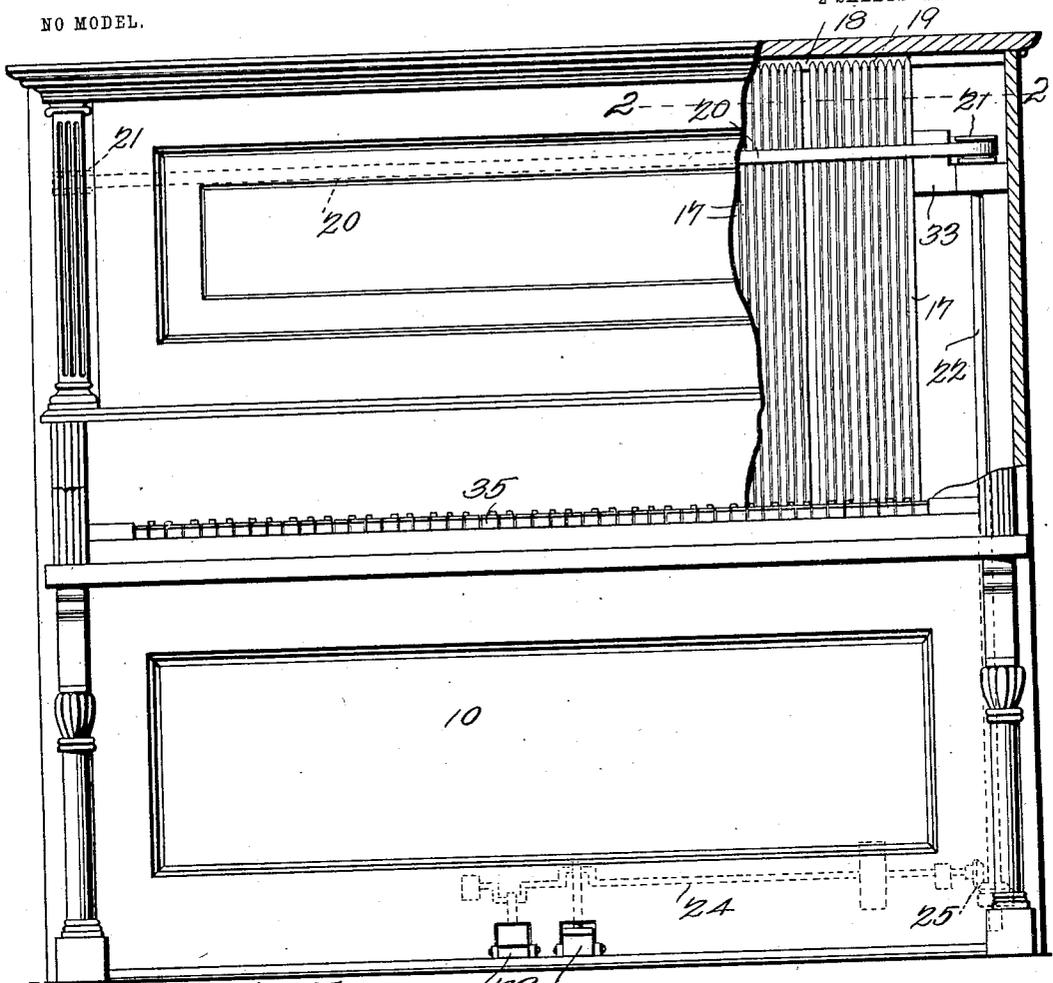


Fig. 1.

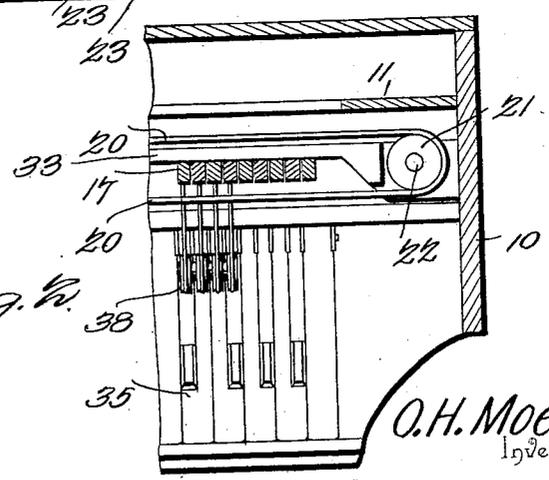


Fig. 2.

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Witnesses  
*E. J. Stewart*  
*J. M. E. Parker*

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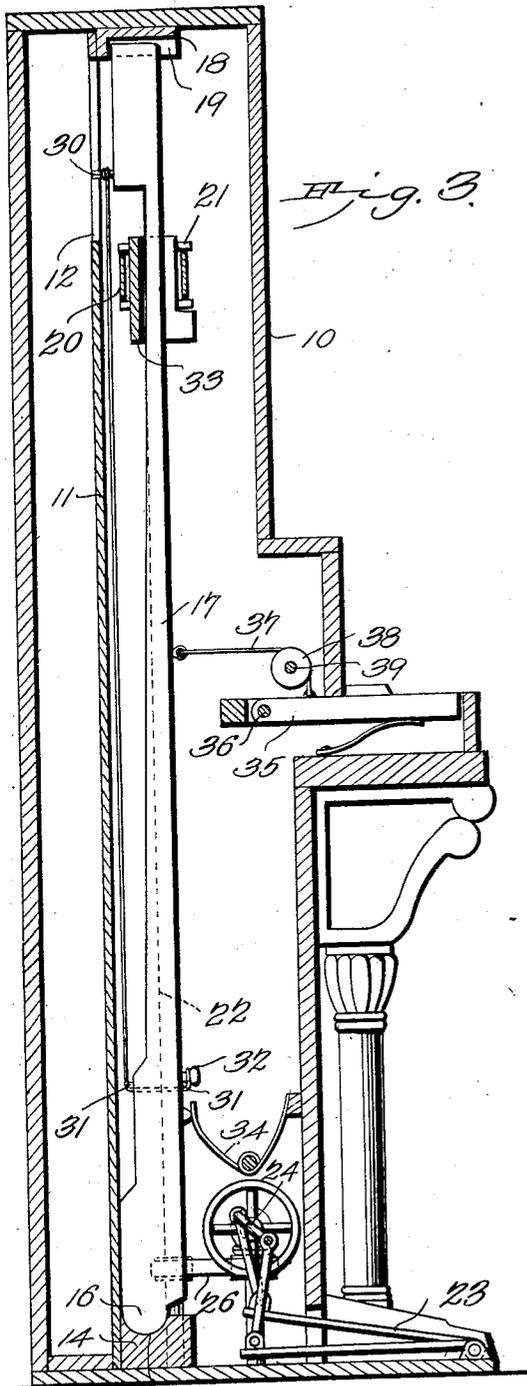


Fig. 3.

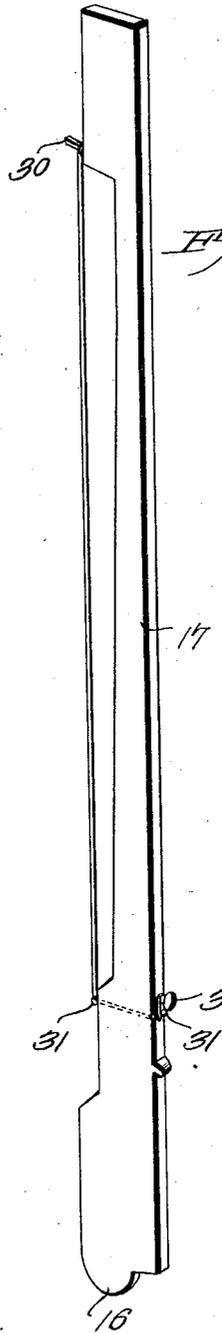


Fig. 4.

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*E. J. Stewart*  
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O. H. Moen, Inventor.  
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# UNITED STATES PATENT OFFICE.

OLE H. MOEN, OF MINNEAPOLIS, MINNESOTA.

## MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 727,665, dated May 12, 1903.

Application filed April 3, 1902. Serial No. 101,245. (No model.)

*To all whom it may concern:*

Be it known that I, OLE H. MOEN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Musical Instrument, of which the following is a specification.

My invention relates to certain improvements in musical instruments, and has for its principal object to construct an improved form of instrument in which the strings are combined with an endless bow, the latter being traveled at any desired rate of speed and the strings being under the control of finger-keys and operated in much the same manner as the keys of an organ.

With this and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is an elevation of a musical instrument constructed in accordance with my invention, a portion of the casing being broken away in order to more clearly illustrate the interior construction. Fig. 2 is a sectional plan view of a portion of the same on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional elevation of the instrument, drawn to a somewhat larger scale. Fig. 4 is a detail perspective view of one of the strings and its carrying-lever.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The casing 10 of the instrument resembles in general appearance that of an ordinary upright piano and may be ornamented in any desired manner. In the rear of the casing is a sound-box having a sound-board 11, which may be of the usual character, but by preference is provided with one or more openings 12 to permit free escape of the sound-waves from the interior of the box. The rear wall of the casing, which preferably forms the rear of the sound-box, is solid and of comparatively heavy wood or similar material.

Secured to the lower front portion of the sound-board is a transversely-extending bar 14, having in its upper surface a curved recess 15 for the reception of the curved lower

ends 16 of the series of string-carrying levers 17, and at the top of the casing is a bar 18, having slots 19 for the reception of the upper ends of said levers. The base of each lever is comparatively broad, its rear face being adapted for contact with the sound-board in order that the vibrations of the string may be transmitted directly to the sound-board for the purpose of increasing the volume of sound, and, as the curved lower ends of the levers 17 fit snugly in the recesses and the sound-board forms a continuation of the line of curvature of the recess, a portion of each lever will at all times be in contact with said sound-board, the curved end of the lever being partly in contact with the sound-board when said lever is moved out of the vertical position shown in Fig. 3. The intermediate portion of each lever is reduced in width and passes between the front and rear runs of an endless bow 20, passing over suitable guiding and driving pulleys 21, arranged at opposite ends of the casing, one of such pulleys being carried by a shaft 22, which receives motion from a pair of pivoted pedals 23 through a cranked shaft 24, gearing 25, and a connecting-beit 26, the pedals serving to keep the bow in constant motion at any desired rate of speed. On each lever is a string, the character of which is dependent upon its position in the instrument, a sufficient number of levers and strings being employed to secure any desired musical effect and the keyboard having a range of six or seven octaves, if necessary. The upper end of each string is secured to the lever by a pin 30, and the lower end of said string passes over small pins 31 to a tuning-peg 32, which preferably is arranged at the front of the lever for convenience in tuning.

When not in operation, the various levers are pressed against the stop-bar 33, each lever having a separate spring 34 for this purpose, while the string of each lever is kept at a slight distance from the resined face of the endless bow at a point between the bow and the sound-board, as illustrated in Fig. 3.

In order to simplify the construction, the keyboard is formed of a series of levers, of which there may be any desired number, representing notes and half-notes, each lever being pivoted on a pin 36 and connected

to its proper string-lever by a flexible cord or chain 37, running over a guiding-sheave 38 on a shaft or spindle 39, the spring 34 serving as a means to hold the keys in elevated position or an auxiliary spring being employed for this purpose, as shown in Fig. 3.

In the operation of the device the bow is operated by successive depressions of the pedals, the bow being traveled at any desired rate of speed and a governing device being employed for the purpose of regulating the speed, if necessary. The operator then depresses any particular key or combination of keys for the production of the desired effect, the bow passing over in contact with the strings of the levers which have been moved and vibrating the strings in the manner usual in a violin. The note may be prolonged to any extent by retaining the pressure on the finger-key or its effect be altered and the volume of sound increased or diminished by regulating the pressure exerted to force the string into contact with the bow. The vibrations of the strings are to some extent transmitted directly to the sound-board through the key-levers and the supporting-bar 14, setting up a mechanical vibration of the sound-board, which is transmitted in both directions, the air between the sound-board and the solid back of the box or casing being acted upon and transmitting the sound-waves through the openings 12.

While the construction herein described, and illustrated in the accompanying drawings, is the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. In a musical instrument, a sound-board,

a supporting-bar carried thereby and having a grooved upper face, levers mounted on said bar and having their lower ends fitted within said groove, means for guiding the upper ends of the levers, strings carried by the levers, finger-keys operatively connected to the levers, an endless bow, and means for operating said bow.

2. In a musical instrument, a sound-board, a supporting-bar carried by the sound-board, and having a grooved upper face, a series of levers having their lower ends fitted within said grooves, devices for guiding the upper ends of the levers, finger-keys operatively connected to the levers, a string carried by each lever, an endless bow, and means for operating said bow.

3. In a musical instrument, a sound-board having openings therein, a supporting-bar carried by the sound-board, levers carried by the bar and having portions of their lower ends constantly in contact with the sound-board, strings carried by said levers, finger-keys operatively connected to the levers, a bow, and means for operating the bow.

4. In a device of the class specified, a movable lever, having a transversely-disposed opening extending from the front to the rear face of the lever at a point above its lower end, a string, means for securing one end of the string to the lever, the opposite end of said string extending through said opening, and a tuning-peg carried by the lever at a point adjacent to the opening and on the front face of the movable lever, said peg being connected to the said opposite end of the string.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

OLE H. MOEN.

Witnesses:

B. B. ANDERSON,  
T. E. MOEN.