March 15, 1932. G. CASCIOTTA 1,849,974

PLECTRUM PIANO ACTION

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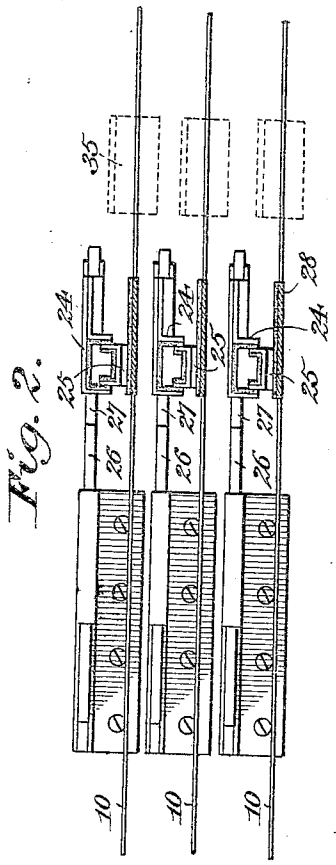


Fig. 2.

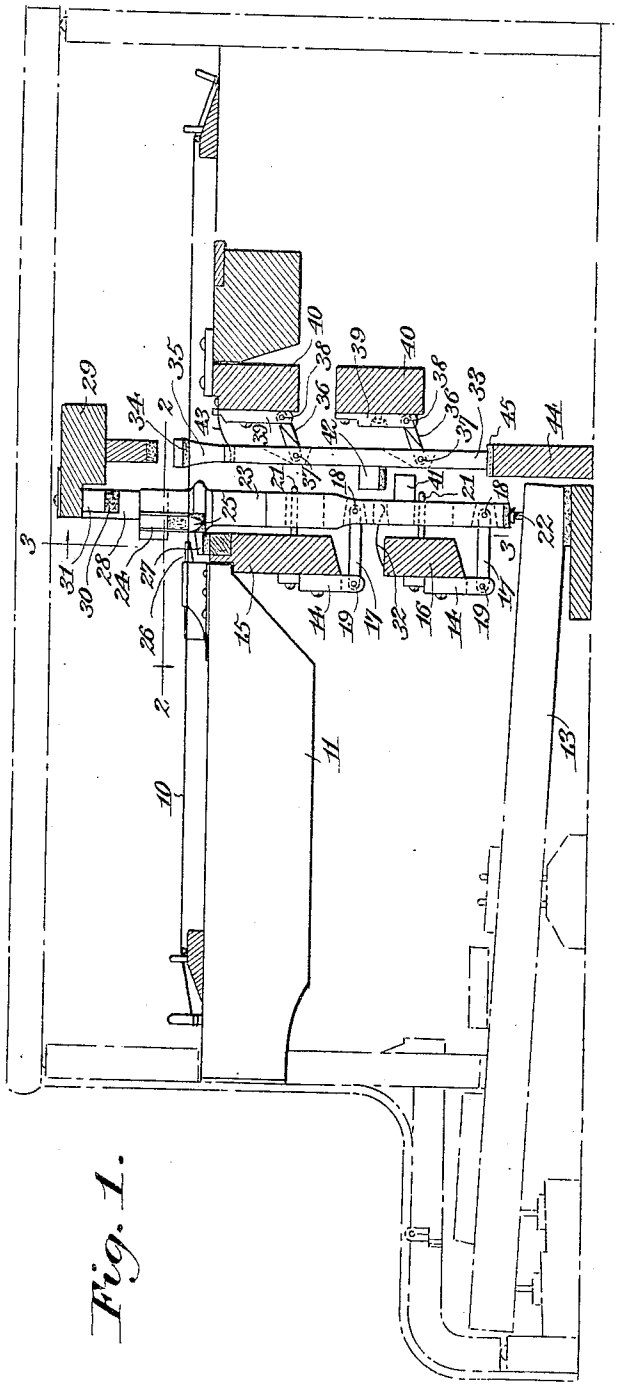


Fig. 1.

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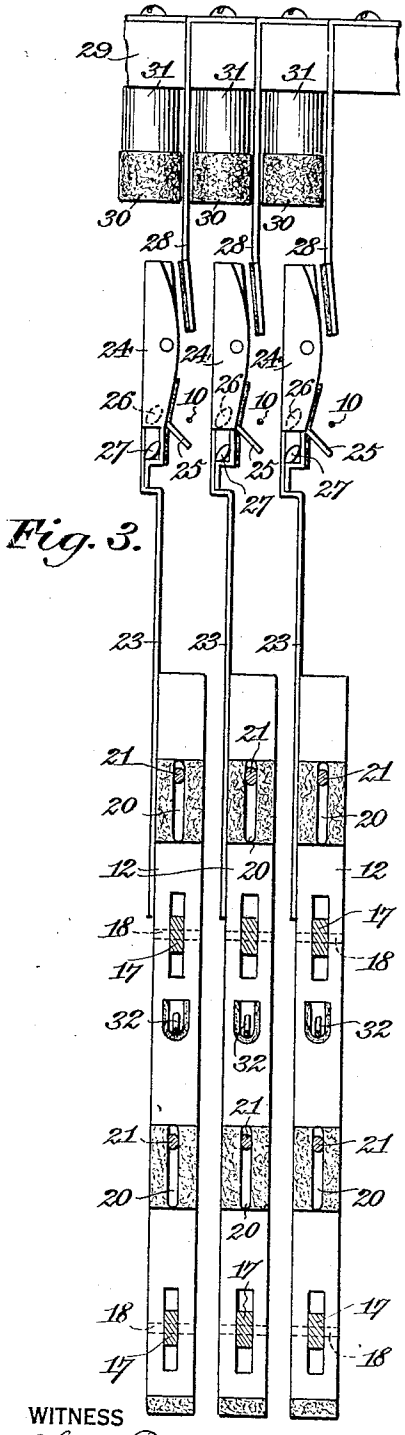



Fig. 3.

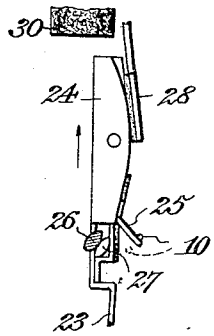



Fig. 5.

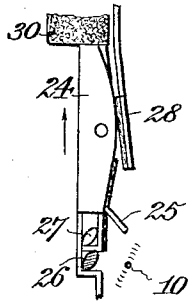



Fig. 6.

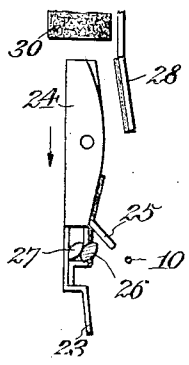



Fig. 7.

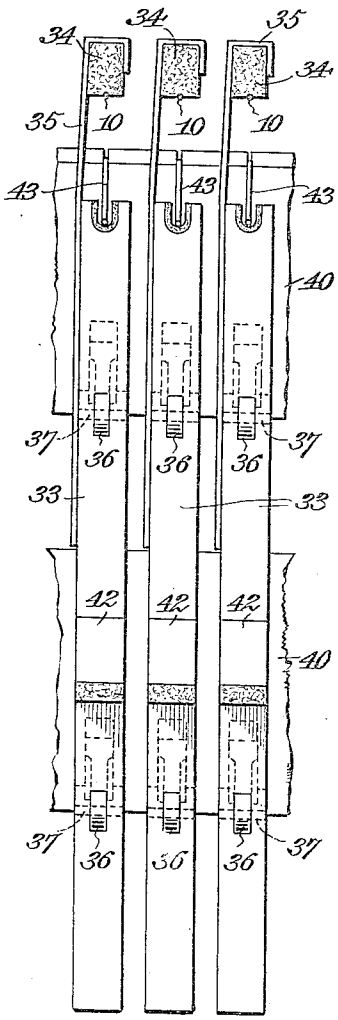



Fig. 4.

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Patented Mar. 15, 1932

1,849,974

# UNITED STATES PATENT OFFICE

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## PLECTRUM PIANO ACTION

Application filed September 10, 1931. Serial No. 562,154.

This invention relates to a plectrum piano action, such as disclosed in the United States Letters Patent No. 1,462,444 and No. 1,824,706 granted to me, which is designed and adapted to simulate the tonal qualities of a harp, and the invention has special reference to certain improvements in connection with an instrument of this character.

The principal object of the invention is the provision of an improved form of action of the indicated character by which the quality, tone and volume thereof will be improved, and which will make the parts including the keys more readily responsive to the touch of a player, and also produce a more immediate reaction and return of the parts to normal positions when pressure on the keys is removed.

Another object of the invention is to simplify and otherwise improve the construction of the action and to eliminate vibration and extraneous sounds.

With the foregoing and other objects in view, the invention resides in the particular provision, relative disposition and operation of the parts hereinafter fully described and illustrated in the accompanying drawings, in which

Figure 1 is a cross section of the action;

Figure 2 is an enlarged section on the line 2—2 of Figure 1;

Figure 3 is an enlarged section on the line 3—3 of Figure 1;

Figure 4 shows a plurality of dampers;

Figures 5, 6 and 7 are views showing different stages of movement of the string picking means or plectrum.

The action may be used advantageously in a musical instrument having a horizontally disposed sound board structure. It is to be understood that the musical instrument embodying the invention will include the desired number of strings mounted upon a sound board structure, the strings being designated 10, and the sound board structure being designated 11. Each string is picked by means arranged on the upper end of a rigid member 12 operated by a key 13. The member 12 is mounted for upward and downward movement, or, in other words, is mounted for endwise movement. This is accomplished by the provision of attachments 14 arranged in superposed spaced relation to each other and respectively attached to supporting rails 15 and 16. Radius links 17 are pivotally connected as at 18 with the member 12, and are pivotally connected respectively with the attachments 14, as at 19. The member 12 is provided with a plurality of openings 20, which respectively receive guiding elements or pins 21 secured respectively to the rails 15 and 16, for the purpose of preventing any lateral or sidewise movement or distortion of the member 12 at its points of pivotal connection with the links 17. The key 13 is mounted for up and down or rocking movement in the usual manner, and is provided with an element 22 having a rounded head which bears against the lower end of the member 12, to cause the upward movement of the member 12 in response to a downward pressure on the manipulating end of the key 13. A flexible strip 23 made of suitable metal such as brass is secured to the upper end of the member 12. A retaining device 24 of any preferred form is attached to the upper end of the strip 23, which is designed to firmly and detachably retain a plectrum or pick 25 in operative position. It is to be understood that the plectrum or pick will have the desired flexibility. It will be obvious that by reason of the provision of the strip 23, the device 19 together with the plectrum or pick 25 may be swung or flexed to either side within certain limits for a purpose hereinafter fully described.

In order to swing or flex the device 24 and its plectrum or pick 25 there are provided guiding elements 27 respectively on the sound board structure 11, and device 24. On reference to Figure 5 it will be seen that on the upward movement of the member 12, the guide element 27 will encounter the guide element 26 causing the device 24 to move laterally thereby bringing the pick 25 in a position to pick the string 10. In the continued upward movement of the device 24, the pick 25 will clear the string 10, and said device 24 will move into engagement with a checking means as shown in Figure 6. The checking

means comprises a spring member 28 secured to a supporting rail 29, and a felt button 30 on the end of a stud 31 carried by the rail 29. The member 12 is under the influence of a spring 32 carried by the rail 16. The spring 32 plus the action of gravity returns the member 12 and its connected parts to a normal position. On reference to Figure 7, it will be apparent that, in the downward movement of the member 12, the guiding element 27 will encounter the element 26 causing the device 24 to swing to a position in which the pick 25 will clear the string 10.

Each string 10 is allowed to vibrate freely when picked and this vibration is stopped to kill the tone at the desired moment. This is accomplished by providing a damper action consisting of a damper for each string. The damper consists of a member 33 and a piece of felt or the like 34 secured to the upper end of the member 33 by a metal retainer 35. Each damper is mounted for up and down or endwise movement and this is accomplished by the provision of radius links 36 arranged in superposed spaced relation and pivotally connected as at 37 with the member 33 and also pivotally connected respectively as at 38 with attachments 39 secured to supporting rails 40. Coacting means consisting of a projection 41 on the member 12 and a projecting portion 42 on the member 33 function to move the damper by the operation of the member 12 out of contact with the string to allow it to vibrate freely when picked, the damper moving into contact with the string to kill the tone at the desired moment. Return movement of the damper is brought about by the action of gravity, plus a spring 43, which is carried by one of the rails 40 and which is in contact with the member 33. The downward movement of each damper is limited by a crossbar 44 having a strip of felt 45 to deaden the sound.

I claim:

1. In a string musical instrument, the combination of a movable rigid member, a flexible member secured to and projecting from one end of said rigid member, string picking means on the projecting end of said flexible member, said picking means being caused to pick a string as a result of the movement of said rigid member and the flexing of said flexible member, and means to prevent the flexible member from vibrating after it has been flexed in the string picking operation.

2. In a string musical instrument, the combination of a movable rigid member, a flexible member secured to and projecting from one end of said rigid member, string picking means on the projecting end of said flexible member, said picking means being caused to pick a string as the result of the movement of said rigid member and the flexing of said flexible member, and means engageable with said picking means to prevent the flexible member from vibrating after it has been flexed in the string picking operation.

3. In a string musical instrument, the combination of a member having string picking means mounted for endwise movement in opposite directions, means to move said member in one direction to cause said picking means to pick a string, and means augmenting the action of gravity to cause the return movement of said member.

4. In a string musical instrument, the combination of a movable rigid member, a flexible member secured to and projecting from one end of said rigid member, string picking means on the projecting end of said flexible member, said picking means being caused to pick a string as a result of the movement of said rigid member and the flexing of said flexible member, and means engageable with one end and one side of said picking means to prevent the flexible member from vibrating after it has been flexed in the string picking operation.

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