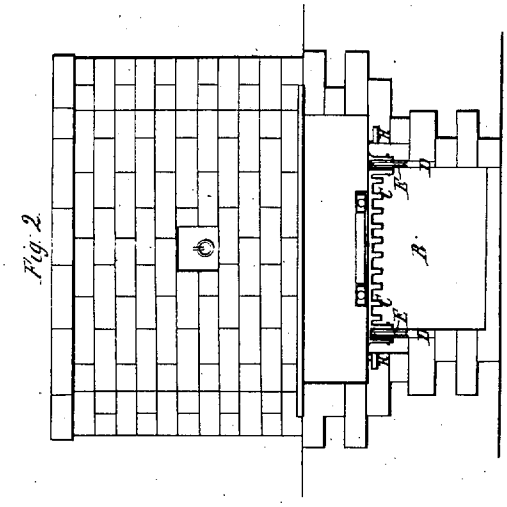
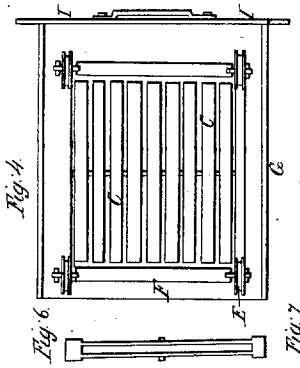
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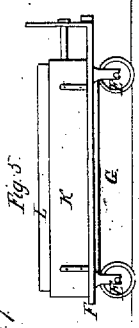
W. Barrett.

Evaporating Pan.

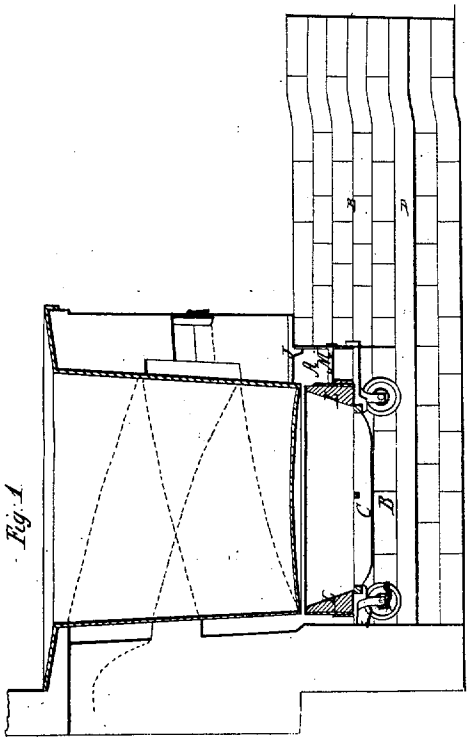
Patented Nov. 19, 1833.

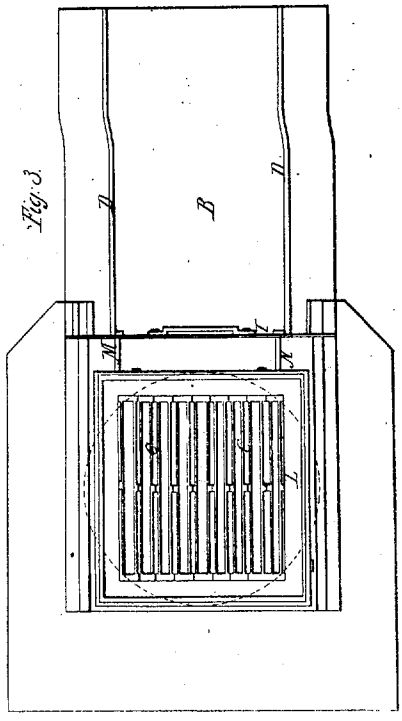












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*7784X William Barrett

Nov 19, 1833

Letters Patent

The Schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said William Barrett himself, of his Improvement or Improvements for burning Anthracite coal for heating & evaporating Liquids.

To all whom it may concern. Be it known that I William Barrett of Malden in the County of Middlesex and State of Massachusetts have invented certain improvements in furnaces for the purpose of burning the different varieties of anthracite coal and applying the heat from the same to the heating of vessels used for the purposes of Dying, Distilling, Brewing, Soap making, generating steam and in general whatever of magnitude is to heat or evaporate fluids of any kind by which improvements I propose to a considerable extent the expense of fuel and the time required for attendance on the fire, effect a more rapid heating of the fluid by a more immediate application of the fire to the bottom of the containing vessel and withdraw or apply the fire with greater facility than by any of the methods heretofore known, preserve the grate bars from the effects of the intense heat of the furnace and obtain other advantages. The grate with its appendages which is used for sustaining the fuel is made to turn upon a rail-way by means of cast iron rollers, from which circumstance I denominate the furnace the "rail-way furnace" and I do hereby declare that the following is a full and exact description of the construction thereof, reference being had to the drawings which accompany and make a part of this specification. Fig 1 is a sectional view of the furnace cut vertically from front to back. Fig 2. is a vertical transverse section thereof. Fig. 3. is a horizontal section or plan with a boiler and defecating case which surrounds it removed leaving the furnace and its immediate appendages in view. Fig 4. shows the under side of the Grate bar frame and bearers, a. Rollers upon which it turns. Fig 5 is a side view of the same. Fig 6. the upper surface of one of the bars. Fig 7 is a transverse section of the same. In referring to the respective figures I shall commence

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of them represent the corresponding parts of the same letters. A. Fig. 1 is the brick-work inclosed by the stacks, flues and other appendages the form of which furnaces will be different upon the nature of the business to be performed. B. is the Ash Pit within which is enclosed the furnace and the cast iron frame which it is to rest. C. is the bars of the grate made of cast iron. D. the ash pit-or whole thickness. E. the stacks or other ground to keep them in their places. On these three bottom parts of the furnace are usually made of cast iron. F. Fig. 4 shows the cast iron frame of the furnace which the foregoing pieces are cast to receive the stacks and at the letter C. there is a flanch or fillet along the whole length projecting downwards, these parts rest two corresponding pieces figured on the narrow of the rock immediately under the furnace and firmly attached to the masonry by dogs or projecting pieces of wrought iron built into it. This arrangement is shown at H. Fig. 2. it serves to secure and direct the current of air through the openings between the bars by preventing its escape laterally. These flanches or fillets are made to project so as to intersect the stacks and thus need not therefore offer any obstruction to the passing of the furnace. To secure a sufficient degree of strength in the cast iron frame which contains the grate bars it is made in one entire piece with sockets for the reception of the Cast Bars. It is also made of greater thickness where it approaches the bars than elsewhere. What I denominate the "dead plate" of the furnace and which is intended to prevent the entrance of air above the fuel when the furnace is on the place is ordinarily made of a thick plate of sheet iron. The lower edge of this plate fits on to the front edge of the cast iron frame of the furnace to which it is firmly attached and its upper edge stands closely against a fillet or edge on the lower side of a cast iron "covering plate" upon which plate the masonry is carried over the furnace in constructing the stack and flue around the latter. The manner in which the dead plate the B may be seen by inspecting that part of the apparatus as in the drawing fig 1. A Edge or square frame of thick sheet iron K. fig 1. is made to fit and attached to the furnace frame. This serves to secure the covering of sheet iron or other bad conductor of heat L. serves to surround the ash pit and the furnace above the place it is to occupy. To this sheet iron frame is to be attached the dead plate of the furnace. Between the cast plate of the

of boiler down at Mr. Harfney it at such distance from the fire as may be found convenient or necessary this being regulated by the width of the ash pan frame. The grate bars fig 6. Should with a groove or channel along them making this groove about three fourths of an inch deep & as wide as the bottom fig 7. shows the general form of the bars. Projections at the ends and at the middle of each bar made as shown from some to keep them other in their places at regular distances from each other. The office manner proved in the bars before them from injury by the intense heat of the fire, which it does not only by diminishing the friction of contact with it but also by retaining other upon each bar which is a less conductor of heat than them described the construction of my furnace such as I have it in actual use and the manner thereof which are herewith attached. Them made to a scale of one inch and a half to the foot taking said furnace for my guide it will be manifest however that it may not only be varied in size but that the parts may in many instances be differently arranged whilst the principle of construction remains unchanged. See notwithstanding therefore by this description to confine myself in either of these particulars but to make such variations therein as opportunities or convenience may dictate. What I claim as new in the furnace herein described is that arrangement thereof by which I am enabled to burn the burning fuel, anthracite, much nearer to the bottom of the vessel to be heated than can be effected by any of the ordinary modes of construction. namely by making the furnace in the form of frame described and running the bars upon a rail way I do not claim as my invention. the manner of using of a furnace upon a railway this having been before done & proposed to be done in some places of a certain description. But I claim it only in combination with the kind of furnace which I have described I also claim the manner of forming and working the dead bottom the grate bars by means of the hinges flanches & pillars at each side of and beneath the frame of the furnace. As herein shewn & described for constructing of the grate bars generally as herein specified & for the manner used for the purpose aforesaid for the

Witnesses to the Signature

William Barnett Esq

Chas. Wm. Wharton

(Drawn Book for Enr.)

Bills Nos