J. GROSSIUS.

Ventilating School-House Stove.

No. 221,811. Patented Nov. 18, 1879.

Fig. 1

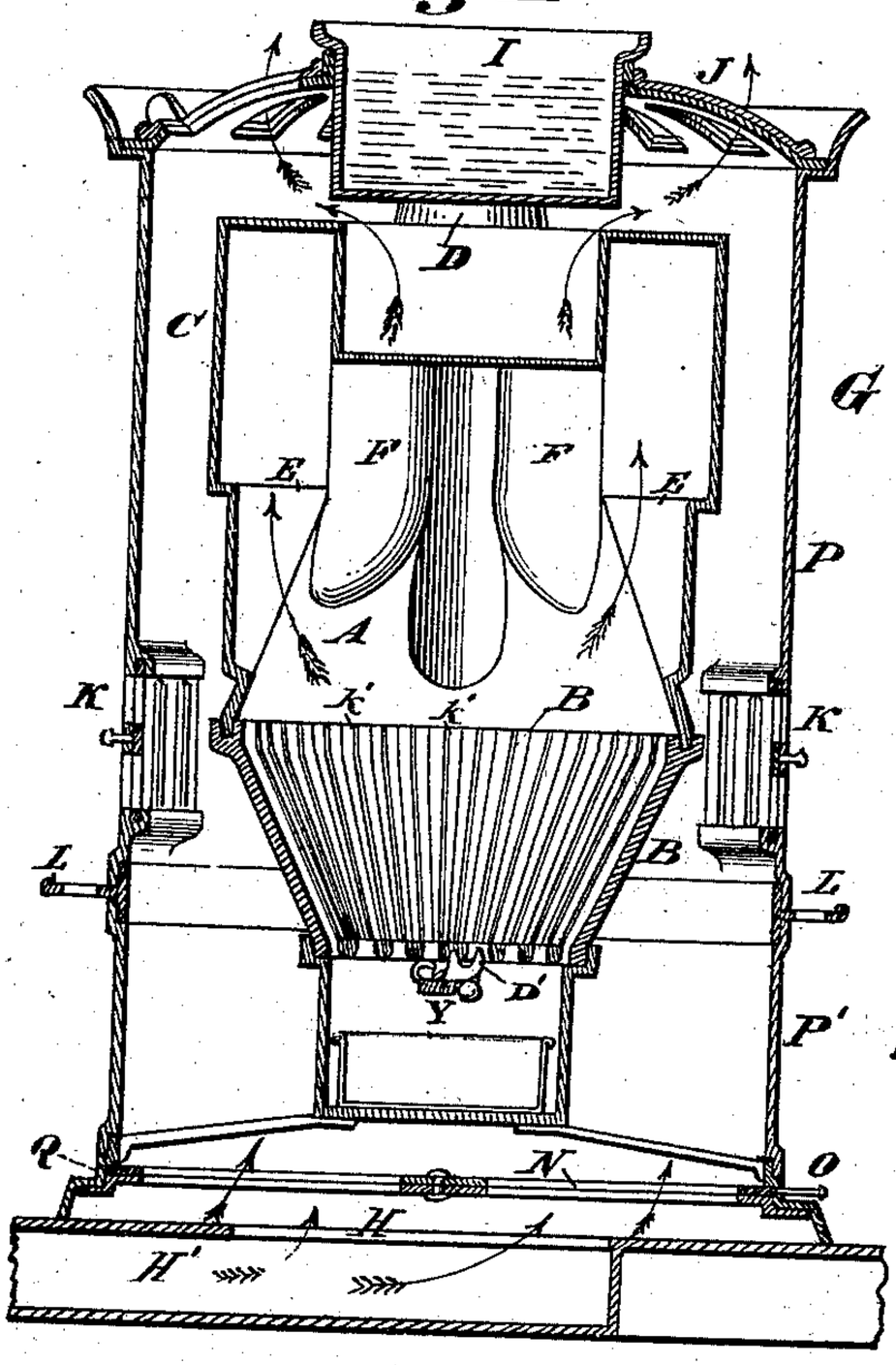


Fig. 3

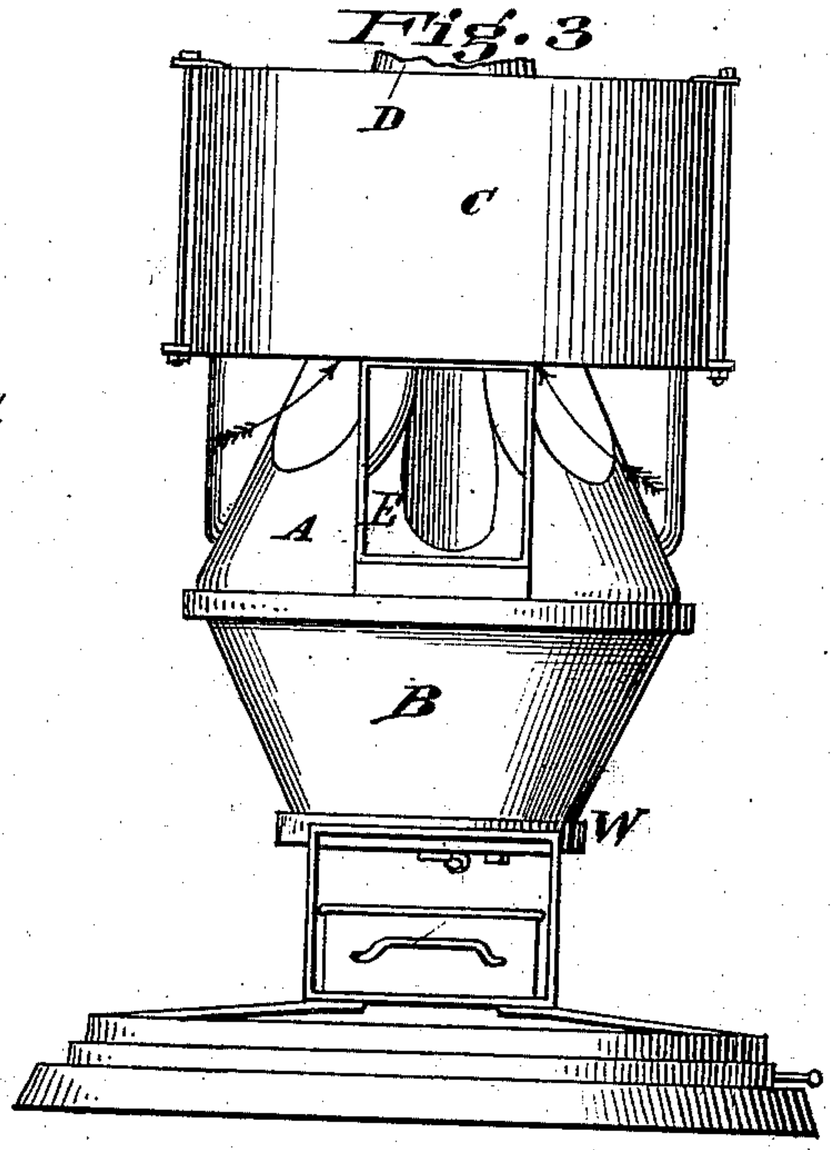


Fig. 4

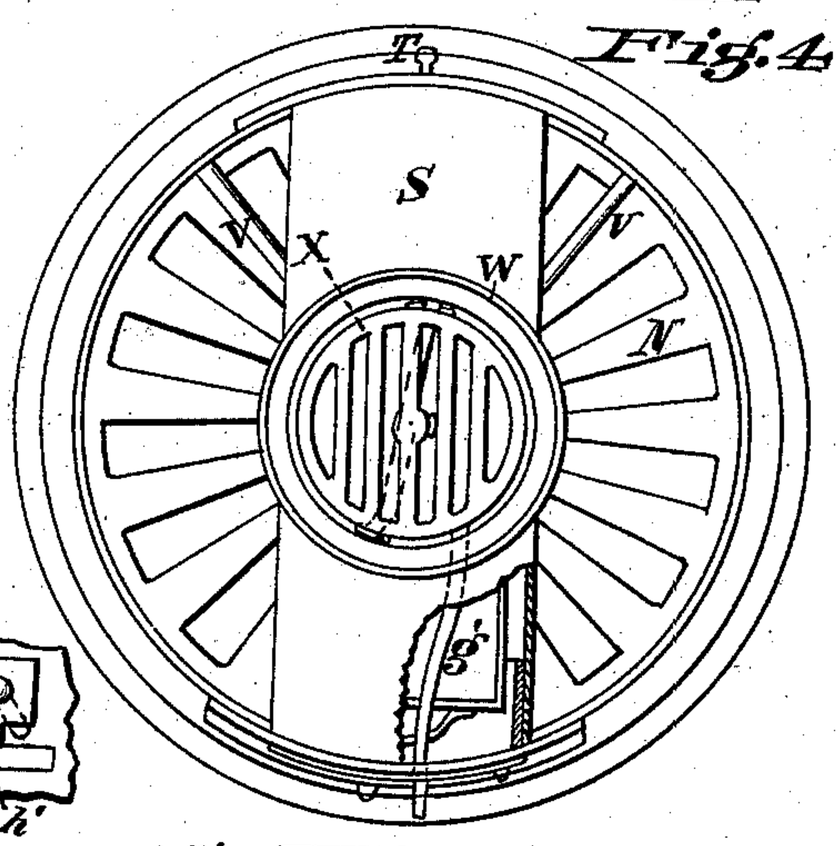


Fig. 5

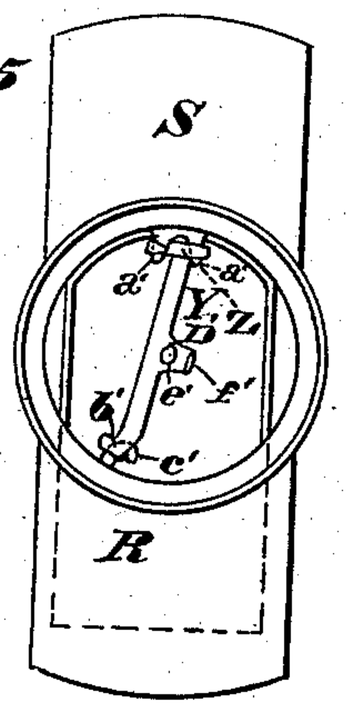


Fig. 6

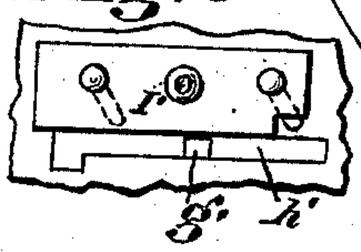
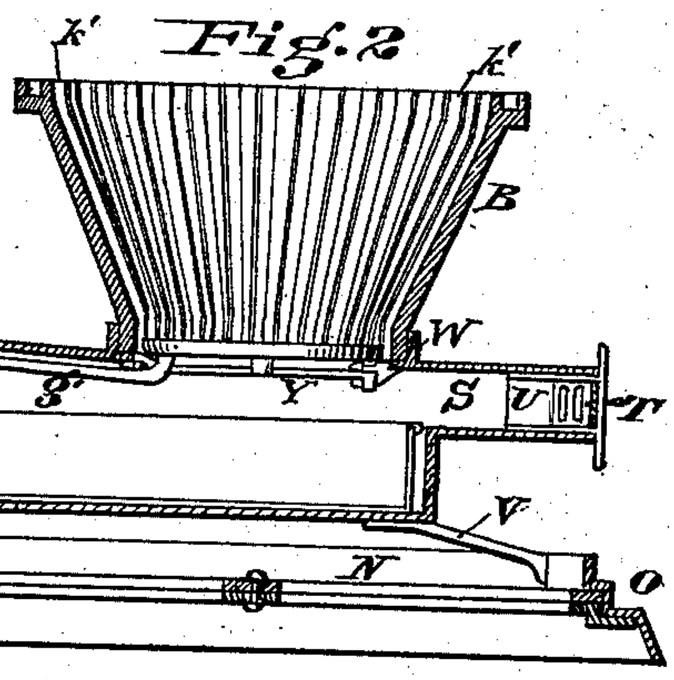


Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN GROSSIUS, OF CINCINNATI, OHIO.

IMPROVEMENT IN VENTILATING SCHOOL-HOUSE STOVES.

Specification forming part of Letters Patent No. **221,811**, dated November 18, 1879; application filed November 18, 1878.

To all whom it may concern:

Be it known that I, JOHN GROSSIUS, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and Improved Ventilating School-House Stove; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use it, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central vertical section of my improved stove, looking toward the back. Fig. 2 is a central vertical section of the base and fire-pot, taken in a plane at right angles to the section, Fig. 1. Fig. 3 is a front elevation with the case or jacket removed. Fig. 4 is a plan view of the base with the fire-pot removed and part of the conduit to the ash-box broken away. Fig. 5 is a plan view of the grate-frame and ash-box, and Fig. 6 is a front elevation of the slot and covering-door for the grate-handle.

Similar letters of reference indicate corresponding parts in the several figures of the drawings.

My present invention consists in certain improvements upon the ventilating school-house stove for which Letters Patent of the United States No. 104,581 were granted and issued to me June 21, 1870, which improvements I will now proceed to describe, and point out in the claims.

In the accompanying drawings I have shown the principal features of the heater upon which my former patent is based and to which my present improvements are applied. These features consist in a stove, A, supported upon a fire-pot, B, and provided around the upper end with an annular drum, C, communicating at its rear side with the smoke-pipe D, and at its front side with the interior of the stove through an opening, E, vertical flues F F through the drum and around the stove serving to circulate and heat the air. These parts are inclosed by a sheet-metal jacket or case, G, secured to the floor of a room over an opening, H, communicating with a conduit, H′, through which fresh air from the outside of the room is admitted around the stove within the jacket. The jacket is provided at its top with a water-basin, I, and with a register, J, by which the heated air is let into or shut off from the room, and upon opposite sides with registers K K above an encircling perforated foot-rest, L. Fuel is supplied to the stove through a door in the front side of the jacket, and a suitable opening is made below it for access to the ash-pan.

When the stove is in operation fresh air is admitted to the jacket through the conduit under the floor, and, circulating around the stove and through the heating-flues F F, is discharged into the room in the requisite quantity through the top register, J. By closing this register and opening the side registers, K, the heated air escapes through the latter for warming or drying the feet of persons resting upon the foot-support.

The bottom of the jacket, or the opening in the floor leading thereto, is provided with a suitable register, N, by which the supply of fresh air is accommodated to the capacity of the stove and the varieties in the temperature of the weather. In very cold weather less fresh air is required, and the register can then be nearly closed. In warmer weather it may be opened wider.

The register is operated by a handle, O, extending through the side of the base which supports the jacket.

The jacket is made in two parts, P P′, of sheet metal, supported upon the cast-iron base-ring Q, which may be fastened to the floor in any convenient manner. This construction cheapens the cost of manufacture and provides readier means for access to the interior of the jacket for fitting up and repairing the stove.

The ash-box is cast in the form of an oblong case, R, supported diametrically within the base-ring by any proper means, with the opening for the introduction and removal of the ash-pan arranged for access through a single or double door, R′, in the lower part, P′, of the jacket, and with a horizontal air-flue, S, at its rear end, communicating with the outside of the jacket through a register, T, in the part P′.

The flue S is located somewhat above the floor of the ash-box, as shown in Fig. 2, for the purpose of stopping the ash-pan at the proper point under the grate and to prevent the ashes from passing into the flue.

The register T for the air-flue and the door

for the mouth of the ash-box are each formed upon short collars U, which pass through the jacket and enter the mouths of the flue and ash-pit, thereby forming close joints between them and the jacket, and serving to hold the latter in place upon the base-ring. The lower part of the jacket, P, terminates just above the top of the ash-box, so that by taking off said part P the ash-box and its connections will be exposed.

It will therefore be seen that by making the jacket in sections access can be readily had to the whole lower part of the stove for the purposes stated.

One means for holding the ash-box and its connections within the base-ring consists in supporting its rear end from the interior of the ring by braces V V, and resting its front end either upon the edge of the ring or upon a ledge inside the ring. The manner of its connection is, however, immaterial so long as the supports do not interfere with the operation of the fresh-air register.

The air-flue T, by communicating with the ash-box, is employed to conduct the foul air from the room directly into the interior of the stove, and therefore acts as a ventilator, in connection with the supply of fresh air which is heated and discharged into the room through the top register.

The foul air from the room being fed directly into the stove, and the fresh air being supplied through the bottom of the jacket from the outside of the room, the stove forms a complete heater and ventilator. As the fresh air is admitted it passes around the stove, becomes heated, and is discharged into the room through the top register, while the foul air descends and is fed to the fire through the foul-air flue. The base-ring Q, not being provided with side openings, permits such circulation, because it excludes the foul-air in the room from the space between the jacket and stove.

W is the grate-rim, surrounding a circular opening in the top of the ash-box, and X is the grate.

My improvements in this part of the stove form the subject of a separate application for Letters Patent which I am about to make, and therefore are not claimed in the present case. I consider it necessary, however, to describe them herein, for the purpose of enabling others skilled in the art to make and use the stove as a whole. The following description of the grate and the means for its operation is made with this object in view:

Y is the supporting-bar of the grate, which, instead of extending diametrically across the grate-opening, is arranged with its rear end in the center thereof and its front end to the right or left of the center, in order to leave a large open space on one side. It is held in place at its rear end by a reverse-curved T-head, Z, formed upon it to engage with two pins or lugs, *a' a'*, projecting from the grate-rim beside each other, but not in the same vertical plane. The downward curve of the T-head rests down upon the lower pin, and the upward curve bears against the under side of the upper pin. The front end, *b'*, of the bar is curved a little to one side, and formed with a notch in its under side, which fits over a hook, *c'*, on the grate-rim, as shown. By this construction the bar can be easily applied and removed, and when in place is effectually prevented from turning upon its supports.

The center of the bar carries a lateral upturned double hook, D', the inner prong, *e'*, of which fits into a central recess in the under side of the grate to support the latter and form a pivot, upon which it is oscillated to sift the ashes. The outer prong, *f'*, serves to catch and hold the grate when dumped. The flattened or squared handle *g'* of the grate is a little on one side the center, and projects to the front of the stove through a narrow horizontal slot, *h'*, in the door-frame or in the jacket P', just above the doors of the ash-box. When the handle is swung to the right of this slot the grate is properly sustained on the bar Y to support the fuel in the fire-pot; but when swung to the left of the slot the preponderance of weight lies to the right of the bar Y, and it can then be easily turned in that direction to dump the fuel into the ash-box. As it swings over its center bar is caught by the prong *f'*, and the grate is therefore prevented from falling down.

The prongs *e' f'* are so arranged with relation to each other that when the grate is swung up its center recess will readily drop over the prong *e'*.

When the grate is turned with its handle at the right side of the slot a vertically-sliding door, I', on the jacket is moved down to cover the slot, a notch being made in one corner to lock the grate-handle against being casually moved, and also to allow the door to slide down the requisite distance for closing the slot completely.

The fire-pot B is supported upon the grate-rim, and its interior is cast or otherwise provided with a series of parallel vertical ribs, *k'*, to hold the fuel off from the walls, and thus form air-passages around it, by which a better combustion of the fuel is effected. These air-passages also greatly assist in accelerating the passage of foul air from the room through the flue T, and therefore add very much to the ventilating capacity of the stove.

Having thus described my invention, what I claim is—

1. The ash-box and foul-air flue made in one continuous part, extending from the front to the rear of the stove under the grate, the ash-box opening at the front of the jacket, and the foul-air flue opening at the rear of the jacket, substantially as described, for the purpose specified.

2. The ash-box and foul-air flue extending through the jacket from side to side, the bottom of said flue being above the level of the

bottom of the ash-box, and the top of the two combined forming a level surface around the grate-opening, substantially as described, for the purpose specified.

3. The foul-air flue and ash-box made in one part, arranged transversely of the stove-jacket, being supported thereby, and in its turn supporting the grate and fire-pot, substantially as described, for the purpose specified.

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Witnesses:
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