

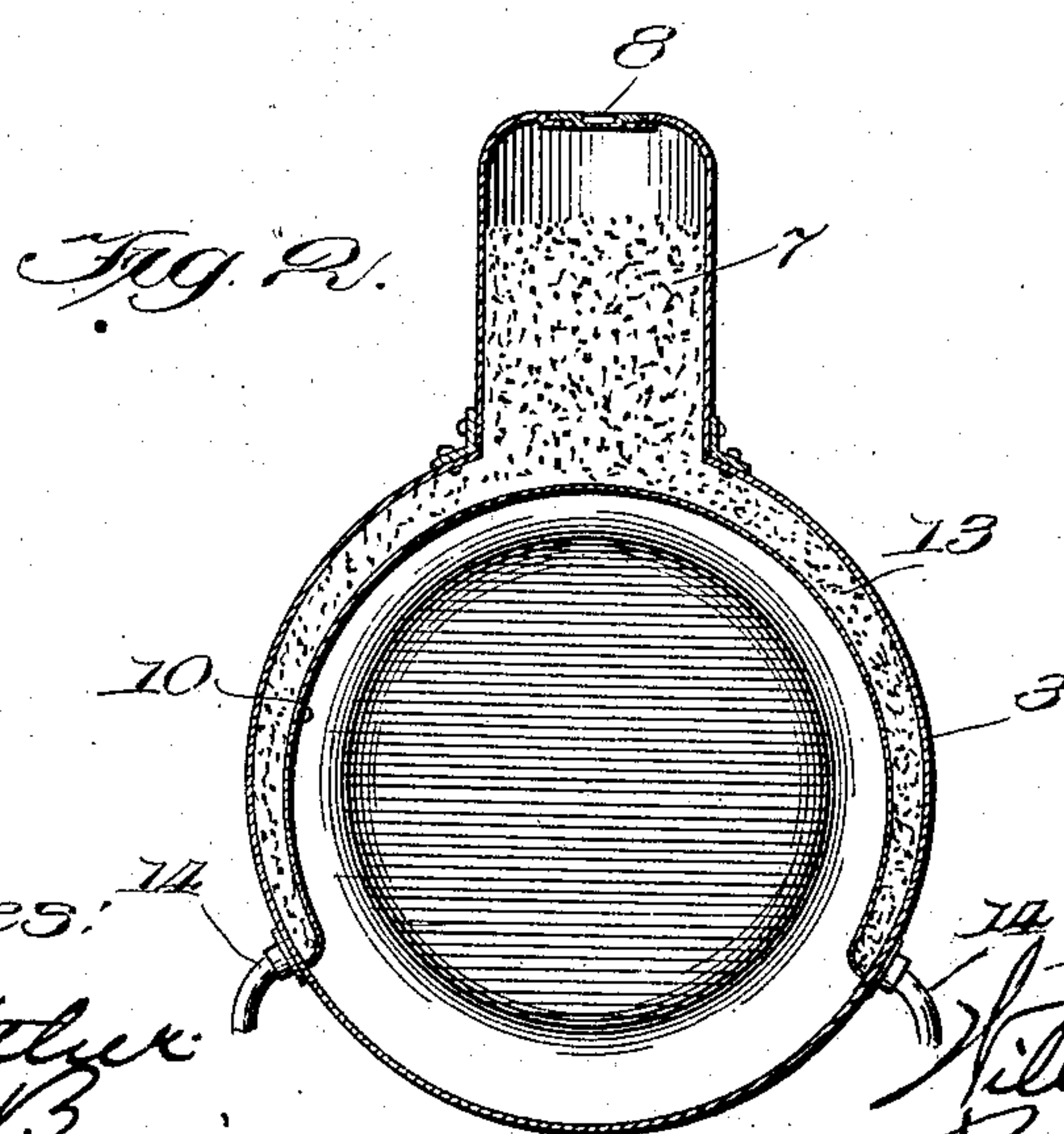
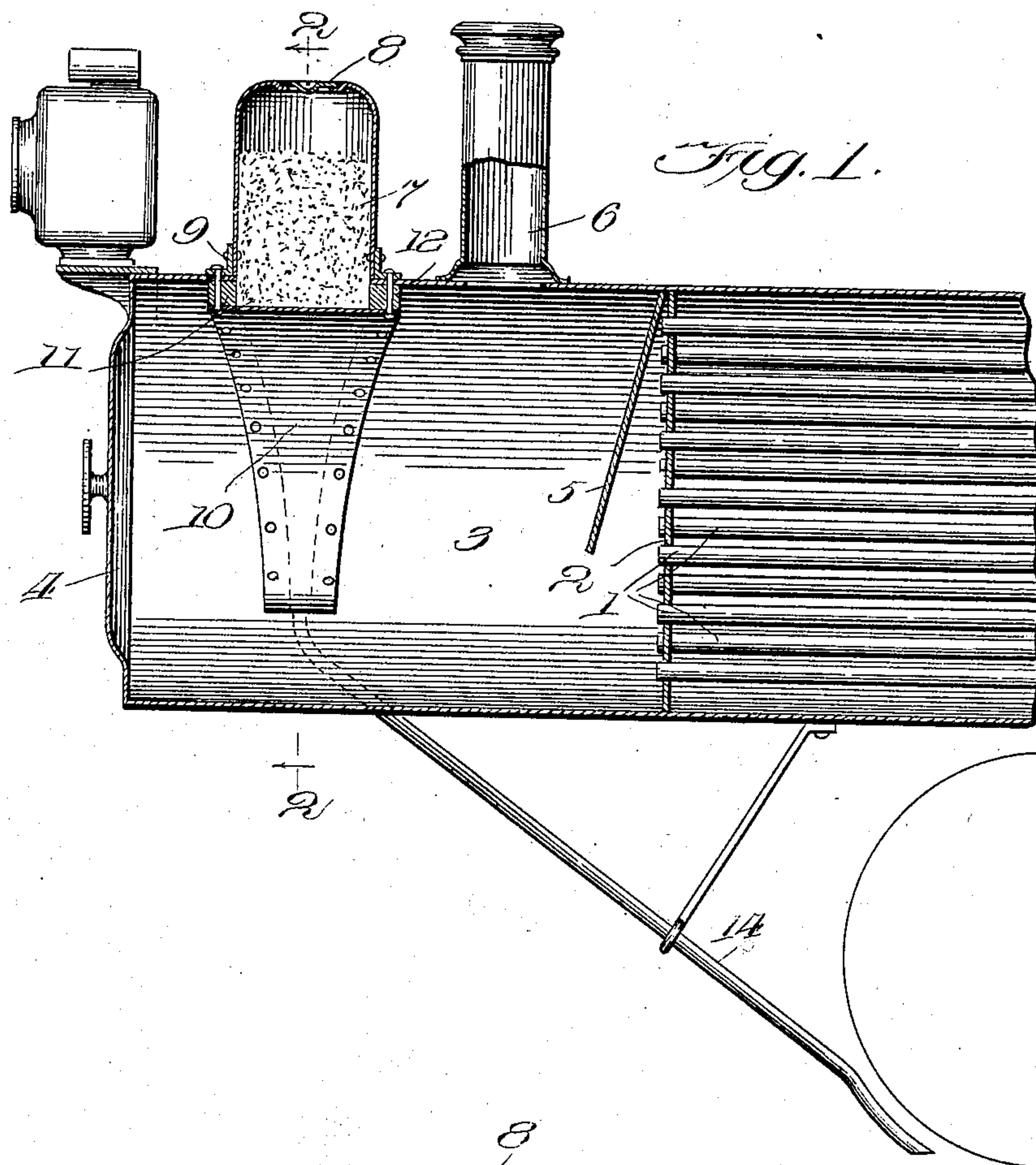
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PATENTED MAR. 27, 1906.

W. H. CLOWRY.

LOCOMOTIVE SAND BOX.

APPLICATION FILED JUNE 10, 1905.



Witnesses: 74

H. S. Gaither.
Walker Banning.

14 Inventor:

William H. Chowny
of Remond's Printing
at 75

UNITED STATES PATENT OFFICE.

WILLIAM H. CLOWRY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF
TO JOHN HESS, OF CHICAGO, ILLINOIS.

LOCOMOTIVE SAND-BOX.

No. 816,073.

Specification of Letters Patent.

Patented March 27, 1906.

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To all whom it may concern:

Be it known that I, WILLIAM H. CLOWRY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locomotive Sand-Boxes, of which the following is a specification.

The present invention is intended to overcome the difficulty often experienced by locomotive-engineers of keeping the sand in the sand-box in a dry condition, so that it may be readily discharged onto the rails at the proper time.

Sand-boxes are ordinarily positioned immediately above the steam-space in a locomotive, and the temperature at such point is less than at the forward end of the boiler, where the boiler-walls will be highly heated by the escaping products of combustion. Furthermore, the boiler-walls will collect more or less moisture immediately above the steam-space by the condensation of atmospheric moisture when cold water is introduced into the boiler, or, in other words, the boiler will sweat. This necessitates the use of sand which has been previously subjected to a drying process before its introduction into the sand-box.

The object of the present invention is to so construct and locate the sand-box that the sand will be kept dry and granular at all times, and this object is accomplished by positioning the sand-box at the forward end of the locomotive beyond the steam-space and at a point where the heated products of combustion escaping through the smoke-stack will keep the sand thoroughly dry and in suitable condition to be discharged through the pipes. By locating the sand-box at the forward end of the boiler it will not be necessary to subject the sand to a preliminary drying before its introduction into the sand-box, since the sand will become thoroughly dried and granular by the time steam is generated in the boiler and the locomotive is started.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a sectional view of the forward end of a locomotive, showing the sand-box of present invention; and Fig. 2, a cross-sectional view of the same looking forward.

The sand-box is applied to a locomotive having flues 1 passing through a flue-plate 2, which forms a cross-wall in the boiler-shell 3, which shell is closed at its forward end by a head 4 of the usual construction. Immediately in front of the flues is a diagonally-disposed baffle-plate 5, in front of which is a smoke-stack 6, through which the smoke and heated products of combustion escape. A sand-box 7 is located forward of the smoke-stack on top of the boiler-shell and, as shown, is of dome-shaped construction and provided with a removable cap or cover 8. The sand-box is open at its lower end and is secured to the boiler-shell by means of an angle-plate 9, which is bolted to the shell and to the sand-box. Immediately beneath the sand-box is a rounded plate 10, which follows the general curvature of the boiler-shell and is separated therefrom by means of plates 11, which converge toward one another at their lower ends, and the curved plate and side plates are secured together and to the boiler by means of bolts or rivets 12, forming a drying-chamber 13, which extends around the top of the front end of the boiler on the inside of the shell and is tapered toward its lower ends on each side for the discharge of sand. The sand is discharged through pipes 14, which pass through the boiler-shell and are connected thereto and lead to a suitable point of discharge for the sand, preferably in front of the driving-wheels. The sand is poured into the sand-box from the top and fills the annular space in the drying-chamber, as shown in Fig. 2, and the tapered formation of the chamber adapts it to discharge the sand through the pipes 14 without difficulty. The heated products of combustion passing from the flues are deflected by the baffle-plate and heat the forward end of the boiler-shell as they pass out of the smoke-stack, keeping the air hot and dry at all times, and the hot dry air acting on the curved or arched walls of the drying-chamber keep the sand in a granular state at all times and prevent any clogging of the sand.

The sand-box of the present invention is located at the only point where it is capable of being thoroughly heated with dry heat, since the remaining portions of the boiler are devoted to the steam-space, and the temperature at such points will be less than at the

forward end of the boiler. At the same time the sand-box is located at a point where it is entirely out of the road of the operating mechanism of the engine, and the heating-chamber inside of the boiler-shell will not obstruct or impair the usefulness of the boiler, since ordinarily the space forward of the flues is practically empty and the location of the interior heating-chamber at this point will not interfere in any way with the existing arrangements in locomotive-boilers.

The provision of an interior heating-chamber of the arched construction herein shown enables a smaller exterior sand-box to be employed, since a large amount of sand will be contained within the drying-chamber, thereby enabling the exterior sand-box to be of lesser capacity than that of the sand-boxes ordinarily employed. The arched formation of the heating-chamber provides a large amount of superficial heating area, so that the dry heat of the escaping products of combustion will act quickly and effectively on the sand, keeping it dry at all times and ready for discharge.

Although the drying-receptacle is described as a tapered inner chamber formed from plates of metal, it is obvious that its shape and construction might be varied without departing from the spirit of the invention, which consists, essentially, in locating the sand-box at the point indicated.

What I regard as new, and desire to secure by Letters Patent, is—

1. A locomotive sand-box positioned forward of the steam-space and consisting of an outer receptacle opening into an inner chamber having walls adapted to be heated by the escaping products of combustion, substantially as described.

2. A locomotive sand-box positioned forward of the smoke-stack and consisting of a receptacle exterior of the shell of the boiler and an interior chamber having arching walls adapted to be heated by the escaping products of combustion, substantially as described.

3. A locomotive sand-box positioned forward of the smoke-stack and consisting of a receptacle exterior of the shell of the boiler, an interior chamber having arching walls adapted to be heated by the escaping products of combustion, and pipes on opposite sides of the boiler entered through the boiler-shell into the arched interior chamber near its lower ends, substantially as described.

4. A locomotive sand-box positioned forward of the smoke-stack and consisting of an outer receptacle secured to the exterior of the boiler-shell opening into an inner chamber having an arching inner wall and side walls secured to the interior of the boiler-shell and forming in combination therewith a heating-chamber, and discharge-pipes entered into the heating-chamber near its lower ends on opposite sides of the boiler-shell, substantially as described.

5. A locomotive sand-box consisting of an outer receptacle secured to the boiler-shell and communicating with a space formed by an arching inner wall and side walls forming a chamber tapering toward its ends and adapted to be heated by the heat of the locomotive, and discharge-pipes entered into the tapered ends of the heating-chamber, substantially as described.

WILLIAM H. CLOWRY.

Witnesses:

WALKER BANNING,
SAMUEL W. BANNING.