

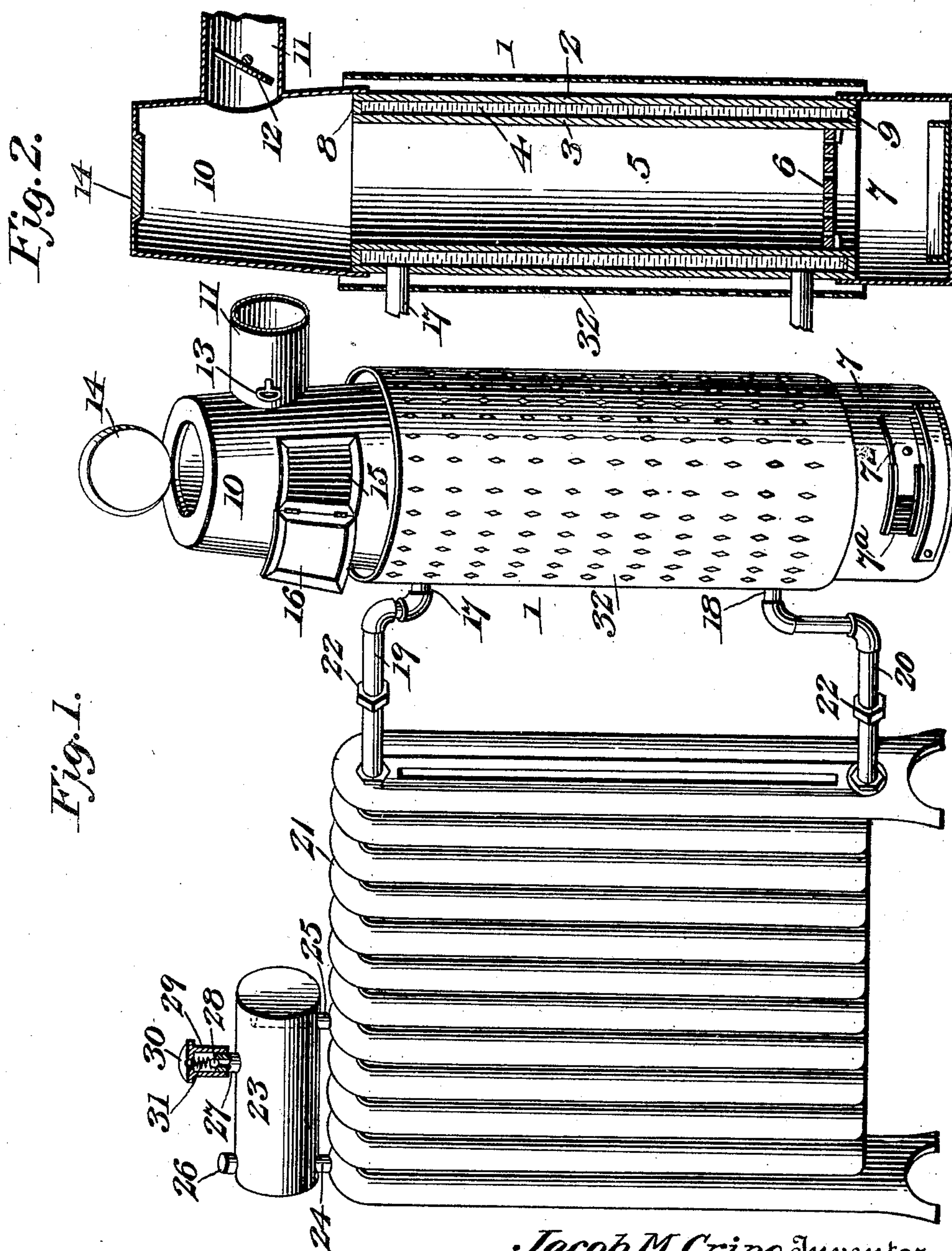
No. 697.813.

Patented Apr. 15, 1902.

J. M. CRIPE.
HEATING SYSTEM.

(Application filed Nov. 21, 1900.)

(No Model.)



Jacob M. Cripe Inventor

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E. G. Figgers

Attorney

Witnesses
Edwin G. McKee
Louis G. Julihn

UNITED STATES PATENT OFFICE.

JACOB M. CRIPE, OF MATTOON, ILLINOIS.

HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 697,813, dated April 15, 1902.

Application filed November 21, 1900. Serial No. 37,285. (No model.)

To all whom it may concern:

Be it known that I, JACOB M. CRIPE, a citizen of the United States, residing at Mattoon, in the county of Coles and State of Illinois, have invented a new and useful Heating System, of which the following is a specification.

My present invention relates to a novel heating system; and its primary object is to produce an inexpensive portable apparatus capable of being set up wherever desired and of supplying a maximum quantity of heat with a minimum expenditure or consumption of fuel.

A further object of the invention is to produce a self-heating radiator equipped at one end with heating apparatus and at its opposite end with an expansion-tank arranged to materially aid in the circulation of water from the heating apparatus through the entire radiator and back to the heating apparatus in a continuous cycle, the expansion-tank being designed to accommodate the expansion of the heating agent and to effect a condensation of steam generated in the system in order to avoid waste and to insure the continued operation of the apparatus without the necessity of constantly replenishing the water.

Subordinate to the objects named are others, which will more fully appear as the necessity for their accomplishment is developed in the succeeding description of the preferred form of my apparatus illustrated in the accompanying drawings.

In said drawings, Figure 1 is a perspective view of my apparatus complete, and Fig. 2 is a central vertical section through the heater.

Referring to the numerals employed to designate corresponding parts throughout the views, 1 indicates a vertically-disposed heater of any desired cross-sectional contour, but preferably cylindrical, as shown, and having double walls 2 and 3, defining an intermediate water-jacket 4. At the bottom of the fire-chamber 5, defined within the inner wall 2, is located a grate 6, suitably supported and surmounting an ash-box 7, having the upper edge of its outer wall bolted or otherwise secured to the lower end of the outer wall 2 of the heater and provided with a draft-opening 7^a, closed by a draft slide or door 7^b. The upper and lower ends of the water-jacket 4 are

closed by the spacing-rings 8 and 9, fitting snugly between the walls 2 and 3 and secured in any suitable manner.

The upper end of the fire or combustion chamber 5 is open to permit the products of combustion from the bed of coals supported upon the grate 6 to pass into a heated dome or hood 10, located above the heater proper and provided with a laterally-extending pipe-collar 11, designed to be extended into a suitable flue-opening and containing a damper 12, operated by a handle 13, by means of which the draft through the heater is regulated. The hood 10 is preferably secured to the outer wall 2, and its upper end is closed by a hinged cap 14, which may be thrown back to permit long sticks of wood or other fuel to be deposited upon the grate from above.

I have stated that my device is designed with special reference to the utilization of various classes of solid fuel—as, for instance, coal, coke, wood, &c. It is for this reason that I provide the hood or dome with the capped opening in its upper end to facilitate the feeding of the fire with sticks of wood; but the dome is also provided with a side opening 15, covered by a hinged door 16, in order to facilitate the feeding of the fire with coal, coke, or the like, although obviously either opening may be used for the introduction of any class of fuel.

Adjacent to the opposite ends of the water-jacket the wall 2 is provided with laterally-extending pipe connections 17 and 18 for the connection of go and return pipes 19 and 20 of a circulatory system in which is included one or more hot-water radiators 21, only one of which is illustrated in the drawings, as it is obvious that any desired extension of the system might be effected by the addition of the required number of radiators, the size of the heater being proportionate to the system installed. The radiator is connected with the go and return pipes, as by means of the couplings 22, and is provided adjacent to the end farthest from the heater with an expansion-chamber 23, of cylindrical or other form, communicating with the radiator through the pipes 24 and 25, located adjacent to the opposite ends of the chamber, the pipe 25 being preferably extended somewhat above the normal water-level. The pipe 25, through which

the expanding heating agent enters the tank 23, is in communication with an intermediate leg or section of the radiator, while the pipe 24, through which water passes from the tank 5 to the radiator, communicates with the last leg or section of the radiator at the end of the latter farthest from the heater, it being observed that by this means the water supplied to the tank 3 by condensation or otherwise 10 is injected into the circulatory system at the point most remote from the heater, thus insuring the complete circulation of the heating agent throughout the extent of the radiator. This expansion-chamber is designed to 15 be utilized for the initial filling of the system with water and is therefore provided with a screw-cap 26, which may be removed for the purpose stated. It will be evident that the heating of the water within the water-jacket 20 will set up a prompt circulation through the system, and by reason of the fact that said jacket surrounds a deep bed of hot coals a maximum quantity of heat will be absorbed by the water with a minimum consumption of 25 fuel.

For the purpose of regulating the temperature of the system the expansion-chamber 23 is provided with a blow-off nipple 27, supporting a safety-valve 28, inclosed within a 30 valve-chamber 29, provided with an apertured screw-cap 30, designed to be screwed down upon a spring 31, opposed to the valve 28. It will thus appear that the tension of the spring is regulated by the position of the cap 35 and that consequently the steam-pressure required to open the valve may be regulated to cause the steam within the expansion-chamber to blow off at any desired pressure.

The apparatus as thus far described is complete and operative; but inasmuch as it is 40 particularly designed as a portable system for residences it is desirable, as already stated, to utilize the heater as a radiator as well as a generator for the system. I therefore inclose the heater within a foraminous 45 shell or heating-drum 32, spaced from the wall 3 a sufficient distance to permit the air in the apartment to circulate through the drum, the opposite ends of which are open, thereby creating a circulation within the room which 50 thoroughly warms the air without in any wise vitiating the atmosphere by the products of combustion.

From the foregoing it will appear that I 55 have invented a novel and efficient heating system embodying a portable apparatus arranged to be easily set up wherever it may be desired and comprehending a heater arranged for the use of various kinds of fuel and in-

closed within a heating-drum which serves as 60 a radiator; but while the present embodiment of my invention as herein described and illustrated is believed to be preferable I desire to reserve the right to effect such variations of 65 form and arrangement thereof as may fall fairly within the scope of the protection prayed.

What I claim is—

1. In a heating apparatus of the character described, the combination with a radiator 70 comprising a series of vertically-disposed sections, a heater provided with a water-jacket, go and return pipes communicating with the water-jacket and with the adjacent end of the radiator at the top and bottom thereof, an ex- 75 pansion-tank located above the radiator and provided with an ingress-pipe communicating with an intermediate section of the radiator and extending nearly to the top of the tank, an egress-pipe communicating with the last sec- 80 tion of the radiator at the end thereof farthest from the heater and communicating with the bottom of the expansion-tank at the end thereof opposite the ingress-pipe, and a safety-valve 85 on said tank designed to permit the escape of steam to prevent excessive steam-pressure in the radiator.

2. In a heating system, the combination with a heater comprising a water-jacket, a 90 combustion-chamber inclosed thereby, an ash-box located below the water-jacket and having its upper edge secured directly to the outer wall thereof, a heat-dome located above the 95 jacket and having its lower edge fitted closely around and secured directly to the outer wall thereof, and a foraminous shell encircling 100 the water-jacket in spaced relation thereto, the ends of said shell being extended above and below the water-jacket in order to inclose the joints between said jacket and the 105 ash-box and dome respectively, of go and return pipes passed through and constituting exclusive supports for the shell and communicating with the water-jacket adjacent to the upper and lower ends thereof to consti- 110 tute a circulatory system, one or more radiators incorporated in said system, an expansion-chamber in communication with the system at the point most remote from the heater, and means for automatically relieving the pressure of the expansion-chamber.

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

JACOB M. CRIPE.

Witnesses:

T. W. GAW,
C. S. HOOTS.