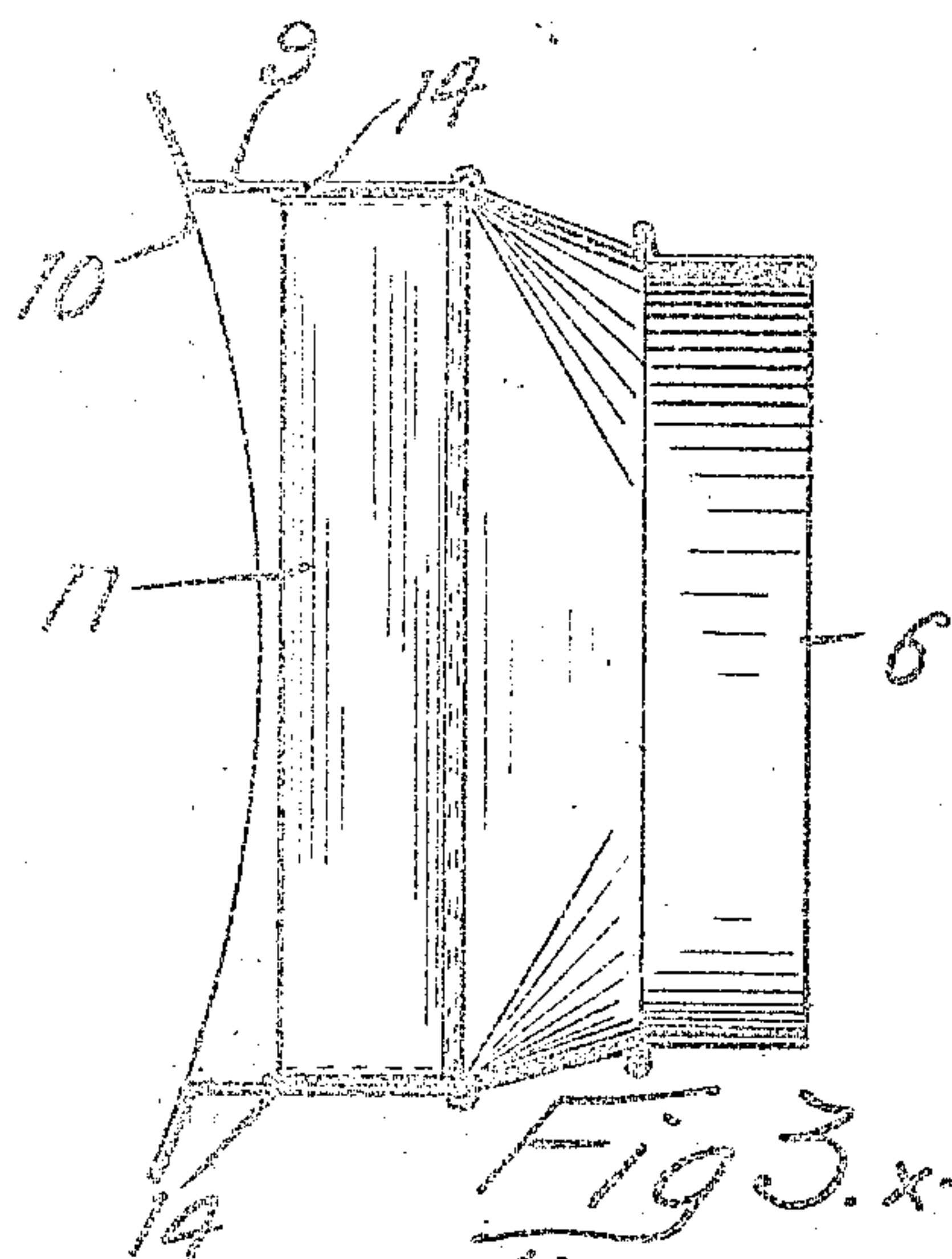
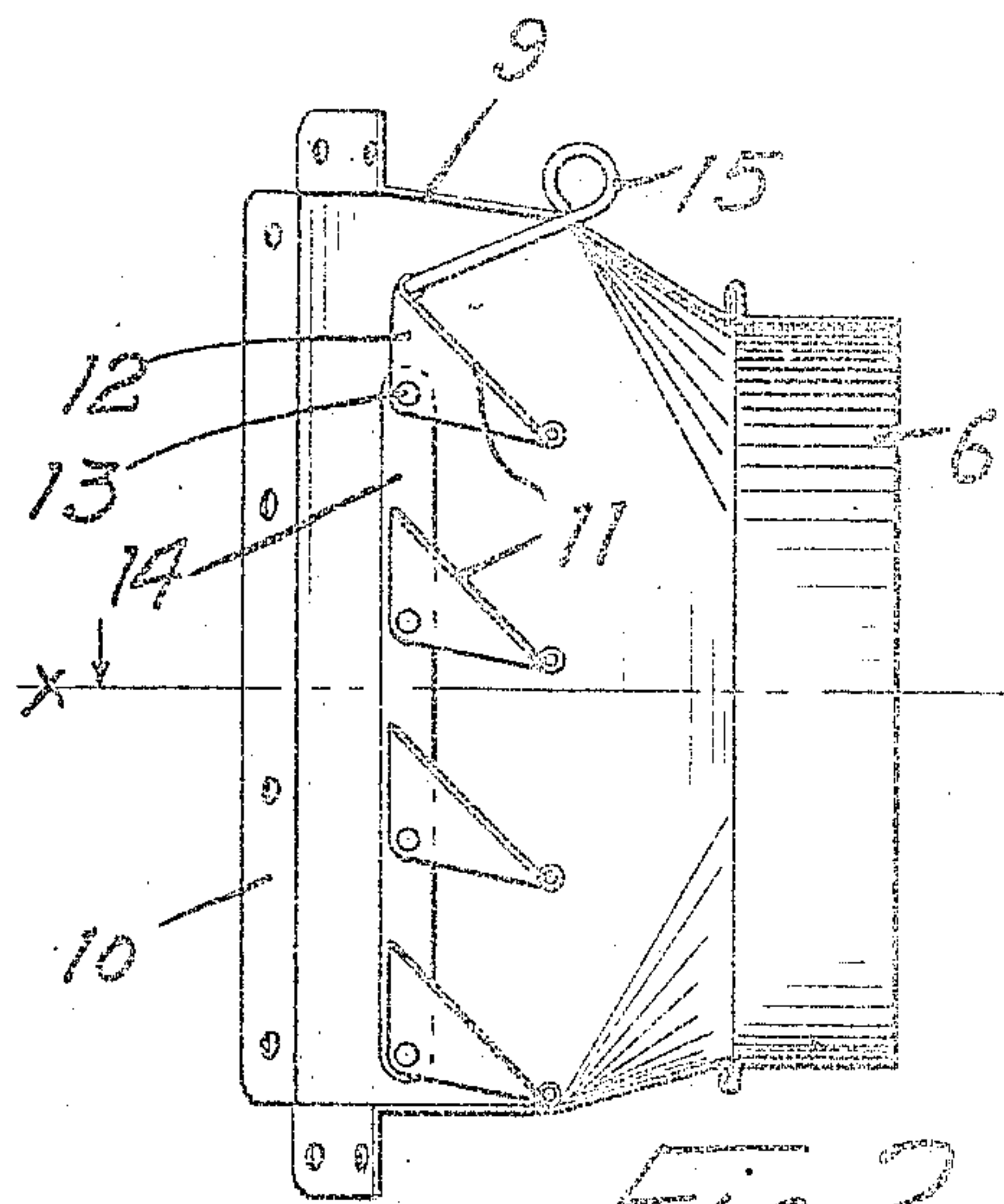
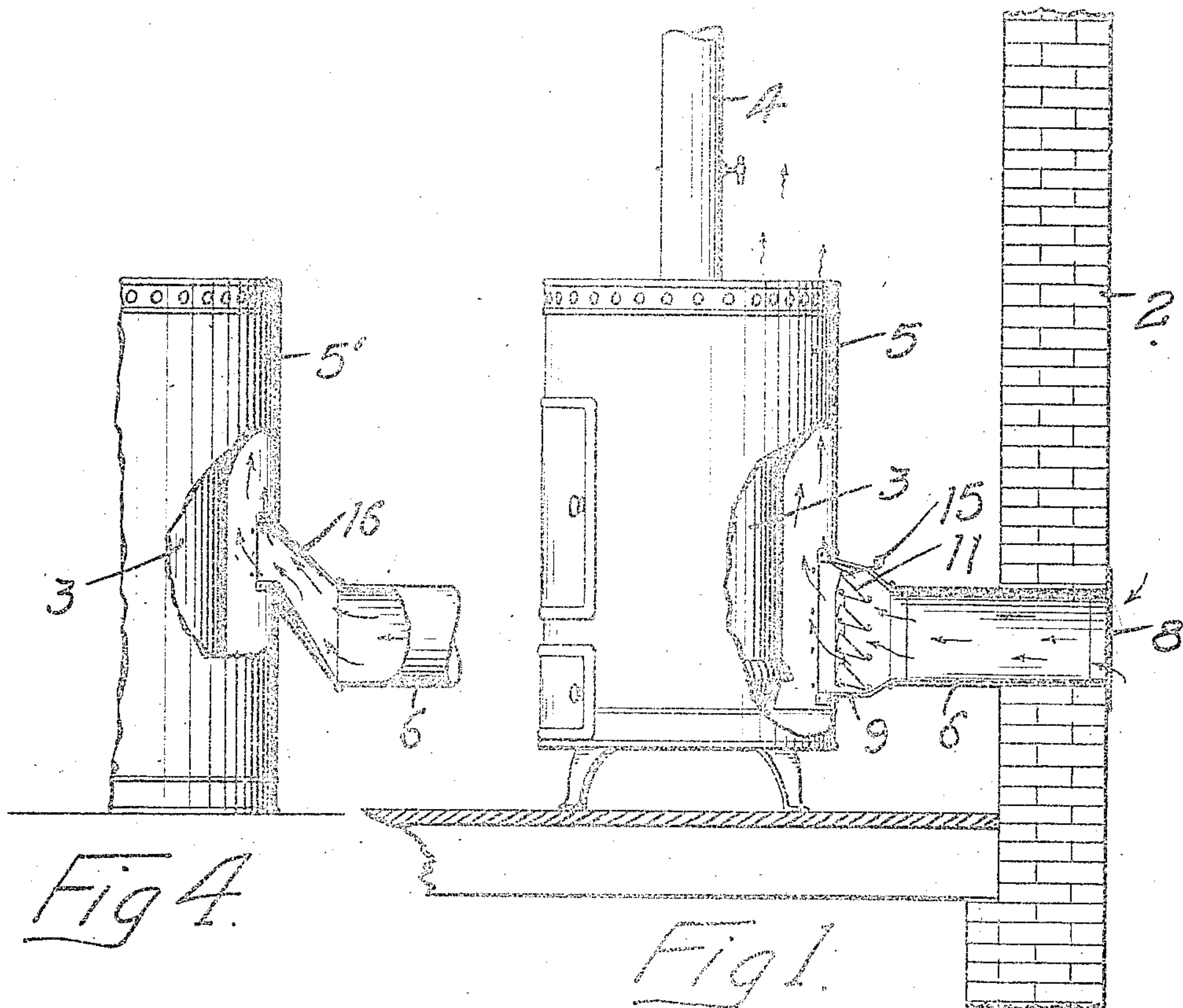


J. L. WATERBURY & C. WATERMAN.
HEATING AND VENTILATING DEVICE.
APPLICATION FILED MAR. 7, 1908.

903,644.

Patented Nov. 10, 1908.



WITNESSES
J. A. Byington

INVENTORS
JAMES L. WATERBURY
CLYDE WATERMAN
BY Paul Paul
THEIR ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES L. WATERBURY AND CLYDE WATERMAN, OF MINNEAPOLIS, MINNESOTA.

HEATING AND VENTILATING DEVICE.

No. 903,644.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed March 7, 1903. Serial No. 419,666.

To all whom it may concern:

Be it known that we, JAMES L. WATERBURY and CLYDE WATERMAN, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Heating and Ventilating Devices, of which the following is a specification.

The object of our invention is to provide an attachment for a stove or other heater by means of which pure air may be admitted to the room and warmed before distribution so that an even circulation of pure, fresh air can be obtained in all parts of the room without creating a draft. The invention is peculiarly adapted to school rooms where the presence of many persons has the effect of rendering the air foul and unhealthful in a short time unless some efficient ventilating means is provided.

A further object is to provide an apparatus that is simple in construction, inexpensive of installation and capable of use with a great variety of heaters.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification; Figure 1 is a side elevation of a heater illustrating the application of our invention to a heater, the wall of the casing around the heater being broken away. Fig. 2 is a detail view illustrating the deflecting device provided outside the wall of the casing. Fig. 3 is a sectional view on the line $x-x$ of Fig. 2. Fig. 4 illustrates a modified construction of the deflector.

In the drawing, 2 represents a wall, and 3 a heater having a flue 4 for products of combustion. Upon this heater we arrange the well known cylindrical casing or shell 5 open at the top and bottom to allow the cold air near the floor to pass up between the casing and the heater. The space between the casing and the heater is unobstructed to permit the free passage of the air. For the purpose of introducing cold air into the space between the heater and the casing we provide a pipe 6 arranged in the wall 2 of the building and having a screened opening 8 through which the pure fresh air is admitted. This pipe may be in any suitable position in the wall with respect to the floor of the room, and of suitable size to obtain the desired amount of air. The inner end of the pipe 6 is provided with a slightly en-

larged rectangular section 9 having a curved end 10 to fit the wall of the casing 5 and inclose an opening therein. The section 9 is secured to the casing by rivets or other suitable means.

For the purpose of deflecting the cold air upward and preventing the heat from the heater acting as a cushion to hold back the entrance of the cold air into the casing we provide a series of valves 11 comprising flat plates extending transversely of the section 9 and provided with ears 12 and pivoted on cross rods 13. A link 14 connects the ears 12 of the series of valves to insure their simultaneous operation, and a rod 15 is attached to the upper valve and extends through the upper wall of the section 9 in position to be grasped by the operator when it is desired to open or close the valves. The valves are arranged to lap by one another so that when they are in a vertical position the passage through the section will be entirely closed. When they are open, as indicated in Fig. 2, the air entering the pipe 6 will be deflected upward in the direction of the arrows, and be prevented from dropping down to the bottom of the casing and to the floor of the room. We are thus able to introduce pure fresh air into the casing without in any way obstructing the passage between the casing and the heater. We regard this as an important feature of the device.

We prefer to make the section 9 of greater cross sectional area than the pipe 6 to compensate for the space occupied by the valves, or in other words, provide a section of sufficient size so that when the valves are open the area of the passageways between them will in the aggregate correspond substantially to the cross sectional area of the pipe 6. We are thus able to introduce cold air to the casing without retarding its passage. The valves are capable of adjustment to regulate the size of the passages between them according to the temperature of the air entering the pipe 6.

In Fig. 4 we have illustrated a modified construction which consists in providing a section 16 at the inner end of the pipe 6 that is flattened slightly with respect to its upper and lower walls, particularly, and is upwardly inclined so that the lower wall of the section directs the air upward from the point where it is discharged from the pipe 6 and causes it to enter the casing at an angle to the horizontal, the result being that it

will, mingle with the warm air around the heater and will not tend to settle to the floor as might be the case if it entered the casing horizontally. We also provide in Fig. 4 a casing 5' which extends entirely to the floor, its wall being spaced from the heater in the same manner as the casing described with reference to Fig. 1. This casing 5' is open at the top and the fresh air introduced through the pipe 6 will ascend between the casing and the heater and mingling with the currents of warm air pass out into the room. It will also be noted in this construction that the space between the casing and the heater is entirely unobstructed and there is nothing to prevent the free upward passage of the currents of air.

The sections 16 having no valves may have the same cross sectional area as the pipe 6 though differing somewhat in form.

We have illustrated this invention as attached to the casing of a stove but do not wish to confine ourselves to such application as it is capable of use with other styles of heating apparatus.

We claim as our invention:

1. The combination, with a heater, of a casing inclosing the same and spaced therefrom, said casing being open at the top, and the space between said casing and said heater being unobstructed, and a cold air pipe entering said casing at its side and having means positioned without said casing for imparting an upward movement to the currents of air entering said casing through said pipe.

2. The combination, with a heater, of a casing inclosing the same and spaced therefrom and having open ends, the space between said casing and heater being uniform and unobstructed, a fresh air pipe arranged to introduce cold air through the wall of said casing, and a series of valves provided in said fresh air pipe and arranged to direct the air currents upwardly at the point where they enter said casing, substantially as described.

3. The combination, with a heater, of a casing inclosing the same and spaced therefrom, the space between said casing and heater being open and unobstructed, a fresh air supply pipe having a section secured to said casing and inclosing an opening therein,

and a series of valves comprising pivoted blades having edges arranged to lap by one another mounted in said section, means connecting said valves with one another whereby all of them may be operated simultaneously, and an operating means projecting through the wall of said section, said valves being located opposite the opening in said casing to direct the air currents upwardly and outside the circumference of the same, whereby the free upward passage of the currents of air within the casing will be permitted.

4. The combination, with a heater, of a casing inclosing the same, and spaced therefrom, said casing being open at the top, and the space between said casing and said heater being unobstructed, a cold air pipe arranged to deliver a supply of fresh air within said casing, and means within said cold air pipe and outside the circumference of said casing for directing the currents of cold air upwardly as they enter said casing and preventing the heated air from obstructing the entrance of fresh air to said casing.

5. The combination, with a heater, of a casing inclosing the same and spaced therefrom, said casing being open at the top and bottom and an unobstructed space being provided between it and the walls of said heater, a fresh air pipe arranged to introduce cold air into said casing, a series of valves provided within said cold air pipe and consisting of plates hinged at one edge in said pipe and having ears and a bar pivotally connecting said ears, whereby all of said valves may be operated simultaneously, and said pipe being enlarged at the point where said valves are located to provide passages between the valves when open, corresponding in area substantially to the cross sectional area of said pipe, and said valves having means for operating them and being adapted to direct the currents of cold air upwardly as they enter said casing, substantially as described.

In witness whereof, we have hereunto set our hands this 2nd day of March 1908.

JAMES L. WATERBURY.
CLYDE WATERMAN.

Witnesses:

J. H. BALDWIN,
J. A. BYINGTON.