(No Model.) 2 Sheets—Sheet 1.

W. H. YOUNG.

PIPE ORGAN.

No. 346,450. Patented July 27, 1886.

Fig. 1

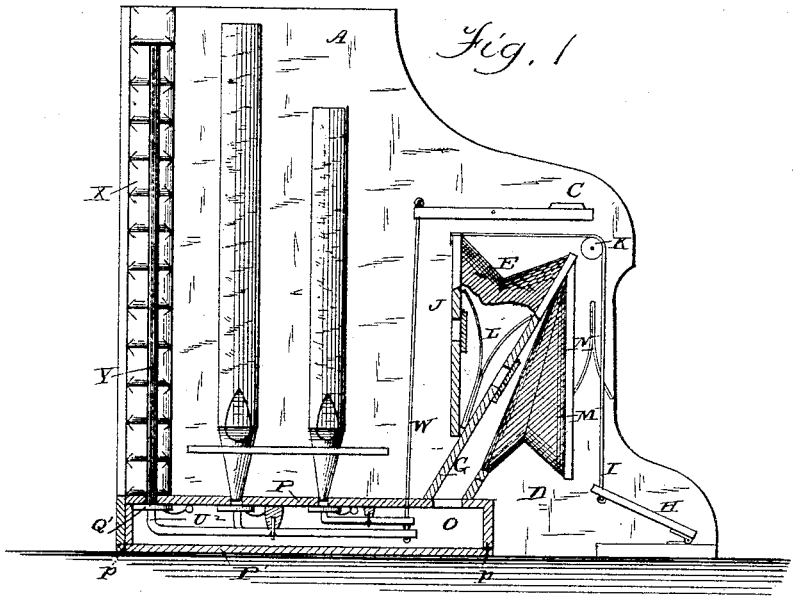
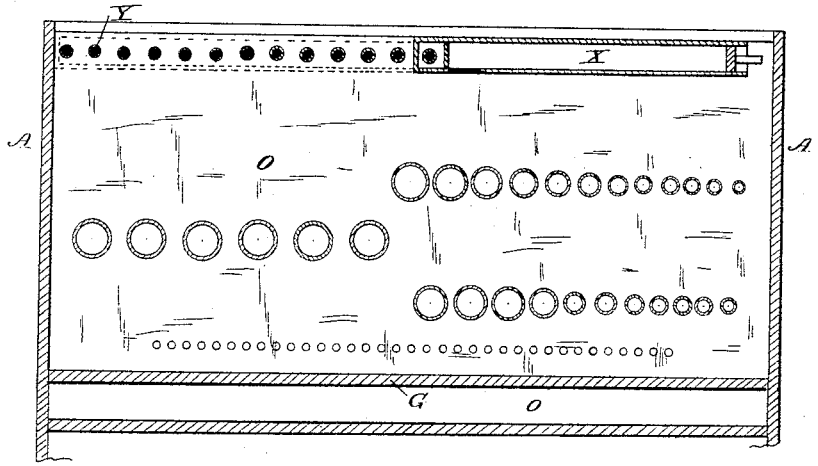


Fig. 2.



Witnesses;

J. S. Barker.

N. N. Low

Inventor;

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attys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

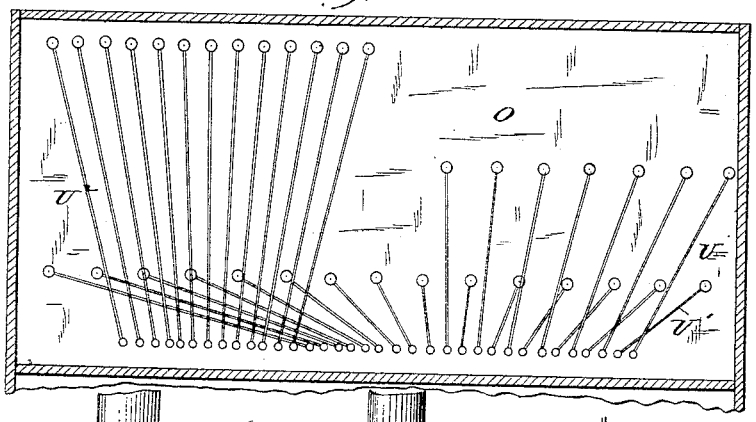


Fig. 4.

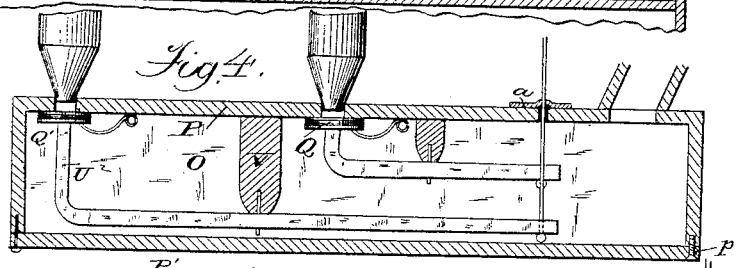
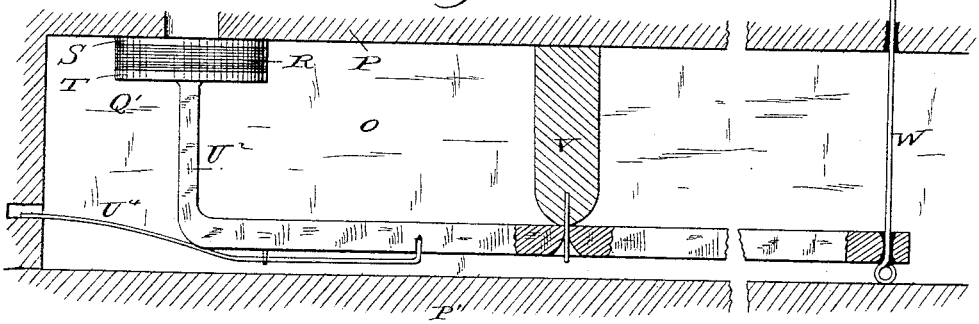


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY YOUNG, OF WILMINGTON, DELAWARE, ASSIGNOR OF ONE-HALF TO BERNARD MACMACKIN, OF SAME PLACE.

PIPE-ORGAN.

SPECIFICATION forming part of Letters Patent No. 346,450, dated July 27, 1886.

Application filed March 27, 1882. Serial No. 56,418. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY YOUNG, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Pipe-Organs, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a vertical section of an organ embodying my improvements. Fig. 2 is a horizontal section of the same. Fig. 3 is a view showing the relative positions of the levers between the valves under the pipes and the trackers under the keys. Fig. 4 is a detailed view in section showing the plan of connecting the levers and the valves. Fig. 5 is a view on an enlarged scale of one of the valves and the lever connected therewith.

A portion of the casing is shown, A A being the end pieces therefor, and C the key-board supported thereon. Under the key-board there is a space or chamber, D, between it and the lower edge of the organ, and in this space I arrange the feeders E and the reservoir. The feeders and the reservoir are situated upon opposite sides of a transverse inclined partition, G, the lower end of which is connected with the wind-chest, and the upper end of which is supported in any suitable manner in the casing under the front edge of the key-board.

H represents the pedals, which are connected by flexible cords or straps I with the movable boards J of the feeder, the cords passing over rollers K. The boards J are returned by means of springs L, and the movable boards M of the reservoir are pressed by swallow-tailed steel spring or springs N, to force out the wind. The reservoir has a passage-way extending downward into the wind-chest. The latter is situated in the lower part of the organ, at the bottom preferably.

The pipes rest directly upon the wind-chest, and by means of the construction and arrangement of parts which I have devised I avoid the necessity of expensive and complicated means heretofore used in the form of grooving boards and channel-boards for conducting the air from the chest to the pipes.

Within the wind-chest I arrange a large part of the mechanism which is essential for admitting the air to and shutting it off from the pipes. That is to say, I mount the valves and the levers directly within the wind-chest and connect the trackers W, which pass down from the keys through the top of the chest, directly to said levers. The pipes are provided preferably with feet, which are mounted on the wind-chest, as shown in Fig. 4. Below the upper wall of the chest are the valves Q. Each is formed with a wooden block, R, a leather packing, S, and a leather joint, T, by which latter the block is fastened to a lever. By following this plan of construction and arrangement I have all the necessary latitude for choosing a suitable position for any pipe or set of pipes. I cannot only arrange the pipes or sets of pipes of one tonal series or set closely together or farther apart, but I can place some of them nearer to the front and others farther therefrom, to accomplish any of many purposes. The smaller pipes require less space around them for speaking-room than that required by the larger pipes, and therefore they can be placed over one part of the wind-chest with a proximity to each other proportioned to their size, so that there is left a large space in which to plant larger pipes and to give them sufficient room. If necessary, they can be put, as said above, some nearer to the front and some farther back.

The levers in the chest which operate the valves are of different lengths, although each is directly connected to its tracker. The front end of each extends to a point in front of the front line of pipes, although the rear ends and the valves carried thereby are at different distances from the front. These levers oscillate vertically about fulcrums formed for them on cross bars or rods V, situated inside of the chest. Those levers which operate the front valves have the horizontal parts thereof situated higher than the corresponding parts of those levers which are connected with the valves that are farther back.

By referring to Fig. 3, it will be seen that there is a perfect freedom in the matter of the direction of the valve-levers—that is to say, each may be situated in any required direction, to connect properly with its valve.

At the rear part of the wind-chest are mounted wooden stopped pipes X X. As shown, they are arranged on horizontal lines, the shortest at the bottom and the longest at the top. Y Y represent the feet of these wooden pipes, extending from the wind-chest to their respective pipes. The feet of these are closed by valves Q', similar to valves Q^2, and with them are connected long levers U^2.

U^4 represents the spring, by which each valve is returned to its place after it has been opened.

A diaphragm, *a*, of buckskin is placed over the aperture for each tracker-rod. This is flexible, and prevents the escape of air from the chest, being more efficient than the diaphragms of other materials that have been used.

I am aware of the fact that use has heretofore been made of devices, such as shown in the English Patent No. 4,553 of 1875, to Thomas W. Barber—that is to say, of a wind-chest having the pipes resting directly thereon, trackers extending into the chest from the top, and between each tracker and its valve two squares or bell-levers connected together by cords or tapes for operating the valve, and each tracker being connected with two or more valves—and I do not wish to be understood as claiming any such construction as my invention. Another feature in the last aforesaid organ is having both the reservoir and feeders directly below the wind-chest.

I am also aware of the fact that in earlier patents there are shown valves bearing against the board upon which rest the pipes, and having stiff levers arranged to swing vertically.

A portable organ having its pipes constructed and arranged as are those of mine, possesses numerous advantages over those heretofore in use. I have no reservoir below the wind-chest, and therefore can lower the latter and the pipes with it, this bringing of the pipes low being one of the essential requisites in a portable organ containing pipes. I remove the reservoir from below the chest and pipes, and mount it horizontally opposite the pipe-chamber, and hence not only make it possible to enlarge the wind-room, but also to bring the pipes low, as aforesaid.

A system of levers of the character of mine is much cheaper, simpler, and more durable than were those having tapes and two or three bell-levers for each valve. When the cords, squares, or bell-levers were used, great care had to be exerted to get all the squares which operate any given valve in the same plane, otherwise it would be inoperative, and even after they have been fixed properly they are liable to be easily disarranged. By using levers of the character which I have shown no such adjustment is necessary, as the lever extends from the tracker-rod to the valve.

I know of no construction prior to my invention having the trackers each connected with a single separate valve, one tracker extending to a lower point than another, and adapted to operate its valve simultaneously with that of the shorter tracker. In devices like that in the aforesaid patent to Barber a lower valve-lever operated only when another lever above it and connected to it also operated—that is to say, each tracker in those organs was intended to operate two valves, and therefore the levers in the lower tiers were not analogous to the lower levers in my construction. In mine each lower lever is connected with its tracker independently of all the upper levers, and is separated therefrom. This enables me to plant the pipes nearer to the front or farther back, or in any desired position, and to arrange each valve-lever at any angle to the key-board that I prefer, as each valve, each lever, and each tracker is independent of the other.

It is not practicable in constructions like that in the said English Patent No. 4,583 of 1875 to arrange the pipes of any given set at option over the top of the wind-chest, because each valve is connected with one or more valves of another distinct set or stop, and hence they must be arranged substantially so that no lever or tape inside of the wind-chest shall cross any other. By employing rigid levers of the character of mine and connecting each separately with its tracker, said levers being mounted in different planes vertically, I can have great latitude, as aforesaid, in placing my pipes. The fulcrums of the longer levers, it will be seen, are situated farther from the front than the fulcrums from the shorter levers, and in this respect the organ is different from those known heretofore, having several tiers mounted directly within the wind-chest, for in the latter the fulcrums of the levers to which the trackers were connected have all been mounted in the same vertical plane and at the same distance from the front, the employment of several levers between each tracker and its valve insuring that the valves shall all be withdrawn from their orifices to a common distance. After simplifying the construction as I have and employing a single stiff lever for each pipe, extending from the tracker to the valve, the valves of the longer levers would be thrown farther away from their orifices if their fulcrums were all the same distance from the front; but by arranging the fulcrum as I have I insure that the valves of the longer levers shall not be withdrawn any farther than those of the shorter.

In another respect my organ differs materially from those heretofore known, in that I arrange the square wooden base-pipes relatively to the levers, the wind-chest, and the cylindrical metal pipes in a novel way.

Prior to my invention no organ was, to my knowledge, constructed with the features in this respect which I have devised—that is, with these wooden base-pipes in a common vertical plane on the back line of the pipe-chamber and extending from end to end thereof, they resting directly upon the top wall of the wind-

chest proper, and having their feet resting in orifices in said top wall, in combination with long stiff levers extending continuously from the plane of the trackers back to the vertical plane of said pipes, and also front metal pipes standing vertically on the top wall of the chest forward of the wooden base-pipes, and short stiff levers mounted directly within the wind-chest, and extending from the plane of the trackers to the valves of the said pipes.

I know that use has been made of horizontal channel-bars combined with wooden base-pipes, all situated at one end or corner of the pipe-chamber. Again, wooden base pipes have been arranged so as to extend from end to end of the pipe-chamber, as illustrated in Patent No. 77,003 to Felgemacher and Derrick; but in the organs last alluded to, not only was use made of the ordinary horizontal channel devices, but also of a vertical supplemental set of channel devices communicating with the horizontal ones, and to which the feet of the base-pipes were connected horizontally.

My construction and arrangement enables me to dispense with many of the incidentals necessary in these instruments as heretofore constructed. Of course it will be understood by those acquainted with instruments of this sort that the construction which I have shown can be modified more or less without departing from the spirit of the invention—that is to say, some of the features which I have described can be employed in portable organs of one character, and others can be employed in organs somewhat different.

I do not herein claim any of the combinations which I have specifically set forth in the claims in the patent heretofore granted to me, No. 272,181, February 13, 1883, which was a division of this case.

What I claim is—

1. In a pipe-organ, the combination of the following elements, constructed and arranged substantially as hereinbefore set forth, viz: a wind-chest situated at the bottom of the organ and extending substantially from the back to the front thereof, the sounding-pipes situated above and resting directly upon the wind-chest, the valves within the wind-chest, the levers in the wind-chest for operating the valves, and the bellows above the wind-chest, substantially as set forth.

2. In a pipe-organ, the combination of the following elements, constructed and arranged substantially as hereinbefore set forth, viz: a wind-chest situated at the bottom of the organ, a bellows above the wind-chest and beneath the key-board, and the sounding-pipes situated above and resting directly upon the wind-chest, substantially as set forth.

3. In a pipe-organ, the combination, with the sounding-pipes and the bellows, of the herein-described wind-chest situated below the bellows and at the bottom of the organ, it being made with a top which operates as a sounding-board, and having the valve-operating devices secured thereto, and the removable lower side, substantially as and for the purposes set forth.

4. In a portable pipe-organ, the combination of the casing, a key-board therein, the wind-chest situated below the key-board in the lower part of the organ, the pipes resting directly upon the wind-chest and situated at various distances from the front, the valves within the chest for the pipes, the valve-levers inside thereof of various lengths, the longer levers carrying the rear valves, and the lever-fulcrums situated at various distances from the front, those nearer the front carrying the shorter levers and those farther back carrying the longer levers, substantially as set forth.

5. In a portable organ, the combination of the casing, the key-board therein, the wind-chest below the key-board in the lower part of the organ, the pipes resting directly thereon at various distances from the front, the trackers passing through the top of the wind-chest in front of the pipes, the valves for the pipes within the chest, the valve-levers of different lengths, each lever fastened at one end to a valve and at the other directly attached to a tracker, all of the levers projecting to the front of the pipes, and two or more fulcrum-supports for the levers, the fulcrum-supports for the longer levers being farther from the front than the supports for the shorter levers, substantially as set forth.

6. In a portable pipe-organ, the combination of the casing, the key-board therein, a wind-chest below the key-board in the lower part of the organ, pipes resting upon the top of the wind-chest at various distances from the front, valves within the wind-chest for said pipes, and bearing against the top wall of the chest, valve-levers mounted directly within the said wind-chest, and situated at various diverging angles relatively to the line of the key-board, each valve being connected to a single lever independently of all the other valves, substantially as set forth.

7. In a portable pipe-organ, the combination of the inclosing-casing, the key-board, a wind-chest below the key-board in the lower part of the casing, pipes resting upon the top wall of the wind-chest, valves in the chest, valve-levers in the chest, trackers extending downward into the chest, feeding-bellows, a reservoir horizontally opposite the pipe-chamber and in front of the rear line of pipes and in rear of the front line of the key-board, whereby the lower ends of the pipes may be brought below the reservoir without decreasing the area of the pipe-chamber and without increasing the diameter of the whole from front to rear, substantially as set forth.

8. In a portable pipe-organ, the combination of the following elements, constructed and arranged substantially as set forth, namely: an inclosing-casing, a key-board therein, a wind-chest below the key-board in the lower part of the organ, pipes resting directly upon the top wall of the wind-chest, the valves and valve-levers situated directly within the wind-

chest, the feeding-bellows, and a reservoir horizontally opposite the pipe-chamber, and a vertical passage-way from which the air passes downward from the reservoir through the top of the wind-chest, substantially as set forth.

9. In a portable pipe-organ, the combination of the following elements, constructed and arranged substantially as set forth, namely: an inclosing-casing, a key-board therein, a wind-chest below the key-board in the lower part of the organ, valves and valve-levers mounted directly within the wind-chest and supported upon the walls thereof, one of the walls of said wind-chest being removable and free from the aforesaid operative parts of the organ mechanism, whereby said wall can be detached without affecting any of said parts, substantially as set forth.

10. In a portable pipe-organ, the combination of the following elements, constructed and arranged substantially as set forth, namely: the outer casing, the key-board therein, a wind-chest situated below the key-board in the lower part of the organ, valves within the wind-chest bearing against the top wall thereof and arranged at different distances from the front, long valve-levers connected with the rear valves and also connected with the trackers, shorter levers connected with the front valves and also connected directly to their trackers, and a series of wooden base-pipes, all arranged in the same vertical plane and resting upon the rear part of the wind-chest, and extending from end to end of the pipe-chamber, with vertically-arranged feet fitted to vertical orifices in the top wall of the wind-chest, said orifices corresponding to the aforesaid valves carried by the longer valve-levers, substantially as set forth.

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

WILLIAM HENRY YOUNG.

Witnesses:
D. HOWARD WEEKS,
BERNARD MACMACKIN.