

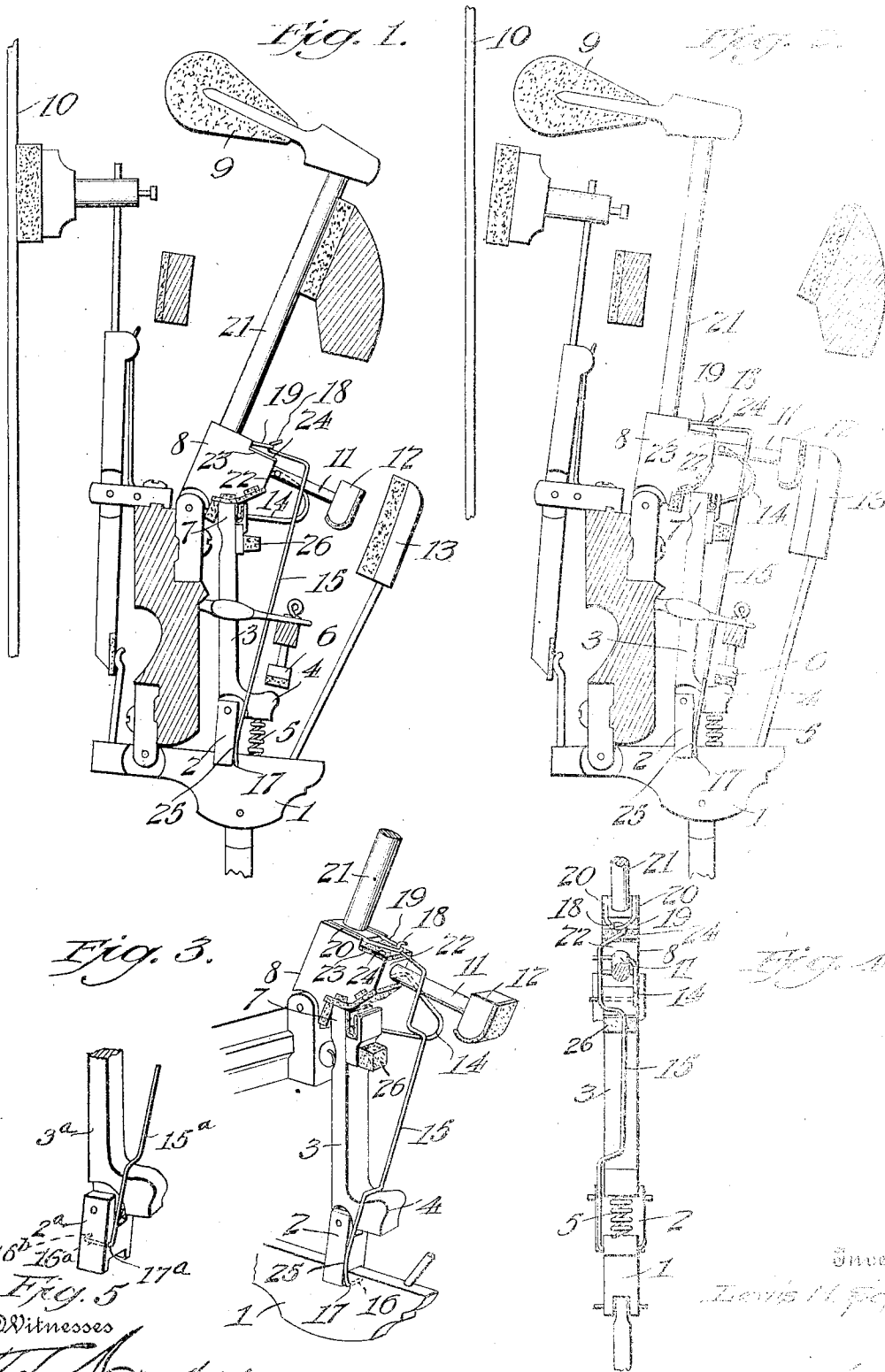
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PIANO ACTION.

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1,056,375.

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PIANO-ACTION.

1,056,375.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LEWIS NELSON SOPER, a subject of the King of Great Britain, residing at Guelph, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Piano-Actions, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in upright piano actions whereby, as compared with other types of actions heretofore in use, the touch is much lighter, more positive, more rapid and more desirable for the player piano, because of the convenience with which it can be installed in the player action. It also has less friction and requires less work for the action finisher, regulator and repairer, and besides the cost of production is considerably reduced.

In carrying out the invention, the usual bridle wire and tape between the wippen and hammer butt is dispensed with and a combined spring and link on the wippen, and flexible loop on the hammer butt, substituted in such a manner that the advantages above referred to are attained.

For a more specific understanding of the embodiment of the invention and its method of operation, reference is to be had to the accompanying drawing, in which—

Figure 1 is a sectional view through an upright piano action with the improvements applied, and the parts being shown in normal or inactive position. Fig. 2 is a similar view showing the parts in the position they occupy immediately after the hammer has struck and while pressure is still exerted on the key. Fig. 3 is a perspective view of the link and loop connecting means between the wippen and hammer butt. Fig. 4 is a front view of Fig. 3 with the countercheck shank in section. Fig. 5 is a perspective view of another form of the invention.

Similar reference characters are employed to designate corresponding parts throughout the views.

Referring to the drawing, 1 designates the wippen which is operatively connected with a key in the usual manner, and attached to the wippen is the usual jack flange 2, to which is pivoted the jack 3, the toe 4 of the jack being pressed upwardly from the wippen by the spring 5 interposed between these two parts. Above the toe 4 is the usual stop or abutment 6 with which the

toe is adapted to engage for effecting the proper release of the upper end 7 of the jack from the hammer butt 8. The hammer butt has the usual countercheck shank 11 and countercheck 12, with which coöperates the check 13 on the wippen. Between the upper end of the jack 3 and the countercheck shank is the repeating spring 14 that restores the jack in proper relation to the hammer butt when the key is released.

The particular improvements in the present invention consist of a link-spring 15, which is made of resilient wire with one end 16, Fig. 3, bent laterally and anchored in an opening 17 in the wippen 1, while the opposite end is formed into a hook 18 to detachably engage a flexible loop 19 attached to the hammer butt. This loop consists of a piece of twine which has its ends set into recesses 20 in the upper surface of the hammer butt, the recesses being located respectively at opposite sides of the shank 21 of the hammer. The ends of the loop are anchored in the recesses or grooves 20 by glue or the like. The loop is of such length as to terminate one-sixteenth of an inch, more or less, inwardly from the front face 22 of the hammer butt, and the hammer butt is recessed at 23 immediately below the loop and the upper surface of this recess has a facing of cloth or felt 24 with which the hook 18 is adapted to engage. By reference to Figs. 3 and 4, it will be observed that the spring or link 15 bears immediately above its anchored end at 25 on the jack flange 2, and at this point 25, the member 15 is fulcrumed. The member 15 is bent inwardly over the toe 4 of the jack to the center thereof, as shown in Fig. 4, and thence extends parallel with and in front of the jack to a point adjacent the countercheck where the member bends laterally to clear the countercheck shank. The hook 18 extends rearwardly above the countercheck shank to a point centrally above the hammer butt. On the jack is a felt abutment 26 which engages the medial laterally inset portion of the member 15, so that the latter acts as a buffer for the jack. If it were not for this buffer function performed by the member 15, the latter could be made straight throughout its length from the anchored terminal 16 to the hook 18.

With the arrangement shown, the link spring 15 has a light pull on the butt of the hammer, the pull decreasing as the hammer

nears the string. As the jack is tripped at relief, the outward pull on the hammer is quickly increased. Then, as the stroke is finished and key released the pull is eased, and the repeating spring incidentally causes the re-setting of the jack, and as the wippen drops, the hook engages the top of the butt and pulls it down, as is done by the usual bridle wire and tape in prior constructions.

By means of the improvements herein referred to, there results a considerable saving of felt, about forty-five per cent. of countercheck wood, about twenty per cent. of butt timber, and also the saving of the seat for the usual hammer spring.

Another manner of anchoring the link-spring is shown in Fig. 5, where its jack flange 2^a has an opening 17^a extending horizontally therethrough from front to rear and the anchor bend 16^a of the link-spring 15^a passes through the opening 17^a and has its extremity turned laterally at 16^b so that the link-spring cannot pull out. The upper end of the link-spring 15^a is shaped as shown in the other figures and hooks into the loop on the hammer butt, and this loop holds the link-spring central with respect to the jack and the hammer butt. This construction shown in Fig. 5 is easier to make and gives excellent results.

Hereinafter the term "carrier" is adopted to refer to that part on which the link-spring is mounted. In Figs. 1 to 4, inclusive, it means the wippen 1, while in Fig. 5, it applies to the jack flange 2^a.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim as new, is:—

1. An upright piano action comprising a jack carrier, a jack, a hammer butt, a hammer, a repeating spring between the hammer butt and jack, and resilient means connected with the hammer butt and jack carrier for effecting the return stroke of the hammer and tensioned to exert normally a light outward pull on the hammer.

2. An upright piano action comprising a jack carrier, a jack, a hammer butt, a hammer, a repeating spring between the hammer butt and jack, and resilient means connected with the hammer butt and jack carrier

for effecting the return stroke of the hammer and tensioned to exert normally a light outward pull on the hammer, said means being so disposed with respect to the jack as to form a buffer for the jack as the latter escapes from the hammer butt.

3. An upright piano action comprising a jack carrier, a jack, a hammer butt, a hammer, a link-spring anchored on the carrier, and means for connecting the spring with the hammer butt.

4. An upright piano action comprising a jack carrier, a jack, a hammer butt, a hammer, a link-spring anchored on the carrier, and a flexible loop anchored on the hammer butt and engaged with the link-spring.

5. An upright piano action comprising a jack carrier, a jack thereon, a hammer butt, a hammer, a resilient member anchored at its lower end on the carrier and terminating at its upper end in a hook disposed normally above the butt and adapted to engage the latter to effect the return stroke of the hammer, and a connection between the hook and the hammer butt.

6. An upright piano action comprising a jack carrier, a jack thereon, a hammer butt, a hammer, a resilient member anchored at its lower end on the carrier and terminating at its upper end in a hook disposed normally above the butt and adapted to engage the latter to effect the return stroke of the hammer, and a connection between the hook and the hammer butt, the intermediate portion of the said member being disposed to engage the jack and form a buffer therefor when the latter escapes from the hammer butt.

7. An upright piano action comprising a wippen, a jack flange, a jack on the flange, a hammer butt, a hammer, a resilient wire rising from the jack flange, and a flexible connection between the upper end of the wire and the hammer butt.

8. An upright piano action comprising a wippen, a jack flange, a jack on the flange, a hammer butt, a hammer, a resilient wire anchored in the jack flange, and a flexible loop anchored on the hammer butt and engaged with the upper end of the said wire.

9. An upright piano action comprising a carrier, a jack mounted thereon, a hammer butt, a hammer, a repeating spring between the jack and hammer butt, a flexible loop connected on the upper end of the hammer butt, and a link-spring connected with the carrier and having its upper end formed to connect with the loop, said upper end being normally spaced from the hammer butt and adapted to engage therewith for effecting the return of the hammer and the intermediate portion of the link-spring being bent inwardly into the plane of the jack to be engaged by and form a buffer for the latter.

10. An upright piano action comprising a hammer butt, a hammer shank secured thereto, said butt having grooves in its top surface at opposite sides of the hammer
5 shank, and a loop-forming element having its ends anchored in the grooves and the loop portion extending forwardly from the hammer shank.

11. The combination of a hammer butt,
10 a carrier, a connection between the hammer butt and carrier including a link-spring secured to and supported by the carrier, a jack on the carrier and disposed behind the

link-spring, and means carried by and disposed in line with the said link spring to
15 engage the latter intermediate its ends whereby the link spring forms means for buffing the jack as the latter escapes from the hammer butt.

In testimony whereof I affix my signature 20
in presence of two witnesses.

LEWIS NELSON SOPER.

Witnesses:

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