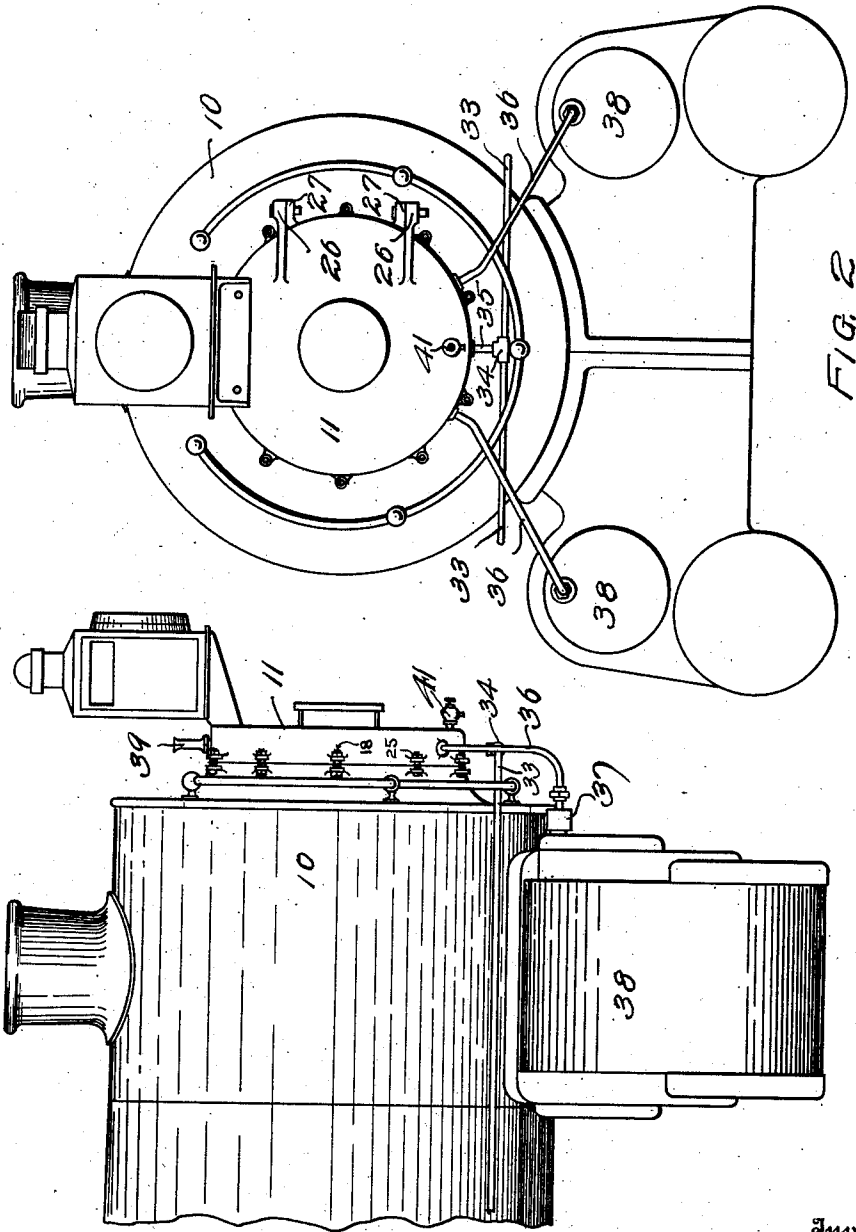


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SMOKE BOX DOOR.
APPLICATION FILED DEC. 12, 1910.

1,022,757.

Patented Apr. 9, 1912.

3 SHEETS-SHEET 1.



Inventor

DAVID SAMMEL.

Witnesses

Walter Kelly

Emory L. Groff

By

N. E. Lee

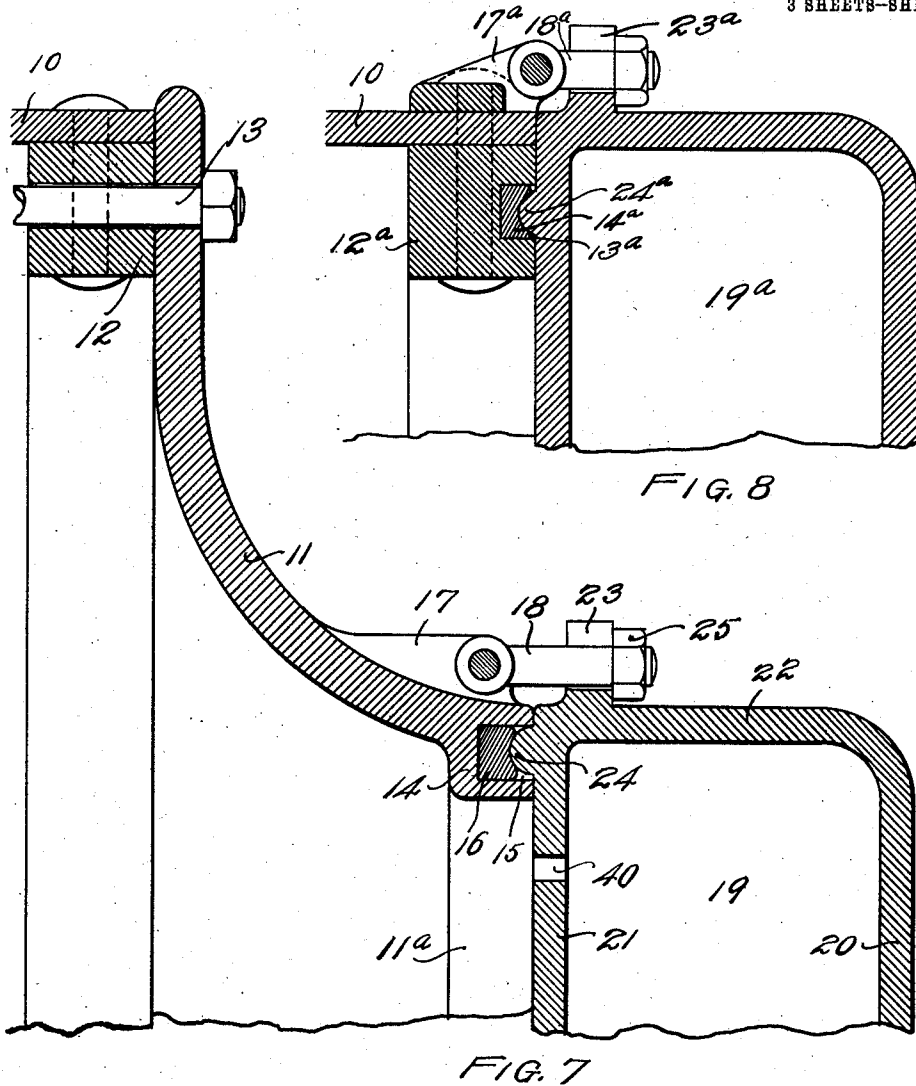
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Witnesses

Walter Kelly
Emory L. Hoff

Inventor
DAVID SAMMEL,

By

N. E. Gee.

Attorney

UNITED STATES PATENT OFFICE.

DAVID SAMMEL, OF ALTOONA, PENNSYLVANIA.

SMOKE-BOX DOOR.

1,022,757.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed December 12, 1910. Serial No. 596,814.

To all whom it may concern:

Be it known that I, DAVID SAMMEL, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Smoke-Box Doors, of which the following is a specification.

This invention relates to an improvement in locomotives, and more particularly to a closure for the front ends of the smoke boxes.

The primary object of the invention is to provide a closure for the purpose described which can be easily swung open to permit the easy access to the boiler flues.

Another object of the invention is to provide a closure of the class described which will not warp or burn out, thus reducing the expense incidental to the renewing of closures as is now commonly done, to a minimum.

A further object of the invention is to provide a closure into which the exhaust steam from the air pumps may pass and in which the oil in the steam, together with the water, may be collected, thereby making an effective water back, against which the gaseous flames emerging from the front ends of the boiler flues, will impinge.

A still further object of the invention is to provide a closure having a connection with the cylinders, whereby the oil collected in the said closure can be conducted through the steam chest relief valves and into the cylinders and in this manner lubricate the same.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of a front end of a locomotive, showing my improved closure applied thereto. Fig. 2 is a front elevation of the parts shown in Fig. 1. Fig. 3 is an enlarged edge view of the smoke box closure. Fig. 4 is a sectional view of the closure shown in Fig. 3. Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 4. Fig. 6 is a detail sec-

tional view taken on the line 6—6 of Fig. 4. Fig. 7 is an enlarged sectional view taken on the line 7—7 of Fig. 2, and showing the manner of forming the air tight connection between the closure and the front end of a smoke box, and Fig. 8 is an enlarged detail sectional view showing a modification.

Like reference numerals designate corresponding parts in all the figures of the drawings.

Referring to the drawings, the reference numeral 10 designates the usual smoke box of a locomotive in which are located the ordinary parts, not shown, such as, for instance, the exhaust nozzle and the steam supply pipes, etc.

My invention comprises a front end 11 which is secured to a ring 12 by means of a bolt 13, said ring 12 being carried by the end of the smoke box 10. This front end is of a semi-conical formation, and is provided at its forward end with an opening 11^a, through which access to the boiler tube may be made. The forward edge of the front end 11 is enlarged as shown by numeral 14, and is provided with a seat 15, in which is located a gasket 16. Formed on the exterior of the front end 11, is a plurality of spaced pairs of ears 17, and between each pair thereof is journaled a bolt 18, as will be readily understood by those skilled in the art.

The invention further comprises a closure designated as a whole by the numeral 19, for the opening 11^a, this closure consisting of a comparatively shallow drum formed of front and rear walls 20 and 21 respectively, and a connecting web 22. Integral with the said connecting web and extending therefrom are bifurcated stops 23. These stops are spaced apart and are arranged in register with the ears 17 of the front end 11. The rear wall 21 is provided with a marginal rib 24, which is adapted to be seated within the recess 15 and bear against the gasket 16 to form an airtight connection between the closure and the front end. The bolts 18 are swung down within the bifurcated stops 23 and, by means of a nut 25, the closure 19 can be quickly connected or disconnected to or from the said front end. This closure is furthermore provided with hinged members 26—26 which coast with hinge members 27 carried by the front end. The closure 11 is furthermore provided with vertically arranged spaced partitions 28, which extend from the bottom of the drum

and terminate at a point below the top thereof. These partitions connect the walls 20 and 21 and thereby form a passage or stand-pipe 29 having an upper open end 30. The closure furthermore comprises interior walls 31 which are arranged in spaced relation to the connecting web 22 to form passages 31^a. These walls 31 extend from the bottom of the transverse walls 28 and terminate in the top of the closure above the open end 30 of the passage 29, as shown by reference numerals 32.

Exhaust pipes 33 for the air pumps are connected by a T 34 and said T communicates with the passage 29 by means of a pipe 35.

Respectively connecting each of the passages 31^a are pipes 36 which are connected to the relief valves 37, said relief valves being connected to the steam chest 38.

From the foregoing, it will be observed that the exhaust steam from the air pumps will pass from the pipes 33, the T 34, pipe 35, and into the passage 29 of the closure. The water of condensation will accumulate in the passage 19 and the steam in the closure will pass out through the exhaust 39. It is a well known fact that considerable oil is carried away by the steam. As the water accumulates in the passage 29, it will eventually flow over the open end 30 and down the outside thereof and fill the space between the transverse partitions 28 and the partitions 32. The oil contained in the steam will of course float on the water, and as the volume of water increases, the oil will eventually flow over the ends 32 of the partitions 31 and into the passages 31^a. From thence the oil will flow through the pipes 36, past the relief valves 37, and into the steam chest 38. Thus it will be observed that this oil, which would ordinarily be wasted, will be used for lubricating the valves and the cylinders, stopping the groaning of the valves and avoiding the cutting of the cylinders.

The closure is also provided with openings 40 formed in the rear wall 21, whereby the steam contained in the closure may escape into the smoke box. The closure or drum is also provided with a stop cock 41 arranged near the bottom thereof and adapted to permit the egress of the water when, for instance, the locomotive is standing still. Thus all danger of the water freezing can be avoided.

Should it be desired to attach the closure directly to the end of the smoke box 10, the construction shown in Fig. 8 of the drawing may be employed. In this structure, the smoke box 10 is provided at its end with a ring 12^a which is secured in position by suitable means. Formed in said ring and communicating with the outer face 12^b thereof is a continuous recess 13^a and in

this recess is arranged a gasket 14^a. Formed on the exterior of the front end of the smoke box proper is a plurality of spaced pairs of ears 17^a, and between each pair thereof is journaled a bolt 18^a. The closure 19^a is formed in the same manner as the door 19, before described, and is provided with a marginal rib 24^a, which projects into the recess 13^a and bears against the said gasket 14^a. This door is hingedly mounted on the smoke box in any well known manner, and is provided with a plurality of bifurcated stops 23^a adapted to receive the bolts 18^a, as will be readily understood.

What I claim is:—

1. In combination with a locomotive fire-box having an open end, of a closure for said open end, an inlet for receiving the exhaust steam in said closure, means in said closure for storing the water of condensation from the steam, and means for segregating the oil carried by said steam from the water of condensation.

2. In combination with a locomotive fire-box having an open end, of a closure for said open end, an inlet for receiving the exhaust steam in said closure, means in said closure for storing the water of condensation from the steam, means for segregating the oil carried by said steam from the water of condensation, and outlet means for removing said oil from the closure.

3. In combination with a locomotive fire-box having an open end, of a hollow closure for said open end, an inlet for receiving the exhaust steam in said closure, a conduit communicating with the inlet and forming a stand-pipe to catch the water of condensation and feed the same to the main portion of the closure, and means for removing from said water the waste oil brought in by said steam.

4. In combination with a locomotive fire-box having an open end, of a hollow closure for said open end, an inlet for receiving the exhaust steam in said closure, a conduit communicating with the inlet and forming a stand-pipe to catch the water of condensation and feed the same to the main portion of the closure, conduits for receiving the waste-oil brought in by said exhaust steam, and means for feeding said oil away from said conduits.

5. In combination with a locomotive fire-box having an open end, of a drum fitted to said end and constituting a closure therefor, said drum including spaced front and rear walls and a connecting web, an inlet in the bottom of the drum for receiving exhaust steam, spaced vertical partitions extending from the bottom of the drum and communicating with the inlet and terminating short of the top, said partitions forming a stand-pipe to catch the waters of condensation from said steam and feed the

same to the main portion of the drum, and means for removing from said water the waste oil brought in by the steam.

6. In combination with a locomotive fire-box having an open end, of a drum fitted to said end and constituting a closure therefor, said drum including spaced front and rear walls and a connecting web, an inlet in the bottom of the drum for receiving exhaust steam, spaced vertical partitions extending from the bottom of the drum and communicating with the inlet and terminating short of the top, said partitions forming a stand-pipe to catch the waters of condensation from said steam and feed the same to the main portion of the drum, conduits for receiving the waste oil brought in by the steam and separated from the water of condensation, and means for feeding said oil away from said conduits.

7. In combination with a locomotive fire-box having an open end, of a drum fitted to said end and constituting a closure therefor, said drum including spaced front and rear walls and a connecting web, an inlet in the bottom of the drum for receiving exhaust steam, spaced vertical partitions extending from the bottom of the drum and communicating with the inlet and terminating short of the top, said partitions forming a stand-pipe to catch the waters of condensation from said steam and feed the same to the main portion of the drum, interior walls arranged in spaced relation to the connecting web to form conduits for receiving the oil brought in by the steam and separated from the water of combustion, said walls extending from the bottom of the stand-pipe and terminating in the top of the drum above the stand-pipe, and means for feeding said oil away from said conduits.

8. In combination with a fire-box having an open end, of a ring carried by said fire-box and arranged contiguous to said end, said ring being provided with a continuous recess in its outer face, a gasket seated within the recess, and a closure for said open end fitted to the fire-box and provided with an inwardly projecting marginal rib adapted to co-act with said gasket to form an airtight joint between the fire-box and the closure.

9. In combination with a fire-box having an open end, of a ring carried by said fire-box and arranged contiguous to said end, said ring being provided with a continuous recess in its outer face, a gasket seated within the recess, a closure for said open end fitted to the fire-box and provided with an inwardly projecting marginal rib adapted to co-act with said gasket to form an airtight joint between the fire-box and the closure, and means for locking the closure to the fire-box.

10. A closure for locomotive fire-boxes, comprising a drum formed of spaced front and rear members and a connecting web, an inlet in the bottom of the drum, spaced vertical partitions extending from the bottom of the drum and communicating with the inlet and terminating short of the top, and interior walls arranged in spaced relation to the web to form conduits, said walls extending from the bottom of the vertical partitions and terminating in the top of the drum above the said partitions.

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

DAVID SAMMEL.

Witnesses:

D. LLOYD CLAYCOMB,
N. E. GEE.