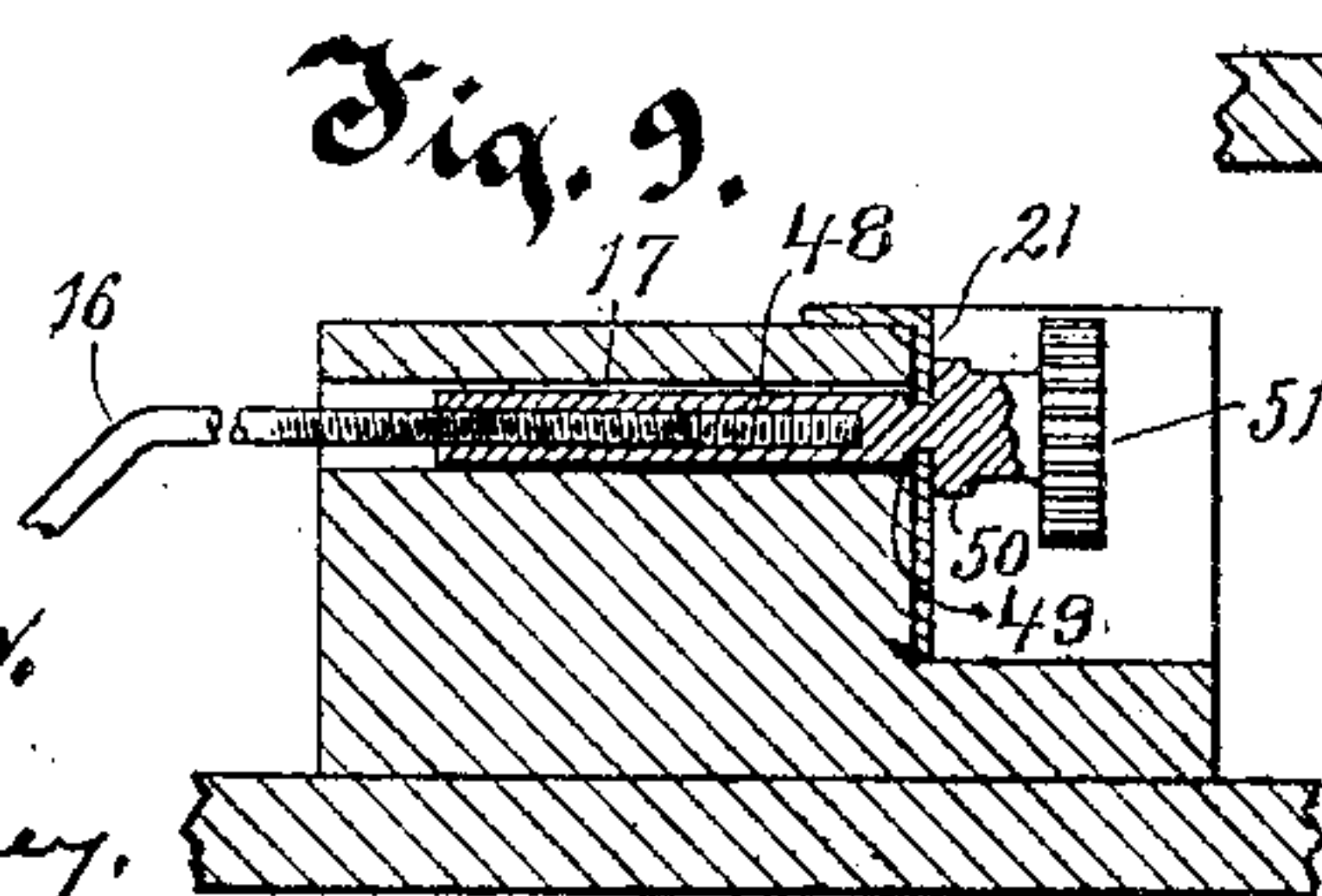
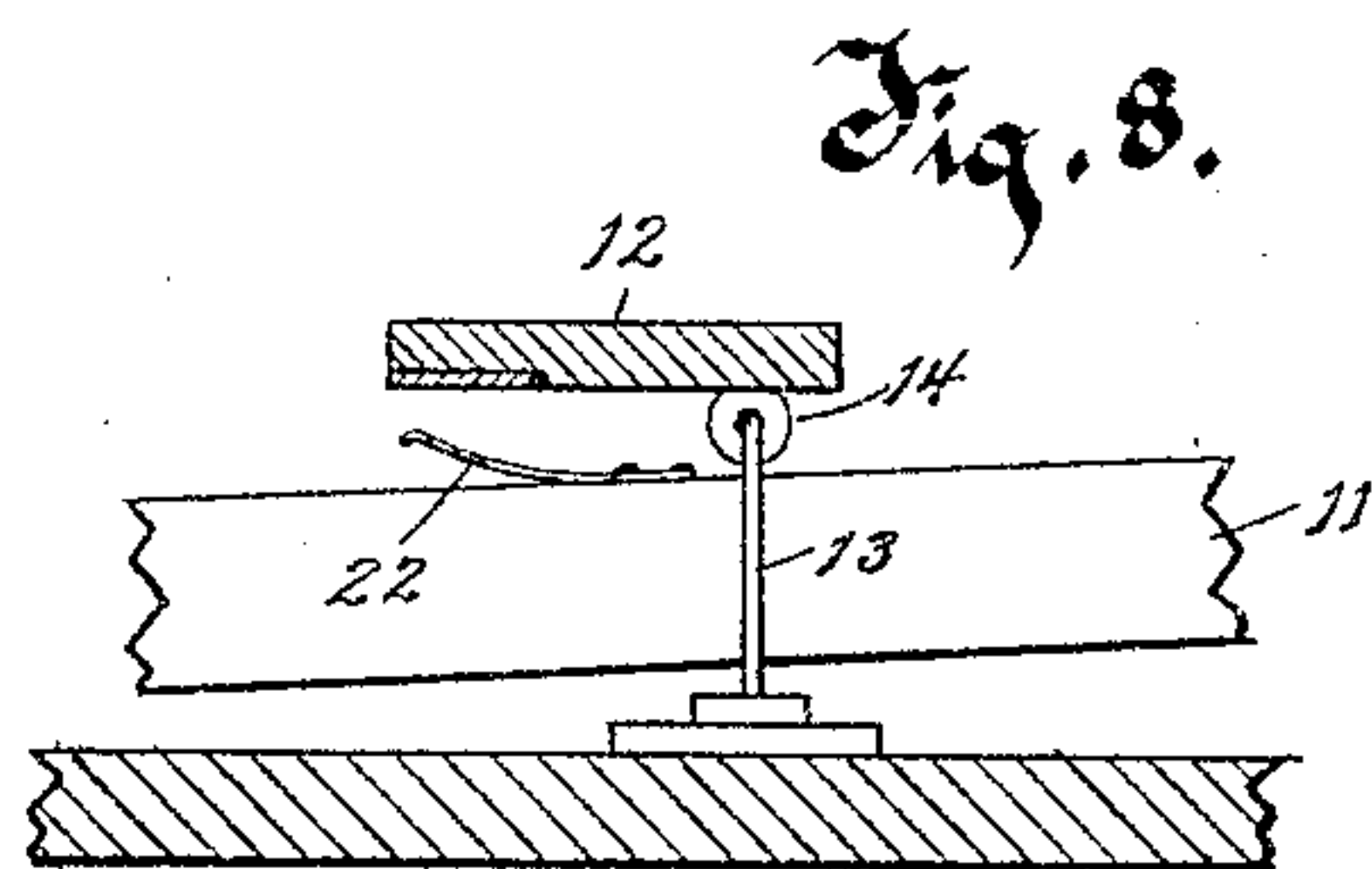
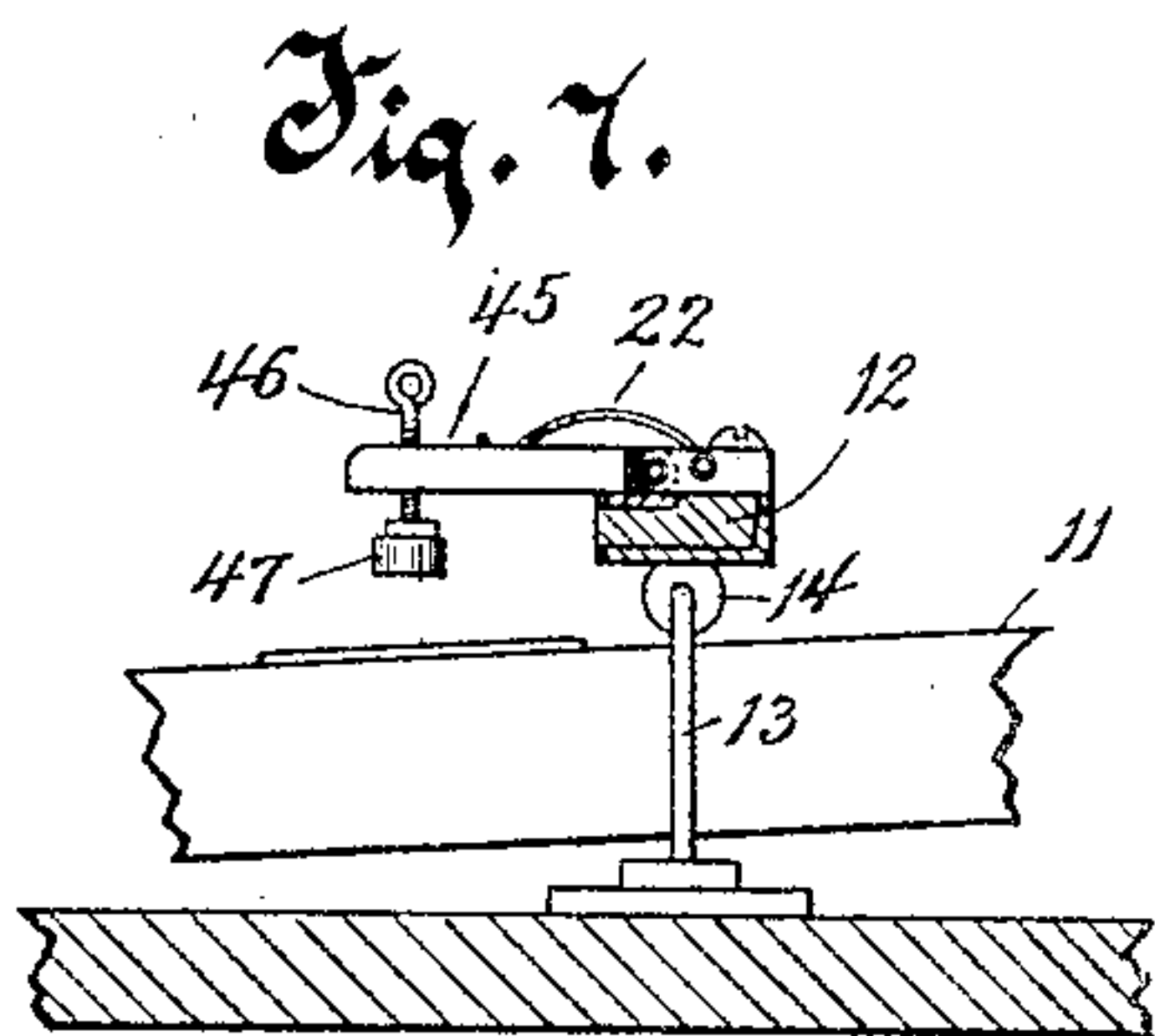
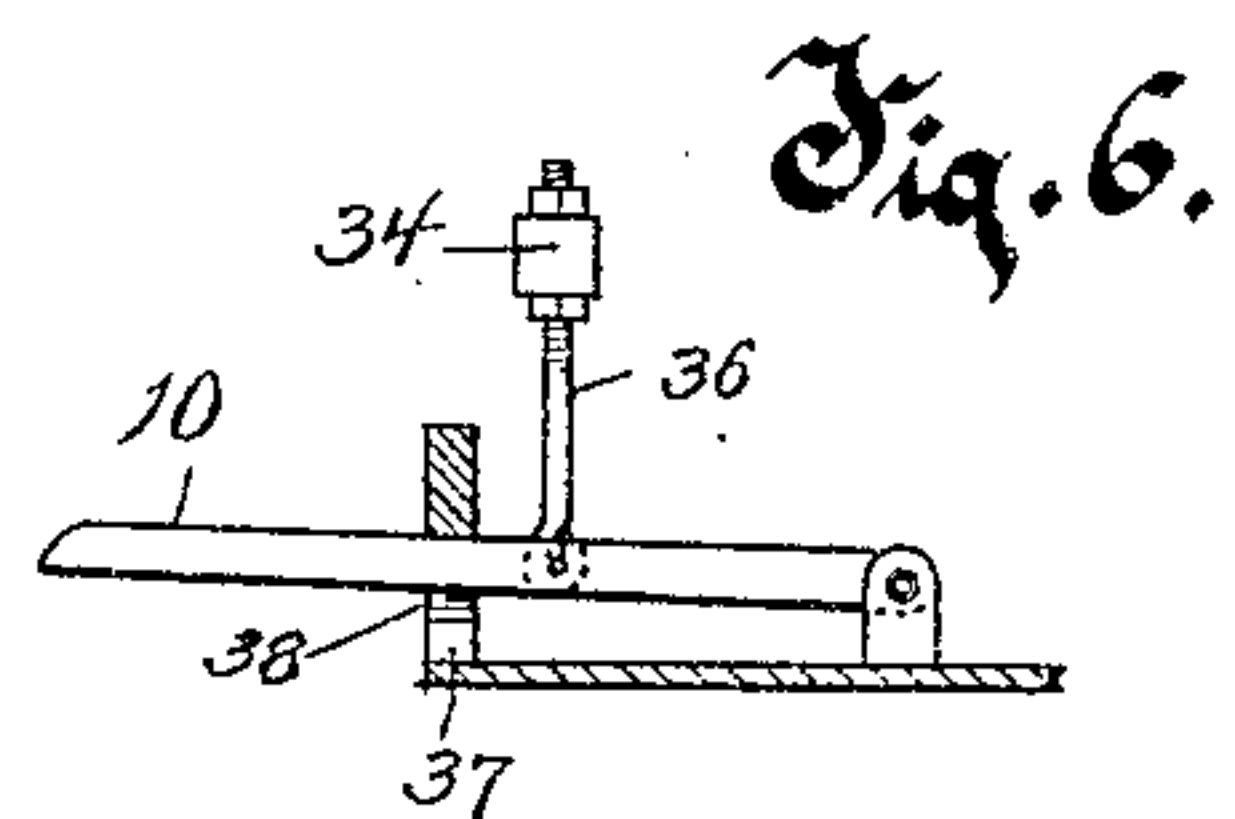
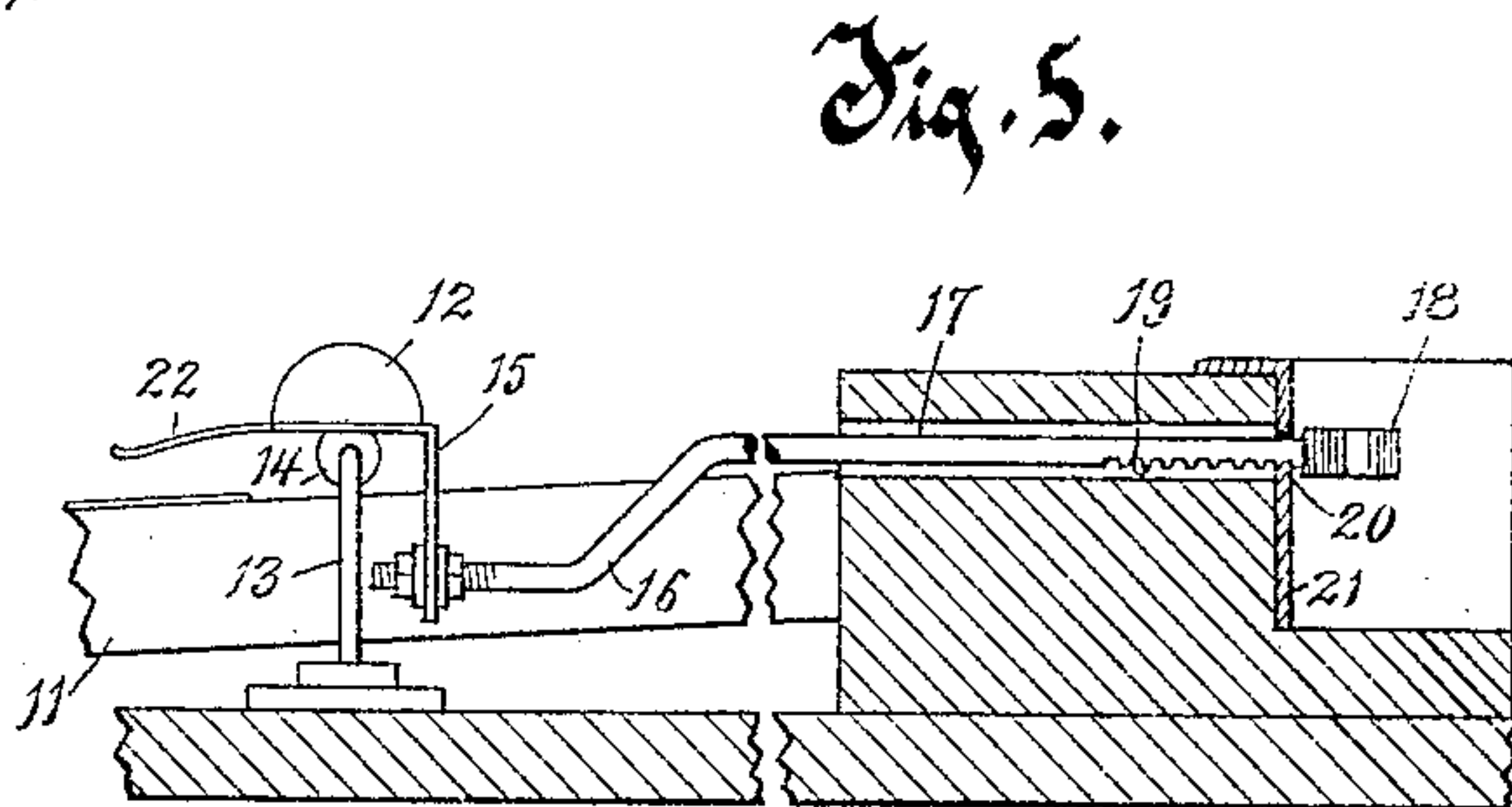
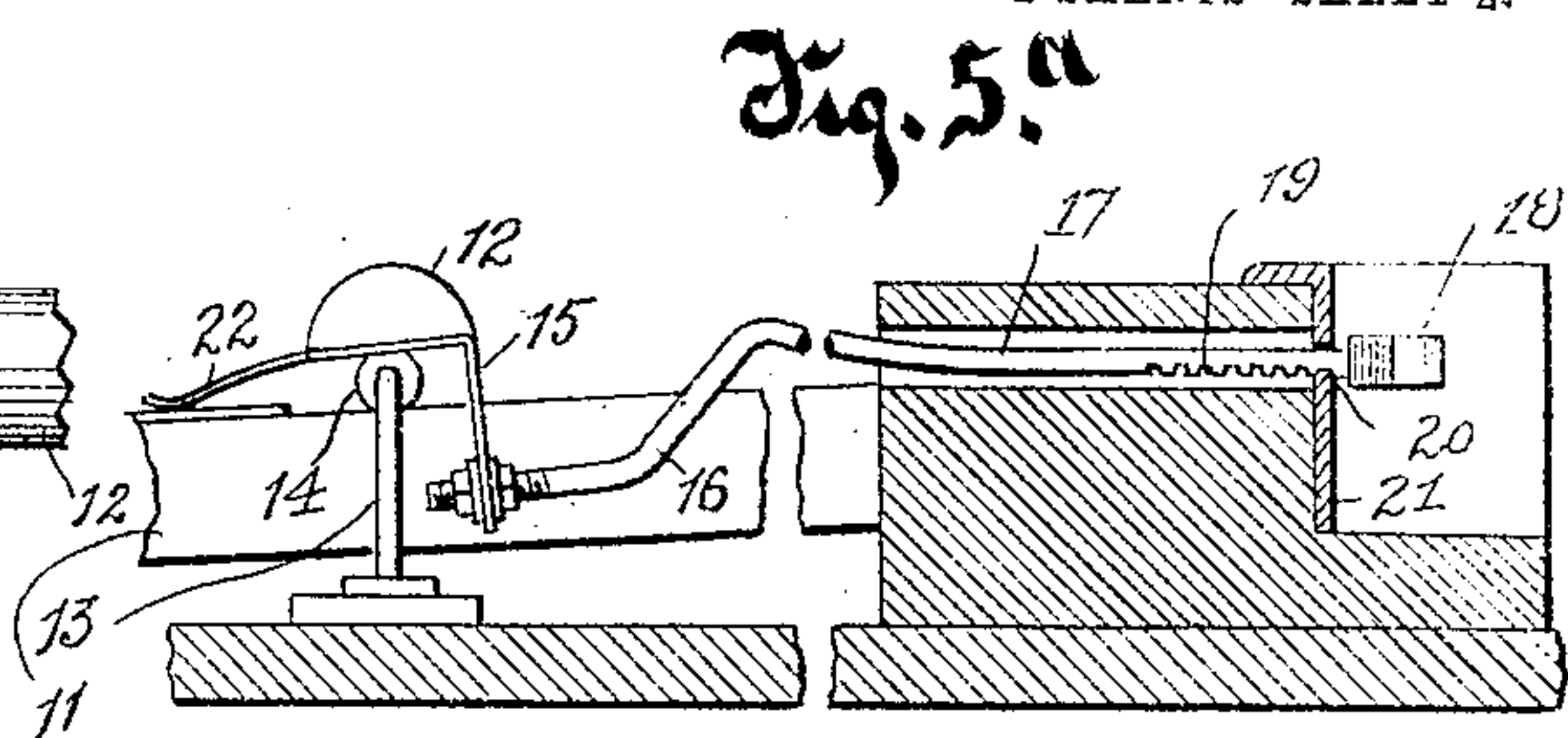
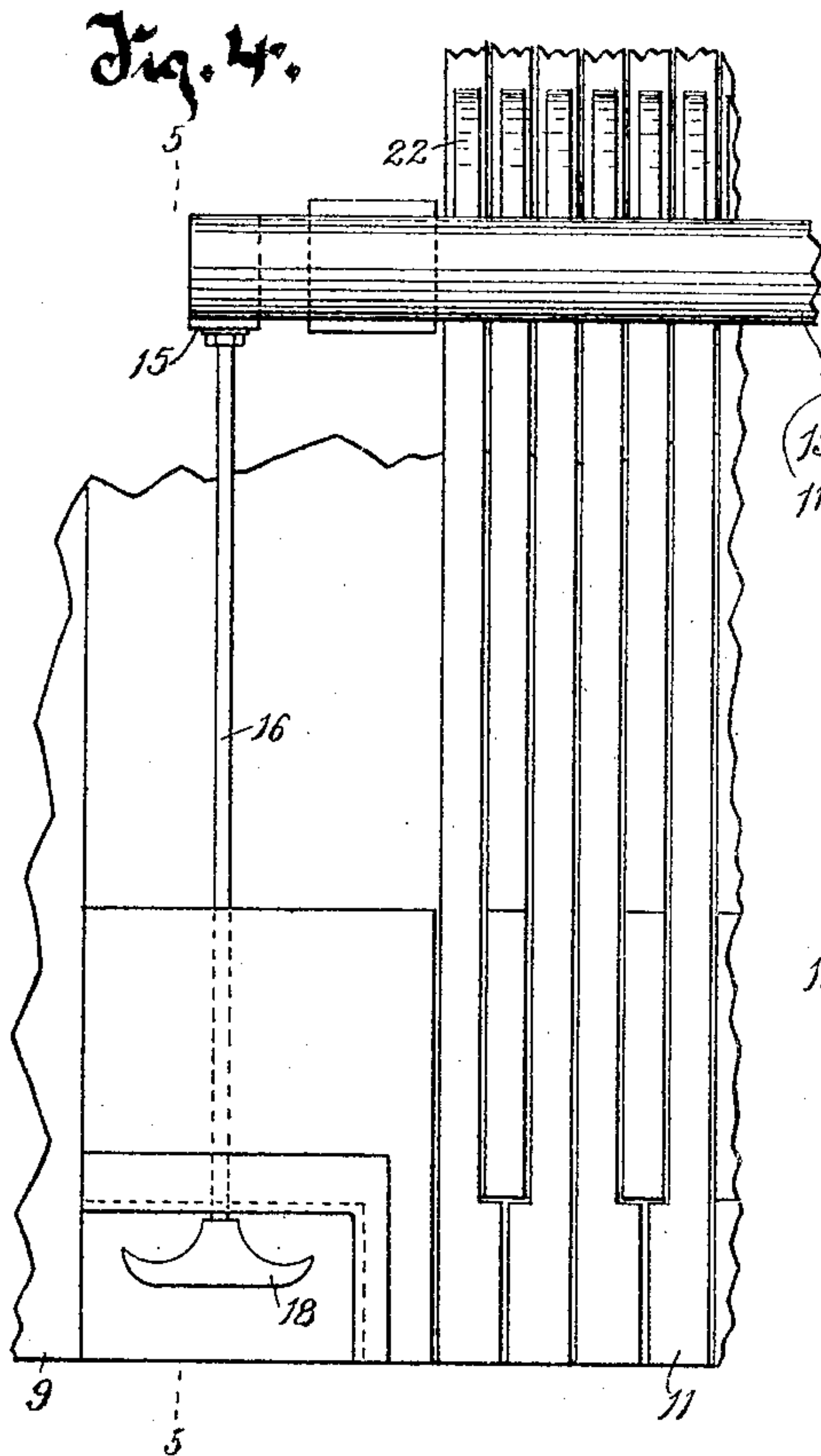


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TOUCH REGULATOR FOR MUSICAL INSTRUMENTS.

APPLICATION FILED FEB. 18, 1904.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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TOUCH-REGULATOR FOR MUSICAL INSTRUMENTS.

No. 804,051.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed February 18, 1904. Serial No. 194,198.

To all whom it may concern:

Be it known that I, WILLIAM ROHLFING, Jr., residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Touch-Regulators for Musical Instruments, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in touch-regulators for musical instruments.

The primary object of the invention is to provide a construction for obtaining a gradually increasing or decreasing resistance on the keys of a piano-forte, either grand, upright, or square, or on the keys of any other form of musical instruments having keyboards—as, for instance, organs—in order to produce a heavy or light touch.

With the above primary object in view the invention consists of the devices and parts or their equivalents, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a front elevation of an upright piano equipped with my improvements, with the front of the piano, the wires, and other parts omitted and a part of the lower rail broken away and also showing one of the end treadles and the central treadle in section. Fig. 2 is a side view of a piano-action, showing one of the keys in connection therewith and also showing my improvements in proper relation therewith. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a plan view of a fragment of the keyboard and keys and illustrating in connection therewith a portion of the mechanism for increasing or decreasing the resistance on the keys. Fig. 5 is a section on the line 5 5 of Fig. 4. Fig. 5^a is a similar view showing the resistance-fingers adjusted for use. Fig. 6 is a detail view of the treadle for operating the mechanism for throwing the piano-action out of operation. Figs. 7 and 8 are illustrations of modifications in the mechanism for increasing or decreasing the resistance on the keys, and Fig. 9 is a sectional view illustrating a modification in the means for adjusting the operating-bar.

Referring to the drawings, the numeral 9 indicates the casing or frame of an ordinary form of upright piano, 10 the outer treadles, 10' the intermediate treadle, and 11 the keys.

The numeral 12 indicates a key-resisting bar, which is arranged above the keys and

which is pivoted to the angularly-bent upper ends of a series of short rigid rods 13, extending upwardly from the keyboard, said angularly-bent ends engaging eyes 14 on the under side of the key-resisting bar. One end of said key-resisting bar has a depending portion 15, to which is connected a bar 16, said bar extending forwardly through a guide-passage 17 in the front board, cheek-piece, or other part of the frame or casing and provided at its outer end beyond said front board or plate with a handle 18 for convenience in operating. The forward portion of the bar 16, on its under side, is provided with a series of teeth 19, the space between any of said teeth being adapted to be engaged by the under bordering edge 20 of an opening in the front plate 21 of the keyboard-rail.

The key-resisting bar 12 carries a series of spring-fingers 22, there being one of said fingers for each key. When the bar 16 is in the normal position, (illustrated in Fig. 5,) the free ends of the spring-fingers are raised sufficiently above the keys to be free from contact therewith, and consequently said keys can be depressed freely without any retarding or counteracting influence of the spring-fingers. If it is desired to increase the resistance on the keys, all that is necessary to be done is to pull outwardly on the rack-bar 16 to a desired extent or until the free ends of the spring-fingers bear on the keys with more or less force. The rack-teeth on the under side of the bar 16 by engagement with the lower bordering edge 20 of the opening of the front plate 21 holds the rack-bar in adjusted position. It is evident that by now bearing down on the outer end of a key the said key is thereby turned on its pivot against the contrary force exerted by the spring-finger, and consequently the touch or power required to depress a key is thereby necessarily increased. Of course the farther out the rack-bar 16 is pulled the greater will be the touch required to operate a key.

In the accompanying drawings is shown mechanism for throwing the piano-action entirely out of operation. I will first describe certain parts of this mechanism, which are duplicated for each key and which are common in pianos as now constructed. The first of such mechanism which will be mentioned is the so-called "wippen," consisting of a part 23, extending upwardly from each key, the part 24, pivoted at 25 and connected to the

upper end of part 23, the upright jack 26, pivoted to a pivot-bar 27, extending upwardly from the part 24 and normally held in the position illustrated in Fig. 2 by the action of a coiled spring 28, interposed between the part 24 and a projecting foot from the upright jack. The parts mentioned constitute the wippen, and the upper end of the upright jack of each wippen is normally beneath a projection 29, there being one of these projections for each hammer-shank 30 and each of said projections being rigid with the hammer-shank relating thereto. Each hammer-shank is pivoted, as indicated by the numeral 31, and carries at its upper end the hammer-head 32. In front of the series of pivoted shanks is the hammer-rail 33.

The numeral 34 indicates a lever, which is pivoted at a point between its ends, preferably on a yielding steel bar 35, as shown in Fig. 1. One end of this lever has a rod 36 depending therefrom, and the lower end of this rod connects with one of the outer treadles 10. It will be noticed that the opening 37, in which this particular treadle works, is provided slightly below its upper end with a lateral branch slot 38, extending in one direction, and the opening at its lower end is provided with another lateral branch slot 39, extending in the opposite direction. The openings 40 and 41, respectively, for the other outer treadle and for the intermediate treadle are merely straight openings devoid of the lateral branches. The end of the lever 34 opposite the end from which the rod 36 depends has connected thereto the lower end of an upwardly-extending push-bar 42. The upper end of this bar is provided with a projecting finger 43, which extends beneath the hammer-rail.

In the ordinary operation of a piano when a key is depressed the part 24 is turned upwardly, and this through the described connection causes the upper end of the jack 26 to act against the projection 29, and hence turn the hammer-shank on its pivot to such an extent as to cause the hammer-head to strike the wire or string 44 lying immediately back of the same, and in this movement of the parts the hammer is given a full swing, and consequently a full volume of the musical sound is produced. In a piano equipped with the construction just explained if, for instance, it is desired to give a soft tone the treadle 10 on the left of Fig. 1 is depressed slightly or until it comes into contact with the lateral branch slot 38 of the opening 37. The treadle is then pushed to the left and into engagement with said slot. This slight movement of the treadle has the effect through the rod 36, lever 34, push-bar 42, and finger 43 of swinging the hammer-rest rail slightly to the rear and in which position it is held by the engagement of the treadle 10, referred to, with the lateral slot

38. In this manner the swing of the hammer is reduced, and consequently when a key is depressed the sound will not be as loud as when the hammer is given its full swing.

If it is desired to permit the depression of the keys without producing any sound whatever, the left-hand treadle is depressed to its full extent and then pushed to the right and into engagement with the lower lateral slot 39. This through the described connection will cause an uplifting of the push-bar 42 to such an extent as to swing the hammer-shank sufficiently to the rear to cause the projection 29 to be brought out of alignment with the upper end of the upright jack 26, and hence when any key is depressed the upright jack will move upwardly without contacting with the projection 29 relating thereto, and hence the hammer will not be swung into contact with the string or wire 44 lying back thereof, and of course no sound is produced.

In Figs. 7 and 8 I show modified forms of devices for regulating the resistance on the keys. In the Fig. 7 construction the key-resistance bar 12 has pivoted on its upper side a finger 45, and the free end of the spring-finger 22 bears on this pivoted finger, while the opposite end of the spring-finger is connected to the bar 12. A screw 46 is turned through the outer end of the pivoted finger 45, and this screw is provided at its lower end with a head or enlargement 47. It is evident that when the bar 12 is turned by a pull outwardly on the rod 16 the head or enlargement 47 is brought into contact with the keys, and when any of the series of keys is depressed it must be forced downwardly against the contrary force exerted by the spring 22 exerting pressure on the upwardly-swinging or hinged finger 45. By providing the head or enlargement 47 on the end of a screw-rod 46 this rod may be adjusted so as to cause the head thereof to bear on the key with more or less manipulation of the pull-rod 16.

The modification illustrated in Fig. 8 is similar to the form of attachment for increasing or decreasing resistance on the keys, as illustrated in Figs. 1 to 5, inclusive, with the exception that the spring-fingers 22 instead of being carried by the key-resistance bar 12 are secured to the upper sides of the keys and bear at their free ends against the under side of the spring-resistance bar.

Fig. 9 of the drawings illustrates a modification in the manner of actuating the operating-bar 16. Instead of said operating-bar being provided on its under side with a series of teeth 19, adapted to engage the projection 20, as in the Fig. 5 form of construction, the outer end of said bar is threaded, and this threaded end is engaged by the interior threads of a sleeve 48, fitted in the guide-passage 17 and turnable in said passage.

This sleeve is provided with an inner shoulder 49, bearing against the inner face of the front plate 21, and with an outer shoulder 50, bearing against the outer face of said plate. By this construction the sleeve is prevented from longitudinal movement. The outer end of the sleeve is advisably provided with a milled head 51 to facilitate turning of the sleeve. When the sleeve is turned in one direction, it will cause a movement of the operating-bar 16 in a direction to throw the resistance mechanism against the keys, and when said sleeve is turned in the opposite direction the pressure of the resistance mechanism on the keys is removed.

While in the accompanying drawings I have shown a series of spring-resistance fingers 22, there being one finger for each key, yet I do not wish to be understood as limiting myself thereto, inasmuch as it is obvious that where the resistance mechanism is secured to the pivoted bar 12 a long continuous spring-strip may be secured to said bar as a substitute for the separate spring-fingers without departing from the spirit and scope of my invention.

What I claim as my invention is—

1. In a touch-regulator, the combination with the keys, and the keyboard-frame, of a movable resistance-bar supported above the keys, a yieldable resistance medium carried by said bar, an internally-threaded sleeve swiveled in the keyboard-rail, and an oper-

ating-rod connected with the resistance-bar and having a threaded front end engaging the said internally-threaded sleeve.

2. In a touch-regulator, the combination with the keys, of a resistance-bar movably mounted above the keys, means for operating said bar, a series of fingers pivoted to said bar in the paths of the keys, and springs secured on the bar and bearing on said fingers.

3. In a touch-regulator, the combination with the keys, of a movable resistance-bar supported above the keys, means for operating said bar, a series of fingers pivoted to said bar, stops on said fingers in the paths of the keys, and springs secured to the bar and bearing on said fingers.

4. In a touch-regulator, the combination with the keys, of a movable resistance-bar above the keys, means for operating said bar, yieldable fingers carried by said bar, and adjustable stops on the said fingers in the paths of the keys.

5. In a touch-regulator, the combination with the keys, of a series of yieldable resistance-fingers above the keys, means for holding said fingers toward the keys, and stops adjustably mounted on said fingers.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ROHLFING, JR.

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