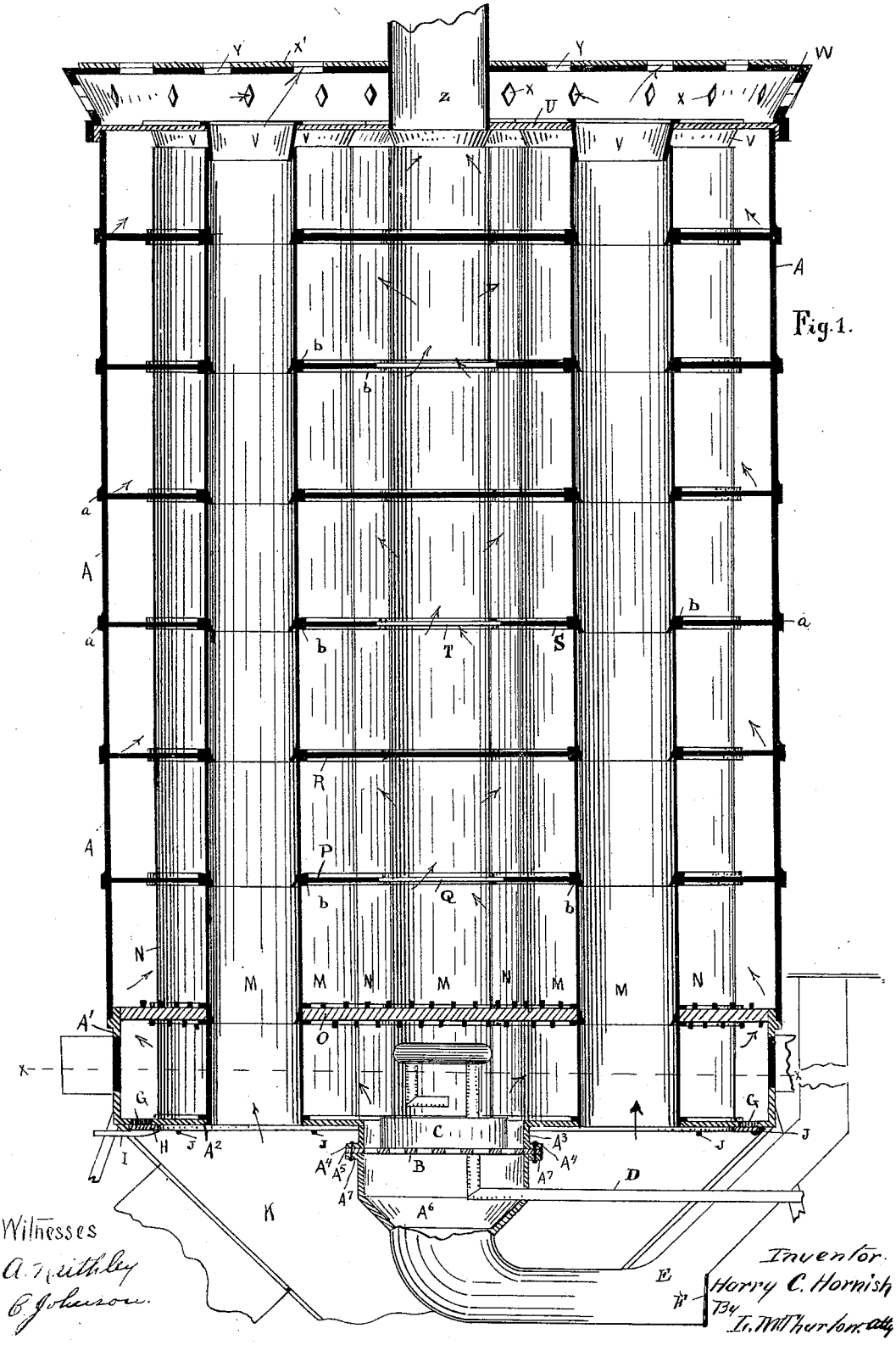
(No Model.) 2 Sheets—Sheet 1.

# H. C. HORNISH.

## STOVE OR FURNACE.

No. 508,475. Patented Nov. 14, 1893.

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(No Model.) 2 Sheets—Sheet 2.

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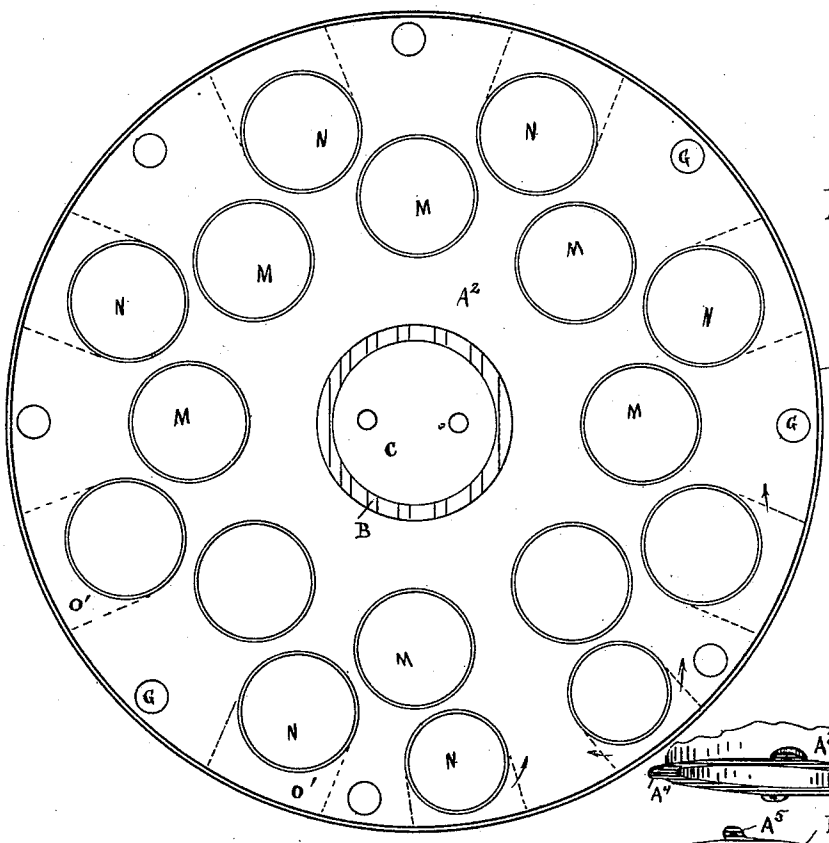



Fig. 2.




Fig. 3

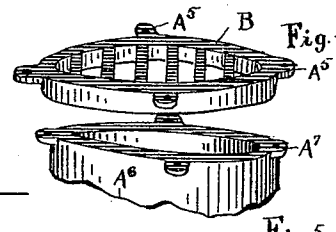
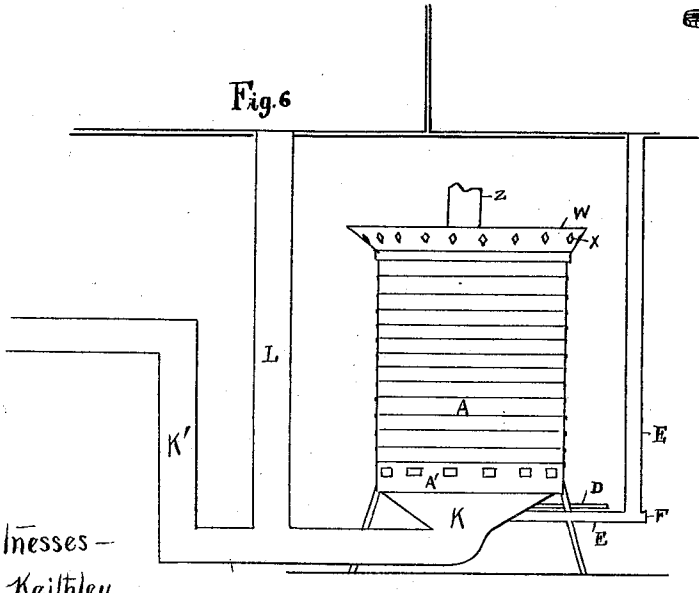



Fig. 4.

Fig. 5.

Fig. 6

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# UNITED STATES PATENT OFFICE.

HARRY C. HORNISH, OF PEORIA, ILLINOIS.

## STOVE OR FURNACE.

SPECIFICATION forming part of Letters Patent No. 508,475, dated November 14, 1893.

Application filed February 7, 1893. Serial No. 461,408. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY C. HORNISH, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Stoves or Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in stoves or furnaces.

The object of the invention is to furnish a large heating surface and to use oil or gas as the heating agent by which use the heat is always constant at whatever degree it is started.

In the drawings presented herewith, Figure 1 represents a sectional elevation of the stove. Fig. 2 is a plan view of the stove through dotted line *x x* Fig. 1. Fig. 3 is a perspective view of a portion of a flange made with the bottom of the stove or furnace. Fig. 4 is a perspective view of a grid or open plate which supports a burner. Fig. 5 is a perspective view of a draft pipe held up against the said plate above mentioned, to carry air to the burner. Fig. 6 is an elevation of the device when used as a furnace.

A A represent the casing of a stove or furnace made in sections as shown; the lower edge of a section having made therewith a flange *a* which projects over and rests upon the upper edge of the section below it.

The lower section A′ is cast with a bottom $A^2$ and a depending open annular flange $A^3$ with ears $A^4$ to which is bolted by corresponding ears $A^5$ a grid B and a draft pipe $A^6$ by ears $A^7$. Upon the grid B rests a gas or other burner C and this is supplied with a fuel by a pipe D. The draft pipe $A^6$ leads from a pipe E which enters a room above and draws the air down and discharges it through the smoke passage, and the pipe E is opened at its lower portion and admits air through a damper F.

Around the bottom $A^2$ near its outer edge are a number of holes G which are opened and closed by a ring H provided with holes corresponding to the holes G and the said ring is rested on lugs J cast with the bottom. A projection I is cast with the ring and projects through a slot in a cold air conduit K. The conduit K brings air in from out of doors through pipe K′ and a pipe L also draws the air from the room above, all of which is shown in Fig. 6. A door is hung on the conduit pipe K and through the opening, the interior parts may be reached. Around the periphery of the casing of section A′ a number of doors are placed to admit air to furnish more draft for the device.

A double row of pipes M N, an inner and an outer row, are run from the bottom to the top of the stove or furnace and each pipe is made in sections and near the upper and lower ends of each section is formed a bead *b*.

The lower ends of the lower sections of pipes are let through the bottom plate through holes and rest on the bottom by reason of the said beads *b* and the upper ends of the said series of pipes support a plate O in the same manner, *i. e.*, by the beads. This plate O is of considerable thickness and is provided with lugs on both of its surfaces, for retaining heat, and is of such diameter as to completely fill the interior diameters of the casings, but the metal is cut away back of the outer row of pipes as shown in Fig. 2 at O′, so that the heat rises from the burner and passes up behind each pipe and heats it, then passes toward the center of the stove and up through a hole Q in a second plate P supported on the pipes the same as plate O. The plate P is of full diameter of the interior of the stove and is without the opening behind the pipes described above in regard to the plate O. Therefore the heat from the burner must pass to the center and then up to find an outlet, and a third series of pipes on top of this supports a third plate R cut out the same as plate O, then a plate S with the hole T the same as plate P and so on; every other plate being open at its center and closed on its periphery and the intermediate plates being closed at the center and having the opening in their peripheries back of the pipes on the outer circle. It may be understood that holes are cut in the plates to let the pipes through. This system of building the pipes and plates alternating, forms a continuous tortuous passage of the heated air which impinges on every possible heating surface.

The upper ends of the top series of pipes

do not come quite to the stove top U and a tapering collar V is let down through holes in the top which enters the pipes to form a tight joint.

On the top of the stove is placed a flaring cap W with holes X around its circumference and having holes Y, in the top around the edge, which are opened and closed by a damper X′ which is a plate with holes drilled therein and corresponding to the said holes Y. The said plate X′ is held in place by the pipe Z around which it moves in operation.

In operation the air enters through the conduit K, passes up through the pipes M and N and the pipes heated, by the heat from the burner, the said air is heated and passes to the rooms to be heated. The air also passes through the holes G in the bottom $A^2$ and aids the draft from the burner to the outlet, and the pipe E leads the air from the rooms to the burner itself and also assists in the draft.

I claim—

1. In a stove or furnace, an outer casing built up of sections and having the flanges *a a* fitting and resting upon the top edges of said sections, a lower section A′ having the bottom $A^2$ made therewith and having the depending open annular flange $A^3$ made with the bottom and having the ears $A^4$, which support by bolts a grid or open plate B, and a pipe $A^6$, drawing air from the room or rooms above and provided at its lower portion with a damper F in the manner and for the purposes set forth and described.

2. In a stove or furnace, an outer casing built up of sections in the manner and for the purposes set forth, the lower section thereof having made therewith the bottom $A^2$ with the holes G, a circular ring H acting as a damper and resting on lugs J, a series of pipes M and N resting upon and opening through the bottom, and supporting a plate O of the full diameter of the interior of the stove and having air passages O′ behind the said pipes N substantially in the manner and for the purposes set forth and described.

3. In a stove or furnace, the combination of a series of vertical heat conducting flues built up in sections, an apertured deflecting plate supported between each section of said series of pipes substantially in the manner and for the purposes set forth, and a casing A built up in sections to surround said pipes and deflecting plates substantially as set forth.

4. In a stove or furnace an outer casing built up in sections in the manner set forth and described, the lower section A′ being made with a bottom $A^2$ having the depending flange $A^3$ with the ears $A^4$ and supporting a grid or open plate B, a burner C resting on the said grid to approach a circular deflecting plate O being supported by an inner and an outer row of pipes M and N respectively resting upon and opening through the bottom $A^2$, said plate having air passages cut therein immediately back of the said pipes N in the manner and for the purposes herein set forth and described.

5. In a stove or furnace an outer casing built up in sections in the manner set forth, the lower section *a′* having the bottom $A^2$ made therewith supporting an inner and an outer row of pipes M and N respectively, built up in sections, said pipes supporting a plate O having air passages O′ cut out back of the said pipes N, a second section of pipes resting upon the plate O and fitting into the first section of pipes and supporting a plate P with a central aperture Q, said plate being the full diameter of the interior of the casing, a third series of pipes resting upon the plate P and fitting into the series of pipes last described and supporting a plate R corresponding to the plate O and thus continuing and building up said stove or furnace in the manner and for the purposes herein set forth and described.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY C. HORNISH.

Witnesses:
C. JOHNSON,
A. KEITHLEY.