

C. K. RICE.  
HEATING STOVE.  
APPLICATION FILED JUNE 14, 1913.

1,136,615.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

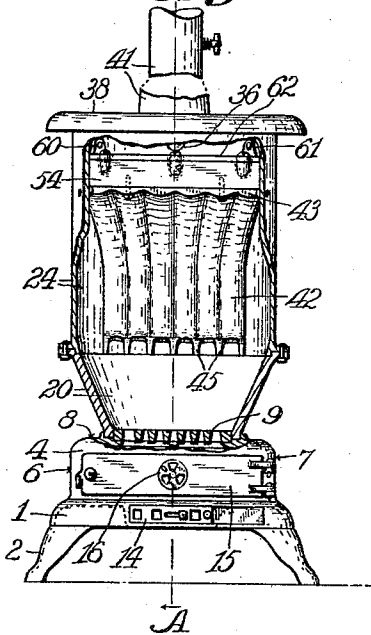


Fig. 2.

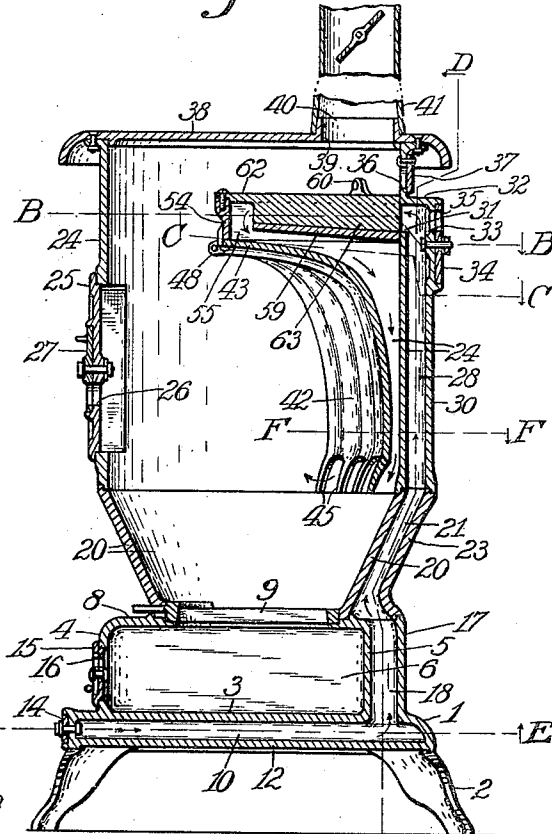


Fig. 3.

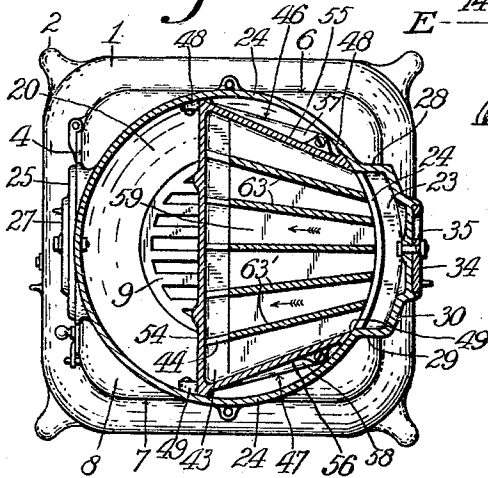
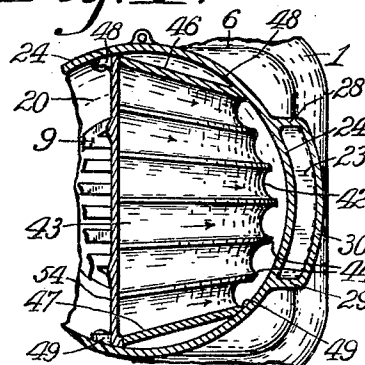


Fig. 4.



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**1,136,615.**

*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

CHARLES K. RICE, OF INDIANAPOLIS, INDIANA.

## HEATING-STOVE.

1,136,615.

Specification of Letters Patent.

Patented Apr. 20, 1915.

Application filed June 14, 1913. Serial No. 773,625.

*To all whom it may concern:*

Be it known that I, CHARLES K. RICE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Heating-Stove, of which the following is a specification, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

This invention relates to stoves, furnaces or the like in which fuel is consumed for producing heat for various purposes, the invention having reference more particularly to the fuel combustion features thereof.

An object of the invention is to provide an improved stove that shall be so constructed as to be highly efficient in supplying heat economically.

A further object is to provide a simple and cheaply constructed stove which in operation shall draw in and heat the cooler air on the floor of an apartment and thereby facilitate the heating of the air throughout the compartment.

A still further object of the invention is to provide a stove adapted for supplying warm air to the top of the fire in order to insure the most complete and economical consumption of the fuel required for producing the heat.

With the above mentioned and other objects in view, the invention consists in a stove having certain novel features of construction whereby the objects of the invention are practically attained; the invention consisting further in the novel parts and combinations and arrangements of parts as hereinafter particularly described and further defined in the accompanying claims.

Referring to the drawings, Figure 1 is a front elevation of the improved stove or furnace partially broken away to expose internal portions thereof; Fig. 2 is a vertical section approximately on the line A A in Fig. 1; Fig. 3 is a horizontal section approximately on the line B B in Fig. 2; Fig. 4 is a fragmentary section on the line C C in Fig. 2; Fig. 5 is a sectional elevation approximately on the line D D in Fig. 2; Fig. 6 is a horizontal section on the line E E in Fig. 2 looking upward; Fig. 7 is a fragmentary section on the line F F in Fig. 2; Fig. 8 is a perspective view of the internal structure of the stove; Fig. 9 is a rear elevation of the structure; and Fig. 10 is an

inverted plan view of a part of the structure.

Similar reference characters in the several figures of the drawings indicate like parts or features of construction herein referred to.

In the preferred form of construction of the invention with respect to a stove suitable for heating purposes generally, a base flange 1 is provided which preferably has supporting legs 2, the flange extending from a plate 3 that constitutes the bottom of the ash-pit required in coal burning stoves, the pit having a front 4, a back 5 and sides 6 and 7 and also an apertured top 8 on which a fire grate 9 is supported. An air duct is formed under the bottom 3 by means of wings 10 and 11 connected to the under side of the bottom, and a bottom plate 12 connected to the wings so that the duct extends from the front to the rear portion of the flange 1, the front portion having apertures 13 therein to admit cool air into the air duct, the air admission being regulated or prevented when desired by means of a regulator 14 mounted on the front portion of the flange so as to close or partially close the apertures 13. The front 4 of the ash-pit is provided with a door 15 having an air inlet regulator 16 therein for governing the admission of air through the fire grate. A section of air duct is formed behind the ash-pit by means of a back wall 17 extending upward from the base flange and having side walls 18 and 19 thereon that are connected to the back 5 of the ash-pit. A fire bowl or pot 20 is seated upon the top 8 so as to extend about the fire grate, and the bowl has an air duct section on its rear portion that is formed by side walls 21 and 22 connected to the bowl and an outer plate 23 connected to the sides, the duct continuing from the duct that is behind the ash-pit that continues from the duct that is under the ash-pit. The stove comprises also a drum or body portion 24 seated on the bowl and having a fire door 25 on its front portion, the door having apertures 26 therein that may be closed or partially closed by a regulator 27 mounted on the door. The drum has an air conduit section on the rear portion thereof formed by wings or side walls 28 and 29 connected to the wall of the drum and an outer plate or wall 30 connected to the wings, the duct continuing upward from the duct at the rear of the fire bowl. The upper rear portion of the wall of the drum has

an aperture 31 therein to form communication with the duct which has a top 32 that is connected with the wall of the drum above the aperture and is connected also to the walls 28 and 29 and to the wall 30, the latter having apertures 33 therein that may be closed or partially closed by a regulator 34 having apertures 35 therein and movably mounted on the wall 30. The rear portion of the wall of the drum has a cleaning hole 36 therein above the aperture 31 and it is normally covered by a gravity shutter 37 hung on the wall. A top 38 is secured to the top of the drum and it has a flue hole 39 therein adjacent to the rear portion of the drum and provided with a flange 40 to which a draft pipe 41 is connected.

The combustion chamber of the stove is provided with a partition which serves the purpose of a baffle plate, a deflector and a heat radiating plate or wall for heating air and also for radiating heat above the fire to promote combustion, and it comprises an approximately upright portion 42 that is arranged opposite to the rear wall portion of the drum at a short distance therefrom, and it has a forwardly curved portion 43, all being fluted so as to have ribs 44 on the rearward and upward side thereof, this being preferable in order to present the maximum radiating area to the air passing between the plate and the wall of the drum. The lower end of the upright portion 42 terminates at a suitable distance above the level at which the fuel is to be maintained, and it has downwardly projecting fingers 45 thereon to prevent the fuel from choking the air passage but permitting the air to pass between the fingers above the fuel. The upper portion of the partition has side portions 46 and 47 that extend to the wall of the drum, and the rear edges 48 and 49 thereof coincide with the edges of the upright portion 42 so as to form a joint with the wall of the drum, said joint edges having screw holes 50 and 51 therein respectively that receive screws 52 and 53 inserted through the drum wall to secure the partition to the drum and thus form an air passage which is partially formed by a bottomless box-like structure connected to the top of the partition and comprising a front wall or plate 54 connected to and extending upward from the forward edge of the portion 43 of the partition, and side walls 55 and 56 extending from the wall 54 back to the rear portion of the wall of the drum at opposite sides of the aperture 31, the side walls having base extensions 57 and 58 thereon respectively that are secured to the sides 46 and 47. An approximately horizontal partition plate 59 extends from the rear portion of the drum wall below the aperture 31 and forward toward but not entirely to the front wall 54, the plate preferably ex-

tending upward from the rear portion of the drum wall, and it preferably is cast integrally with the walls 54, 55 and 56 at a suitable distance below the plane of the top thereof. The sides 55 and 56 have ears 60 and 61 thereon respectively that are secured to the wall of the drum 24. A top plate 62 is secured to the walls 54, 55 and 56 and it is suitably curved or formed so that its edges fit closely against the inner side of the wall of the drum, to constitute the top of an air passage extending from the aperture 31 and which preferably is divided by partitions 63, 63' cast integrally on the top 62 and extending down to the partition plate 59, the partitions extending radially from the aperture 31 so that the incoming air is spread out opposite the front 54 to pass downward under the partition plate 59 and thence to the fire bowl. The top 62 is arranged at a suitable distance below the top 38 of the combustion chamber so that the gases of combustion or smoke must pass over the top 62 on their way to the draft pipe; and since ashes or soot may be deposited upon the top 62 the same may be removed by a scraper inserted through the cleaning hole 36.

In practical use bituminous coal or coke preferably is used as a matter of economy and the fire bowl should be approximately full of fuel at all times, a proper amount of air being admitted through the grates as usual to maintain combustion, the intensity of the fire, however, being regulated as usual. In some cases the regulator 14 may be closed when starting a fire and the regulator 34 may be opened, but preferably the latter should be closed when the stove is operating normally, the regulator 14 being opened to permit atmospheric air to pass through the conduit to become slightly heated in the lower portion of the conduit and further heated on its way up to the aperture 31, the air passing thence forward over the plate 59 and then below the plate where the air becomes heated to a high degree by the forward portion 43 and the upright portion 42 of the partition as the air passes down upon the fire, the heated air mixing with the product of more or less imperfect combustion and aiding to produce more perfect combustion of the gases thrown off from the fire, the combustion being further promoted by the heat radiated from the front of the fluted partition so that a high degree of economy is attained while the wall of the drum and the top radiates the heat developed as usual.

Having thus described the invention, what is claimed as new is—

1. A heating stove including a fire bowl, a drum on the bowl, a vertically fluted partition secured in the drum and extending opposite the rear wall portion and upward and over toward the front wall portion of

the drum, the edges of the partition being connected to the wall of the drum, the back of the partition having vertical ribs thereon forming passageways extending downward approximately to the top of the bowl for discharging air onto the fire, and an air-duct extending from the exterior of the drum to the forward upper portion of the partition for conducting air to the passage-ways.

2. A heating stove including a fire bowl having a conduit on the exterior thereof, and a drum on the bowl having an external conduit thereon extending from the conduit of the bowl and into the upper portion of the wall of the drum, the drum having also a relatively broader internal conduit extending from the external conduit and increasing in width therefrom toward the front of the drum and thence extending downward to the lower inner side of the wall of the drum and approximately to the top of the bowl for discharging air onto the fire, the inner wall of the downward extending portion of the conduit having vertical flutings.

3. A heating stove including a drum or body portion having an air-conduit on the interior thereof extending from one portion horizontally toward the opposite portion of the wall of the drum and thence backward under the horizontal portion and also downward, the horizontally extending portion increasing in width from the wall and having vertical partitions therein, the inner wall of the downward extending portion of the air-conduit being fluted to form ribs extending toward the outer wall thereof, the air-conduit extending downward to the lower portion of the drum for discharging air onto the fire.

4. A heating stove comprising a base, an ash pit box on the base, a fire bowl on the ash pit box, a drum on the bowl having an aperture in the upper rear portion of the wall thereof, and a top on the drum having a flue-opening therein adjacent to the aperture, the stove having an air-duct extending in the base under the ash pit box and upward behind the box and the bowl and also behind the drum to the aperture, the air-duct extending from the aperture within the drum below the flue-opening toward

the front and thence back to the rear of the interior of the drum and downward to the lower portion of the drum, for discharging air onto the fire.

5. A heating stove including a fire-bowl, a drum or body portion on the fire-bowl and having an inlet aperture in the upper rear wall portion thereof, an upright partition connected to two portions of the wall of the drum and extending upward opposite the rear portion and over toward the front portion of the wall, the partition forming with the back of the drum an air pass agency extending downward to the top of the fire-bowl for discharging air onto the fire, a front wall plate on the forward portion of the partition, side walls extending from opposite sides of the aperture to the front wall plate, a top plate extending from the wall of the drum above the aperture and to the front wall plate, a partition plate extending from the wall of the drum between the top plate and the upper portion of the upright partitions toward but not to the front wall plate, and vertical partitions between the partition plate and the top plate.

6. In a heating stove, the combination of a fire-bowl, a drum having an aperture in the upper portion of the wall thereof, the drum being seated upon the fire-bowl, a partition extending uprightly in the drum and connected at its edges to different portions of the wall, the partition extending opposite the wall and extending upward and forward within the drum, the lower end of the partition having fingers thereon extending downward and away from the adjacent portion of the wall of the drum, said partition forming with the wall of the drum an air passageway extending downward to the top of the fire-bowl for discharging air onto the fire, an internal air-conduit extending from the aperture to the upper forward portion of the partition, and an external air-conduit extending to the aperture and provided with an air-inlet regulator.

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

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Witnesses:

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