

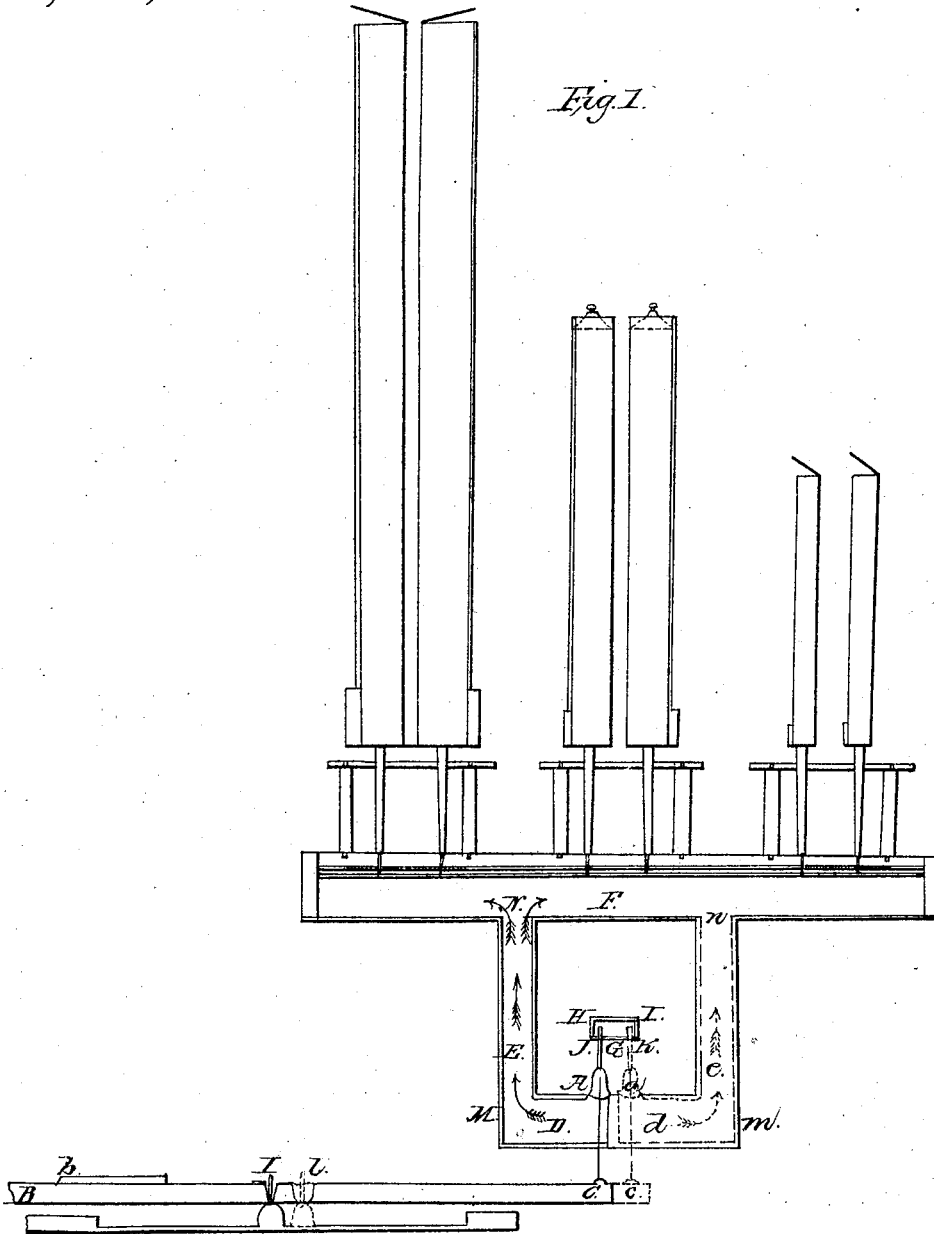
J. Meades,

Pipe Organ,

No. 1,021,

Patented Nov. 25, 1838.

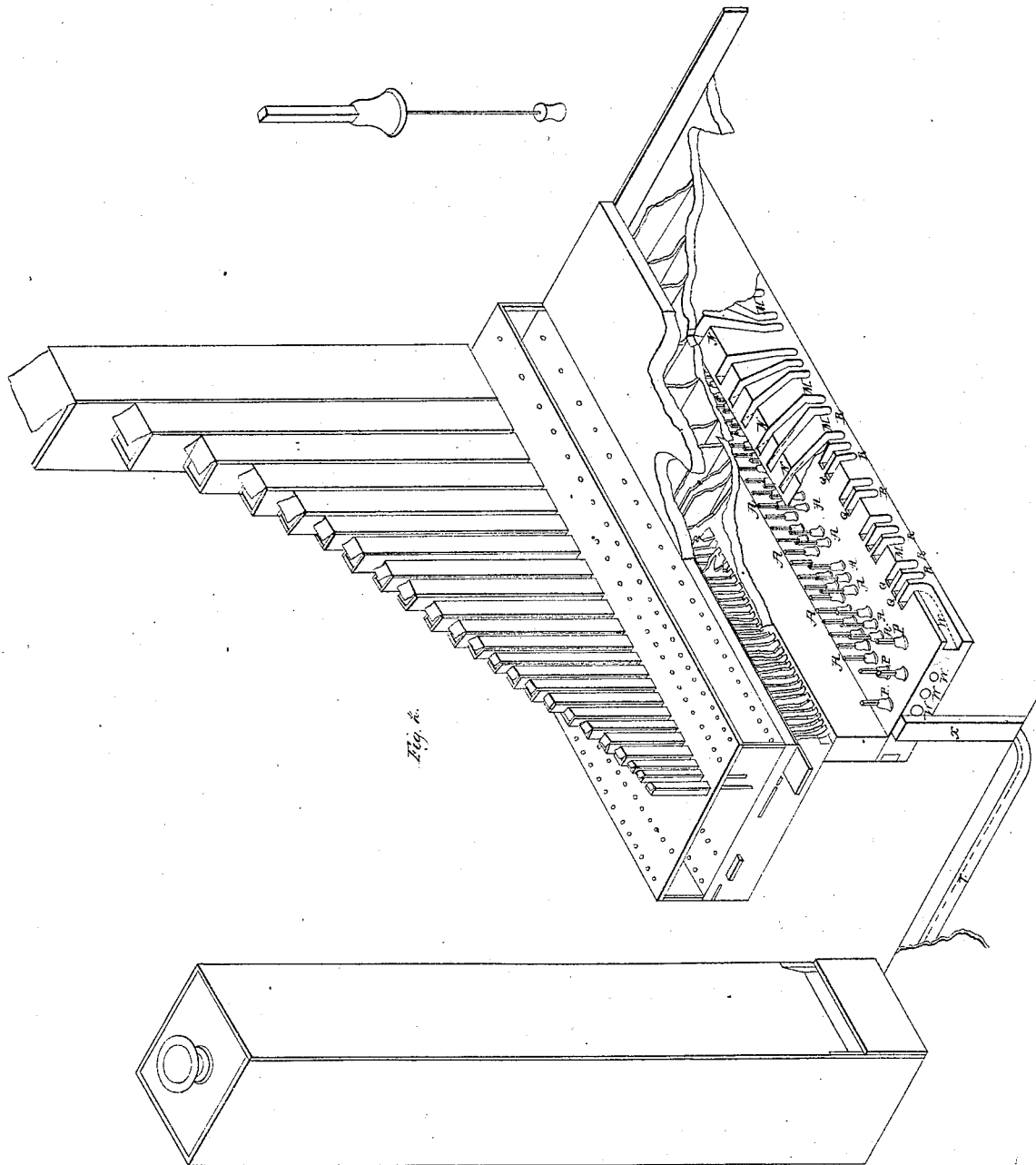
Fig. 1.



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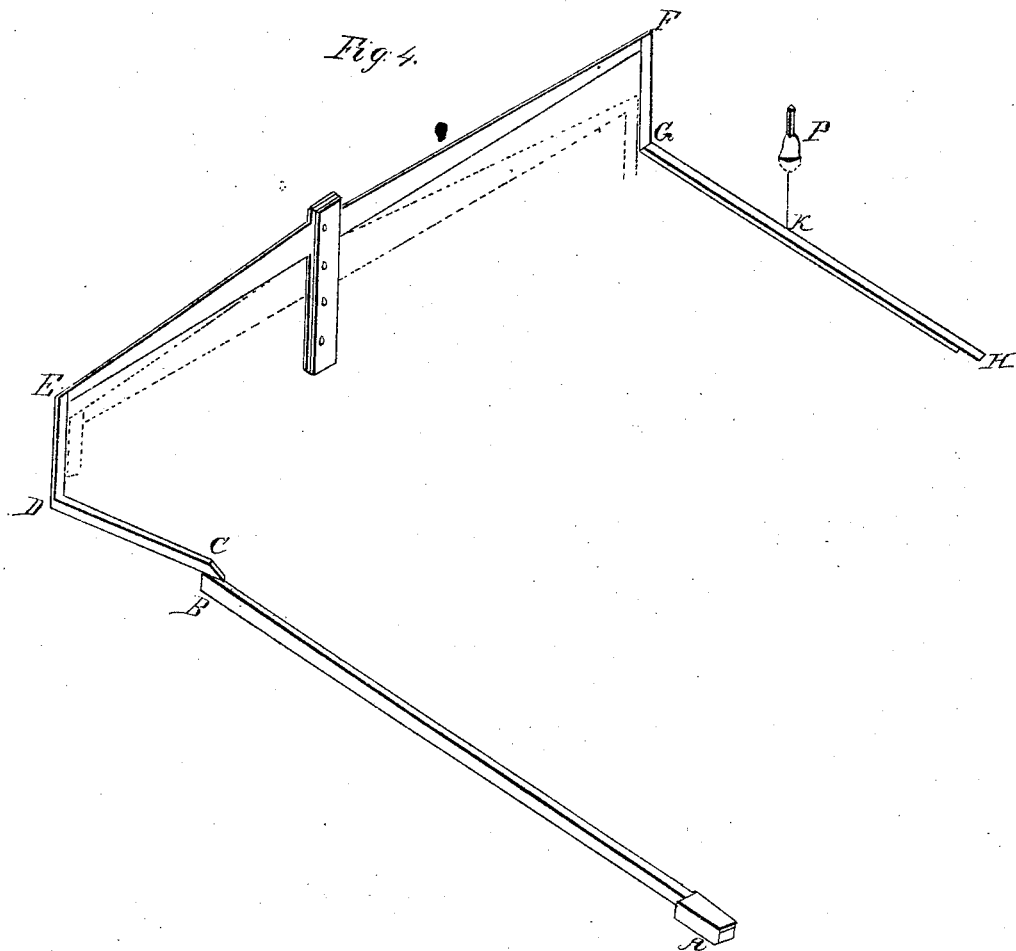
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UNITED STATES PATENT OFFICE.

JOHN MEADS, OF ALBANY, NEW YORK.

ORGAN.

Specification of Letters Patent No. 1,021, dated November 25, 1838.

To all whom it may concern:

Be it known that I, JOHN MEADS, of the city and county of Albany and State of New York, have invented an Improvement in the construction of certain parts of the organ, to wit, in the construction of the wind-chest, in the application thereto and arrangement of puppet-valves, and in the mode of acting upon the valves by means of the keys; and I do hereby declare that the following is a full and exact description thereof.

Figure 1, of the accompanying drawings exhibits a transverse section of some of the principal parts of the instrument, and is intended to show the connection, form, and mode of action of the valves and keys, together with the form and direction of the wind channels leading from the valves to the sound-board, so far as the same can be thus shown. Fig. 2, of said drawings, exhibits the outline (in isometrical perspective) of part of the interior of the wind chest, with the arrangements of the valves and wind channels and their connection with the adjacent parts.

For the purpose of disclosing in some measure the arrangement of the interior of the wind chest, portions of the sound board with its channels, and also of the side of the wind chest together with the tampon at the end are supposed to be removed. The thin covering (which may be either of wood or leather) of the back side of the wind chest is also supposed to be removed, in order to expose to view the diverging and converging channels in the side and to show their connection with those in the bottom.

Of the valves.

These are puppet valves, represented at A *a*, Fig. 1, and A, A, A A, Fig. 2, and one of about the full size is represented at Fig. 3. They may be made of lead, tin, or other metal, or of any metallic alloy, the proportions of which may be so varied as to increase or diminish the weight of the valve in any degree that may be desired and thereby render the touch of the keys more or less delicate, or they may be made of any other material of sufficient density and tenacity. In an instrument which has been constructed, they are composed of an alloy of one part of tin and two parts of lead. The bottoms of the valves may be either flat, convex, or of any other form which will admit of a close adaptation to their seats

and may be covered with soft leather or any other material which will render such adaptation most accurate. The forms of the mouths or openings which are covered by the valves as also of the valves themselves may be varied at pleasure, provided that the action of the valves as puppet valves be not thereby changed.

The upper parts of the valves are intended to fit into notches cut in the edges of a thin strip of wood (marked G in Fig. 1,) supported between the two rows of valves. The portions of this strip of wood which lie between these notches project laterally beyond these upper parts of the valves, and thus form supporting ledges for a small rectangular frame, which when placed upon these ledges, will by such connection complete a double row of mortises, by means of which the valves are kept in their perpendicular position when in action or otherwise. Over all is placed a thin box or cap in an inverted position (a section of which is shown in Fig. 1, and marked H, I, J, K,) the object of which is to prevent the valves from being thrown up beyond their proper limits. The uppermost side of this box is made of leather so as to prevent any noise being heard in case of the valves striking it. These last described fixtures however may be varied to an indefinite extent provided the same general purposes are subserved.

Into the bottom of the lower or bell part of the valve is screwed or otherwise fastened a steel or other wire which extends perpendicularly downward through the bottom of the wind-chest and terminates (as shown at Fig. 3,) in a small bulb or button, the lower part of which should be convex. This bulb or button comes as nearly as possible in contact with, but so as not to rest upon, the farther extremity of a key of the ordinary piano-forte form, as shown at Fig. 1, C, *c*. Where the keys are intended to act upon the valves of a swell in a large organ or in any case where the wind chest is required to be elevated a considerable distance above the keys, the valves and their appendages may be constructed in the same manner as those above described—and the action of the key may be transmitted to the valve by a light perpendicular rod the lower end of which may rest upon the farther extremity of the key, and the upper end of which should come as nearly as possible in contact with, but so as not to touch the bulb or but-

ton at the lower end of the valve. These rods may be supported in their perpendicular portion by being made to play through mortises in a horizontal bar supported at about the middle of the rods.

The hindmost row of valves, Fig. 1, *a*, and Fig. 2, A, A, A, is appropriated to the black keys, and the foremost row of valves Fig. 1, A, and Fig. 2, A A A, to the white keys. It may be proper here to remark, that the dotted portions of the diagram Fig. 1, are intended to exhibit the back row of valves above referred to and also the channels appropriated to the black keys, which portions, not lying in the plane of the section represented, could not otherwise have their relative position brought to view in this diagram.

In order to equalize the touch of the white and of the black keys, the balance bar or fulcrum (L, Fig. 1,) of the former is placed same little distance behind that (Z, Fig. 1,) of the latter, as is the case also with the correspondent extremities of each sort of keys—this arrangement being in some degree conformable to that of the piano-forte. But if the row of valves appropriated to the black keys should be changed so as to be in front of the row appropriated to the white keys it would not be necessary, in order to equalize the touch, that there should be a second balance bar, but both white and black keys, might then, be balanced upon the same bar.

Of the wind chest.

The wind chest is a rectangular box of hard wood. Its dimensions may be varied so as to suit the views of the builder and the size of the instrument. In an instrument already constructed of four and a half octaves and five and a half stops, the dimensions within are as follows: Length about 3 feet, breadth $5\frac{1}{2}$ inches, depth $4\frac{3}{4}$ inches. It is closed at the ends by tampions, which are movable at pleasure so as to permit a ready access to the valves in case of their derangement. The wind-trunk from the bellows, may enter the wind-chest through the bottom near either end or through the tampions by which the ends are closed.

Of the channels.

These extend from the seats of the valves in the bottom of the wind chest and at right angles to its sides (those belonging to each row of valves being conducted to the side nearest such row) as represented at D, *a*, Fig. 1, except those marked P P P P, Fig. 2, which are of a larger size and have their outlets W, W, W, &c., at the ends instead of the sides of the wind chest, and are thence conducted by means of tubes such as X, Fig. 2, and channels such as Y, in any required direction, to the large pipes to which they belong.

The channels having been conducted beneath the surface in the directions already described, until they reach that part of the bottom of the wind chest immediately below the sides, as seen in Fig. 1, and also at Q, M, R, Fig. 2, are then curved upward so as to pass into the sides as at M, *m*, Fig. 1, and M, M, &c., Fig. 2, through the entire breadth of which they are conducted obliquely in the directions M N, M N, &c., Fig. 2, (either converging or diverging as the case may require,) until they form a perfect junction with the parallel channels of the sound board as at N, *n*, Fig. 1, and N, Fig. 2, which latter channels are constructed in the ordinary way.

The entire circuit of a channel is represented by D *d* E *e* N *n*, Fig. 1, the direction of the wind being indicated by the darts. The form and direction of the channels as above described need not however be rigidly adhered to, but may be in some measure varied, provided the circuit from the valve to the sound board be completed.

Of the machinery pertaining to the extra valves.

The large valves P P P P, Fig. 2, when placed at the upper end of the wind chest must necessarily be moved by keys near the opposite end. To effect this a short balanced lever C D, Fig. 4, itself parallel with a prolongation of the key A B has its forward end C raised by the key, and the farther end D is of course thereby depressed, and thus draws down a small perpendicular bar D E, which in its turn draws down the end E of a nearly balanced lever E, F, placed behind and parallel with the wind chest. This last lever is in length about equal to the horizontal distance of the key from the valve which it is destined to move. This last lever being thus drawn down, the other extremity F is of course elevated and having also a perpendicular bar F, G, attached to it, it is thereby enabled to raise a third lever G, H, which passes transversely beneath the wind chest, and has its fulcrum H, at its farther extremity. Upon or near the middle K of this last mentioned lever rests the lower extremity of the perpendicular wire or stem K, P, of the valve to be moved. The perpendicular bars D, E, and F, G, are notched or indented at their extremities D and G so as to admit the ends of the levers; and in order to insure the free play of the joint, the levers are kept in place by a leather stirrup only.

Of the advantages resulting from the proposed improvements.

1. *Of those more immediately dependent upon the valves.*—To secure a perfect articulation of the notes especially of staccato passages and of those requiring great ra-

pidity of execution, it is requisite that the action of the wind upon the pipes should be, as nearly as may be, uniform during its continuance, and that its commencement and cessation should, as far as possible, be instantaneous; and this is particularly desirable in order to secure a quick, full and distinct articulation in the case of reed pipes. It needs no comment to show that this end can be better attained by the use of the puppet valve, than by that of the usual form, even if the former were opened and closed by means of the same contrivance as that ordinarily employed to move the latter. Now, in the proposed improvement the action of the key upon the valve is direct and immediate, and no sooner does this action cease than the valve is permitted to fall unchecked by any essential resistance: whereas, in instruments of the old construction, the key is made to act upon the valve through a series of intervening rods and wires, the very complication of which renders the immediate transmission of any impulse impossible: and hence also, the pressure upon the elastic spring which serves to close the valve will not at once cease, when that upon the key is withdrawn. In addition to all this, in the proposed construction the valve is closed by its own weight; whereas, in that now in use, the same purpose is at best effected by a wire spring, which, in order to the ready opening of the valve, must necessarily be made inferior in the energy and rapidity of its action. Moreover, when the puppet valves are once closely settled into their seats or places, their own weight tends to secure and constantly increase their tightness—the narrow margins upon which they rest, afford little room for the lodgment of any foreign substances—and should any such lodge there, the downward rush of the wind, when the valve is raised, would probably at once remove them, whereas the weight of the ordinary valves has a constant tendency to open them, and any foreign substance which may accidentally lodge upon the upper surface of any of them, as upon a shelf, will be likely to remain and cause leakage. Besides in the ordinary construction there is a constant leakage around each of those wires which pass through the bottom of the wind chest and move the valves; but in the construction now proposed, a similar leakage can take place around the wires of such valves only as are open, and very rarely will there be more than from six to eight of them open at any one time.

2. *Of the advantages resulting from the*

proposed wind-chest.—The structure of the wind chest might seem in one respect to present a decided disadvantage, since the wind, instead of being admitted directly from the wind chest into the sound board is conducted to the latter by bending channels of considerable length: inasmuch however, as the wind chest is placed beneath the central instead of the front part of the sound board, the entire distance of the extreme stops from the valves will be less in this, than in the ordinary construction, and the great thickness of the bottom and sides of the wind-chest admits of such a depth in the channels passing through them, that the passage of the wind through these channels will not be essentially obstructed. Again, where the wind-chest has the ordinary position and connection with the sound board—the respective distances of the several stops from the valves, are very unequal, and in consequence, it is found that what is technically called “the weight of wind” is greater upon the front stops, than upon those which are farther back; whereas, in the construction now proposed, the distances in question are much more nearly equal, and the weight of wind will thereby be rendered nearly equable in its distribution.

Upon a connected view of all that has been said, it will also appear that the proposed improvements, while they will require the exercise of less skill in the construction of the instrument, would render it in many of its essential parts more simple, less expensive and less liable to derangement.

The parts of the construction above described of which I claim to be the inventor, are—

1. The application of puppet valves in the manner and for the purposes above described, or in any similar manner and for any like purposes, of, either the form above described or any other form.

2. The position of the valves in relation to the wind-chest, and their peculiar mode of arrangement.

3. The arrangement of the channels of the wind-chest in the manner and for the purposes above described.

4. The action of the key upon the stem of the valve in either and all of the modes above described or in any mode not essentially differing therefrom.

Albany May 15th 1838.

JOHN MEADS.

Witnesses:

R. J. WILSON,
ORLANDO MEADS.