2 Sheets—Sheet 1.

M. W. CHASE.

Heaters for Desks and Seats.

No. 198,351. **Patented Dec. 18, 1877.**

Fig 1.

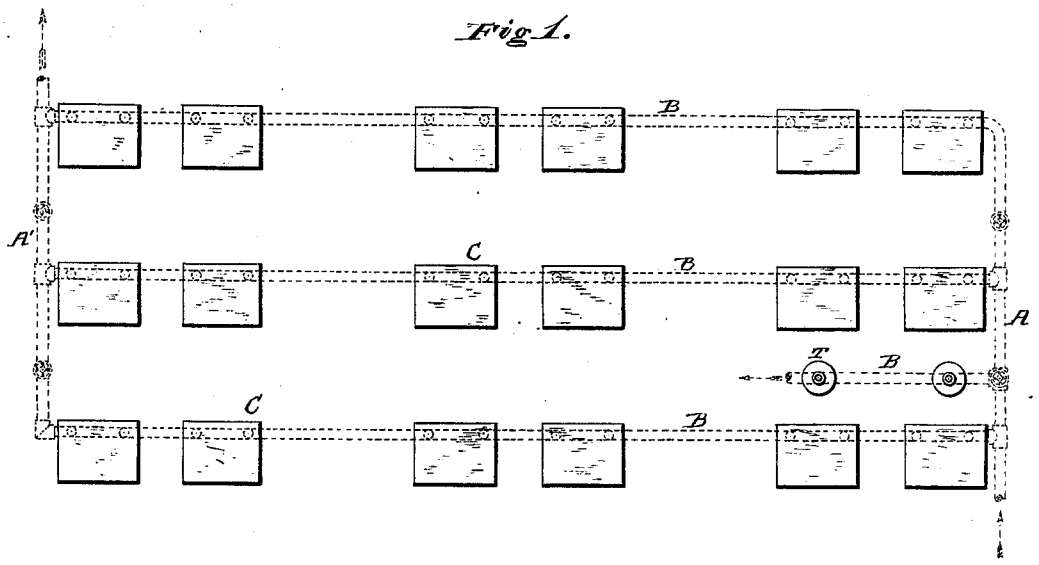
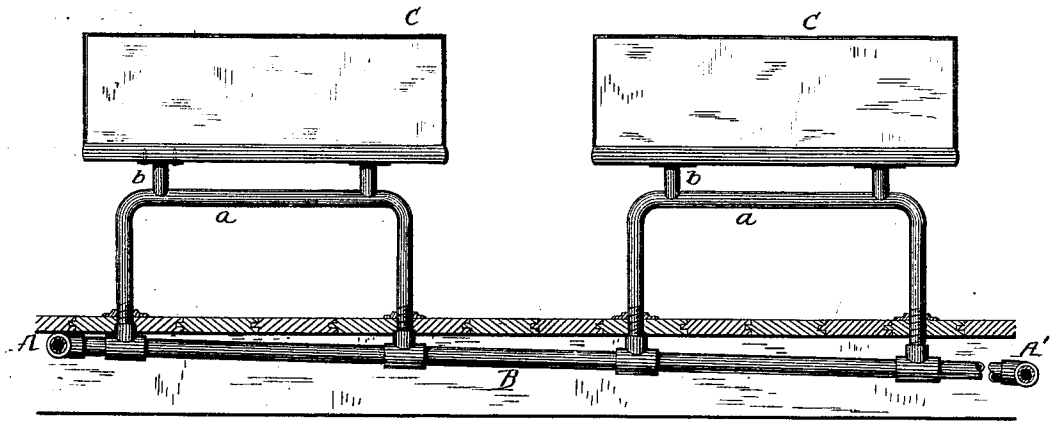


Fig 2.



Witnesses.

Harry King

George Shown,

Inventor.

M. W. Chase

By his attorney

Charles E. Foster

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

M. W. CHASE.

Heaters for Desks and Seats.

No. 198,351. **Patented Dec. 18, 1877.**

Fig 3.

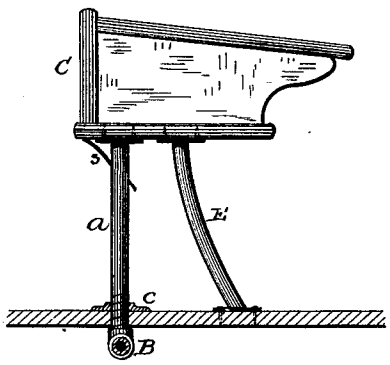


Fig 5.

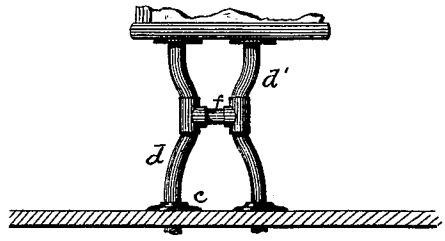
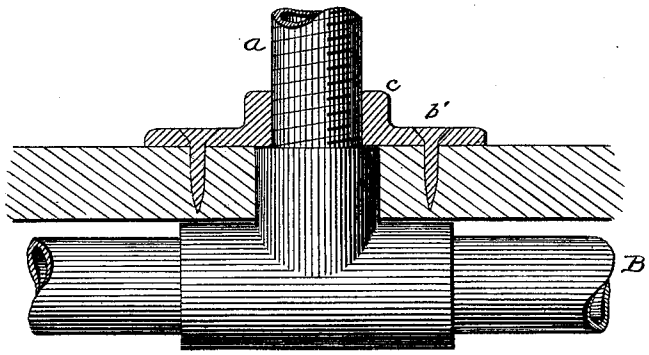


Fig 4.



Witnesses.

Harry King

George Thom

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By his attorney

Charles Foster

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UNITED STATES PATENT OFFICE.

MARCELLUS W. CHASE, OF BUFFALO, NEW YORK.

IMPROVEMENT IN HEATERS FOR DESKS AND SEATS.

Specification forming part of Letters Patent No. **198,351**, dated December 18, 1877; application filed June 12, 1877.

To all whom it may concern:

Be it known that I, MARCELLUS W. CHASE, of Buffalo, Erie county, New York, have invented Improvements in Heating School-Rooms, of which the following is a specification:

The object of my invention is to uniformly heat school-rooms and similar places, and to utilize the heating-pipes as supports for the desks, seats, &c.; and this I effect by the system of heating-pipes fully described hereinafter, and illustrated in the accompanying drawings, in which—

Figure 1 is a diagram of part of a school-room, illustrating my invention. Fig. 2 is a front view, showing the fronts of two desks and attachments; Fig. 3, a side elevation of Fig. 2; Fig. 4, a detached sectional view, enlarged, and Fig. 5 a modification.

It is well known that the usual systems of heating by radiators generally result in an unequal temperature, those portions distant from the radiators being unduly heated, or the more distant parts being maintained at too low a temperature.

Where there are a number of available spaces on the floor of a room, the arrangement of radiators at such points will, in a degree, correct this difficulty; but this cannot be done in school-rooms, churches, theaters, &c., where the seats, desks, or pews occupy all the available space.

My invention, which effectually remedies this difficulty, consists in a system of heating-pipes, or their equivalents, comprising the supply and waste pipes and hollow supports extending vertically from the supply and waste pipes at various points throughout the entire extent of the room, which will therefore be uniformly heated at all points without the necessity of a high temperature at any one point, thus reducing the cost of fuel, and resulting in a more healthy atmosphere.

In order to render this system applicable to school-rooms, churches, theaters, railway-cars, and other places where there is no available space for the arrangement of ordinary radiators, I construct the before-mentioned upright pipes in such a manner as to constitute the supports for the desks, seats, &c., with which the room must be supplied.

It will be apparent that various modes of arranging the pipes and of constructing them to furnish the desired amount of radiating-surface and the supports of the proper character may be employed. The system and construction which I have found most available is illustrated in the drawing, in which—

A represents the supply, and A′ the waste or exhaust, pipe, properly inclined to insure the flow of the drip, and B the connecting-pipes, all arranged, preferably, below the floor. C C are the desks, and *a a* are tubular supports, which extend above the floor to form continuations of, or connect with, the pipes B, serving to sustain the desks, seats, &c., and constituting the radiators, by which the room is heated uniformly throughout.

The pipes *a* may be of the inverted U shape shown in Figs. 1 and 2, their ends communicating with the pipes B, as shown; and where sufficient radiating-surface is afforded by reducing the height, posts *b* may extend from the pipes *a* upward to the level of the bottoms of the desks, which may be further braced by supplementary supports E.

In order to effect a secure attachment to the floor the pipes *a* may be threaded at the ends, and supplied with flat nuts or washers *c*, which may be adjusted to afford a firm bearing, however irregular the floor may be, and are perforated or notched for the passage of screws or staples *b′*, to secure the whole in place. In order to deflect the heat and throw it forward or sidewise, inclined plates *s* may be suitably arranged beneath the desks.

In some instances it is desirable to arrange the pipes B in a different position, so as not to interfere with the spaces at the fronts of the desks. In such cases the side standards are utilized, as shown in Fig. 5, which illustrates a simple and cheap construction, consisting of bent pipes *d d′* and T-couplings, connected by a cross-pipe, *f*, combined, forming a hollow standard of great strength, but light in weight.

If desired, the uprights *a* may be utilized for the support of the seats T, as shown in Fig. 1, or for supporting seats in churches and theaters, and desks in bank buildings, warehouses, and stores, &c.

It will be apparent that steam, water, or air may be employed as the heating medium.

Without limiting myself to any special construction of the hollow supports or to the described arrangement of supply and waste pipes,

I claim—

1. The combination of the supply and exhaust pipes of a heater and a series of hollow pipes or standards, communicating with the heating-pipes, and adapted to support or form the standards of articles of furniture, substantially as set forth.

2. The arrangement, within a room to be heated, of vertical hollow standards, communicating with the heating-pipes, and constructed to constitute the standards of desks, seats, &c., as specified.

3. The deflectors *s*, combined with the desks and heating-supports, as set forth.

4. The standards *a*, threaded and provided with nuts *c*, for the purpose specified.

5. The combination, with the pipes *d d*, T-couplings, and cross-pipes *f*, forming a hollow radiating-standard, and constructed to support a desk or other article of furniture, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARCELLUS W. CHASE.

Witnesses:
C. E. FOSTER,
HOWARD ZEVELY.