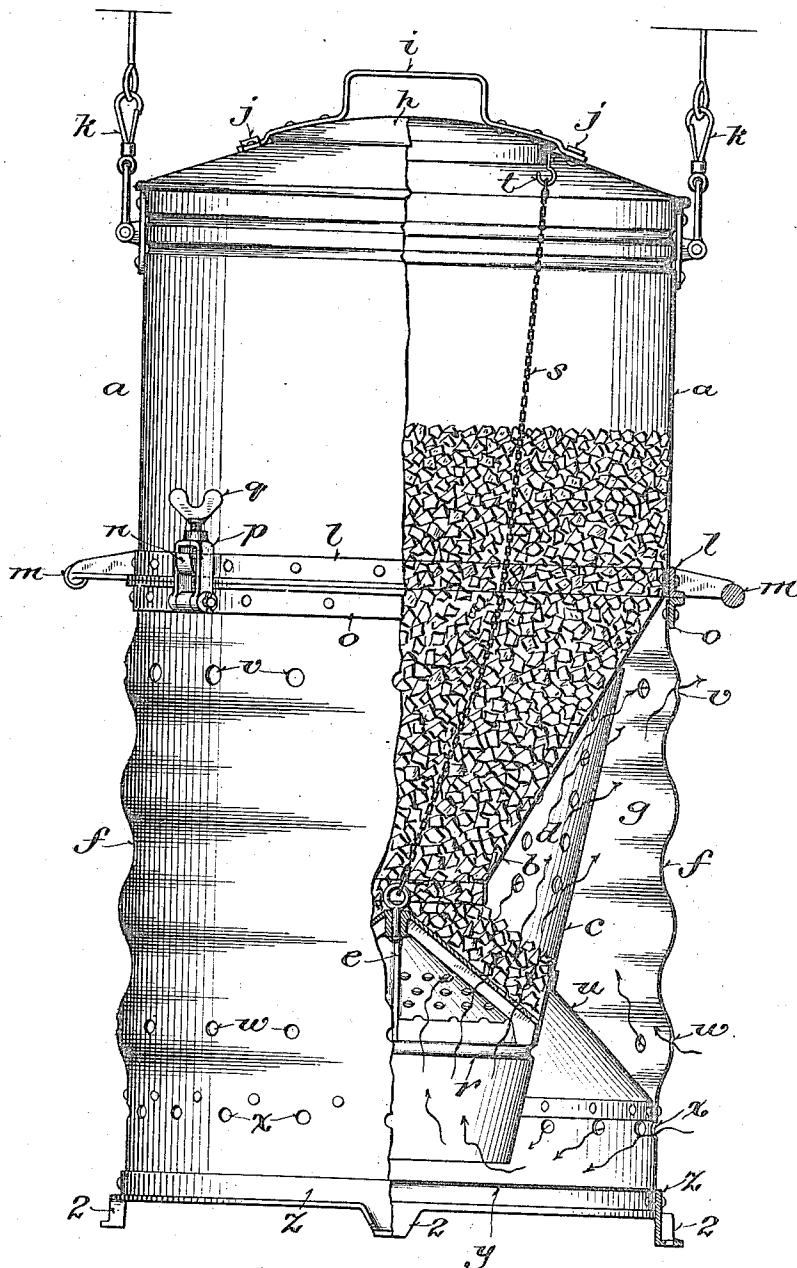


R. F. BEUTLICH & F. SOCHUREK, JR.
HEATER.

APPLICATION FILED NOV. 16, 1914.

1,232,885.

Patented July 10, 1917.



Witnesses:

Fred Palm

Chas. L. Goss.

Inventors:

Richard F. Beutlich
Frank Sochurek, Jr.
By Flanders Bottomham & Bottomham
Attorneys.

UNITED STATES PATENT OFFICE.

RICHARD F. BEUTLICH, OF CHICAGO, ILLINOIS, AND FRANK SOCHUREK, JR., OF WEST ALLIS, WISCONSIN, ASSIGNORS TO MILWAUKEE BREWERS SPECIALTY COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

HEATER.

1,232,885.

Specification of Letters Patent.

Patented July 10, 1917.

Application filed November 16, 1914. Serial No. 872,280.

To all whom it may concern:

Be it known that we, RICHARD F. BEUTLICH and FRANK SOCHUREK, Jr., citizens of the United States, residing, respectively, at Chicago, in the county of Cook and State of Illinois, and West Allis, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Heaters, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

The main objects of this invention are to produce a light, compact portable heater, suitable for warming freight cars to prevent freezing of their contents, and for other purposes; a heater which will keep a fire for a long time without replenishing with fuel and without attention; which will be economical and safe in operation; which can be easily charged with fuel and in which the fire can be easily stopped any time when the charge has been but partially consumed without dumping; and generally to improve the construction and operation of heaters of this class.

It consists in the construction, arrangement and combination of parts as hereinafter particularly described and pointed out in the claims.

In the accompanying drawing, a heater embodying the invention in its preferred form and construction is shown partly in elevation and partly in vertical medial section.

The heater, which may be conveniently constructed as shown, mainly of sheet metal, although other material may be used, comprises a magazine *a*, having a funnel-shaped lower portion *b*; an inverted frustum-shaped fire pot *c*, surrounding and extending below the lower portion of the magazine and forming therewith the combustion chamber *d*; a conical grate *e*, seated normally in the fire pot *c* below the opening in the lower end of the magazine; and a radiator *f*, surrounding the fire pot and forming therewith an annular heating chamber *g*.

The magazine *a*, is removably mounted on the radiator *f* and its funnel-shaped lower portion *b*, which forms a greater angle than the fire pot *c* to the vertical axis of the heater, is removably fitted into the upper end of the fire pot.

The top of the magazine is formed with

an opening for charging it with fuel, and is provided with a removable cover *h*, having a handle *i*. The handle may be made as shown, of a piece of band metal, the ends of which project beyond the margin of the cover on opposite sides thereof and are adapted to be turned with the cover underneath keepers *j* attached to the top for securely holding the cover in place. At or adjacent to the top on opposite sides thereof, the magazine is provided with snap hooks *k*, or other means for suspending the heater from the roof or ceiling of a car.

The upper portion of the magazine, which is preferably of cylindrical form, is provided at its lower end next to the top of its funnel-shaped lower portion with a reinforcing metal band *l*, riveted or otherwise fastened thereto and provided on opposite sides with handles *m*, and at intervals around its circumference with lugs *n*.

The radiator *f*, which is also preferably made of generally cylindrical form corresponding in diameter with the upper part of the magazine, is provided at its upper end with a metal reinforcing band *o*, riveted or otherwise fastened thereto.

The bands *l* and *o* are preferably of angle form or flanged, to stiffen and strengthen them without unduly increasing their weight and to form extended bearing faces for each other. At intervals around its circumference the band *o* is provided with stirrups or pivoted loops *p*, adapted to be turned upwardly over the lugs *n* on the band *l*, for detachably fastening the radiator *f* with the fire pot and grate supported thereby, to the magazine.

To prevent the detachment and separation of the radiator from the magazine and to bind and hold them tightly together, the stirrups or loops *p* are provided with thumb screws *q*, for engagement with sockets in the upper sides of the lugs *n*.

The upper portion of the fire pot *c* above the grate and above the lower end of the magazine is perforated to allow the hot gases and products of combustion to pass from the combustion chamber *d* into the heating chamber *g* which surrounds it.

The grate *e*, which is normally seated and supported on an internal rib or shoulder *r* in the fire pot, has an imperforate central portion below the feed opening in the lower

end of the magazine, and a perforated zone or belt adjacent to its periphery. A chain *s*, fastened to the center of the grate, passing upwardly therefrom through the magazine
 5 and suspended at its upper end on a hook *t* or otherwise adjustably connected with the top of the magazine, affords means for lifting the grate and holding it against the magazine to close the feed opening in its
 10 lower end and cut off the supply of fuel to the combustion chamber.

The fire pot *c* into which the funnel-shaped lower portion of the magazine fits adjacent to its upper end, removably fits into
 15 and is supported adjacent to the grate by a conical deflector *u*, riveted or otherwise fastened around its base to the radiator *f*.

The radiator *f*, which is preferably corrugated as shown, to increase its radiating surface, is formed adjacent to its upper end
 20 with outlet openings *v*, and adjacent to the deflector *u* both above and below the same, with air inlet openings *w* and *x*.

A short distance below the lower open
 25 end of the fire pot *c* the radiator is provided with an imperforate bottom *y*, forming an ash receptacle. At its lower end the radiator is reinforced by a metal ring or base *z*, which is riveted or otherwise fastened
 30 thereto, and is provided at suitable intervals with legs or feet 2, upon which the heater may stand and by which it may be secured to a floor when it is not suspended from an overhead support, the legs or feet
 35 supporting the bottom of the heater above the floor and permitting air to circulate between them, thus avoiding danger of fire.

In the operation of the heater, the magazine *a* and the grate *e* being removed from
 40 the fire pot *c* and radiator *f*, a fire is started with kindling placed in the lower part of the fire pot on the bottom *y*. The magazine and grate are then replaced in position and a small quantity of fuel such as charcoal, introduced through the opening in the top of
 45 the magazine, spreads over the perforated outer portion of the grate and is ignited from the fire below. After a fire has been thus started on the grate the magazine is
 50 charged with a sufficient quantity of fuel to maintain the fire for the desired length of time, especially if the heater is used for warming a car, and the fuel is automatically fed from the magazine to the grate and distributed thereon as required as long as the
 55 charge in the magazine lasts, or until the fire is stopped by lifting the grate and cutting off the supply before it is exhausted. Air entering the base of the heater through
 60 the lower openings in the radiator, passes thence upwardly through the lower open end of the fire pot *c*, and through the openings in the outer part of the grate, maintains combustion of the fuel thereon, the hot
 65 gases and products of combustion from the

burning fuel in the combustion chamber *d*, escaping therefrom through the openings in the upper part of the fire pot *c* into the heating chamber *g*, as indicated by arrows. The unconsumed combustible gases escaping
 70 from the chamber *d* through the openings in the fire pot, are supplied with air through the openings *w* in the lower part of the radiator above the deflector *u*, and are thus consumed, producing additional heat, the products of combustion mingled with heated air
 75 escaping from the openings *v* in the upper part of the radiator, together with the heat radiating from the heated wall of the radiator *f*, maintaining the desired temperature
 80 in the car, or a temperature above freezing.

At the end of the run, or when there is no further occasion for the operation of the heater, if there is any fuel left therein, the fire is stopped, and the unconsumed fuel is
 85 saved by lifting the grate *e* by means of the chain *s*, thereby closing the opening in the lower end of the magazine and cutting off the supply of fuel to the combustion chamber. Any ashes or refuse which have accumulated in the base of the heater may be
 90 readily removed therefrom by unfastening and lifting the magazine from the radiator and fire pot, the grate being held by the chain *s* in place against the magazine and
 95 closing the feed opening therein. When the magazine has been thus removed, the fire pot can be readily removed if desired from the radiator, and the latter inverted to discharge any ashes or refuse it may contain.
 100

When the parts of the heater are assembled and secured together and a fire has been kindled therein as above explained, it requires no further care or attention as long as the supply of fuel with which it is
 105 charged lasts. As no fire or ashes can escape from the heater while it is in operation and under ordinary conditions, danger of injury to the car or its contents from fire or ashes, is avoided.
 110

Various changes in the details of construction and arrangement of parts may be made without materially affecting the operation of the heater, and without departing from the principle of the invention as defined in the following claims.
 115

We claim:

1. In a heater the combination of a magazine having a funnel-shaped lower portion, an inverted frustum-shaped fire pot surrounding and extending below the magazine and forming therewith an annular combustion chamber having an outlet opening from the upper part thereof, a conical grate seated in the fire pot below the magazine and having a perforated marginal zone and an imperforate central portion, a radiator surrounding the fire pot and forming therewith an annular heating chamber, and a deflector closing the space between the fire pot
 120
 125
 130

and radiator adjacent to the grate, the radiator having an outlet opening above the deflector and an ash receptacle and air inlet below the deflector.

2. In a heater the combination of a magazine having a funnel-shaped lower portion, an inverted frustum-shaped fire pot surrounding and extending below the magazine and forming therewith an annular combustion chamber having an outlet opening from the upper part thereof, a conical grate seated in the fire pot below the magazine and having a perforated marginal zone and an imperforate central portion, a radiator surrounding the fire pot and forming therewith an annular heating chamber, and a deflector closing the space between the fire pot and radiator adjacent to the grate, the magazine being removably mounted on the radiator, the fire pot being removably seated in the deflector, and the radiator having an outlet opening above the deflector and an ash receptacle and air inlet below the deflector.

3. In a heater the combination of a magazine having a funnel-shaped lower portion, an inverted frustum-shaped fire pot surrounding and extending below the magazine and forming therewith an annular combustion chamber having an outlet opening from the upper part thereof, a conical grate seated in the fire pot below the magazine and having a perforated marginal zone and an imperforate central portion, a radiator surrounding the fire pot and forming therewith an annular heating chamber, and a deflector closing the space between the fire pot and radiator adjacent to the grate, the radiator having inlet and outlet openings in the lower and upper parts thereof respectively.

4. In a heater the combination of a magazine having a funnel-shaped lower portion, an inverted frustum-shaped fire pot surrounding and extending below the magazine and forming with the lower portion thereof an annular combustion chamber which has an outlet opening from the upper part thereof, a conical grate seated in the fire pot below the magazine and having an imperforate central portion, a radiator forming an annular heating chamber around the fire pot and having an imperforate bottom, and a deflector closing the annular space between the fire pot and radiator adjacent to the grate, the radiator having air inlets above and below the deflector and an outlet opening in the upper part thereof.

5. In a heater the combination of a magazine having a funnel-shaped lower portion, an inverted frustum-shaped fire pot surrounding and extending below the magazine

and forming with the lower part thereof an annular combustion chamber having an outlet opening from the upper part thereof, a conical grate seated in the fire pot below the magazine and having an imperforate central portion, a radiator forming an annular heating chamber around the fire pot and having an imperforate bottom forming an ash receptacle, a deflector closing the space between the fire pot and radiator adjacent to the grate, the radiator having air inlet openings above and below the deflector and an outlet opening from the upper part of the heating chamber, and the magazine being separable from the fire pot and radiator.

6. In a heater the combination of a magazine having a funnel-shaped lower portion, an inverted frustum-shaped fire pot surrounding and extending below the magazine and forming with the lower portion thereof an annular combustion chamber, a vertically movable conical grate normally seated in the fire pot below the magazine and having an imperforate central portion, a radiator surrounding the fire pot and forming therewith a heating chamber which communicates with the upper part of the combustion chamber and has an outlet opening, the magazine being removable from the fire pot and radiator; means for securing the magazine, radiator and fire pot together, and means for lifting the grate to close the opening in the lower end of the magazine.

7. In a heater the combination of a magazine having a funnel-shaped lower portion, a fire pot surrounding and extending below the magazine and forming therewith an annular combustion chamber which has an outlet opening from the upper part thereof, a grate seated in said fire pot below the magazine, a radiator surrounding and extending below the fire pot and forming therewith an annular heating chamber, an annular deflector closing the space between the fire pot and radiator adjacent to the grate, the radiator having air inlet openings above and below the deflector and outlet openings in the upper part thereof and having an imperforate bottom forming an ash receptacle, the magazine being detachable and removable from the radiator, and the fire pot being then removable from the radiator.

In witness whereof we hereto affix our signatures in presence of two witnesses.

RICHARD F. BEUTLICH.
FRANK SOCHUREK, Jr.

Witnesses:

E. H. FISCHER,
C. C. MINN.