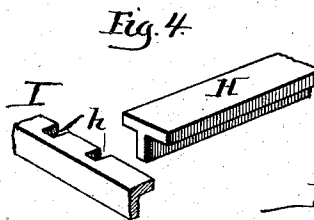
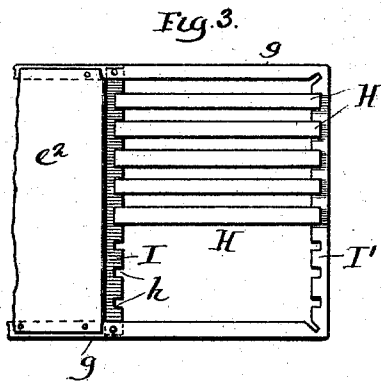
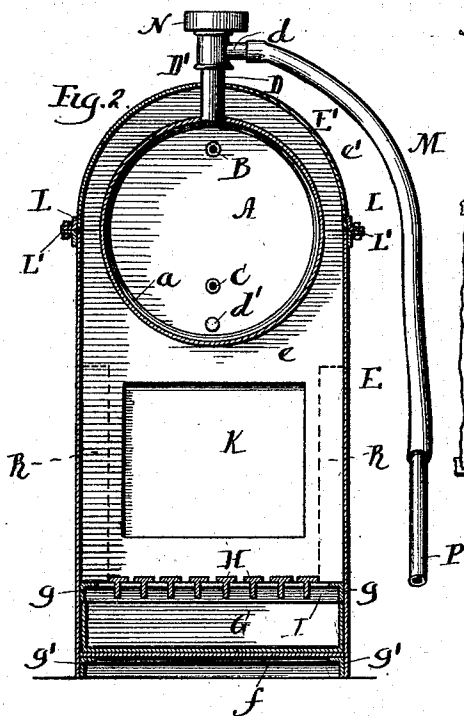
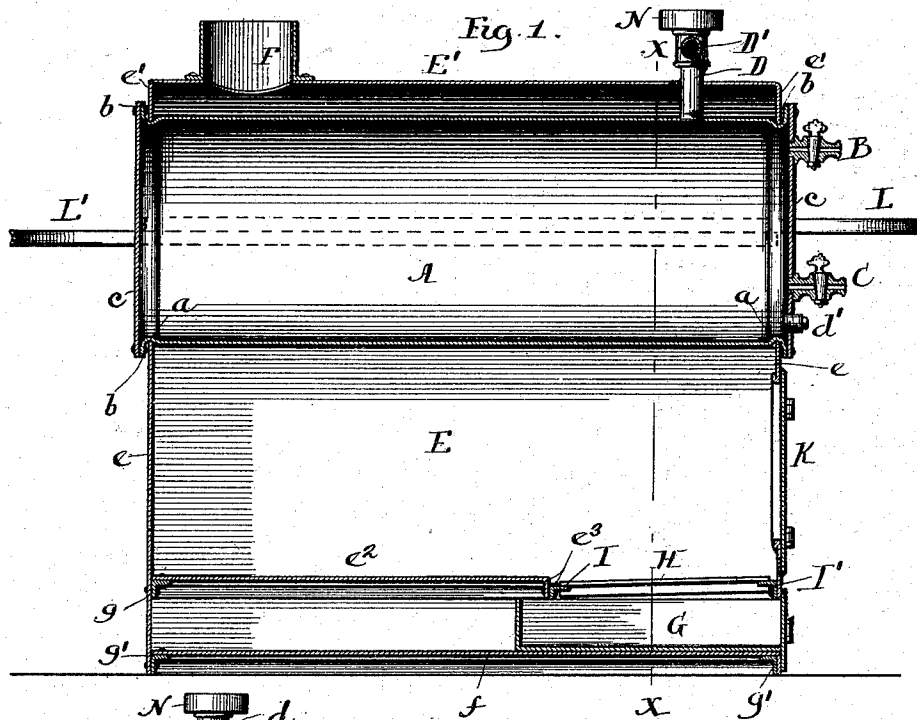


(No Model.)

E. H. KORSMEYER.
STEAM GENERATOR.

No. 541,934.

Patented July 2, 1895.



Witnesses:

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UNITED STATES PATENT OFFICE.

ERNST H. KORSMEYER, OF HIGGINSVILLE, MISSOURI.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 541,934, dated July 2, 1895.

Application filed May 22, 1894. Serial No. 512,099. (No model.)

To all whom it may concern:

Be it known that I, ERNST H. KORSMEYER, a citizen of the United States, residing at Higginsville, State of Missouri, have invented certain new and useful Improvements in Steam-Generators, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My present invention has for its object to provide a simple, cheap, durable and effective apparatus whereby steam can be generated for the purpose of steaming or cooking food for feeding to stock, for steaming clothes in laundry work, for heating water for bathtubs, and indeed for a great variety of uses in which steam can be effectively and economically employed.

Inasmuch as steam generators of the class to which my invention more particularly relates are designed for use largely by unskilled persons and for purposes that will ordinarily not warrant a large expenditure for elaborate mechanism, it is important that the construction shall be so simple that it cannot only be furnished to the user at a low price, but shall also be of such character that it can be effectively operated by the ordinary user. My invention, which supplies a steam generator meeting these requirements, consists in the various novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in central vertical section through a steam-generator embodying my invention. Fig. 2 is a view in vertical transverse section on line *xx* of Fig. 1. Fig. 3 is a detail plan view of the front portion of the fire-box. Fig. 4 is a detail perspective view of a portion of one of the grate-bars and a portion of the end support therefor.

A designates the boiler that is formed of thin sheet metal preferably of soft steel and preferably of cylindrical shape as shown. Each of the ends of the boiler A is furnished with an annular bead *a* and with an outwardly turned flange *b* adjacent thereto. To these flanges *b* are riveted the boiler heads *c*,

suitable strips of asbestos sheeting being preferably interposed to guard the seams against leakage.

The purpose of the annular beads *a* at the ends of the boiler is to receive the front and back walls *e* of the main casing E and the inwardly turned flanges *e'* of the upper part of the casing E', thereby affording a simple and effective means for securely retaining the boiler in proper position with respect to the casing. The casing E has the upper part E' connected thereto by means of the angle bars L and L'. The angle bar L is riveted to the upper part E' of the casing and the angle bar L' is bolted to the lower part E of the casing, and the horizontal flanges of these angle bars are securely bolted or riveted together as shown.

In order to enable the apparatus to be conveniently lifted and carried from place to place I prefer to extend the angle bar L around the front of the casing and the angle bar L' around the back end of the casing as shown, these angle bars being preferably bent at the front and rear ends to enable them to be more conveniently grasped without cutting the hands.

The lower part of the main body E of the casing comprises the fire box wherein will be burned the fuel by which the heat is supplied for producing steam within the boiler A. To the back and sides of the main casing E is bolted an angle plate *g* that extends to a point beyond the vertical center of the casing and serves to support a plate *e*² that divides the fire box from the space beneath it. The front edge of the plate *e*² is formed with a downwardly turned flange *e*³ to which is bolted the support I for the rear ends of the grate bars H, the ends of the support I being preferably bolted or riveted also to the horizontal flange of the angle bar *g*. (See Fig. 3.) A similar grate-bar support I' is also bolted to the front wall of the casing and preferably the support I' is formed in piece with the angle bar *g* as shown more particularly in Fig. 3 of the drawings. The grate of the fire box consists of individual bars H that are T-shaped in cross-section, the center webs of these bars setting within slots *h* of the supports I and I', while

the horizontal end portions of the grate bars H rest upon the supports I and I' as shown in Figs. 1, 2 and 3.

My purpose in forming grate bars H as individual bars is to enable any one or more of these bars to be separately withdrawn and replaced in event of its becoming worn out or broken and by forming these bars of the shape shown they can be readily made and will be found to possess great strength and durability. The bars H extend across the front part only of the fire-box, the purpose of this arrangement being to enable a comparatively small amount of fuel to be used for the generation of steam within the boiler A. Around the interior of the bottom of the casing E extends an angle plate or bar *g'* to which is bolted the bottom plate *f* and upon this bottom plate will rest the ash-pan G that extends beneath the grate bars H and is provided with a suitable handle whereby it can be readily withdrawn through an opening formed for this purpose in the front plate of the casing. It will be seen that the angle bars *g* serve also to effectively strengthen and give the necessary rigidity to the casing E. Within that part of the fire-box adjacent the side of the grate bars H are arranged the linings R of fire brick or like material that serve to effectively protect the sides of the casing E from the extreme heat of the fuel upon the grate bars.

The front of the casing is formed with an opening that is provided with a door K whereby the fuel is admitted to the fire box in usual manner.

The boiler A is provided with a plug *d'* to enable it to be readily cleaned from scale or the like and is furnished also with the test cocks B and C by which the height of water within the boiler can be readily determined. From the top of the boiler extends a steam pipe D that is provided with a coupling D' having a branch *d* to which is attached a hose or other flexible pipe M that is preferably furnished at its opposite end with a short pipe section P to be inserted within the food to be cooked or water to be heated. The coupling D' has an opening in its top to receive the stem *n* of the weighted valve N that constitutes a safety valve for the boiler. From the top of the upper portion E' of the casing and adjacent its rear end is formed a smoke flue F through which the products of combustion will escape.

It will be observed that the diameter of the boiler A is of such size as to leave but a narrow space between the boiler and the side walls of the casing, but the boiler is set at such distance below the top of the casing as to form a space above the boiler of considerably greater area than the space between the sides of the boiler and the casing. The purpose of this arrangement is to allow the highly heated products of combustion to be drawn up around the sides of the boiler and into the space beneath the top of the casing whence

they will pass to the smoke flue F at the rear end of the casing.

If desired the coupling D' may have two or more branches instead of a single branch shown, to which sections of hose or other pipes may be attached in order that steam may be simultaneously supplied to several receptacles and if desired these branches may be fitted with suitable cocks.

From the foregoing description it will be seen that when the boiler is to be filled it is only necessary to lift off the weighted valve N, when by placing a funnel in the valve seat in the top of the coupling D' the water may be poured into the boiler A, or if preferred the water may be delivered into the boiler through the hose M. It is obvious that in case the steam should exceed the pressure for which the boiler is adapted, the weighted safety valve N will be blown from its seat thus allowing a free escape of steam into the air. It is obvious also that by means of the test cocks B and C, it can be readily determined when the water within the boiler is to be replenished or has reached the desired height. It is manifest that the precise details of construction above set out may be varied without departing from the scope of my invention and features of the invention may be employed without its adoption as an entirety.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A steam generator of the character set forth, comprising the combination with a boiler A, of a casing inclosing said boiler and provided at its rear upper portion with the discharge flue for products of combustion and at its front lower portion with a fire-box, said casing being separated from said boiler to form the narrow passage ways at the sides for products of combustion and being separated from the upper part of said boiler to leave a space of greater area above the boiler for products of combustion, substantially as described.

2. A steam generator of the character set forth, comprising the combination with a boiler A having circumferential grooves or beads *a* at its ends, with an inclosing casing, the front and rear walls of which fit within said grooves at the ends of the boiler, substantially as described.

3. A steam generator of the character set forth, comprising the combination with a boiler A having circumferential grooves *a* at its ends and having the end flanges *b* and the heads *c* attached to the end flanges *b*, in combination with the casing, the front and rear walls of which set within the circumferential grooves of the boiler, substantially as described.

4. A steam generator of the character set forth, comprising the combination with a boiler A of the inclosing casing formed of the upper and lower sections E and E', said sec-

tions being connected to the angle bars L and L' that are secured together, said angle bars being extended at the front and rear of the boiler to form means whereby the apparatus
5 can be lifted, substantially as described.

5. A steam generator of the character set forth, comprising the combination with a boiler, of a sheet metal casing inclosing said boiler, the lower part of said casing being provided with the angle bars *g* and *g'*, the plate
10 *e* resting upon and secured to said angle bar *g*, a plate *f* secured to said angle bar *g'*, suitable grate bar supports I and I' in front of said plate *e* and grate bars H, substantially
15 as described.

6. A steam generator of the character set forth, comprising the combination with a boiler and an inclosing sheet metal casing, of an angle bar *g* extending around the lower part of said inclosing casing, a cross bar or sup- 20 port I extending between the sides of said angle bar *g* and a series of grate bars resting upon the front portion of said angle bar *g* and upon said cross bar I, substantially as described.

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