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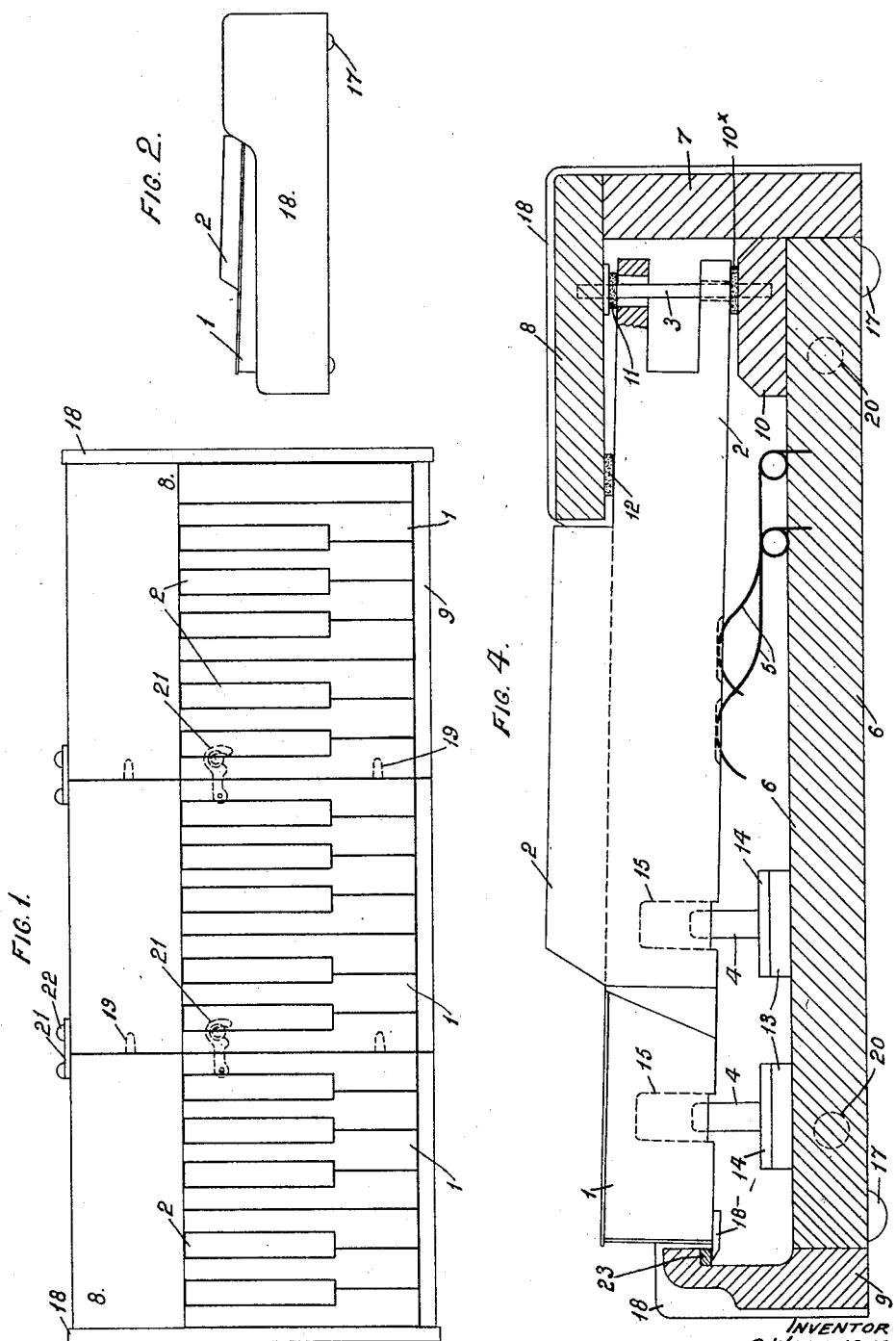
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INSTRUMENT FOR EXERCISING THE FINGERS

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2 Sheets-Sheet 1



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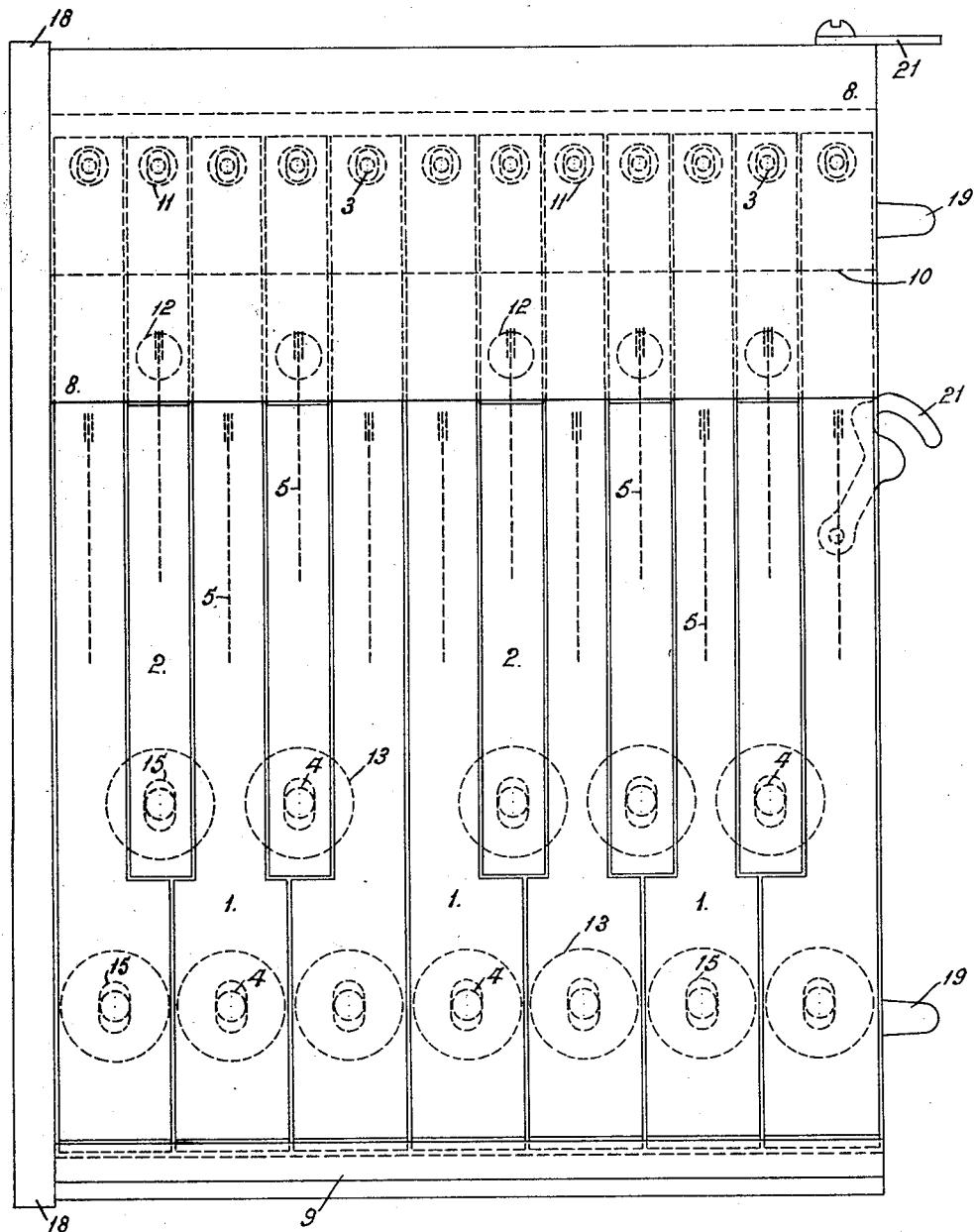
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FIG. 3.



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UNITED STATES PATENT OFFICE

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INSTRUMENT FOR EXERCISING THE FINGERS

Application filed March 27, 1930, Serial No. 439,433, and in Great Britain November 1, 1929.

This invention has reference to instruments for exercising the fingers of the hands of players of pianoforte and other instruments played by the fingers, for the purpose of keeping the muscles highly agile, or in a high state of sensitiveness and training; and it relates to that kind of such instruments which comprise hinged keys or levers, which are struck by the fingers, similarly to striking the keys of a pianoforte or the like.

One of the primary objects and effects of the invention is to provide an instrument of the kind concerned, which while it is highly effective as regards the accomplishment of its purpose, is relatively inexpensive, simple, and light, and one that is portable.

The keys of the instrument are mounted at their back ends or hinges or joints on a base, and the portions in front of the joints rest on springs of a suitable strength, such as bow springs or their equivalent, which are supported on the base or carried by it, and which keep the keys in their upper normal position; and a set of keys, say five or 25 more white ones, with the usual accompanying black keys, are carried on the base as described, constitute a unit of the instrument.

The units are placed and suitably held together in position, and they may be readily movable, so that a change of position may be accomplished in order that the position of the keys in relation to the hands may be varied to meet the requirements of practice.

As for instance, two units may be used, and they will be spaced apart, one being placed and held at one end of the instrument, and the other at the other, and they will be held in this relationship; that is, when the units 40 are placed in the position required, they will be held firmly together in such position.

Any suitable detents or holding devices such as catches, hooks, studs or the like may be used, and suitably fixed or mounted.

The keys will be held as stated at the back ends by hinges of any suitable kind, whilst at the front they will be provided with a guide device which operates in connection with a part on the base or the base itself, and 50 so that the keys are guided and kept in their

required position in relation to one another.

In some cases, a board or plate may extend over the back portion of the keys, so as to cover this portion in.

The units may be carried in a hand case 55 or box of any suitable kind.

The various parts of the instrument, if desired, may be made of wood, stamped or pressed sheet metal, or any other suitable material.

This construction of units according to this invention, whether used in single or in multiple, provides an exercising instrument which is very sensitive, light and quick in action in recovery of position, and also provides for the advantages and effects hereinbefore specified.

The invention, the nature of which is above described, is illustrated in the annexed drawings, in which Figure 1 is a plan of an instrument comprised of three units, held together, but readily detachable from one another; and Figure 2 is an outside end view of the instrument.

Figures 3 and 4 are plan and cross section, 75 respectively, drawn to a larger scale, showing a single unit.

Referring to the drawings, 1 are the white keys of the instrument, and 2 the black keys, which are similar to those of an ordinary 80 pianoforte; 3 are the joints or hinges at the back ends of the keys, on which the keys are mounted and move; 4 are the guides at the front part of the instrument on which the keys work up and down; and 5 are the springs on which the keys rest, and by which normally they are held in their upper position. 6 is the base of the units, 7 the back board or 85 wall, 8 the cover board, enclosing or covering the back parts of the keys, and 9 the front 90 board.

The hinges or joints 3 consist in the case shown of pins, the lower ends of which are fixed in a longitudinal bar 10 of wood or other suitable material, fixed on the base 6. 95 The keys are forked at their rear ends as shown, and the hinge pins 3 pass through holes in the lower part of the gapped end, so that it constitutes a fair free fit; while the upper part of the key end above the gap, is 100

provided with a longitudinal slot, so that this part can work to and fro over the hinge pin 3, which extends up into the top or cover board 8 as shown.

5 Between the keys and the bed bar 10 washers or pads 10^x of suitable felt or like material are introduced, and the back ends of the keys rest on these pads or cushions; while above the keys 1 and 2 and between 10 them and the under side of the cover board 8, are similar pads 11 and 12, the hinge pin 3 passing through the pad 11, and the other pad 12 is suitably secured to the underside of the cover 8, above the keys 2, and so limits 15 their upper movement and serves as a cushion stop.

The key guides 4 near the front are in the form of pins fixed in the base 6, and having round their bases washers or pads 13 of cork 20 or similar semi-soft material, having on the upper surface a felt pad 14; and in action, the keys when depressed strike the pads 14, and so are cushioned and the contact rendered soft.

25 The holes 15 in the keys, in which the guide pins 4 stand and work, are in slotted form, as seen in Figure 3 to allow for the circular movement of the keys about their hinges.

The front board 9 which is attached to the 30 base 6 encloses the space below the keys, and its upper edge extends inwards as shown, and this part stands above the front edge of a projecting piece 16 on the underside of the ends of the keys 1, and so serves as a general 35 stop to limit the upward movement and position of the keys 1, which keys and the keys 2, are normally pressed up by the wire springs 5, the lower ends of which are fixed in the base 6, while their upper curved ends lie and 40 work in narrow slits, forming guides, in the lower surface of the keys.

The black keys 2 lie and work in gaps in the adjacent sides of the white keys 1, in the same manner as in a pianoforte; and 45 they project up above the white keys as shown, so that the part near the cover board 8 stands about level with the top of this board. The back ends of the black keys 2 are of the same form and construction 50 as those of the white keys; and the bottoms of both white and black keys are, in the construction shown, in the same horizontal plane.

The units are each provided with rubber or soft feet 17 which will rest on the table 55 or other surface on which they are placed.

In the case shown in Figure 1, three units are employed, and they are placed together side by side as shown so that the edges of the bases 6, and back and front boards 7, 9, 60 and cover board 8 abut one another, and the units are in true alignment; and they are adapted to be fastened together so that they will be rigidly held together, and practically 65 constitute a continuous single instrument. The two end units, as in the case shown, are

provided with end boards 18, which close the outer ends.

In order to have true alignment of the units when they are placed together, the meeting ends of the units are provided with devices 70 which register or true the relative positions of the units, and this is accomplished in the case shown by the use of dowels 19 of wood, metal or the like on one edge of one unit, and corresponding holes 20 in the adjacent 75 edge of the other unit, so that when two units are placed together, and the dowels 19 of one enter the holes 20 of the other, the true alignment of the units is produced, and the two units are engaged with one another; but they may be further secured together or locked, by catches, hooks, bolts or the like. In the case shown hooks 21 are used, pivoted to the base 6, and the back 7, and the hooks are 80 so adapted that when they are moved into engagement with an eye or pin 22 on the adjacent unit, they act on the eyes or pins and pull the units one towards the other and hold them together firmly. But any other equivalent or suitable means of registering these 85 different units in relation to one another, when placed together, and holding or locking them firmly in position together, may be used.

In the case shown, in which an intermediate unit or units is or are used between two end units, one edge or face of the intermediate unit will be provided with dowels 19, and the other with the holes 20. In some 90 cases two or more units between the two end units may be used, according to requirements.

In some cases the units may be secured together when placed together by pins which pass through the joint type of device fixed at suitable points on the case, one part of the 100 device being on or near the edge of one unit, and the other part on or near the edge of the other unit, and through the eyes of these parts the pins are passed when connecting up the units; while when disconnecting and separating the units these pins are simply withdrawn.

The units or instruments are light, and can be easily carried by hand; and the means for carrying the apparatus may consist of a small attaché case made of any suitable material, such as papier-mâché or any suitable artificial fabric, canvas or the like. In some cases each unit may be held in a case; and if desired a general case may be used to hold the several 115 units, that is, the complete set of units, so that one, two or more units can be readily packed in a travelling case.

In using the apparatus the keys will be operated by the fingers in the usual way, and the limit of movement, when they are acted upon and pressed down is controlled by the pads 14, onto which their under surfaces come, and they are thus cushioned. In the 120 action the springs 5 are put under strain, and 125

upon the pressure of the fingers being removed, the springs react, and move the keys upwards about their hinges 3 quickly, so that the action of the keys is very sensitive and 5 rapid, and a high rate of action or striking of the keys by the fingers is possible. In the return action of the keys their end projections 16 will strike the pad 23 on the overhanging edge of the front board 9.

10 In some cases the key units may be adapted to be spaced apart, and a spacing device or dummy placed in between them and adapted to be connected together, so as to make the apparatus one in any of the manners herein 15 described. This enables variation of position of the units to be differently placed for exercising.

What is claimed is:—

1. An instrument for exercising the fingers 20 comprising a plurality of readily connectible and disconnectible key units adapted to fit and be kept together in line, and having connected with the adjacent meeting ends a removable attachable and detachable device 25 by which the units can be held firmly together and freed and separated at will, and the different units each having a plurality of pivoted black and white hinged keys normally pressed up by springs or elastic media.

30 2. An instrument for exercising the fingers comprising a plurality of readily connectible and disconnectible key units, the adjacent ends of the units having parts adapted, when the ends of the units are 35 placed together, to register same, so that in the assembled units they are all truly in line.

3. An instrument for exercising the fingers as defined in claim 2, wherein the adjacent edges of the casing in which the fingers 40 lie and are fixed are provided alternatively with dowels and corresponding apertures which fit in one another and register the position of the respective units, and also with 45 catch fasteners adapted to hold the sections together at the meeting faces.

4. An instrument for exercising the fingers as defined in claim 2, and wherein the keys are disposed within an open case provided with an overhanging upper partial lid 50 at the back, and a pivot pin extending through the back ends of the keys and carried in the overhanging part and the base of the case.

55 In testimony whereof I have signed my name to this specification.

GEORGE WOODHOUSE.