(No Model.)

T. CAHILL.

ORGAN.

No. 345,028. Patented July 6, 1886.

Fig. 1.

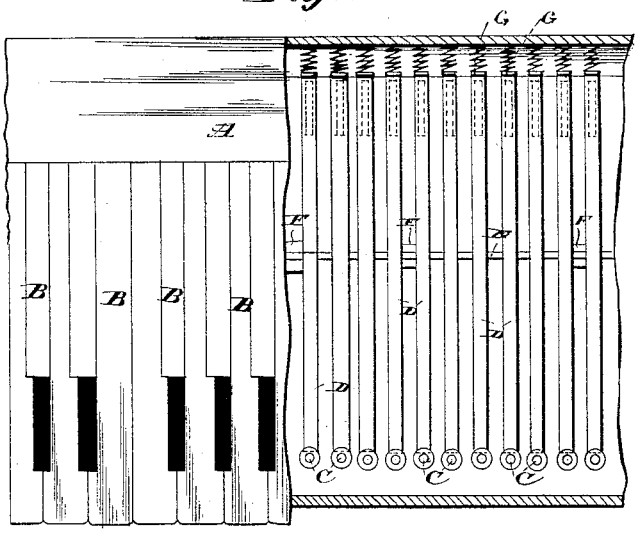


Fig. 2.

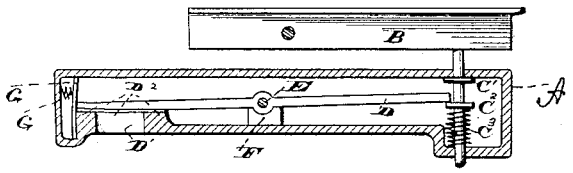


Fig. 3.

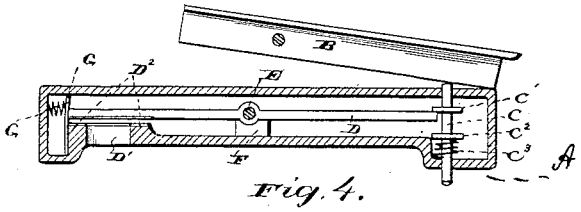
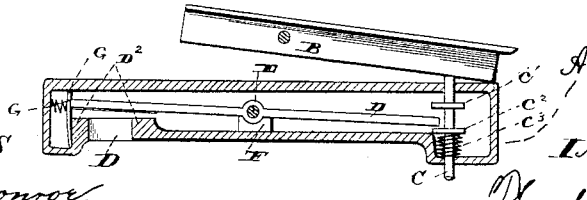


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

THADDEUS CAHILL, OF OBERLIN, OHIO, ASSIGNOR OF TWO-THIRDS TO TIMOTHY CAHILL, OF SAME PLACE.

ORGAN.

SPECIFICATION forming part of Letters Patent No. 345,028, dated July 6, 1886.

Application filed August 14, 1885. Serial No. 174,389. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS CAHILL, a citizen of the United States, residing at Oberlin, in the county of Lorain and State of Ohio, have invented a new and useful Improvement in Organs and all other Keyed Wind Instruments Similar thereto. For this invention I have received no Letters Patent, and of it the following is a specification.

The object of my invention is to give to organs and similar instruments the capability of varying their tones in loudness in accordance with the touch of the fingers upon the keys; and my invention consists in governing the loudness of the tones of organs and similar instruments by valve mechanism so constructed and combined with the keys of said instruments as to regulate the flow of wind and vibrations from the tone-producers in accordance with the rapidity with which the keys are depressed, and while I have devised many mechanisms by which my invention can be carried into effect, I do not limit myself to any particular forms and details of mechanism, as my invention does not consist solely in such things, but is the first application to an organ of mechanism whereby its loudness of tone can be governed in all degrees of piano and forte by and in accordance with the stroke upon the keys.

I have not considered it necessary to describe or draw the frame, bellows, stops, reeds, and other parts of cabinet-organs, since I change them in no respect; but I have represented and described only those parts which are intimately connected with my invention.

With reference to the accompanying drawings, Figure 1 is a plan view of the wind-chest, showing it in its position with reference to the keys of a common instrument, the right half of the figure being in horizontal section, with the cover of the chest removed, so as to show my mechanism. Fig. 2 is a side elevation in section of my device, showing the different parts in position when the finger-key is at rest. Fig. 3 is a side elevation in section through the valve-chest, showing the parts as in position when the key has been gently depressed. Fig. 4 is a view similar to the preceding, showing the position of the piano-forte wind-valve when the key has been depressed by a strong stroke.

To describe my invention with reference to the accompanying drawings, the valve-chest A is beneath the finger-keys B B B, which are similar to those in ordinary use, or may be of any other desirable pattern. A number of movable pins, C C C, one for every key of the instrument, pass through the top of the wind-chest A and project above it, having their upper ends immediately under the keys B B B, so that when any one of the finger-keys is depressed it depresses at the same time one of the pins C C C. Within the valve-chest A each one of the pins C C C has two circular flange-like projections, C′ and C², and below the lower flange-like projection, C², is a spiral spring, C³. Between the flange-like projections C′ and C² is the end of the piano-forte wind-valve D. There are as many of these piano-forte wind-valves as there are keys, and they are all set upon the rod E, which rod is suitably supported by the projections F F F of the valve-chest A. Each of the piano-forte wind-valves D D D covers a port or wind hole, D′, in the lower part of the valve-chest A. From this wind-hole D′ in the lower part of the valve-chest A the wind, which has been supplied to the valve-chest A from any suitable source, passes through any suitable passages to the reeds or other tone-producers. The piano-forte wind-valves D D D are balanced upon the rod E, and are pressed at one end by the lever-springs G G G, so that said piano-forte wind-valves will stay in whatever position they may be thrown by the finger-keys B B B, acting through the intervention of the flange-furnished pins C C C. Now, when one of the movable pins C C C is depressed by the corresponding finger-key, B, above it, the upper flange-like projection, C′, when it has almost reached its lowest position, strikes the balanced piano-forte wind-valve D, whose momentum causes it to move off its seat D² and open the port D′ more or less, in proportion to the force of the stroke upon the corresponding finger-key, opening said valve but very little if the stroke upon the finger-key B is very soft, as in Fig. 3, but opening it to its full extent if the stroke is very strong or heavy, as in Fig. 4. The piano-forte wind-valve D is held thus open by the spring G until the key B in rising re-

leases the upwardly spring-pressed pin C, whose lower flange-like projection, C^2, while rising touches the under side of the piano-forte wind-valve D and closes it, for the flange-like projection C^2 is in contact with the piano-forte wind-valve when said valve is closed, though not in contact with it when open, for the downward motion of the movable flange-furnished pin C is as great as or greater than the extreme motion of the piano-forte wind-valve D. Thus the amount of wind for the tone-producers admitted by the valve D varies with the force of the stroke upon the corresponding finger-key; and since in cabinet-organs and similar wind instruments the loudness of tone depends, other things being equal, upon the amount of wind admitted to the tone-producers, the loudness of tone is varied in accordance with the touch upon the keys. Thus by my improvement the same power of having the tone varied in loudness according to the touch which the piano-forte possesses is given to the cabinet-organ and similar instruments, in which, unlike the piano-forte, the tones can be sustained at pleasure.

While I have described my invention with reference to the finger-keys of the manuals, it is obvious that it may also be used with pedals in pedal instruments in exactly the same manner as it is used with the finger-keys.

It is obvious that instead of applying the valve mechanism herein described, or its equivalent, to a port, hole, or passage through which air passes for the production of tones, it may equally well be applied to a port, hole, or passage through which sound-waves escape, and thus govern the loudness equally well; and this is applicable to pipes and other similar tone-producers whose loudness of tone cannot be governed by the wind-pressure without changing the key.

It is further obvious that a number of such valves may be joined together, so as to act at the same time. By any suitable connector just as many slats of a swell are joined together by one connecting-piece.

I desire it to be understood, therefore, that in this specification and the accompanying claims I use the word "valve" in a very comprehensive sense—indeed, in its broadest sense.

It is also obvious that the valve mechanism herein described, or its equivalent, may be used in connection with the ordinary valves of organs in all cases where such use is advantageous, just as any number of valves may be placed upon the same wind-passage.

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

1. In an organ or other similar instrument, valve mechanism constructed and arranged substantially as herein described, consisting of the double-flanged tracker-pin C, valve D, and lever-spring G, or their equivalents, whereby the flow of wind or vibrations from the tone-producers is governed by and in accordance with the rapidity with which the key is depressed.

2. The combination of the keys of organs with valve mechanism constructed and arranged substantially as herein described, consisting of the double-flanged tracker-pin C, valve D, and lever-spring G, or their equivalents, whereby the flow of wind or vibrations from the tone-producers is governed by and in accordance with the rapidity with which said finger-keys are depressed.

3. In an organ, the combination of the valve D with the double-flanged tracker-pin C, or the equivalent thereof, whereby the amplitude of motion of said valve D is governed by and in accordance with the rapidity of motion of said tracker-pin C, or the equivalent thereof.

4. In an organ, the combination of the valve D with the lever-spring G, constructed and arranged substantially as shown, or the equivalent thereof, whereby said valve is caught and held open in any position in which it may be thrown.

THADDEUS CAHILL.

Witnesses:
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GEO. W. WAITE.