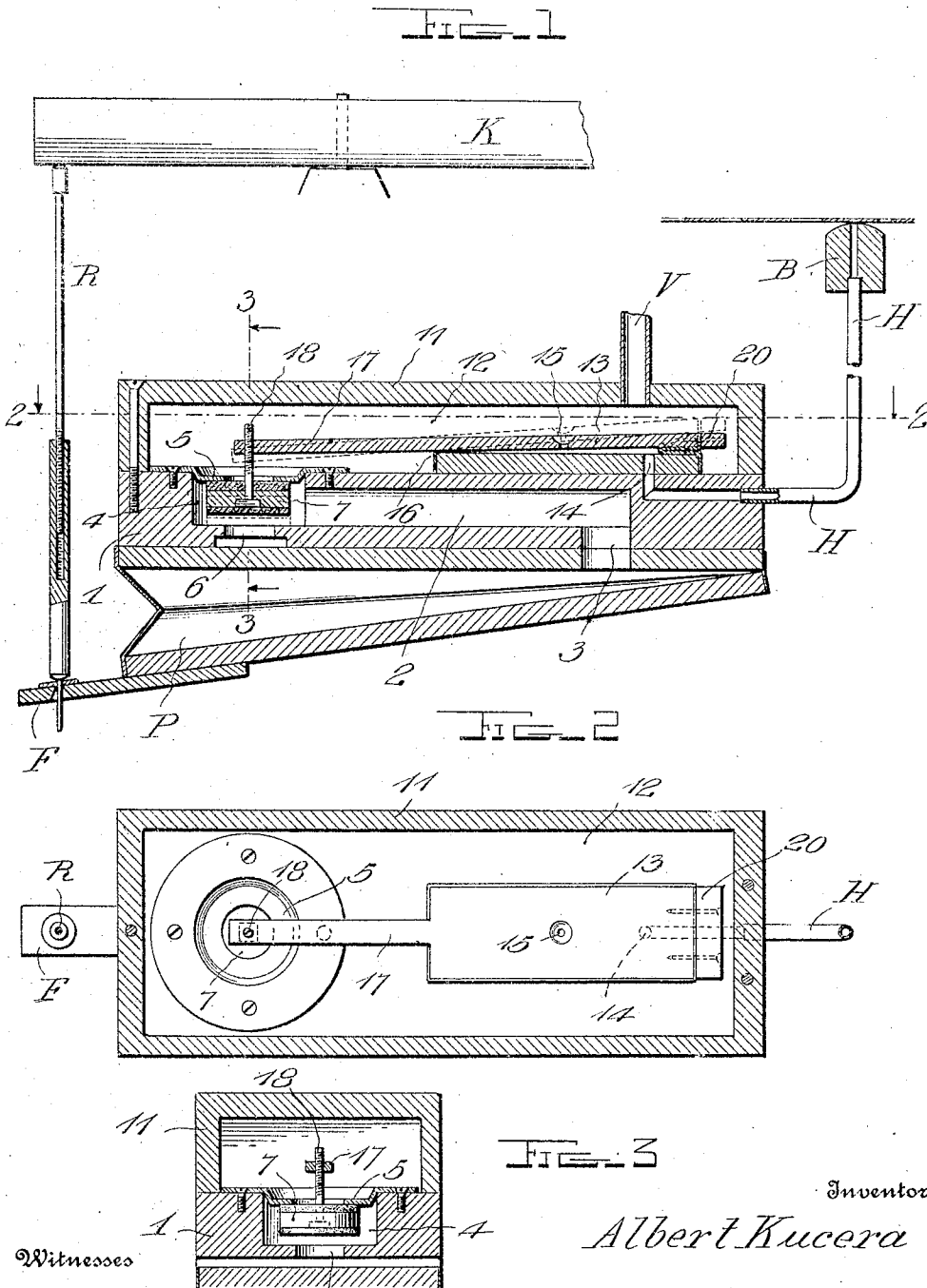


A. KUCERA.
 AUTOMATIC PIANO MECHANISM.
 APPLICATION FILED MAY 27, 1912.

1,051,961.

Patented Feb. 4, 1913.



Witnesses

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ALBERT KUCERA, OF CHICAGO, ILLINOIS.

AUTOMATIC PIANO MECHANISM.

1,051,961.

Specification of Letters Patent.

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Application filed May 27, 1912. Serial No. 699,956.

To all whom it may concern:

Be it known that I, ALBERT KUCERA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Piano Mechanism; and I do 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.

This invention relates to music, and more especially to automatic pianos; and the object of the same is to improve and simplify the construction of the valve-actuating mechanism in an instrument of this kind.

This object is accomplished by constructing the mechanism in the manner hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a central vertical longitudinal section through this mechanism complete; Fig. 2 is a horizontal section on the line 2—2 of Fig. 1; Fig. 3 is a transverse vertical section on the line 3—3 of Fig. 1.

In the drawings I have illustrated but one of the mechanisms employed in connection with an automatic piano, and of which there are generally eighty or ninety according to the length of the key-board—there being one of these mechanisms for each key. In the present case the key is diagrammatically illustrated and lettered K, and rod R connects it with a finger F on the pneumatic or power bellows P in such manner that when the latter closes the key is actuated and a note is struck. The letter B designates diagrammatically the duct bridge from which leads a rubber or other hose H to the mechanisms hereinafter described and constituting the gist of the present invention.

The numeral 1 designates the lower portion of the casing of this mechanism which is mounted upon and secured to the upper side of the pneumatic P in any suitable way and has a passage 2 communicating with said pneumatic through a port 3, and a valve chamber 4 at the front end of said passage surrounded at its open upper end by an overhanging valve seat 5 which is preferably a metal disk secured to the top of this portion 1 of the casing and having an aperture through its center as shown. The lower end of the valve chamber 4 communicates with air inlets 6 through the side of this portion of the casing as usual, and

when the valve 7 is raised the passage 2 is in communication with the open air, whereas the descent of the valve closes communication between the passage 2 and the inlets 6 and opens communication between said passage and the vacuum chamber.

The numeral 11 designates the upper portion or cover of the casing which is fitted upon the lower portion in any suitable manner and has connection at V to a vacuum pump or other device in the machine for extracting air from the vacuum chamber 12 which is surrounded by this cover 11 when it rests upon the lower portion of the casing. Within the vacuum chamber is disposed a smaller bellows 13, more specifically shown in Fig. 2 of the drawings, whose interior is connected as at 14 with the pipe or tube H leading to the duct bridge B. The lower side of this bellows is secured upon the top of the lower portion 1 of the casing as shown, and the upper side has a small vent 15 for a purpose to appear. Said upper side is continued beyond the pivotal point of connection 16 between the two sides of this bellows into a tongue or finger 17 which extends forward over the valve chamber 4 and is pierced with a hole in which is screwed the threaded upper end of a screw 18; and the body of this screw projects downward through the opening in the valve seat 5 and its head is fast in the valve 7. The object of this detail of construction is to permit adjustment of the connection between the tongue 17 and valve 7, and this can easily be accomplished by removing the cover and turning the screw in one direction or the other. The object of continuing the upper side of the small bellows 13 into the tongue 17, is to save material and simplify construction, and at the same time to render the action of said tongue entirely positive so that the valve will be opened when the bellows opens, and the valve will be immediately closed when the bellows closes. Finally I provide a weight 20 attached to the rear end of the upper side board of this bellows as best seen in Fig. 2, and this assists in closing the bellows after the opening in the music sheet has passed the duct bridge B.

The action of this mechanism will now be clearly understood to those familiar with this art. The air is exhausted from the vacuum chamber 12 through the connection V, and through the vent 15 this exhausts the air

from the interior of the bellows 13 and the interior of the duct bridge. When this bellows closes the valve 7 closes, and the outside air is thrown into communication with the striking bellows or pneumatic P through the ports 6 and the passages 2 and 3. When now a hole in the music sheet moves over the duct bridge and air is admitted through the hose H and inlet 14 to the interior of the bellows 13, the strong vacuum within the chamber 12 causes this bellows to move to the dotted position in Fig. 1 so that its tongue 17 descends and the valve 7 opens. This closes connection with the air inlets 6 and throws the vacuum chamber into communication with the interior of the pneumatic P, and the latter is closed and a note is struck on the piano. The parts stand in this position as long as the hole uncovers the opening in the duct bridge, but when the music sheet again closes said opening and no more air is admitted to the interior of the bellows 13, the latter closes as shown in full lines in Fig. 1, the valve 7 rises and closes communication between the vacuum chamber and the passage 2, and the latter is thrown into communication with the outside air through the air inlets 6 so that the pneumatic opens and the parts are restored to their original position.

Thus it will be seen that I have produced an extremely simple valve-actuating bellows for use in connection with an automatic piano mechanism; one that is positive and

quick in its action, has an adjustable connection with the valve so that it can be set to accommodate itself to various piano mechanisms, and yet one which by its location can be instantly removed and replaced in case it needs repair.

I do not limit myself to the materials or proportions of parts, nor to the exact details further than is set forth in the following claim:

I claim—

In an automatic piano mechanism, the combination with the duct bridge, the pneumatic, and the casing containing a vacuum chamber, a passage in communication with the pneumatic, and a valve chamber between said vacuum chamber and passage; of a valve in such chamber, a valve-actuating bellows located within the vacuum chamber and in communication with the duct bridge, the upper side of this bellows being continued beyond its pivotal connection with the lower side in a tongue extending over the valve chamber, a screw threaded through said tongue and connected to the valve, and a weight on said upper side.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALBERT KUCERA.

Witnesses:

JAMES NASH,

FRANK L. CAULKINS.