(Model.)

T. J. BRADBEER.

HOT AIR FLUE.

No. 390,438. Patented Oct. 2, 1888.

Fig. 1.

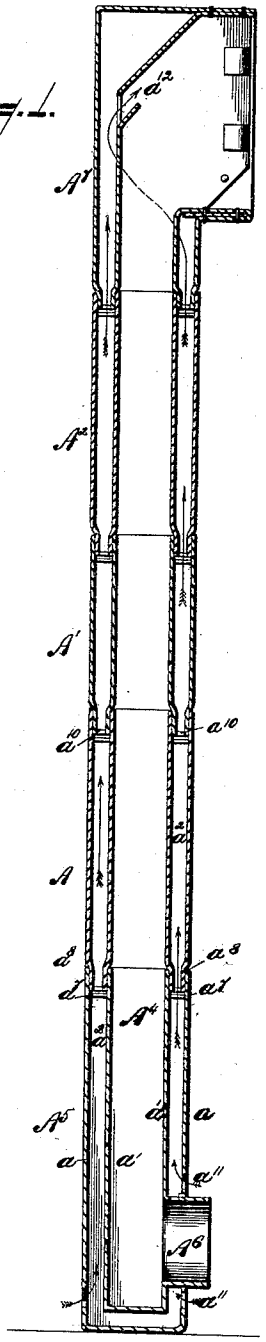


Fig. 2.

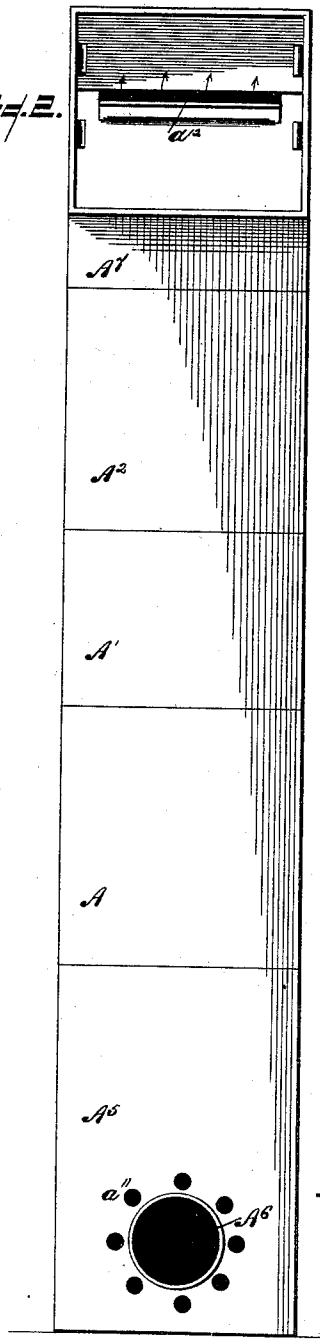


Fig. 3.

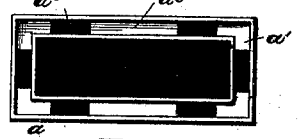


Fig. 7.

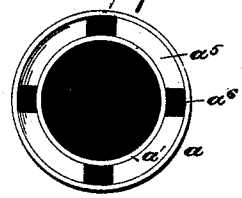


Fig. 4.

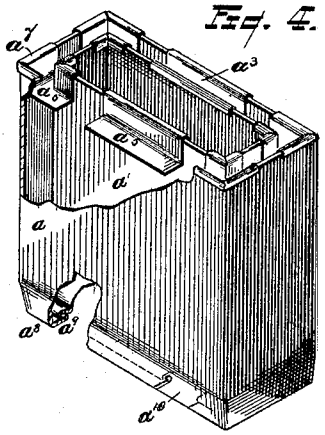


Fig. 5.

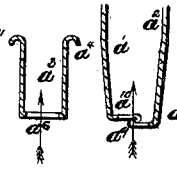


Fig. 6.



WITNESSES

Samuel E. Thomas.

M. G. Dogherty.

INVENTOR

Thomas J. Bradbeer,

By Wm. Leggett,

Attorney

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

THOMAS J. BRADBEER, OF DETROIT, MICHIGAN.

HOT-AIR FLUE.

SPECIFICATION forming part of Letters Patent No. 390,438, dated October 2, 1888.

Application filed January 4, 1887. Serial No. 223,363. (Model.)

To all whom it may concern:

Be it known that I, THOMAS J. BRADBEER, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Pipes; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a new and useful improvement in hot-air flues or wall-pipes for hot-air furnaces and indirect radiation of steam heat, steam-pipe coverings, &c.; and it consists, essentially, of the devices and their combination, as hereinafter more fully described, and more particularly pointed out in the claim.

In the drawings forming a part of this specification, Figure 1 is a vertical section illustrating my invention. Fig. 2 is a side elevation; Fig. 3, a plan view of one of the sections, and Fig. 4 a view of one of the sections in perspective, showing parts broken away. Fig. 5 is a separate view of the intermediate plate in section, and Fig. 6 a separate view in section of one end of one of the sections. Fig. 7 illustrates a modification.

I carry out my invention as follows:

One feature of my invention contemplates the construction of said flues in sections of any desired length, and preferably of varying lengths, so that from an assortment of sections of different lengths any desired extent of flue may be selected for any given location. It is my purpose, therefore, to so construct the flue in sections that a dealer or tinner or builder can carry in stock assorted lengths of sections, so that a flue of any desired length can be put together by use of the sections without cutting or waste of material.

My invention also contemplates the construction of the sections themselves and the method of their union one with another to form a continuous flue embodying the novel features embraced in my device as disclosed herewith.

A A′ A^2, &c., represent a series of intermediate sections of my improved flue, preferably of varying lengths, although sections of uniform length may of course be used where they may constitute the entire flue without cutting. Each of said intermediate sections is constructed with an outer wall, *a*, and an inner wall, *a′*, which may be mutually supported and connected in any proper manner, one with another, to constitute a combined section, my object being to provide an air-space, a^2, outside and surrounding the central or internal main flue, A^4. The air-spaces of the different sections are made to communicate with each other to form a continuous air-space, a^2, throughout the entire length of the wall-pipe and surrounding the flue A^4 the entire length of said pipe. For the purpose of engaging the different sections together end to end, the walls *a a′* at one end are united by an intermediate joining-plate, a^3, flanged, as shown at a^4, to set over the adjacent edges of the walls *a a′*, the portion a^5 intermediate the edges being depressed and provided with one or more orifices, a^6, whereby the air-space a^2 may communicate from one section to another. This depression of the plate at a^5 leaves a socket, a^7, between the adjacent walls *a a′* to receive the adjacent end of the corresponding section. The intermediate sections may thus each be provided with a socket a^7 at one end. The opposite end of the section is slightly compressed, as shown, to narrow the section at this point so as to permit its entrance into the socket a^7 of the adjacent section. This compression is illustrated at a^8. The adjacent edges of the walls *a a′* are turned in and hooked together, as shown at a^9. The flanges of these edges thus turned in and engaged are perforated, as shown at a^{10}, to afford communication of the air-space a^2 with that of the connected section. Thus each section may be provided with a compressed end and a socketed end, and thus is adapted for union with another section. As so constructed and united, the inner faces of united sections are left substantially smooth and free from obstruction, so that the central flue, A^4, is free from all impediments to the free passage of the heated air.

The lower section, A^5, of the wall-pipe of course needs only to be provided for union at one end with an adjacent section, and is provided with a collar, A^6, to connect with the furnace or radiator-box and admit the heated air into the interior flue, A^4. The outer wall, *a*, is also perforated, as shown at a^{11}, to admit cold air into the air-space a^2. It will be seen that by this construction the air-space a^2 affords

protection in the location of the wall-pipe, so that the heat from the flue A^4 shall be radiated into the said air-space, and thereby all liability of danger is effectually overcome from the presence of the heat in the flue A^4.

The upper section, A^7, of the wall-flue leading to the register-box is constructed with an orifice, a^{12}, in the interior wall, a', to admit the air from the air-space a^2 into the register, and thence find access with the heated air in the flue A^4 into the room. It will be observed that by perforating the lower section, as at a^{11}, to admit the cold air, and perforating the upper section, as at a^{12}, free circulation is provided through the air-space a^2. The air circulating through said space is of necessity heated in its passage and is delivered into the room after being so heated, so that not only is the danger from overheating in the flue A^4 overcome, but the very heat ordinarily occasioning such danger is utilized to heat the air circulating in the air-space a^2, and thereby the heating capacity of the furnace or radiator is economized and utilized, while it also becomes a safety wall-pipe. Each section is complete in itself, an air-space a^2 entirely surrounding the interior hot-air duct or flue, A^4. The outer wall of the air-space a^2 may be plastered over, and in making offsets no brick and mortar are required for safety, permitting an offset to be made as quickly as a perpendicular run. A horizontal run may also be made with equal facility.

I do not limit myself to any given shape for making the flue, and have shown it both rectangular and round, as in Fig. 7. It may be made of any desired shape without departing from the principle of my invention.

It is intended not only to use a pipe thus constructed for the purposes of a hot-air wall-pipe; but my invention also contemplates the use of my improved pipe as a steam-pipe covering protecting said steam-pipe from the air, thus preventing condensation, and also affording protection to wood-work adjacent thereto.

What I claim is—

A hot-air pipe consisting of an inner hot-air flue and an outer air-flue, the inner wall beveled outward and the outer wall beveled inward at one extremity and the metal of each engaged with the other, forming a perforated cross-wall at the extreme end of the pipe, said pipe at its opposite end having the inner and outer walls united by a separate thickness of metal extending from the extreme edge of the outer wall, passing downward between the walls a short distance, thence across and outward again to the extremity of the inner wall, and perforated along its bottom or cross-wall portion, whereby there is formed a mortised cavity of double thickness, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

THOMAS J. BRADBEER.

Witnesses:
N. S. WRIGHT,
M. B. O'DOGHERTY.