

G. PURVIS.  
 ASH EJECTOR.  
 APPLICATION FILED JUNE 7, 1918.

1,305,564.

Patented June 3, 1919.

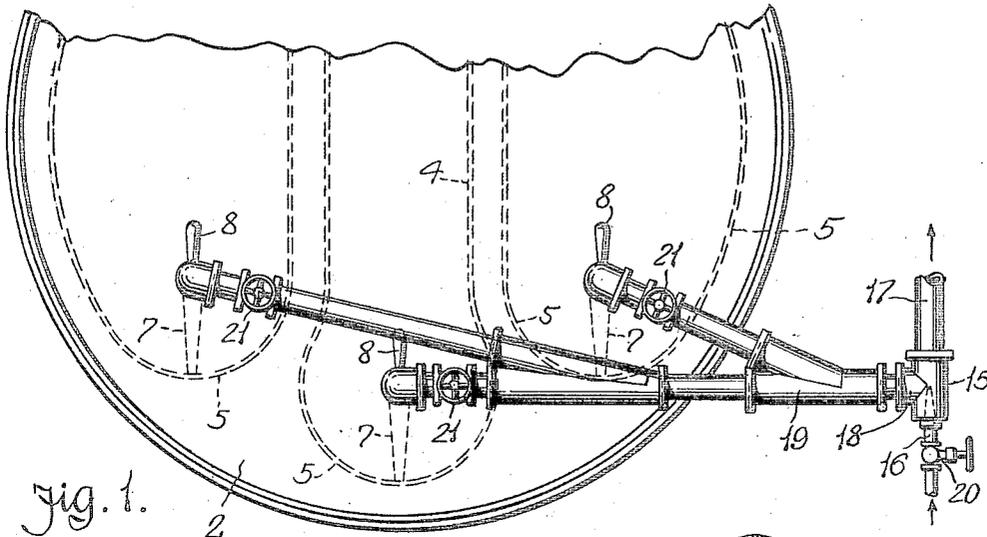


Fig. 1.

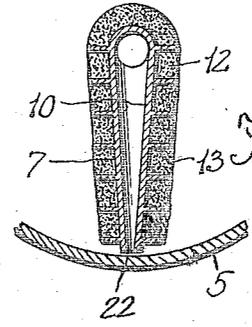


Fig. 3.

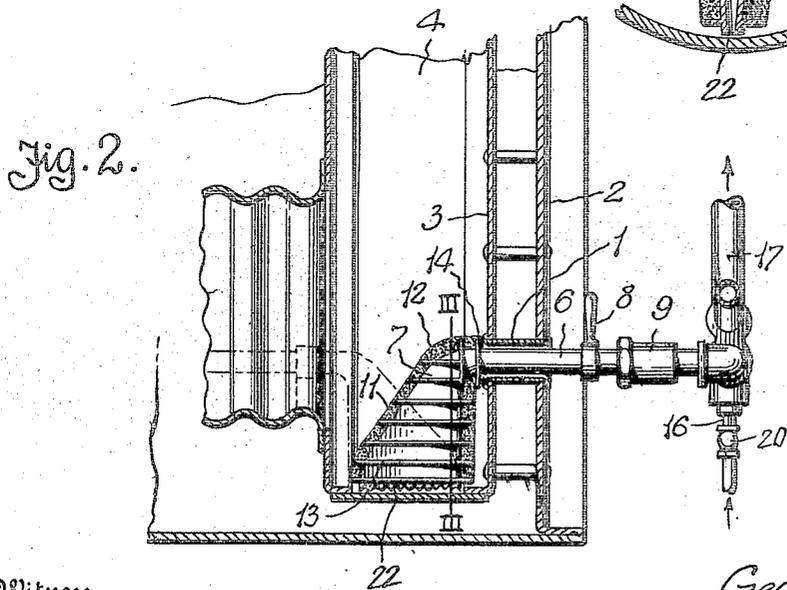


Fig. 2.

Witness  
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# UNITED STATES PATENT OFFICE.

GEORGE PURVIS, OF PORT HURON, MICHIGAN.

## ASH-EJECTOR.

1,305,564.

Specification of Letters Patent. Patented June 3, 1919.

Application filed June 7, 1918. Serial No. 238,798.

*To all whom it may concern:*

Be it known that I, GEORGE PURVIS, a citizen of the United States of America, residing at Port Huron, in the county of St. Clair and State of Michigan, have invented certain new and useful Improvements in Ash-Ejectors, of which the following is a specification, reference being had thereto to the accompanying drawings.

In the operation of flue boilers, particularly of the marine type, wherein the horizontal flue passages terminate in an upright smoke flue or box, there usually being one such upright box for each flue, there is a collection of soot at the bottom of such smoke box which it is necessary and advisable to remove whenever occasion requires. In the ordinary type of boiler this is usually accomplished by hand cleaning which necessitates the shutting down of the boiler and is a difficult and disliked procedure.

This invention relates to a soot ejector whereby the soot that collects at the bottom of the upright passages of boilers of marine type is readily withdrawn without the necessity of closing down the boiler or of getting inside of it.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims, reference being also had to my co-pending application, Serial No. 249,424.

In the drawings,

Figure 1 is a view in rear end elevation of a portion of a boiler equipped with a soot and ash ejector that embodies features of the invention;

Fig. 2 is a view in longitudinal section through the boiler showing a portion of the ejector in elevation, and

Fig. 3 is a detail taken on line III—III, of one form of section nozzle.

Referring to the drawings, a hollow stay bolt 1 is inserted in the rear wall 2 of a boiler and the rear wall 3 of each upright smoke passage or combustion chamber 4, the boiler illustrated being of the usual marine type with corrugated furnaces, at the point where it is substantially the center of curvature of the lower rounded end portion of the flue.

The hollow stem 6 of an intake suction nozzle 7 is journaled in each stay bolt 1 with the outer end portion thereof provided with a manipulating handle 8 and arranged to be

rotatably secured in a union or slip joint 9, packed to prevent leakage.

The nozzle in preferred form consists of converging side walls 10 terminating in serrated margins 22, the length of the walls being such that the mouth formed by the serrated margins 22 sweeps over the rounded end portion 5 of the upright smoke passage whenever the nozzle is turned. The front wall 11 of the nozzle is preferably also convergent upon the stem and as a further detail of construction it is feasible to inclose the nozzle with heat insulating material such as indicated at 12 in which instance it is desirable to provide holding ribs 13 upon the nozzle to carry this insulation. There is also an annular flange 14 around the stem 6 to prevent outward movement through the bushing, or stay-bolt 1.

An ejector indicated generally at 15 includes a steam jetting pipe 16 entering the casing and discharging into an outlet pipe 17, there being a lateral intake or suction nipple 18 that is connected through suitable pipe fittings 19 with the several stems 6 of the nozzles 5. This arrangement of pipe fittings and connections is of course dependent upon the relative situations of the nozzles. In all events there is a steam controlling valve 20 and other valves 21 in each branch leading to a stem.

As a result of this construction, the device when mounted upon a boiler and supplied with steam through the valve 20 causes the usual suction or exhaust effect when any one of the stems 6 is open through the corresponding valve 21 with the pipe line, or they all may be opened simultaneously. Manipulation of the nozzle back and forth over the surface which its serrated margins sweep, stirs up the soot, indraws it and delivers it to the exhaust pipe 17.

Consequently a boiler of this type may be readily cleaned as desired and the usual collection of soot between cleaning operations avoided as the cleaner may be operated at any time to eject the soot. Furthermore, the device is readily installed as it necessitates no particular fitting of the boiler save the insertion of the hollow stay bolt which, when it acts as a bearing, also serves to stiffen the boiler construction. By the selective operation of the nozzles, the one at which there is the greatest accumulation of soot can be readily operated without disturbing the

others. By bringing the nozzle so that the serrated margin, which is the preferred form, stirs up the soot as it is swept past it, the dislodged material is readily indrawn by the air currents.

If desired the nozzle may be operated from the part of the boiler by extending the hollow stem through the lower portion of the furnace beneath the grate bars as shown in dotted lines in Fig. 2.

Obviously changes in the details of construction may be made without departing from the spirit of my invention, and I do not care to limit myself to any particular form or arrangement of the parts.

What I claim is:—

1. The combination of a flue type boiler having an upright smoke passage with an ash ejector consisting of a suction nozzle, a hollow stay bolt in the boiler shell in which the nozzle is rotatably mounted to sweep the lower end of the passage and to agitate mechanically and stir up any deposit therein, a steam ejector, and connections between the ejector and the nozzle permitting the rotation of the latter and providing for an exhaust through the nozzle.

2. The combination of a flue type boiler having an upright smoke passage with an ash ejector consisting of a hollow supporting member mounted in the wall of the boiler and of the passage, a suction nozzle having a hollow stem journaled in the supporting member and provided with an inlet adapted to sweep the lower end of the passage when the nozzle is oscillated, a steam ejector, and connections between the ejector and the nozzle stem permitting rotation of the latter.

3. The combination of a flue type boiler having upright smoke passages with an ash ejector consisting of a hollow supporting

member mounted in the boiler wall and lower end portion of the wall of each passage, a suction nozzle having a stem rotatable in the supporting member and an intake adapted to sweep the lower portion of the companion passage when the stem is oscillated, a steam operated ejector, and pipe connections between the ejector and the several suction nozzles permitting oscillations of the latter together with means for selectively throwing the nozzles into communication with the ejector and for manipulating the nozzles from the exterior of the boiler.

4. In an ash ejector, a nozzle comprising a hollow stem adapted to be journaled in a supporting member and a shell formed of converging side and end walls and a rear wall extending to one end of the nozzle of which said side walls and end walls form an integral part, a refractory lining on the exterior of the nozzle, and means on the stem for manipulating the nozzle from the exterior of the boiler.

5. In an ash ejector, a suction nozzle consisting of a hollow stem adapted to act as a journal for the nozzle, a body extending radially from the inner end thereof having a serrated margin at the delivery end with side walls diverging from the delivery intake end to the stem, and a front wall inclined toward the stem from one end of the inlet opening, ribs on the side walls and refractory lining material incasing the nozzle and engaging the ribs.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE PURVIS.

Witnesses:

ANNA M. DORR,  
CHAS. W. STAUFFIGER.