

(No Model.)

2 Sheets—Sheet 1.

W. F. CONDON

SELF EXTINGUISHING, HEATING AND VENTILATING STOVE.

No. 250,502.

Patented Dec. 6, 1881.

Fig. 1.

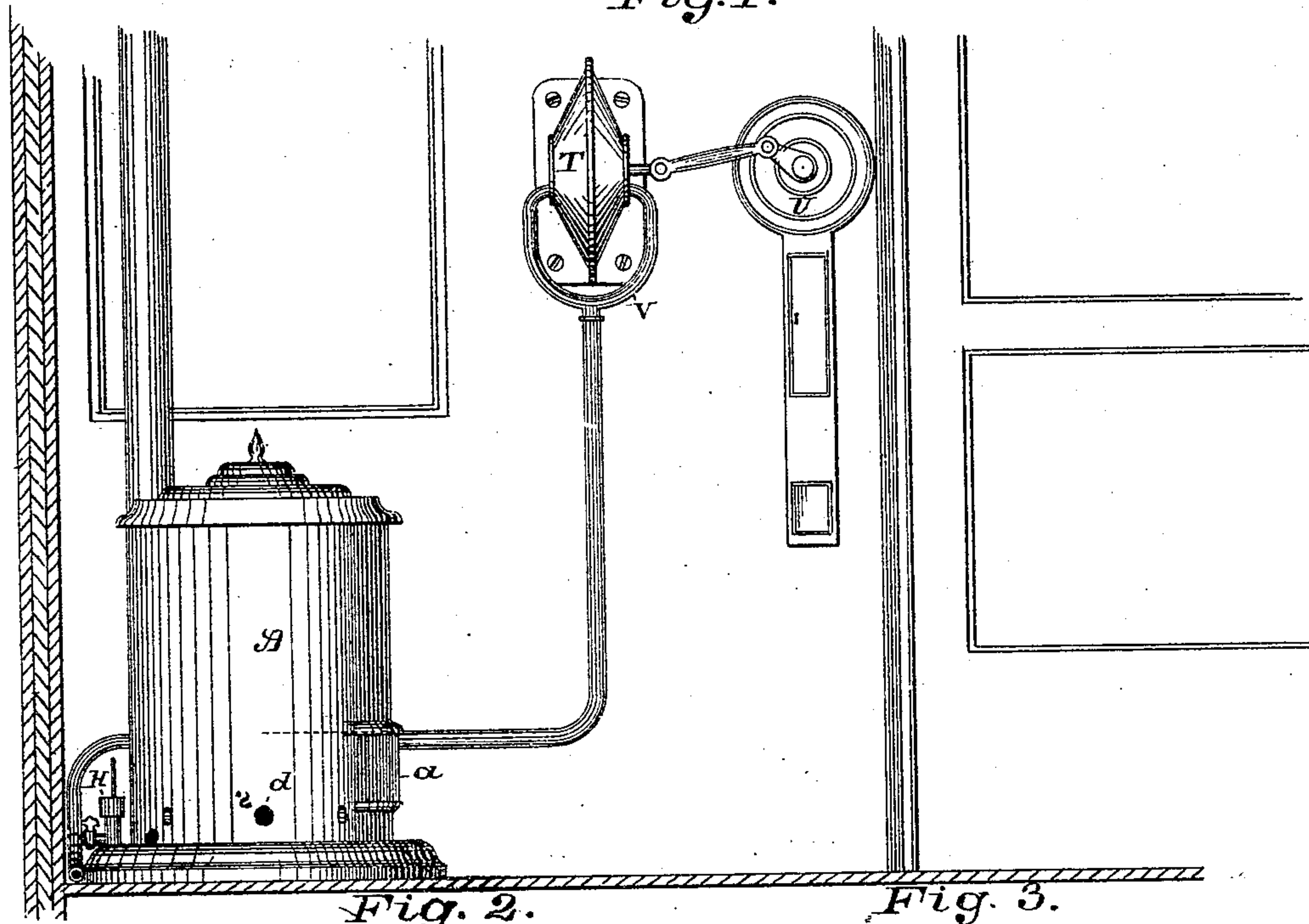
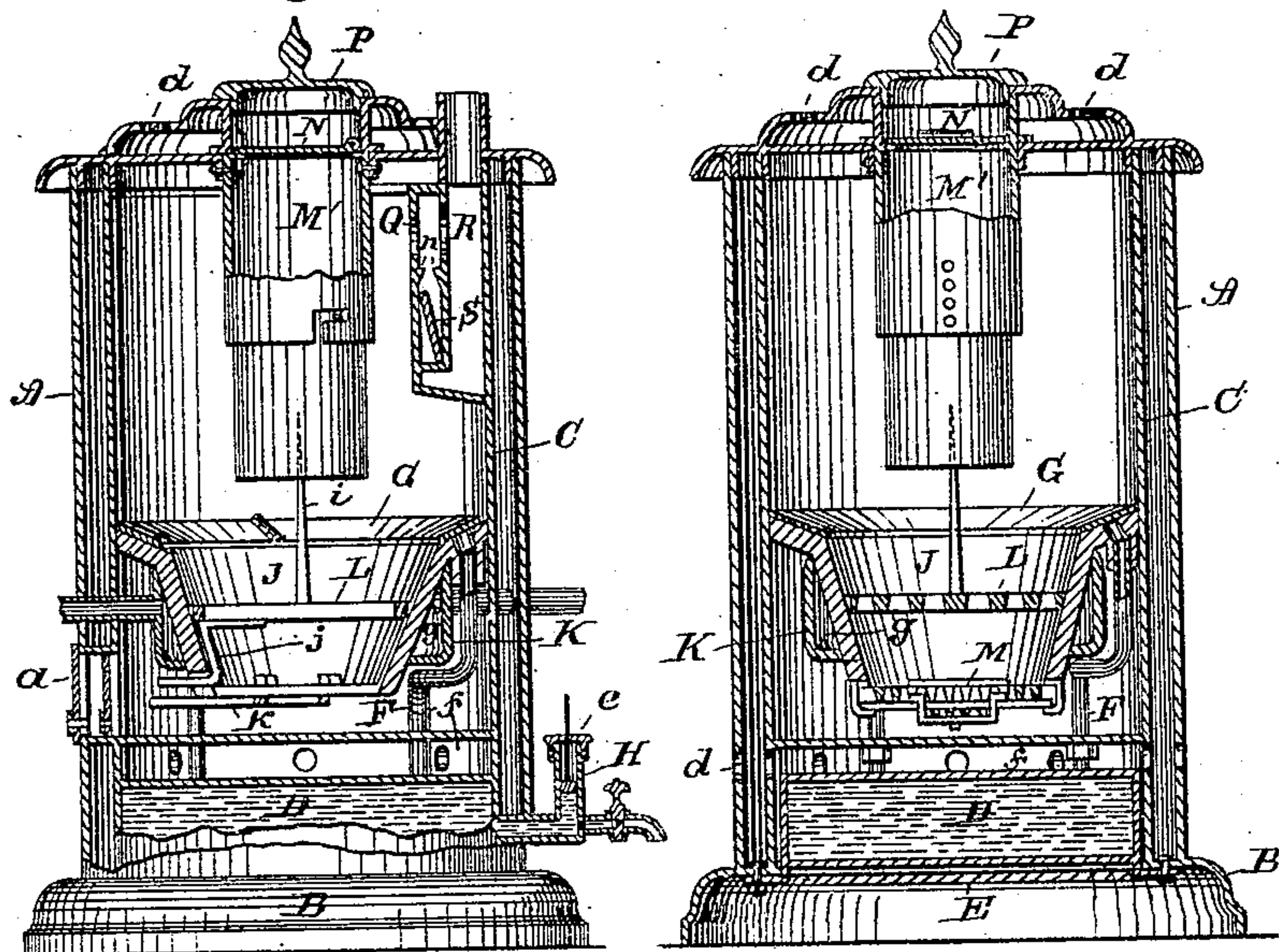


Fig. 2.

Fig. 3.



Attest:

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Wm. Henderson

Inventor:

William F. Condon

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Fig. 4.

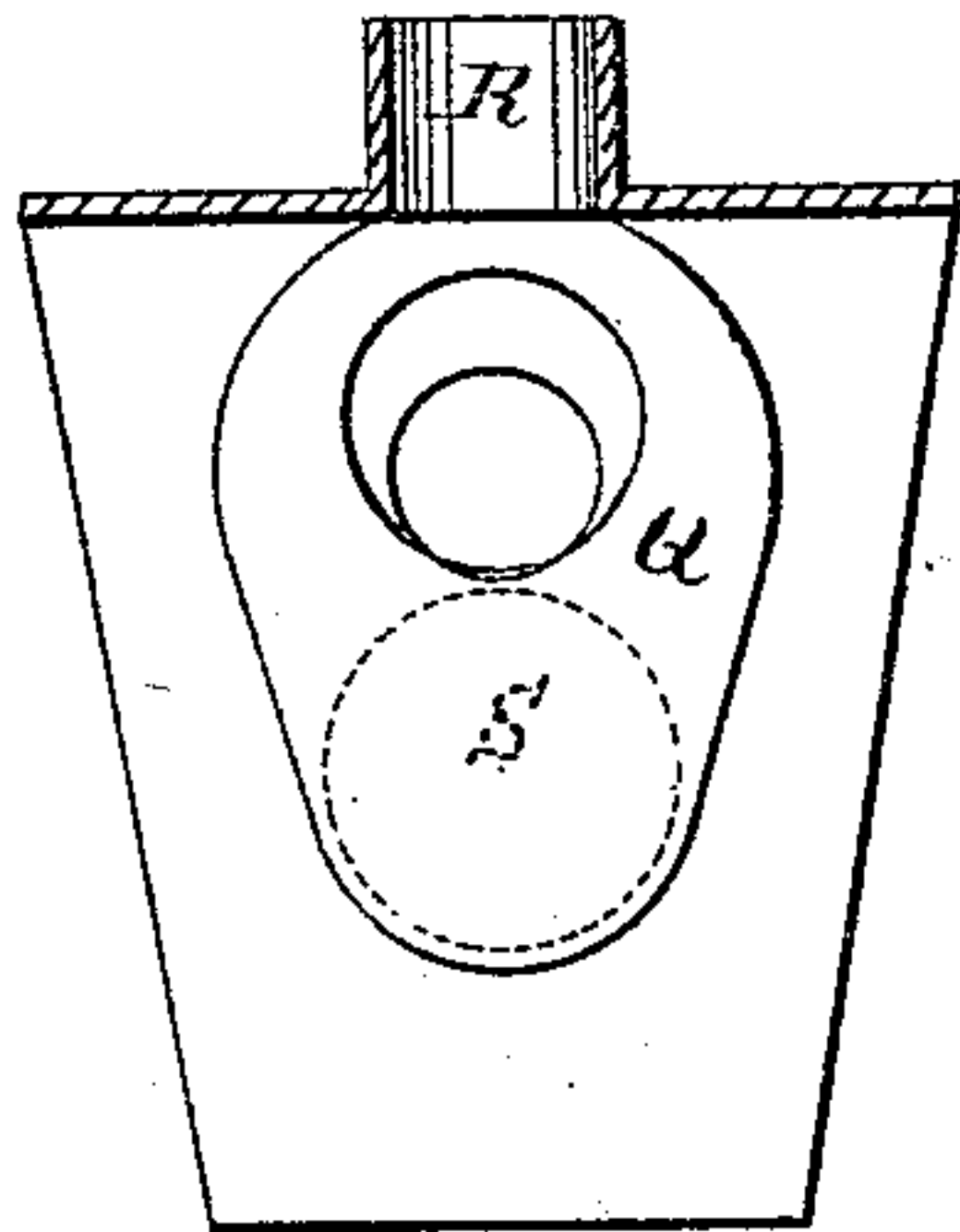


Fig 5.

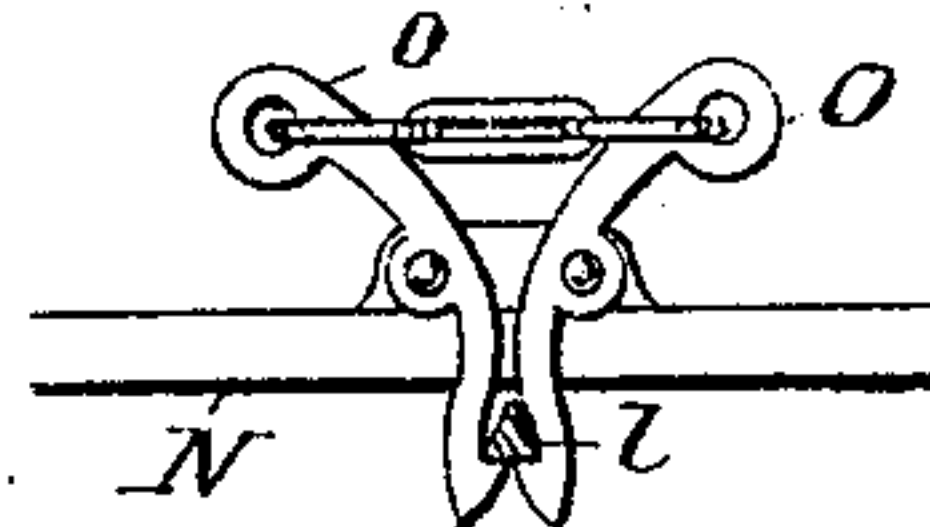


Fig. 6.

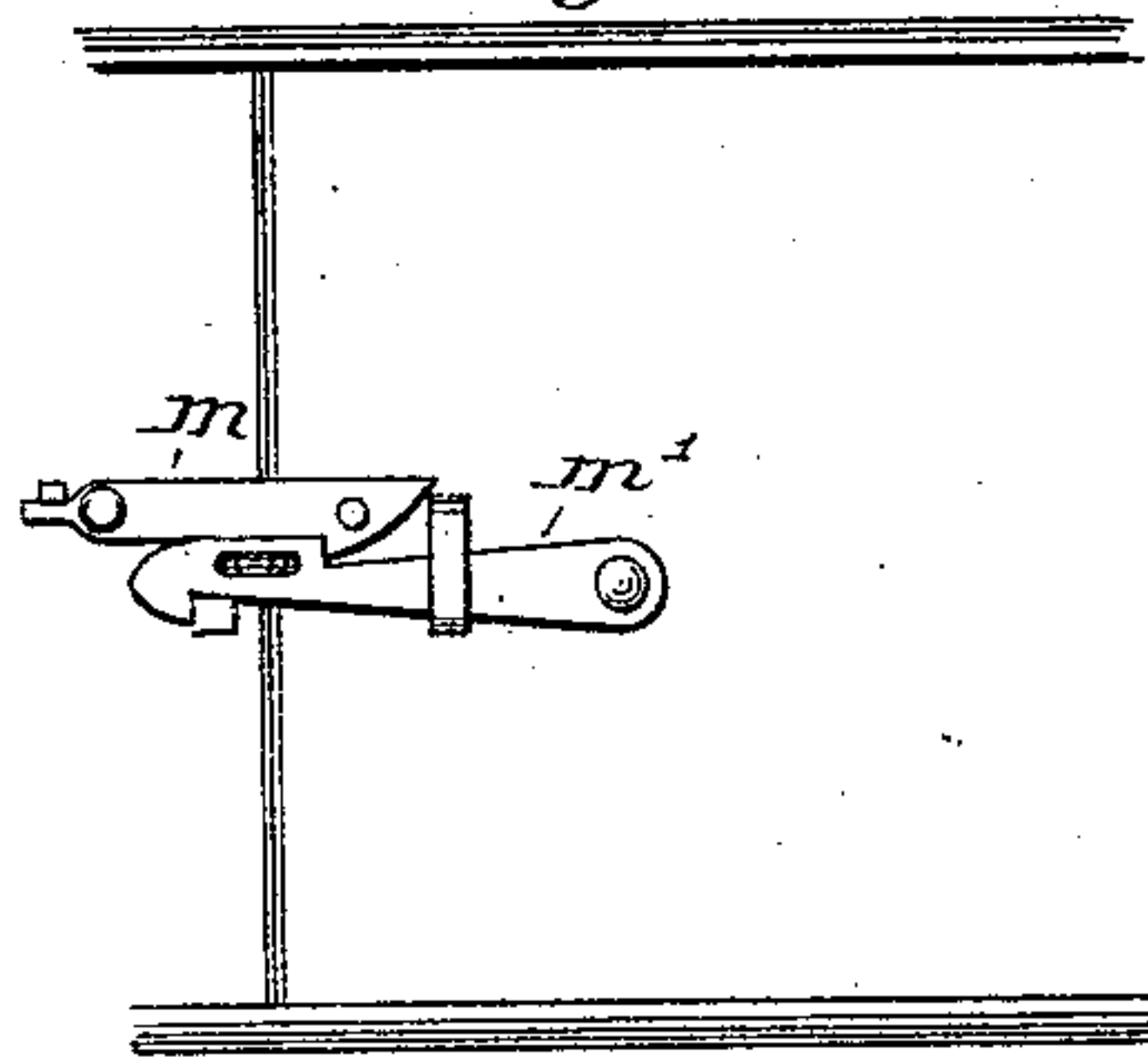
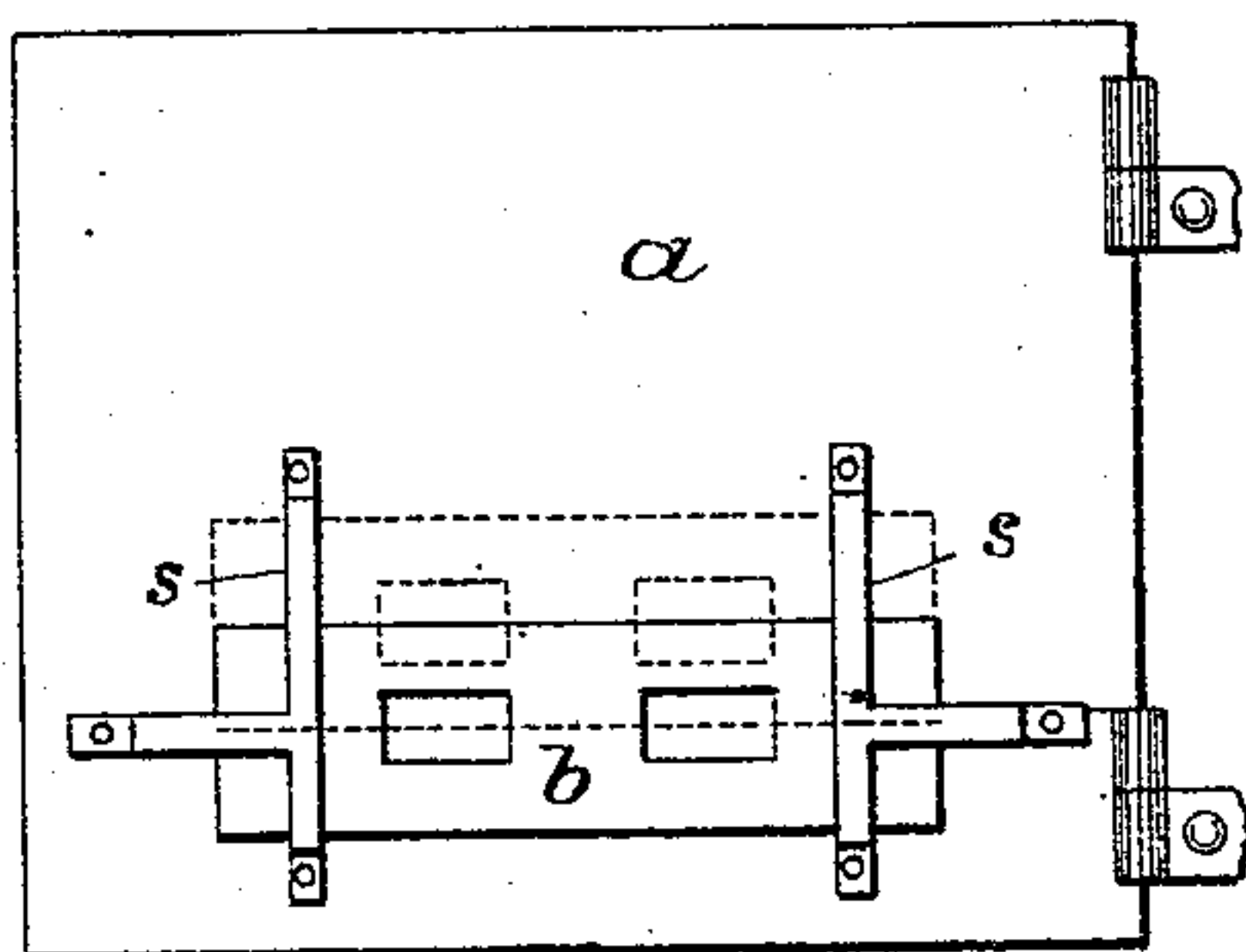


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM F. CONDON, OF EAST SAGINAW, MICHIGAN.

SELF-EXTINGUISHING HEATING AND VENTILATING STOVE.

SPECIFICATION forming part of Letters Patent No. 250,502, dated December 6, 1881.

Application filed November 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. CONDON, of East Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Self-Extinguishing Stoves or Heaters and Ventilators; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which

my invention appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification, and in which—
Figure 1 is a sectional elevation of the car with my improved stove placed therein; Fig. 2, a longitudinal section through the stove from front to rear, with a portion of the coal-magazine broken away; Fig. 3, a longitudinal section from side to side of the stove, with a portion of the coal-magazine broken away, and showing a removable water-tank placed in the lower part of the stove. Fig. 4 is a detailed view of the smoke-flue with valve-casing; Fig. 5, a side view of the stove-lid (parts being broken away) and dogs for holding it in place. Fig. 6 is a front view of the stove-door (parts being broken away) and dogs for holding it closed, and Fig. 7 a detailed view of the door with cut-off valve applied thereto.

My invention relates to stoves designed more particularly for heating cars, and has for its object the formation of a stove which shall embrace the several features of a tank of water for extinguishing the fire in the event of the stove turning over; a self-acting valve for closing the several openings through which the fire might pass out in the event of the stove turning over; a self-feeding magazine with an adjustable or removable section, so as to regulate the quantity of coal to be fed to the fire-pot, and also to admit of the substitution of a new section for the old when the latter becomes burned out; a two-part grate which will hold up the live coals while the ashes can be removed without disturbing the fire; a rod for agitating the coal in the magazine when the grate is shaken; a jacket or chamber about the fire-pot wherein is to be heated the air which is afterward to be impelled through the car; means for impelling the air into the said

chamber and then through the car, and safety dogs or latches for securely holding closed the lid and the door to the stove; and to the accomplishment of these ends it consists in the construction as well as in the combination of parts, hereinafter particularly described, and then sought to be specifically defined by the claims.

In the accompanying drawings, the letter A indicates the stove-jacket, which rests on the base B, and is provided with a swinging door, *a*, located below or in front of the fire-pot, and having a self-acting shut-off, *b*, admitting of a vertical and side adjustment. The shut-off is held in position by means of guards *s*, and its function is to close the openings in the door if the stove should be overturned, and thus assist in extinguishing the fire and preventing all particles of the burning material from falling out. The jacket has perforations *d* near its lower end to let in cool air, and also at the top to let out the warm air, and the base on which it rests may be bolted direct to the floor, or it may be supported on legs resting on the floor. Within this jacket, and resting on the same base, or preferably extending down far enough to rest on the floor, is the stove-cylinder C, which may be provided with a sliding door opposite to the door in the jacket, and that door provided with self-acting shut-offs the same as the door to the jacket. Within this cylinder, at or near its bottom, is placed a water-tank, D, which is preferably of copper, but may be of other suitable material, and is made separate from the cylinder, so that it can be readily replaced by another when necessary, in which event it can be withdrawn through an opening made in the stove for its removal.

I prefer to secure the bottom plate, E, to the body of the stove by bolts passed through the plate into the body of the stove, so that by unfastening the bolts the plate may be removed and the water-tank taken out.

The tank D communicates with the fire-pot through pipes F, which extend up through sockets projecting down from the top flange of the fire-pot, and communicate with the open top of the pot through openings in the flange thereof; but instead of passing into sockets, as described, they may project directly into

slots formed in the top flange of the pot, the slots in such case being closed on top by means of a circular band or plate, G, which is made in sections hinged together, and adapted, when
 5 laid on top of the fire-pot, to rest thereon and keep the slots covered, so that no ashes or coals will fall into the same, and yet at the same time it is adapted to fall from off the flange when the pot is overturned and permit
 10 the water to run from the tank into the pot for the purpose of extinguishing the fire. When the plate G is made in sections, hinged together, one section will fold upon the other when the pot is overturned, and its separation
 15 from the pot-flange will be better insured. The pipes F are bent or elbowed, so as to form a trap that will prevent the water from splashing from the tank into the pot by the motion of the cars, and yet not prevent a free flow of
 20 water into the pot if the stove should be overturned. The tank is filled with water through a branch pipe, H, the end of which is closed by a removable cap, e, through which and into the pipe there extends a rod, f, on the lower
 25 end of which there is a block or piece of cork or other light material, so as to form a float that will rise and fall with the water in the tank, and thereby indicate the height of the water therein. The pipe H, at its elbow, is
 30 provided with a cock, through which the water in the tank may be drawn out. Between the top of the tank D and the fire-pot there is placed a plate, I, which forms the bottom of the ash-pit, the plate being placed so as to
 35 leave a space, f, between it and the top of the tank, into which space air passes from the outside through perforations in the cylinder C, as shown, so as to keep the top of the tank cool.

The fire-pot J has a flaring flange at its top,
 40 which is perforated or slotted, and is set within the cylinder C, being supported therein by the sides of the cylinder, or on lugs projecting therefrom, or by resting on the pipes F. Around the outside of the fire-pot there is formed an
 45 air-heating chamber, g, by means of a jacket, K, which jacket is made separate from the pot and slipped over and secured in any suitable manner thereto, or it may be molded or otherwise
 50 formed therewith, though I make no claim to this latter. The function of this chamber is to receive the air pumped from the outside, so that it may be heated therein preparatory to being forced from there into pipes, through
 55 which it is impelled to the rear or other part of the car. By forming the air-heating chamber around the outside of the fire-pot the air is brought to a point where it can be quickly and highly heated, and the interior of the pot is left unobstructed by any coil of pipe.

60 The fire-pot is provided with two grates, L and M. The upper grate, L, is journaled in any of the well-known ways in the side of the pot, so as to oscillate, and is provided with a rod, i, which extends upward into the coal-
 65 magazine, so that the coal therein may be agitated and loosened every time that the grate is shaken. A rod, j, extends from the grate

through the fire-pot, so that by means of it the grate may be operated.

In a working-stove there should be a space 70 of something like two inches between the two grates, and the lower grate has its bars closer together than the bars of the upper grate, and may be supported within the fire-pot, as illustrated in Fig. 2, or just below its bottom on 75 projecting angular lugs, as illustrated in Fig. 3. This lower grate is made in two parts, the central portion being adapted to slide, so that by pulling it forward an opening may be formed in the center of the grate, through which the 80 ashes and cinders may fall when the stove is to be cleaned out. The lower grate may be shaken by means of the rod k, it being adapted to be turned back and forth in a horizontal plane. Both grates should incline from cir- 85 cumference to center, so as to direct the coals and ashes to their centers. By using two grates constructed as described the top grate will hold the larger and live coals, while the bottom one will hold the cinders and ashes, which can 90 be removed without disturbing the fire or wasting fuel.

A two-part magazine, M, extends downward into the cylinder C from the top of the stove, to which it is secured in any suitable manner. 95 It is made in two parts, with the lower section fitting either inside or outside of the upper section, so that the lower section may not only be raised and lowered to regulate the quantity of coal to be fed to the fire-pot, but also that it 100 may be removed when burned out and replaced by a new section without the expense of substituting a whole new magazine. The sections are held together by a bayonet-joint, as shown in Fig. 2, (only one joint being there 105 shown, although there may be several, so as to adjust the magazine to different heights,) or by means of perforations and a pin, as shown in Fig. 3.

The top of the magazine is provided with 110 a hinged lid, N, which is securely held closed by two latches or dogs, o, pivoted to its top and passed through the same, and constructed with hooked lower ends, and so as to throw 115 the lower ends inwardly when suspended as described, and arranged so that both lower ends will, as the dogs stand normally, be thrown toward each other. These dogs are connected together at their upper ends by a chain, and 120 their hooked ends engage with lug l, formed on the inside of the magazine or other part of the stove where the dogs can engage with it. When it is desired to open the lid or cover the chain is raised, which action draws the upper 125 ends of the dogs toward each other, and the lower ends apart and from engagement with the lugs, so that the lid can then be lifted, and as soon as the lid is lowered the dogs immediately engage with the lug and hold the lid securely closed. If the stove should fall over 130 onto its side in such a position that one of the dogs would be disengaged from the lug by reason of the weight of the upper end bearing that end down, still the other dog will re-

main in engagement with the lug and hold the lid closed, so that no live coals can fall from out of the magazine through the top thereof. A removable top, P, covers the opening through which coal is introduced into the magazine.

The fastening for the lower doors of the stove consists of the two dogs, *m m'*, the one, *m*, being pivoted to the body of the stove, and prevented, by a pin or stud located so as to bear against the top of its rear end, from falling below a horizontal plane, the other one, *m'*, being pivoted to the door and held to its place by a clasp. The dog *m'* is formed with two shoulders or hooks, one on its lower edge, near its free end, and the other on its top edge, a little way back from the free end, so that the lower one will engage with a stud or pin on the body of the stove and the upper one with the shoulder or hook formed on the lower edge, near the free end of the dog *m*. When the door is to be opened both dogs have to be lifted, so as to free the top dog from engagement with the lower dog and the lower dog from engagement with the stud on the stove. This fastening can be used on either a sliding or swinging door. When used on a sliding door, in closing the door the lower dog first strikes against the rounded end of the upper dog and lifts it up, and next strikes and engages with the stud which holds it to its place, the upper dog at the same time engaging with the hook or shoulder of the lower dog, and the parts are thus securely held together.

The smoke-flue Q communicates with the exit-pipe R, and is of an egg or conoidal shape, with the broadest portion at the top, and within this flue there is placed an annular or equivalent shaped valve, S, which rests in the lower portion of the flue. On the inside of the wall of the flue, just below the openings therein, which allow communication between the interior of the stove and the exit-pipe, as illustrated in Fig. 2, there are formed two beveled or wedge-shaped lugs or seats, *n*, which will allow the valve S to pass up between them and lodge on one of the two seats, so as to close and keep closed the opening in the flue in case the stove falls over, and thus cut off the draft, and also prevent the fire from escaping through those openings. By forming the flue of the shape described less space is required for the satisfactory working of the shut-off valve than if it were of another shape. The shape of the flue quickly directs the valve between the beveled lugs and over the openings when the stove is turned over on its side.

The air for heating the car is supplied and impelled by a bellows, T, of any suitable and desirable shape, secured to the end of the car and operated by clock-work mechanism having a weight contained within the casing U, or by a crank-and-pedal movement, or any other suitable means for automatically working a bellows or blast apparatus. The bellows is connected to a two-way pipe or tube, V, so that the air will pass alternately through the

two branches as the bellows is worked, and from thence into a pipe leading into an air-chamber around the fire-pot, and then by the same means forced out of the chamber into the pipe leading therefrom, and through that pipe to the rear of the car, or through coils along the sides and under the seats to any part of the car desired. If desired, the air may be supplied to the bellows through a pipe from the outside of the car, and the pipes running from the stove throughout the car are to be provided with valves, so as to cut off the air at any point in the car, and thereby control the temperature, and, if necessary, so as to let the hot air pass out of the car at the end farthest from the stove, or into the car. A flexible pipe of any suitable material will connect with the pipe running from the bellows, and will have a metal nozzle, also a cut-off or cock, its use being to supply a blast to the fire either in starting the same or at any subsequent stage. It can have the air cut off from it at any time by the cock, and, being flexible, can be hung up out of the way.

By providing each car with a blast apparatus not dependent on the motion of the car for operation the car can be heated while not in motion as well as when in motion, and the temperature of the car can be regulated by cutting off partially or entirely the blast by checking or stopping the operating mechanism, and the car can be evenly heated throughout, or at one point more than at another, if necessary, by the pipes through which the air is impelled and by the valves for cutting off the air at any desired point. If desirable, the hot air can be forced from the stove direct and quickly to the rear of the car, and that end heated first, or at the same time as the forward part.

The same heating apparatus—that is, an apparatus constructed on the same principle—may be used for heating buildings and similar structures, and the blast feature of the invention may be used in connection with any other form of stove having the jacket and heating-chamber for forcing the air to different parts of the building.

The pipes may be extended to a bath-room or other chamber and into a vessel, so as to heat water fresh or salt, or both fresh and salt.

Instead of forcing hot air to warm the car in summer, cool air may be forced by the same devices, so as to cool or ventilate the car or building.

The parts of the stove may be held together by rods and bolts, or in any other well-known manner.

The jacket usually has a swinging door, while the stove-cylinder has sliding doors; but it is obvious that all the doors may slide.

The shut-offs or valves, instead of being on the doors, may be affixed to the drafts in any other part of the stove.

The pipes connecting the water-tank and fire-pot, instead of being elbowed, may have a grating within the same, or a ball resting on a seat

therein, or constructed in any other manner that will prevent the water from splashing into the fire-pot.

The magazine may be omitted, and the other parts not dependent thereon for operation will work as satisfactorily without it as with it.

There may be openings in any part of the stove most suitable, large enough to permit the escape of steam and gas that may be generated by the water flowing onto the fire, and yet small enough to prevent the coals from falling out.

Instead of the jacket around the fire-pot, a coil of pipe within the pot may be used as the chamber for heating the air; but the jacket is the better means, for the reasons hereinbefore set forth, and the one I desire to claim.

The water-tank may be made so as not to be removable, as illustrated in Fig. 2; but the other way is better.

The operation of the several parts is apparent from the foregoing description of their construction and functions, and will not therefore be separately set forth.

I do not limit myself to any particular form of stove, nor to any particular material, for it may be made of either boiler or cast iron or other suitable material.

I am aware that air has been forced through a chamber surrounding a fire-pot for heating purposes, and do not claim such, broadly.

Having described my invention, what I claim is—

1. The combination of a blast apparatus operated by clock mechanism, and a fire-pot having around it an air-heating chamber formed by a removable jacket and pipes, substantially as set forth.

2. The fire-pot provided with a removable jacket around its exterior, forming a chamber between the pot and jacket, in combination with pipes leading to and from said chamber, and a blast apparatus for impelling air to and through the said chamber and pipes, substantially as set forth.

3. In a stove or heater, a fire-pot provided with a perforated or slotted flange and a detachable plate resting on said flange so as to cover the openings therein, and adapted to fall

from over the same when the pot is overturned, substantially as set forth.

4. In a stove or heater, a fire-pot provided with a perforated or slotted flange and a sectional detachable plate resting on said flange so as to cover the openings therein, and adapted to fold and uncover the openings in the flange when the pot is overturned, substantially as set forth.

5. In a stove or heater, the smoke-flue Q, provided with a loose valve and a lug, forming a seat, on which the valve may catch and rest when moved from one part of the flue to the other, substantially as set forth.

6. The conoidal or egg-shaped flue provided with lugs n, in combination with loose valve, substantially as set forth.

7. The lid to the stove or heater, provided with two pivoted dogs adapted to grasp by their lower ends a lug on the stove, so as to hold the lid closed, and to release their grasp thereon when the upper ends are drawn together, so as to permit the lid to be raised, substantially as set forth.

8. The combination, with a stove or heater lid, of the two dogs O, provided with hooked lower ends, and fulcrumed so that their upper ends will be thrown outward and their lower ends inward, substantially as and for the purpose set forth.

9. The combination, with a side door of a stove or heater, of two dogs, one being pivoted to the door and the other to the body of the stove, one of the dogs being adapted to engage with a shoulder on the other and the latter with a lug or catch on the stove, substantially as and for the purpose set forth.

10. The combination, with a stove and its side door, of the dog m, provided with a hooked end and pivoted to the stove, and the dog m', provided with a shoulder or hook on its top and bottom and pivoted to the stove-door, the two being adapted to operate as set forth.

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

WILLIAM F. CONDON.

Witnesses:

EDWARD T. WALKER,
WM. G. HENDERSON.