E. A. TAPPE.

PLAYER PIANO.

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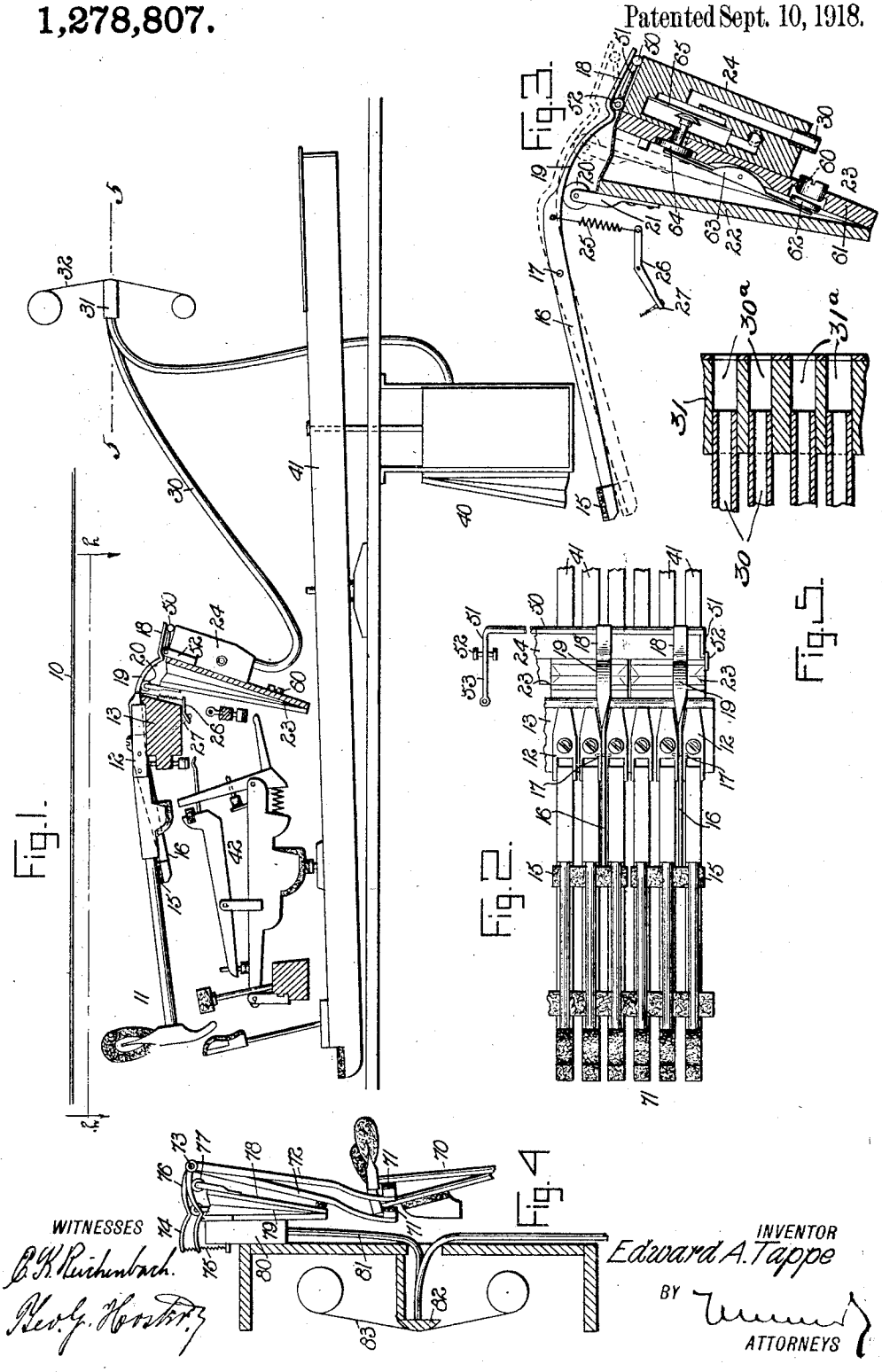

WITNESSES

B. K. Richenbach.

Rev. G. Horstkotte

INVENTOR

Edward A. Tappe

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD ARTHUR TAPPE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO GEORGE Q. CHASE, OF SAN FRANCISCO, CALIFORNIA.

PLAYER-PIANO.

1,278,807. Specification of Letters Patent. Patented Sept. 10, 1918.

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To all whom it may concern:

Be it known that I, EDWARD A. TAPPE, a citizen of the United States, and a resident of Los Angeles, in the county of Los Angeles and State of California, have invented a new and Improved Player-Piano, of which the following is a full, clear, and exact description.

The invention relates to player pianos in which the hammers are normally held in reduced or half stroke position by the use of a hammer rail made in movable sections controlled by pneumatic actuating devices for moving any one of the hammer rail sections into position for holding the corresponding hammer in full stroke position.

The object of the invention is to provide a new and improved player piano having hammer controlling devices which are simple and durable in construction and which can be readily applied to a grand piano player or to an upright piano player as now generally constructed.

In order to produce the desired result, use is made of spring-pressed levers singly carrying the hammer rail sections to hold the hammers normally in half stroke position, and pneumatic actuating means for imparting a swinging motion to any one of the said levers to move a corresponding hammer rail section into position for holding the corresponding hammer in full stroke position.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a cross section of the improvement as applied to a grand piano player, the parts being shown in position for holding the hammers in half stroke position;

Fig. 2 is a plan view of the same with the strings omitted;

Fig. 3 is an enlarged sectional side elevation of one of the hammer rail sections, its lever, and pneumatic actuating devices;

Fig. 4 is a cross section of the improvement as applied to an upright piano.

Fig. 5 is a detail horizontal section through a portion of the tracker bar taken on line 5—5 of Fig. 1.

The strings 10 of a grand piano are adapted to be sounded by hammers 11 pivoted on flanges 12 attached to the action rail 13 in the usual manner, the flanges being spaced apart, as plainly indicated in Fig. 2. The shanks of the hammers normally rest on a hammer rail made in sections 15 each attached to the inner end of a lever 16 extending between adjacent flanges 12 and pivoted thereon by a pivot 17, as plainly shown in Figs. 1 and 2. Each lever 16 is preferably made of a flat piece of steel set edgewise to readily pass between adjacent flanges 12, and the front portion 18 of each lever 16 extends beyond the flanges 12 and the action rail 13 and is connected by a twist with the lever so that this portion 18 extends flat in a horizontal position. A portion 19 of the front end of each lever 16 is curved and engaged at the under side by a friction roller 20 journaled in a suitable bearing 21 attached to the upper end of the movable member 22 of a pneumatic 23 secured to a wind chest 24 supported at its ends in the usual manner on the piano frame. A spring 25 is connected at one end with the forward end 18 of each lever 16, and the other end of the said lever is connected with a lever 26 pivoted on the under side of the action rail 13 and adapted to be adjusted by a regulating screw 27 to regulate the tension of the spring 25. It will be noticed that by the arrangement described the curved portion 19 of the forward end 18 of each lever 16 is held in contact with the corresponding friction roller 20 by the action of the spring 25 so that the corresponding hammer rail section 15 holds the corresponding hammer 11 in reduced or half stroke position. Each hammer rail section 15 is of a width to accommodate one or more successive hammers 11; preferably, however, three hammers, as shown in Fig. 2.

In order to move any one of the hammer rail sections 15 into full stroke position it is necessary to collapse the corresponding pneumatic 23 so that the friction roller 20 imparts an upward swinging movement to the curved portion 19 of the forward end 18 of the lever 16 whereby the rear portion of the latter is swung downward to move the corresponding hammer rail sections 15 downward and thereby allow the hammer 11 to drop into full stroke position. It is understood that normally the hammer rail sections 15 are in the half stroke position shown in Fig. 1, and whenever it is desired to emphasize a particular note in the melody then the corresponding hammer rail section is

moved downward to full stroke position to allow the corresponding hammer to sound the string with full force in contradistinction to the sounding of the strings by the hammers 11 which are in half stroke position and produce but a subdued accompaniment.

The wind chest 24 is connected by tubes 30 with supplementary tracker board openings 30^a of a tracker board 31, which may be located, for instance, beyond the ends of the usual series, certain of which appear at 31^a in Fig. 5, so that the note sheet 32 passes over the same in the usual manner. The tracker board 31 is provided with the usual tracker board openings adapted to register with the note sheet openings for controlling the striking movement of the hammer 11 by the usual pneumatic actuating devices employed for the purpose. As shown in Fig. 1, the pneumatic actuating devices consist of pneumatics 40 connected with keys 41 to actuate the latter and consequently the usual action 42 for actuating the hammers 11 whenever a main note sheet opening registers with a corresponding main tracker board opening. As the pneumatic actuating means for the hammers do not form a part of this invention it is not deemed necessary to more fully describe the same, and it is expressly understood that I do not limit myself to any particular actuating means for the hammers.

When it is desired to play the piano by hand then all the levers 16 carrying the hammer rail sections 15 are simultaneously actuated to allow the hammers 11 to move into full stroke position and for this purpose use is made of a rod 50 extending under the forward ends 18 of the levers 16, and the rod 50 is provided at its ends with arms 51 pivoted on brackets 52 attached to the wind chest 24. One of the arms 51 is provided with an extension 53 connected with suitable mechanism (not shown) and under the control of the player for imparting an upward swinging motion to the rod 50 to raise the forward ends 18 of the levers 16 and to swing the latter downward to allow the hammers 11 to move into full stroke position.

The pneumatic 23 is provided with an air inlet valve seat 60 screwing in the fixed member 61 of the pneumatic, and the said seat 60 is controlled by the usual valve 62 held on a lever 63 adapted to be actuated by a valve 64 connected with the diaphragm 65. By adjusting the valve 60 the amount of air intake can be increased or diminished and as this valve seat 60 is readily accessible it can be quickly adjusted to suit existing conditions with a view to insure proper collapsing of the pneumatic 23 whenever the corresponding note sheet opening registers with the corresponding auxiliary tracker board opening. The improvements as shown in Fig. 4 are applied to an upright piano in which the hammers 70 are normally held in reduced or half stroke position by the sections 71 of the hammer rail. Each section 71 is attached to the lower end of a lever 72 fulcrumed at its upper end upon a rod 73, the ends of which are suitably connected to the piano casing, as for instance the casing ends (not shown), said lever being provided with an angular extension 74 pressed on by a spring 75 to normally hold the hammer rail section 71 in the reduced or half stroke position. The angular extension 74 of each lever 72 is provided with a curved portion 76 engaged at the under side by a friction roller 77 journaled on the movable member 78 of a pneumatic 79 attached to the wind chest 80. The latter is connected by a tube 81 with an auxiliary tracker board opening in the tracker board 82 over which passes the note sheet 83 in the usual manner. The operation is the same as above described in reference to the grand piano player illustrated in Figs. 1, 2 and 3, so that further detailed description of the same is not deemed necessary, it being understood that whenever it is desired to emphasize the melody the corresponding pneumatic 79 is collapsed to cause the movable member 78 thereof to impart a swinging motion to the corresponding lever 72 to allow the hammer 70 to move into full stroke position.

From the foregoing it will be seen that the device can be readily attached to grand and upright player pianos as now generally constructed, and the device is very simple and durable in construction and composed of comparatively few parts, not liable to get out of order easily.

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

1. A grand player piano, comprising strings, hammers sounding the strings, pneumatic actuating means for actuating the hammers, an action rail, spaced hammer flanges on the said action rail and on which the hammers are fulcrumed, a hammer rest rail made in sections, levers extending between adjacent hammer flanges and fulcrumed thereon, each lever carrying a hammer rest rail section, a spring pressing each lever to normally hold the hammers in half stroke position, and pneumatics having movable members engaging the said levers to retract the rest rail sections into full stroke position on collapsing a corresponding pneumatic.

2. A grand player piano, comprising strings, hammers sounding the strings, pneumatic actuating means for actuating the hammers, an action rail, spaced hammer flanges on the said action rail and on which the hammers are fulcrumed, a hammer rest

rail made in sections, levers extending between adjacent hammer flanges and fulcrumed thereon, each lever carrying at its inner end a hammer rest rail section, the outer end of the lever having a curved portion, a spring held on the action rail and connected with the outer end of a lever to normally hold the hammers in half stroke position, and pneumatics each having a movable member provided with a friction roller engaging the said curved lever portion to impart a swinging motion to a lever on collapsing the corresponding pneumatic to move the corresponding hammer into full stroke position.

3. A grand player piano, comprising strings, hammers sounding the strings, pneumatic actuating means for actuating the hammers, an action rail, spaced hammer flanges on the said action rail and on which the hammers are fulcrumed, a hammer rest rail made in sections, levers extending between adjacent hammer flanges and fulcrumed thereon, each lever carrying at its inner end a hammer rest rail section, the outer end of the lever having a curved portion, a spring held on the action rail and connected with the outer end of a lever to normally hold the hammers in half stroke position, pneumatics each having a movable member provided with a friction roller engaging the said curved lever portion to impart a swinging motion to a lever on collapsing the corresponding pneumatic to move the corresponding hammer into full stroke position, and a rod mounted to swing on the said action rail and extending under the outer ends of the said levers to permit of swinging the levers simultaneously to move the hammer rail sections into full stroke position.

EDWARD ARTHUR TAPPE.