

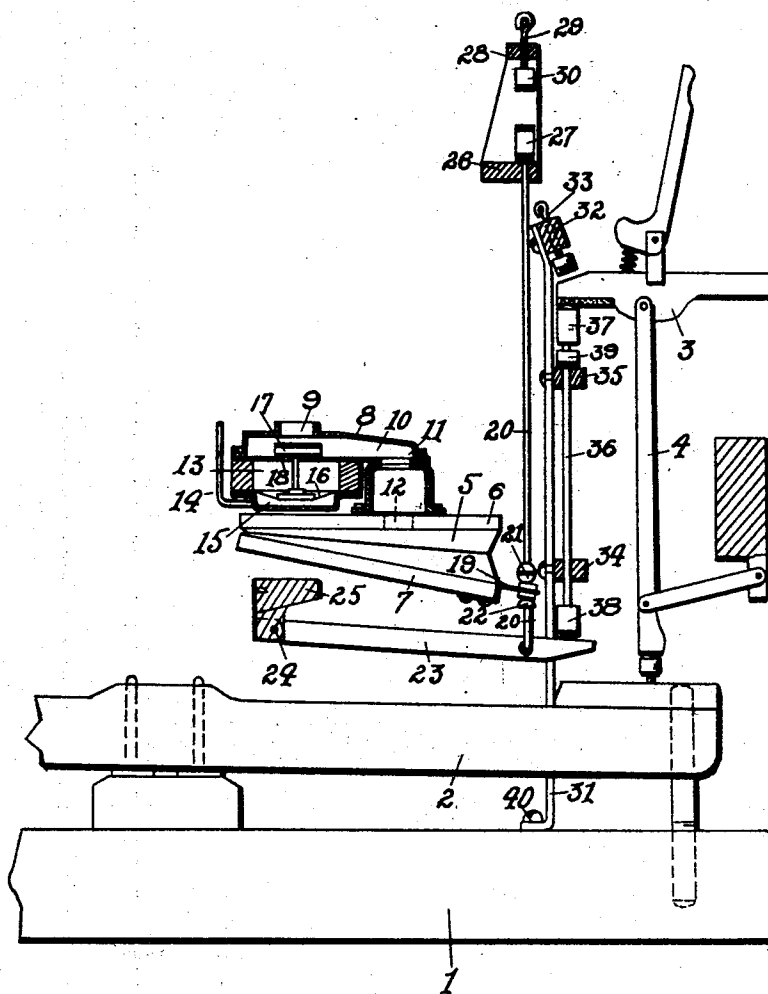
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PIANO PLAYER ACTION

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UNITED STATES PATENT OFFICE.

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PIANO-PLAYER ACTION.

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To all whom it may concern:

Be it known that I, CLAUS E. PETERSON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in a Piano-Player Action, of which the following, together with the accompanying drawing, is a specification.

My present invention relates to a new and improved method of connecting the player action with the sound producing mechanism of a piano, as hereinafter described and illustrated in the accompanying drawing, which represents so much of a player action and of the sound producing mechanism of a piano as is necessary to illustrate the construction and operation of my invention.

Referring to the drawing, 1 denotes the key bed, 2 the key, 3 the wippen and 4 the abstract of a piano, all constructed and operating in the usual and well known manner, which will be understood by those conversant with this class of musical instruments. The player action, of which a portion only is shown, is of the common and well known type known as "pneumatic", comprising a series of motor bellows, each having a valve controlling mechanism, by which a variation of air pressure is produced in the motor bellows as determined by the passage of a perforated music sheet over a tracker bar.

In the accompanying drawing, only one motor bellows and its associated valve mechanism is represented, the tracker bar and music sheet having been omitted, as the construction and operation of this class of pneumatic player actions is in common use and will be readily understood. My present invention relates only to the method of connecting the motor bellows of a pneumatic player action with the wippen of a piano and its connected sound producing mechanism. I have represented but a single motor bellows, represented in the accompanying drawing at 5, comprising a stationary leaf 6 and a movable leaf 7. The valve controlling mechanism 8 is of the usual and ordinary type employed in this class of player actions, in which the motor bellows 5 is alternately connected with the atmosphere through the air passages 9, 10, 11 and 12, or with a vacuum chamber 13 connected with an air exhausting mechanism, not shown. A pipe 14 connects a

chamber 15 with the perforations of a tracker bar which, when open to the atmosphere by the passage of a perforated music sheet, raises a flexible diaphragm 16 and lifts a valve 17 to close the air passage 9 and connect the motor bellows with the vacuum chamber 13 through the air passages 18, 10, 11 and 12, causing the motor bellows to be collapsed, thereby lifting an arm 19 connected to the movable leaf 7 of the bellows. The arm 19 embraces a rod 20 between the nuts 21 and 22. The rod 20 is pivotally connected at its lower end with a lever 23, pivoted at 24 to a stationary framework 25 forming part of the player action. The upper end of the rod 20 is screw threaded and capable of sliding vertically through a fixed framework 26 also forming part of the player action. Adjustably held on the screw threaded end of the rod 20 is a block 27, and directly above the block 27 and held in the framework 28 is an adjusting screw 29 carrying a block 30 to limit the upward movement of the rod 20.

Resting upon the key bed 1 is a strap 31 forming a part of the piano action and carrying at its upper end a bar 32 extending transversely across the piano and carrying adjustable screws 33 in position to serve as stops to limit the upward swinging movement of the wippen 3. The strap 31 carries two bars 34 and 35 having holes therethrough for striker wires 36 carrying a block 37 at its upper end arranged to strike against the under side of the wippen, and a block 38 at its lower end resting upon the free end of the lever 23. The striker wires 36 are screw threaded at their upper ends to carry the adjusting nuts 39, capable of being adjusted on the striker wires 36 and resting against the transverse bar 35 so as to limit the downward movement of the striker wires 36. By the construction above described, all the striker wires 36 are adjusted by the nuts 39 to bring all the blocks 38 in the same horizontal plane, and the rods 20 are adjusted by the blocks 27 to bring the free ends of the levers 23 in the same horizontal plane. The nuts 21 and 22 are also adjusted on the rod 20 so that the action of the motor bellows 5 will produce the desired angular movement of the lever 23. The strap 31, attached to the key bed 1 by means of a screw 40, and the parts supported by said strap form part of the piano

action. The player action, including the framework 25, 26, 28, together with the motor bellows and its valve controlling mechanism, can be withdrawn and again replaced 5 in position by sliding the free end of the lever 23 beneath the striker wire 36.

It will be understood that the motor bellows 5 together with the operative parts connected therewith will be duplicated for each 10 sound producing mechanism of the piano, only one player action having been shown in the accompanying drawing. The pneumatic portion of the player action may be of the type shown, or of any known construction 15 suitable to actuate the sound producing action of a piano. My present invention relates particularly to mechanism interposed between the pneumatic portion of the player action and the wippen of the piano and held 20 by the framework forming a part of the piano, but adapted to be actuated by a pneumatic bellows, whereby the pneumatically operated portion may be withdrawn and again replaced in position without disturbing 25 that part of the player action held by the framework of the piano. I accomplish this by operatively connecting each motor bellows with a lever pivoted at one end to a framework of the removable part of the action, and providing means for holding all 30 the levers in the same position and causing each of said levers to actuate striker wires held by the framework of the piano and interposed between said levers and the wippen 35 of the piano, with means holding the lower ends of said striker wires in the same horizontal plane, so the free ends of the levers can be withdrawn from beneath the striker wires and again replaced in position to actuate the striker wires. 40

The player action, according to my present invention, is divided into two sections, with one removable from the other; the removable section carrying the pneumatic portion of 45 the action comprising the motor bellows with their valve controlling mechanism and the levers 23 with the means for maintaining their free ends in the same horizontal plane, and the nonremovable section comprising 50 the striker wires 36 with means for maintaining them in the same horizontal plane supported by the framework of the piano.

I claim:

1. In a piano, the combination of a motor 55 bellows, a lever pivoted at one end to a fixed framework and extending beneath the motor bellows, a rod extending between said lever and the motor bellows, means coacting with said rod for limiting the movement of the

lever in both directions, a wippen, a striker 60 wire interposed between the free end of said lever and said wippen, and guides for said striker wire supported by the key bed of the piano.

2. In a piano, the combination of a motor 65 bellows supported in a framework removable from the piano, a lever pivotally held at one end by said removable framework and extending beneath said motor bellows, means for maintaining the free end of said lever 70 in a given position, a striker wire interposed between the free end of said lever and the wippen of the piano, and means independent of said lever for limiting the downward movement of said striker wire. 75

3. The combination in a piano, of a pneumatic player action comprising a motor bellows, a lever pivoted at one end and extending beneath said motor bellows and operatively connected therewith by a rod, and 80 means coacting with said rod for limiting the movement of the free end of said lever, said player action being removable from the piano, and a striker wire interposed between the free end of said lever and the wippen of 85 the piano, with said striker wire slidably supported by the frame of the piano.

4. The combination in a piano, of a pneumatic player action comprising a motor bellows, a lever pivoted at one end extending 90 beneath said bellows and connected therewith, means for limiting the downward movement of the lever, means for adjusting the space between the lever and the motor bellows, a striker wire mounted on the free 95 end of said lever and in contact with the wippen of the piano, a vertical strap attached to the key bed of the piano and a guide for the striker wire attached to said strap. 100

5. The combination in a piano of a pneumatic player action, comprising a motor bellows, a lever pivoted at one end to a fixed framework and extending beneath the motor bellows, with its free end adjustably connected therewith, a striker wire supported 105 on the free end of said lever, contacting with the wippen of the piano, a strap mounted on the key bed of the piano, guides for said striker wire attached to said strap, and a 110 stop to limit the upward motion of the wippen carried by said strap.

Executed this 19th day of June, 1920.

CLAUS E. PETERSON.

Witnesses:

RUFUS B. FOWLER,
NELLIE WHEALEN.