Feb. 11, 1936. S. M. GREEN 2,030,205

DRAFT CONTROLLER

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FIG. 1

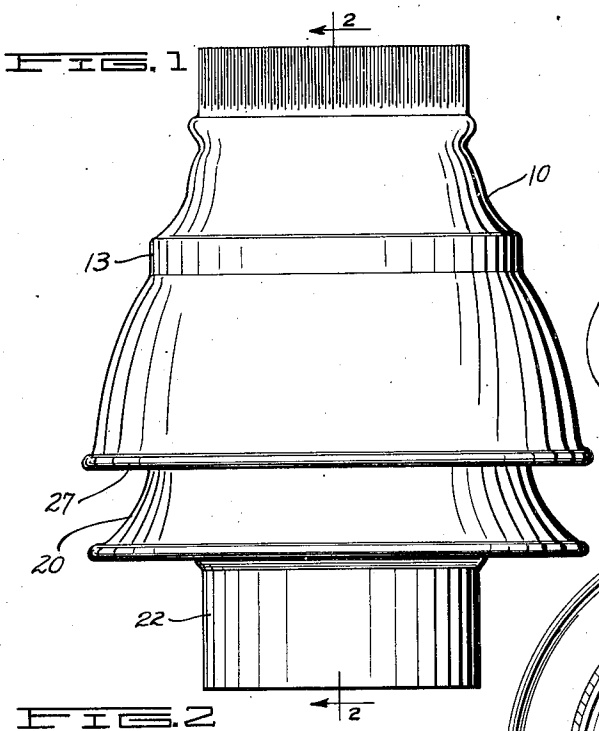


FIG. 4

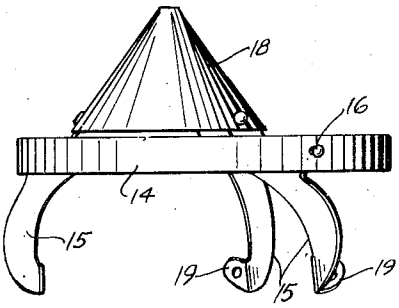


FIG. 3

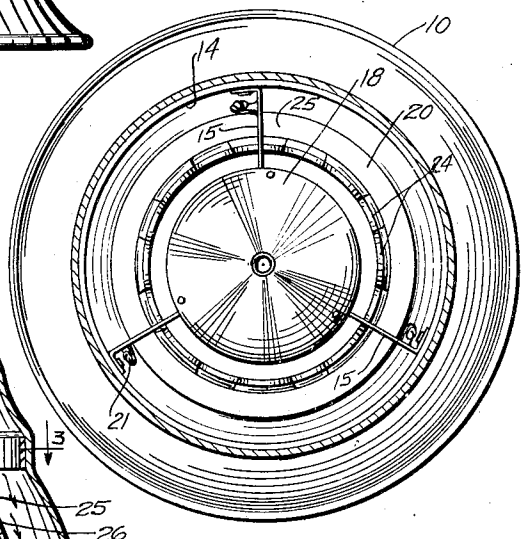
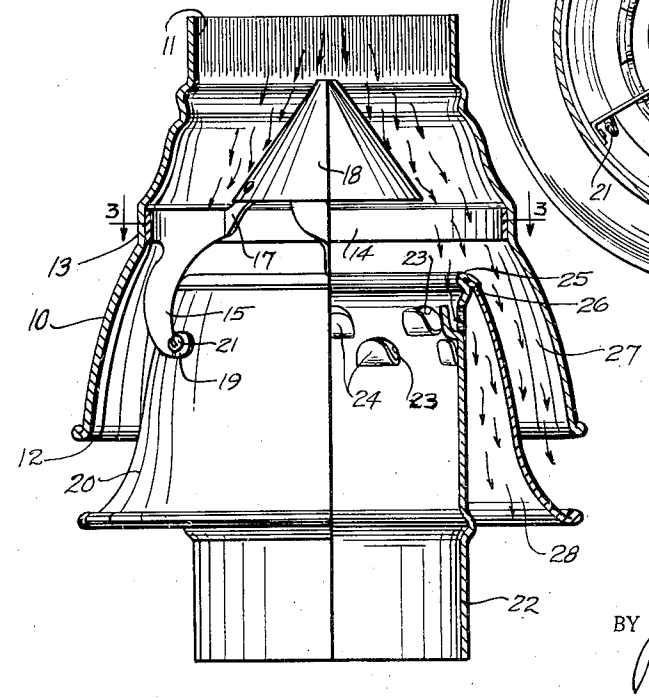


FIG. 2



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FIG. 5

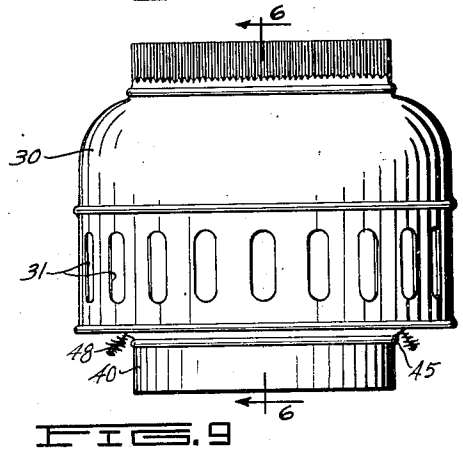


FIG. 6

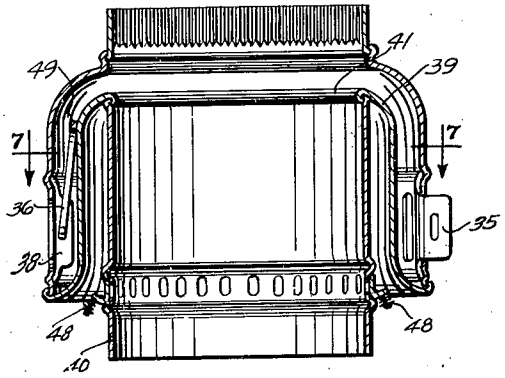


FIG. 9

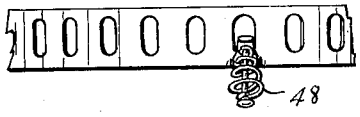


FIG. 8

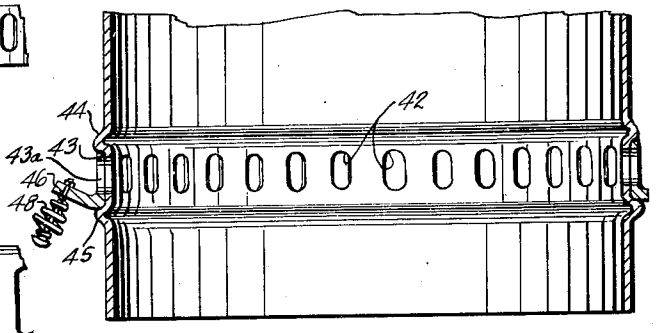


FIG. 11

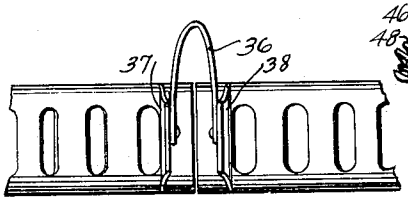


FIG. 10

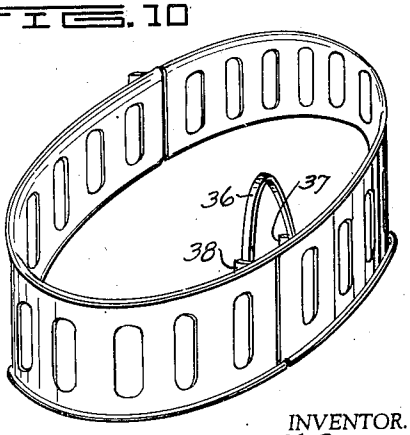


FIG. 7

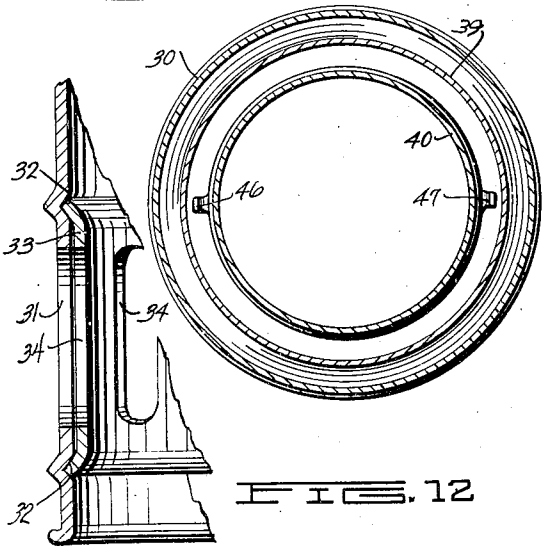


FIG. 12

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Patented Feb. 11, 1936 2,030,205

UNITED STATES PATENT OFFICE

2,030,205

DRAFT CONTROLLER

Say M. Green, Cleveland, Ohio

Application June 6, 1935, Serial No. 25,291

7 Claims. (Cl. 126—307)

My present invention is an improvement in construction and efficiency in heat and draft controls over my previous Patent No. 1,856,478, granted May 3, 1932.

One object of my present invention is to increase the efficiency of the device by decreasing the fuel waste and eliminating dangerous down draft.

Another object of my invention is to construct a device at a moderate cost that is positive in action and ensures complete combustion of fuels used and elimination of smoke and maximum economy in fuel consumption.

Still further objects and advantages are means for the inclusion of the correct amount of oxygen within the combustion chamber and a means whereby sufficient draft is assured to completely eliminate waste gases without loss in heating efficiency.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the several parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, in my specification and claims and illustrated in the accompanying drawings, in which:

Fig. 1 is an elevation of the device used with gas fuel only.

Fig. 2 is a longitudinal section partly in elevation taken on lines 2—2 of Fig. 1.

Fig. 3 is a top plan view partly in section, the outer body being cut away on lines 3—3 of Fig. 2.

Fig. 4 is an elevation of the inner cone down draft diverter assembly.

Fig. 5 is an elevation of a second form of the device for use with coal or oil fuel.

Fig. 6 is a sectional view taken on lines 6—6 of Fig. 5.

Fig. 7 is a top plan view taken on lines 7—7 of Fig. 6.

Fig. 8 is an enlarged fragmentary portion of the inner body structure showing the louvres and louvre cover.

Fig. 9 is an enlarged fragmentary portion of the louvre cover shown in Fig. 8.

Fig. 10 is a perspective view of inner louvre cover or slide.

Fig. 11 is an elevational view of a fragmentary portion of the louvre cover shown in Fig. 10, showing the tension spring.

Fig. 12 is an enlarged fragment showing the method of assembling the inner louvre cover in the tracks formed in the outer bell body.

Again referring to the drawings: a bell shaped outer structure 10 of such shape as shown in Figs. 1 and 2 is open at the ends 11 and 12 for connection to a stack and stove respectively, having a flat portion 13 approximately half way between ends 11 and 12, and has mounted therein a band 14 to which are attached a plurality of legs 15 by means of rivets 16 as shown in Figs. 2, 3, and 4.

The upper ends 17 of legs 15 are riveted to a small cone 18 near the edge of the larger circumference of the cone. The lower ends 19 of legs 15 are attached to the outer surface of an inner bell shaped structure 20 by means of screws 21 as shown in Figs. 2 and 3.

Mounted within the inner bell shaped structure 20 is an inner pipe 22 having a plurality of partly open ports 23 spaced alternately in rows around the upper portion of said inner pipe 22, each port 23 having the partly cut-out portion bent inwardly in such manner as to form a shield or deflector lip 24, as is shown in Figs. 2 and 3, said inner pipe 22 being peened at 25 over the top edge 26 of the inner bell shaped structure 20.

In operation the device is mounted in the stack of any gas heating unit where the gas is confined within a closed structure and is attached to a vent; any down draft coming down the stack (not shown) strikes the surface of the small cone 18 within the bell shaped outer structure 10, is deflected by the said cone and flows out through the passage 27 formed between the inner and outer bell shaped structures 20 and 10 respectively.

Any draft escaping into the inner body 22 is caught by the inwardly projecting port shields 24 and diverted through the ports 23 into a passage 28 formed between the inner bell shaped structure 20 and the pipe 22.

Normally, the cool air from the room is drawn upwardly through the passage 27 and forming an air baffle above the top of the inner bell shaped structure 20 forces the heat units back into the combustion chamber thus retarding the upward flow of unburned gases; the admixture of the oxygen and unburned gases changes the composition of both and creates a combustible matter which is consumed.

In the form illustrated by Figs. 5 to and including 12, a slightly different form is shown for the use of fuels other than gas.

The outer body or shell structure 30 has a plurality of slotted apertures or louvres 31 around its circumference near the bottom portion as shown in Fig. 5. A track 32 is formed on the inner surface of the body structure 30 as shown

specifically in Fig. 12 and a louvre cover band valve 33 with slotted apertures 34, as shown in Figs. 6, 10, 11 and 12 is mounted slidably within track 32 and is operated by a slotted flange 35 which is a part of said louvre cover band 33 and projects outwardly therefrom. A tension spring 36 of such shape as is shown in Figs. 6, 10 and 11, is attached by its lower ends to inwardly projecting flanges 37 and 38 of the louvre cover band 33.

The pressure of the tension spring 36 against the outer surface of the inner body structure 39 holds the louvre cover band 33 reasonably tight against the inner wall of the outer body structure 30 but not tight enough to prevent the said louvre cover band from being rotated easily to open and close the louvre 31.

The inner body structure 39 is attached at its bottom edge to the outer body structure 30, the two edges being peened and beaded together to form a single unit.

A center pipe section 40 is attached in a similar manner at its upper end to the curved top edge 41 of the inner body structure 39.

Near the lower edge of the pipe 40 and at approximately the level of the lower edge of the inner body structure 39 is a series of slotted apertures forming louvres 42 and an outer louvre cover band 43 with slotted apertures 43*a* is superimposed over the center body 40 and is slidably retained by outwardly projecting beads 44 and 45 in the center body 40 at its upper and lower edges respectively.

The outer louvre cover band or valve 43 has a pair of lugs 46 and 47 at opposed sides of said louvre cover band, which are bent upward at an angle as shown in Figs. 6, 8 and 9 and having attached thereto handles 48 as a means by which the louvre cover band may be rotated at will to open or close the louvres 42 in the center body 40.

The same general principle is present in this form as in that of the device for gas fuel hereinabove described except that the use of the down draft diverter cone is eliminated in this form and the louvres and louvre covers in both the outer body structure 30 and the center body 40 have been added.

It will be seen from the illustrations that when the louvres 31 and 42 are covered by louvre cover bands 33 and 43 the device is entirely closed thus giving a through draft in the stack to start a fire. When the fire is going well, both louvre covers are rotated, opening the louvres 31 and 42; the air drawn in through the louvres 31 rises through the passage 49 formed between the outer body structure 30 and the inner body structure 39 and forms an air baffle directly above the open top of the center body 40, and the change in the gaseous content is similar to that described heretofore and pertaining to the first unit illustrated in Figs. 1 to 4.

The air baffle created by the shape of the outer and inner body structures is so low above the pipe 40 that it almost completely prevents the escape of heat through the stack thus establishing a greater fuel economy.

And furthermore, actual tests have fully established the fact that the device as now constructed does in a large measure decrease the amount of smoke that enters the chimney; the bell shaped cone throws oxygen over the carbon and this action is responsible for the elimination of much of the smoke, especially where a poor grade of coal is used in the heating unit.

I claim:

1. A draft controller comprising an inner pipe section having ports in the sides thereof, an outer bell shaped shell spaced around said pipe section and adapted for connection to a stack at its upper end, and an intermediate bell shaped shell spaced between the pipe section and the first-mentioned bell shaped shell and forming an air passage between said shells, said passage being open at its lower end, the said intermediate section depending from the upper end of the pipe section and the outer bell shaped shell being supported upon the intermediate shell.

2. A draft controller as in claim 1, and a deflecting cone supported within the outer shell and above the upper end of the pipe section.

3. A draft controller as in claim 1, the pipe section having said ports into the space between said section and the intermediate shell.

4. A draft controller as in claim 1, the pipe sections having said ports opening into the intermediate shell and deflecting lips beside said ports.

5. A draft controller comprising a pipe section, an intermediate shell depending around said pipe section and spaced therefrom and secured at its upper end to the top thereof, and an outer shell spaced around the said intermediate shell to form an air passage and secured at its lower end to the lower end of said intermediate shell, said passage being open at its lower end, the outer shell being formed for connection at its upper end to a stack.

6. A draft controller as in claim 5, the outer shell having a row of ports near its lower end, and a valve band controlling said ports.

7. A draft controller as in claim 5, the pipe section having a row of ports around the same, and a valve band controlling said ports.

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