

E. H. WHITE & W. D. PARKER,
AUTOMATIC COMBINATION PIANO.

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UNITED STATES PATENT OFFICE.

EDWARD H. WHITE AND WILLIAM D. PARKER, OF MERIDEN, CONNECTICUT;
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AUTOMATIC COMBINATION-PIANO.

SPECIFICATION forming part of Letters Patent No. 579,623, dated March 30, 1897.

Application filed December 12, 1895. Serial No. 571,940. (No model.)

To all whom it may concern:

Be it known that we, EDWARD H. WHITE and WILLIAM D. PARKER, citizens of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Automatic Combination-Piano, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of the present invention is to provide an automatic combination-piano of simple and improved construction, having combined therein in a practically efficient and desirable manner, with the common upright piano-action and its manual-keys, a reed-organ attachment applicable to the space in front of the jack-lifter rods, an automatic operating mechanism beneath the key-table having actuating connections that upwardly engage the rear ends of the manual-keys and controlled by a traveling perforated music sheet, strip, or tablet, and wind-inducing devices, said mechanisms being relatively arranged and organized in a complete operative instrument, as more fully hereinafter explained; also, to provide a reed-organ attachment of the character described adapted for convenient placement upon and removal from the piano. These objects we attain by the mechanism herein illustrated and described.

In the drawings, Figure 1 is a vertical sectional view of such parts of the piano and combined mechanism as will illustrate our invention. Fig. 2 is a vertical longitudinal section through one end of the reed-box, looking from the front; and Fig. 3 is a similar section at the other end of the reed-box.

The piano upon which our invention is employed is of the common upright type. The piano-action A, strings S, and manual-keys K being arranged in well-known manner need not be herein more particularly described. For operating this instrument automatically we preferably employ mechanism of the nature of that described in Letters Patent No. 470,323, dated March 8, 1892, or in which the manual-keys K are each worked by a pit-

man or lifter J', that acts for raising the rear end of the key by force imparted thereto from a pneumatic or power device disposed beneath the key-table *a* and controlled from a traveling music sheet, strip, or tablet M, the propelling power for which is generated by a suitable motor. (Not shown.) The wind-inducing apparatus D, the motor-engine, and connections for operating the music-sheet rolls therefrom, and the means for controlling the impulses of the automatic-operating mechanism can be of well-known suitable construction. For instance, in the mechanism shown, F indicates the upright operating pneumatics within the chest C, that act to lift the puppets J by the levers I or cranked wires, G the valves for the inlet-leader F', and *h* the controlling pneumatics that act to move the valves G, as influenced by the inflow of air in the ducts *b* of the tracker B, when the music-sheet perforations pass the same. These parts and their operation will be understood, all being substantially as set forth in the above-named prior patent.

R indicates the improved reed-box, which is arranged across the piano adjacently in front of the jack-lifter rods *m* and above the rear part of the manual-keys K within the space between said jack-lifter rods and the upright front of the case A'. Said reed-box is provided with reed-cells 2 for one or more sets of organ-reeds 4, which are inserted in the respective cells for sounding in the usual order; also, with a wind-chest chamber 3 and a cut-off valve chamber 6, beneath the reed-cells, and into which latter chamber the air-ducts from said reed-cells lead. Valves 5 are arranged over the openings of the reed-cells, said valves being hinged to the reed-box and having suitable springs for closing them to their seats. The free end of the valves is arranged for engagement with a lifter or operator, which preferably consists of a vertical pitman-pin 7, disposed beneath the end of the valve and supported for endwise vertical movement by suitable guides on the reed-box. The lower end of said pitman 7 stands upon the manual-key (or upon the adjuster which is connected thereto) just forward of the jack-lifter *m*, that works the pi-

ano-action devices, so that the piano-hammer and the reed-playing valve are together operated in conjunction with the upward movement of the key end for simultaneously sounding the string and reed.

The reed-box is removably supported at its ends by suitable ledges or brackets 9, in connection with the piano case or frame, and retained in place by detachable fastenings *f*, so that it can be readily taken out and replaced. When in position, the wind-chest 3 matches upon and makes connection with a wind trunk or conductor 10, leading to the air-exhausting bellows D, which are located at the back of the frame.

A mute or cut-off valve 8 is provided within the chamber 6, by which the flow of air from the reed-cells and chamber 6 into the wind-chest 3 can be stopped or controlled at will. Said valve 8 is operated by connections 12 at the end of the reed-box, which connections may extend to a convenient position at the front of the instrument, where a suitable pull or actuating device is provided for moving the same, as desired.

In some instances, if desired, the valve 5 or the pitman 7 can be engaged and lifted by a pin or lug carried upon the jack-lifter rod *m*. (See dotted lines at *n*.) We prefer, however, to step the pitman upon the key.

By combining the reed-box and its mechanism with the piano and automatic operating mechanism in the manner described a structure is produced that can be manufactured and assembled with economical facility and which is applicable for attachment to upright pianos now in general use without expensive alteration of the piano structure. The reed-box can be readily fitted and arranged in position, is easily accessible, and the playing of the reed-valves is in positive unison with the piano-action, while its operation can be performed either manually or automatically, at the will of the operator.

Our improvement, as herein shown, can be applied to automatic pianos in which the manual-keys receive impulse from electric actuators disposed beneath the keys (see dotted lines *x*) as well as for pneumatic mechanism, and we desire to include such use as within the scope of our invention.

It will be understood that we do not herein claim combining a reed-organ and piano, broadly or irrespective of the described struc-

tural arrangement and mode of operation of the appliances; but

What we claim herein, and desire to secure by Letters Patent, is—

1. In an automatic combination piano and organ having the usual upright-piano action, the key-table and manual-keys; the automatically-controlled actuating mechanism arranged beneath the key-table and having upright lifters that upwardly impinge against the rear ends of said manual-key, the reed-box R adapted to the space between the jack-lifters and upright front of the case, its ends extended to and removably supported in connection with the case or frame by ledges and detachable fastenings; said reed-box provided with reed-cells 2 containing reeds 4, and inclosing the longitudinal wind-chest chamber and intermediate cut-off-valve chamber 6 with the sliding cut-off valve therein, the exhaust-bellows having the forwardly-extending wind-trunk 10 onto the open end which said wind-chest matches, the playing-valves 5 overlying the reed-cells, and the upright pitman-pins arranged for moving said playing-valves in unison with the jack-lifters, said parts being constructed, combined and operating, all substantially as and for the purposes described.

2. In combination, with the piano case and action having the manual-keys and upright jack-lifter rods, the removable reed-box, as shown, adapted to stand above the manual between said jack-lifter rods and the upright front of the case, its ends retained by supports and detachable fasteners; said box provided with reed-cells, reeds and valves, and carrying, confined in guides thereon, the series of upright valve-pins stepped upon the keys adjacent to and working in conjunction with the respective jack-lifters, the automatic operating mechanism, as described, disposed underneath the key-table, and the series of lift-rods actuated thereby, upwardly impinging against the rear ends of the manual-keys, all substantially as set forth.

Witness our hands this 5th day of December, A. D. 1895.

EDWARD H. WHITE.
WILLIAM D. PARKER.

Witnesses:

C. L. PIERCE,
E. M. BALDWIN.