

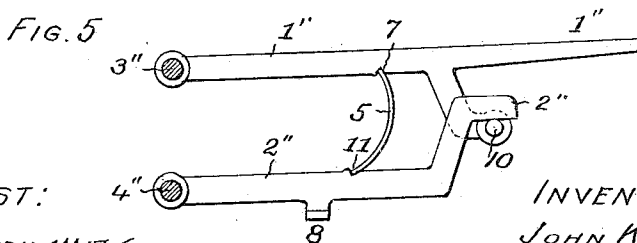
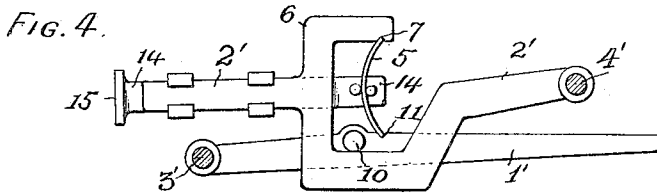
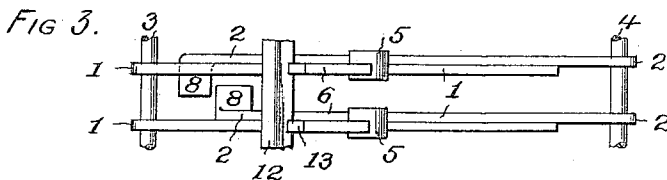
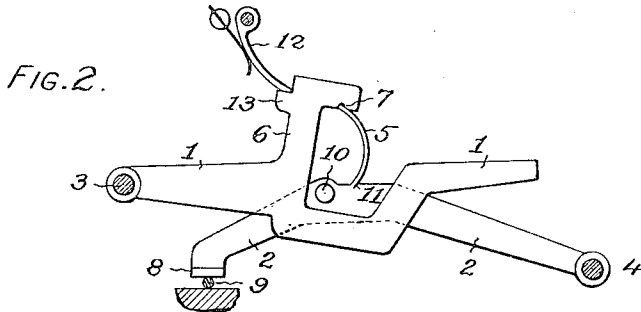
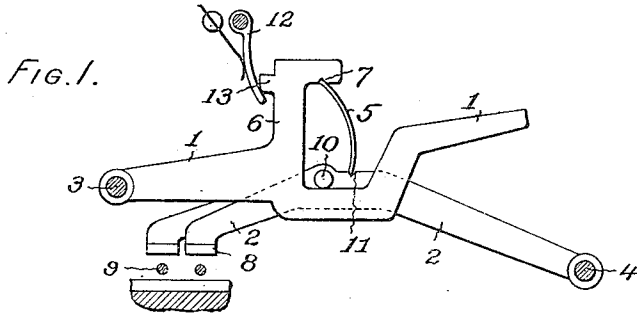
J. KONAR.

MECHANICAL MOVEMENT.

APPLICATION FILED MAR. 16, 1912. RENEWED SEPT. 27, 1916.

1,225,442.

Patented May 8, 1917.



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MECHANICAL MOVEMENT.

1,225,442.

Specification of Letters Patent.

Patented May 8, 1917.

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To all whom it may concern:

Be it known that I, JOHN KONAR, a citizen of the United States, and a resident of Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

This invention relates to mechanical movements of the duplex lever type, and has for its object to provide a simple and efficient structural formation and arrangement of the pair of levers constituting the main portions of the mechanism, with which the required range of movement is attained by a simple and compact arrangement of parts and in which a single elastic means is employed between the levers to return the same to their normal position, after a positive movement in the opposite direction, and at the same time permit of an abnormal movement of the primary lever without imparting any corresponding movement to the secondary lever, all as will hereinafter more fully appear.

In the accompanying drawings:—

Figure 1, is an elevation, showing the parts in a normal and raised position.

Fig. 2, is a similar view showing the parts depressed.

Fig. 3 is a plan view.

Figs. 4 and 5 are elevations of modified constructions.

Similar reference numerals indicate like parts in the several views.

Referring to the drawings, 1 represents the primary or actuating lever, and 2 the secondary or actuated lever of the combination. Said levers are arranged in side by side relation and preferably with their respective fulcrums 3 and 4 at opposite sides of the combination, as shown in Figs. 1, 2 and 3, and receive motion in one direction by pressure applied adjacent to the free end of the primary lever 1, and in the other direction by a spring 5, or like elastic member, arranged in the manner hereinafter described in detail.

The levers 1 and 2 in the present improvement will comprise a detail construction as follows:

6 is a bracket or yoke formation extending laterally from one side of the primary lever 1 at a point intermediate of the free

end of the lever and its fulcrum point 3, and said yoke formation is provided at its end remote from the lever 1 with a point of attachment or bearing 7 for one end of the spring 5, above referred to, and by which motion is imparted in one direction to the primary lever 1 and its accessories.

8 is a pressure shoe operatively connected to the free end of the secondary lever 2 and adapted to depress and stop the string 9 of a guitar or like musical instrument when the present mechanism is employed as an element of a key board mechanism for such class of instruments.

10 is a bearing lug or projection carried by the secondary lever 2 and adapted to have bearing against an upper surface of the primary lever 1, in the normal position and operation of the parts. Said bearing lug 10 is located at intermediate the length of the secondary lever 2, and preferably near the midlength of the same as shown in Figs. 1 and 2.

11 is a point of attachment or bearing also carried by the secondary lever 2 in adjacent relation to the aforesaid bearing lug or projection 10, and located at a point between the said bearing lug 10 and the fulcrum 4 of the secondary lever 2, as shown.

The spring 5, above referred to, is preferably of the arc shape compression type shown, and its respective ends have engagement with the above described points of attachment of bearings 7 and 11, and in the present construction the spring is inserted in place under an initial compression for the purpose hereinafter stated.

In the construction shown in Figs. 1 and 2, the bearings 7 and 11, are ordinarily positioned equi-distant from the fulcrum 3 of the primary lever 1, but in that in the present arrangement the stress of the spring end engaging the bearing 11, is exerted indirectly on the primary lever 1, through the aforesaid bearing lug 10, and owing to the fact that said lug 10 is carried at a point farther removed from the fulcrum 4 of the secondary lever 2, than said bearing 11, the stress transmitted to the primary lever 1 is correspondingly reduced to a ratio corresponding with the distance between the elements 10 and 11. Accordingly the full stress of the spring will be exerted against

the bearing 7 of the primary lever 1, in a direct manner, while the stress exerted in the opposite direction will be reduced in the manner above described, with the result that the stress of the spring will move both levers 1 and 2 in the direction of the bearing 7 until the resiliency of the spring is exhausted or a fixed stop reached.

While the equi-distant arrangement of the bearings 7 and 11, from the fulcrum point 3 of the primary lever 1, above set forth, is the preferred arrangement of the parts, the upper bearing 7 may be placed nearer or farther removed from the fulcrum point 3 when so desired, and with the result that in one instance the upward stress of the spring 5 is decreased, and in the other instance increased.

The operation of the mechanism is as follows:

With a positive movement of the primary lever 1 in a downward direction by the application of pressure to its free end, the motion is transmitted through the spring 5 to the secondary lever 2, such transmission being governed by the bearing lug 10, in its contact with the primary lever 1. As a result the bearing shoe 8 moves into engagement with and exerts a clamping action on a string 9 of a musical instrument when the mechanism is applied to such use. During such movement further compression is usually imparted to the spring 5 by the increased ratio of movement of the bearing 7 as compared with the ratio of movement of the bearing 11, as heretofore set forth in detail, and so that when the force which moves the primary lever 1 downward is removed, the spring 5 will automatically effect a return of the levers to their original and normal condition.

With a normal amount of the above described movement of the primary lever 1, the action already described of the mechanism is complete, when however an abnormal amount of movement is imparted to said primary lever, as is frequently the case, a further operation takes place and in that the shoe 8, has reached a fixed bearing for the secondary lever 2, all further movement is made by the primary lever 1, and in consequence it moves away from its bearing against the lug 10, as illustrated in Fig. 2, to be finally restored to its original bearing engagement when the force used is removed.

12 is a latch plate pivoted at its upper end, and extending longitudinally a series of transversely arranged primary levers 1, aforesaid, and common thereto.

13, are a series of individual latch toes or projections, preferably formed on the bracket extensions 6 of the primary levers 1, and adapted for engagement beneath the

lower end of the latch plate 12 aforesaid, when a particular primary lever is depressed, to hold said lever in its depressed condition until subsequently released in a continued actuation of the mechanism, and during which the toe 13 of a companion primary lever 1 forces the latch plate 12 out of holding engagement with the first mentioned toe 13, and ending in turn with the last mentioned toe in engagement with the latch plate 12, aforesaid.

In the modification illustrated in Fig. 4, the secondary lever 2, of the heretofore described arrangement, is now employed as the actuating element 1' with 3' as its fulcrum point, while the primary lever 1 of said former arrangement is now the actuated element 2' with 4' as its fulcrum point. The arrangement of the spring 5 and the bearing lug 10, is substantially the same as before described, with the single difference that the bowing action or flexure of the spring 5 in actual use, is employed to impart movement to a reciprocating member 14, that may carry a type head 15, such as is used in the push bar class of typewriters, voting machines and the like.

In the modification shown in Fig. 5, the fulcrum points 3'' and 4'' of the primary and secondary levers 1'' and 2'' are located at one side, the arrangement and operation of the spring 5, and bearing lug 10, being identical with the preferred construction of parts first described.

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

1. A mechanical movement comprising, a primary lever pivoted at one end, a secondary lever pivoted at one end and provided with a lug intermediate its length for bearing engagement upon an upper surface of the primary lever, and a resilient means having bearing against an under surface of the primary lever and an upper surface of the secondary lever, substantially as set forth.

2. A mechanical movement comprising, a primary lever pivoted at one end and provided with a bracket extension intermediate its length, a secondary lever pivoted at one end and provided with a lug intermediate its length for bearing engagement upon an upper surface of the primary lever, and a resilient means having bearing against an under surface of the aforesaid bracket extension and an upper surface of the secondary lever, substantially as set forth.

3. A mechanical movement comprising, a primary lever pivoted at one end, a secondary lever pivoted at one end and provided with a lug intermediate its length for bearing engagement upon an upper surface of the primary lever, and an arc shape spring having bearing against an under

surface of the primary lever and an upper surface of the secondary lever, substantially as set forth.

4. A mechanical movement comprising, a
5 primary lever pivoted at one end and provided with a bracket extension intermediate its length, a secondary lever pivoted at one
10 end and provided with a lug intermediate its length for bearing engagement upon an upper surface of the primary lever, and an
arc shaped spring having bearing against an under surface of the aforesaid bracket extension and an upper surface of the secondary
15 lever, substantially as set forth.

5. A mechanical movement comprising a
15 plurality of primary levers pivoted at one end and provided with a plurality of latch toes, a plurality of secondary levers pivoted
20 at one end and provided with lugs intermediate their lengths for bearing engagement upon upper surfaces of the primary
levers, resilient means having bearing against an under surface of the primary levers and upper surfaces of the secondary
25 levers, and a latch plate common to the series of latch toes aforesaid, substantially as set forth.

6. A mechanical movement comprising, a
30 plurality of primary levers pivoted at one end and provided with bracket extensions intermediate their length and with latch toes,
a plurality of secondary levers pivoted at one end and provided with lugs intermediate their length for bearing engagement upon
35 upper surfaces of the primary levers, resilient means having bearing against under surfaces of the aforesaid bracket extensions
and upper surfaces of the secondary levers, and a latch plate common to the series of
40 latch toes aforesaid, substantially as set forth.

7. A mechanical movement comprising a
45 plurality of primary levers pivoted at one end and provided with a plurality of latch toes, a plurality of secondary levers pivoted
at one end and provided with lugs intermediate their lengths for bearing engage-

ment upon upper surfaces of the primary levers, arc shaped springs having bearing
50 against under surfaces of the primary levers and upper surfaces of the secondary levers, and a latch plate common to the series of
latch toes aforesaid, substantially as set forth.

8. A mechanical movement comprising, a
55 plurality of primary levers pivoted at one end and provided with bracket extensions intermediate their length and with latch
toes, a plurality of secondary levers pivoted at one end and provided with lugs intermediate their length for bearing engage-
60 ment upon upper surfaces of the primary levers, arc shaped springs having bearing against under surfaces of the aforesaid
bracket extensions and upper surfaces of the secondary levers, and a latch plate common
65 to the series of latch toes aforesaid, substantially as set forth.

9. A mechanical movement comprising a
70 pair of levers associated in parallel relation, one of said levers having a lug intermediate its length for bearing engagement upon the
other lever, and a resilient means disposed between the levers adjacent to the lug aforesaid, substantially as set forth.
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10. A mechanical movement comprising a
80 pair of levers associated in parallel relation, one being an actuating lever and the other an actuated lever, a lug on one of said levers
intermediate of its length for bearing engagement upon the other lever, and a resilient means interposed between said levers
and located between the lug aforesaid and the pivot point of the actuated lever, and adapted to yieldingly resist a positive move-
85 ment of the actuating lever and return both levers to their normal position, substantially as set forth.

Signed at Chicago, Illinois, this 14th day of March, 1912.

JOHN KONAR.

Witnesses:

ROBERT BURNS,
J. C. ADAMS.