

G. G. KAISER.  
 COAL BURNING STOVE.  
 APPLICATION FILED MAR. 16, 1908.

914,847.

Patented Mar. 9, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

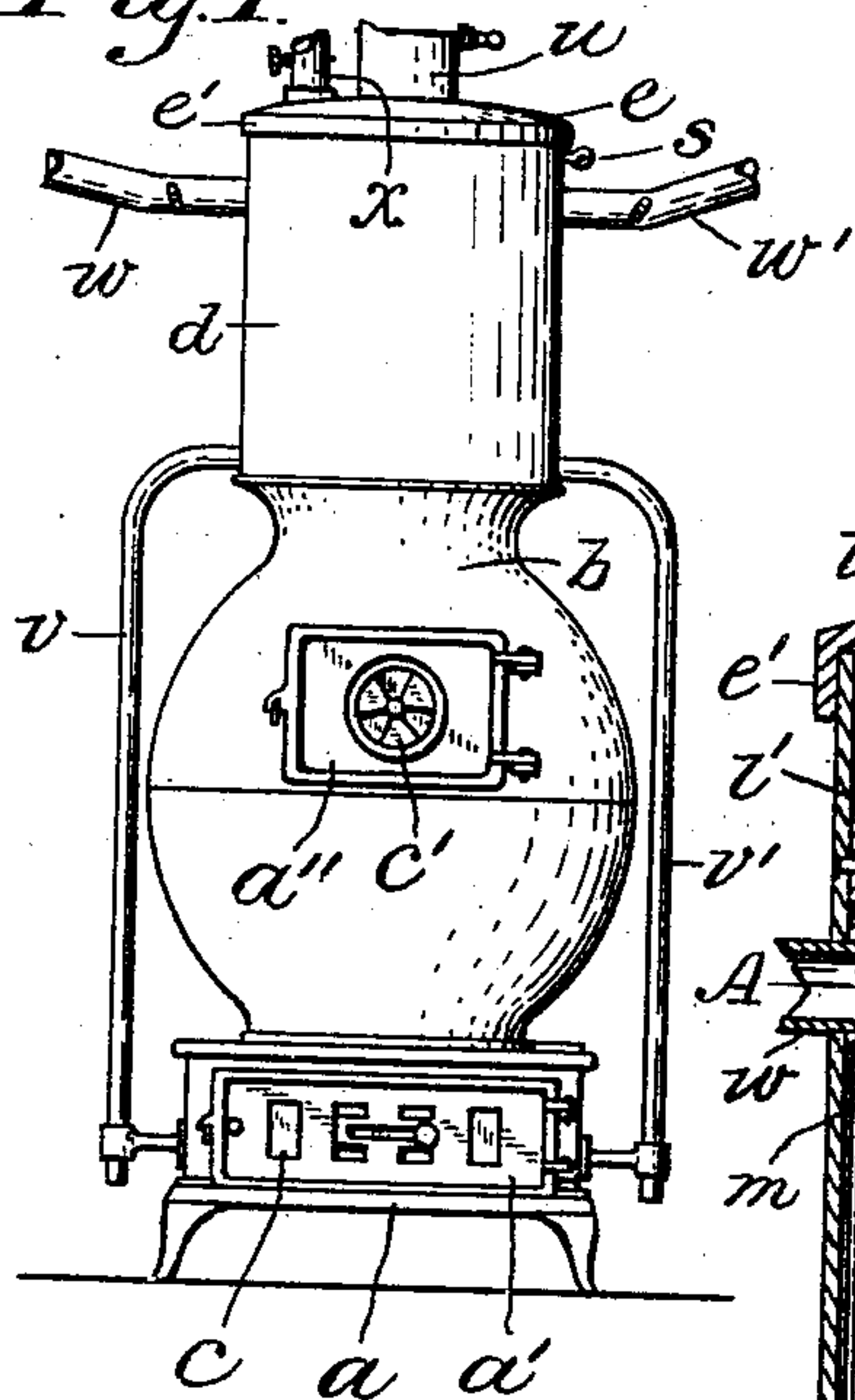
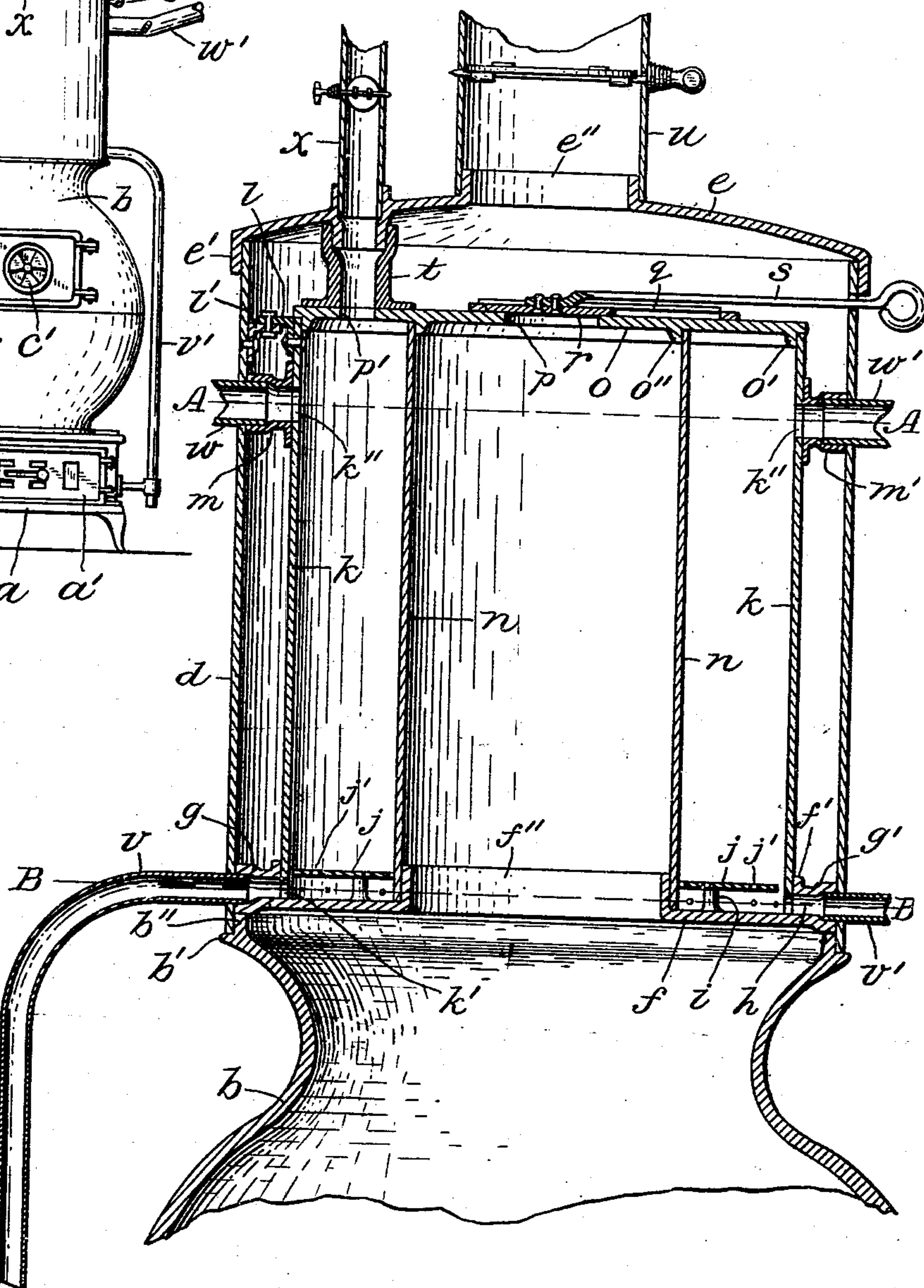


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

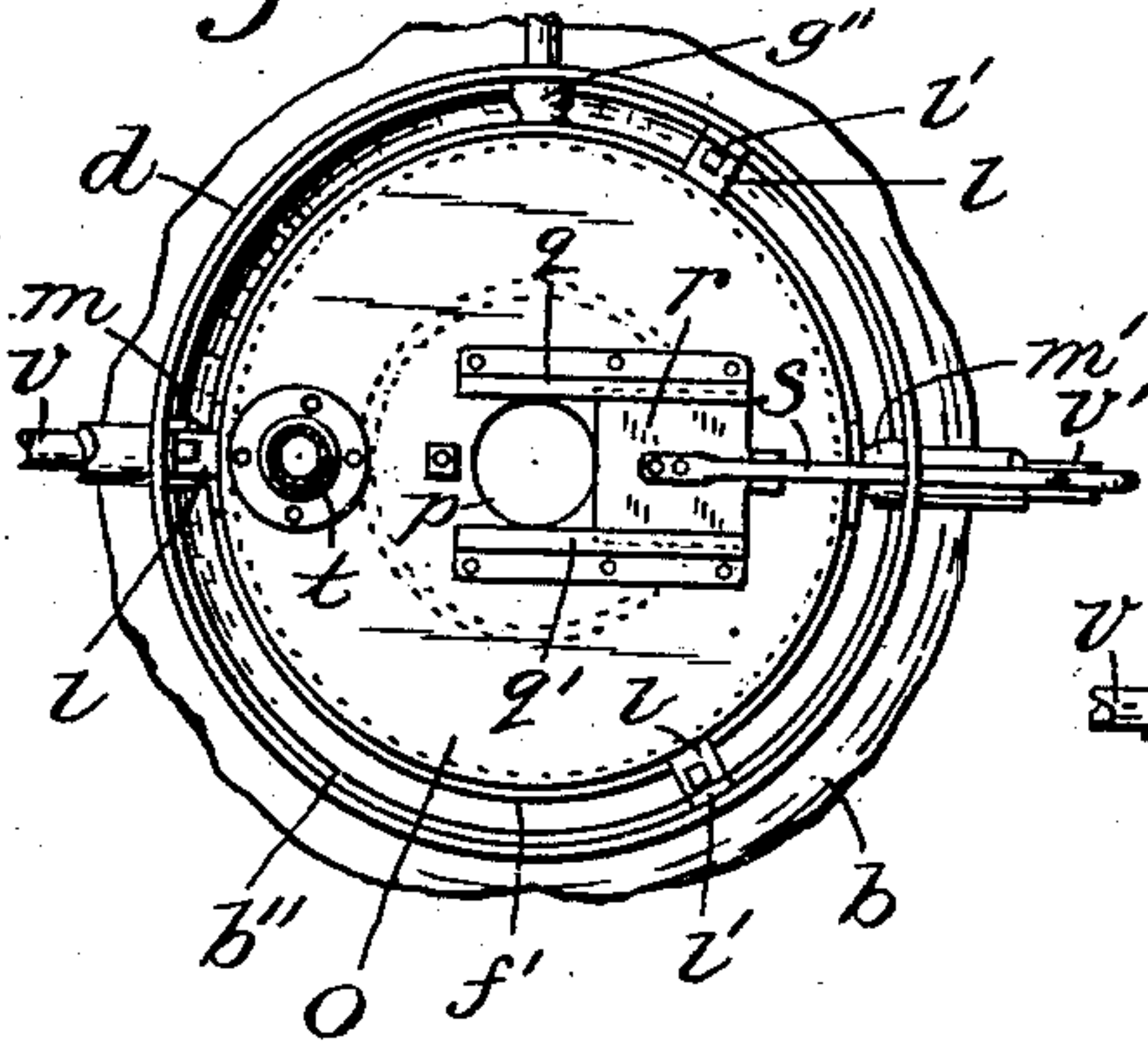


Fig. 4.

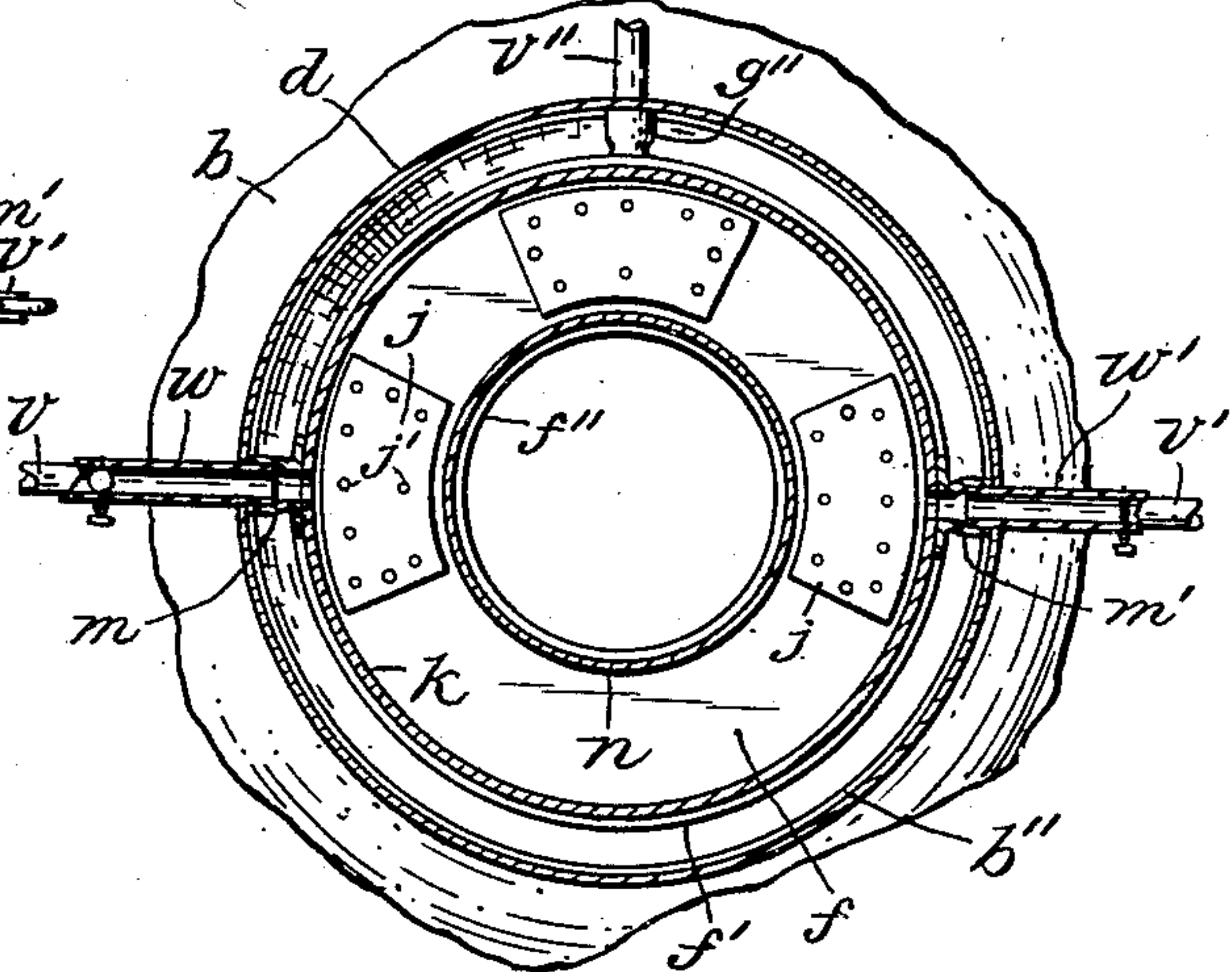


Fig. 5.

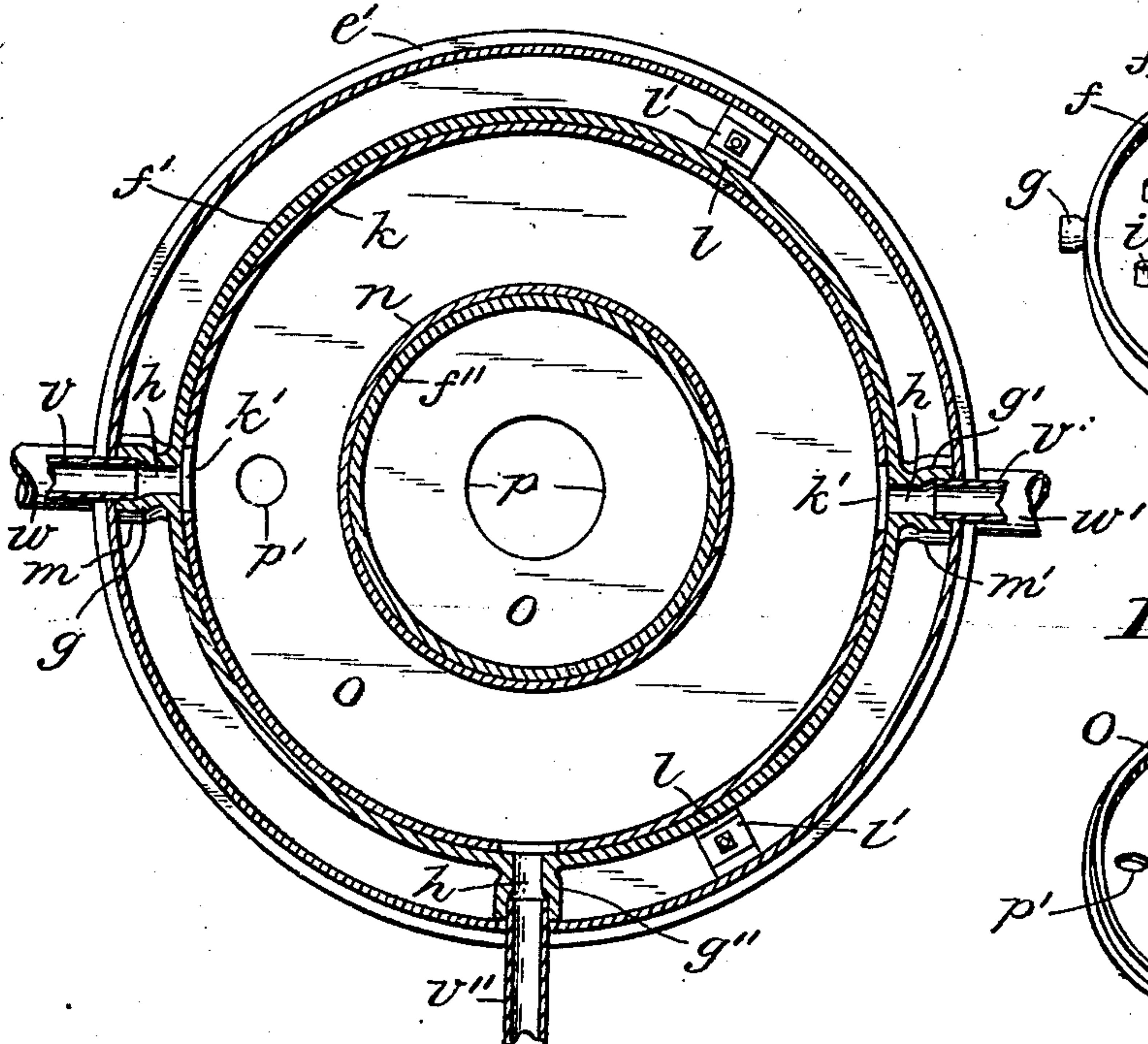


Fig. 6.

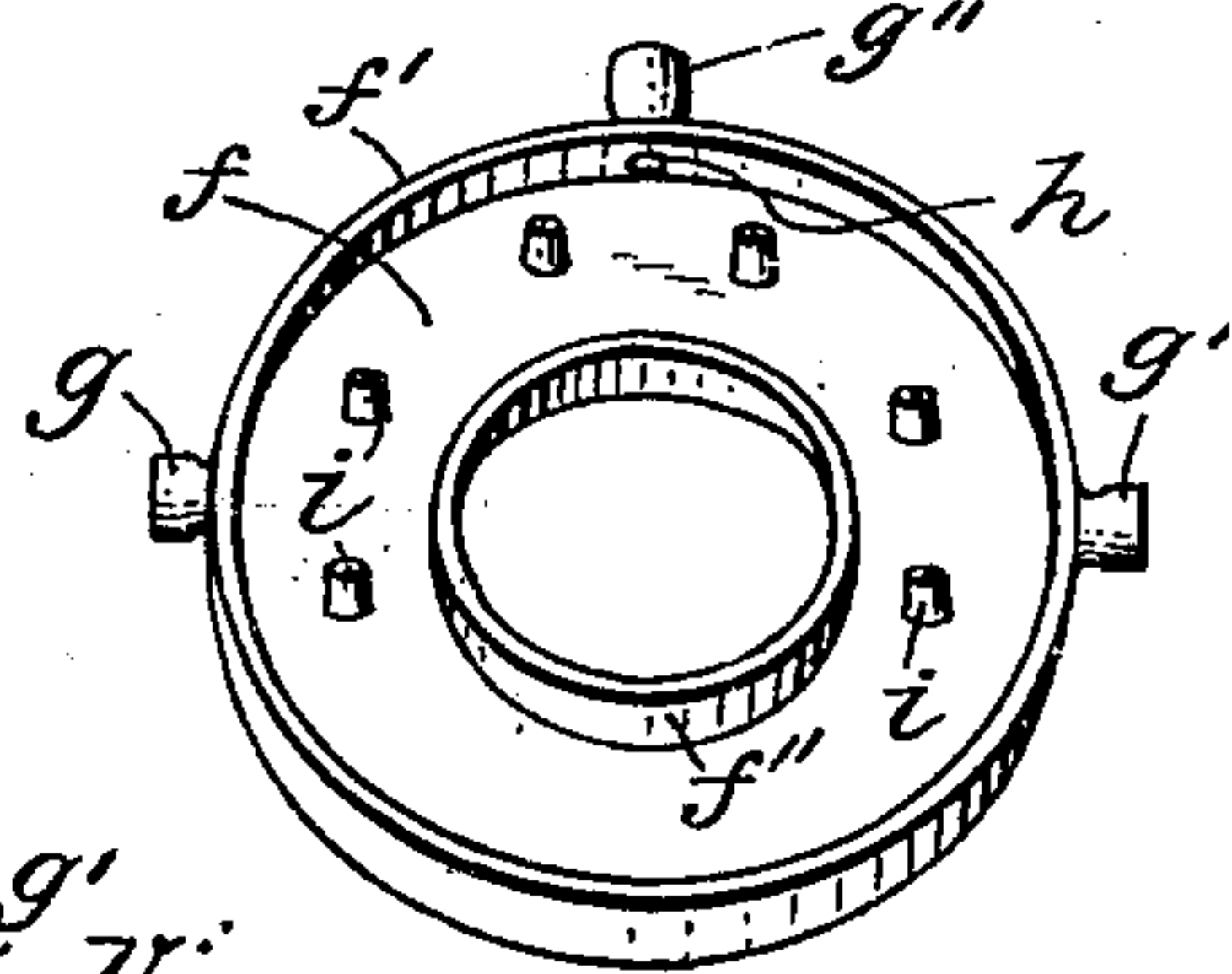
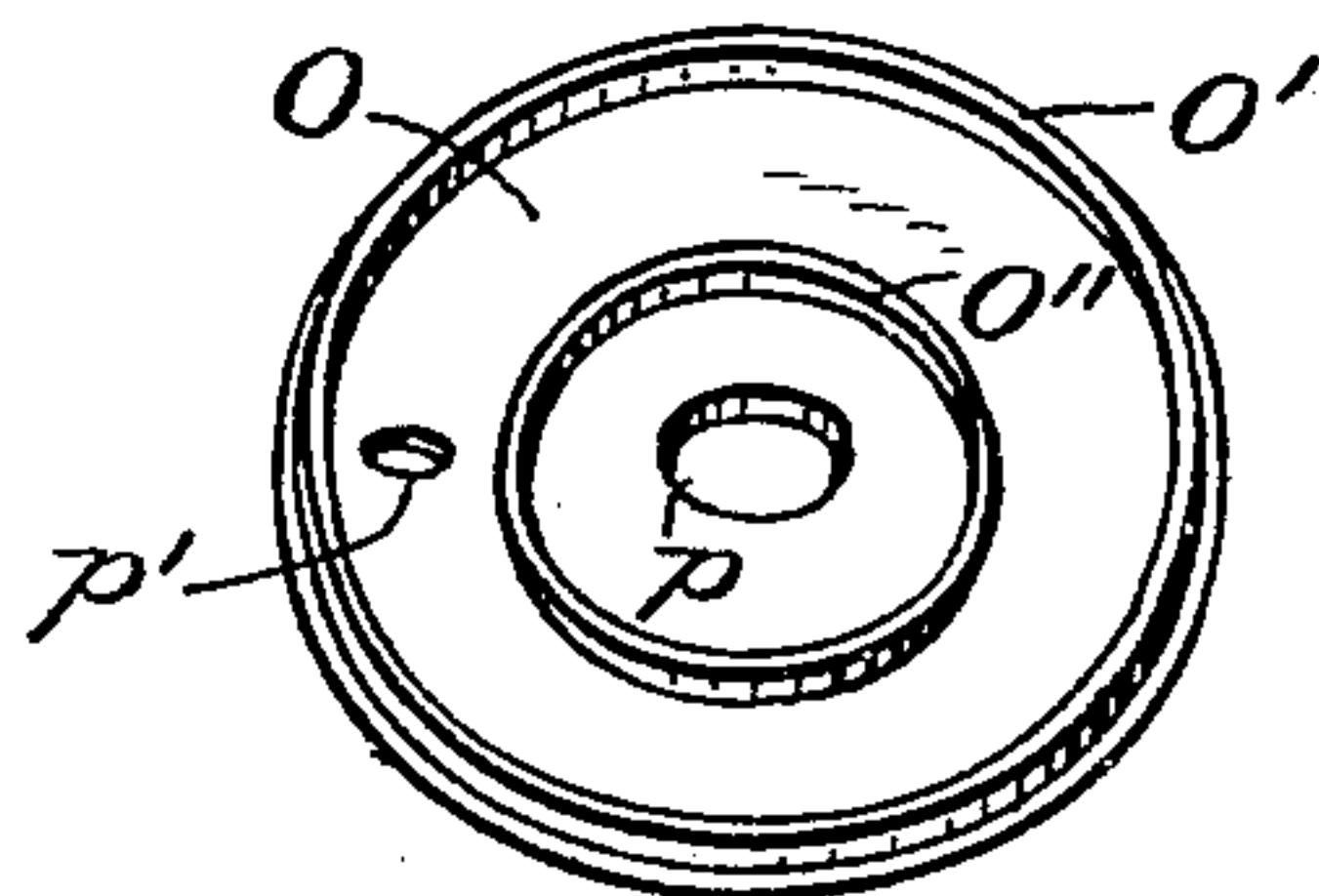


Fig. 7.



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# UNITED STATES PATENT OFFICE.

GEORGE G. KAISER, OF HARRISON TOWNSHIP, CLAY COUNTY, INDIANA.

## COAL-BURNING STOVE.

No. 914,847.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed March 16, 1908. Serial No. 421,440.

*To all whom it may concern:*

Be it known that I, GEORGE G. KAISER, a citizen of the United States, residing in Harrison township, in the county of Clay and State of Indiana, have invented certain new and useful Improvements in Coal-Burning Stoves; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to heating stoves and has reference particularly to improvements in stoves, especially those that are designed for using coal as fuel, for enabling the stoves to heat air under control whereby to heat other rooms than that in which a stove may be located.

The object of the invention is to provide an improved stove that will be adapted in a measure to serve the purpose of an air heating furnace, while at the same time being adapted to be constructed at relatively small cost and suitable for use in a dwelling room, so that the stove may heat not only the room in which it may be situated but capable of furnishing heated air for conveyance to other rooms in the building; other objects being to provide an economical heating stove that will not require expert attendants nor any considerable expense for repairs.

The invention consists in certain improvements in heating stoves with respect to parts thereof that are designed for direct radiation of heat and also for heating air to be conducted away from the stove. And the invention consists further in certain parts and combinations and arrangements of parts as hereinafter particularly described and referred to in the accompanying claims.

Referring to the drawings Figure 1 is a front elevation of the improved heating stove; Fig. 2, a transverse vertical sectional view of the upper portion of the stove, showing the improvements therein; Fig. 3, a top plan view of the radiator and air heater with the top thereof removed; Fig. 4, a horizontal sectional view on the line A A in Fig. 2; Fig. 5, a horizontal sectional view on the line B B in Fig. 2, looking upward or in inverted arrangement; Fig. 6, a perspective view of

the bottom plate of the radiator and heater; and, Fig. 7, a perspective view of the upper plate of the radiator and heater.

Similar reference characters in the different figures of the drawings designate corresponding elements or features of construction.

Practically embodied, the invention comprises certain parts of a stove which may be variously constructed including a base *a* and a body part *b* in which the fuel is to be consumed, the base being designed as an ash-pit and provided with a door *a'*, the body part having a door *a''*, the door *a'* being provided with a draft regulator *c*, and the fire door *a''* having a draft regulator *c'* as is customary. For the purposes of the invention, the top of the body part *b* is open and has an external flange *b'* and an adjacent annular vertical flange *b''* on the top of the wall thereof.

A hollow cylinder *d* is provided which may be of any suitable length and normally rests on the flange *g'* against the outer side of the flange *b''* and may be either secured thereto or removable as may be preferred. The cylinder has a top *e* having a flange *e'* extending over the upper end of the cylinder, the top being annular and having a flange *e''* extending upward around the opening therein, the opening being designed to permit of the escape of smoke or unconsumed gases of combustion, and to afford draft for the fire.

An annular bottom plate *f* is provided that is somewhat less in diameter than the cylinder *b* and has an upturned flange *f'* at the periphery and also a flange *f''* extending around the opening therein. A suitable number of air conduits as *g g' g''* are cast integral with the flange *f'* and have each an air passage *h* therein extending through the flange, the conduits being designed to extend to the inner side of the cylinder *d* and fit closely thereto, and obviously might extend through the wall of the cylinder if desired. The plate has a suitable number of posts *i* cast on the top thereof to which are suitably attached a suitable number of deflecting plates *j*, preferably having minute apertures *j'* therein, there being a plate near each conduit and designed to momentarily hold air that may be received through the conduits until the air becomes slightly



heated, the plates being designed also to prevent the air from rushing upward directly from the inner orifices of the conduits.

An intermediate hollow cylinder *k* which is somewhat shorter than the cylinder *d* is placed upon the plate *f* close to the flange *f'* and has openings *k'* therein registering with the conduits, the cylinder being preferably riveted or otherwise secured to the flange, but attachment may be unnecessary when the conduits rest on the flange *b''* as shown, so as to support the plate *f*, but preferably the upper portion of the cylinder *k* is provided with external projections *l* that rest on or may be secured to brackets *l'* that are attached to the inner side of the cylinder *d*. The upper portion of the cylinder *k* has a suitable number of conduits *m m'* suitably attached to the exterior thereof, and they extend to the inner side of the cylinder *d*, there being openings *k''* in the cylinder *k* registering with the conduits. The cylinder *k*, it will be seen, is somewhat less in diameter than the surrounding cylinder *d*, and the annular space between the two cylinders serves as a draft passage between the body part and the space above the intermediate cylinder and under the top *e* of the outer cylinder. An inner cylinder *n* of less diameter than the cylinder *k* is placed also on the plate *f* close to the outer side of the flange *f''* and extends upward as high as the top of the cylinder *k*.

An upper plate *o* is placed upon the inner cylinder and intermediate cylinder and is suitably joined thereto, preferably by means of annular flanges *o'* and *o''* on the under side of the plate and extending against the walls of the cylinders. The plate may be either removable from the cylinders or attached thereto as may be preferred. The plate *o* has an aperture *p* therein and has a pair of guides *q* and *q'* thereon on opposite sides of the aperture, a gate *r* being arranged in the guides so as to normally close the aperture, but permitting the aperture to be opened if required, the gate being provided with an operating rod *s* that extends through the outer cylinder *d*. A conduit *t* is connected to the top of the plate *o* at an aperture *p'* that is formed in the plate for the escape of heated air, the conduit being suitably connected to the top *e*. A chimney pipe *u* is connected to the flange *e''* for draft purposes.

In order to provide for the circulation of air to be heated, a suitable number of pipes as *v v' v''* are connected to the lower conduits as *g* and extend downward near to the floor level of the apartment and may be suitably connected so as to be supported by the base *a* of the stove, the conduits being adapted to permit cool or cold air to pass through the flue space into the annular heating chamber between the intermediate and inner cylinders *k* and *n*, from which the air after becoming heated may pass out through suitable dis-

tributing pipes *w* and *w'* connected to the conduits *m* and *m'*, and a pipe *x* connected with the conduit *t*. It will be understood that the distributing pipes may be connected either at the sides of the cylinder *d* or through the top *e* thereof as may be preferred, or in both ways as shown.

It will be understood that the cylinders herein referred to are obviously not required to be circular but may be otherwise shaped in cross section, although as is obvious the circular forms may be most easily and cheaply manufactured.

In practical use, the fuel is to be fed onto the fire grate through the fire door *a''* in the usual manner, and when starting a fire, if desired, the gate *r* may be opened in order to permit smoke to pass directly to the chimney pipe, but in the ordinary operation of the stove, the gate should be closed so as to retain heat in the cylinder *n* for the purpose of assisting to heat the air surrounding the cylinder. If, however, it is found that soot collects in the upper portion of the cylinder *n*, the gate may be opened temporarily to permit the soot to burn out. As ordinarily operated, the draft will occur through the passage between the outer cylinder *d* and the intermediate cylinder *k*, and the heat arising will be radiated from the cylinder *d* and its top *e* and also assist in heating the air within the cylinder *k*. The plate *j* being relatively close to the plate *f* and the direct heat from the fire will receive considerable heat and thus be enabled to immediately heat the air more or less that enters through the conduits *g*, etc., before the air can rise to the higher portions of the walls of the cylinders which may be heated to a less degree than the lower portions. It will be understood of course that the body *b* of the stove will radiate a greater amount of heat directly to the room in which the stove is situated, and that the draft passage around the cylinder *k* serves more particularly as a jacket for assisting to heat the air within the cylinder *k*.

It will be seen from the foregoing that the various parts of the air heating apparatus may be readily disconnected for the purposes of inspection or cleaning or repairs.

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

1. A stove including an annular bottom plate having an upturned flange at its periphery and also an upturned flange at the inner side thereof, the peripheral flange having a conduit connected to the exterior thereof, a hollow outer cylinder extending about the peripheral flange at a distance therefrom and connected to the wall of said conduit and having an opening therein at the conduit, a top on the outer cylinder, a hollow intermediate cylinder within the outer cylinder and connected to the bottom plate at the inner side of said peripheral flange, a hollow



inner cylinder within the intermediate cylinder and connected to the bottom plate at the flange that is at the inner side thereof, and a top plate under the top that is on the  
5 outer cylinder and connected to the intermediate cylinder and inner cylinder.

2. A stove comprising a body part open at its top, an upright hollow outer cylinder connected to the top of the body part and having  
10 an apertured top thereon, an upright hollow intermediate cylinder within the outer cylinder, an upright hollow inner cylinder within the intermediate cylinder, an annular bottom plate having a flange on the peripheral edge thereof engaging the bottom of the  
15 intermediate cylinder and having also a flange at the inner side thereof engaging the bottom of the inner cylinder, the peripheral flange having a conduit on the exterior thereof of extending to the outer cylinder, an aper-  
20 tured top plate connected to the tops of the intermediate and inner cylinders, a gate mounted movably on the top plate and normally covering the aperture thereof, a rod at-  
25 tached to the gate and extending through the outer cylinder, an outlet conduit extending from the interior of the intermediate cylinder to the exterior of the outer cylinder at the upper portions thereof, and air-pipes  
30 connected to the conduits.

3. A stove comprising a body part open at its top, an upright hollow outer cylinder

connected to the top of the body part and having an apertured top thereon, an upright hollow intermediate cylinder within the outer  
35 cylinder, an upright hollow inner cylinder within the intermediate cylinder, an annular bottom plate having a flange on the peripheral edge thereof engaging the bottom of the intermediate cylinder and having also a  
40 flange at the inner side thereof engaging the bottom of the inner cylinder, the peripheral flange having a conduit on the exterior thereof of extending to the outer cylinder, an aper-  
45 tured top plate connected to the tops of the intermediate and inner cylinders, a gate mounted movably on the top plate and normally covering the aperture thereof, a rod at-  
50 tached to the gate and extending through the outer cylinder, an outlet conduit extending from the interior of the intermediate cylinder to the exterior of the outer cylinder at the upper portions thereof, a deflecting plate supported fixedly in the space between the  
55 intermediate and inner cylinders above the plane of the conduit that is on the said flange, and air pipes connected to the conduits.

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

GEORGE G. KAISER.

Witnesses:

JOHN BYERLY,  
J. H. TRAVIS.