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J. W. DAVIS.

AUTOMATIC ORGAN ACTION.

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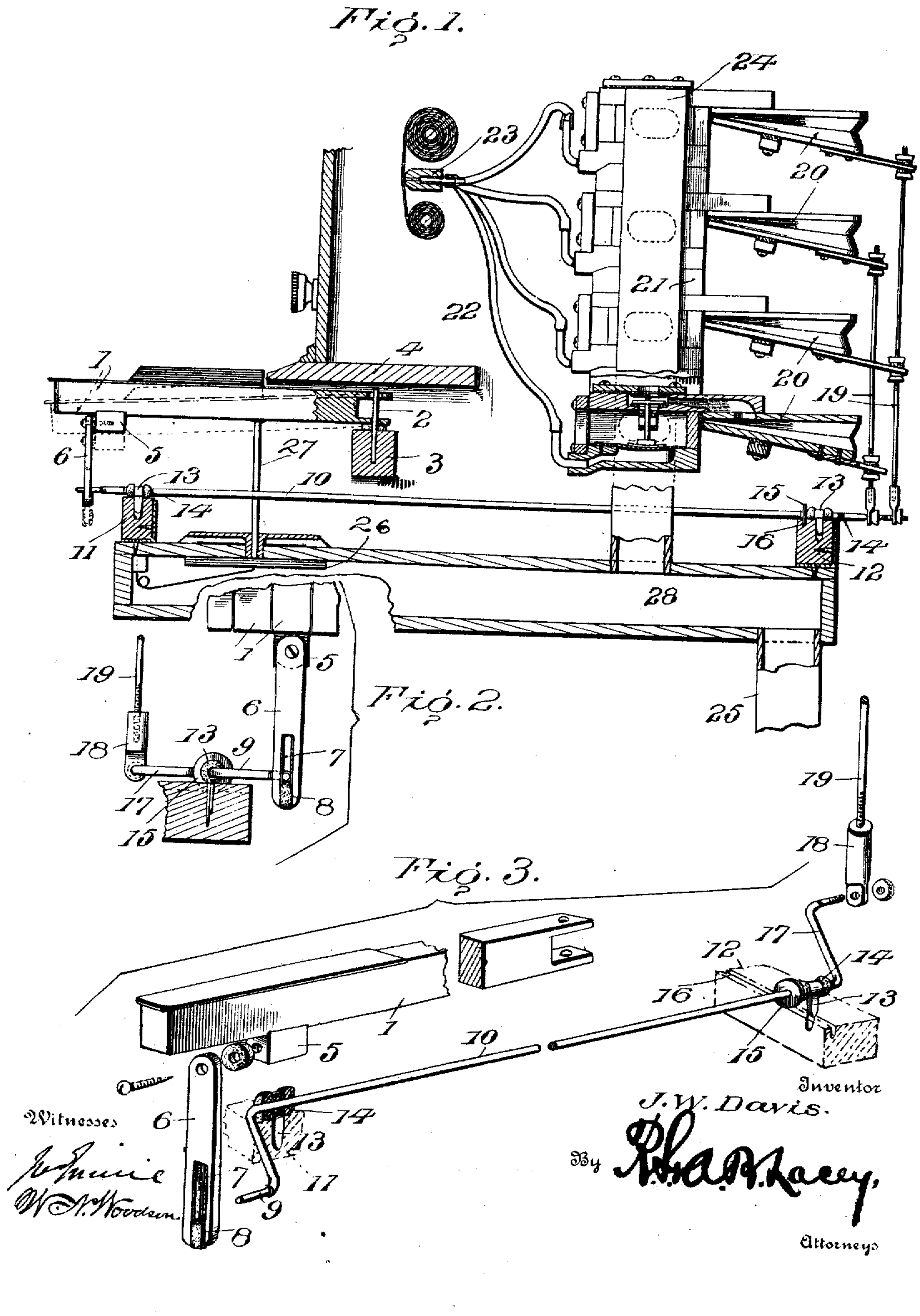

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UNITED STATES PATENT OFFICE.

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AUTOMATIC ORGAN-ACTION.

No. 845,165. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed September 26, 1906. Serial No. 336,211.

To all whom it may concern:

Be it known that I, JOHN W. DAVIS, a citizen of the United States, residing at Pulaski, in the county of Giles and State of Tennessee, have invented certain new and useful Improvements in Automatic Organ-Actions, (Case D,) of which the following is a specification.

This invention contemplates certain new and useful improvements in that class of automatic organ-actions in which the action is arranged so that the organ may be played automatically and manually at the same time without interference, the connection between the pneumatics or the other automatic actuating mechanism of the keys being such as to permit the manual depression of any of the keys without affecting the automatic mechanism.

The object of the invention is to provide in actions of this class improvements which may be incorporated or embodied in any ordinary organ structure without necessitating any material changes in the organ-playing mechanisms and without any disturbance of the same or interference with other proper functions.

The invention further provides instantaneous and ready access to the various parts of the improvement for the purpose of adjustment, repair, or the like without requiring the removal of the action as a whole or the disassembling of other than those parts requiring attention.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a vertical sectional view, with parts in side elevation, of so much of the automatic organ-action as is necessary to illustrate the features of the invention. Fig. 2 is an enlarged detail view illustrating particularly the connection between a key, its automatic-actuating rod, and the connection between the latter and one of the mechanical trackers leading to a pneumatic; and Fig. 3 is a detail perspective view of a key, its actuating-rod, and its mechanical tracker, together with their concomitant parts, the parts being separated and in juxtaposition to each other.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates a key of an automatically-actuated pneumatic organ; 2, the pin projecting from the key-rail 3 and upon which the key is removably mounted at its rear end to slightly swing in a vertical plane for the necessary actuation of the reeds or pipes, and 4 the front portion of the case, which, it is to be understood, is arranged to be removed conveniently whenever it is necessary to detach one or more of the keys 1. All of these parts may be of any desired construction and design, as they form by themselves no essential part of my invention and are described and shown for the purpose of illustration only.

Each key 1 is provided near its front free end and on the under side thereof with a block 5, to which the depending finger 6 is pivotally secured, as by screws shown. This finger is formed near its lower end with a longitudinal slot, the side walls of which are preferably padded with felt and the bottom wall of which is preferably provided with a felt pad 8. The outwardly-extending end of a crank 9 is loosely mounted within the slot 7 of the finger 6 in a manner so that the finger may be readily withdrawn therefrom whenever desired, either by unscrewing the finger from the key or by bodily removing the key from its support with the finger 6 remaining attached to the key. The crank 9 is formed on one end of a rod 10, which extends from front to rear of the organ below the keyboard and at any convenient elevation so as not to interfere with any of the couplers or other portions of the action, preferably immediately above the reed-board and between the latter and the couplers, and said rod is mounted to partially rotate about its longitudinal axis on transversely-extending rails 11 and 12, supported on the sound-box 28, as shown. The direct means for journaling the rod 10 on the rails is by means of staple-like bearings 13, the shanks of which are inserted within the rails, as shown, and which are provided with felt washers 14, encircling the rod, so as to preclude noise during the operation of the rod. In order to hold the rod properly in

its bearings and prevent endwise slipping, the rod is provided with a preferably integral collar 15, which fits within a longitudinal groove 16 in the rear bearing-rail 12, as shown particularly in Fig. 3.

The rod 10 is provided at its rear end with another crank, (designated 17,) the outstanding end of which is intended to be inserted within the sleeve 18 and have a pivotal movement therein, and said sleeve is adjustably secured on the lower end of a mechanical tracker or rod 19. The upper ends of these trackers are carried by the movable sections of the pneumatics 20, which are actuated from the wind-chest 21 in any desired manner, said wind-chest being operatively connected, by means of tubes 22, to the tracker-board 23.

24 designates an air-trunk which directly connects the wind-chest 21 to the sound-box 28, the latter being connected to the bellows (not shown) in any desired manner, such as that indicated at 25.

26 designates the pallet for the key shown, said pallet being operatively connected to the key by a tracker 27, attached to the key at the point indicated in Fig. 1.

In the practical operation of my improved organ-action any one or more of the pneumatics 20 may be automatically operated to raise its tracker, and thereby rock the rod 10 so as to depress the key 1 and at the same time sound the pipes or reeds controlled thereby. This is the ordinary action of pneumatics and by itself forms no part of my invention; but it is to be particularly noted that my invention consists in the arrangement of the cranked rod 10 in connection with the mechanical trackers 19 and also more particularly in connection with the fingers 6 of the keys 1.

It is obvious from the foregoing description, in connection with the accompanying drawings, that when the rods 10 are rocked by the pneumatics the respective keys which are operatively connected to the cranks 9 by means of the fingers 6 will be depressed by said cranks. At the same time other keys may be depressed manually without affecting their respective cranked actuating-rods, because of the loose or sliding connection provided for by the slots 7, in which the ends of the cranks 9 are mounted. Hence it will be seen that any of the keys may be depressed without affecting the automatic pneumatic action, which is a desideratum in the art to which this invention appertains, and, furthermore, it will be observed that by the detachable connection between the fingers 6 and the cranks 9 any one or more of the keys may be readily removed without affecting any of the other parts of the action. Furthermore, it is to be noted that the pneumatics 20 are located between the two ends of the rods 10, so that space is not only economized by this arrangement, but the mechanical trackers 19 are located outermost in an accessible position where they may be attended to readily by merely opening the back of the organ. Similar access to the fingers 6 and front ends of the rod 10 may be easily had by removing a front panel of the case, and any one or more of the rods may be removed without disturbing the others by merely detaching its bearings from the rails 11 and 12 and withdrawing it through either the front or back of the organ-case.

I have also observed in my experiments in constructing automatic organs, and it has been my observation of other automatic organs as well, that a serious difficulty arises in obtaining such adjustment of the suction from the bellows between the reeds or reed pipes and the pneumatics that actuate the pallets in opening them that either the bellows or the set of pneumatics may be actuated without interfering with or disturbing each other. In the ordinary construction of an organ (not self-playing) there is a sound-box, such as that indicated at 28 in the accompanying drawings, underneath and connected with the reed-board, and to this sound-box there is a pipe or other desired connection with the suction-bellows. When playing manually, by depressing any key upon the keyboard its corresponding pallet is opened, so that the bellows-suction causes that reed or pipe to speak. When a pneumatic action is placed within the case to perform mechanically and automatically, what is done manually by playing upon the key the set of pneumatics do by connecting with the suction-bellows. However, it must be understood that in addition to this ordinary and usual function of direct suction upon the reeds or pipes the suction-bellows must also actuate the pneumatics when the pneumatic action is placed in the case. In the usual construction a connection is effected between the pneumatics and the sound-box, so that suction upon the sound-box is also directed upon the pneumatics. The difficulty aforesaid is that when the suction-bellows is made strong enough to assume this additional load and actuate the pneumatics and their connections with the pallets it has also been strong enough to at the same time open the pallets, which are held normally closed by a slight spring. This produces a hissing or slight yet perceptible sound in addition to the sound from the reed actuated. A heavier spring to keep the pallets closed only requires a stronger bellows to actuate the pneumatics. Hence, as may be readily seen, there can be no relief from this source. By my invention I surmount this difficulty by obtaining practically the same leverage upon the tracker or rod which opens the spring-pressed pallet in my automatic construction as in the manual per-

formance. For example, by reference to Fig. 1 it will be seen that I still use the key leverage, pulling the keys from a point underneath and opposite the point on top of the keys that is pressed upon when playing manually.

Having thus described the invention, what is claimed as new is—

1. In an organ-action of the character described, the combination with a key and a pneumatic, of a rod mounted to turn about its longitudinal axis and provided at each end with a crank, a tracker connection between one crank and the pneumatic, and a depending finger pivotally secured to the key and having a detachable connection with the other crank of the rod.

2. In an organ-action of the character described, the combination with a key and a pneumatic, of a rod mounted to turn about its longitudinal axis and provided at each end with a crank, a tracker connection between one crank and the pneumatic, and a depending finger pivotally secured to the key and provided with a longitudinal slot in which the other crank is loosely mounted.

3. In an organ-action of the character described, the combination with a key and a pneumatic, of a rod mounted to turn about its longitudinal axis, rails upon which said rod is journaled, said rod being provided at each end with a crank, one rail being provided with a longitudinal groove, and the rod having a collar fitted in said groove, a tracker connection between one crank of the rod and said pneumatic, and a depending finger pivotally secured underneath the key near the front end thereof, said finger being provided with a longitudinal slot in which the other crank is loosely mounted, the arrangement being such that the key with the finger may be removed readily from the organ, substantially as set forth.

4. In an organ-action of the character described, the combination with a key, of a rod provided at one end with a crank, a depending finger pivotally secured to the key and having a slotted detachable connection with the said crank, and means for automatically actuating said rod, to depress the key.

5. In an action of the character described, the combination with a key, of a rod provided at one end with a crank, said rod being mounted to turn about its longitudinal axis, a depending finger pivotally secured to the key and having a slotted connection with said crank, and means for automatically actuating said rod to depress said key.

6. In an organ-action of the character described, the combination with a key, of an actuating-rod connected to the key near the front end thereof, said rod being mounted to turn about its longitudinal axis and extending rearwardly from the key from the front to the rear of the organ below the keyboard, a pneumatic located between the ends of said rod, and a tracker connected to the rear end of the rod and to the pneumatic, as and for the purpose set forth.

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

JOHN W. DAVIS. [L. S.]

Witnesses:
EUNICE C. FREEMAN,
BEN CHILDERS.