No. 836,844. PATENTED NOV. 27, 1906.

J. L. WARNER.

VIOLIN PIANO.

APPLICATION FILED OCT. 2, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

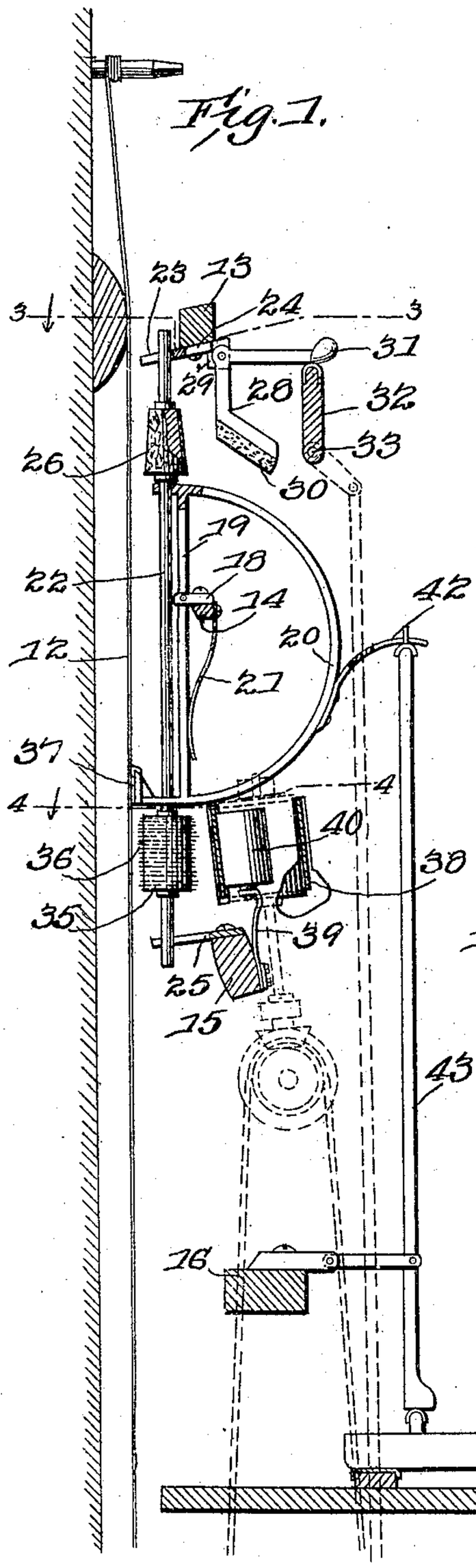


Fig. 3.

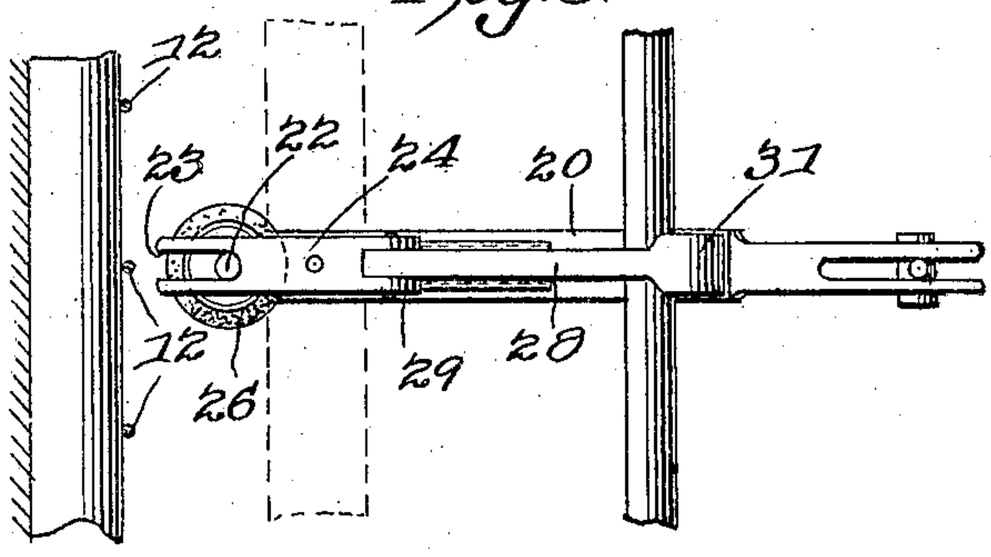
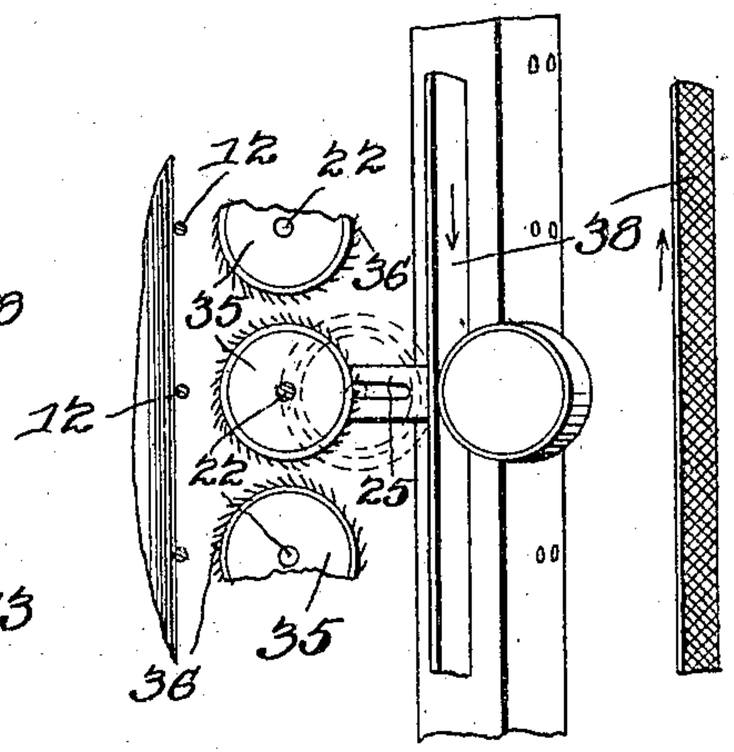


Fig. 4.



Witnesses

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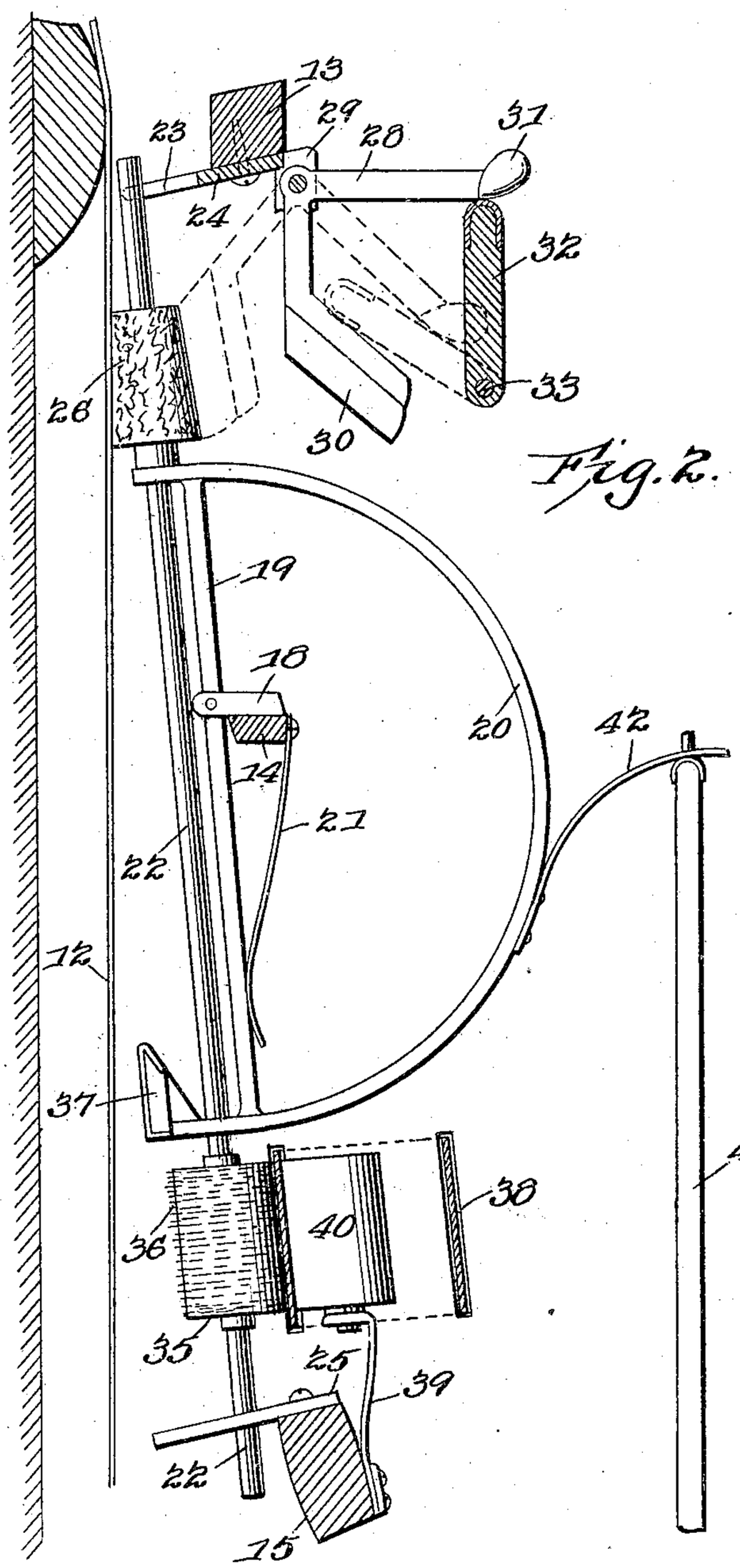

Fig. 2.

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UNITED STATES PATENT OFFICE.

JAMES L. WARNER, OF GIRARD, KANSAS.

VIOLIN-PIANO.

No. 836,844. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed October 2, 1905. Serial No. 281,070.

To all whom it may concern:

Be it known that I, JAMES L. WARNER, a citizen of the United States, residing at Girard, in the county of Crawford and State of Kansas, have invented a new and useful Violin-Piano, of which the following is a specification.

This invention relates to violin-pianos, and has for its principal object to provide a novel mechanism for setting the strings of a piano or similar instrument into vibration without the employment of the ordinary hammers.

A further object of the invention is to provide a mechanism of this type which may be substituted for the ordinary piano-action by merely removing the latter and placing the device forming the subject of the present invention in its place.

A still further object of the invention is to provide a revoluble string-vibrating member arranged in front of the string and movable toward and from the same, a separate vibrating member being employed in connection with each of the keys of the instrument, so that the latter may be played in the same manner as an ordinary piano or organ.

A still further object of the invention is to provide normally inactive vibrating members which when moved into engagement with the string are revolved through the medium of a continuously-operating driving-belt and are removed from the driving-belt as they move from contact with the string.

A still further object of the invention is to provide a novel form of vibrator and damper-carrier which when moved in one direction draws the damper from the string and moves the vibrator into contact therewith, and when moved in the opposite direction withdraws the vibrator and forces the damper into contact with the string.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood 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 the invention.

In the accompanying drawings, Figure 1 is a vertical section of a musical instrument constructed in accordance with the invention, the framework and casing being omitted. Fig. 2 is a similar view of the principal portions of the mechanism drawn to an enlarged scale and showing the vibrator in contact with a string. Fig. 3 is a sectional plan view of a portion of the mechanism on the line 3 3 of Fig. 1. Fig. 4 is a similar view on the line 4 4 of Fig. 1.

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

The key-frame 10, keys 11, and strings 12 may be of any ordinary construction and arranged in any suitable manner, those in the present instance representing the parts of an ordinary form of upright piano.

The various parts of the mechanism are supported on four rails 13, 14, 15, and 16, which extend across from side to side of the instrument in front of the strings. The principal rail 14 is provided with flanges 18, to which are pivoted the approximately-vertical cross-bars 19 of semicircular strips 20, that form carriers for the vibrators and dampers. Each of these frames is held normally in inactive position by a spring 21, the upper end of which is secured to the rail 14, while the lower end of the spring bears against the bar 19. The opposite ends of the frame serve as supports for a short vertical shaft 22, the upper and lower ends of which extend beyond the frame. The upper end of the shaft is guided in a groove 23, formed in a small guide-plate 24, that is secured to the rail 13, while the lower end of the shaft is received within the groove of a small guide-plate 25, that is secured to the rail 15, these guides serving to prevent any lateral play of the shaft.

On the upper portion of the shaft is keyed a vibrator 26, this being preferably in the form of a frusto-conical roller formed of soft rubber wound with straight hair or covered with skin with the hair left on, the hair running circumferentially around the roller, or silk thread may be used in place of the hair. In any case the hair or fiber is treated with varnish containing resin and will be held in place when the mixture is dry.

The resin-applying apparatus consists in the present instance of a bell-crank lever 28, pivoted at the point of bifurcation to a lug or flange 29, projecting from the rail 13. One arm of the bell-crank lever forms a clamp for

a block 30, of resin, or a compound containing resin, while the opposite arm of the lever is provided with a counterweight 31, that normally is held in elevated position by a tiltable bar 32, extending across the instrument and mounted on pivots 33, so that it may be moved down to the dotted-line position, (shown in Fig. 2,) thus permitting the resin block 30 to make contact with the vibrator 26. When moved to the full-line position, the resin block will be moved out of engagement with the vibrator.

Near the lower end of the shaft 22 is mounted a drum or wheel 35, that is formed of any suitable material and is provided with a plurality of teeth 36, that project from the periphery of the drum on non-radial lines. The lower end of each frame 20 also carries a damper 37, that is arranged to make contact with the string when the parts are in normal position.

Immediately above the rail 15 is arranged a driving-belt 38, that is formed of any suitable material, preferably horsehair, interwoven with transverse strips or threads of metal, which will positively engage with the teeth 36 of the drums when the latter are moved into engagement with the belt and impart positive movement thereto, so that the vibrator will be turned, no matter what the resistance offered may be. The teeth 36 are arranged on non-radial lines, so that while firmly clutched by the belt they will readily pull out of said belt without injury. The belt may be supported and driven in any suitable manner.

The lower rail 15 is provided with a series of springs 39, and on the upper end of each spring is mounted a roller 40, that is in alinement with the drum 35, there being one of such rollers for each of the drums. This roller forms a packing for the belt and is held in operative position by the spring 39, so that good driving contact between the belt and drum is insured.

Each of the semicircular frames 20 is provided with a projecting spring-arm 42, the upper end of which is connected to a vertically-movable jack 43, that is operated from the keys.

In the operation of the device the depression of a key will elevate one of the jacks, and the frame 20 will be rocked from the position shown in Fig. 1 to the position shown in Fig. 2, the vibrator 26 coming into contact with the string, while the drum 35 engages the belt 38 and is positively rotated by said belt, the movement being transmitted to the vibrator, and the latter in moving across the string sets said string into vibration, the sound produced being similar to that of a violin or other bow instrument. When the pressure on the key is relieved, the parts are restored to normal position and the damper 37 engages the string.

The parts are of such construction that by the removal of the ordinary piano-action the device forming the subject of the present invention may be placed in position and operated from the piano-keyboard.

Having thus described the invention, what is claimed is—

1. In a stringed musical instrument, a shaft, a rocking frame, the opposite ends of which are provided with bearings for said shaft, the frame being pivoted at a point intermediate of its ends, a drum mounted on the shaft near one end thereof, a vibrator carried by the shaft near the opposite end, a continuously-operated belt adjacent to the drum, and a key-actuated means for rocking the frame to effect contact between the vibrator and the string and between the drum and the belt.

2. In a stringed musical instrument, a shaft, a rocking frame carrying said shaft, slotted guides for the opposite ends of the shaft, a vibrator mounted at one end of the shaft, a drum mounted at the opposite end of the shaft, a continuously-operated belt, a key-actuated means for rocking the frame, and means for restoring the frame to initial position when the key is released.

3. In a stringed musical instrument, the combination with a rocking frame, of a shaft supported thereby, a vibrator arranged at one end of the shaft, a drum arranged at the opposite end of the shaft and provided with peripheral teeth, means for rocking the frame, and a continuously-operated belt with which said toothed drum is engaged when the vibrator makes contact with the string.

4. In a stringed musical instrument, the combination with a rocking frame, of a shaft supported by the frame, means for rocking the frame, a vibrator arranged at one end of the shaft, a drum arranged at the opposite end of the shaft and provided with peripheral teeth, said teeth extending on non-radial lines, and a continuously-operated belt with which said toothed drum is engaged when the vibrator is moved into contact with the string.

5. In a stringed musical instrument, the combination with a rocking frame, of a shaft carried thereby, a vibrator at one end of the shaft, a drum at the opposite end of the shaft, a continuously-operated belt with which said frame may engage, a key-operated mechanism for tilting the frame, and a spring-pressed roller forming a backing for the belt at a point opposite the drum.

6. In a stringed musical instrument, the combination with a revoluble vibrator, of a bell-crank lever, a resin-clamp at one arm of the lever, a counterweight on the second arm of the lever, and a tiltable bar engaging the counterweighted arm and normally maintaining the resin out of contact with the vibrator.

7. In a stringed musical instrument, a

rocking frame, a shaft supported by said frame, a revoluble vibrator carried by the shaft at one end of the frame, means for revolving the shaft, and a damper secured to the opposite end of the frame and arranged to move into engagement with the strings as the vibrator moves out of engagement with the strings.

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

JAMES L. WARNER.

Witnesses:
WALTER K. POTTER,
GEORGE E. COLE.