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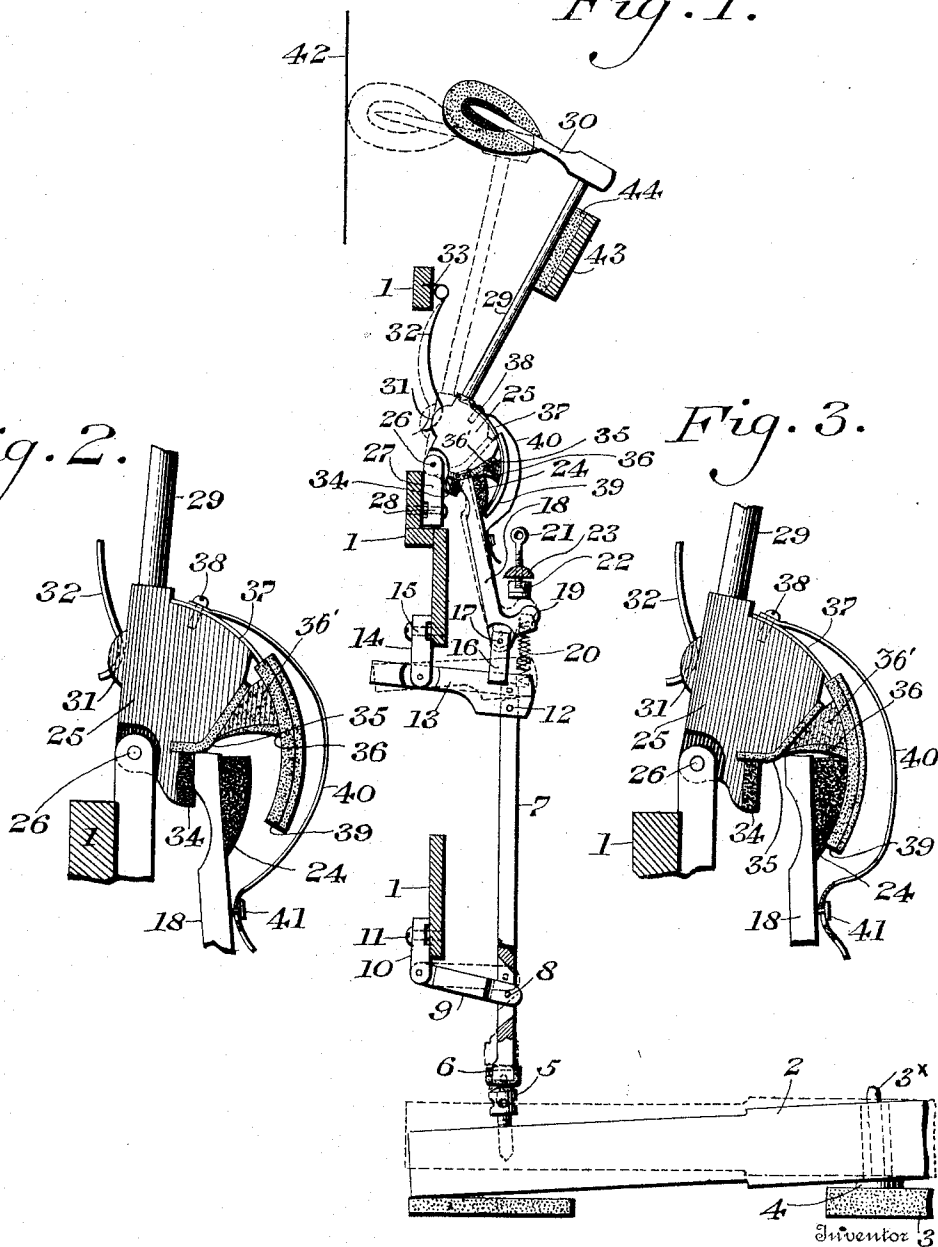
E. WERNER.
PIANO ACTION.

APPLICATION FILED JAN. 30, 1905.

Fig. 1.

Fig. 2.

Fig. 3.



Witnesses

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PIANO-ACTION.

No. 813,263.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EMIL WERNER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Piano-Actions, of which the following is a specification.

My invention consists of a novel construction of a fly and hammer-butt and its adjuncts for pianos and the like in which the improper rearward movement of the hammer is prevented as well as the blocking of said hammer, and wherein a better and quicker repetition occurs and a more effective instrument is produced.

It also consists of a novel construction in which the number of parts is reduced to a minimum and the cost of construction greatly simplified and cheapened by the omission of various parts which have been heretofore deemed indispensable.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a side elevation of a hammer-butt and its adjuncts embodying my invention. Fig. 2 represents in side elevation, on an enlarged scale, the hammer-catch and its adjuncts in normal position or in the position the parts assume either when the hammer is in raised position or when the key is first but not fully depressed or before the fly is released from the butt. Fig. 3 represents, on an enlarged scale, a side elevation of the hammer-catch and its adjuncts, showing the position the parts assume when the key is fully depressed and the fly is released from the butt.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates different rails of the action.

2 designates a key which is connected with the keyboard 3 by the pivot 3^x, between which keyboard and key is a punch 4.

5 designates a regulating screw or pilot fastened in the key 2 near its end and adapted to contact with the cushioned end 6 of the abstract 7, which latter is pivoted at 8 to a link 9, pivoted to the flange or fixed point 10, which latter is suitably secured to one of the action-rails at 11. The end of the abstract 7 is piv-

oted at 12 to a whip 13, which is pivoted near its end to a flange 14, suitably secured to the rail 1 at 15.

16 designates a flange secured to the whip 13 and having pivoted at its outer end by a fly center-pin 17 a fly 18, having a lug 19 thereon, between which and the whip 13 a fly-spring 20 is inserted.

21 designates a let-off-regulating screw having the felt-cushioned head 22 and engaging with the regulating-rail 23.

24 designates a cushion at the end of the fly 18, which latter actuates the hammer-butt 25, which is pivoted at 26 to a flange 27, secured to the rail 1 at 28.

29 designates a shank secured at one end to the hammer-butt 25 and at the other end to the hammer 30.

31 designates a lug or projection on the butt 25, against which presses a hammer-spring 32, which is secured at 33 to the rail 1.

34 designates a felt stop on the butt 25, and 35 and 36 designate strips of leather or suitable material, the strip 36 extending outwardly from the strip 35 and the latter being secured to said butt. The end of the fly 18 contacts during the operation against the strips 35 and 36.

37 designates a hammer-catch suitably secured at 38 to the hammer-butt 25 and preferably having the contour of the arc of a circle which is struck from the center-pin 26 of said butt.

39 designates a sleeve which fits on the hammer-catch 37 and which I make, preferably, of leather on the inner side and felt on the outer side; but instead of gluing the leather and felt to the hammer-catch I preferably glue the felt and leather together at the edges, so that no glue is between the leather and the heel, which gives a very smooth and uniform action. It will, however, be apparent that these parts may be assembled or connected in different ways from that described without departing from the spirit of my invention.

40 designates a bridle-strip secured to the butt at 38 and adapted to be adjustably secured to a pin 41, which is fastened to the fly 18. This bridle-strip, which is detachably secured to the butt, regulates the relation of the fly to the butt, so that if for any reason,

such as the swelling of the parts owing to the presence of dampness or moisture, the hammer should stick or hang the lowering of the fly would bring the hammer back to its initial position.

42 designates a string against which the hammer 30 is adapted to strike.

43 designates the hammer-rail, which has the felt 44 thereon and against which the shank 29 normally rests.

As seen in Figs. 2 and 3, the strip 35 is secured directly to the hammer-butt. An angular piece of material 36' is fastened on one side to this strip. Fastened to the under side of the piece 36' is a strip 36, which engages at one end the strip 35. The piece 36' is of such dimensions that when the top of the fly contacts with the strip 36 the material 36', to which it is secured, will be pressed against the sleeve 39, which closely engages the catch, and thus prevents the said sleeve from being removed by the contacting of the fly-felt 24 therewith. After the string has been struck by the hammer and the end of the fly has moved rearwardly, and thus permitted the hammer to move away from the string, the rearward movement of the butt on its pivot will be prevented by the engagement of the end or top of the fly with the strip 36. It will thus be seen that any further rearward movement of the hammer is positively prevented as long as the key is depressed and that the said hammer will be held in such a position relative to the string that a very rapid repetition can be produced.

It will be evident that the strip 36 and the angular piece 36' may be made integral if so desired.

The operation is as follows: When the end of the key is depressed, the pilot 5 presses against the end 6 of the abstract 7, lifts the latter, and raises the fly 18, which is secured thereto. The end of the fly 18 presses against the cushion 35 on the hammer-butt 25 and causes the latter to turn on its pivot 26 and the hammer 30 to strike the string 42; but as the fly is lifted the lug 19 contacts with the felt on the end of the let-off-regulating screw and causes the end of the fly to be drawn backward, as seen in Fig. 3, the hammer-catch contacting with the fly-felt 24 and the end of the fly contacting with the strip 36. It will be seen that the strip 36 extends laterally outward and that its point of contact with the strip 35 is above that portion of said strip with which the end of the fly contacts when the string is struck by the hammer, so that when the fly is drawn backward the end of the fly as well as the fly-felt will engage the strip 36, and the hammer will be prevented from any further rearward movement and will be held in the desired position for a very rapid repetition. The curve of the hammer-catch 37 causes the hammer to be held back from the string, so that the hammer cannot

block, which is a great disadvantage and causes a great deal of trouble in hammer-butts as ordinarily constructed. It will be apparent to those skilled in the art that the hammer cannot stop on the string and act as a damper to stop the vibration, as has been the case heretofore when the back check is not rightly regulated. I do away with the back check and bridle-strip wire in my new construction, which lessens the number of parts and makes the device much cheaper to construct. A better and quicker repetition is obtained, as well as a reduced action.

I preferably make the hammer-catch of metal; but it is evident that the same may be made of other material or integral with the hammer without departing from the spirit of my invention. The hammer cannot block on account of the inner curve of said catch contacting with the fly-felt. The hammer instead of being stopped by a back check is stopped by the engagement of the top of the fly with the strip 36 and is held away from the string by the inner curve of the hammer-catch. The hammer is held higher in my novel construction of hammer, because the end of the fly contacts with the strip 36, which will permit a much quicker repetition than in the constructions ordinarily employed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, a butt pivotally supported, a fly, a hammer-catch secured to said butt, the inner surface of which is concentric with the pivot of said butt, a strip 35 secured to said butt and having a laterally-extending portion and an upwardly-extending portion, a strip 36 extending outwardly from the upwardly-extending portion of said strip 35 and against which the top of the fly contacts during the operation, an angular piece engaging said strips, and a sleeve closely engaging said catch, said sleeve being retained thereon by the contact therewith of said catch and of the angular piece between said strips.

2. In a device of the character described, a butt pivotally supported, a catch secured thereto, the inner surface of which is concentric with the pivot of said butt, a sleeve adapted to closely engage said catch, a fly, a felt secured to the back of said fly near the upper end thereof, a strip secured to said butt and having a laterally-extending portion and an upwardly-extending portion, a strip extending outwardly from the upwardly-extending portion of said first strip and against which the said fly-felt contacts when in raised position at which time said fly-felt contacts with said sleeve, an angular piece engaging said strips and a stop-felt secured to said butt beneath said first strip.

3. In a device of the character described,

a pivot, a butt pivotally supported thereon, a catch secured thereto, the inner surface of which is concentric with said pivot, a fly, a fly-felt near the outer end thereof, and a strip extending from said butt in a plane above the point at which said fly normally contacts, and which engages with said catch and against which the top of said fly contacts only when in raised position.

4. In a piano-action, a fly, a pivot, a butt pivotally supported thereon, a catch secured to said butt the inner surface of which is concentric with said pivot, a bridle-strip secured

to said butt and adjustably attached to said fly, a hammer, means interposed between said butt and said catch against which the top of said fly contacts in raised position, and a felt on said fly, the outer surface of which is concentric with said pivot when said fly contacts with said catch whereby said hammer is frictionally held away from the string when the key is depressed.

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Witnesses:

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