

G. SANDER.
ORGAN.

No. 512,522.

Patented Jan. 9, 1894.

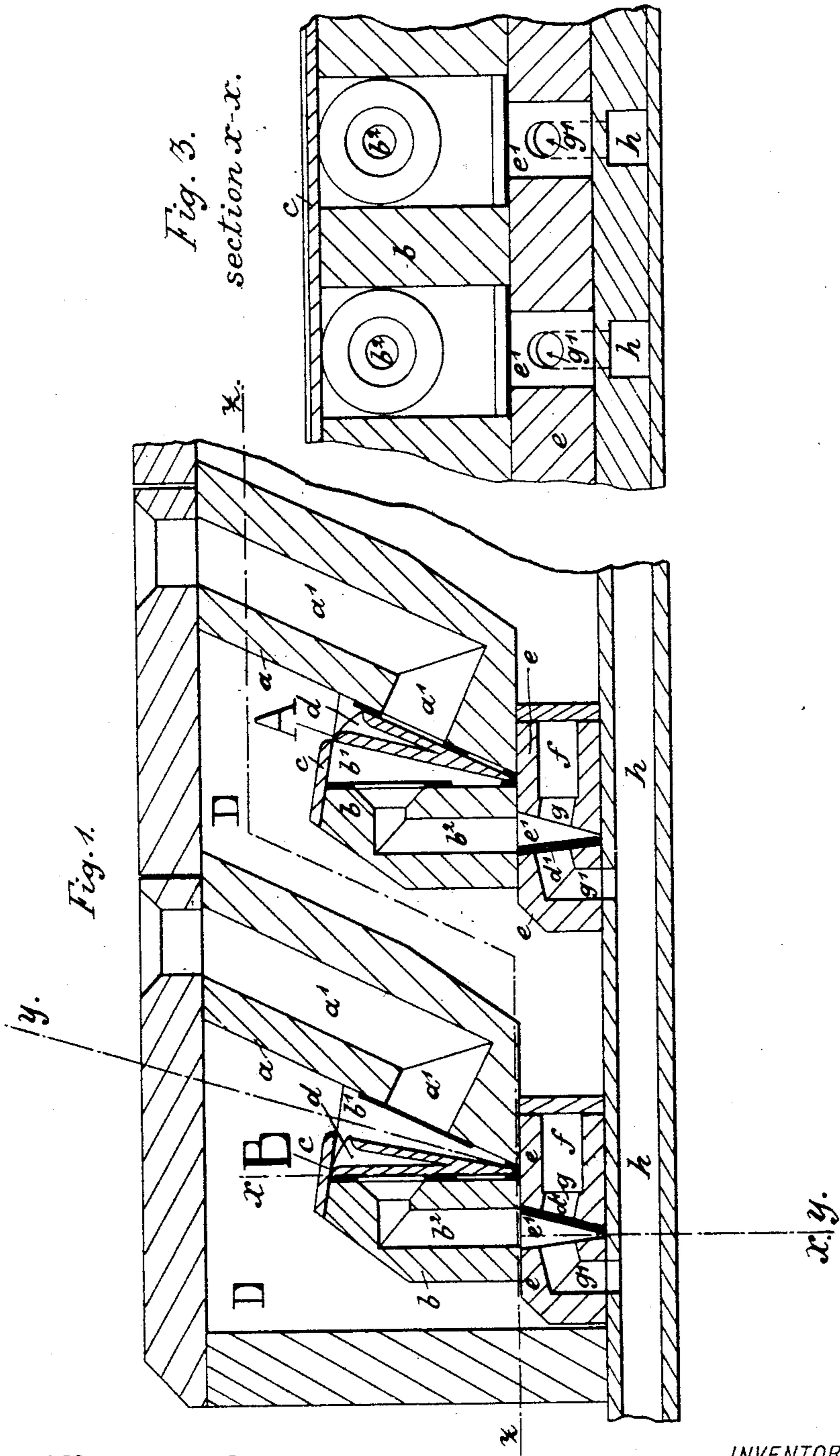
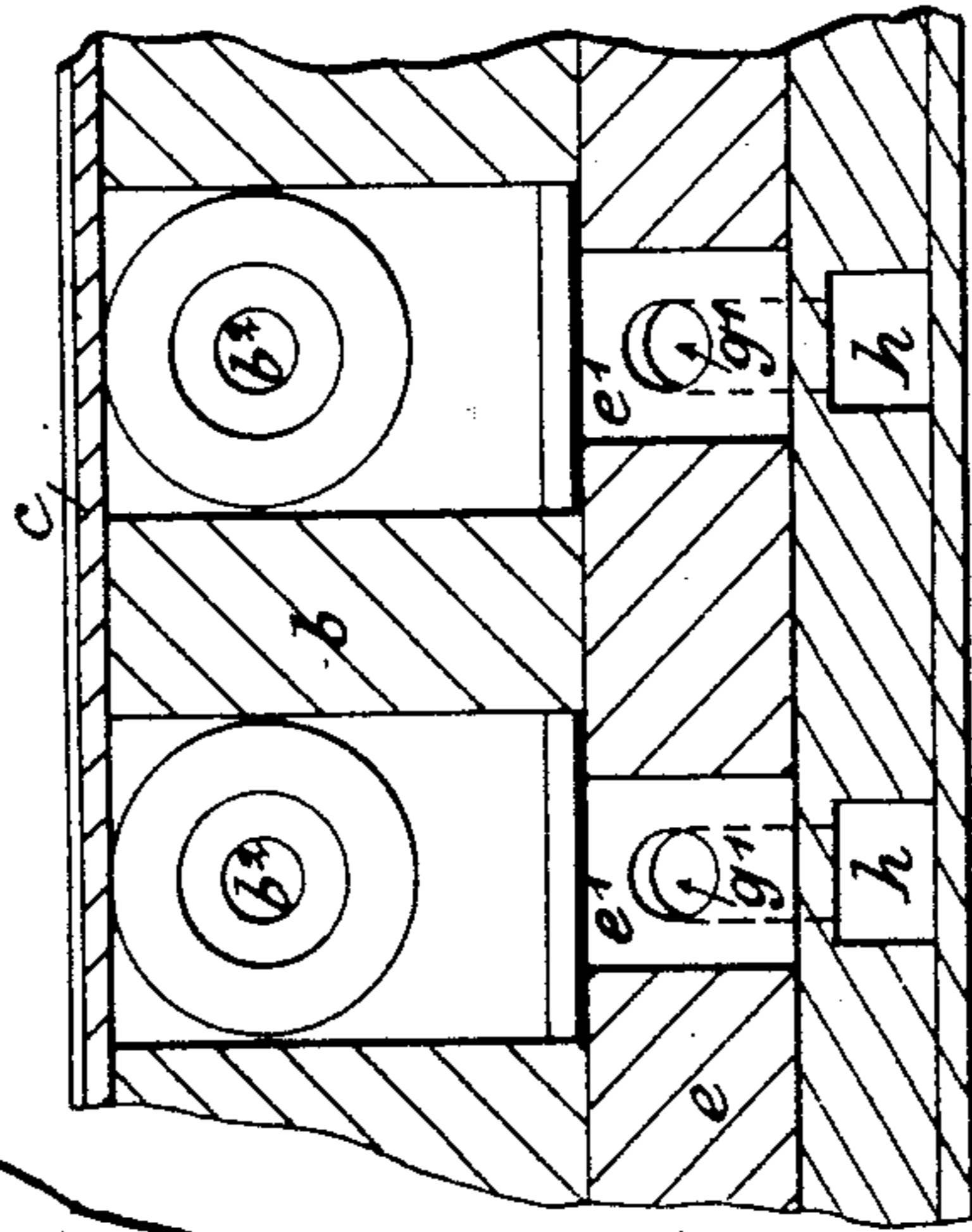
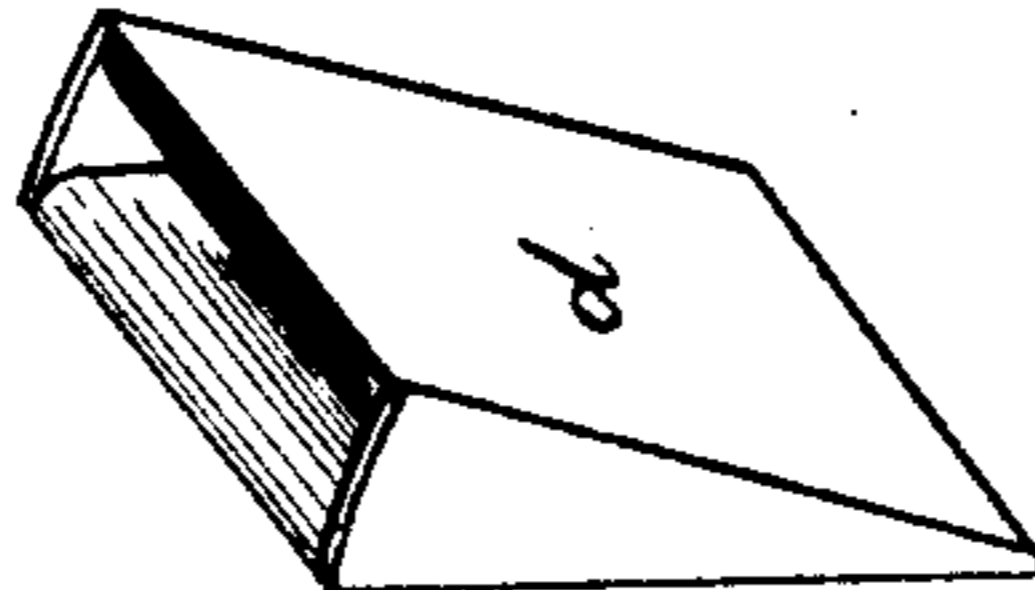


Fig. 3.
section x-x.



WITNESSES:
J. Chebret.
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Fig. 5.



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Fig. 4.
section y-y.

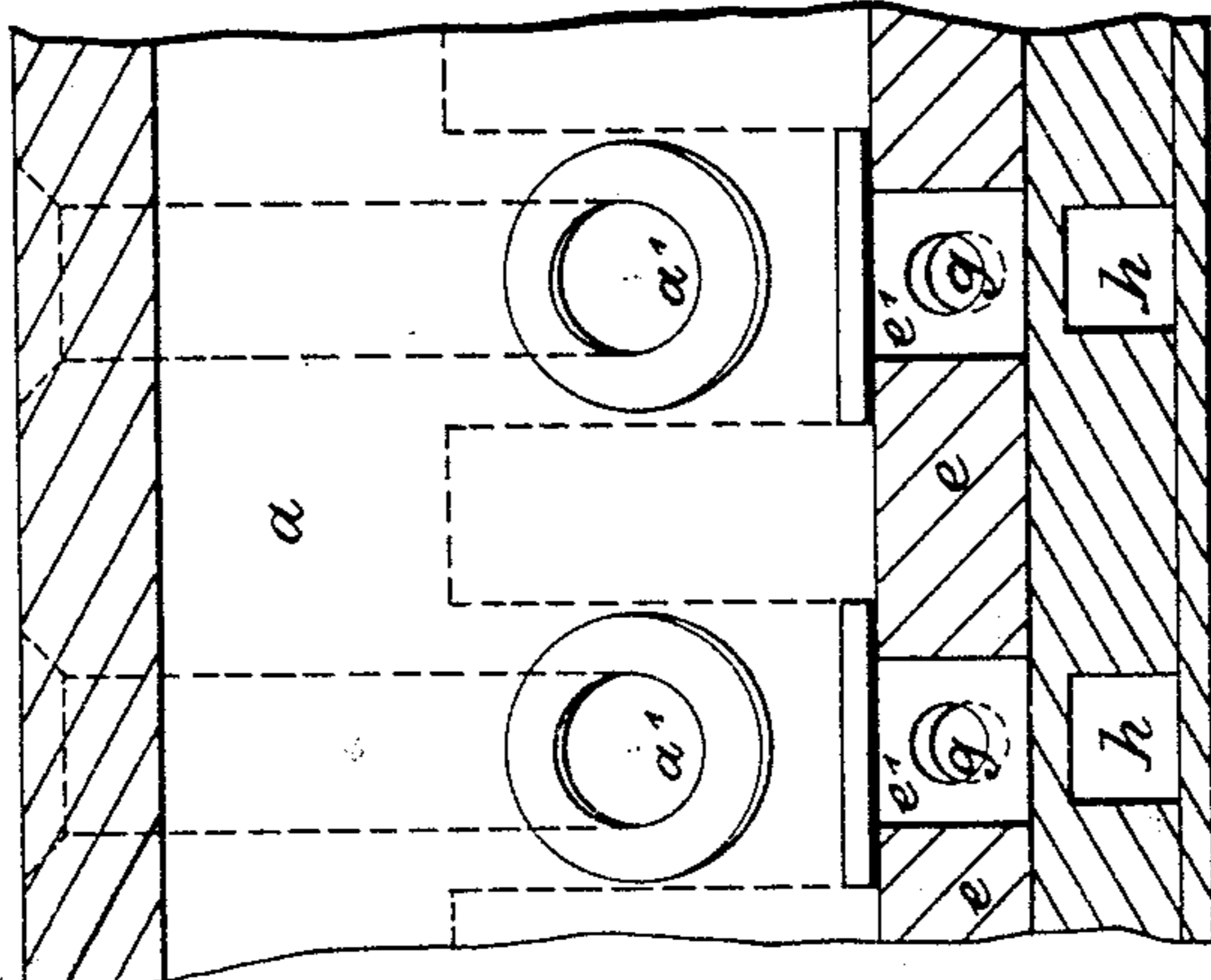
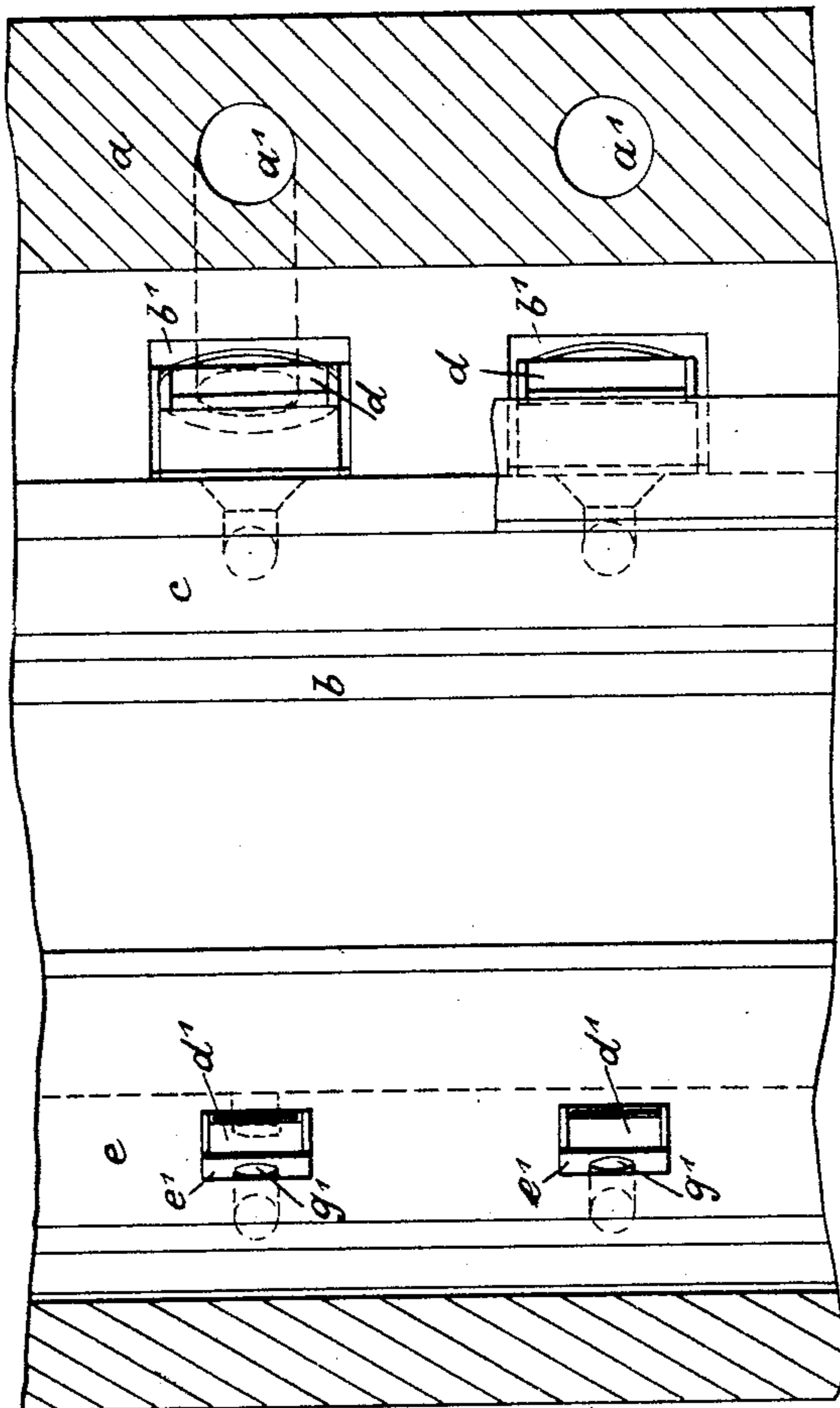


Fig. 2.
section x-x.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GUSTAV SANDER, OF BRUNSWICK, GERMANY.

ORGAN.

SPECIFICATION forming part of Letters Patent No. 512,522, dated January 9, 1894.

Application filed September 12, 1893. Serial No. 485,323. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV SANDER, a subject of the King of Prussia, German Emperor, residing at Brunswick, in the Duchy of Brunswick, German Empire, have invented certain new and useful Improvements in Organs, of which the following is a specification.

Hitherto it has been the custom to construct organs in such a manner that the reed-pipes thereof are opened or closed, either by means of playing cylinders, membranes or bellows-valves, and all such devices have been found very unsatisfactory, for the reasons that those which were durable were not easily operated, and those which were easily operated were not durable, and utterly failed to properly perform their function after being in use a short time.

The object of my invention is to provide a device in which all the difficulties mentioned will be overcome, and in which the register and reed-pipe valves will be operated, when desired, by the action of the compressed air, or the vacuum, as the case may be, in the wind-chest, which operates the organ-pipes or reeds; and to that end the same consists of the construction, combination and arrangement of the various parts of my improved organ wind-chest, shown and described in the following specification, of which the accompanying drawings form a part, wherein similar letters of reference designate like or equivalent parts wherever found throughout the several views, and in which—

Figure 1, is a view of the lower portion of my improved wind-chest, showing two of the reed-pipes and accompanying valves thereof in central vertical section. Fig. 2, is a view in horizontal section of Fig. 1, on the line $z-z$ thereof. Fig. 3, is a view in vertical section of said Fig. 1, on the line $x-x$ thereof. Fig. 4, is a view in vertical section on the line $y-y$ of said Fig. 1, and Figs. 5 and 6, are views in detail of various portions of the apparatus.

It will be understood that every oblique side of the wind-chest corresponding with a pipe-register, is provided with as many angular wind-tubes (or pipe apertures) a' , as there are different tones in the corresponding registers. Before the bottom port of each of said wind-tubes a' , is placed a band b having formed therein a compartment b' , which is of

substantially the shape and size shown, and which forms the valve chamber of the valve d , which normally closes the entrance to the wind-tube a' as shown at A, in Fig. 1. This valve d , is preferably of the form shown in detail in Fig. 5, being substantially wedge-shaped and provided with a hollow central portion or chamber, open at the top, and that side of the same which is normally to rest against and close the wind-tube a' , is made slightly shorter than the other side or wall of said valve d , as shown in Fig. 1. Said valve d , is placed in position in the chamber b' , simply by being dropped into the same, point downward, and such point rests preferably upon suitable wool or other packing, as shown, and rings of like material are also preferably provided surrounding the apertures to the passages or tubes a' and b^2 located on each side of said valve, as shown in Fig. 1. After the valves d , are placed in position, as shown, the compartments b' , are partially covered by bands c , against which the upper edge of the longer sides of such valves loosely abut so as to allow free movement of the same back and forth beneath such bands c , which project forward sufficiently far to just barely prevent the longer side of the valves d , from passing out from under the same when in the extreme forward position. Shown at A, in said Fig. 1.

Located beneath the bands b , are the register bands e , having located therein the valve chambers e' , which communicate at the top with the passages b^2 , in the band b , and at one side with the passages g which communicate with the register channels f , and at the other with the passages g' which communicate with the playing channels h , which are preferably formed in the bottom of the wind-chest, as shown. Located in the valve chambers e' , so as to move freely back and forth therein, are valves d' , which like the valves d , rest upon their bottom edges, and are preferably formed of any suitable light material such as wood or aluminium, and are covered with leather on both sides as shown.

The channels h , are provided with suitable valves (not shown) actuated by the motion of the keys in the operation of playing, and the register channels f , are also provided with similar valves (not shown) actuated by the appropriate register stop, by which the ad-

mission thereto of air at ordinary atmospheric pressure, or at the pressure sustained in the wind chest, may be regulated as desired.

5 The operation of the device is as follows: The wind chest being of course closed and being filled with compressed air in the usual manner, it will receive such air in all its parts, and that in the chambers D acting
10 upon the interior chamber of the wedge shaped valves d , will force the same down upon the openings or ports of the tubes a' , so as to close the same, and at the same time the compressed air rushing into the chambers e'
15 by way of the register channels f , will close the valves d' tightly against the ports of the passages g' , and the air then rushing up through the channels b^2 will assist in holding the valves d , firmly against the ports of the
20 wind-tubes a' , when the parts will be in the position shown at A, in Fig. 1, and the register stops being in the position known as "off" no sound can be got from that register of the organ. It being then desired to bring such
25 register into operative connection with the key-board, this is done by pulling the organ stop (not shown) into the position known as "on" when suitable valves (not shown) will be operated by the action of such stop, and
30 the channels f of such register will be shut off from communication with the wind-chest, and will be brought into communication with the atmosphere, and the instant this is done, by reason of the pressure of the air in the
35 channel f , port g , and chambers e' and b^2 being lowered to that of the atmosphere, the pressure of the organ wind in the channel h , will act upon the valve d' , and will force the same over against the port g of the register
40 passage f , so as to firmly close the same (as shown at B, Fig. 1), and the compressed air will then pass from the playing channel h up through the passage b^2 , into the chamber b' , and pressing against the back of the valve
45 d , will assist the air in the chamber D, in keeping it in the position shown at A, in Fig. 1, while the valve d' will still be in the position shown at B. The key connected with the appropriate channel h being then struck,
50 suitable valves (not shown) connected therewith will be actuated and such channel h , will at once be cut off from communication with the wind-chest and brought into communication with the atmosphere. The instant this is done the pressure in the chan-
55 nel h , passage g' , valve chamber e' , and passage b^2 , will of course be reduced, when the air pressure in the chamber D, acting upon the central chamber of the hollow wedge shaped valve d , will force such valve away
60 from the port of the wind-tube a' , back under the band c , and against the port or opening at the upper end of the passage b^2 , when the parts being in the position shown at B,
65 in said Fig. 1, the compressed air in the chamber D, will pass to the proper pipe by way of the wind-tube a' , and will continue to

so pass and consequently sound the note required, so long as pressure is exerted upon the key, but the instant such key is released
70 by the player, the channel h , being instantly cut off from communication with the atmosphere and being brought into communication with the compressed organ wind in the wind-chest, the equilibrium will be restored be-
75 tween the two bodies of air in the channel h and in the chamber D, when the valve d , will of course be at once forced forward into the position shown at A, in said Fig. 1, so as to completely close the port to the wind-tube a' ,
80 and thus cut off all access of air to the pipe.

The valves d and d' are preferably made of wood or aluminium, but may if desired be made of any suitable light material, and of any form preferred, although I prefer to use
85 those shown.

It is evident that with but very little change in the construction of the device the same may be adapted for use in organs in which a vacuum is formed in the wind-chest, and the
90 reeds or pipes operated by atmospheric pressure, and that many other changes in the construction, combination, and arrangement of the various parts of my approved organ may be made without departing from the scope of
95 my invention, and I do not limit myself to the exact form of construction shown, but,

Having now particularly described my said invention, its construction and operation, what I claim, and desire to secure by Letters
100 Patent, is—

1. In an organ or similar wind-instrument, the combination with the entrance of the wind-tube, of a wedge-shaped valve therefor provided with a central hollow open at the top,
105 one side wall of such hollow being higher than the other, substantially as shown and described.

2. In an organ or similar wind-instrument, the combination with the wind-tube entrance,
110 of a hollow wedge-shaped valve therefor, one side wall of which is higher than the other, adapted to be actuated by the air pressure, a passage b^2 having an opening opposite to the wind-tube entrance adapted to be closed
115 by the valve when the same is moved from the wind-tube entrance, and means for controlling and varying the pressure of the air in the passage b^2 , substantially as shown and described.

3. In an organ or similar wind instrument, the combination with the wind-tube, of a valve adapted to close the entrance to the wind tube and to be actuated by the air pressure, a pas-
120 sage b^2 , having an opening opposite to the opening of the wind-tube adapted to be closed by the valve when the same is moved from the wind tube opening, a channel h , means for controlling the air pressure in the same, a valve chamber e' , a passage g' forming a
125 communication between the valve chamber e' , and the channel h , a register channel f communicating with the valve chamber e' by means of a passage g , means for controlling

and varying the pressure of the air in the channel f , and a valve d' located in the valve chamber e' , and adapted to close the passages g and g' , as desired, substantially as shown and described.

4. In an organ or similar wind instrument, the combination with the wind-tube, of a valve adapted to close the entrance to the wind-tube, means for actuating such valve as desired, a register channel f , a valve chamber e' , in communication therewith, a valve d' located in the chamber e' , and actuated by the air pressure in the channel f , and means for controlling and varying the air pressure in such channel, substantially as shown and described.

5. In an organ or similar instrument, the combination with the wedge-shaped flap-valve d , of a chamber b' for holding such valve, air passages a' and b^2 opening into the valve chamber b' at opposite sides thereof, a playing channel h , and a passage connecting the channel h with the passage b^2 , substantially as shown and described.

6. In an organ or similar wind instrument, the combination with the wedge-shaped flap-valve d , of a chamber b' in which the same is located, passages a' and b^2 opening into the valve chamber b' at opposite sides thereof, a playing channel h , a passage g' connected therewith, a valve chamber e' communicating with the passages g' , b^2 and g , a register channel f in communication with the passage g , and a flap-valve d' located in the chamber e'

and adapted to close the passages g and g' , as desired, substantially as shown and described.

7. In an organ or similar wind-instrument, the combination with the wind-tube entrance, of a hollow wedge-shaped valve therefor, one side wall of which is higher than the other, adapted to be actuated by the air pressure, a passage b^2 , having an opening opposite to the wind-tube entrance adapted to be closed by the valve when the same is moved from the wind-tube entrance, a band c located above and partially covering the chamber between the opening b^2 and the wind-tube entrance, and means for controlling and varying the pressure of the air in the passage b^2 , substantially as shown and described.

8. A valve for use in wind-instruments, having a central hollow open at one end, one side wall of which is higher than the other, substantially as shown and described.

9. A wedge-shaped valve for use in wind-instruments, having a central hollow open at one end, one side wall of which is higher than the other, substantially as shown and described.

Signed at Brunswick, in the Duchy of Brunswick and Empire of Germany, this 9th day of June, 1893.

GUSTAV SANDER.

Witnesses:

JULIUS TECKEL,
A. HÄNSCHEN.