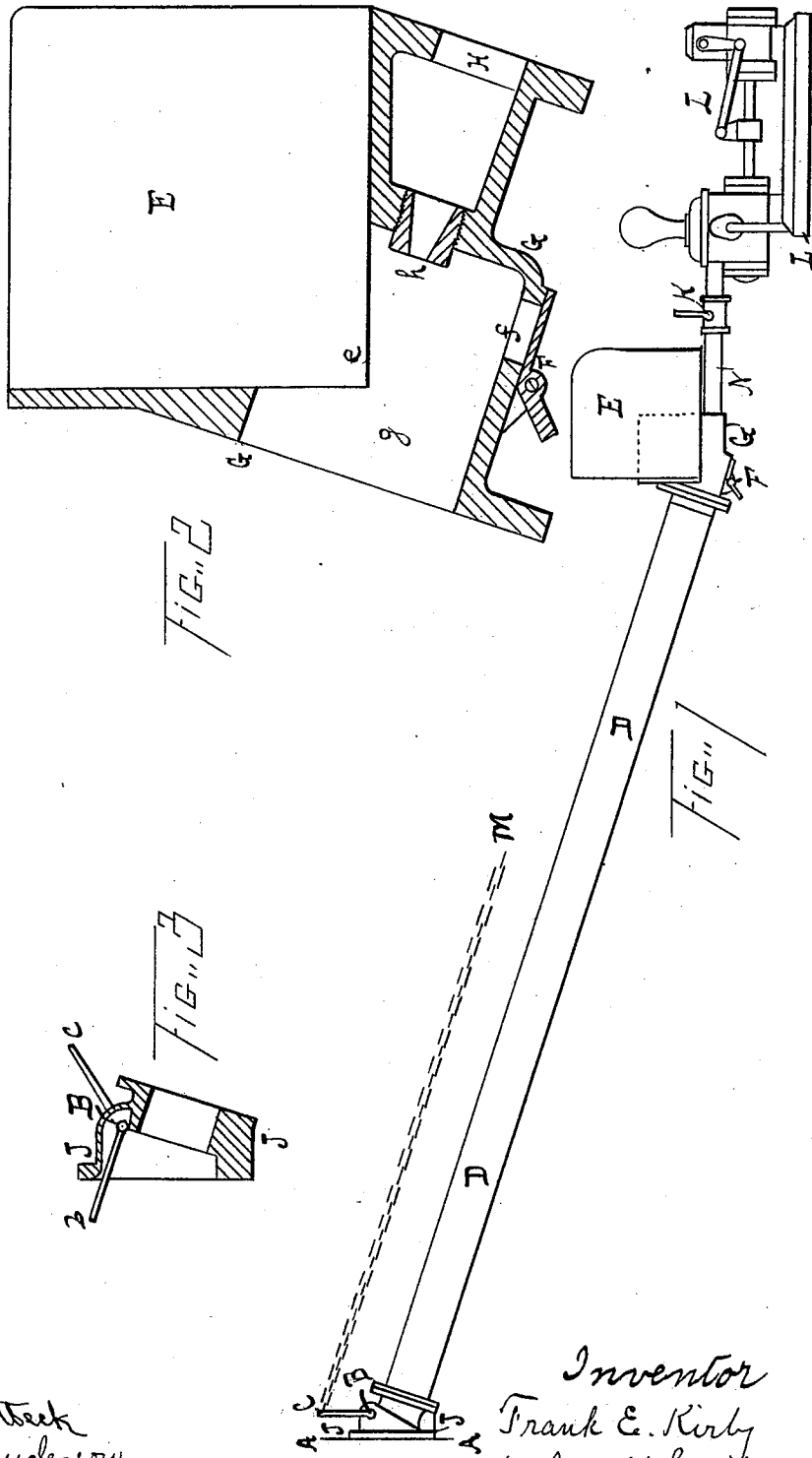


(No Model.)

F. E. KIRBY.
ASH EJECTOR.

No. 522,119.

Patented June 26, 1894.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK E. KIRBY, OF DETROIT, MICHIGAN, ASSIGNOR TO THE DETROIT DRY DOCK COMPANY, OF SAME PLACE.

ASH-EJECTOR.

SPECIFICATION forming part of Letters Patent No. 522,119, dated June 26, 1894.

Application filed March 14, 1893. Serial No. 465,966. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. KIRBY, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Ash-Ejectors, of which the following is a specification.

My invention consists in an improved method of and apparatus for removing ashes from fire rooms of steam ships, hereinafter fully described and claimed.

Figure 1 is a side elevation. Fig. 2 is a vertical central section through the hopper and ejector mechanism, and Fig. 3 is a section through the outboard discharge valve.

My improved method consists in removing ashes by means of a fluid ejector, in contradistinction to hoisting and pouring overboard, which is now the usual method.

A represents a portion of the side of a ship, and J represents a casting which is secured thereto, having a discharge opening therein, and at the point B within the casting J is pivoted a valve *b*, provided with a lever C, by which it can be raised or lowered, to open or close said discharge opening. The valve *b* is so arranged that when open it lies entirely clear of the line of the opening which it closes, so as not to interfere with a free flow of a column of fluid and ashes through said opening.

D represents a straight pipe which connects the inner end of casting J with a casting G located in the fire room. This casting G contains a chamber *g* in direct line with the pipe D and at the farther end of said chamber *g* is a nozzle *h* communicating with a passage H, as clearly shown in Fig. 2. Under the nozzle *h* and at the lower side of chamber *g* is formed an opening *f* adapted to be closed by a counter-balanced valve F, so constructed as to be almost balanced when in the closed position shown in Fig. 2.

E represents a hopper for the reception of ashes, the lower end of which opens into chamber *g* as shown at *e*, the opening from hopper E into chamber *g* being preferably less in area than the pipe D, so that it will not pass ashes into chamber *g* and pipe D more rapidly than they can be removed therefrom. The sides of this hopper do not converge, so that ashes cannot be wedged therein, and a

poker or slice bar or shovel can be used to loosen the ashes without compacting them.

L represents a steam pump for forcing water, or any other suitable means for forcing a stream of fluid, through nozzle *h*, and is connected with the opening H by means of a pipe N in which is a valve K, which is preferably some form of quick opening valve, so that a stream may be suddenly admitted through nozzle *h*.

M represents a rope or chain from lever C of valve *b*, to a convenient point in the fire room, by which said valve may be opened by pulling on said chain, or allowed to close by its own weight by slacking off on said chain.

The operation of my invention is as follows: When it is desired to remove ashes, the valve *b* is opened by means of chain M and fastened open. Pump L or its equivalent is now set in motion and valve K opened, by which means a stream of fluid (preferably water) is forcibly projected through nozzle *h*, through pipe D and outboard. The stream being under considerable pressure, and being smaller than pipe D, tends to create a partial vacuum in chamber *g*, so that valve F remains closely seated. Ashes are now shoveled into hopper E, and passing through the opening *e*, are caught by the stream of fluid in the chamber *g*, rapidly carried through pipe D and forcibly ejected through the side of the ship and to a considerable distance therefrom. When the ashes have been removed, the stream of fluid is shut off, and that which still remains in pipe D and chamber *g* settles downward, and by its weight opens valve F, thus flowing down onto the furnace hearth, or into a waste receptacle instead of going into hopper E and wetting the ashes therein.

In a propeller the outboard discharge or end of J, is preferably placed at the skin of the ship, but in a side wheel boat, I prefer to carry it outboard to the edge of the guards, thus discharging ashes free from the ship and preventing their getting into the wheel journals.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an ashes ejector, the combination of a hopper having sides at right angles with each other, and an opening in the lower cor-

ner, of a chamber of greater area than said opening connected with said hopper, a nozzle adapted to deliver a stream of water centrally through said chamber close to the corner of
5 said hopper, and a straight pipe leading from said chamber outboard, substantially as shown and described.

2. In a device for removing ashes from a ship's fire room, the combination of the ejector
10 G having a nozzle *h* opening *f* and counter-weighted valve F, and means for forcing a stream of fluid through said nozzle, with the hopper E opening into said ejector, a discharge pipe D, and a valve *b*, substantially as
15 and for the purposes set forth.

3. In a device for removing ashes from a

ship's fire room, the combination of the ejector G having a nozzle *h*, means for forcing a stream of fluid through said nozzle, the hopper E opening into said ejector, a discharge
20 pipe D provided at its outlet end with a valve *b*, the opening *f* in the lower side of the ejector, and an outwardly opening valve F normally closing said opening but automatically yielding under the pressure of the water con-
25 tained in the pipe D to permit its escape therefrom upon the stoppage of the ejector, substantially as described.

FRANK E. KIRBY.

Witnesses:

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