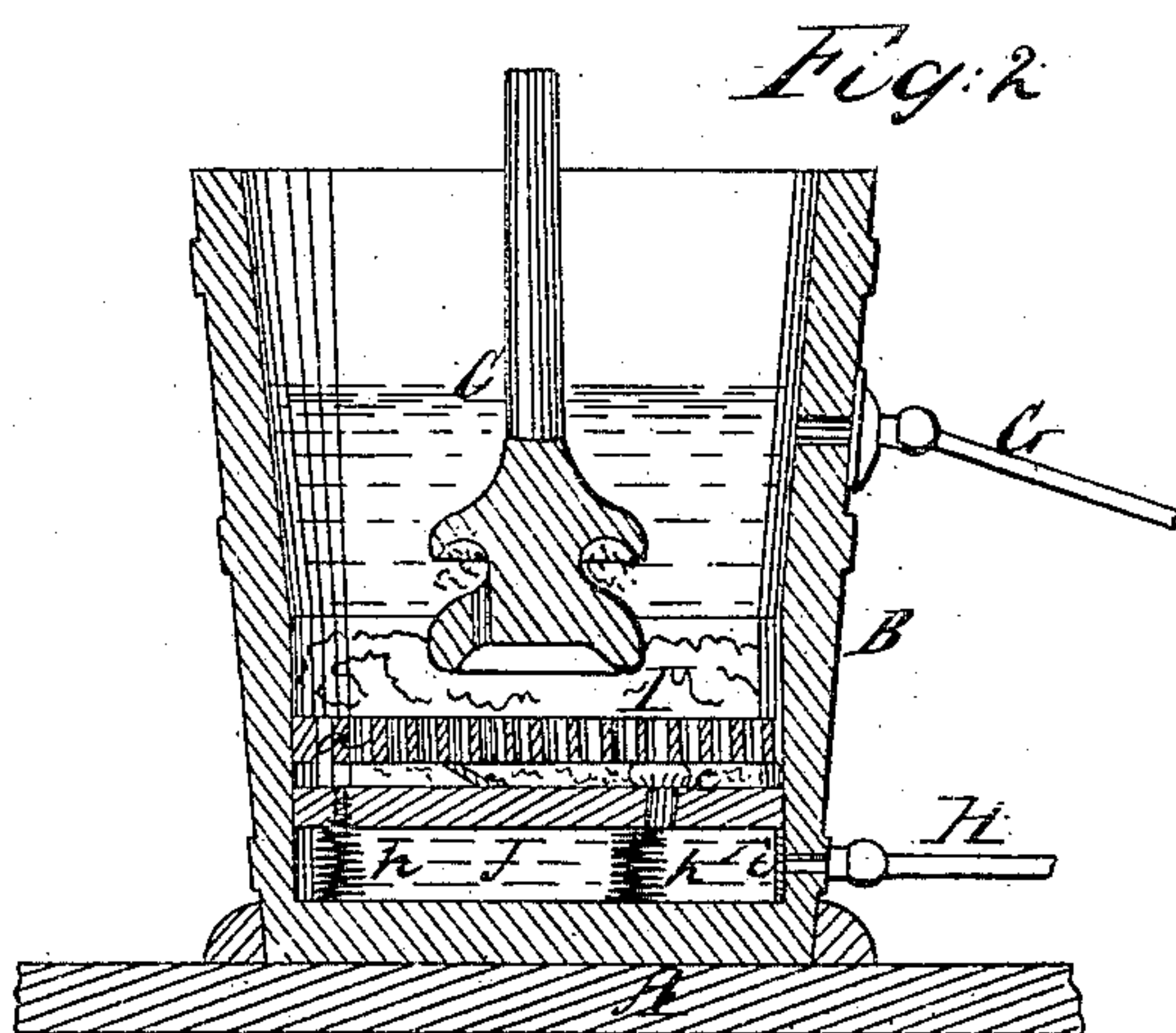
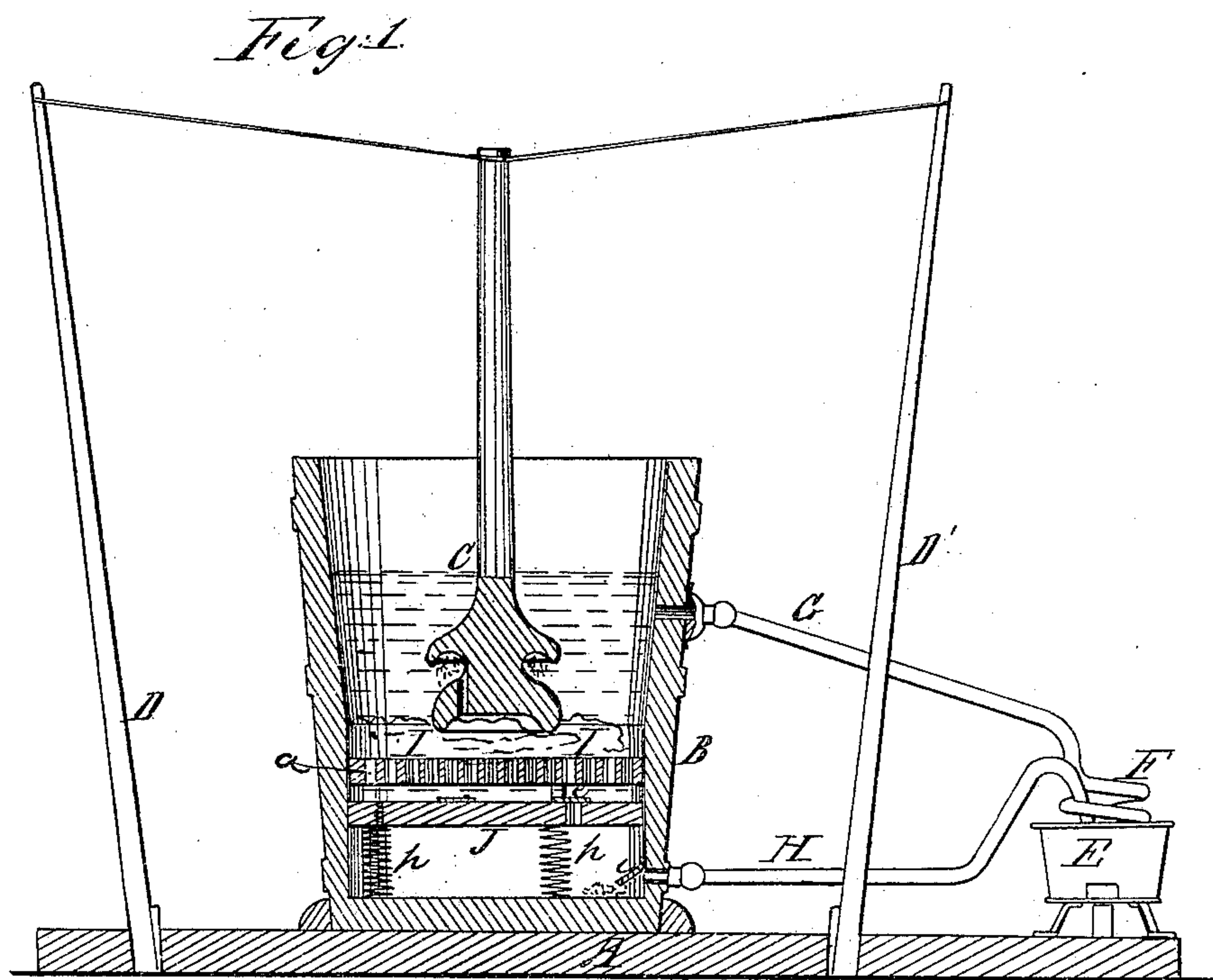


H.E. Smith,
Washing Machine,
No 21,909. Patented Oct. 26, 1858.



UNITED STATES PATENT OFFICE.

HAMILTON E. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

WASHING-MACHINE.

Specification forming part of Letters Patent No. 21,909, dated October 26, 1858; Reissued April 19, 1859, No. 694.

To all whom it may concern:

Be it known that I, HAMILTON E. SMITH, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Washing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to an improvement in washing machines in which a reciprocating plunger is used to act on the clothes contained in a tub or other vessel, and my improvement consists in placing within the vessel a valved diaphragm; and above the latter a perforated diaphragm or its equivalent, both diaphragms being arranged to yield together to the pressure of the plunger on the clothes, and to return to their former positions on the removal of this pressure, the whole being combined with two pipes connected to any suitable heading apparatus, and communicating with the vessel, one above and the other below the diaphragms, so that portions of the cooler water, at the upper portion of the tub, may pass into the heater and a supply of re-heated water brought to act on the clothes, by the action of the plunger.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawing, Figure 1 is a sectional elevation of my improved washing machine, with the plunger in the act of being raised; Fig. 2, a section of a portion of the machine, with the plunger pressed down on the clothes.

A is the foundation plate of the apparatus, B the wash tub, C the plunger, attached to a cord or wire, the opposite ends of which are connected to the spring posts D and D', secured to the foundation A, E is a fireplace, F a coiled tube within the same, and G and H pipes connected to and communicating with both coil and wash tub. The sides of the latter, toward the bottom, are parallel, and in this parallel portion two diaphragms I and J fit snugly, but so as to move freely. The upper diaphragm I is perforated with a number of holes and has any convenient number of pins *a*, which rest on the upper surface of the diaphragm J. The two diaphragms are thus main-

tained a short distance apart. In the lower diaphragm J are any convenient number of openings with valves on the top, said valves opening upward, and, between the diaphragm J and the bottom of the tub, intervene any suitable number of spiral or other suitable springs *h*. The orifice, which forms the communication between the pipe H and the tub, is furnished with a valve *i*, and both pipes may be supplied with cocks to regulate the flow of water through the same. The plunger C is of a peculiar construction, its enlarged end being perforated and concave on the under side. But as any ordinary plunger is applicable to the present invention, and, as the one illustrated forms the subject of a distinct application for a patent, further allusion to its construction and action will be unnecessary here.

Operation: Sufficient water being placed in the tub to raise the level of the water above the orifice communicating with the pipe G, and the fuel being ignited in the fireplace E, the clothes are placed on the upper perforated diaphragm, and pressed upon by repeated strokes of the plunger C. As the latter descends, both the upper and lower diaphragms will be depressed to an extent depending upon the amount of pressure and the rigidity of the springs *h*. The water, which had become heated in the coil, and had previously passed through the pipe H, into the space between the lower diaphragm J and the bottom of the tub, now that the diaphragms are depressed and the valve *i* consequently closed, will rush through the orifices of the lower diaphragm, and thence through those of the upper diaphragm, and act on the clothes, prior to passing to the space above. During this depression of the plunger, the water which has passed from the upper portion of the tub, through the pipe G, into the coil F, becomes increased in temperature, and, the moment the plunger is raised, the diaphragms, through the recoil of the springs *h*, will be elevated, and, the valves of the lower diaphragm being closed, it will act in the same manner as the piston of a pump, causing a partial vacuum beneath, opening the valve *i*, and allowing the reheated water, or water and steam combined, to fill the lower compartment, preparatory to being driven through the perforations of the diaphragms as before, by the descent of the plunger on the clothes. It

will thus be seen, that, at every stroke of the plunger, a supply of reheated water is withdrawn from the coil and brought to bear on the clothes, while the supply is replaced in the coil from the partially cooled water near the top of the tub. The action of this superheated water, as a means of effectually and rapidly cleansing the clothes, will be too obvious to need further description.

I do not desire to confine myself to the use of a coil for superheating the water, as other heating apparatus, equally as efficient, might be used, but

I claim and desire to secure by Letters Patent,

The vessel B, with its yielding valved dia-

phragm J, and the perforated diaphragm I or its equivalent, in combination with a pipe G, communicating with the vessel at a point above, and the pipe H at a point below the said diaphragms, and both pipes communicating with any suitable heating apparatus, substantially as and for the purpose herein set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HAMILTON E. SMITH.

Witnesses:

HENRY HOWSON,
HENRY ODIORNE.

[FIRST PRINTED 1911.]