

WELLMAN & OLD.

Coal Stove.

No. 48,751

Patented July 11, 1865.

Fig. 1

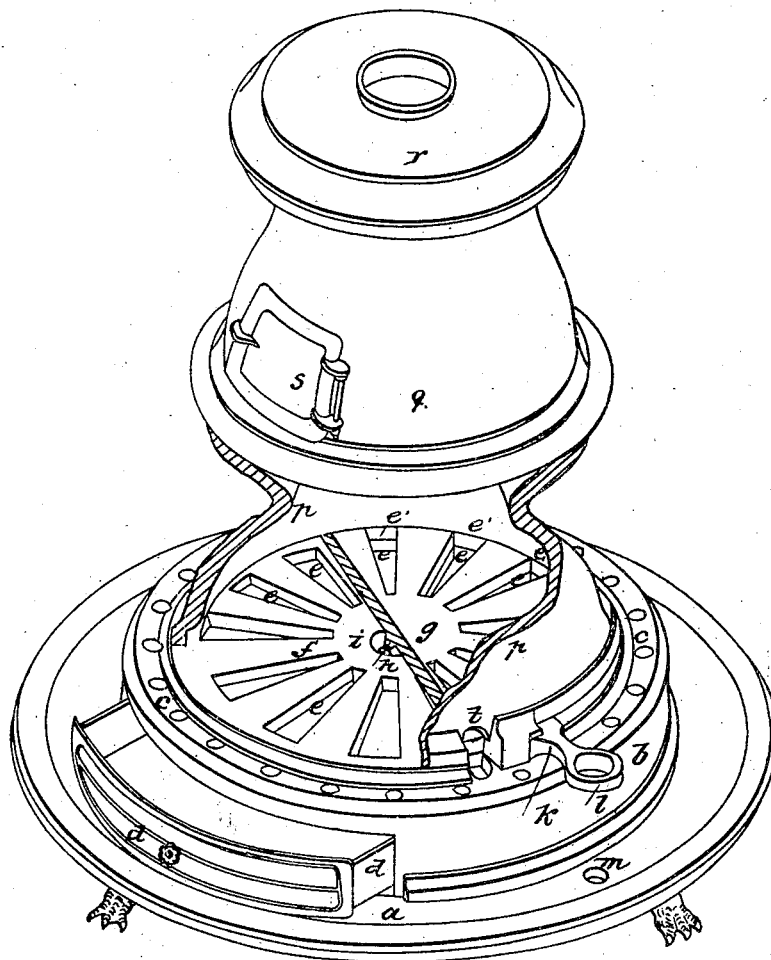
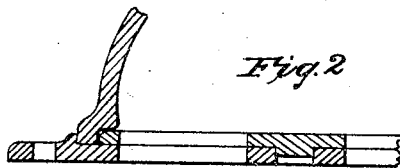


Fig. 2



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UNITED STATES PATENT OFFICE.

MARSHALL D. WELLMAN AND JAMES OLD, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN COAL-STOVES.

Specification forming part of Letters Patent No. 48,751, dated July 11, 1865.

To all whom it may concern:

Be it known that we, MARSHALL D. WELLMAN and JAMES OLD, both of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Close Stoves; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification, in which—

Figure 1 is a perspective representation of our improved stove, a portion of the side being removed to exhibit the interior construction; and Fig. 2 is a section of part of the upper and lower gratings.

Our improvements in close stoves are designed chiefly to overcome the difficulties experienced in regulating the heat, and to reduce the amount of coal consumed to yield a given degree of heat.

Close stoves are ordinarily constructed with an open grating for a fire-bed, the space below this grating being closed by a door, and the fire chamber or space above the grating having either perpendicular sides or sides flaring outward and upward. With such a stove a large amount of fuel is wasted, and a great proportion of the gas and fuliginous matter evolved passes away unconsumed which might be burned. Such stoves are also very apt to become overheated and cannot then be readily cooled, so that it is very difficult to maintain a regular heat, or to regulate it to the desired temperature. They also consume a large quantity of coal and need to be frequently replenished.

Our improvements in close stoves are shown in the accompanying drawings, which represent an upright circular stove.

a is the bottom plate, supported, as is usual, on feet. On this plate is placed the air-chamber *b*, in which is inserted the ash-drawer *d*.

Around the edge of the horizontal top of the air-chamber *b* are a number of circular holes, *c*, through which air is admitted into the air-chamber below the grating *f*. Parallel to the circumference of the air-chamber *b*, and inside the holes *c*, is a bead, *n*, which rises from the face of the top of the air-chamber *b*, and inside of which sits the bottom section or fire-pot, *p*, of the stove. The holes in the grating *f* radiate from points equidistant from the center of the top plate of the air-chamber to the

inner circumference of the lower edge of the fire-pot *p*, near to the bead *n*, the holes *e e* in the grating *f* opening into the air-chamber below. The grating *f* may be a separate piece from the air-chamber *b* or form part of it.

Over the grating *f*, and in contact with it, is placed a similar circular grating, *g*, of somewhat smaller diameter, with radial openings *e'*, which correspond in number, shape, and position to the openings in the lower grating, *f*. The spaces between the openings in both gratings are of similar shape and a little larger than the openings, so that when the upper grating is turned on its center over the lower one the spaces between the openings in one grating may close the openings in the other. To facilitate the turning of the upper grating, *e*, it has a pin, *h*, which projects downward from its center and enters a corresponding hole in the center of the lower grating, *f*. The upper grating forms the fire-bed of the stove, and also serves as a rake to remove the ashes and cinders, which choke the openings *e* and *e'* in the gratings, when it is desired to increase the supply of air to the fire. The fire-bed or upper grating, *g*, (one-half of which is represented in the drawings as removed to show the lower grating, *f*.) has a handle, *k*, which projects horizontally from its circumference at any convenient point where the bead *n* is intermitted for that purpose.

On the top of the fire-pot *p* is set the upper section, *q*, of the stove, in which is a door, *s*, and over that is placed the cap or cover, *r*, which has a flange, *v*, surrounding the opening *w* for the stove-pipe.

The shape of the lower section or fire-pot of our stove is peculiar, being that of the lower section of a dome, or, if preferred, the frustum of a cone, with its greatest diameter at the level of the grate, and arching or inclining upward and inward toward the center of the stove at an interior angle to the horizontal fire-grate of about forty-five degrees, or so much as to deflect the heat and flame down onto the fire, and to prevent in a great degree the packing of the coal against the sides of the stove. From the point where the diameter of the fire-pot is contracted to about one-half of its diameter at the grating the body of the stove enlarges again for a short distance rapidly, and then is gradually contracted toward the cover or cap *r*. The shape and height of the stove

above the throat or narrowest point of the fire-pot *p* is a matter of no great moment, however, and may be varied to suit the taste of the manufacturer. When the upper grating, *g*, is turned so that the openings *e'* correspond with the openings *e* in the lower grating, *f*, the air which enters the air-chamber *b* through the holes *c c*, or through the ash-drawer *d* when open, will pass up through the open gratings into the fire, and especially all around the inner circumference of the fire-pot *p*, where the openings are widest, because the effect of the arched or inwardly-sloping sides of the fire-pot is to prevent the packing of the coal against the sides of the fire-pot, and thus leave free passage-way for the air. This causes a constant stream of flame all around the edge or circumference of the fire, which is deflected downward, and as it rises to the contracted throat of the fire-pot makes an arch or dome of flame, through which the gas and smoke from the central mass of fuel have to pass, and which are thereby ignited as they pass into the upper part of the stove, causing a great combustion and consequent heat. When the upper grating is thus turned to open the air-passages a hole, *t*, in the bottom of the fire-pot *p* is exposed, through which a poker may be inserted to stir the fire. This opening *t* is closed by the handle *k* of the upper grating, *g*, when it is turned back, so as to close the openings *e e'* in the gratings.

At the end of the handle *k* is a ring, *l*, through which the poker may be passed with its point inserted into a hole, *m*, in the bottom plate, *a*, and with the poker as a lever, its fulcrum being at the hole *m*, the upper grating, *g*, may be shaken back and forth to rake out the ashes and cinders from the fire-bed.

When it is desired to check the heat of the stove the upper grating may be turned so as

to lessen the amount of air supplied to the fire, which may be so regulated as to cause the fire to burn slowly but with a steady heat. If the air-passages through the gratings are entirely closed and the stove-door thrown open, the fire will continue alight for a long time, and yet emit very little heat. Thus by regulating the admission of air the degree of heat given out by the stove may be controlled at pleasure and with very little trouble, and even a high degree of heat may be attained and kept up with the consumption of less than one-half of the fuel consumed in ordinary stoves.

Our stove is chiefly designed for burning soft or bituminous coal; but we believe that it will be found very advantageous for the consumption of anthracite also.

Having thus described our improvement, what we claim as our invention, and desire to secure by Letters Patent, is—

1. Making the fire-pot of close stoves with its greatest diameter at the level of the fire-bed or grate and contracting upward, substantially as and for the purposes hereinbefore described.

2. The use, in close stoves, in combination with a fire-pot constructed as hereinbefore described, of a double perforated grating, the lower part of which is stationary and the upper part turning thereon, for the double purpose of raking the fire and regulating the admission of air to the fire, substantially as hereinbefore set forth.

In testimony whereof we, the said MARSHALL D. WELLMAN and JAMES OLD, have hereunto set our hands.

MARSHALL D. WELLMAN.
JAMES OLD.

Witnesses:

JOHN M. NEAL,
A. S. NICHOLSON.