

Jan. 2, 1923.

1,440,409

S. H. OWENS.
FUEL SAVER.
FILED MAR. 6, 1922;

2 SHEETS-SHEET 1

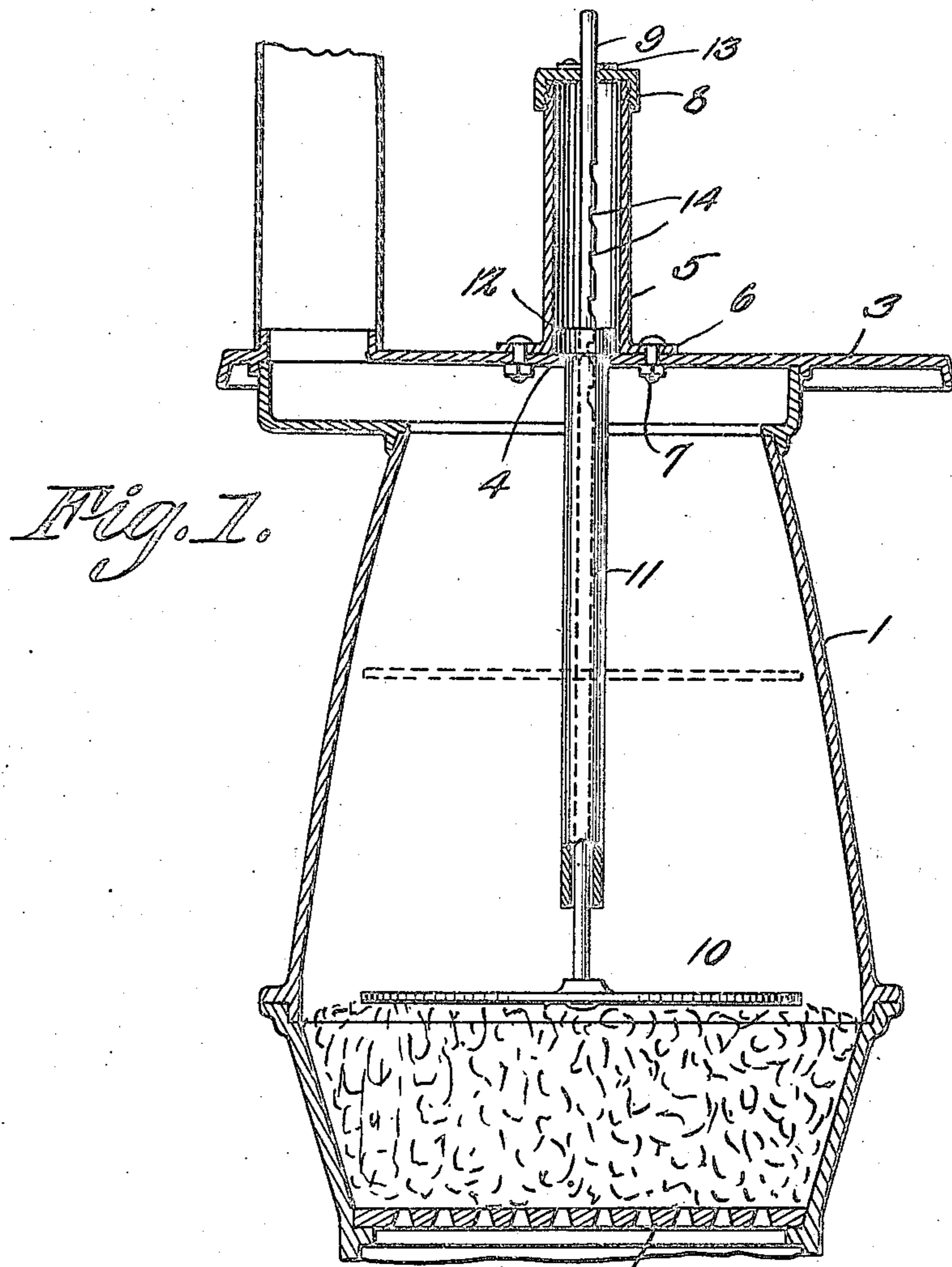


Fig. 2.

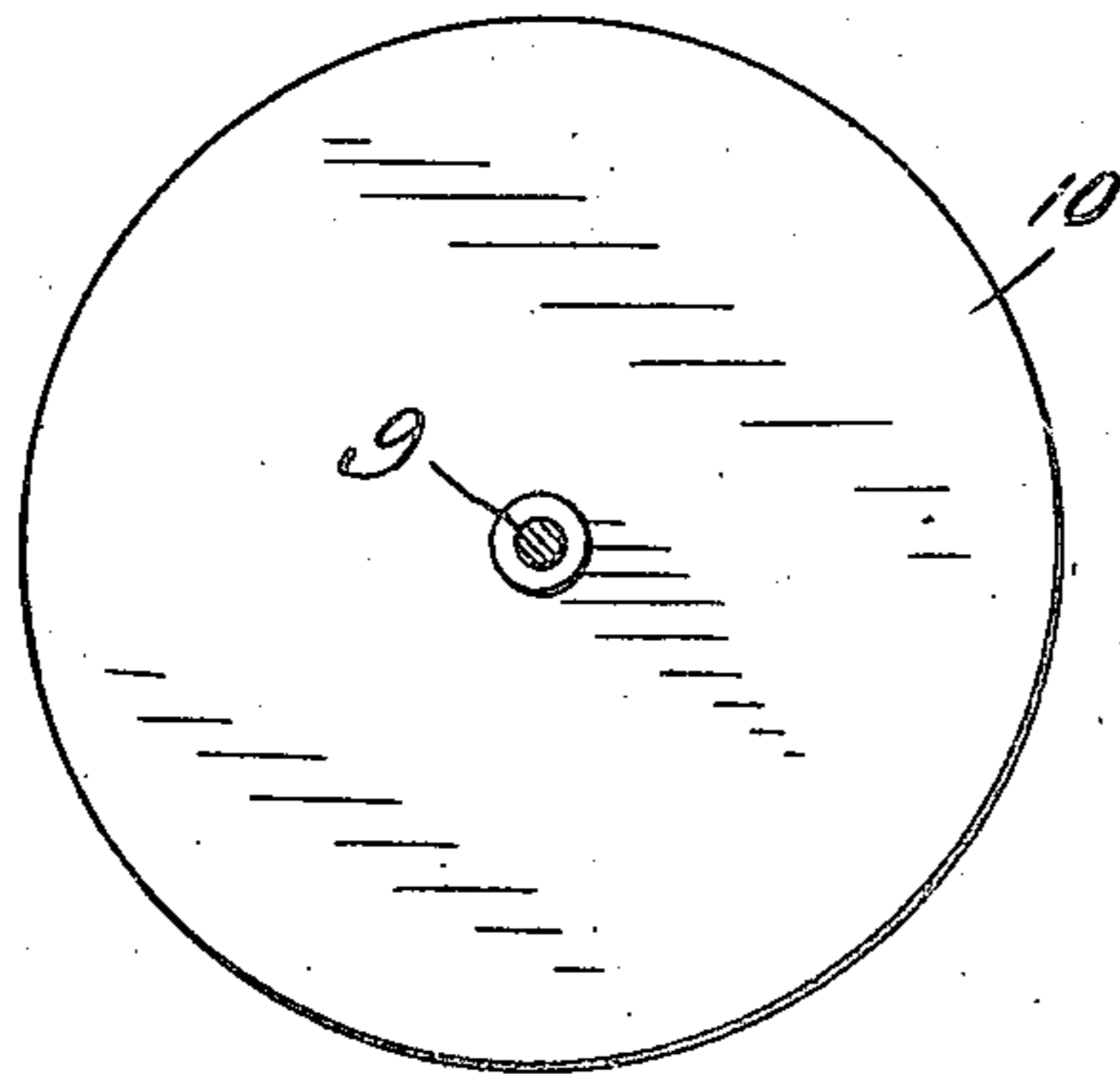
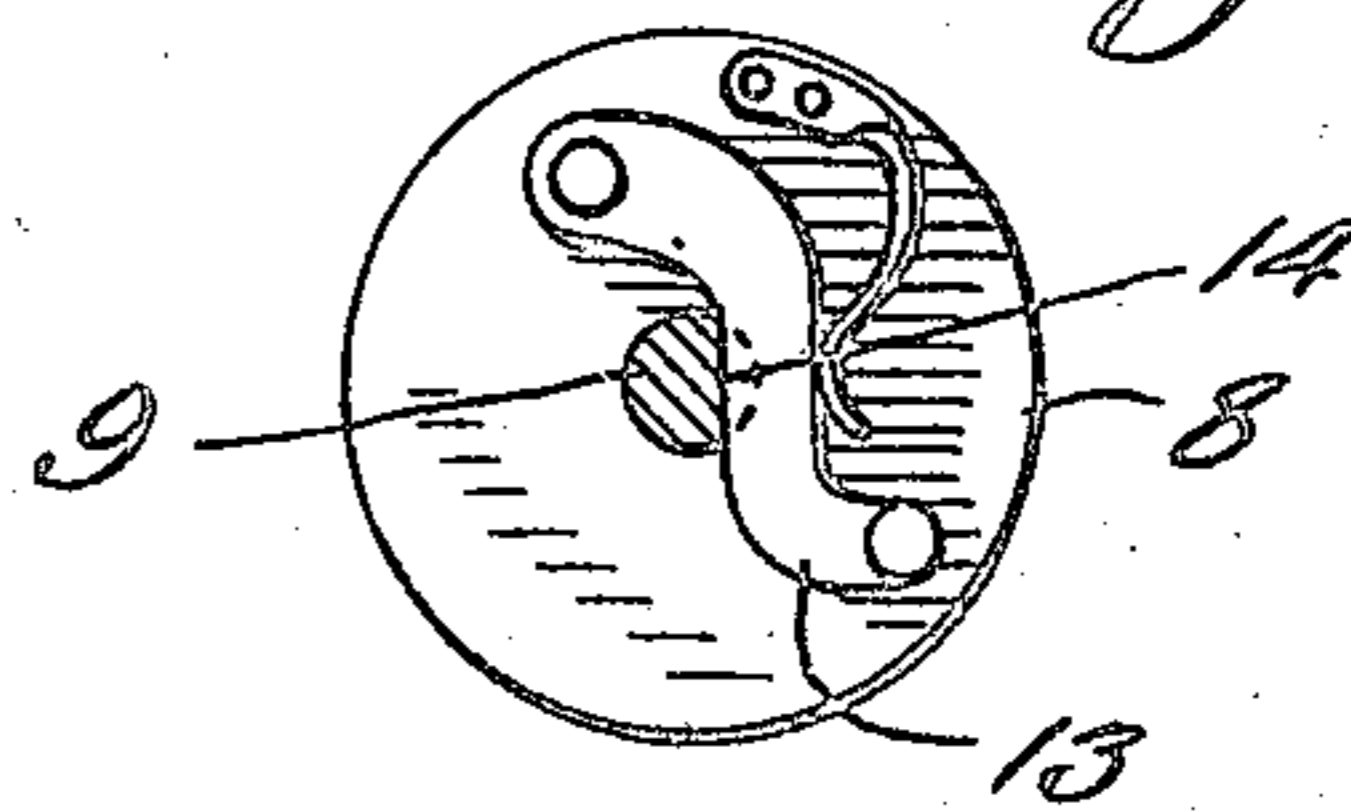


Fig. 3.



Inventor

S. H. OWENS

By *Chas. H. Co.*
Attorneys.

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2 SHEETS-SHEET 2

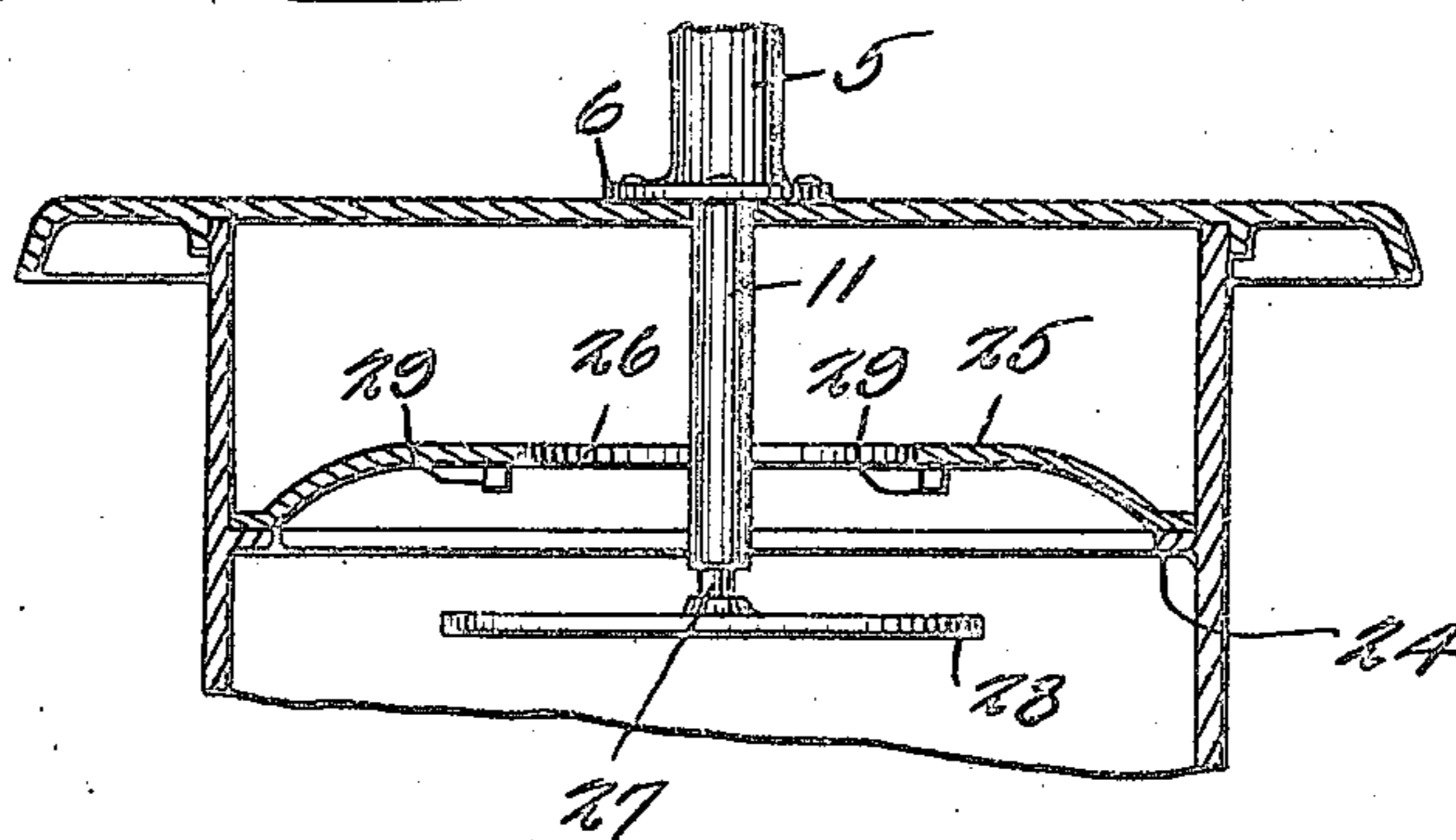
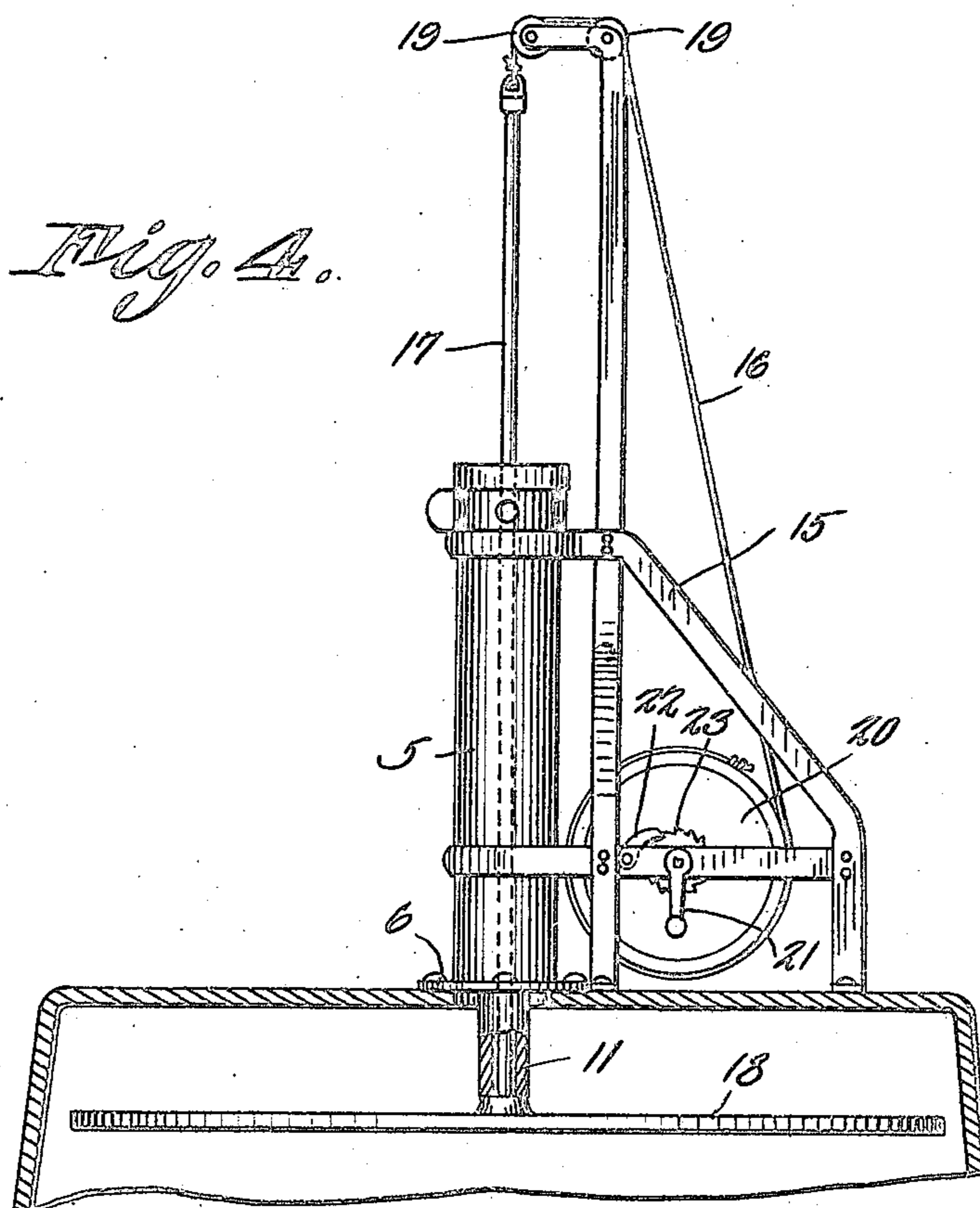


Fig. 5.

Inventor

S. H. Owens

By *C. A. Snow & Co.*
Attorneys.

Patented Jan. 2, 1923.

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UNITED STATES PATENT OFFICE.

SAMUEL H. OWENS, OF EVELETH, MINNESOTA.

FUEL SAVER.

Application filed March 6, 1922. Serial No. 541,419.

To all whom it may concern:

Be it known that I, SAMUEL H. OWENS, a citizen of the United States, residing at Eveleth, in the county of St. Louis and State of Minnesota, have invented a new and useful Fuel Saver, of which the following is a specification.

This invention relates to a fuel saving device for stoves, furnaces and the like, that may be installed in heating plants already erected, or may be built as a part of the heating unit at the time of manufacture.

One object of the invention is the provision of a device that may be adjusted in such position within the fire box as to cause combustion of the fuel to take place first about the outer edges of the bulk of fuel.

Another object of the invention is the application of the device as a draft regulator.

Still another object is the provision of novel means for adjusting the device to serve as a draft regulator.

Other objects will present themselves as the description proceeds, it being within the province of the disclosure to improve generally and to enhance the utility of devices of that class to which the present invention belongs. It also being understood that slight changes may be made within the scope of what is claimed without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawing forming a part of the specification—

Figure 1 is a vertical sectional view of a stove with the invention applied thereto.

Figure 2 is a plan view of the disk forming a part of the present invention.

Figure 3 is a detail sectional plan view of a portion of the device.

Figure 4 is a view in side elevation of a modified form of operating means for the device, the heating element being shown in section.

Figure 5 is a modified form of the device parts being shown in section and parts in elevation.

Referring to the drawing by characters of reference, the numeral 1 designates the body of a heating stove, having a grate 2 and a top 3. In adapting the device to a stove as illustrated in Figure 1, an opening 4 is formed in the top of the stove and a tube 5, having an attaching flange 6, is secured over the opening, bolts 7 being used

for this purpose. A cap 8 is screw threaded to the upper end of the tube 5. A stem 9 passes through an opening in the cap 8 and extends down through the tube and into the stove. A disk or plate 10 is secured to the lower end of the stem or rod 9, the diameter of the disk being somewhat less than the internal diameter of the stove at the fuel level. A tube 11 is loosely mounted in the opening 4 and has a cap 12 which rests on the top of the stove, supporting the tube within the combustion chamber of the stove where it surrounds the rod 9 protecting it from the intense heat of the said chamber.

In practical operation the disk 10 is lowered on the top of the fuel bed, this prevents the draft of the chimney from having any effect on the fire except about the outer edges of the fuel bed, with the result that combustion takes place at the outer edge of the fuel. The products of combustion being directed by the plate 10 against the sides of the stove greatly increasing the heating efficiency of the same. When combustion of this outer ring of fuel has sufficiently proceeded the plate 10 is raised and the inner portion of the fuel bed permitted to burn, the disk then forming a deflector to direct the heat to the shell of the stove. By raising the plate 10 to the position shown by dotted line in Figure 1, an effective damper is produced. The converging side walls of the stove acting in conjunction with the plate to restrict the chimney draft to a greater degree as the plate is elevated. In any of its positions the disk serves to prevent undue draft at the center of the fuel bed, which results in a more even combustion of the fuel.

Means for supporting the disk at various elevations in the combustion chamber may consist of a spring actuated latch 13, pivotally mounted on the cap 8 and adapted to engage any one of a series of notches 14 formed in the rod 9.

In attaching the device to a furnace or other large heater, a device such as shown in Figure 4 is provided, which comprises a frame 15 secured to the top of the furnace. A cord or other flexible element 16 is secured to the rod 17 which supports the deflecting plate 18. The cord is trained over guide sheaves 19 located at the top of the frame and then leads to a drum 20, which is mounted for rotation on the frame. A crank handle 21 is employed for rotating

the drum to hoist or lower the plate and a pawl 22 and ratchet 23 prevent retrograde movement of the drum, supporting the plate at any desired elevation in the fire box.

5 In stoves the side walls of which are parallel as illustrated in Figure 5, a flange 24 may be cast integral with the side wall or otherwise attached thereto and a truncated dome shaped member 25 rests on the
10 said flange. The member 25 has a draft opening 26 through which projects the stem 27 of the plate 28. Lugs 29 space the plate 28 from the opening 26 and prevent closure of the draft opening when the plate is ele-
15 vated to the limit of its movement.

It is to be understood of course that the plate 10 although illustrated as being round may be rectangular or of any other configuration.

20 Having thus described the invention, what is claimed is:

1. A device of the class described comprising a heater having converging side walls and a plate within the heater and mounted
25 for vertical movement whereby the effective draft area between the periphery of the plate and the side walls of the heater is increased or diminished.

2. A device of the class described comprising a heater having upwardly and in- 30 wardly converging side walls and a plate mounted for vertical movement within the combustion chamber of the heater, said plate coacting with the side walls of the heater to limit the draft in the heater.

3. A device of the class described comprising a heater having upwardly and inwardly inclined side walls, a plate mounted for vertical movement within the combustion cham- 40 ber of the heater, the plate being adapted to coact with the side walls of the heater to limit the draft opening in the heater and means for raising and for locking the plate in adjusted position.

4. A device as set forth in claim 3 and 45 further characterized by the fact that said means comprises a stem having a series of notches and a latch secured to the heater, and adapted to engage the notches.

In testimony that I claim the foregoing 50 as my own, I have hereto affixed my signature in the presence of two witnesses.

SAMUEL H. OWENS.

Witnesses:

A. I. NASLUND,
G. B. GABLE.