

No. 842,539.

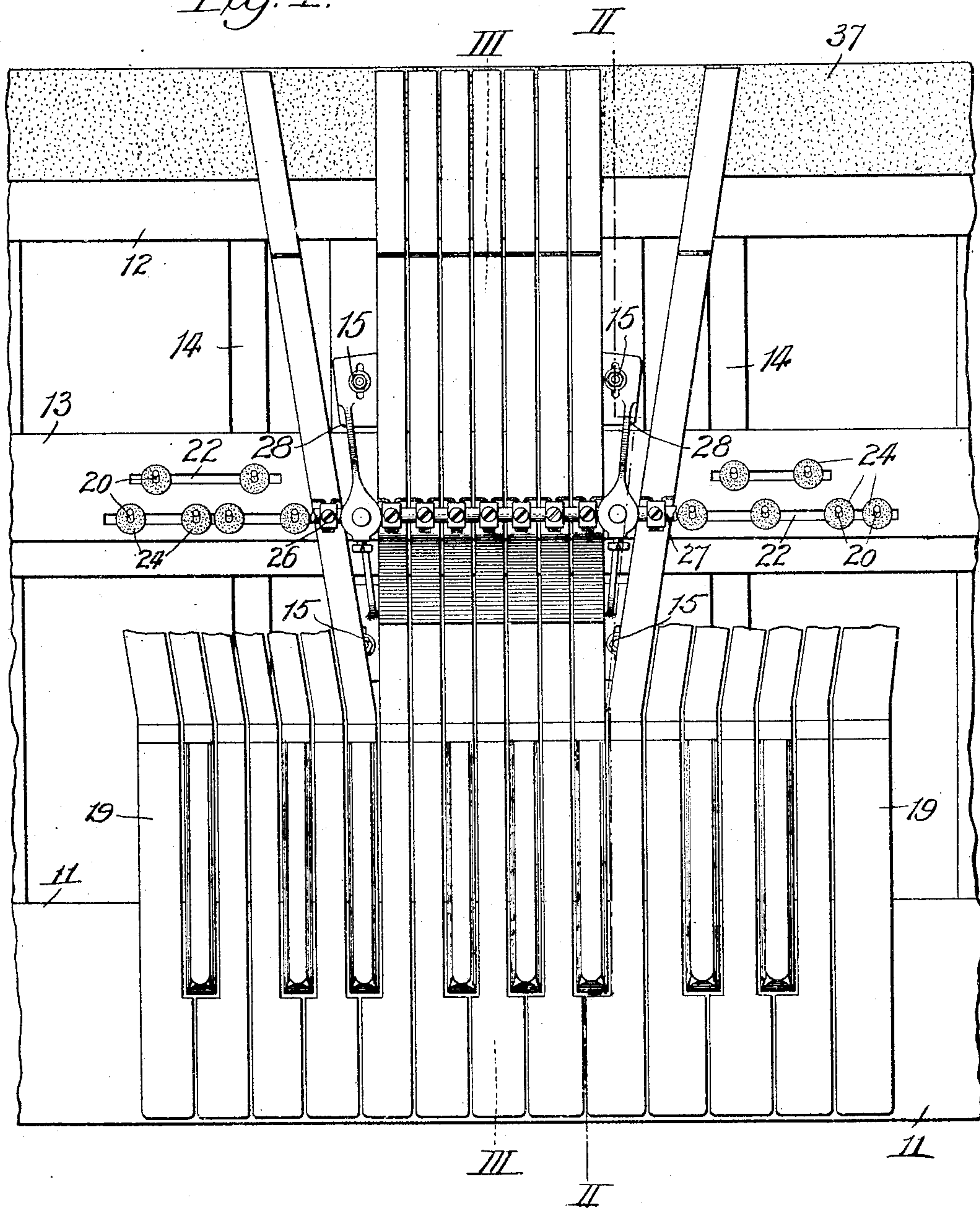
PATENTED JAN. 29, 1907.

W. B. FITZ SIMMONS.
KEYBOARD FOR MUSICAL INSTRUMENTS.

APPLICATION FILED MAY 28, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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Inventor:

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By Attys.

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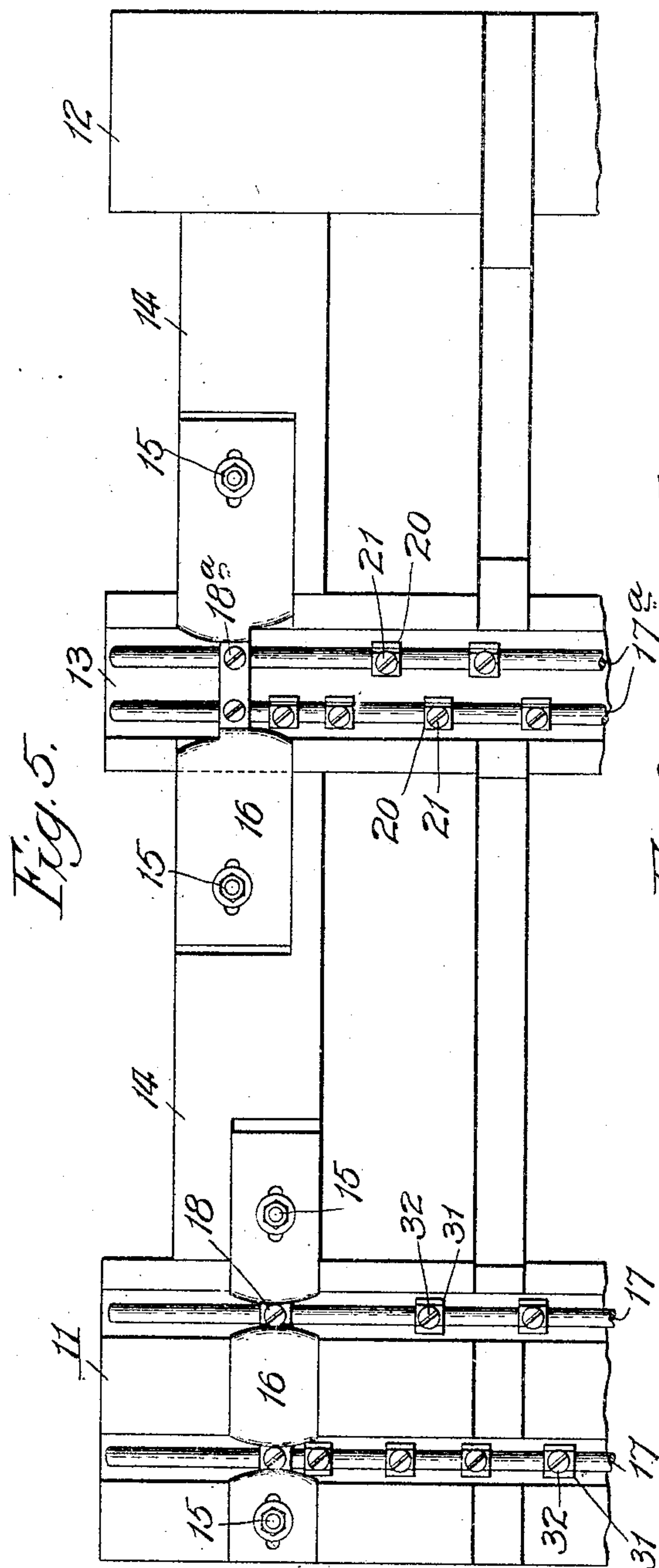


Fig. 10.

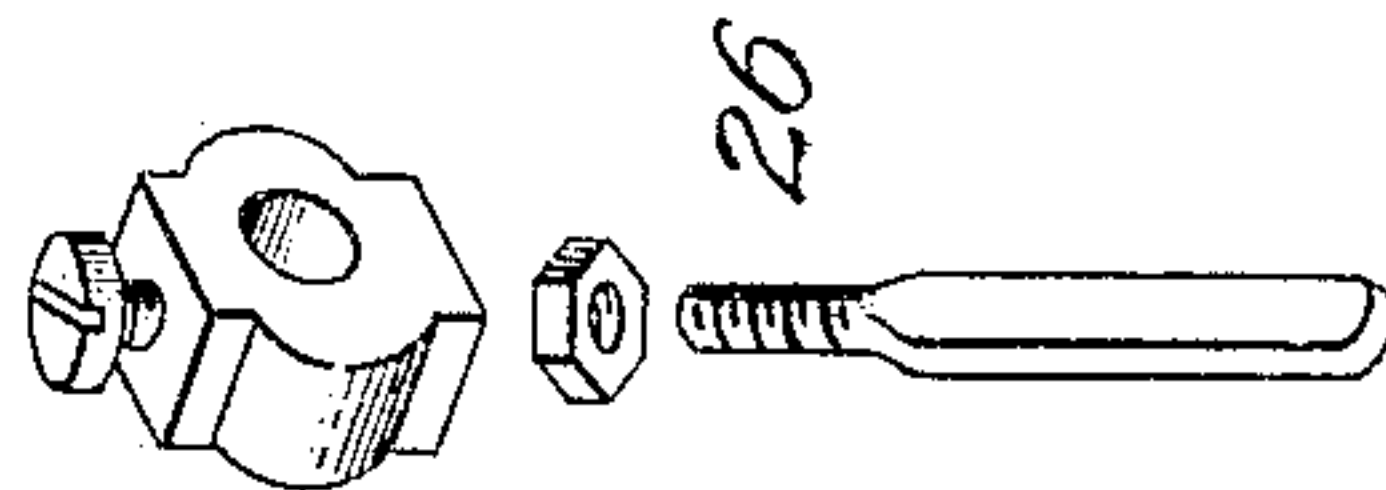


Fig. 9.

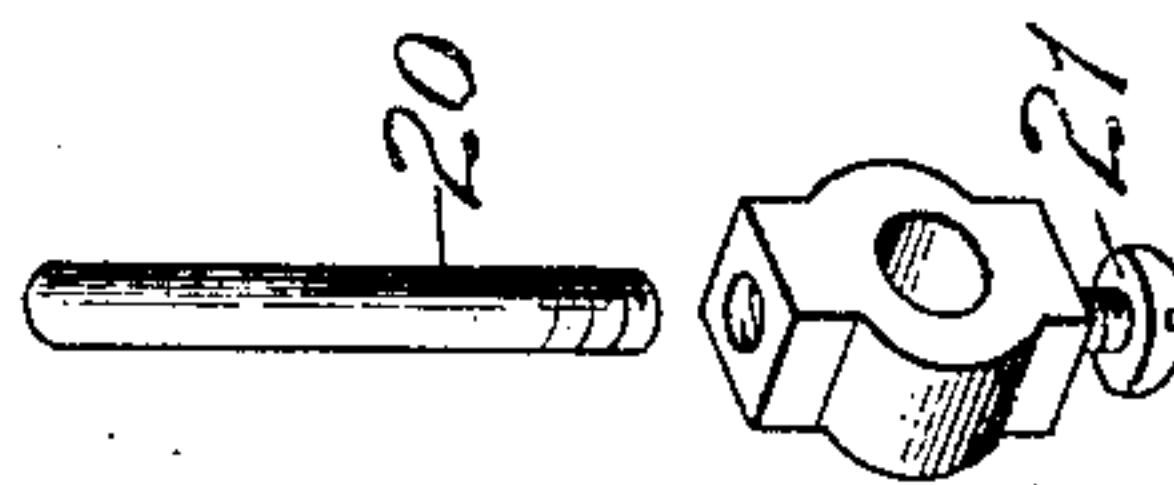


Fig. 8.

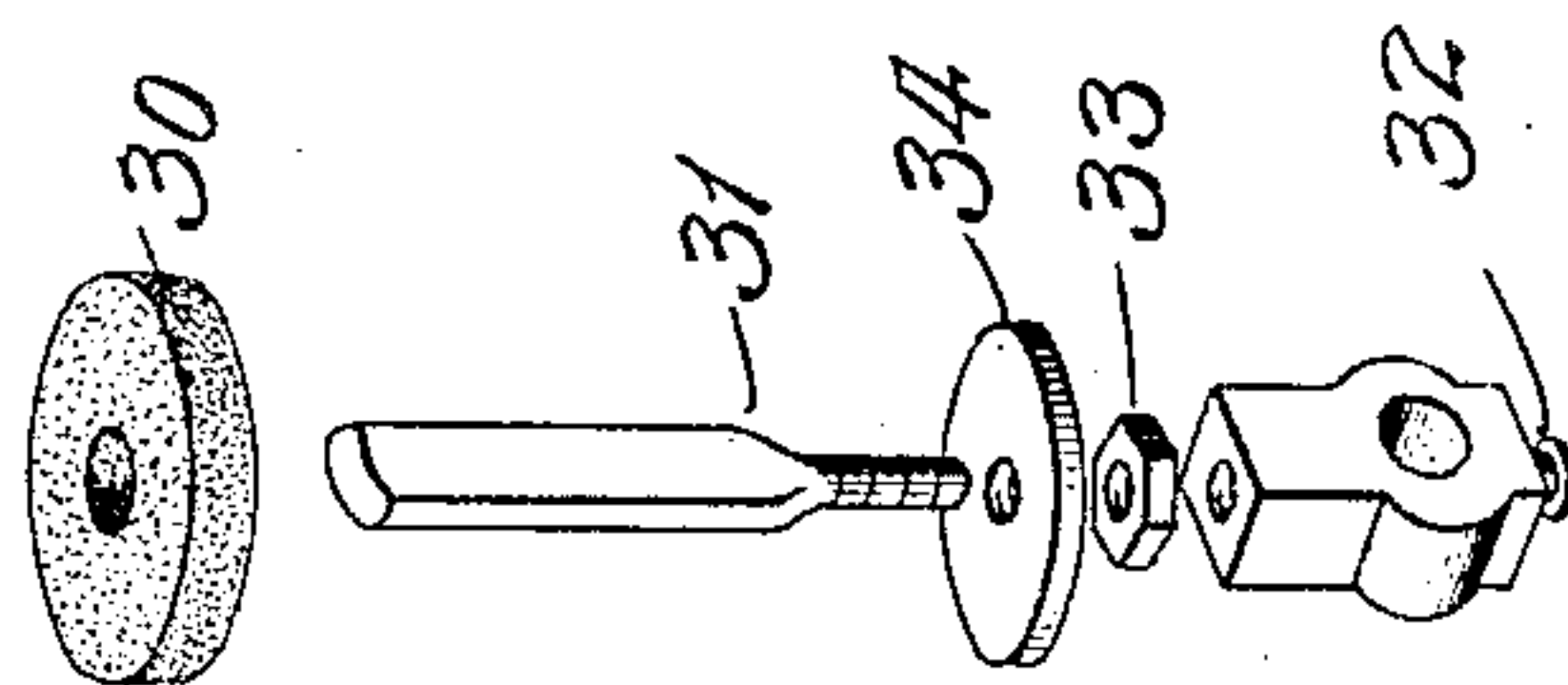


Fig. 7.

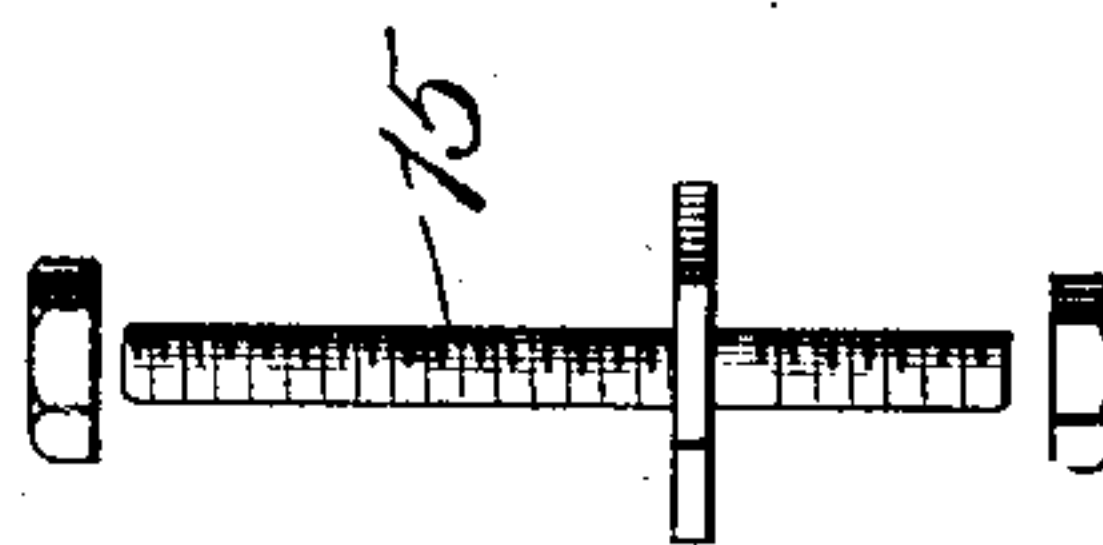
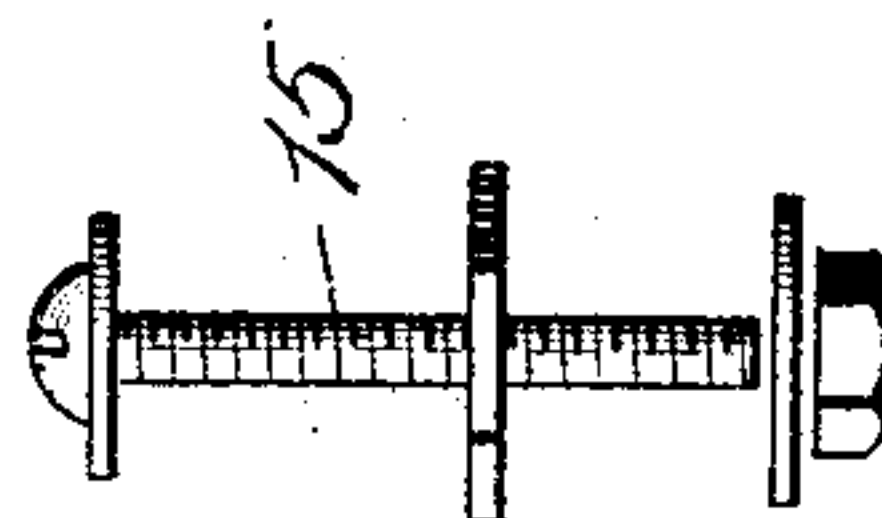


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM B. FITZ SIMMONS, OF CHICAGO, ILLINOIS.

KEYBOARD FOR MUSICAL INSTRUMENTS.

No. 842,539.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed May 28, 1906. Serial No. 319,027.

To all whom it may concern:

Be it known that I, WILLIAM B. FITZ SIMMONS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Keyboards for Musical Instruments, of which the following is a specification.

My invention relates to keyboards for pianos and similar musical instruments, and particularly to the construction of the keyboard and frame, and the mechanism employed to hold the keys in position upon the frame, and has for its objects; to provide a connection between the key frame and keyboard which will allow each key to be independently spaced, leveled and trued up, and when so adjusted, securely locked in position; to provide a connection which will hold the keys in exact alinement with each other, and at the same time permit them to be moved freely in a vertical direction; to provide a connection whereby the dip of any one key can be regulated at any time; to provide a keyboard and frame of a light and rigid construction and one wherein the process of manufacture is considerably simplified by reason of the improved form of the bushings and the manner of their application to the keys. These objects, and others which will hereinafter appear, I attain by means of the construction illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 is a plan view of a small three section piano keyboard having my improvement applied thereto;

Figure 2 is a longitudinal vertical section of the same on the line (II) - (II) of Figure 1;

Figure 3 is a similar view on an enlarged scale, on the line (III) - (III) of Figure 1, of the front end of one of the keys, showing the pin for regulating the dip of the key and the manner in which it is secured to the frame;

Figure 4 is a similar view of the middle portion of the same key, together with the balance rail of the frame and the pivot pins for holding the keys in place;

Figure 5 is a bottom view of the key frame and its parts;

Figures 6 and 7 are side elevations of the bolts used to secure the rod brackets to the cross rails of the frame;

Figure 8 is a perspective view of one of the adjusting pins, together with the cushion

upon which the key strikes when depressed, and the means for adjustably securing the pin upon the rod, and

Figures 9 and 10 are similar views of one of the pivots and one of the alining pins respectively.

In the construction of keyboards for pianos, pipe organs, &c., it is of course desirable that the keys should be held in alinement by means capable of adjustment, and furthermore that the mechanism employed therefor should be of such a character as to render the action of the keys absolutely noiseless, and in actual practice it has been found that these objects may be most satisfactorily attained by means of pins fitted into the front rails of the frame and which project into guide slots cut in the under side of the keys. In order to allow the pins to fit snugly into the slots and the keys to move freely thereon without noise it has been found expedient to line each slot with a felt bushing, and in the constructions heretofore employed it has been necessary to bush each key separately, which in itself is an operation requiring considerable time and skill, as the felt bushings have first to be cut to size, then treated with glue and allowed to dry until such time as they are desired for use, when they are again rendered adhesive by being heated by steam, after which they are fitted in place in the slots and when dry are ready for use. Furthermore, such an arrangement of pins permits of but a limited degree of adjustment of the keys, and that only by taking the keyboard apart and in extreme cases readjusting the balance rail as well.

In order to overcome these objectionable features, as well as to provide a keyboard and frame of a superior construction, I prefer to employ a frame consisting of the front rail 11, back rail 12 and middle or balance rail 13, connected by a series of cross rails 14, the whole being fastened together by means of screws, glue, or in any other suitable manner. To the under side of the cross rails 14, below the front and balance rails, are secured by means of bolts 15, brackets 16 and 16^a which project up into grooves formed in said rails, and serve as bearings for the transverse pin rods 17 and 17^a secured therein by means of the set screws 18 and 18^a.

The keys 19 rest and are balanced upon the balance rail 13 in the usual manner, and

are held in position as against longitudinal movement by means of round pivot pins 20, mounted upon the rods 17^a to which they are adjustably secured by the set screws 21, as shown in Figure 4. The pins 20 project through slots 22 in the balance rail 13, into recesses 23 formed in the under side of keys 19, said recesses being of such a shape as to allow the keys to rock freely upon the balance rail without shifting. As the pins 20 are adjustable upon the rods 17^a, it will be apparent that a slight rotation of the pins around the rods will shift the keys either backward or forward, as desired. In order to render the movement of the keys noiseless, each of the pins 20 is provided with a felt washer 24, which is interposed between the key and balance rail, as illustrated in Figures 1, 2 and 4. In order that the keys may oscillate in an exact vertical plane each key is further provided with an upwardly projecting slotted guide or button 25 adapted to engage an oval pin 26 adjustably mounted upon a transversely disposed rod 27 suspended from brackets 28, secured to the cross rails 14 by means of the bolts 15 and located as illustrated in Figures 1 and 2. Said guides or buttons are provided with felt bushings 29 at the point where they engage with the pins 26, to be presently described. It will be noted that as the pins 26 are oval in cross section, as shown in Figure 10, any slight wear upon the bushings 29 which would tend to allow the keys to wobble when depressed, may be compensated for by slightly rotating the pins until they again fit the slots snugly.

The downward movement or dip of the keys is regulated by means of felt washers 30 upon which the keys strike when depressed, said washers being mounted upon pins 31 adjustably secured upon the rods 17 by means of set screws 32 directly below and near the forward end of each key. The pins 31 are made in two parts screwed together for the purpose of adjustment as illustrated in Figure 3, and are also provided with a lock nut 33 and a metallic washer 34 upon which the felt washer 30 rests and is supported.

The pins 31 project upwardly through slots in the front rail 11 into recesses 35 formed in the under side of the keys, which recesses are provided with bushings 36 fitted in recesses 36^d extending across the bottom of the keys in line with the recesses 35, similar to the bushings 29. The pins 31 are also made oval in cross section for the purpose of adjustment in the recesses, similar to the pins 26. When the keys are in their raised or normal position their rear ends rest upon cushions 37 secured to the rear rail 12, as shown in Figure 2.

In piano keys made in accordance with my invention the buttons 25 and bushings 29 and 36 are made in strips and are then

glued onto the blank which is afterward sawed up into keys. This method of manufacture, while greatly reducing the cost of manufacture, produces a stronger key and one which can be made much more rapidly, as it dispenses with the re-heating of the bushings necessary in the constructions now employed. Other advantages of the device will readily occur to those familiar with the art.

Having thus described my invention and illustrated its use, what I claim as new, and desire to secure by Letters Patent, is the following:

1. A keyboard for musical instruments comprising in combination, a supporting frame, keys pivoted thereto and provided with engaging means on their upper sides, guides at the front lower side of the keys, a rod mounted above and transversely of the keys, provided with depending pins adapted to engage and guide the said engaging means on the keys, and means whereby the rod may be adjusted vertically.
2. A keyboard for musical instruments comprising in combination, a supporting frame, keys pivoted thereto and provided with engaging means on their upper sides, guides at the front lower side of the keys, a rod mounted above and transversely of the keys, pins slidable longitudinally thereon and means for securing the pins in position, said pins being adapted to engage and guide the said engaging means on the keys.
3. A keyboard for musical instruments comprising in combination, a supporting frame, keys pivoted thereto, guides at the front lower side of the keys, a rod mounted above and transversely of the keys, pins depending therefrom, and slotted members secured in the tops of the keys and adapted to engage said pins and guide the keys.
4. In combination, pivoted recessed keys a balance-rail extending transversely below the keys, a rod mounted below and parallel therewith, pins mounted for rotative adjustment upon said rod and adapted to engage the recesses in the keys.
5. In combination, pivoted recessed keys a balance rail extending transversely below the keys, a rod provided with upwardly-extending pins mounted below said rail, said pins extending through the rail and adapted to engage the recesses in the keys.
6. In combination, pivoted recessed keys a balance rail extending transversely below the keys, a rod mounted below and parallel therewith, upwardly extending pins mounted thereon for rotative and longitudinal adjustment, and means for securing the pins in position, said pins extending above the rail and adapted to engage recesses in the keys.
7. In combination, a set of piano keys recessed on the under sides, a transverse rod, guide pins slidable longitudinally thereon

and adapted to engage the recesses in the keys, together with means for securing the pins in position.

5 8. In combination, a set of piano keys recessed on their under sides, a transverse rod, pins slidable longitudinally thereon and adapted to engage the recesses in the keys, means for securing the pins in longitudinally adjustable position, and means whereby the
10 pins may be adjusted toward and away from the rod.

9. In combination in a key for pianos and the like, a wooden body portion provided at

its lower side with a slot extending transversely thereacross and with a recess extending back from the slot, and a packing strip fitting the slot and provided with a perforation opposite the recess which perforation is adapted to receive a guide pin. 15

In testimony whereof I have hereunto
signed my name in the presence of the two
subscribed witnesses. 20

WILLIAM B. FITZ SIMMONS.

Witnesses:

WILLETT J. DICKINSON,
PAUL CARPENTER.