No. 851,044. PATENTED APR. 23, 1907.

J. A. TYNAN.

HEATING STOVE.

APPLICATION FILED MAR. 6, 1906.

2 SHEETS—SHEET 1.

Fig 1

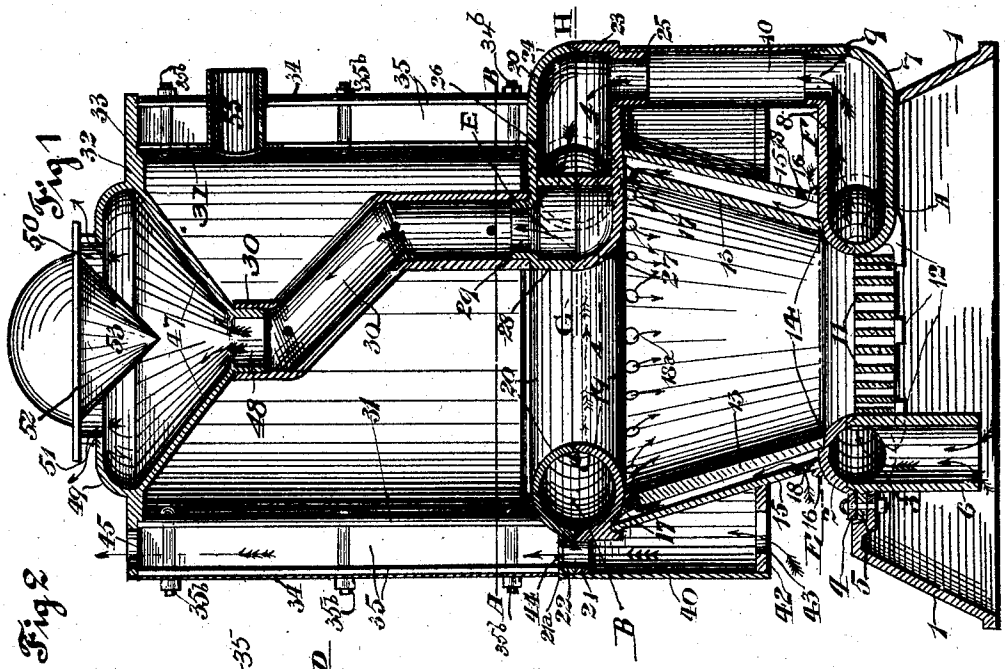


Fig 2

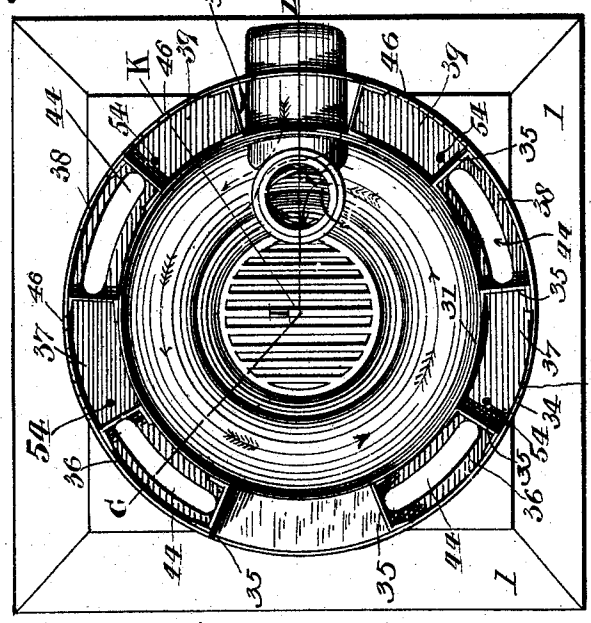


Fig 3

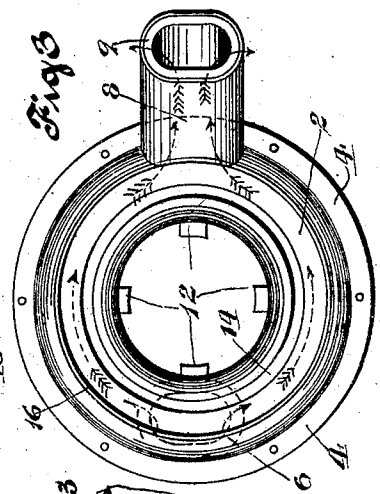
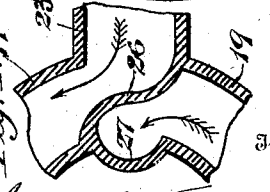


Fig. 4.



Witnesses

Wm. O. Morch

F. Gimbel.

Inventor

John A. Tynan

By Thompson & Peck

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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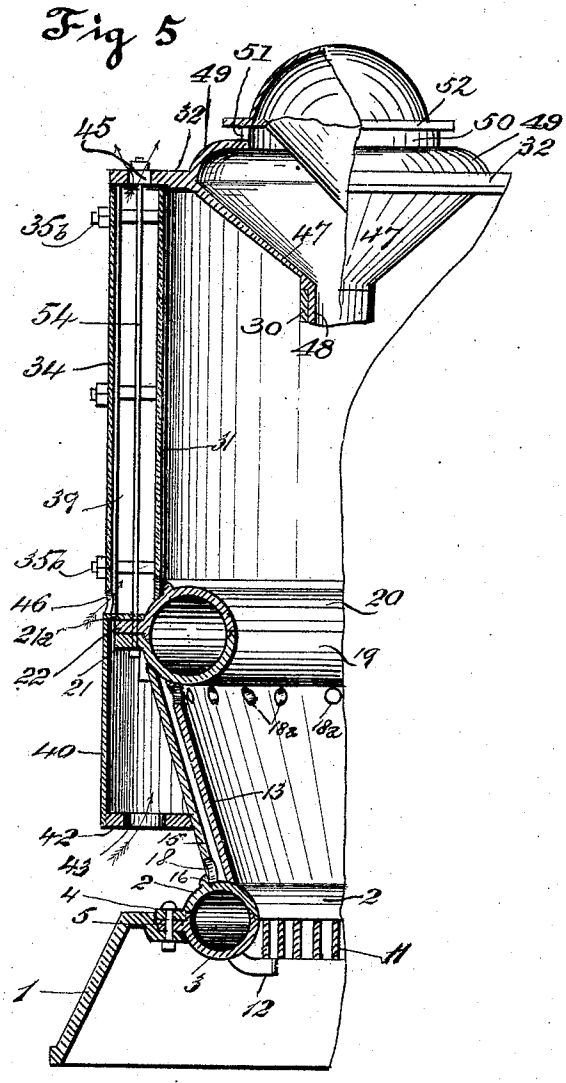
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HEATING STOVE.

APPLICATION FILED MAR. 6, 1905.

2 SHEETS—SHEET 2.

Fig 5



WITNESSES:

Francis M. Springer

W. W. Defrees

INVENTOR.

John A. Tynan

BY

Thompson & Bell

ATTORNEY

THE NORRIS PETERS CO., WASHINGTON, D. C.

REISSUED

UNITED STATES PATENT OFFICE.

JOHN A. TYNAN, OF INDIANAPOLIS, INDIANA.

HEATING-STOVE.

No. 851,044. Specification of Letters Patent. Patented April 23, 1907.

Application filed March 6, 1905. Serial No. 248,577.

To all whom it may concern:

Be it known that I, JOHN A. TYNAN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Heating-Stoves, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to heating-stoves, and consists in an arrangement of air circulating and heating means whereby the air in the chamber in which the heating-stove is situated is caused to circulate through said circulating and heating means to rapidly raise its temperature, as will be hereinafter described, and particularly pointed out in the claims.

The objects of this invention are, first, to provide a cheap, efficient, and economical or fuel-saving heating-stove; also, to provide an air-heating means whereby the air will be thoroughly and quickly heated and speedily circulated through said air-heating means, and whereby the heated air will be rapidly discharged from and out of said air-heating means of the stove to be disseminated throughout the chamber or room wherein said stove is situated. I attain these objects by means of the heating-stove illustrated in the accompanying drawings, in which similar numerals of reference designate like parts throughout the several views.

Figure 1 is a sectional elevational view of my construction of a heating-stove, showing the air-heating arrangement thereof, and taken through the line C D. (See Fig. 2.) Fig. 2 is a plan view of the same, taken through the line A B. (See Fig. 1.) Fig. 3 is a similar plan view taken through the line E F. (See Fig. 1.) Fig. 4 is a detail broken sectional plan view of the upper air circulating and heating tube, taken through the line G H, (see Fig. 2;) and Fig. 5 is a broken vertical section of a portion of the stove, taken through the chamber 37 at the line I K. (See Fig. 2.)

The base 1 of the stove may be of any suitable form of construction and is provided for the purpose of supporting the stove at a distance above the ground.

The lower or base air circulating and heating tube is preferably composed of an upper half 2 and a lower half 3, which upper and lower halves constitute the lower or base annular air-circulating tube A, and which halves are each provided with the outer flanges 4 and 5, which extend around the outer peripheral edges of said tube-halves 2 and 3 and are suitably bolted or connected together to form a single air circulating and heating tube. The top portion of the base 1 is provided with an annular recess, which is adapted to receive the flange 5 of the bottom half 3 of the tube A to support the same. Integral on the bottom half 3 of the bottom or base air circulating and heating tube A and situated thereon to be at the front of the stove is a depending air-inlet tube 6, by which the colder air is supplied to the base air circulating and heating tube A, and on the opposite side of said air circulating and heating tube is an outlet-tube, which is divided into a lower portion or half 7 and an upper portion or half 8, which lower and upper portions are formed integral with the lower and upper portions 3 and 2 of the air circulating and heating tube A. On the ends of the said outlet-tube portions 7 and 8 are formed the elbow-halves 9, whereto the lower connecting or uptake tube 10 is fitted.

Situated in the center opening of the annular air circulating and heating tube A is the grate 11, which rests on its supports 12, which latter are spaced at suitable distances apart around said tube and are formed integral on the bottom side or bottom half portion 3 of the base air circulating and heating tube A.

The fire-pot 13 is tapered or reduced at its bottom end or is in the form of a truncated cone and has its reduced bottom end let into the recessed or flattened bearing portion 14, formed in the top half portion 2 of the base air circulating and heating tube A.

An exterior inclosing casing 15 is also made in the form of a truncated cone and is arranged to completely encircle and inclose the fire-pot 13 and has its bottom smaller end adapted to rest on the top half portion 2 of the air circulating and heating tube A and to fit in the annular ring 16, formed integral on the said top half portion 2, whereby the base of said casing is maintained in concentric position relative to the fire-pot 13 and said tube A. The top portion 17 of the fire-pot is slightly flared out and is provided with a series of hot-air-inlet openings 18^a, through which hot air is admitted into the interior of the fire-pot 13 directly over the fuel therein to promote a more thorough combustion, and thereby prevent the formation of smoke.

Around the bottom reduced portion of the exterior inclosing casing 15 are a series of air-inlet openings 18, through which the external air passes to and into the space or chamber between the fire-pot 13 and the exterior inclosing casing 15, thence to and through the top openings 18[a] of the fire-pot, as previously described, above the fire to support the combustion of the fuel.

An upper air circulating and heating tube is situated above the enlarged or flared portions of the fire-pot 13, and the said tube comprises a lower portion or half 19 and an upper portion or half 20, which portions or halves are fitted together to form the complete tube B, and said portions or halves are provided with exterior peripheral flanges 21 and 22, through which suitable securing-bolts are passed to firmly clamp together the bottom portion 19 and the top portion 20, comprising said circulating and heating tube B.

The upper air heating and circulating tube B is preferably of larger diameter than the lower or base air heating and circulating tube A in order to provide ample capacity and heating surface for the reception of the partially heated and rarefied air as it is delivered from the base circulating and heating tube A. Integral on the said portions 19 and 20 of said tube B is an inlet-elbow which comprises a lower half portion 23 and an upper half portion 24, which portions are situated at the rear of the stove to be connected to the top end of the lower connecting or uptake pipe 10.

On the lower half portion 23 of the elbow is formed the depending tube portion 25, which is adapted to fit in the top end of the lower connecting-pipe or uptake-tube 10.

A dividing wall or diaphragm 26 is formed in each of the halves 19 and 20 of the upper air heating and circulating tube and comprises upper and lower portions or halves, which portions or halves are situated one above the other and directly opposite the mouth of the inlet-elbow of said heating and circulating tube, and said dividing wall or diaphragm is provided for the purpose of forming a separating and deflecting wall, whereby the current of heated air entering the inlet end of the circulating-tube B will be compelled to flow in one direction, as in the direction indicated by the arrows, (see Fig. 2,) and thence to and through the uptake-elbow E. (See Fig. 1.)

The uptake-elbow E comprises a lower elbow portion 27 and an upper portion 28, formed integral on the air heating and circulating tube portions or halves 19 and 20, and situated near the dividing wall or diaphragm 26. On the top end of the uptake portion 28 is formed a nipple 29, upon which is fitted the uptake-tube 30, whereby the latter is supported. A casing or combustion-chamber 31 rests on the top portion 20 of the upper air heating and circulating tube B, and on the top end of said casing or combustion-chamber 31 is the stove-top 32, which is reduced on its under side near the edge thereof to form a flange 33, which fits within the casing or combustion-chamber 31 to center or maintain said stove-top centrally on the casing or combustion-chamber 31. An outer casing 34 surrounds said inner casing 31, and said casing 34 is fitted to and rests on the top side of the flange 21[a] at its bottom end and at its top end is fitted to the bottom side of the stove-top 32.

Vertically extending distance channel-irons 35 extend from the flange 21[a] to the under side of the stove-top 32 and divide the annular space between the inner casing or combustion-chamber 31 and the outer casing 34, surrounding same, into a series of air-circulating chambers 36, 37, 38, and 39, and said channel-irons 35 are secured to said inner and outer casings 31 and 34 by suitable bolts 35[b], which pass through the flanges of said channel-irons and said casings to securely bind both said casings to said channel-irons and maintain them concentrically, the inner with the outer casing.

The chambers 36 and 38 are similar and are supplied with heated air by the openings 44, while the chambers 37 and 39, which are alike, receive air through the openings 46.

An outer lower casing 40 surrounds the casing 15 and is provided with a flange 21[a], which rests on the top side of the flange 22, so that the casing 40 is suspended from said flange. The bottom portion of the casing 40 is provided with a base-closure 42, in which latter a series of openings 43 are formed, which openings correspond with and fall directly under the air-openings 44, formed in the flanges 21 and 22. Similarly-situated openings 45 are formed in the stove-top 32, so that air admitted through the openings 43 into the air-chambers between the casing 15 and the outer casing 40 will pass directly through the openings 44 into the air-space between the casing 31 and 34, thence through the openings 45, formed in the stove-top. 32.

It will be noted that air-circulating-chambers 37 and 39 are not connected with the air-space situated between the casings 15 and 40; but openings 46 are formed in the outer casing 34, around the base thereof adjacent the flange 22, so that the exterior air can enter and pass through said base-opening into said chambers 37 and 39, thence out of suitable openings, as 45, formed in the stove-top 32. A conical air-heating chamber 47 depends from the bottom inner side of the stove-top 32, and on its reduced smaller end is a nipple 48, which fits in the top end of the bent uptake-tube 30 to receive the air discharged therefrom.

Integral on the stove-top 32 is formed the raised chamber portion or cap 49, which

closes the top end of the conical heating-chamber 47. A flange or ring portion 50 is formed on the top side of the chamber portion or cap 49, and in the same are formed a series of air-outlet openings 51. A lid 52 rests on the said ring, and the same is provided with a deflecting-cone 53, whereby the air as it is discharged by the uptake-tube 30 into the conical chamber 47 is deflected to and through the openings 51. Tie-bolts 54 extend from the bottom side of the flange 21 to the top side of the stove-top 32 to securely bind the parts together.

The smoke-stack-connecting tube 55, or the tube to which the smoke-stack is connected, is situated at or near the top of the casing 31. (See Fig. 1.)

Having thus fully described this my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

1. In a heating-stove, the combination with a fire-pot having the form of an inverted truncated cone and provided with a series of air-inlet openings situated at or near its upper edge, a fire-pot-inclosing casing surrounding said fire-pot to form a hot-air chamber between them, said casing provided with air-inlet openings situated at or near and extending around its bottom edge, and a supporting-base, of an annular air-circulating tube situated between the lower reduced portion of said fire-pot and said base and provided with a forward cold-air inlet and a hot-air outlet, said hot-air outlet situated diametrically opposite said cold-air inlet, said tube composed of upper and lower sections or halves, an annular air-circulating tube situated above said fire-pot to extend around the top edge thereof, said tube provided with air inlet and outlet openings, a vertically-extending deflecting or dividing wall situated at the inlet of said upper annular tube whereby the incoming air is directed to flow in one direction around the tube to the outlet thereof, an uptake situated exteriorly of said stove connecting said lower annular air-circulating tube to said upper annular air-circulating tube, a combustion-chamber situated above said upper air-circulating tube, an upper inclosing cover, and an uptake connected to the outlet of said upper annular air-circulating tube extending upwardly within the combustion-chamber of the stove and having its outlet end arranged to discharge the heated air above said combustion-chamber cover.

2. In a heating-stove, the combination with a fire-pot having the form of an inverted truncated cone and provided with a series of air-inlet openings situated at or near its upper edge, a fire-pot-inclosing casing surrounding said fire-pot to form a hot-air chamber between them, said casing provided with air-inlet openings situated at or near and extending around its bottom edge, an outer casing situated to surround the upper enlarged portion of said fire-pot-inclosing casing to form an outer air-chamber, said chamber provided with air-inlet openings situated at and extending around its bottom, and a supporting-base, of an annular air-circulating tube situated between the lower reduced portion of said fire-pot and said base and provided with a forward cold-air inlet and a hot-air outlet, said hot-air outlet situated diametrically opposite said cold-air inlet and said tube composed of upper and lower sections or halves, an annular air-circulating tube situated above said fire-pot to extend around the top edge thereof, said tube provided with air inlet and outlet openings, a vertically-extending deflecting or dividing wall situated at the inlet of said upper annular tube whereby the incoming air is directed to flow in one direction around the tube to the outlet thereof and said tube also composed of upper and lower sections or halves, an uptake situated exteriorly of said stove connecting said lower annular air-circulating tube to said upper annular air-circulating tube, a combustion-chamber situated above said upper annular air-circulating tube, an upper combustion-chamber cover provided with an air-chamber of an inverted-cone form, said chamber provided with a lower reduced air-inlet end and upper air-outlet openings, an uptake connected to the outlet of said upper annular air-circulating tube and extending vertically within said combustion-chamber to be connected to the reduced end of said cover-chamber, and a casing surrounding said combustion-chamber to form an air-chamber the air spaces or chambers formed by said combustion-chamber and said fire-pot casings being connected by air ducts or passages, and each of said chambers provided with lower air-inlet and upper air-outlet openings.

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

JOHN A. TYNAN.

Witnesses:
THOMPSON R. BELL,
FLORENCE GIMBEL.