

H. G. LELAND.
FINGER EXERCISING MACHINE.
APPLICATION FILED NOV. 18, 1910.

1,023,573.

Patented Apr. 16, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

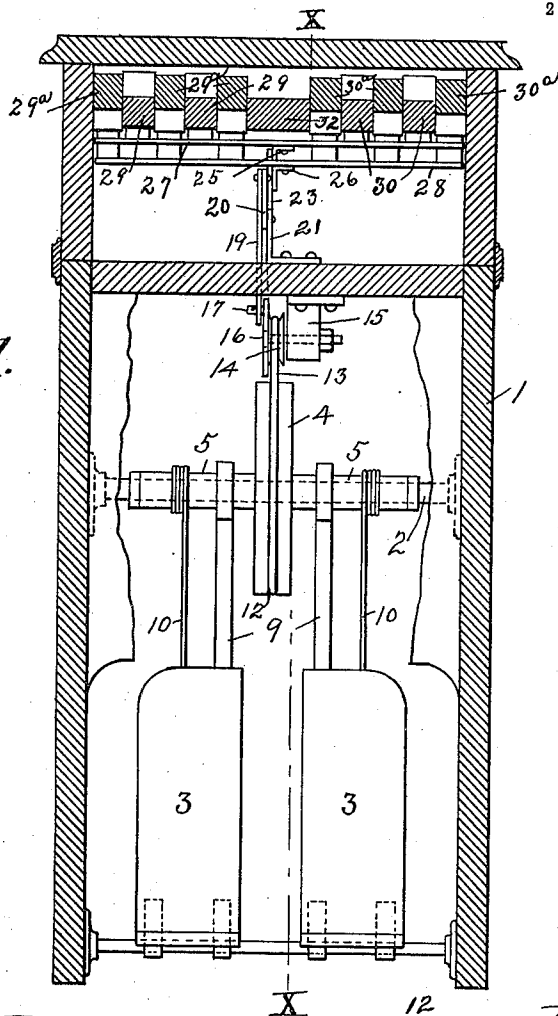
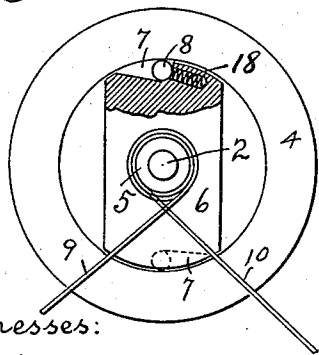


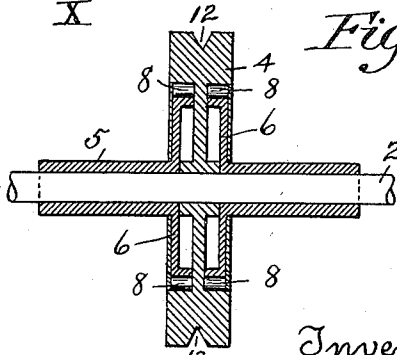
Fig. 4.



Witnesses:

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Fig. 3.



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2 SHEETS-SHEET 2.

Fig. 2.

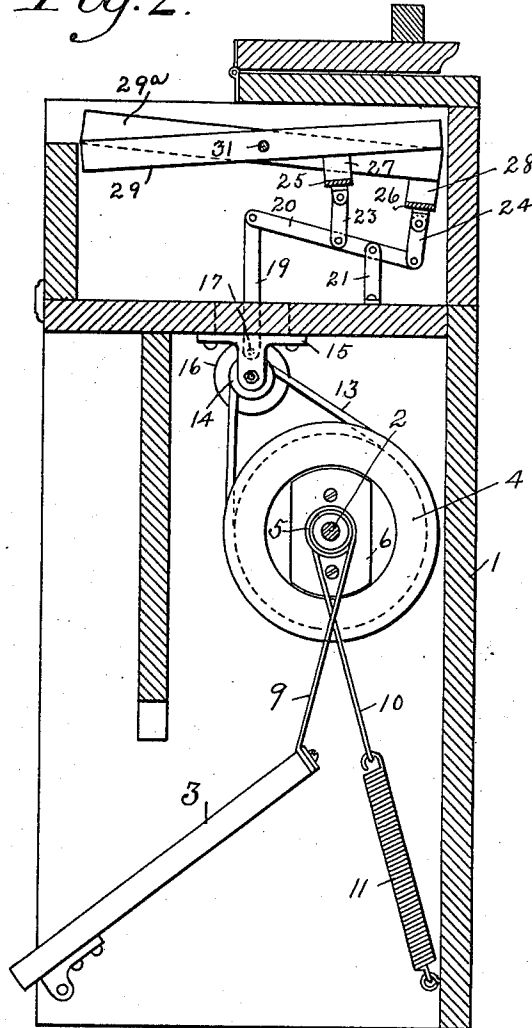
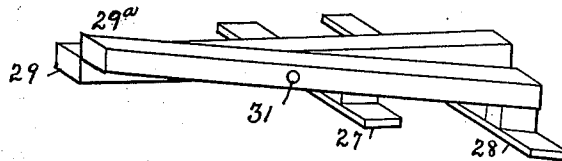


Fig. 5.



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UNITED STATES PATENT OFFICE.

HARRY G. LELAND, OF HOWARD PARK, MARYLAND.

FINGER-EXERCISING MACHINE.

1,023,573.

Specification of Letters Patent.

Patented Apr. 16, 1912.

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To all whom it may concern:

Be it known that I, HARRY G. LELAND, a citizen of the United States, residing at Howard Park, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Finger-Exercising Machines, of which the following is a specification.

This invention relates to improvements in finger exercising machines.

The object of the invention is to provide a series of mechanically operated levers which impart to the fingers the same movement as that required to operate the keys of a piano. The exercise of the fingers by my present invention for an hour is equal to at least ten hours' practice on the piano, and greatly lessens the physical and mental strain of the latter method, as well as the wear and tear of the piano and the discordant practice of exercises and scales. In the devices heretofore invented for this purpose the fingers operate the levers, whereas in my present invention the levers operate the fingers.

The invention consists of the novel construction and arrangement of the parts and combination of parts hereinafter more fully set forth in the specification and pointed out in detail in the claims.

In the accompanying drawings,—Figure 1 is a front elevation, partly in section, of my invention. Fig. 2 is a vertical sectional view on the line X—X of Fig. 1. Fig. 3 is a detailed sectional view of the clutch and power shaft. Fig. 4 is a side elevation of the clutch, partly broken away. Fig. 5 is a detailed view of two of the finger levers.

Referring to the accompanying drawings, forming part of this specification, and in which like reference numerals designate like parts throughout the several views thereof, 1 designates the casing in which is mounted the main shaft 2, which in the present instance is driven by the treadles 3, 3, but which may be driven by electricity or any other suitable power transmitted to the said shaft 2. On the main shaft 2 is a clutch comprising a fixed wheel 4 keyed to the shaft 2, and two loosely mounted sleeves 5, having disks 6 projecting into said wheel 4 and having cut-outs 7 into which are fitted the rollers 8, which latter are held normally against the wheel 4 by the springs 18. To the sleeves 5 are connected the straps 9, which latter have their lower ends secured to the

treadles 3. When the treadles 3 are depressed the sleeves 5 and disks 6 are revolved on the shaft 2 and grip the rollers 8 between the disks 6 and the wheel 4 and cause the main shaft 2 to revolve. The sleeves 5 are also provided with cords 10 wound thereon and connected by one end to the coiled springs 11, which latter serve to return the sleeves and disks, and consequently the treadles, to their normal position. The depression of the treadles revolve the sleeves and disks in one direction to cause the disks 6 to grip the rollers 8 and revolve the main shaft 2, and the springs 11 exerting their tension on the cords 10 cause the sleeves 5 and disks 6 to revolve in the opposite direction and return to their normal position when the treadles are released.

The wheel 4 is provided with an annular groove 12 into which the belt 13 fits and from which power is transmitted to the small wheel 14, which latter is mounted in the bracket 15. Cast integral with the small wheel 14 is a disk 16 having a pin 17 projecting from the side thereof and to which is secured the lower end of the link 19 which has its upper end pivoted to the lever 20, which latter is fulcrumed to the upright 21. Pivottally connected to the lever 20 are two links 23 and 24, one in front and one back of the upright 21. These links 23 and 24 are pivoted to the lugs 25 and 26 on the bars 27 and 28, respectively. Arranged above and connected to the bars 27 and 28 are two groups of finger levers, 29 and 29^a comprising one group and 30 and 30^a comprising the other group, all of which levers are pivoted at 31. The levers 29 and 30 are secured to the bar 27 and the levers 29^a and 30^a are secured to the bar 28. It will thus be seen that by the revolution of the wheel 14 and disk 16 the lever 20, through the link 19, will be rocked on the upright 21 and the finger levers raised and lowered through the connections heretofore described. The levers 29 and 30 operate in unison, as do the levers 29^a and 30^a. When the fingers rest on the finger levers, and the latter are in their normal position, the operation of the machine causes the front ends of the levers to raise the fingers and the latter naturally follow the levers back to their normal position. Thus it will be seen that, by this movement, the fingers can easily be kept in their proper position on the levers with little or no exertion when the machine is operated rapidly.

Between the two groups of finger levers is a stationary rest 32 upon which the hand of the operator rests when it is desired to exercise one or more fingers. The adjacent 5 levers of each group operate simultaneously in opposite directions thereby mechanically producing a "trill", and various combinations of finger exercises can, therefore, be produced. The two groups of levers are so 10 spaced apart that the distance from any one lever in one group to the corresponding lever in the other group is about $7\frac{1}{2}$ inches, or the space of a piano octave, whereby octave exercises may be accomplished, thereby 15 by exercising the muscles of the wrist as well as those of the fingers. The stroke of the levers is greatly in excess of that of a piano key, in order to insure an excess of finger action.

20 The exerciser is practically noiseless in operation, whereby the operator, as well as others in close proximity thereto, is spared the noise and nerve-racking strain occasioned by practice upon a piano.

25 The details of construction and arrangement of the parts of my invention, as herein described, may be varied, within the scope of the appended claims, without departing from the spirit of my present invention.

30 Having thus described my invention, what I claim is:

1. A finger exerciser comprising a series of levers all of which operate simultaneously, a driven shaft, a bar connected to 35 some of said levers, another bar connected to the remaining levers, and means connecting said bars to the driven shaft whereby when the latter is revolved one bar and its connected levers will be raised and the 40 other bar and its connected levers will be lowered.

2. A finger exerciser comprising a series of levers all of which operate simultaneously, a bar connected to some of said levers, 45 another bar connected to the remaining levers, and means whereby when one bar and its connected levers is raised the other bar and its connected levers will be lowered.

3. A finger exerciser comprising a series 50 of levers all of which operate simultaneously, a driven shaft, a bar connected to some of said levers, another bar connected to the remaining levers, and means connect-

ing said bars to the driven shaft whereby when the latter is revolved one bar and its 55 connected levers will be raised from the normal position and the other bar and its connected levers will be lowered to the normal position.

4. A finger exerciser comprising a series 60 of levers all of which operate simultaneously and each lever operating in the opposite direction from the one adjacent thereto, a driven shaft, a bar connected to some of 65 said levers, another bar connected to the remaining levers, and means connecting said bars to the driven shaft whereby when the latter is revolved one bar and its connected 70 levers will be raised and the other bar and its connected levers will be lowered.

5. A finger exerciser comprising a series of levers all of which operate simultaneously, a driven shaft, a bar connected to 75 some of said levers, another bar connected to the remaining levers, and levers connecting said bars with the driven shaft whereby when the latter is revolved one bar and its 80 connected finger levers will be raised and the other bar and its connected finger levers will be lowered. 85

6. A finger exerciser comprising a series of levers all of which operate simultaneously, a driven shaft, a bar connected to 90 some of said levers, another bar connected to the remaining levers, means connecting said bars with the driven shaft whereby when the latter is revolved one bar and its 95 connected levers will be raised and the other bar and its connected levers will be lowered, and means for operating said driven shaft. 100

7. A finger exerciser comprising a series of levers all of which operate simultaneously, a driven shaft, a bar connected to 105 some of said levers, another bar connected to the remaining levers, means connecting said bars with the driven shaft whereby when the latter is revolved one bar and its 110 connected levers will be raised and the other bar and its connected levers will be lowered, and treadles for operating said driven shaft. 115

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

HARRY G. LELAND.

Witnesses:

CHAPIN A. FERGUSON,
ROBERT C. RHODES.