J. CARLSON.

LOCOMOTIVE EXHAUST TIP.

APPLICATION FILED MAR. 24, 1911.

1,082,928.

Patented Dec. 30, 1913

2 SHEETS—SHEET 1.

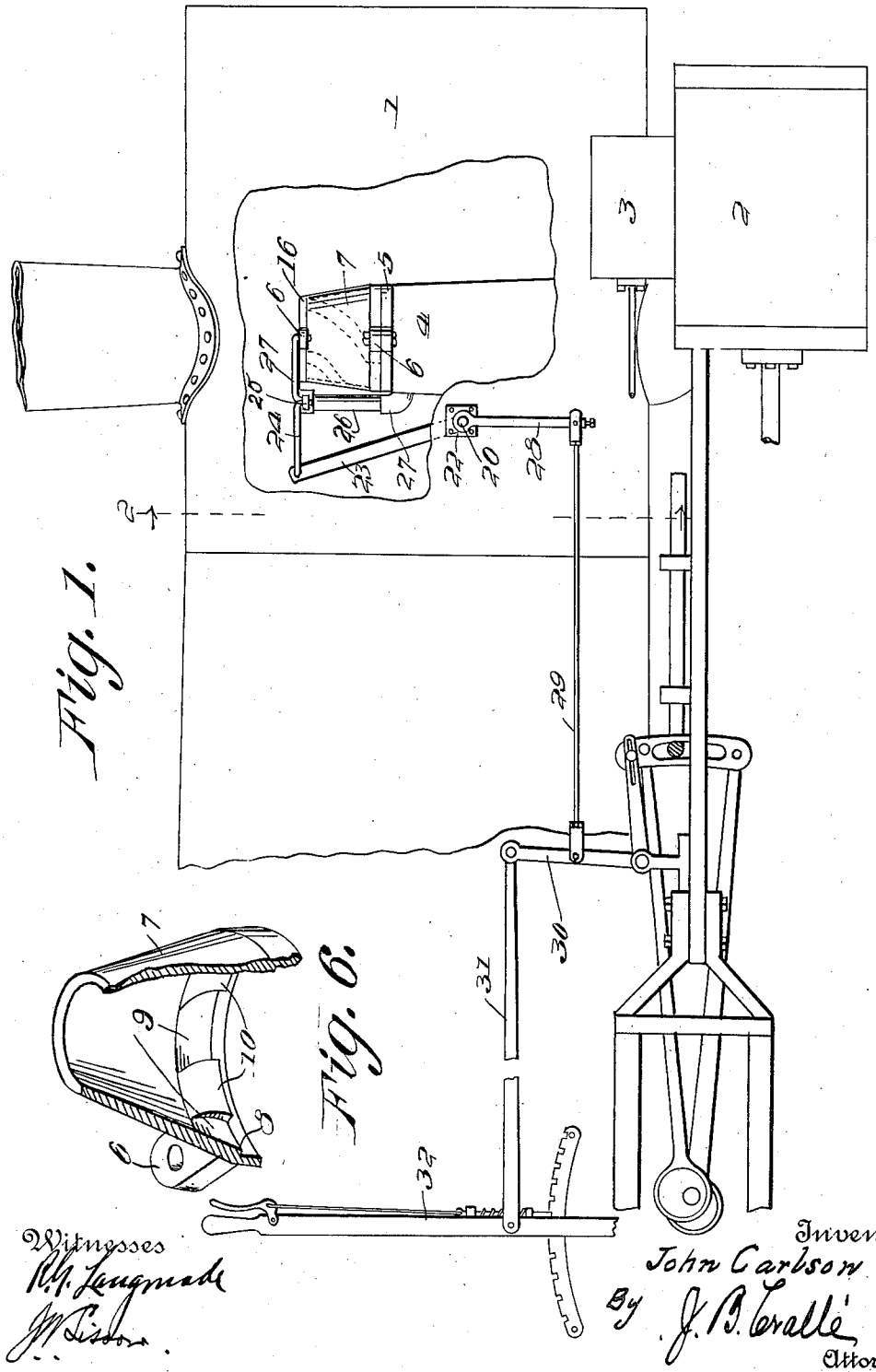

Fig. 1.

Fig. 6.

Witnesses

R. F. Langmade

J. M. Lisson

Inventor

John Carlson

By J. B. Verallé

Attorney

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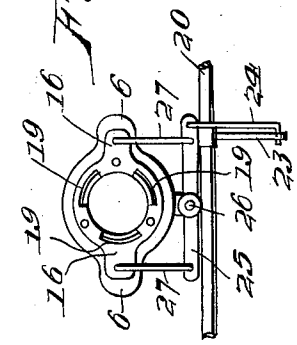

Fig. 3.

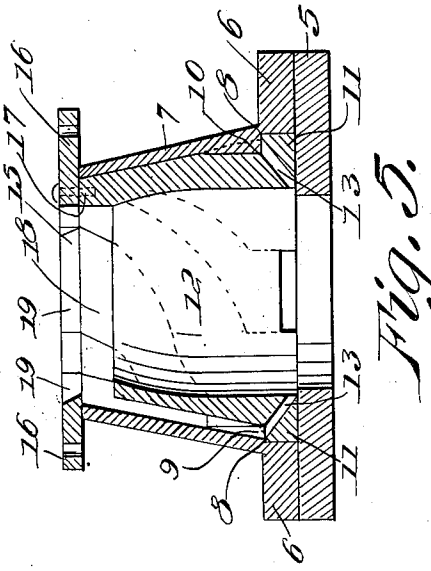

Fig. 5.

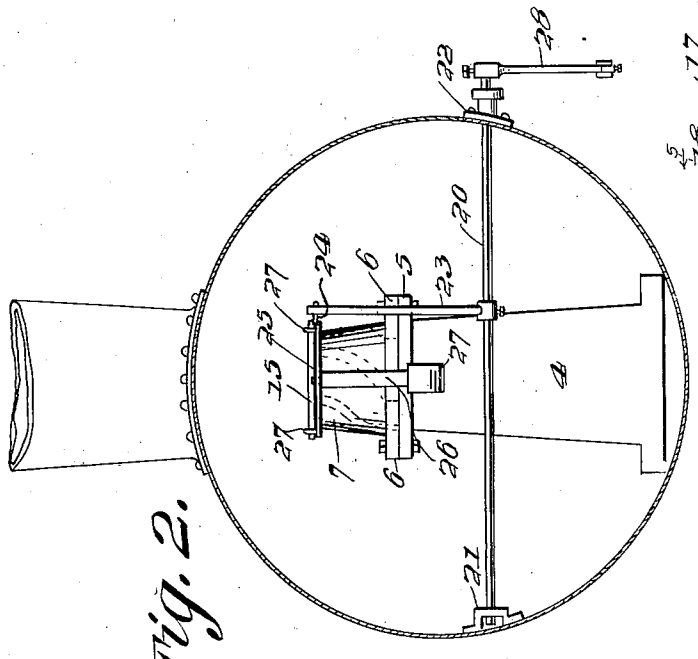

Fig. 2.

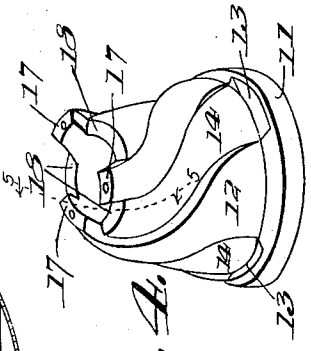

Fig. 4.

Witnesses

R. F. Langmade

J. M. Tibson

Inventor

John Carlson

By J. B. Evalle

Attorney

UNITED STATES PATENT OFFICE.

JOHN CARLSON, OF SEARSPORT, MAINE, ASSIGNOR OF ONE-THIRD TO RALPH W. CAMPBELL, OF MILLINOCKET, MAINE.

LOCOMOTIVE-EXHAUST TIP.

1,082,928. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed March 24, 1911. Serial No. 616,689.

To all whom it may concern:

Be it known that I, JOHN CARLSON, a citizen of the United States, residing at Searsport, in the county of Waldo and State of Maine, have invented new and useful Improvements in Locomotive-Exhaust Tips, of which the following is a specification.

This invention pertains to certain new and useful improvements in locomotive exhaust tips, and the object of the invention is to provide a device of the character described which will lessen the noise made by the exhaust.

A further object of the invention is to generally improve, simplify and increase the practicability of the device, to provide a maximum of efficiency, and to make the operation positive in its action, and capable of ease in actuation.

Further and other objects will later appear.

In the drawings: Figure 1 is a side elevation of a portion of a locomotive to which the present invention is applied, the locomotive being partly broken away to show that part of the invention located on the locomotive interior; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a top plan view of the tip proper; Fig. 4 is a detail perspective view of the valve member; Fig. 5 is a section taken through the tip, and Fig. 6 is a detail perspective view of the valve casing, partly broken away.

The smoke-box is designated 1, and the cylinder 2, the latter having the usual valve chest 3, the exhaust of which communicates with a hollow vertical conduit 4. Plate 5, is attached to the upper end of conduit 4 and has bolted thereto, the lugs 6, at the base of a valve casing 7. As shown in Figs. 5 and 6, the valve casing 7, is formed adjacent its bottom with an annular shoulder 8, and passages 9, which are separated by projections 10, the latter and shoulder 8 engaging with the annular flange 11, which projects out from the base of cone-valve 12. Valve 12, is hollow and has its base formed with a series of inclined inlet ports 13, which correspond in number to projections 10, since, as shown in Fig. 5, when the ports 13, are opposite said projections, the latter will close the ports and prevent passage of steam therethrough. The valve 12, is also formed with a series of spiral-like passages 14, which extend from the ports 13, through the top end of the valve, it being understood that when the ports 13, and the passages 14, register with the passages 9, a part of the steam passing through conduit 4 will flow through ports 13 into and through the registering passages and will escape through outlet openings 18, at the top of the valve into the interior of said valve. The steam thus entering said valve escapes upwardly therethrough together with the steam which does not pass through the passages, but escapes directly through the interior of the valve. Further it will be seen that the steam will egress from openings 18, with a spiral motion, due to the spiral-like shapes of the passages 14, and on encountering the stream of steam which passes directly up through the interior of valve 12, mingles with the stream and breaks it up so to speak, thereby obviating to a great extent the loud noise which the exhaust generally causes. A plate 15, having opposite lugs 16, is attached, by screws or the like to the upper ends 17, of valve casing 12. Plate 15 is cut away, as at 19, at points which aline with openings 18 to permit of the steam exhausting.

A shaft 20, is journaled in bearings 21 and 22, carried by the smoke box body, the shaft extending across the interior of the latter. An arm 23, is rigidly secured to the shaft and has its upper end secured to a link 24, which has connection with one end of a rocking bar 25, the latter being pivoted intermediate its ends to the top of a post 26. Post 26, is secured by an elbow 27, to the vertical conduit 4. Connecting links 27′, extend from the ends of bar 25 to the lugs 16, of plate 15. A second arm 28, depends from and is rigidly secured to shaft 20, and has its lower end connected to a rod 29, which latter is pivoted to a lever 30, the lever 30 being in turn connected by a rod 31 to the reverse lever 32. In the neutral position of lever 32, as depicted in Fig. 1, the valve ports 13 are closed by the projections 10 on the valve casing, but when said lever is moved from that position, in either direction, the shaft 20 will be rocked through the medium of the mechanism above described, and in turn, will rotate valve 12 by means of its rigid connection thereto, said valve moving to such position as will bring its ports 13 to partially or completely register with the spiral passages 14,

the steam thus passing up the passage 14, and having a whirling motion imparted thereto. Thus the capacity of the exhaust is increased, since when the passages 9 and 14, register, the amount of steam which can pass through the valve casing is greater than when these passages are out of register. In practice it has been found that by virtue of the increase of the capacity of the exhaust and the presence of the whirling body of steam which surrounds and acts on the main body passing through the valve interior, the noise of the exhaust is softened to an appreciable extent.

From the above it will be noted that the exhaust steam egressing from the device passes up the smoke stack, thereby creating a partial vacuum in the smoke box, which in turn obviously causes draft in the fire box. The greater the volume of steam that passes through the exhaust tip, the stronger the draft on the fire will be, resulting in a greater consumption of fuel.

Obviously by use of the present invention the draft on the fire can be regulated, thereby resulting in a great saving of fuel which is an important factor in the operation of locomotives.

By imparting a whirling motion to the steam the latter is caused to more completely fill the stack as it passes through the same, and thereby causes the formation of a more perfect vacuum than otherwise.

What I claim is:

In a device of the type set forth, a valve casing formed on its interior with passages and with projections between the passages, a hollow cone-shaped valve arranged in the casing and having spiral passages on its exterior for registry with said casing passages, said valve having ports at its base which communicate with said spiral passages thereof, and means for operating said valve to bring said ports into and out of alinement with said projections.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN CARLSON.

Witnesses:
GUSTAV W. LARSSON,
JAMES C. LOMBARD.