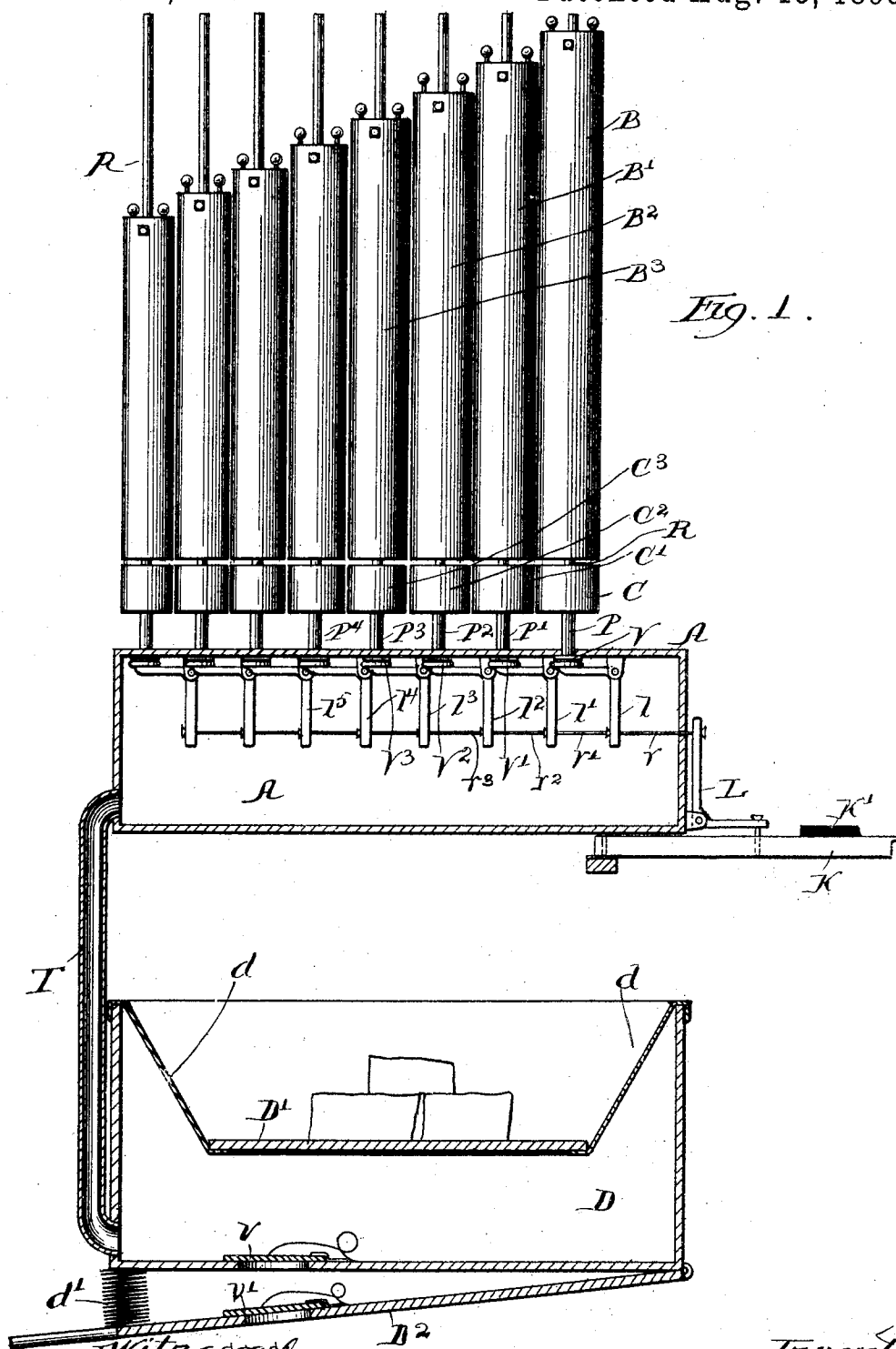


2 Sheets—Sheet 1.

No. 503,226.

Patented Aug. 15, 1893.



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(No Model.)

2 Sheets—Sheet 2.

V. ANDERSON.
PIPE ORGAN.

No. 503,226.

Patented Aug. 15, 1893.

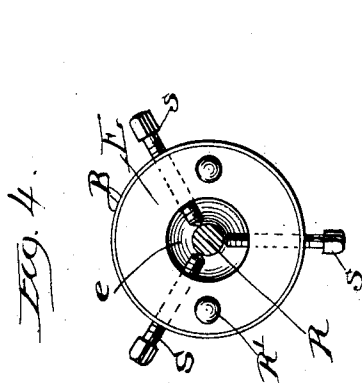
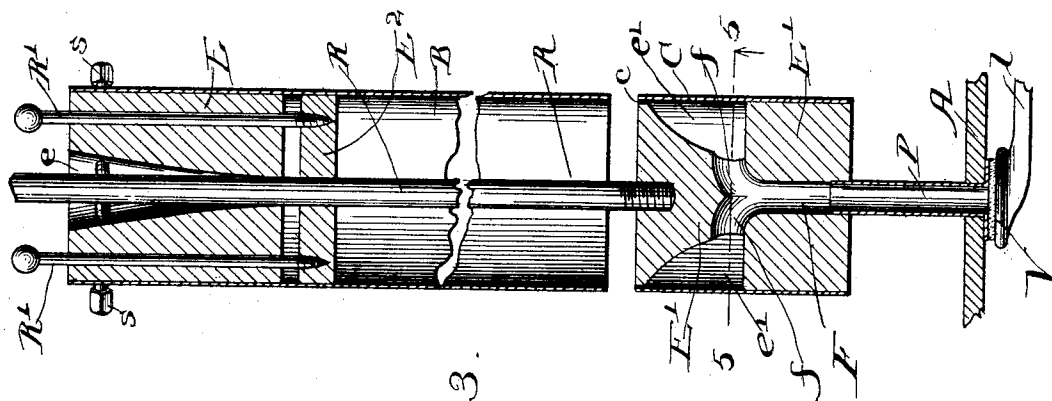


Fig. 3.

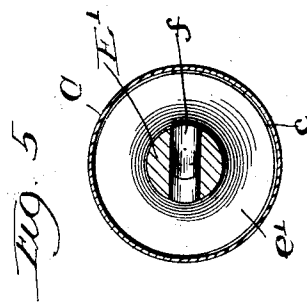
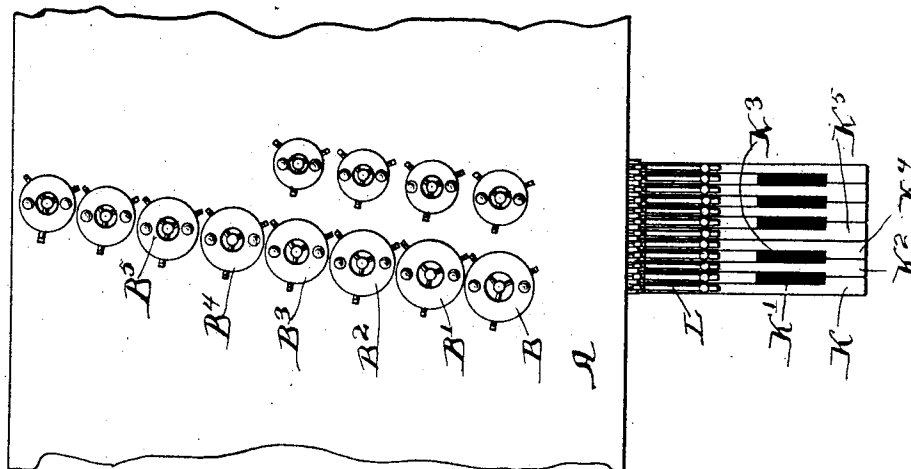


Fig. 5.



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Fig. 2.

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UNITED STATES PATENT OFFICE.

VICTOR ANDERSON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
CHRISTIAN N. CHRISTENSEN, OF SAME PLACE.

PIPE-ORGAN.

SPECIFICATION forming part of Letters Patent No. 503,226, dated August 15, 1893.

Application filed April 3, 1893. Serial No. 468,794. (No model.)

To all whom it may concern:

Be it known that I, VICTOR ANDERSON, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pipe-Organs, of which the following is a specification.

My invention relates to improvements in pipe organs and more particularly to improvements in the sound-producing pipes of the organ, the means for holding them in place and supplying them with air, and the means for accurately tuning them and adjusting their parts with relation to each other.

The invention is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1 is a view partly in side elevation and partly in transverse vertical section, of a part of an organ embodying my invention, the view being in the direction indicated by the arrow, in Fig. 2. Fig. 2 is a top plan of a portion of the organ showing an arrangement of the pipes corresponding to one octave in the key-board. Fig. 3 is a central vertical section of one of the pipes showing its internal construction. Fig. 4 is a top plan of the pipe shown in Fig. 3; and Fig. 5 is a horizontal section through the line 5—5, Fig. 3, the view being upward.

In these views, A is the air-chest of an organ embodying my invention and B, B', B², &c., are a series of organ pipes connected with the air-chest by tubes, P, P', P², &c., in the manner hereinafter described in detail. The air-chest is supplied with air by means of a tube, T, entering the body, D, of a bellows having a movable top, D', weighted and connected with the walls of the body, D, by suitable flexible folds, *d, d*. The box, D, is supplied with air by means of the usual movable wall, D², connected with the bottom of the box by suitable flexible folds, *d'*, and operated in the ordinary manner, the bottom of the box and the movable wall, D², being supplied with valves, *v, v'*, adapted to admit and retain air under pressure, the pressure being regulated by the weights on the top, D', of the air-chest. In front of the air-chest is the usual key-board made up of keys, K, K', K², &c., each adapted to operate the corresponding pipe, B, B', B²,

by means of the mechanism illustrated in Fig. 1. Each of the keys is pivoted at its inner end to a suitable support and is connected near its center with one end of a bell crank lever, L, one of the levers, L, being shown in the figure. The upper end of each of the levers directly actuated by the key is connected by means of a rod with a second bell crank lever pivoted to the top of the air-chest and operating a suitable valve adapted to open and close the tube leading to the corresponding pipe.

In Fig. 1, the rods connecting the different pairs of bell crank levers are lettered *r, r', r², &c.*, and the corresponding valve-operating levers are lettered *l, l', l², &c.*, the corresponding valves being indicated by the letters, V, V', V², &c. It is evident that downward pressure upon any key of the key-board must open the corresponding valve and supply air to the corresponding pipe.

The construction of each of the pipes is clearly indicated in Figs. 3, 4, 5, in which, B is the tubular body of one of the pipes, and C is a short tube of the same diameter as the body, B, and separated by a suitable space from the body which is directly above it. The body, B, has in its upper end a closely fitting block, E, and the tube C, incloses a block, E', whose lower end fits closely in the tube, while its upper end is of somewhat less diameter than the tube and is separated from it by a slight annular space, *c*. In the upper half of the block, E', is formed an annular recess, *e'*, extending upward very nearly to the top of the block and communicating with the outer air through the space, *c*. In the lower portion of the block, E', is formed a vertical tubular opening, F, communicating through lateral branches, *f, f*, with the annular recess, *e'*, and in the lower end of the tubular opening, F, is seated the upper end of the corresponding tube, P, which extends down into the air-chest, A, and is closed at its lower end by the corresponding valve, V. The blocks, E, E', are connected by means of an axial rod, R, rigidly seated at its lower end in the block, E', and adjustably fixed in a conical opening, *e*, in the block, E, the lower end of the conical opening being fitted closely to the rod. A series of set screws, *s, s*, set horizontally in

the block, E, impinges upon the rod, R, and provides for adjustment of the block, E, and the body, B, of the pipe with relation to the rod. By means of these set screws the body, B, may be brought into perfect alignment with the tube, C, which is of the greatest importance in the operation of my invention. In the body, B, of the pipe below the block, E, is an adjustable block, E², connected with the block, E, and supported by means of two rods, R', R', sliding in the block, E. These rods may be raised or lowered for the purpose of adjusting the block, E², and the pipe may thus be quickly and accurately tuned since the position of the block and the working length of the pipe may in this manner be regulated at will.

In operation, air under pressure is permitted to escape from the air-chest by the manipulation of the keys and thus enabled to enter the annular recesses, e', in the blocks, E', of the tubes. From each of these recesses it passes upward through the opening, c, about the margin of the block, E', and is projected with suitable force into the mouth of the body of the pipe above it, thus producing a musical note of the pitch and quality predetermined by the length and diameter of the pipe. The body of each of the pipes is preferably of metal adapted to vibrate rapidly under the influence of the waves produced by the air current and the sound evolved is thus highly resonant and melodious.

Pipes constructed in accordance with my invention are cheap and simple of construction even when made with perfect accuracy and are of such material and arrangement as to be extremely durable, and I have found in careful experiments that by their use the finest musical effects may be attained at much less cost than is involved in the construction of organs of the forms heretofore in general use.

An organ having pipes such as I have shown and described may produce notes of great volume and carrying power.

I intend to apply my invention not only to the construction of organs for indoor use, but also to utilize it in what may be called tower organs, that is to say, organs located in church towers or other elevated open-air structures from which their notes may be heard to a great distance. Such a tower organ may either be played independently or may be connected by electric or other suitable means with the key-board of an organ in the building on which the tower organ is located. When thus placed and operated it will constitute at once a valuable adjunct to the organ within the building and a substitute for the bell chime which is frequently installed in a tower and furnishes music to auditors at great distances from the place of its location.

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

1. An organ pipe constructed substantially

as described and comprising a tubular body closed at its upper end, a tube in alignment with the body and separated from its open end by a suitable space, a block set in the upper end of the tube and separated from the wall thereof by a narrow annular space, an air-space communicating with said annular opening and means for supplying air under pressure to said air space and forcing it from said opening into the mouth of said tubular body.

2. An organ pipe constructed substantially as described and comprising a tubular body means for closing the upper end thereof, a tube in alignment with said body and separated from its open end by a suitable space, a block set in the upper end of the tube and separated from the wall thereof by a narrow annular opening, an air space communicating with said annular opening, means for admitting air under pressure to said air space, and means for longitudinally adjusting the device which closes the upper end of the tubular body, whereby the clear space therein may be regulated.

3. The combination with the tubular body, B, having the block, E, in its upper end of the tube, C, the block, E', seated in the tube and formed with the annular recess, e', the tubular opening, F, admitting air to the recess and the annular opening, c, permitting escape thereof and the rod, R, connecting the blocks, E, E', and securing the body, B, and tube, C, in proper relation to each other.

4. The combination with the tubular body, B, of the block, E, set in its upper end and formed with the conical opening, e, the tube, C, in alignment with the body, B, and separated from its open end by a suitable space, the block, E', set in the tube, C, and adapted to permit escape of air under pressure through an annular opening, c, at its upper end, the rod, R, set at its lower end in the block, E', and at its upper end in the opening, e, and means substantially as shown and described for adjusting the upper end of the body, B, upon the rod, thereby securing perfect alignment of the body, B and tube C.

5. The combination with the tubular body, B, of the block, E, set in its upper end, tube, C, in alignment with the body and separated from its open end by a suitable space, the recessed block, E', set in the tube, C, and adapted to permit the passage of air under pressure, the rod R, set in the blocks, E, E', and connecting the two parts of the pipe, the block, E², lying within the body and longitudinally adjustable therein and means for adjusting the position of the block, E², in the body and thereby varying the clear space therein.

6. The combination with the body, B, and tube, C, of the blocks, E, E', E², formed substantially as described, the set screws, s, s, and the rods, R', R', adapted to fix the position of the block, E², substantially as and for the purpose set forth.

7. In an organ, the combination with a suit-

able air-chest and means for supplying it with
 air under pressure, of a series of pipes adapt-
 ed to produce the musical notes of a scale and
 each provided with an inlet from said air-
 5 chest and a valve controlling said inlet, and
 a series of keys connected with said valves
 respectively and adapted to operate the same
 and admit air to said pipes, each of the pipes
 being constructed substantially as shown and
 10 described and comprising a tubular body
 closed at its upper end, a tube in alignment
 with the body and separated from its open end
 by a suitable space, a block seated in the tube
 and separated at its upper end from the wall
 15 thereof by an annular opening, an air space
 communicating with said annular opening
 and with the air-chest and means substantial-
 ly as shown and described for holding the
 tubular body and tube in alignment and in
 20 proper relation; substantially as shown and
 described.

8. The combination with the air-chest, the
 pipes, B, C, B', C', &c. and the tubes, P, P',
 &c. connecting said pipes, respectively, with

the air-chest of the valves, V, V', &c. closing 25
 the ends of said tubes, the levers, l, l', &c.
 the rods, r, r', &c. the levers, L, L', &c. and
 the keys, K, K', &c., said pipes being con-
 structed and adapted to operate substantially
 as shown and described. 30

9. The combination with the air-chest, a
 series of pipes connected therewith and means
 for controlling the communication between
 said air-chest and pipes, of means substan-
 tially as shown and described for supplying 35
 said air-chest with air under pressure and
 comprising the box, D, connected with the air-
 chest by a tube, T, top, D', having all its edges
 connected by flexible folds, d, d', with the
 walls of the box, the moving wall, D², connect- 40
 ed with the bottom of the box by flexible folds,
 d', and the valves, v, v', adapted to admit and
 retain air.

VICTOR ANDERSON.

Witnesses:

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 R. H. WILES.