

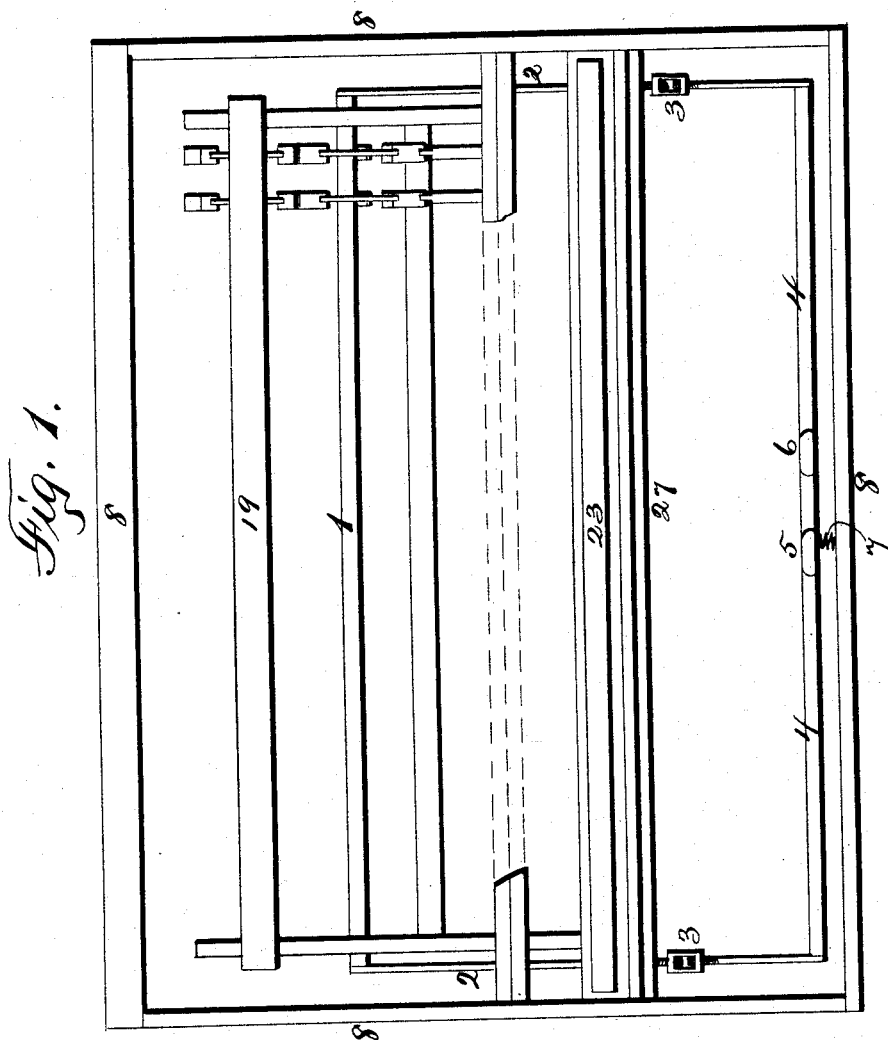
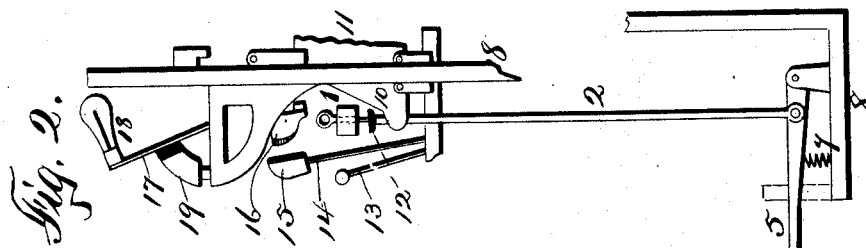
(No Model.)

2 Sheets—Sheet 1.

F. H. TOLES.  
PIANISSIMO DEVICE.

No. 421,845.

Patented Feb. 18, 1890.



Witnesses

*W. H. Pond*

*J. F. Demson.*

*Freeman H. Toles* Inventor

By *his* Attorneys

*Smith & Demson*

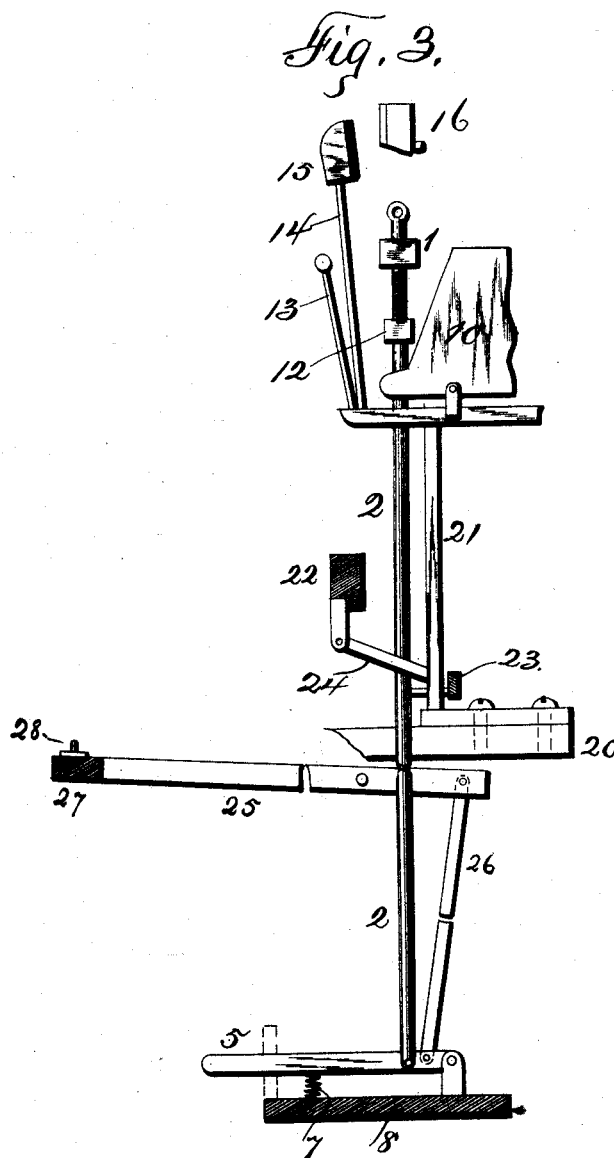
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# UNITED STATES PATENT OFFICE.

FREEMAN H. TOLES, OF SYRACUSE, NEW YORK.

## PIANISSIMO DEVICE.

SPECIFICATION forming part of Letters Patent No. 421,845, dated February 18, 1890.

Application filed June 15, 1889. Serial No. 314,421. (No model.)

*To all whom it may concern:*

Be it known that I, FREEMAN H. TOLES, of Syracuse, county of Onondaga, in the State of New York, a citizen of the United States,

have invented certain new and useful Improvements in Piano-Actions, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of that part of a piano-action to which my invention relates. Fig. 2 is a side elevation of the same, showing only the adjustable regulating-rail. Fig. 3 is a side elevation of the same, showing the rocker-regulating rail in addition.

My invention relates to piano-actions, and especially to devices for regulating the key-action and for taking up all the slack or lost motion when the soft pedal is on, operating, first, to regulate and control the depression of the keys evenly and uniformly, and, second, to reduce, limit, and adjust the throw of the rocker so that the hammer is released whenever desired, and so that the force of the blow can be of any desired strength less than a full blow, according to the pressure upon and the depression of the soft pedal.

The object of my invention is to produce a device for controlling and regulating and adjusting or changing the tones of the pianissimo effect of a piano by limiting the depression of the keys and regulating the force of the blow of the hammer, both being accomplished by the amount of pressure on the soft pedal.

My invention consists in the several novel features of construction and operation hereinafter described, and which are specifically set forth in the claims annexed.

It is constructed and operated as follows:

The top, bottom, and side pieces 8 indicate the main frame of an upright piano, and the bars 1 and 4, adjusting-rods 2, with the turn-buckles 3, constitute the regulating-bar. The bar 4 is connected to the soft pedal 5, so that when the pedal is depressed the regulating-bar will be drawn downward, and 7 is a spring beneath the pedal, which returns the rail-pedal to their normal positions.

The loud pedal is marked 6.

The regulating-rail proper 1 extends across the action, just above the arm of the jack 10,

and 12 is an adjustable let-off button upon the adjusting-rod and adapted to engage with the jack. The vertical movement of this rail regulates the stroke of the hammer. When the rail is in its normal position the jack operates to cause the hammer to strike a full blow, and in proportion as the rail is depressed or drawn down toward the jack, bringing the let-off button down also, so that it sooner engages with the jack, so is the stroke and blow of the hammer reduced in force.

A stirrup or bridle wire 13 is connected to the bridle-ribbon 14.

15 is the back catch on the back-catch wire.

16 is the back check.

17 is the hammer-stem, and 18 is the hammer.

The rail 1 is entirely detached from the main frame, and is carried wholly by the rods 2 and the bottom bar 4.

The hammer-stem rail is stationary, and is mounted within the case in any ordinary manner.

The rocker 20 is mounted and engages with the lifter in any ordinary manner, the lifter 21 being connected to the center rail 22, substantially as shown in the drawings.

23 is the rocker-regulating rail supported upon arms 24, mounted upon the rods 2 in any ordinary manner, the rail extending clear across over all of the rockers. This mechanism operates simultaneously with the regulating-rail 1 by the pedal depression, and regulates the upward lift of the rocker and jack.

In Fig. 3 I also show a key-regulating mechanism comprising a rod 26, connecting the pedal 5 to the levers 25, pivoted one upon each side of the body of the piano, and a key-rail 27 is mounted upon these levers, this rail also carrying the guide-pins 28, which enter the lower faces of the keys and guide them in their vertical movement. This mechanism, by the depression of the pedal, operates to elevate the key-rail toward the keys, and to thus regulate the degree of their depression, and when used in conjunction with the regulating-rail 1 the depression of both rails should be uniform. Also the rocker-regulating rail 23 can be used in conjunction with the regulating-rail 1, the depression of both being equal, and it can be used in conjunc-

tion with both the regulating-rail 1 and key-rail 27, the variation of all three from their normal positions being equal.

When an operator desires to play soft, the depression of the pedal pulls the regulating-rail 1 down, bringing the let-off button closer to the jack, so that when the key is touched the jack engages with the button sooner and is released more quickly, thus releasing the hammer sooner, and consequently farther away from the wire, and this reduces the force of the hammer-blow upon the wire. When the rocker-regulating rail is used, the depression of the pedal draws the rocker-rail down toward the rocker, and consequently reduces upward lift of the rocker, limiting the stroke of the key, and consequently reducing the force of the hammer-blow. When the key-regulating rail is used in conjunction with the regulating-rail 1, the depression of the pedal raises the key-rail a proportionally equal distance to that of the depression of the rail, so that the downward stroke of all of the keys is reduced and limited, which reduces the lift of the rocker and reduces the force of the hammer-blow.

It will be observed that in some piano-actions the regulating-rail 1 and rocker-regulator will be all that will be necessary, that in others only the regulating-rail and key-rail will be necessary, and that in some all three will be required. It will also be seen that the levers 25 can be also connected to the rods 2 instead of to the pedal by the rod 26.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a piano-action, the combination, with the jack and hammer, of the pedal, a regulat-

ing-rail connected to the pedal by rods connected to the ends of the rail, and a cross-bar between the lower ends of the rod, whereby the let-off button and rail are drawn down toward the jack by the pedal, as set forth.

2. In a piano-action, the combination, with the jack and hammer, of the pedal, a regulating-rail and let-off button connected to and depressed by the pedal toward the jack, and a rocker-regulating rail connected to the pedal and depressed toward the rocker simultaneously with the regulating-rail, as set forth.

3. In a piano-action, the combination, with the jack and hammer, of the pedal, a regulating-rail and let-off button connected to and depressed by the pedal toward the jack, and a key-regulating rail mounted upon a lever which is connected to the pedal, whereby the regulating-rail and let-off button are depressed toward the jack and the key-rail is elevated toward the keys simultaneously, as set forth.

4. In a piano-action, the combination, with the jack and hammer, of the pedal, a regulating-rail and a let-off button connected to and depressed by the pedal toward the jack, a rocker-regulating rail connected to the pedal and depressed toward the rocker by the pedal, and a key-regulating rail mounted upon a lever which is connected to the pedal, whereby this rail is elevated toward the keys simultaneously with the depression of the other rails, as set forth.

In witness whereof I have hereunto set my hand this 6th day of May, 1889.

FREEMAN H. TOLES.

In presence of—

C. W. SMITH,  
H. P. DENISON.