A. WORLEY.

Twin Wood Stove.

No. 46,746. Patented March 7, 1865.

Fig. 1.

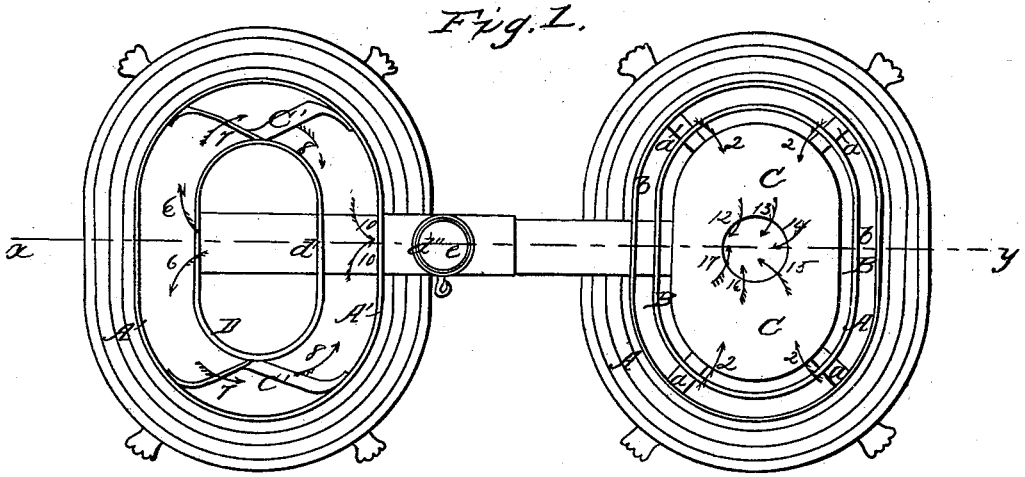
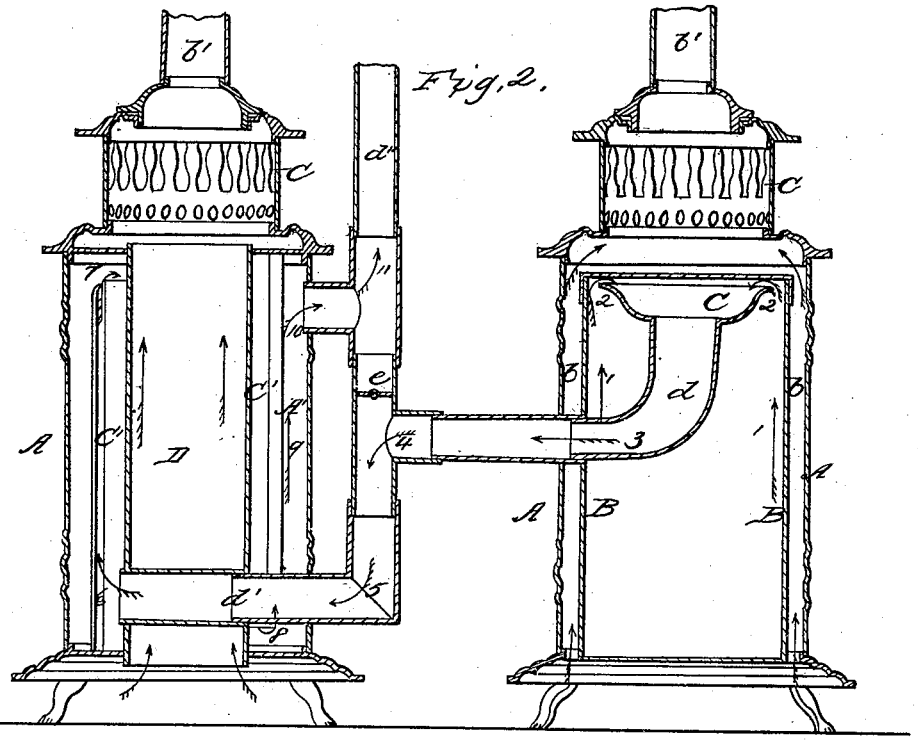


Fig. 2.



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UNITED STATES PATENT OFFICE.

ADAM WORLEY, OF ST. PAUL, MINNESOTA.

TWIN WOOD-STOVE.

Specification forming part of Letters Patent No. **46,746**, dated March 7, 1865.

To all whom it may concern:

Be it known that I, ADAM WORLEY, of the city of St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Wood-Stove Heaters; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of my twin-stove heater, showing the upper part as seen in Fig. 2, removed in order to exhibit their interior arrangements; Fig. 2, a vertical section of the same, as indicated by the line *x y*, in Fig. 1.

Like letters indicate like parts in both figures of the drawinus.

My improvement relates to the construction of what I designate as a "twin wood-stove heater," the stove proper, and the receiver. The heat is generated in the stove proper in the ordinary manner peculiar to wood-stoves, is then conducted into the receiver by a pipe passing through a partition or wall and connecting the two together. The two are similar in respect to their exterior formations. The pipe in which the smoke is conducted off and through which the draft from the flue of the chimney is admitted is connected with the receiver. The heat and smoke passing into it from the stove do not simply pass out into the pipe, as in a drum, but is there disposed of by being diffused around an air-chamber, over and under partitions, (which I will mention more particularly hereinafter,) so arranged as to retain the heat as long as possible so that the heat may be radiated into the room in which the receiver is placed and the temperature therein made as comfortable as the adjacent one in which the stove is situated. As there is generally a current of air near the surface of the floor, the air-chamber in the receiver is therefore left open below, so that the air as it ascends through the chamber, as indicated by arrows in black, is heated by the inner surfaces of the chamber, and, becoming rarefied, passes out through the interstices in the sides of the upper part of the receiver. The stove is also provided with an air-chamber. The cylinder in which the fire is built is surrounded with an outer one, between which the chamber is formed and left open below, so that the air as it ascends through the chamber (see arrows in black) is heated and rarefied by what may be termed the "fire-cylinder" and passes out through the upper part, as in the receiver. The manner and the means by which the heat is transmitted to the latter I will speak of hereinafter. The smoke-pipe in its connection with the receiver, (as herein referred to,) for the purpose of deriving as much use as possible from the heat that more or less escapes into the chimney, may be carried up into the room above and thence into the flue of the chimney instead of passing into the flue below, so that the upper room by this means may be made comfortable; or, if desirable, pipes may be carried up from the upper or top part of the stove and receiver, (provision being made for it in their construction,) through the ceiling to the floor above, and registers to regulate the heat in the rooms above, so that the same may be heated at any time by a proper regulation of the valve in the pipe connected to the stove in room below. In the heating of large rooms or halls, if desirable, the two may be used in combination to great advantage, and when used in two rooms they may be placed near the wall or partition away from the fire-place, or placed out from the wall, by extending or increasing the pipe connecting the two. The greater the extension of the pipe the more the surface, and consequently the greater the radiation.

The object of the stove proper is to make it perform the functions of two or more stoves for heating two or more apartments, so that strict economy will be had in the use of the wood, (it being constructed and adapted for that purpose only,) which is not very abundant in the section of country where it will be principally used, and where the winters are extremely rigorous, and consequently impelling a free use of the article to keep the house sufficiently warm. It is therefore designed that one fire shall answer the purpose of two or more fires. There is generally enough heat that escapes from the stove into the chimney, and a superabundance of it in the room that might be disposed of to good advantage, and hence I propose to make use

of it as contemplated by the improvement in the combination of the twin stove, and the proper disposition of it by their interior arrangements, which I will presently describe.

It may be urged that, in consequence of the distance the heat has to traverse and the downward directions it has to take before reaching the receiver, it will become expended or fail to effect the purpose for which it is intended, owing to an insufficiency of draft to drive or direct it. This would probably be the case where the atmosphere is humid, though I am not positive; but in the climate where this will be used, and where the atmosphere is clear and dry and very cold during a part of the year, a sufficient draft is obtained from the most ordinarily constructed chimney to give the heat the proper direction, as I have been able to realize from a practical demonstration.

To enable any one skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct a cylinder, A, of an oval form, of sheet-iron, supported by legs in the ordinary manner, with the base or rim part of cast-iron of an ornamental shape, and the top part in a like manner, excepting that it may be sheet-iron, if desired. On the inside is the fire-cylinder B, small enough to allow a reasonable space for an air-chamber, *b*, between it and the outer one, as seen clearly in the two figures. It is supported and held to the outer cylinder by stays *a a a a* at the bottom, as seen in Fig. 1. The intervening air-space preserves the outer as well as the inner cylinder from being burned out or discolored. The upper part of the stove has a short oval cylinder, *c*, smaller than the outer one, resting on a cast-iron rim on the latter, with interstices around the sides, as seen in Fig. 2, for the purpose of passing out the heated or rarefied air from the air-chamber, which comes in from below, as indicated by the arrows in black. The upper or top part of this cylinder has a lid or cover, which may be removed, as shown in Fig. 2, and a pipe, *b'*, placed thereon, so that a portion of the heat from one or both may be carried up into the room or rooms above, as hereinbefore mentioned. The receiver A' in respect to its exterior is constructed in a similar manner to the stove.

The heat, after being generated in the fire cylinder or chamber, passes upward, as shown by arrows 1, and is deflected off from the sides of a convex plate, *e*, into the concave part of it, as seen by arrows 2, is then carried down into a curved or elbow pipe, *d*, into a straight pipe, (arrow 3,) which passes through the partition or wall, or otherwise, if desired, to use both combined in the same room, and thence down into the vertical part of the elbow-pipe, (arrows 4 and 5,) which is connected to the receiver. This pipe *d'* passes in and across the air-chamber near the bottom. The heat then passes out at the mouth of it, (arrow 6,) and, taking an upward direction, goes over the vertical bent or curved partitions *c' c'*, (arrow 7;) descending to the bottom, comes out under openings or holes at one corner of the partitions, (arrow 8;) ascending, (arrow 9,) goes out at a small pipe, (arrow 10,) connecting with the chimney-pipe *d'*, which chimney-pipe extends down to the pipe passing through the partition or wall from the stove, and, connecting therewith, extends a little below this pipe, and is then connected to the pipe passing into the receiver, a valve, *e*, being placed just above the mouth of the connecting-pipe to regulate it. In Fig. 2 the valve is shown down to prevent the escape of the heat up the chimney-pipe into the chimney. The object in forcing it down at this point and across to the opposite side of the receiver, over and under the partitions above alluded to, is to diffuse it thoroughly in order that the surfaces of the air-chamber and outer cylinder may be well heated.

The convexo-concave plate C is placed a little below the top plate of the fire-cylinder, and is made small enough to allow a reasonable space for the heat and products of combustion to pass up and over its edges. It is supported by the curved pipe and made steady or fixed by stays between it and the cylinder. (See Figs. 1 and 2.) The stays are seen in Fig. 1. The mouth of the curved pipe connected to this plate is enlarged, so that a greater degree of draft may be introduced to assist in concentrating the heat at this point, the sloping sides of the plate tending to a center. The increase of draft created by the enlargement rapidly absorbs or draws in the heat (as shown by arrows 12, 13, 14, 15, 16, and 17) and conducts it in the proper direction.

The partitions in the receiver are curved or made nearly V shape, and are placed between the air chamber or cylinder and the outer one, as seen clearly in Fig. 1, with a hole or opening made at each corner to the left at the top, as seen by arrow 7 in Fig. 2, to allow the heat and products of combustion to pass through after its ascent, a plate above fitting closely around the air-chamber, preventing the heat and products of combustion going any farther. Another hole is made at the corner (as seen by arrow 8) at the bottom, to the right, to allow the heat and products of combustion after their descent to pass through, and by the time they reach the smoke-pipe the heat will have been effectively disposed of.

The black arrows in the air-chamber D in Fig. 2 indicate the ascent of the air from underneath and its passage out through the interstices above, as in the stove.

It will be observed that my improvement differs from the ordinary drum very materially in relation to the arrangement of the draft or chimney pipe. The pipe, instead of connecting directly with the stove, as ordinarily, and simply transmitting the heat and smoke into the drum and out into another pipe leading into the flue of another chimney, is connected

indirectly, or, rather, one pipe communicating with the flue of one chimney serves to operate both, which may be seen clearly in Fig. 2. It also differs in respect to its interior arrangements, the advantages of which I have stated.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The convexo-concave plate C and curved or elbow pipe *d*, in combination with the inner or fire cylinder, B, substantially in the manner and for the purpose herein described.

2. The curved or bent partitions *c' c'* (in the receiver) in combination with the inner cylinder, D, and outer one, A', substantially in the manner and for the purpose herein described.

3. The combination of the stove A with the receiver A', when used with their interior arrangements as described, substantially in the manner and for the purpose herein set forth.

ADAM WORLEY.

Witnesses:

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