

June 19, 1923.

1,459,378

H. F. SCHENUIT

TREMOLO FOR PIANOS

Original Filed Feb. 24., 1919

3 Sheets-Sheet 1

FIG. 1.

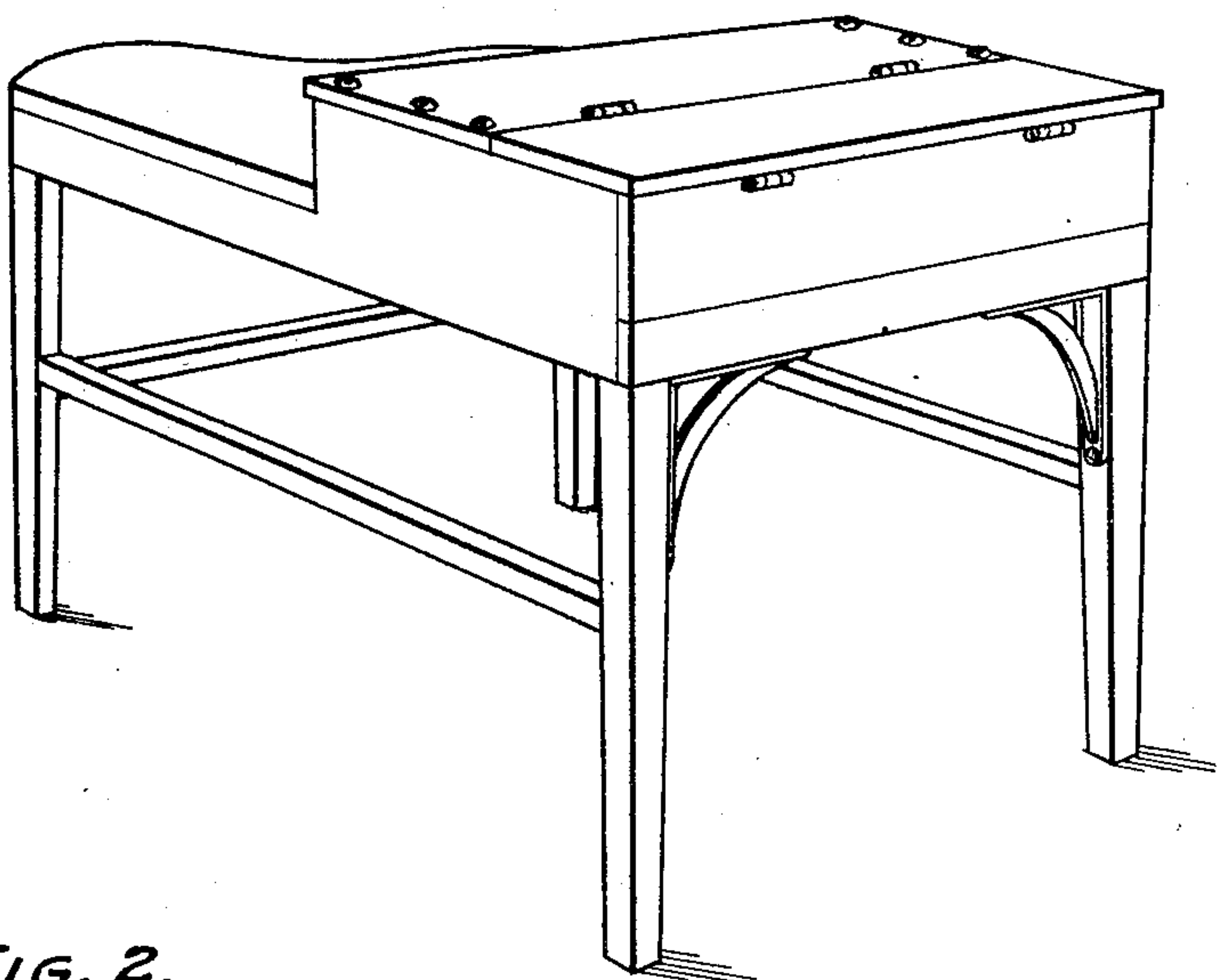
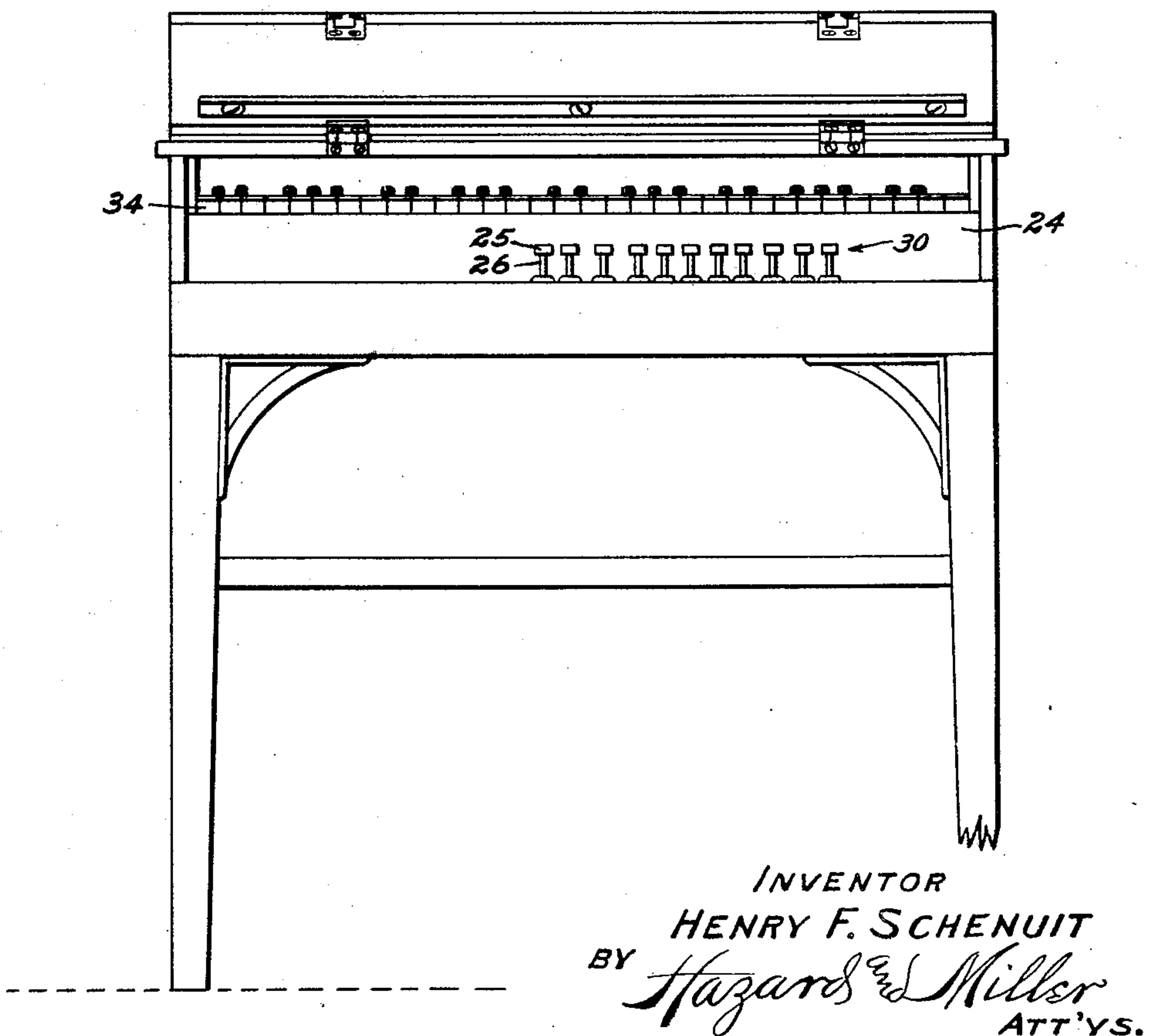


FIG. 2.



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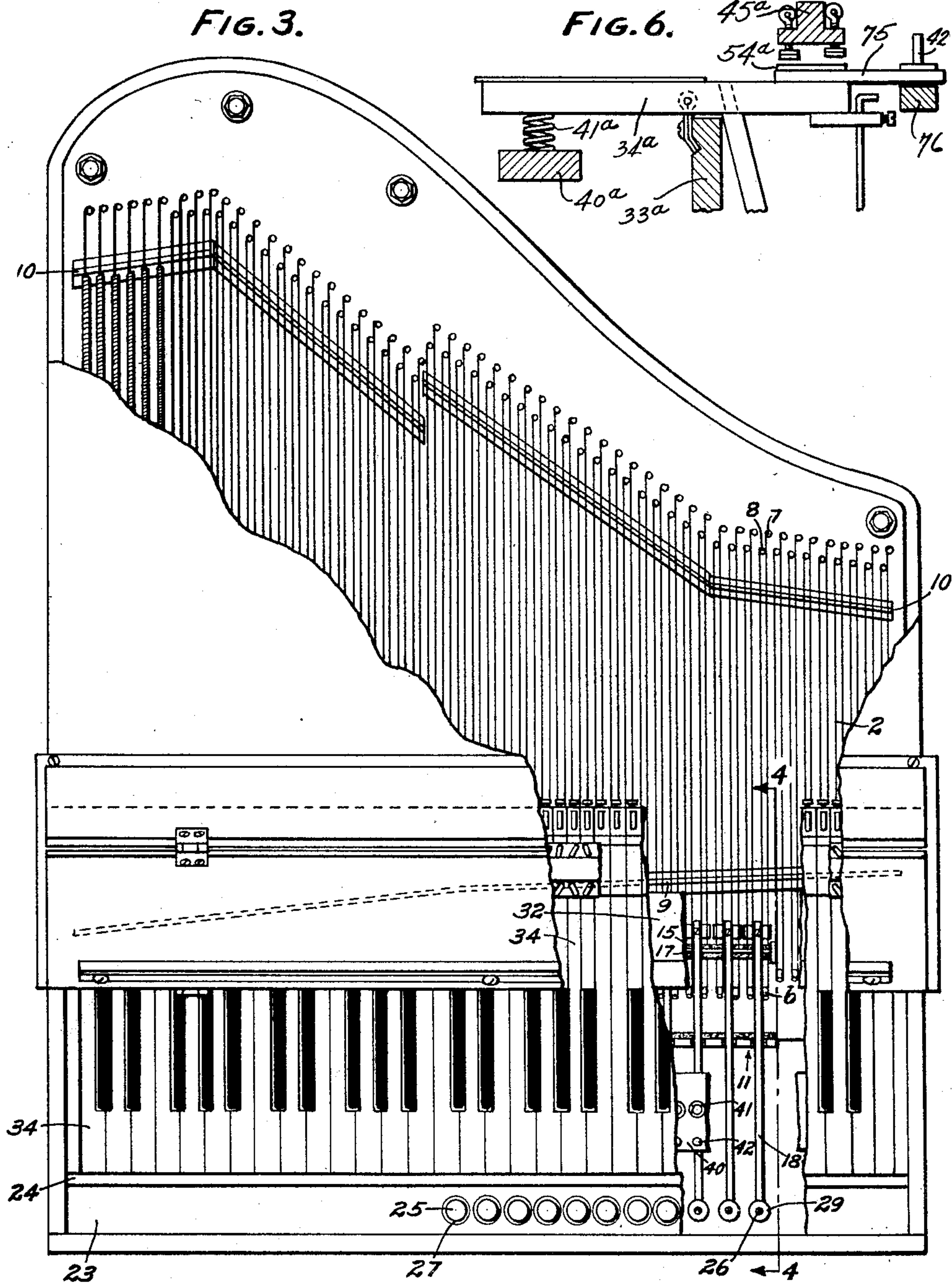
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FIG. 5.

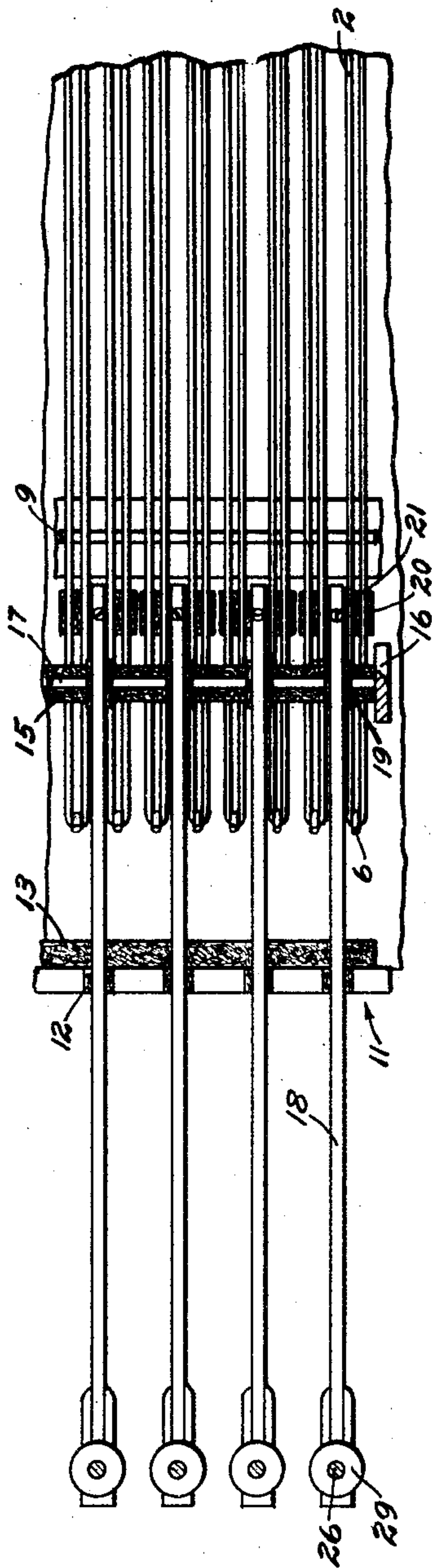
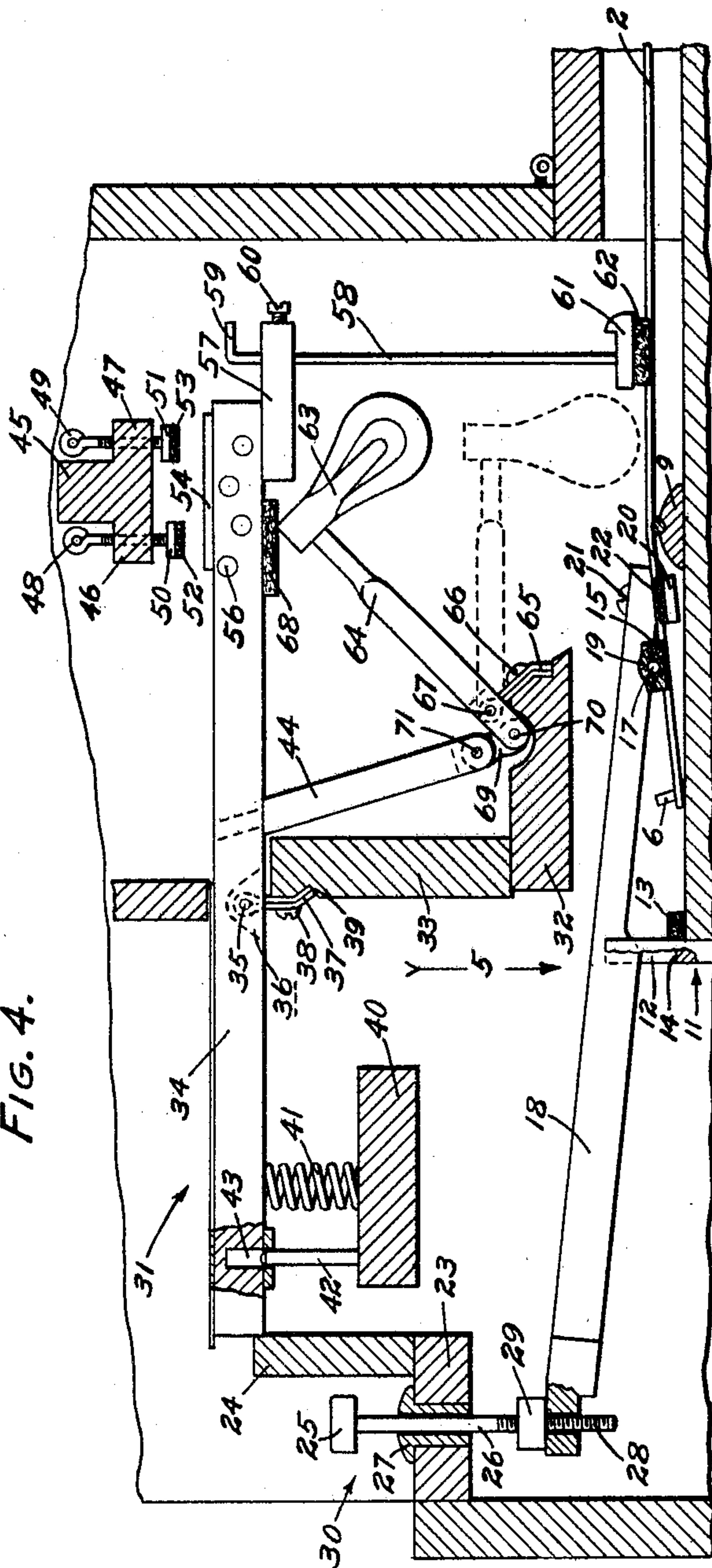


FIG. 4.



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UNITED STATES PATENT OFFICE.

HENRY F. SCHENUIT, OF PASADENA, CALIFORNIA.

TREMOLO FOR PIANOS.

Application filed February 24, 1919, Serial No. 273,759. Renewed May 3, 1923.

To all whom it may concern:

Be it known that I, HENRY F. SCHENUIT, a citizen of the United States, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Tremolos for Pianos, of which the following is a specification.

My invention relates to pianos and consists of the novel features herein shown, described and claimed.

My object is to provide a tremolo device for pianos.

Figure 1 is a perspective of a piano embodying the principles of my invention with the cover in closed position.

Fig. 2 is a front elevation of the piano with the cover in open position for operating the piano.

Fig. 3 is an enlarged top plan of the piano, parts being broken away to show the details of construction.

Fig. 4 is a fragmentary vertical sectional detail on line 4—4 of Fig. 3.

Fig. 5 is a fragmentary plan of the tremolo action as seen looking in the direction indicated by the arrow 5 in Fig. 4.

Fig. 6 is a fragmentary vertical longitudinal sectional detail on the same plane as Fig. 4 and showing a modified construction of guide pin for a key.

The frame of the piano is horizontally disposed and the forward ends of strings 2 are secured in the usual manner to hitch pins 6, which latter are seated in the forward portion of said frame.

The rear ends of the strings are attached to tuning pins 7 and 8 that are set in the wrest plank at the rear portion of the piano frame.

A bridge 9 is arranged on the sounding board to the rear of the pins 6 and the strings pass over and rest upon this bridge and they likewise pass over and rest upon bridges 10 that are secured to the wrest plank adjacent to the pins 7 and 8.

A wooden strip 11 is rigidly secured against the front vertical face of the string plate and extends upwardly, and notches 12 are formed from the upper face of the strip crosswise of the strip and in planes parallel with the strings 2. A strip of felt 13 is secured to the upper face of the string plate against the rear face of the strip 11, the upper face of the felt 13 being above the

bottoms 14 of the notches 12. A strip of felt 15 is placed crosswise of the strings 2 and upon the strings and half way between the string pins 6 and the bridge 9. Stops 16 extend upwardly from the string plate one at each side of the tremolo action, and a small rod 17 is placed upon the felt pad 15 between the stops 16. The tremolo levers 18 are placed in the notches 12 and extend from near the bridge 9 to points a considerable distance in front of the strip 11 and slightly in front of the forward ends of the piano keys. Felt pads 19 are placed upon the rod 17, there being an independent pad under each lever 18, and there being a lever 18 for each two strings affected by the tremolo action.

As shown in Fig. 5, each string 2 is a double wire and there is a lever 18 for each pair of strings, that is for four wires. A plate 20 is placed under the extreme rear end of each lever 18 and under the corresponding pair of strings 2 and secured to the lever by a bolt 21. The upper faces of the plates are covered with felt pads 22. When the forward end of a lever 18 is depressed the rod 17 serves as a fulcrum, and the plate 20 presses upwardly on the strings while the rod 17 presses downwardly on the strings thereby cramping or bending the string momentarily to tighten the string. The reason each lever 18 operates a pair of strings is to reduce the number of levers, and if it happens that only one string of the pair is vibrating, tightening the non-vibrating string will produce no result.

A board 23 is mounted horizontally and extends forwardly from the key board 24, and the tremolo keys 25 are mounted upon the upper ends of the stems 26 and the stems 26 are inserted slidingly and vertically through the sleeves 27 fixed in the board 23. The lower ends 28 of the stems 26 are screw threaded, and nuts are adjustably mounted upon the screw threads and the nuts 29 rest upon the extreme forward ends of the levers 18, and the screw threaded portions 28 below the nuts 29 extend loosely through the levers. The keys 25 are simply round buttons, and in Fig. 2 I have shown 11 of these keys. The tension of the strings 2 will hold the keys 25 elevated, and when it is desired to produce the tremolo effect the key 25 is struck or pressed downwardly to the desired extent or until the lever 18 rests upon the

felt strip 13 thereby momentarily tightening the string 2. Thus I have produced the tremolo action 30.

The piano action 31 is mounted above and independent of the tremolo action 30. The tremolo action 30 engages the strings 2 in front of the bridge 9, and the piano action 31 engages the strings 2 behind the bridge 9. A board 32 is mounted horizontally directly above the string plate 3 clear of the string plate and supported at its ends by the piano casing. This board forms the action-rail and is rigid with a second board 33 mounted vertically edgewise and forming the balance-rail. The piano keys 34 are mounted horizontally crosswise of the balance-rail 33 upon balance key pins 35. Recesses 36 extend upwardly from the lower faces of the keys 34. Bearing clips 37 are formed by folding pieces of sheet metal upon themselves to form bearings to fit the pins 35, and the clips fit against the front side of the balance-rail 33 and are held in place by screws 38. The extreme lower ends of the clips are bent laterally and fit in a recess 39 in the front face of the balance-rail. A board 40 is mounted horizontally flatwise with its ends supported in the piano casing to form the key frame. Springs 41 are inserted between the upper face of the key frame 40 and the lower faces of the keys 34. Guide pins 42 are fixed in the key frame 40 and extend upwardly into recesses 43 in the keys 34.

Arms 44 have their upper ends mortised and tenoned to the keys 34, said arms extending downwardly and backwardly back of the balance-rail 33. A stop bar 45 is fixed with its ends supported in the piano frame, the bar being almost directly above the bridge 9 and above the inner ends of the keys 34. Flanges 46 and 47 extend forwardly and backwardly from the bar 45, screws 48 and 49 are screw seated downwardly through the flanges 46 and 47, buttons 50 and 51 are mounted upon the lower ends of the screws, and felt pads 52 and 53 are fixed upon the lower faces of the buttons. Rubber pads 54 are fixed upon the upper faces of the rear ends of the keys 34, so that when the keys are operated the rubber pads 54 strike the felt pads 52 and 53, and so that by manipulating the screws 48 and 49 the stroke of a key may be adjusted to a nicety.

In the modification of the invention illustrated in Fig. 6, a different arrangement of a guide pin for a piano key is formed. In this construction key 34^a is pivoted to balance rail 33^a as previously described, a spring 41^a being arranged between the forward end of the key and board 40^a. The rear end of the key is provided with an extension 75 through which is received a guide pin 42^a mounted upon a rail 76. The stop

bar 45^a and the parts associated therewith are arranged as previously described, so as to engage pad 54^a mounted upon the extension 75.

Lead plugs 56 are inserted horizontally through the ends of the keys 34 to counter-balance the hammers. An extension 57 is secured to the lower face of each key and extends backwardly. A damper rod 58 is mounted through each extension and has a handle 59 in its upper end, and the damper rod is held in its adjusted position by a set screw 60. A damper head 61 is fixed upon the lower end of each damper rod 58, and a felt cushion 62 is fixed upon the lower face of the head 61. There may be a damper for each string, and the damper is adjusted to bring the felt cushion 62 into contact with the strings when the key 34 returns to its normal position.

Each key 34 is provided with a hammer head 63 mounted upon a hammer handle 64. Bearing clips 65 are fixed against the front face of the action-rail 32 by screws 66 and the bearings at the upper ends of the clips 65 are recessed into the handles 64 and connected by pins 67. The pins 67 are near the opposite ends of the handles 64 from the heads 63. A felt pad 68 is fixed against the lower face of each key 34 in position to form a rest for the hammer head 63 when the hammer head is in its normal inoperated position.

A link 69 connects the short end of each hammer handle 64 to the lower end of the arm 44, there being a pivot 70 through one end of the link and through the hammer handle, and a pivot 71 through the other end of the link and through the arm 44. The parts are adjusted so that when a key 34 is pressed downwardly to the limit the short end of the hammer handle is raised and the hammer head 63 descends with a whip action to strike the string 2, and so that if the key 34 is held depressed the hammer head 63 will rebound from the string and stand substantially in the position shown in dotted lines in Fig. 4 until the key is released. As soon as the key is released the damper engages the string.

Various changes may be made without departing from the spirit of my invention as claimed.

I claim:

In a piano including piano keys, a bridge, strings and hitch pins, levers connected to the strings between the bridge and hitch pins for bending the strings, and keys mounted in front of the piano keys and connected to the levers for operating the levers to produce the tremolo effect.

In testimony whereof I have signed my name to this specification.

HENRY F. SCHENUIT.