

No. 725,676.

PATENTED APR. 21, 1903.

W. F. COOPER.
STRIKING MECHANISM FOR AUTOMATIC PIANO PLAYERS.

APPLICATION FILED APR. 17, 1902.

NO MODEL.

Fig. 1.

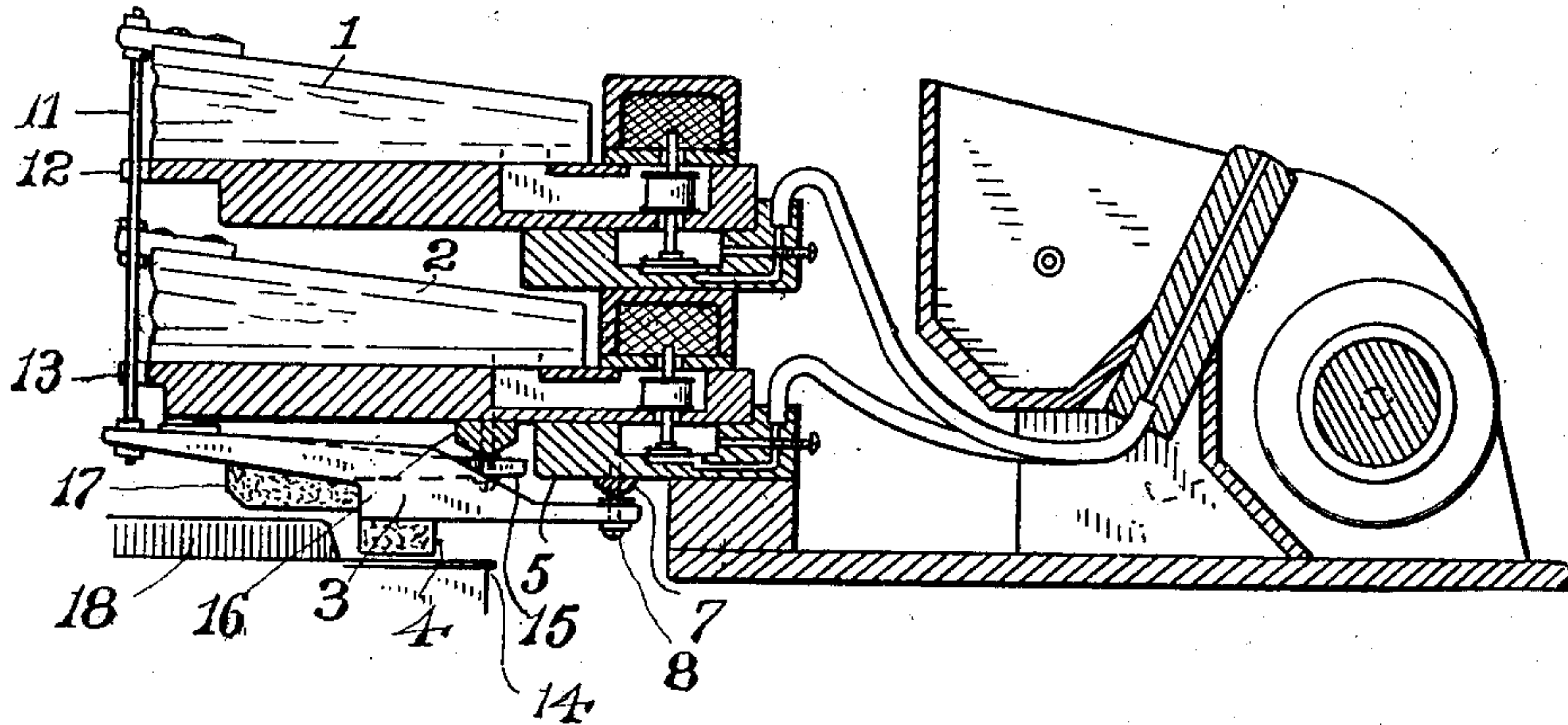
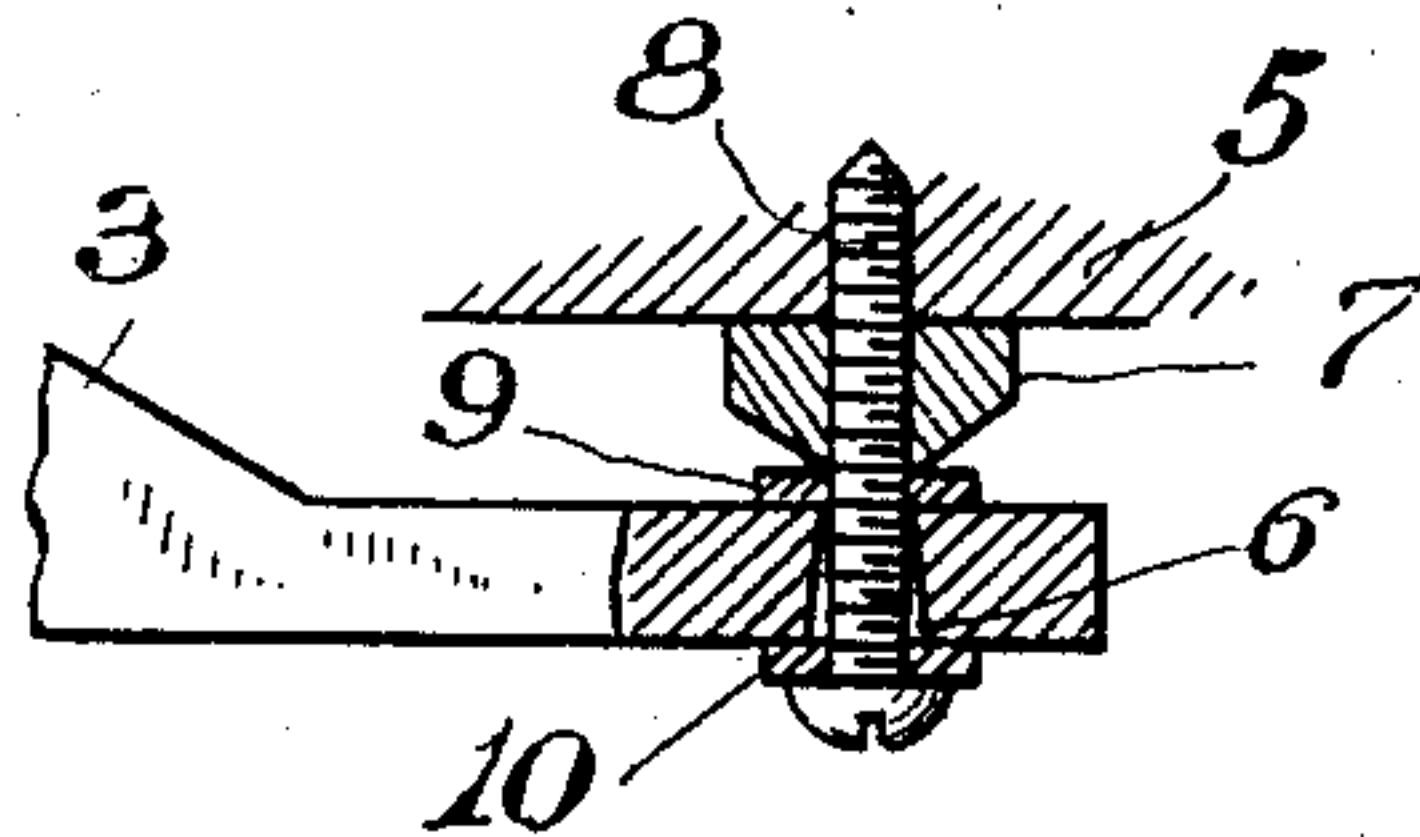


Fig. 2.



WITNESSES:

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STRIKING MECHANISM FOR AUTOMATIC PIANO-PLAYERS.

SPECIFICATION forming part of Letters Patent No. 725,676, dated April 21, 1903.

Application filed April 17, 1902. Serial No. 103,398. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. COOPER, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Striking Mechanism for Automatic Piano-Players; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to automatic piano-players, but more particularly has reference to the striking mechanism which is controlled by the operation of the pneumatics.

The object of my invention is to bring the action immediately over the keyboard, so that the line of striking is direct, and therefore the method of striking the keys is nearer the motion of the human finger in pianoforte playing, the result being that there is an absence of an automatic or mechanical expression so common to piano-players.

In the accompanying drawings, which form a part of this application, Figure 1 is a broken sectional elevation illustrating my improvement, and Fig. 2 a detail broken sectional elevation illustrating the manner of pivoting the strikers.

Similar numerals of reference denote like parts in both figures of the drawings.

My present improvement has nothing whatever to do with the regulation and control of the supply and exhaust of air with respect to the pneumatics, and therefore I will enter into no description of such supply and exhaust, since it is deemed sufficient for all practical purposes to state that the pneumatics respond to any suitable method of exhausting and supplying air, and I have in my present invention utilized the mechanical movements of the pneumatics in their collapse and recovery for the purposes of my improvement.

1 designates a pneumatic for controlling the striking mechanism for a white key, and 2 designates a pneumatic of controlling the striking mechanism of a black key.

3 is a striking-lever provided with the usual felt hammer 4, which lever is pivoted at its front end to a stationary part 5 of the attachment. The manner of pivoting these levers

is peculiar, and I will describe the same in detail. Through the front end of the lever is a conical-shaped opening 6, and secured to the bottom of the stationary part 5 is a conical-shaped protuberance 7. A screw 8 is passed from the bottom loosely through the opening 6, and driven within said protuberance and stationary part and interposed between the protuberance and the lever and between the protuberance and the head of the screw are felt washers 9 10, respectively. The conical-shaped opening 6 permits the lever to rock freely in that there can be no binding of the lever against the screw, and also said lever is capable of a very quick action and recovery.

11 is a rod secured at its upper end to the pneumatic 1 and extending downward in a vertical plane through guide-openings 12 13 in stationary parts of the attachment. The lower extremity of this rod is secured in any suitable manner to the extreme rear end of the lever 3, so that it will be clear that the latter will respond to any vertical movement of said rod.

The hammer 4 is directly over a white key 14, and as the pneumatic collapses and recovers the rod will reciprocate and thereby cause the lever to operate, whereby the key 14 will be struck by the hammer 4.

The striking mechanism for the black keys is constructed and operated in precisely the same manner as in the instance of the white keys, and therefore further detail description in this respect will be superfluous. I will merely state that I have illustrated a portion of one of these levers 15, which is pivoted to a protuberance 16, that is secured to the under side of a stationary part of the attachment, this lever being provided with a felt hammer 17, that is immediately above a black key 18, and that this lever is operated from the pneumatic tube in precisely the same manner as in the instance of the lever 3.

I have only illustrated two of the pneumatics; but of course it will be clear that there are as many of these pneumatics as there are black and white keys to be struck, and this simple illustration avoids the necessity of duplicating a great many parts that are all precisely alike and operate in the same manner.

It will thus be clear from the foregoing description that my improved striking mechanism is directly over the keyboard of a pianoforte and that the striking is direct. 5 Moreover, the employment of levers that are pivoted at one end and are connected at the other end with the striking-rods that operate directly over the keyboard enables me to do away to a considerable degree with the automatic and mechanical expression that is so 10 characteristic of piano-players.

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

15 1. In a striking mechanism for automatic piano-players, the combination of the pneumatics, the striking-levers pivoted at their front ends to a stationary element and carrying hammers at points intermediate their 20 length and arranged over the keys of the pianoforte, and the vertical striking-rods se-

cured at their upper extremities to the pneumatics and having their lower ends connected with the rear extremities of said levers directly over the piano-keyboard, substantially 25 as set forth.

2. A striking mechanism for automatic piano-players, comprising horizontally-disposed levers carrying hammers, said levers pivoted at their front ends to a stationary element 30 while their rear extremities are operated directly by the pneumatics, and hammers near the middle of said levers for striking the keys, the pneumatics thus having a proper leverage for operating the keys, substantially as 35 set forth.

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

WILLIAM F. COOPER.

Witnesses:

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M. T. LONGDEN.