

(No Model.)

2 Sheets—Sheet 1.

H. SEE.
ASH EJECTOR FOR STEAM VESSELS.

No. 581,521.

Patented Apr. 27, 1897.

FIG. 1.

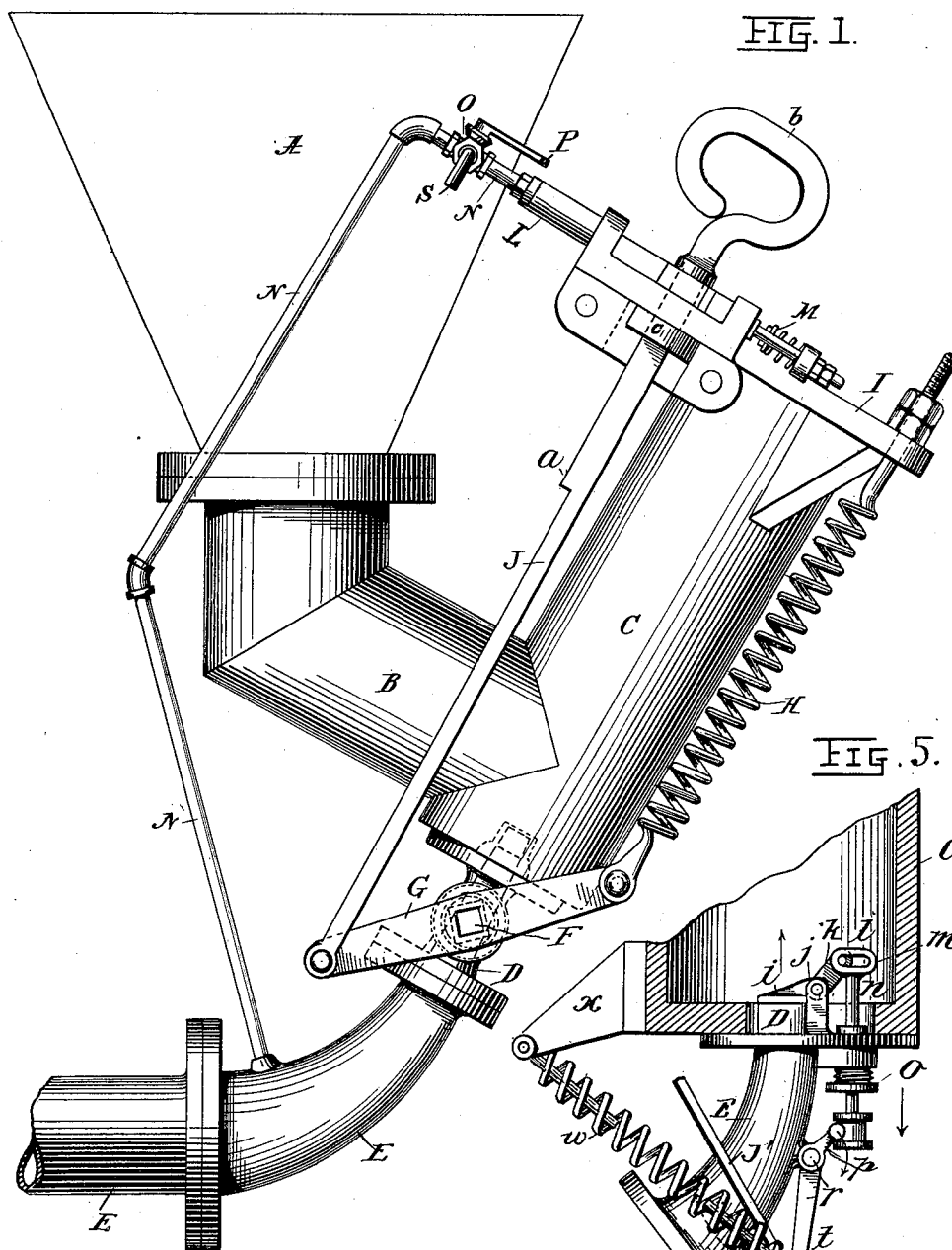
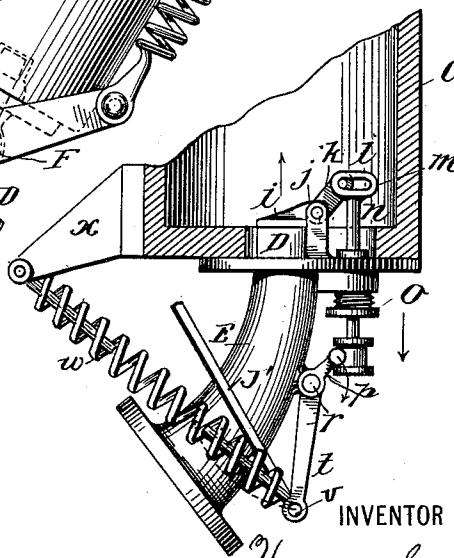


FIG. 5.



WITNESSES:

Edward L. Portland
James F. Court

INVENTOR

Horace See
BY
Francis P. Reilly
ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

H. SEE.
ASH EJECTOR FOR STEAM VESSELS.

No. 581,521.

Patented Apr. 27, 1897.

FIG 2.

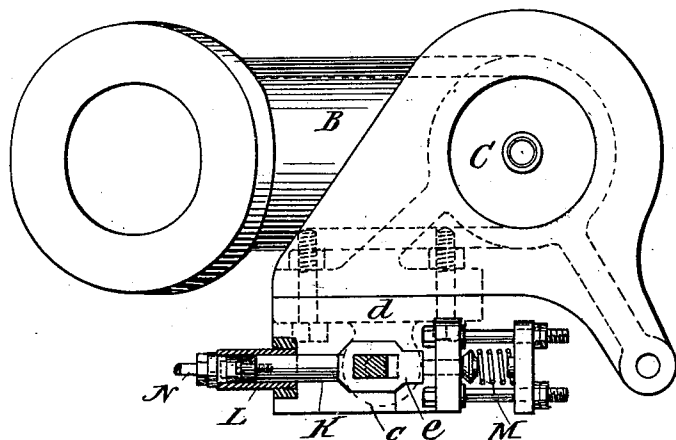


FIG. 3.

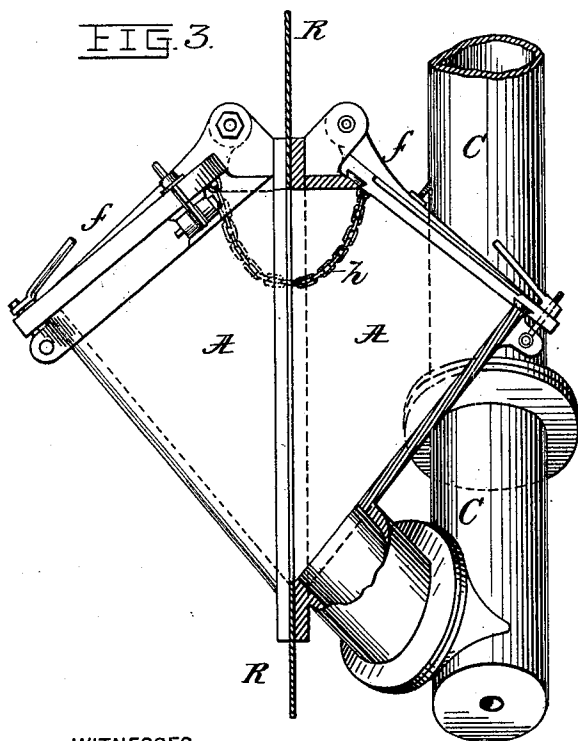
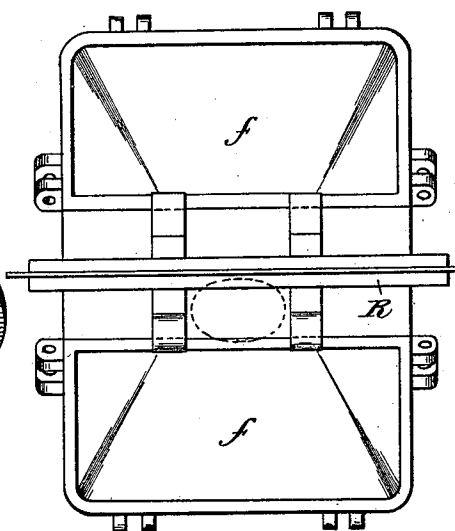


FIG. 4.



WITNESSES:

Edward C. Rowland.
James F. Cowart

INVENTOR

Horace See

BY

Francis P. Riley
ATTORNEY

UNITED STATES PATENT OFFICE.

HORACE SEE, OF NEW YORK, N. Y.

ASH-EJECTOR FOR STEAM VESSELS.

SPECIFICATION forming part of Letters Patent No. 581,521, dated April 27, 1897.

Application filed March 4, 1896. Serial No. 581,762. (No model.)

To all whom it may concern:

Be it known that I, HORACE SEE, of the city of New York, in the county and State of New York, have invented certain new and useful
5 Improvements in Ash-Ejectors for Steam Vessels, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to increase
10 the efficiency of hydraulic ash-ejectors and to make the same automatic in the important function of starting into operation after the hydraulic charging has commenced.

The invention will first be described in detail, and then particularly set forth in the
15 claims.

In the accompanying drawings, Figure 1 shows the ash-ejector in side elevation. Fig. 2 is a view in plan, partly in section, of Fig. 1, several parts being omitted. Fig. 3 is a side elevation, partly in section, showing how
20 the same ejector may be operated from two compartments of a vessel separated by a bulk-head. Fig. 4 is a view in plan of Fig. 3, several parts being omitted. Fig. 5 shows in sectional side elevation a modified detail hereinafter described.

In said figures the several parts are respectively indicated by reference-letters, as follows:
30

The letter A indicates an ashes-receptacle, preferably shaped like an inverted conoid or prism, forming a hopper into which the ashes to be removed are thrown by means of shovels or otherwise. Said hopper may be provided with any suitable cover. The lower part of the hopper A is connected to a pipe B, which is in turn connected to a discharge-pipe C. To the base of the discharge-pipe C
40 is connected the ejector-nozzle D of an ejector-pipe E, leading from any suitable force-pump. Said nozzle is provided near its conical jet end with a cock F, but a valve may, if desired, be substituted for said cock, as hereinafter described. Connected to said cock is
45 a double-armed lever G, to one arm of which is secured one end of a spiral spring H, the other end of said spring being secured to a bracket or frame I on the pipe C. To the
50 other arm of the lever G is connected one end of a rod J, having a projection or offset a, and provided at its other end with a handle b.

The rod J passes through a lug c, forming part of a bracket d, and also passes through a slot e in an enlarged portion of the plunger
55 K of a controlling-cylinder L, said rod being held in its raised position, when the offset a rests upon the lug c, by the spring M, connected to the end of the plunger K, which prevents the disengagement of the offset from the lug.
60 Connected to the controlling-cylinder L is a pipe N, the other end of said pipe being connected to the ejector-pipe E. The pipe N, near the point where it connects with the controlling-cylinder L, is provided with a three-
65 way regulating-cock O, having a handle P.

The operation of the apparatus is as follows: When it is desired to elevate the ashes, the cover of the hopper A is closed and also the jet-cock F. The force-pump connected
70 to the ejector-pipe E is then started and the regulating-cock O turned so that a portion of the water entering the ejector-pipe E can pass through the pipe N and cock O to the controlling-cylinder L. When the desired pressure of water has been obtained in the pipes
75 E and N, the spring M on the end of the plunger K (which has been so set as to prevent its moving until the desired pressure of water has been obtained) will yield to the
80 outward movement of the plunger K, caused by the pressure of water entering the cylinder L through the pipe N. This outward movement of the plunger K also releases or
85 trips the rod J, which is in its raised position with the spring H extended. When the rod J has been thus released, the spring H quickly retracts and forces the plug F wide open, at the same time drawing down the rod J to the position shown in Fig. 1. A solid jet of water
90 then enters the pipe C through the tapered bore of the nozzle D under a very high pressure and with great velocity. The door of the hopper A is now opened and the ashes thrown into said hopper, from which they pass
95 into the pipe C, where they encounter the jet of water entering through the nozzle D, and are carried with the water up said pipe and discharged overboard through the side of the ship at any suitable point, this discharge con-
100 tinuing as long as ashes are thrown into the hopper A. When the work has been completed, the handle P of the regulating-cock O is turned so as to allow the water in the con-

trolling-cylinder L to escape into the bilge or elsewhere through a spout S. The rod J is then raised until its projection *a* is above the lug *c*, when the reaction of the spring M forces the plunger K back and locks the rod, with its offset *a*, over the lug *c*. The act of raising the rod J also closes the cock F and extends the spring H, so as to be ready for another operation.

In all hydraulic ash-ejecting apparatus, in order to start the machine into operation with certainty, it is necessary that the ejecting cock or valve be opened very suddenly under a great pressure of water, and the construction above described is specially adapted to such end. It is also of importance that the cock or valve be placed near the end of the ejector-nozzle, for by means of such location a smaller cock or valve can be used, the tapering end of the ejector being of much smaller diameter than the rest of the pipe. The smaller, therefore, the valve or cock which can be used the less will be the force required to overcome the friction of opening and closing it—an important consideration where it is desirable to open the cock or valve, whether by hand or automatically, by a sudden movement and with the utmost celerity.

In Figs. 3 and 4 the apparatus is shown arranged so as to discharge the ashes from two fire-rooms. In this construction a double hopper A A is shown arranged on each side of a bulkhead R and connected to the discharge-pipe C, said bulkhead being cut away within the hopper. Said hopper is provided on each side of the bulkhead with a hinged lid or cover *f*, connected within the hopper by a chain *h*. By this arrangement the opening of one of the doors *f* causes the other to be tightly closed, and the hopper A can be opened to but one fire-room at a time, thereby compensating for the opening in the bulkhead and making it water-tight.

Instead of using the cock F (shown in Fig. 1) the device shown in Fig. 5 may be substituted therefor, in which latter figure the letter *i* indicates a valve placed within the discharge-pipe C and closing the orifice of the ejector-nozzle D. Said valve is hinged at *j* and provided with a rigid arm *k*, the end of said arm being provided with a stud *l*, which slides within a slotted head *m*, formed upon the upper end of a rod *n*. Said rod passes downward through a stuffing-box *o*, and its lower end has a sliding contact with a forked arm *p* of a double-armed or bell-crank lever *l*, said lever being pivoted at *r* to a lug on the nozzle E. To the other arm of the lever *t* at the point *v* and to a bracket *x* may be connected in any suitable manner a spring *w* for keeping the valve *i* closed against the pressure of the water in the pipe E, which tends to open said valve. When the required pressure of water has been obtained in the pipe E, it will lift the valve *i*, thus throwing down the rod *n*, moving the lever *t* in the direction of the arrow, and compressing the spring con-

nected to said lever. As soon as the water is shut off from the pipe E said spring will be released from its compression, the rod *n* lifted, and the valve *i* again closed by the reaction of said spring. Any suitable rod, such as J', or a chain or other device may be connected to the lever *t* for opening the valve *i* either by hand or automatically.

The springs used in the apparatus herein described may be so regulated or adjusted as to prevent any danger of the pressure of water bursting the pipes, or the pipes may be made strong enough to stop the pump before the pressure of the water reaches the limit of the pipe's endurance.

If it is desired to operate the apparatus by hand instead of automatically, as herein described, the pipe N and the cylinder L, with its attached parts, may be dispensed with and the rod J released or tripped by hand; but the use of the automatic starting mechanism is deemed preferable.

Having thus fully described my said invention, I claim—

1. In a hydraulic ash-ejecting apparatus, the combination of an ash receptacle, or hopper; a discharge-pipe; an ejector-pipe; and a valve or cock for said ejector-pipe held closed to the escape of the ejecting-water by suitable regulating means adapted to be set to a predetermined pressure; whereby when the pressure of the water has overcome said predetermined resistance said valve is opened and the apparatus started automatically into continuous action, substantially as set forth.

2. In an ash-ejecting apparatus, a starting mechanism consisting of a starting cock or valve provided with a lever for opening and closing the same, said lever being provided with a spring and a rod, the rod having an offset; in combination with a fixed support for said offset; as and for the purposes set forth.

3. In an ash-ejecting apparatus, an automatic starting mechanism consisting of a starting cock or valve provided with a lever for opening and closing the same, said lever being provided with a spring and a rod, the rod having an offset; in combination with a fixed support for said offset and a hydraulic cylinder and plunger, and a spring on said plunger; whereby when the pressure in said cylinder is sufficient to compress the spring on its plunger the offset on said rod is disengaged from its support and the starting cock, or valve, is forced open by the spring on its lever, substantially as set forth.

4. In an ash-ejecting apparatus, a hopper provided with two charging-doors connected by a chain so that the act of opening one door draws the other door shut and one ejector serves for two separate compartments, substantially as and for the purposes set forth.

HORACE SEE.

Witnesses:

J. R. SEWEIRA,
WILLIAM MOLLOY.