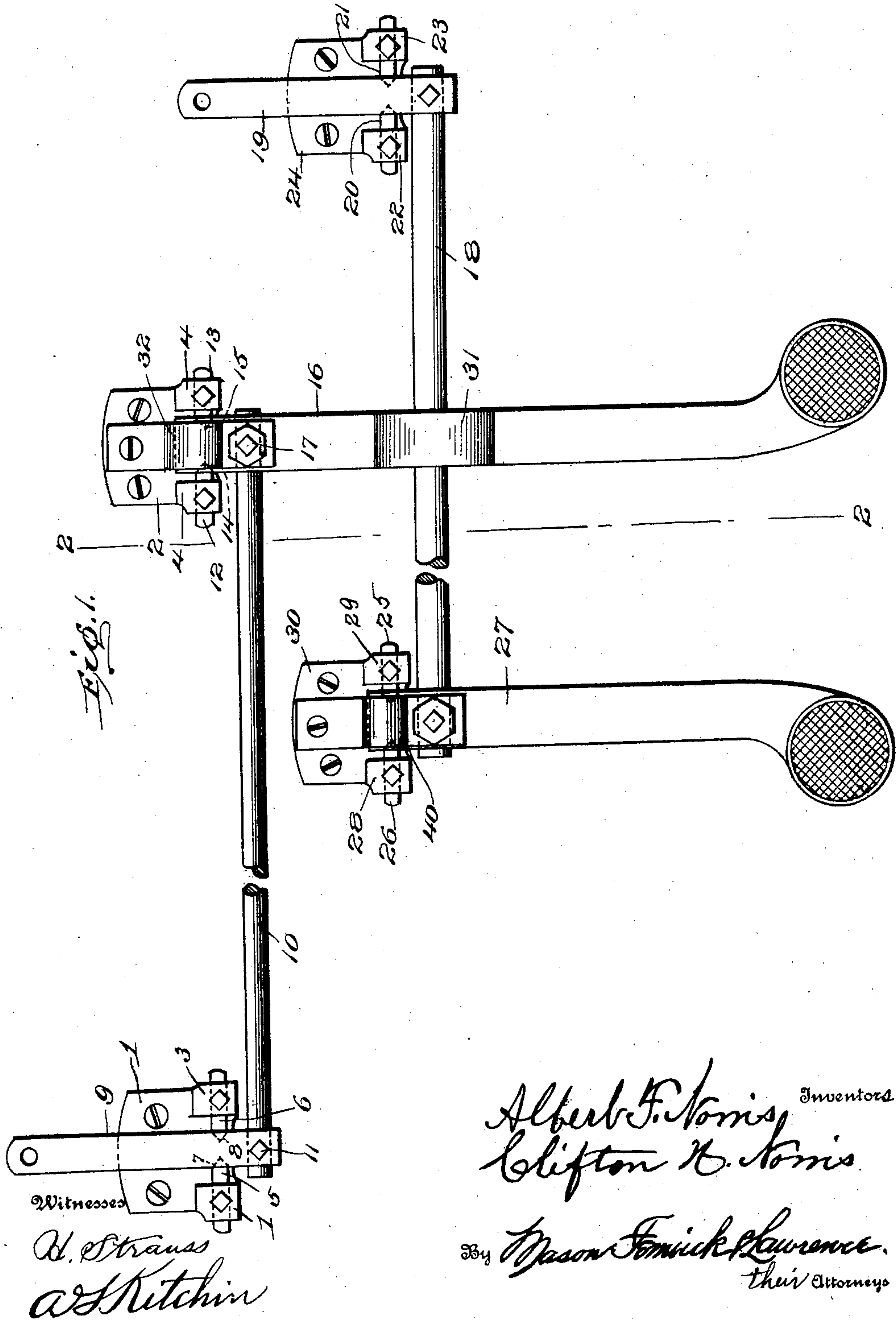


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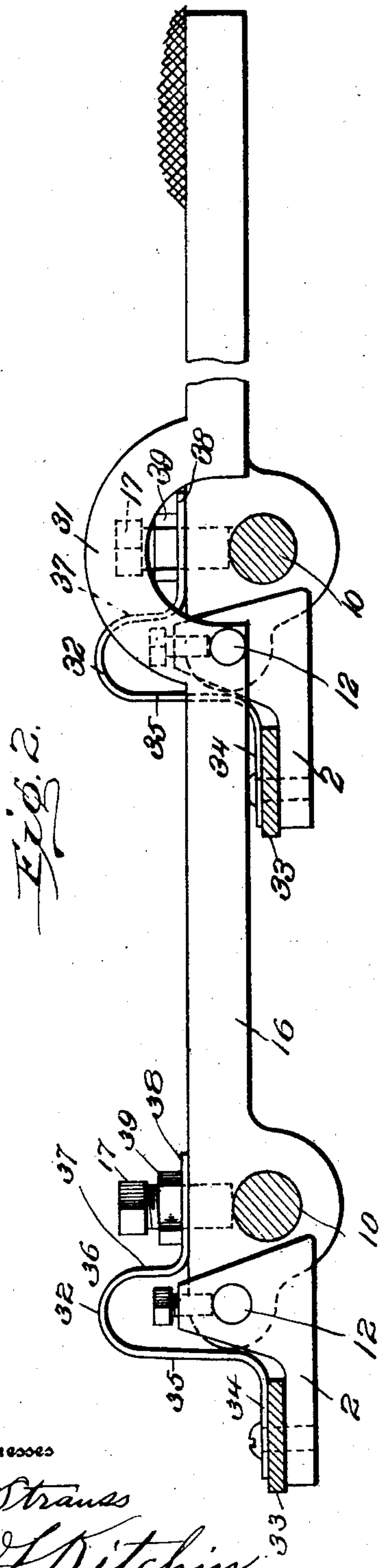
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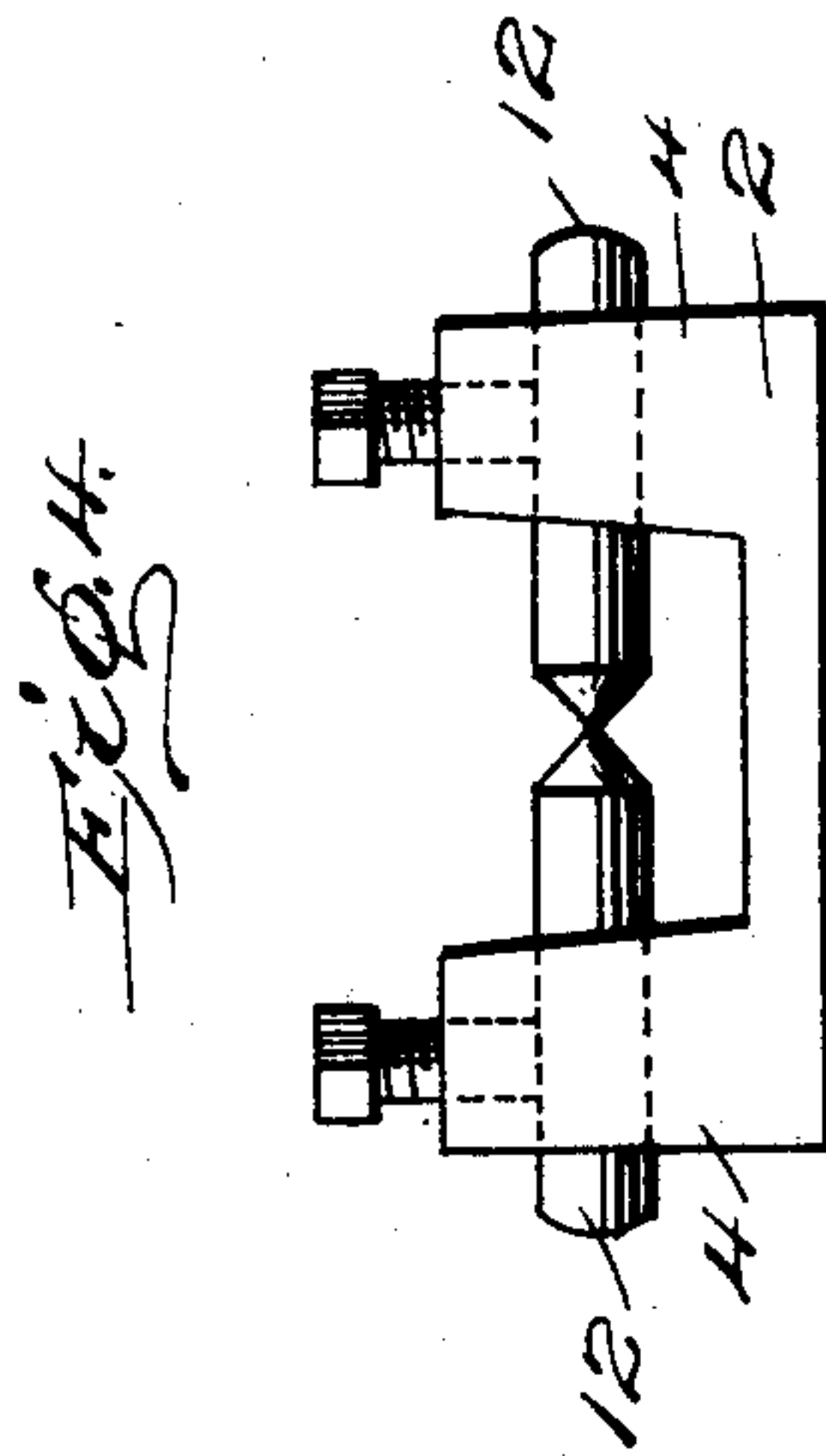
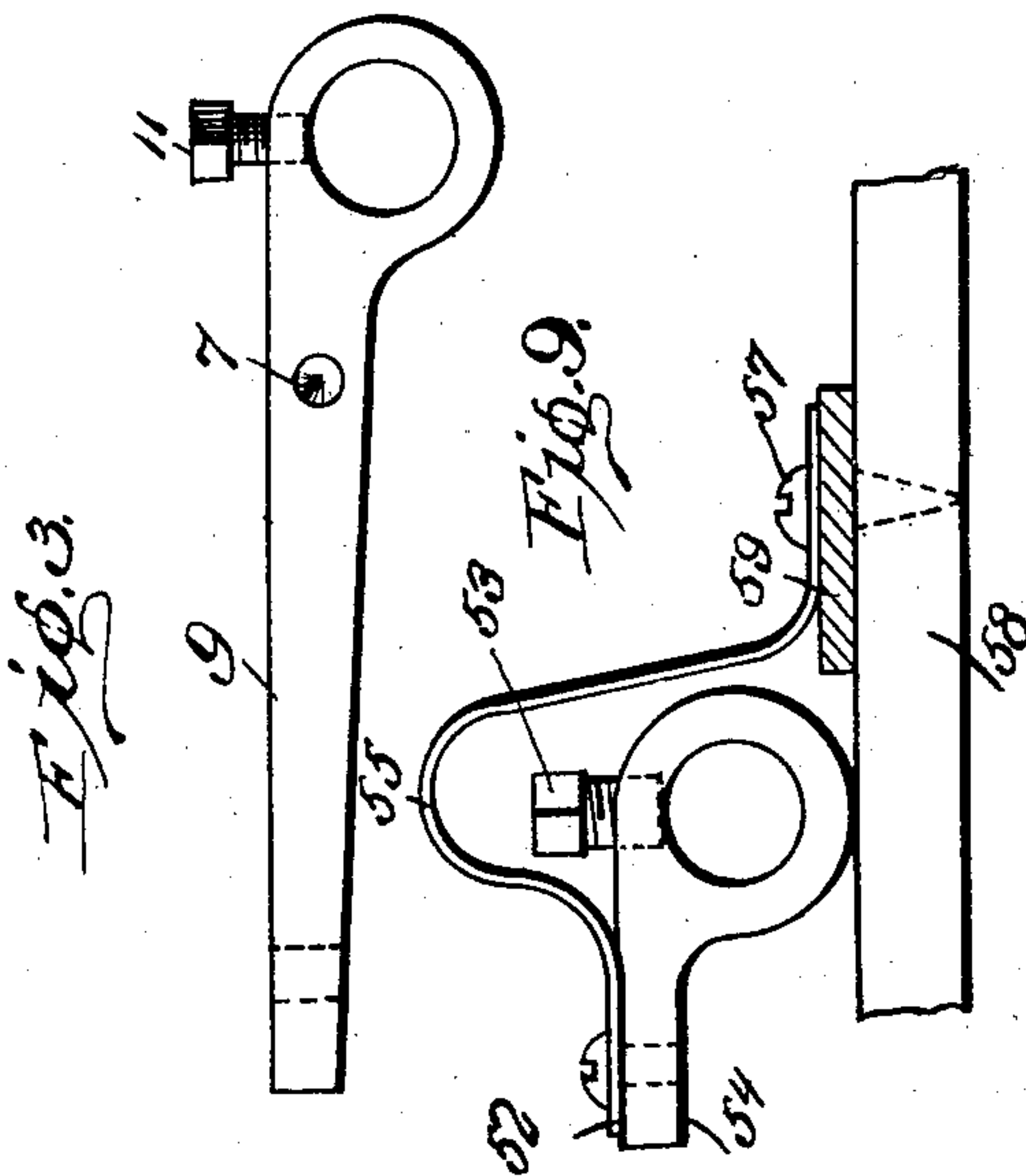
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Witnesses

H. Strauss

A. L. Kitchen.



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 Clifton H. Norris

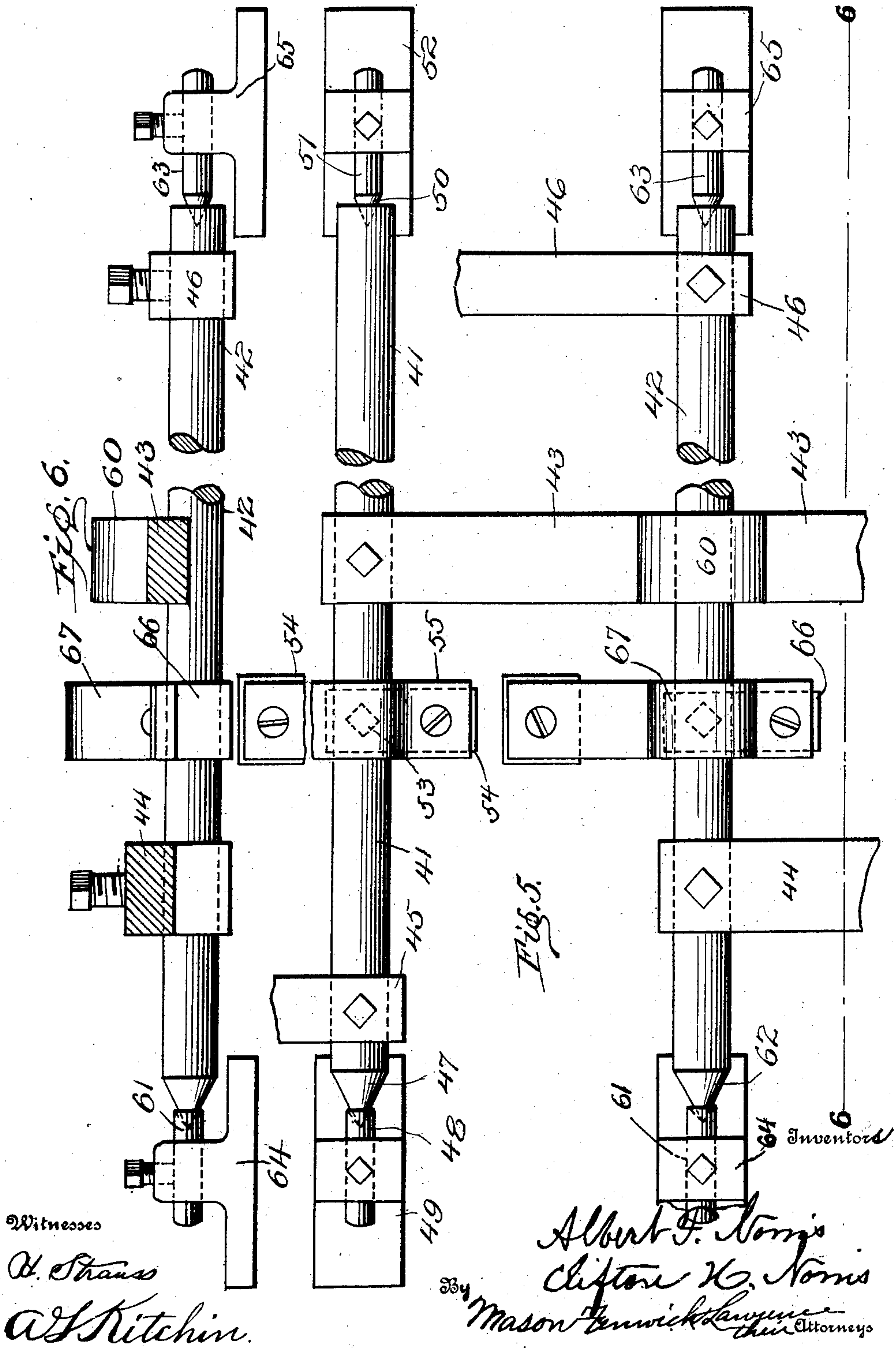
By Mason F. Smith Lawrence,
 Attorneys

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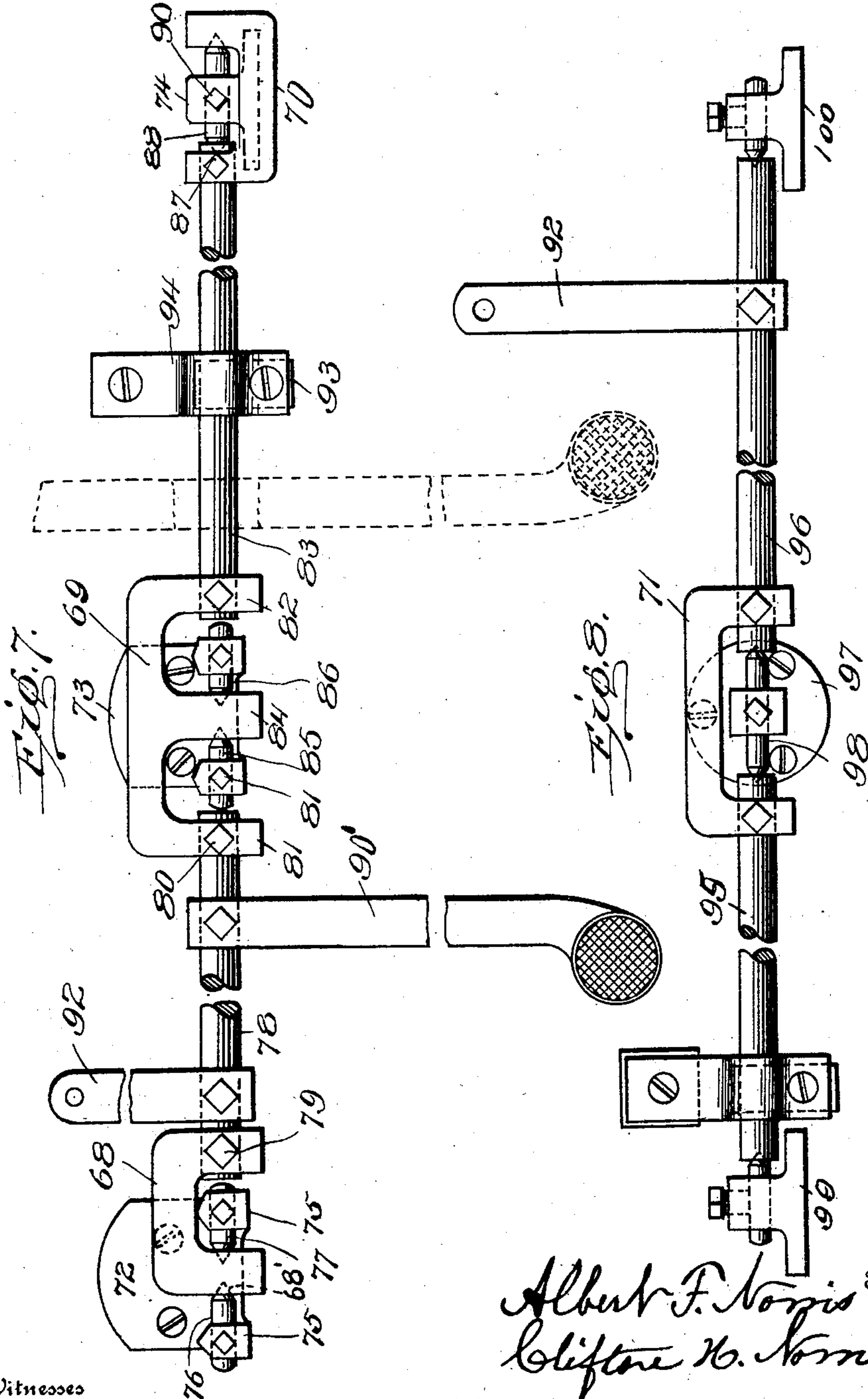
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Witnesses

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UNITED STATES PATENT OFFICE.

ALBERT F. NORRIS AND CLIFTON H. NORRIS, OF BOSTON, MASSACHUSETTS.

PEDAL-ACTION FOR MUSICAL INSTRUMENTS.

No. 915,691.

Specification of Letters Patent.

Patented March 16, 1909.

Application filed April 2, 1908. Serial No. 424,767.

To all whom it may concern:

Be it known that we, ALBERT F. NORRIS and CLIFTON H. NORRIS, citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Pedal-Actions for Musical Instruments; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in attachments for pianos and other musical instruments, and particularly to the pedal action thereof, and has for an object the provision of a pedal action that will occupy but a very small space.

Another object in view is the provision of a pedal action that will operate in a very small space and operate noiselessly.

A further object in view is the provision of a pedal action adapted to occupy a comparatively small space, act easily and noiselessly, and to be arranged with any desired number of pedals, and means for normally holding the pedals in an elevated position.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangement of parts that will be hereinafter more fully described and claimed.

In the accompanying drawing: Figure 1 is a top plan view of the pedal action embodying the features of the present invention. Fig. 2 is a section through Fig. 1 on line 2—2. Fig. 3 is a side view of the lifter rod arm. Fig. 4 is a detail view of a support and cone bearing members. Fig. 5 is a top plan view of a slightly modified form of the structure shown in Fig. 1, certain parts being broken away. Fig. 6 is a section through Fig. 5, approximately on line 6—6. Fig. 7 is a top plan view of a further modified form of the structure shown in Fig. 1. Fig. 8 is a top plan view of a still further modified form of the structure shown in Fig. 1. Fig. 9 is a side elevation of a spring and lug forming part of the present invention, the rock shaft being omitted.

Referring to the drawing by numerals, 1 and 2 indicate brackets that are formed with upstanding lugs or members 3—3 and 4—4 respectively. The upstanding members 3—3 accommodate rods or shafts 5 and 6 formed with beveled or cone shaped ends that are

adapted to be fitted into countersunk portions 7 and 8 formed in lifter rod arm 9. The lifter rod arm 9, as clearly seen in Fig. 1, is secured to a rod 10 that is adapted to be moved on the arc of a circle, as hereinafter more fully set forth. A set screw 11 is preferably used for securing lifter rod arm 9 to rod 10 though any other preferred means may be used.

Upstanding members 4—4 are provided with shaft bearing members 12 and 13 formed with beveled or cone ends for fitting into depressed portions 14 and 15 formed in pedal 16. By this construction pedal 16 is pivotally mounted upon cone bearings and also lifter rod arm 9 is mounted upon cone bearings and will move in synchrony with said pedals as pedal 16 is firmly secured to rod 10 by set screw 17 and lifter rod arm 9 is secured to rod 10 by set screw 11. The bearing members or shafts 5 and 6 and 12 and 13 are in actual alinement so that whenever pedal 16 is moved upon its journal or pivotal point lifter rod arm 9 will also be moved upon its pivotal point or bearing in a predetermined direction and the same relative distance. As pedal 16 extends upon one side of rod 10 in a position to be depressed by the operator and lifter rod arm 9 extends in the opposite direction for raising the lifter rod, the lifter rod will be raised whenever the pedal is depressed and whenever the pedal is raised by a spring, hereinafter more fully described, lifter rod arm 9, together with its lifter rod and connecting mechanism will be lowered.

In pianos there are usually employed several pedals, and when it is desired to have a lifter rod at any desired point in addition to the lifter rod operated by arm 9 a second rod 18 is provided which has rigidly secured thereto a lifter rod arm 19 in a similar manner to the lifter rod 9. The lifter rod arm 19 is pivotally mounted upon bearing members 20 and 21 having cone faces, and which are firmly held in the upstanding members 22 and 23 of bracket 24. Positioned in axial alinement with members 20 and 21 are journal members 25 and 26 that are formed with cone faces for fitting into depressions in pedal 27 and form bearing members therefor. The bearing members 25 and 26 are rigidly held in upstanding members 28 and 29 of bracket 30 by any desired means as, for instance, set screws. When lifter rod arm 19 and associated mechanism is positioned to the right of pedal 16 and pedal 27 and associated parts positioned

to the left of pedal 16, the same is adapted to be accommodated in its movement by curved up portion 31 of pedal 16, as clearly seen in Fig. 2. This curved up portion permits the movement of rod 18 upon the arc of a circle with journal members 20, 21, 25 and 26 as the center so that either pedal 16 or 27 may be depressed as may be desired without either pedal affecting the other, and consequently either lifter rod 9 or 19 can be operated.

Secured to bracket 2 is a spring 32 which extends over and is also secured to pedal 16. A strip of yielding material 33, preferably leather, is interposed between bracket 2 and spring 32, as clearly seen in Fig. 2, so as to give an easier and freer action to the spring. The spring is bent from substantially a horizontal position at 34 to a vertical position at 35, and from thence is bent upon the arc of a circle at 36 until it merges into an upright or vertical portion 37 in opposition to portion 35. From the portion 37 the spring is bent over into a portion 38 that is firmly clamped to pedal 16 by a nut 39 mounted upon set screw 17. This gives a substantially S shaped contour to the spring and permits pedal 16 to move upon its pivotal bearing and yet be continuously acted upon by the spring. The spring may be made of any desired size and strength and is adapted to hold pedal 16 in a substantially horizontal position, as clearly seen in Fig. 2. When it is desired to move the lifter rod the pedal is depressed in the usual manner which will move the set screw 17 and portion 37 downward and bring the spring 32 under tension and at the same time will move rod 10 upon the arc of a circle and move lifter rod arm 9 upon its bearing. After the rod has been held in a raised position for the desired time pedal 16 is released and spring 32 will raise the same to its normal position and at the same time will move rod 10 in a reverse direction to its former movement and, consequently lifter rod arm 9. Spring 32 is therefore adapted to return and hold pedal 16 in a normal substantially horizontal position or in any other position in which the same has been set. It will also be noted that the pivots or journal members 12 and 13 are positioned substantially midway of the spring 32 so that in moving pedal 16 against the action of the spring the spring will be wound slightly with the members 12 and 13 as the center and when the pedal 16 is released the spring will pass through an unwinding action for returning the pedal. When pedal 27 is depressed rod 18 will move upon the arc of a circle for moving lifter rod arm 19 and will be returned to its normal position by a spring 40 in a similar manner to the manner in which spring 32 returns pedal 16. The lifter rod arms 9 and 19 may be of any desired length for properly acting upon the lifter rod.

In Figs. 5 and 6 will be seen a slightly modified construction of the present invention in which the rods 41 and 42 are pivotally mounted so as to merely rock during the movement of the pedals 43 and 44 and their respective lifter rod arms 45 and 46. Rod 41 is beveled for forming a cone-shaped member 47 at one end which is adapted to fit into a journal member 48 that is supported by a suitable bracket 49. Any desired means as a set screw may be used for holding member 48 in position. The opposite end of rod 41 to the beveled portion 47 is formed with a conical-shaped opening for receiving a conical-shaped end 50 of shaft or bearing member 51. Shaft or bearing member 51 is supported by bracket 52 and is rigidly held in position by any desired means as a set screw. Pedal 43 is firmly held in position by any desired means as, for instance, a set screw, and also lifter rod arm 45 is held in position preferably by a set screw so that whenever pedal 43 moves or rocks shaft 41 lifter rod arm 45 will be moved or rocked. Secured to shaft 41, preferably by a set screw 53, is a lug 54 that is adapted to receive or have secured thereto a spring 55 similar in construction to spring 32. Spring 55 is secured to lug 54 at 56 and to any of the bracing members of the piano as 57. If desired a support 58 may be secured in the bottom of the piano in any desired manner for receiving the end of the spring 55. A meshing strip 59, preferably of leather, is positioned between spring 55 and member 58, for easing the action of the spring. When spring 55 has been secured in position and set screw 53 tightened upon rod 41 all the pedals and lifter rod arms secured to rod 41 will be held in their normal position, and, when moved from their normal position, will be returned to said position in a similar manner to the way pedal 16 and associated parts are returned to their correct position.

Associated with rod or shaft 41 is a rod or shaft 42 for carrying another lifter rod arm 46. In order to accommodate rod or shaft 42 pedal 43 is preferably curved upward at 60 in a similar manner to the way pedal 16 is curved up at 31. Rod 42 is journaled at one end in bearing 61 by having its beveled end 62 fitting into a conical-shaped opening in bearing 61. The opposite end of rod or shaft 42 is formed with a conical-shaped opening into which a bearing shaft 63 projects. Bearing shaft 61 is supported by a bracket or supporting member 64 and member 63 is supported by a bracket or journal supporting member 65. Suitable tightening means, as set screws, are provided for members 61 and 63 so as to hold the same in any adjusted position for permitting rod or shaft 43 to act in its usual manner. Secured to shaft or rod 42 is a bracket 66 and a spring 67 and also associated parts that are similar

to the bracket, spring and associated parts of the structure shown in Fig. 9, and will therefore need no further description. By this construction and arrangement of shafts or rods 41 and 42 and their associated parts a noiseless action is provided and also one that will take up very small space. An efficient and strong action also it will be observed is presented and one that is not liable to be deranged or gotten out of order easily.

Referring more particularly to Figs. 7 and 8 another slightly modified construction is presented in which yokes 68, 69, 70, and 71 are used. In Fig. 7 is seen a structure having a plurality of supports or brackets 72, 73 and 74. Bracket 72 is formed with upstanding members 75—75 which are adapted to carry journal members 76 and 77 that are formed with cone-shaped ends for engaging cone-shaped sockets in yoke 68. Yoke 68, opposite the end which is journaled upon members 76 and 77, is firmly secured to a rod or shaft 78 by any desired means as set screw 79, the end of rod 78 opposite yoke 68 is firmly secured in the yoke 69 by a set screw 80. Yoke 69 is formed with arms 81 and 82 for receiving shafts or rods 78 and 83 which are firmly held in position by a suitable set screw. A central arm 84 is also provided for engaging bearing members 85 and 86 which are formed with conical-shaped faces for engaging conical-shaped depressions in arm 84. Bearing members 85 and 86 are supported and held in position by a bracket constructed and arranged similar to bracket 72. Shaft 83 is secured to yoke 70 at the opposite end to the end secured to yoke 69. Yoke 70 is secured to shaft 83 by any desired means as by set screw 87 and also is pivotally mounted on bearing member 88 that is rigidly held in bracket 74 by a set screw 90. Bearing member 88 also is adapted to engage the end of rod or shaft 83 for forming a journal member therefor which is assisted by yoke 70 and its pivotal mounting. Any desired number of pedals as 90' may be secured to rods or shafts 78 and 83 and also any desired number of lifter rod arms 92 may be used. It will be, however, seen that all of the lifter rod arms 92 will be moved upon the movement of any pedal rigidly secured to rod 78 or 83. Secured to rod 83 is a lug or spring supporting member 93 and a spring 94 similar to the spring and lug shown in Fig. 9 and is adapted to be positioned and arranged in the same way and with the same surrounding parts so as to normally hold the shafts 83 and 78 in one position and to return the shafts to that position when moved to some other position.

In Fig. 8 a slightly simplified form of the structure shown in Fig. 7 is disclosed in which yoke 71 connects shafts 95 and 96 by being rigidly secured thereto. A bracket 97 sup-

ports a journal member 98 that is formed with cone-shaped ends which are adapted to fit into cone-shaped sockets formed in rods 95 and 96. By this construction shafts 95 and 96 may be comparatively short and have journal members for correctly supporting the same and yet be connected rigidly together and form substantially a continuous shaft or rod that extends the full length of the piano or other instrument or any part of the length as may be desired. Another advantage of this structure is that if desired one of the rods 95 and 96 may be removed and the remaining rod will operate in the usual manner. Connected to either of rods 95 or 96 or to both are pedals, lifter rod arms, and spring receiving lugs for normally holding the shafts in correct position. Suitable end journal members 99 and 100 similar to brackets 64 and 65 and surrounding parts are provided for supporting the ends of the rods.

By constructing a pedal action according to the present invention the same may be arranged to occupy a very small space at the lower part of the piano and yet act efficiently and noiselessly. The rods, springs, and other parts may be close to one side of the piano and take up a very small space but, as will be evident, will effectually operate the lifter rods in the desired manner. Another important feature of the invention is the adaptability of the action to be placed in position and adjusted properly in any desired musical instrument, and at the same time present a device in which the lost motion caused by the wear can be taken up.

What we claim is:

1. In a pedal action, a lifter rod arm, a shaft secured thereto, a pedal secured to said shaft for moving the same, and pivotal members engaging said arm in such manner as to permit said rod to travel in the arc of a circle concentric with said pivotal members.

2. In a pedal action for musical instruments, a rocker bar, a lifter rod arm secured to said bar, bearings for said arm, a pedal secured to said rocker bar, and a spring for holding said pedal and said rocker bar in their normal position and for returning said pedal and said rocker bar to that position when moved from the same.

3. In a pedal action for musical instruments, a rocker bar, a lifter rod arm secured thereto, a pedal secured to said rocker bar, and cone bearings for said pedal and said lifter rod arm in axial alignment, said cone bearings being arranged for causing said pedal to rock said shaft on the arc of a circle concentric with said bearings.

4. In a pedal action for musical instruments, a rock shaft, a lifter rod arm secured to said shaft, bearings for said lifter rod arm, a pedal for moving said shaft in the arc of a circle concentric with said bearings, and yielding means for normally supporting said shaft.

5. In a pedal action for musical instruments, a rock shaft, a lifter rod arm removably secured to said shaft, cone shaped bearing members for supporting said lifter rod arm, a pedal rigidly secured to said shaft, and a spring secured at one end to said pedal and at the other to said musical instrument.

6. In a pedal action for musical instruments, a rock shaft, a lifter rod arm secured to said rock shaft, means for adjusting the position of said lifter rod arm, bearings for supporting said lifter rod arm in such manner as to cause said rock shaft to move upon the

arc of a circle, means for adjusting the position of said bearings, a pedal secured to said rock shaft, means for adjusting the position of said pedal on said rock shaft, and means for normally holding said pedal in correct position.

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

ALBERT F. NORRIS.
CLIFTON H. NORRIS.

Witnesses:

E. A. CHURCH,
CHAS. W. BAILEY.