

(No Model.)

2 Sheets—Sheet 1.

R. STONE.

MEANS FOR DISCHARGING ASHES FROM STEAMBOATS OR OTHER VESSELS.

No. 420,613.

Patented Feb. 4, 1890.

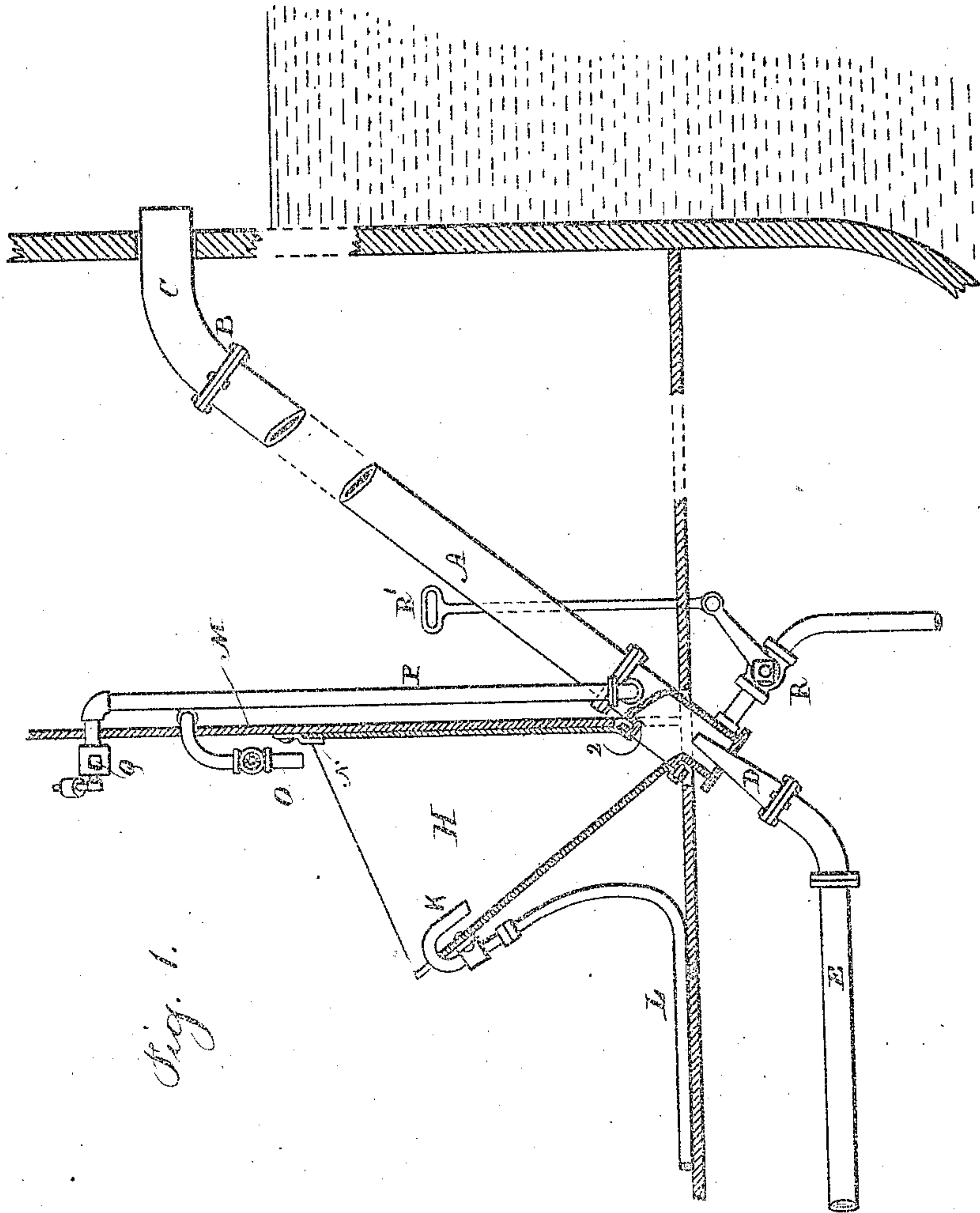


Fig. 1.

Witnesses

Chas. H. Smith
Geo. T. Pinckney

Inventor

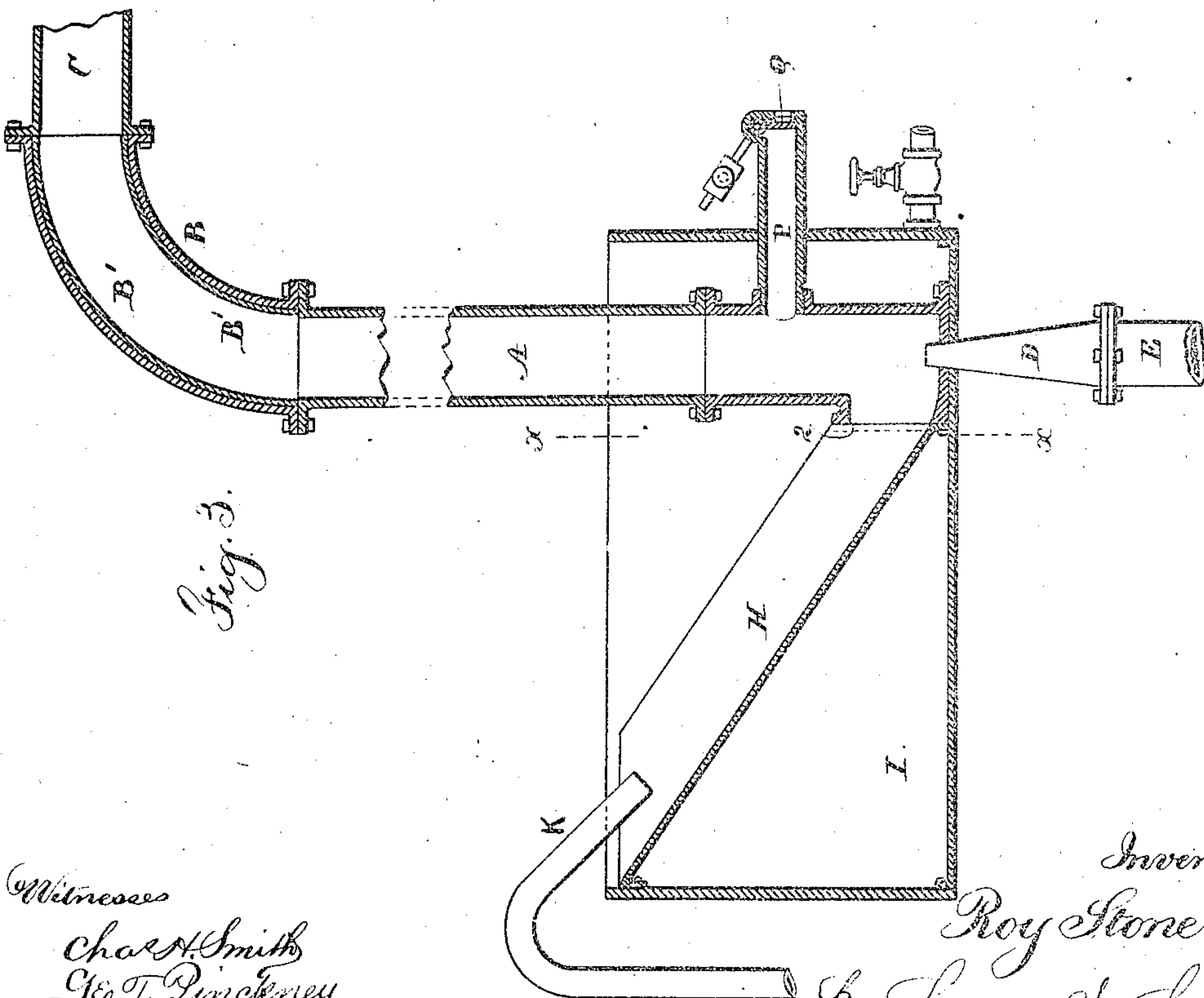
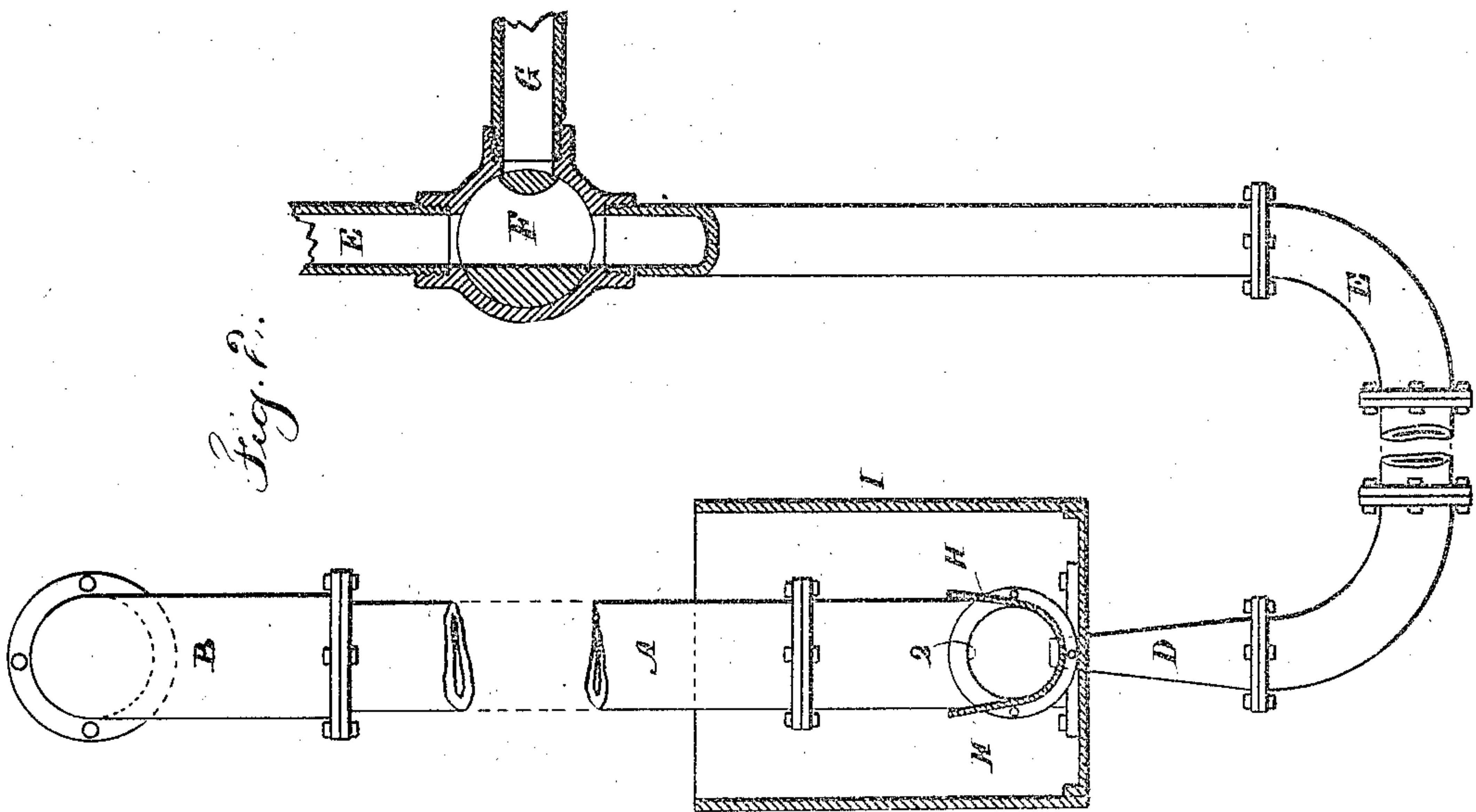
Roy Stone
per Samuel W. Serrell

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UNITED STATES PATENT OFFICE.

ROY STONE, OF NEW YORK, N. Y.

MEANS FOR DISCHARGING ASHES FROM STEAMBOATS OR OTHER VESSELS.

SPECIFICATION forming part of Letters Patent No. 420,613, dated February 4, 1890.

Application filed September 25, 1889. Serial No. 325,058. (No model.)

To all whom it may concern:

Be it known that I, ROY STONE, of the city and State of New York, have invented an Improvement in Means for Discharging Ashes from Steamboats and other Vessels, of which the following is a specification.

Efforts have heretofore been made to discharge ashes from the fire-room of steam vessels by means of a rising discharge-trunk into which the jet of water is forced at the lower end. I, however, find that in practice the column of water is liable to become so heavy, both by its altitude and by the ashes carried up with the water, that the actuating-jet has not sufficient power to eject the ashes and water from the rising pipe. To obviate this difficulty, I provide for the inlet of atmospheric air, which, commingling with the water and the ashes, renders the column sufficiently light to prevent the force of the jet being overpowered by the weight of the column, thus lessening the force of water required for a given lift and preventing the obstruction of the apparatus by the ashes being dumped too quickly into the receptacle for the same.

In addition to the foregoing difficulty, it often happens that a large body of ashes will be dumped into a receptacle in the apparatus previous to the jet of water being turned on, and when such jet is turned on it has not sufficient momentum to act with the required power, and the ashes are simply drawn into the apparatus sufficiently to clog it up. I prevent this difficulty by providing a three-way cock in the pipe leading from the pump and an external discharge-pipe, so that the pump may be brought fully into action and the water discharged overboard at its maximum velocity before the ash-injector is brought into action by turning the three-way cock.

In the drawings, Figure 1 represents my improved apparatus in the form adapted to ocean vessels, in which the discharge-pipe can pass diagonally from the fire-room to the side of the vessel. Fig. 2 is a section of the water-supplying pipe and three-way cock, and a partial section at the line *xx* of Fig. 3. Fig. 3 is a section of the ash-receiving vessel in the form especially adapted to river and coasting vessels.

The rising pipe A may be vertical, as shown in Fig. 3, or at an inclination, as shown in Fig. 1, and there is a bend or elbow B connecting the rising portion with the horizontal, or nearly horizontal, discharge-pipe C, that passes through the side of the vessel or otherwise, so that the ashes may be discharged overboard or into a lighter. I find that the upward flow of the ashes is liable to injure the bend or elbow B by internal abrasion. I therefore provide a removable lining B', which forms a shield, and it may be made of metal that is the least liable to abrasion, and form a complete shield around the inside of the pipe, or only to that portion of the interior of the pipe the most liable to injury. The rising pipe A is provided at its lower end with an injecting-nozzle D at the end of the water-pipe E, and this pipe leads to a suitable pump for the supply of water under pressure, and at F is a three-way cock and a discharge-pipe G, so that when the pump is started the water is to be passed through the pipe G until the pump attains its maximum velocity, and then the three-way cock F is turned into the position shown in Fig. 2, so as to suddenly open the water-way to the injecting-nozzle D. This nozzle D is at the lower end of the rising pipe A and axially in line, or nearly so, with the same, and at one side of the lower end of the rising pipe A is an ash-receiver H in the form of a trough or funnel, the lower end opening into the side of the rising pipe A. This ash-receiver H may be within a box I, as represented in Fig. 3, so that any surplus ashes or water may fall over into this box; but I prefer and generally use a hopper-shaped receiver H, as shown in Fig. 1, with a nozzle or pipe K for the supply of water into the ash-receiver for causing the ashes to pass down into the rising pipe A. The water may be supplied to this nozzle or pipe by the hose L, Fig. 1, and in instances where the fire-room is limited in its size the ash-receiver H may be made movable and held in its position by the button N upon the bulk-head M, separating the fire-room from the coal-bunker. In this case it is advantageous to make use of a pipe and stop-cock O for the supply of water into the hopper-shaped ash-receiver, such pipe and stop-cock being fastened to the bulk-head M.

Under all circumstances I provide for the introduction of air at the lower end of the rising pipe A, and with this object in view the ashes should be placed in the receiver H in such a manner that air may draw in above the ashes and below the upper edge 2 of the opening into the pipe A, so that as the column of water from the nozzle D mixes with the ashes and carries them up in the rising pipe A air will also be drawn in with the jet and mingled with the water sufficiently to lessen the weight of the column and prevent it weighing more than the force of the jet can overcome, because if the ashes become clogged in the uprising pipe A the water will pass out into the ash-receiver H and the fire-room.

As an additional protection against the rising pipe A being simply filled with ashes and water, an air-pipe P is provided a little distance above the edge 2 of the ash-inlet, and in this air-pipe P, I prefer to use an automatic valve Q, that opens inwardly the moment there is a vacuum action or minus pressure in the pipe A, caused by the water from the nozzle D rushing past the air-pipe P when the ashes close the inlet at the bottom end of the ash-receiver. Thereby difficulty resulting from the clogging of the pipe A with a column of ashes is prevented.

Where the ash-receiver H is removable, as in Fig. 1, it is preferable to place the air-pipe P adjacent to the bulk-head M, with the automatic valve Q at the upper end.

A pipe and cock R may be provided, as shown in Fig. 1, to draw off water from the pipe A, and this water may run to the bilge. The cock may be operated by the handle and rod R', connected to an arm upon the valve-stem of the cock.

I claim as my invention—

1. The combination, with an apparatus for ejecting ashes and similar material, of a rising pipe having an opening near the lower end, an injecting-nozzle in the line of the axis of the pipe, and an ash-receiver connected with the rising pipe and having an opening at the bottom into the rising pipe above the injector-nozzle, there being an air-inlet opening above the ashes and adjacent to the water-jet, whereby air is drawn in by the action of the water-jet and commingled with the same for lessening the weight of the column of water and ashes, substantially as set forth.

2. The combination, with a rising pipe having a lateral opening near the lower end, of an injecting-nozzle axial with the rising pipe and acting below the lateral inlet, and an ash-

receiver above and opening into said inlet, and a pipe for supplying water into the same, substantially as set forth.

3. The combination, in an apparatus for ejecting ashes and similar materials, of a rising pipe having a lateral inlet near the lower end, and a receiver for the ashes or similar materials connected at and rising above the lateral inlet, an injecting-nozzle central to the rising pipe, a pipe for supplying water to the nozzle, a lateral discharge-pipe therefrom, and a three-way cock, whereby the water from a pump or other supply can be allowed to attain its maximum velocity and then be suddenly turned through the jet-nozzle, substantially as set forth.

4. The combination, with a rising pipe having a lateral inlet near the lower end and a receiver connected thereat for ashes or similar material, of a jet-nozzle axial to the rising pipe, a horizontal or nearly horizontal discharge-pipe above the upper end of the rising pipe, an arm or elbow connecting the rising pipe with the horizontal discharge-pipe, and a removable lining to the elbow or bend, substantially as set forth.

5. The combination, with the ash-receiver and the rising pipe having a lateral opening near the lower end at which the ash-receiver is connected, and an injecting-nozzle axial to such rising pipe, of an air-inlet pipe connected with the rising pipe above the lateral opening, substantially as and for the purposes set forth.

6. The combination, with the rising pipe having a lateral opening near the lower end, of an ash-receiver opening at its lower end into the rising pipe, and an injecting-nozzle axial to such rising pipe, and an air-inlet pipe above the lateral opening, and an automatic valve to the air-pipe, substantially as and for the purposes set forth.

7. The combination, with a rising pipe having a lateral opening near the lower end and the injecting-nozzle axial to the rising pipe, of a removable ash-receiver having an opening at its lower end to connect with the rising pipe at the opening thereof, and a cock and stationary supply-pipe above the receiver for water to be injected into the ash-receiver, substantially as set forth.

Signed by me this 19th day of September, 1889.

ROY STONE.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.