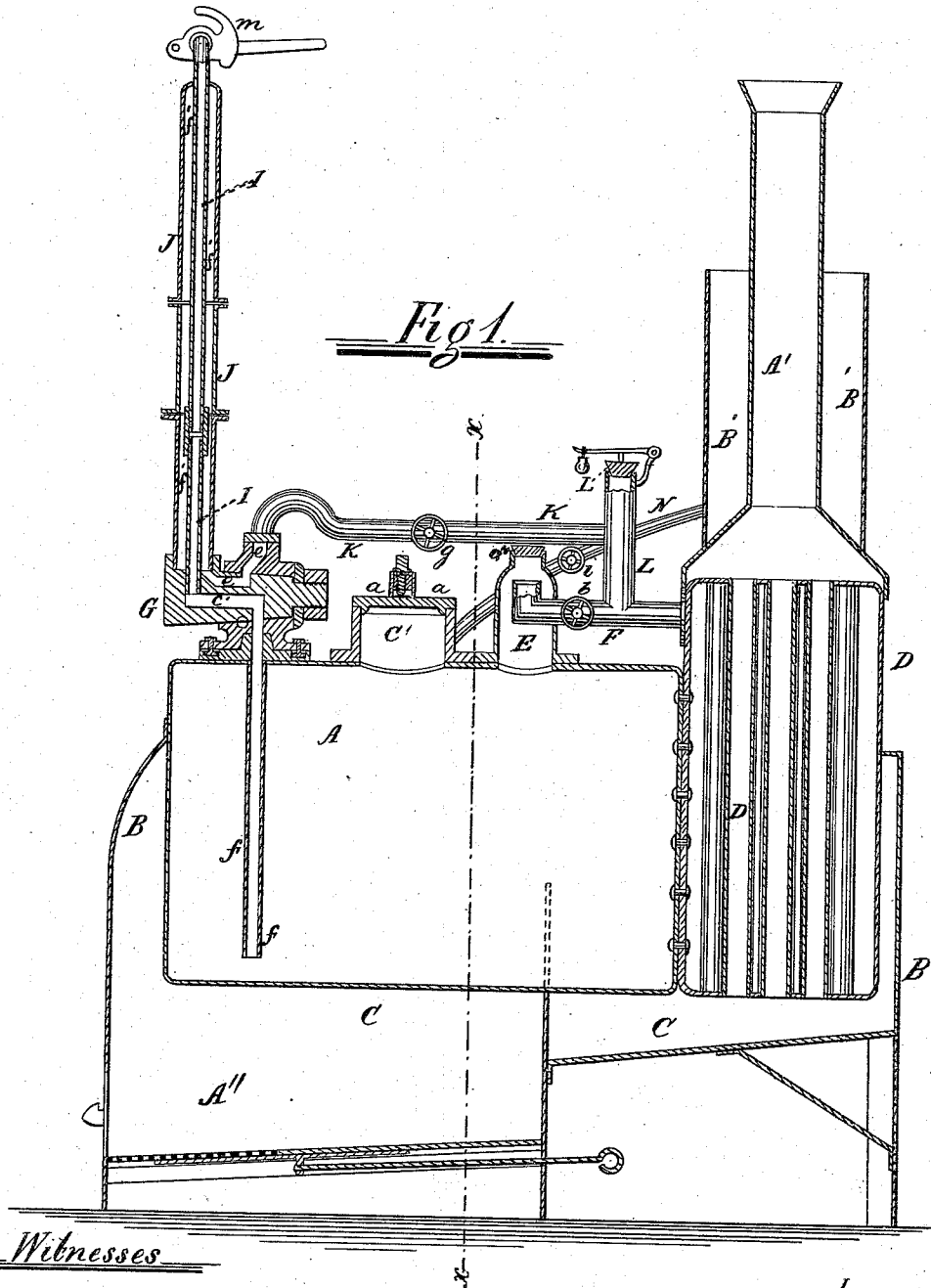


J. PERRY.
Apparatus for Lifting Molten Roofing-Material.
 No. 157,460. Patented Dec. 8, 1874.



Witnesses

Wm. Edwards

William R. Whitney

Inventor

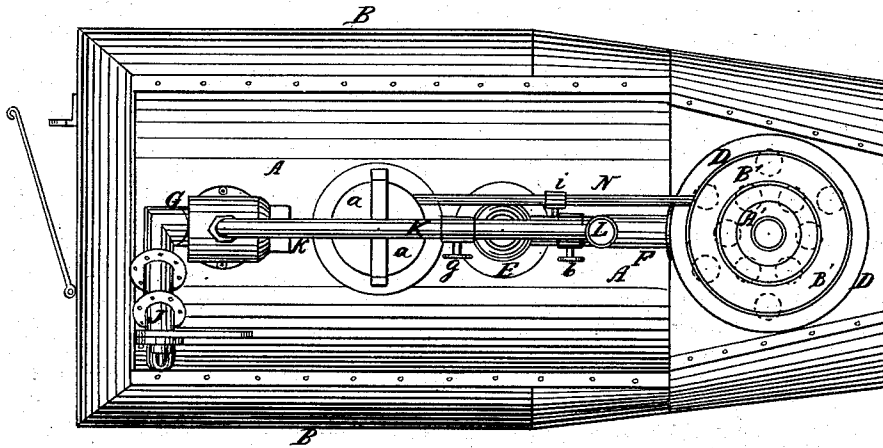
James Perry

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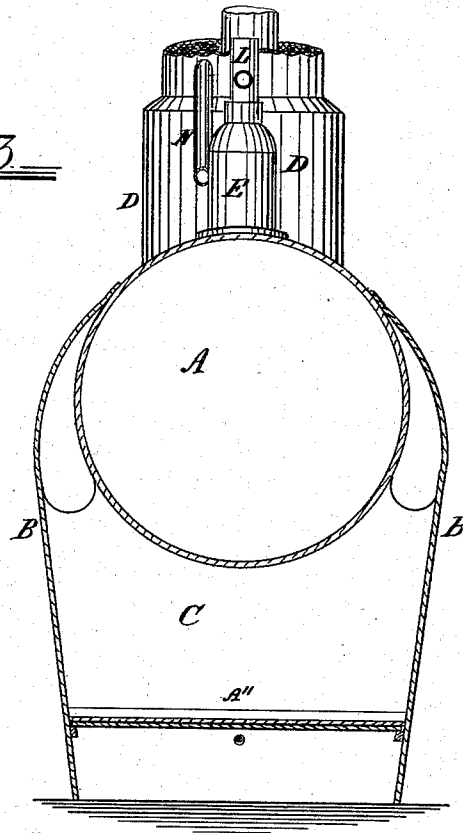
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Fig 2.



* Fig 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES PERRY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN APPARATUS FOR LIFTING MOLTEN ROOFING MATERIALS.

Specification forming part of Letters Patent No. 157,460, dated December 8, 1874; application filed October 2, 1874.

To all whom it may concern:

Be it known that I, JAMES PERRY, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Apparatus for Lifting Molten Roofing Materials, of which the following is a specification:

This invention comprises an organized machine for elevating plastic roofing materials, mastics, or cements in a molten or liquid condition from a lower level up to the roofs upon which they are to be used or applied, the said apparatus including a novel combination of a tank for melting the mastic, coal-tar, or other cement or material, a steam-boiler from which, on occasion, steam under pressure may be supplied to the tank aforesaid to force the molten contents through an upright outlet-pipe, and a furnace for simultaneously heating the tank and the boiler. The invention also comprises certain other novel combinations of parts whereby the molten material expelled from the tank is prevented from cooling, and, consequently, from assuming a thick or viscid condition, during its ascent to the roof upon which it is to be placed, and whereby the waste heat from the uptake of the furnace is utilized in providing for a preparatory melting of the roofing or cementing material previous to its admission to the tank.

Figure 1 is a vertical longitudinal section of an apparatus made according to my invention. Fig. 2 is a plan view, and Fig. 3 a transverse sectional view, (taken in the line *xx* of Fig. 1,) of the same.

A is a metal tank, provided within a shell, B, which constitutes the casing of a furnace, C, and of a steam boiler or generator, D, the flame and hot gaseous products of combustion from the fire-box A' passing along the bottom and sides of the tank back to the boiler. This latter is arranged at one end of the tank, and, preferably, is of the vertical tubular type, but may be of any construction desired. A' is the usual uptake of the boiler D, and around it is a cylindrical chamber, B', the purpose of which will be hereinafter fully explained. The tank is formed with a man-hole, C', through which coal-tar, cement, or mastic, or any usual or suitable roofing material or cement designed to be applied in a hot and molten condition, may be passed into the tank in its ordinary cold or

solid state, the man-hole being closed when the apparatus is in use by a suitable plate, *a*, held down by the usual fastenings. E is a dome provided for the tank, and preferably fitted with a safety-valve at *a''*. The steam-space of the boiler connects with this dome by a steam-pipe, F, in which is provided a stop-cock, *b*. G is a faucet-plug, working on a horizontal axis in a bearing fixed upon the tank, and communicating with the interior of the latter by the passage *c'* and pipe *f*; the pipe *f* extending nearly to the bottom of the tank. The passage *c'* connects with the bore of a pipe, I, rigidly attached to the plug G. This pipe I is made of sections, screwed or otherwise secured together by appropriate joints, to permit the available length of the pipe to be increased to any extent necessary to reach the roof upon which the contents of the tank are to be applied. This pipe I is provided at the top with a valve, *m*, for shutting off any flow therefrom when required, and is surrounded by a larger pipe, J, also made in sections and jacketing the pipe I, there being a space or annular chamber, *f'*, provided between the inner pipe I and the outer pipe J. This chamber *f'* connects by a passage, *e*, with a pipe, K, which through another pipe, L, connects with the steam-pipe F. The pipe L may carry at its upper extremity the safety-valve of the boiler. The pipe K is furnished with a stop-cock, *g*. The chamber B' around the uptake A' communicates with the tank A by a pipe, N, in which is a stop-cock, *i*.

In the operation of the apparatus, the tank A is partially filled with the coal-tar, cement, mastic, or other material to be applied to the roof, either for cementing flexible roofing, (felt, paper, or the like,) or for any other purpose for which plastic roofing applied in a molten state is used. There being at the same time a sufficient quantity of water in the boiler D and a suitable fire in the furnace C, steam is generated in the boiler simultaneously with the melting and heating to a high heat of the contents of the tank, the heat required to bring the said contents to the requisite temperature involving the production, in the adjacent boiler, of a comparatively high pressure. This done, the pipe I, jacketed by the pipe J, is raised to a vertical position, its nozzle, carry-

ing the stop-cock *m*, being brought over the edge of the roof to which the hot and molten roofing material is to be supplied. The stop-cock *b* is then turned to admit steam from the boiler to the tank into the space above the molten contents of the latter, the top of the pipe *I* being opened at the same time by due manipulation of the stop-cock *m*. The pressure of the steam admitted to the tank forces the molten contents of the latter through the pipe *f* and passage *e'*, and through the pipe *I*, and out at the top of the latter into any suitable receptacle upon the roof. In order to prevent the heat from radiating from the molten material during its ascent through the pipe *I*, the stop-cock *g* is turned to admit steam from the steam-boiler, through the pipe *K* and passage *e*, to the space or chamber *f*, thereby steam-jacketing the pipe *I*, and, by keeping the molten material at a high temperature during its ascent, insures the delivery of the same upon the roof in the highly-heated and thoroughly-liquid condition essential to its advantageous use. In order that the supply of roofing material to the tank may be kept up as long as possible without the trouble and delay of opening the man-hole, and also to utilize what would otherwise be waste heat from the uptake *A'*, the chamber *B'* around the latter is, at the outset of operations, filled with a portion of the cold or solid roofing material, and then melted to a degree of fluidity which will enable it to flow through the pipe *N* when the stop-cock *i* is opened to open communication between the chamber aforesaid and the tank; but this should, of course, only be done when no steam-pressure is exerted within the tank. When the requisite quantity of the molten material has been forced up to the roof, the stop-cock *m* is closed, the pipes *I* *J* are lowered, by turning with the plug *G* around the horizontal axis of the latter, the steam being at the

same time shut off from the space or chamber *f'* of the aforesaid pipes, and also from the tank by turning the stop-cocks *b* and *g*. After being elevated to the roof, as herein described, the molten roofing material may be applied in any suitable or ordinary manner to the roof, but I much prefer to apply it according to my improved method of securing flexible roofing to roofs, as set forth in my application for a patent on said method, filed of even date with this.

It will be understood that, while I prefer the direct action of steam upon the contents of the tank to forcibly eject the same, as hereinbefore set forth, compressed air or other elastic gas may be used in place of the steam to secure the same result.

What I claim as my invention is—

1. An organized apparatus for elevating roofing materials in a hot and liquid form, comprising, as its essential elements, a melting-tank, a steam-boiler, a furnace, and a pipe for conducting upward the said molten material, the whole combined for operation substantially as herein set forth.

2. The combination, in an apparatus for elevating molten roofing material, of the outer pipe *J* with the outlet-pipe *I*, the tank *A*, and the steam-boiler *D*, whereby the pipe *I* is steam-jacketed with steam from the boiler during the ascent of the molten material from the tank, substantially as and for the purpose set forth.

3. The combination, in a machine for elevating molten roofing material, of the chamber *B'*, surrounding the uptake *A'*, the boiler *D*, the tank *A*, and the pipe *F*, provided with the stop-cock *b*, substantially as and for the purpose herein set forth.

JAMES PERRY.

Witnesses:

JAMES A. WHITNEY,
WILLIAM R. WHITNEY.