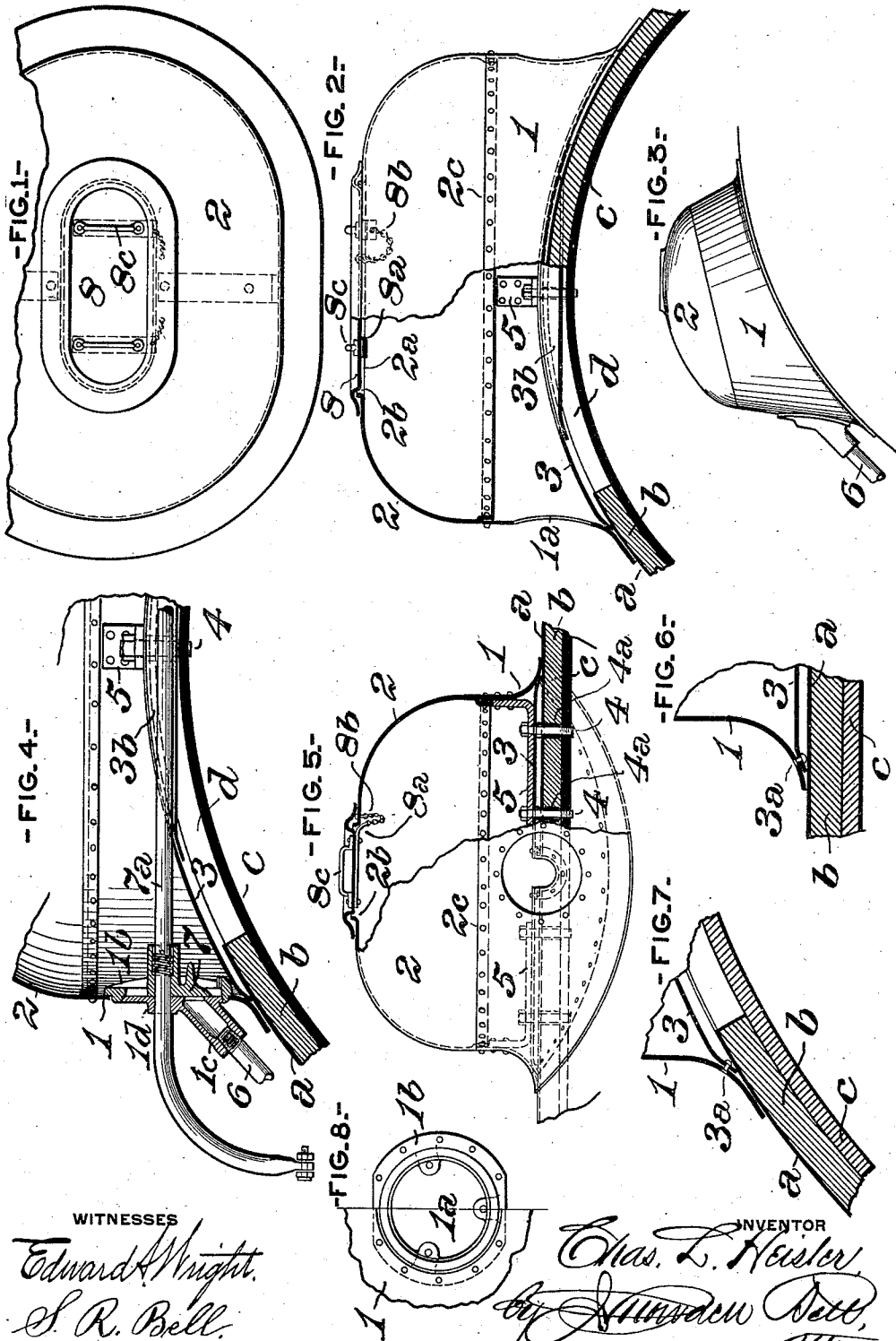


C. L. HEISLER.
LOCOMOTIVE SAND BOX.
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1,066,274.

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WITNESSES

Edward Wright.
S. R. Bell.

INVENTOR

Chas. L. Heisler,
by *Harmon Bell*,
att.

UNITED STATES PATENT OFFICE.

CHARLES L. HEISLER, OF SCHENECTADY, NEW YORK.

LOCOMOTIVE SAND-BOX.

1,066,274.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES L. HEISLER, of Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Locomotive Sand-Boxes, of which improvement the following is a specification.

My invention relates to sheet metal sand boxes for locomotives, and its objects are to effect a reduction in weight, cost of construction, and labor heretofore required in fitting the sand box to the locomotive boiler; to afford a maximum sand capacity for a minimum weight of box; and to provide a light cover which shall be effectively prevented from being blown off the inlet opening and be prevented from dropping off when removed therefrom.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawing: Figure 1 is a plan or top view of a locomotive sand box embodying my invention; Fig. 2, a front view, partly in elevation, and partly in section; Fig. 3, a similar view showing the sand box as located on one side of the vertical central plane of the locomotive boiler; Fig. 4, a partial vertical transverse section on an enlarged scale; Fig. 5, a view, partly in side elevation and partly in vertical longitudinal central section; Figs. 6 and 7, enlarged sectional views, showing the connection of the sand box bottom to the lower flange of the body; and, Fig. 8, an enlarged view of a sand valve opening fitted with a reinforcing ring.

In the practice of my invention, I provide a sheet metal locomotive sand box, comprising a body member or skirt, 1, which is preferably, as shown, of elliptical horizontal section, with its longer axis disposed transversely to the locomotive boiler upon which it is to be applied, but may, if preferred, be of cylindrical section, and which is outwardly curved or flared around its lower end, and also curved segmentally at its bottom, in an axial plane, so that the bottom of its outwardly flared portion shall be adapted to fit the convex surface of the sheet metal jacket, *a*, of the boiler; an inwardly dishd top member, 2, having a central inlet opening, 2^a, which is surrounded by an upwardly projecting rim or flange, 2^b, said top member being secured to the body member by rivets, 2^c, and a bottom plate

member, 3, which is curved substantially concentrically with the segmental curvature of the bottom of the body member, and is secured thereto by rivets, 3^a, the bottom plate member extending outward beyond the vertical portion of the body member, but having its periphery inside of that of the lower outwardly flared portion thereof. The outward curvature of the body member is such as to present a graceful contour when the sand box is located in position upon the boiler. The jacket, *a*, is, as in ordinary practice, fitted around the lagging, *b*, which incloses the shell, *c*, of the boiler, and an opening, *d*, is formed in the jacket and shell, below the bottom plate, 3, in order to allow the heat from the boiler to be applied directly to the bottom plate for the purpose of drying the sand in the box. The portions of the jacket and lagging which extend inside of the body form a flashing, for protection from weather. If desired, the bottom plate may be depressed sufficiently to be in contact with the boiler shell, for the purpose of increasing the capacity of the sand box, but, for manufacturing reasons, it is preferable that it should conform, as nearly as may be, to the curvature of the jacket, to obviate the necessity of extra labor in forming a special depressed bottom. The bottom plate, 3, is preferably formed by passing a flat sheet through bending rolls, and thereafter slightly flanging its rim to provide a tight joint with the lower portion of the body, this joint being outside of the vertical portion of the body. The outer edge of the flared lower end of the body projects beyond the periphery of the bottom plate, so as to form a readily yielding flange member which can be easily and neatly fitted to the outer surface of the boiler jacket. By the location of the joint of the bottom plate and body outside of the vertical portion of the latter, difficult flanging and fitting of the bottom plate is avoided, and the fitting, drilling, and riveting of the seam under the curved lower portion of the body is rendered much more convenient. The construction of body and bottom plate, and relation of the latter to the boiler shell hereinbefore described, enables a maximum sand capacity to be afforded within a determined height, and also provides a structure which, while very light, is strong and substantial.

The sand box is secured to the boiler shell,

c, by stud bolts, 4, tapped into the shell, and passing through the bottom plate, 3, and through angle plates, 5, extending in line with the vertical central plane of the shell, on the top of the bottom plate, and riveted to the body, 1. The bolts, 4, are fitted in spacers or thimbles, 4^a, interposed between the shell and the bottom plate, so as to provide room for the jacket and lagging, between said plate and the boiler shell, while enabling the bottom plate to be tightly secured to the boiler shell.

The delivery of sand from the sand box is effected, as from time to time desired in service, through sand discharge pipes, 6, leading from opposite sides of the body, 1, to locations of discharge adjacent to the track rails, said pipes being controlled by sand valves, 7, fixed on an operating shaft, 7^a, which extends transversely through the body. In order to enable the operating shaft and valves to be located as low as possible, a downwardly extending segmental transverse channel, 3^b, of sufficient width to admit said shaft, is formed in the central portion of the bottom plate, 3, the bottom of said channel being located as near as practicable to the shell of the boiler. Circular openings, 1^a, each of which is surrounded by a reinforcing ring, 1^b, are formed on opposite sides of the body, the reinforcing rings having downwardly projecting tubular extensions, 1^c, to which the sand discharge pipes, 6, are connected, and central bearings, 1^d, for the operating shaft. The sand valves, 7, are swung by the operating shaft, on valve faces formed on the inner sides of the reinforcing rings, and, according to the positions into which they are moved, open or close communication between the body of the sand box and the sand discharge pipes.

The inlet opening, 2^a, of the top member of the sand box, is closed by a removable sheet metal cap or cover, 8, having an annular groove fitting over the rim of the inlet opening, said cover being held in position by chain bars, 8^a, on its inner side, which are riveted to it and to handles 8^c, on its outer side. The downwardly projecting portions of the chain bars extend under the front edge of the inlet opening, to prevent the cover from being lifted by wind when the sand box is fitted on a high speed locomotive, and are connected by chains, 8^b, to the top member, preferably near the front side of the inlet opening and directly under the rim of the cover, for the purpose of preventing leakage in the event of the fastenings becoming loose.

In many locomotives of recent construction, the diameter and height of boiler are so great that sufficient head room is not afforded for a sand box of desired capacity, and in such cases the sand box may be lo-

cated on one side of the vertical central plane of the boiler, as shown in Fig. 3, one or more sand boxes being applied as conditions may appear to require.

I claim as my invention and desire to secure by Letters Patent:

1. In a metallic locomotive sand box, the combination of a body member which is provided with a sand discharge opening, and is outwardly curved around its bottom and also segmentally curved at bottom in an axial plane to fit on a convex supporting surface, a top member secured thereto and having an inlet opening, and a segmentally curved bottom plate member extending outwardly beyond the vertical portion of the body member and secured to the lower and outwardly curved portion thereof.

2. In a metallic locomotive sand box, the combination of a body member which is outwardly curved around its bottom and also segmentally curved at bottom in an axial plane to fit on a convex supporting surface, said body member having a lateral opening, a reinforcing ring secured to the body member around said opening and having a tubular extension for the connection of a sand discharge pipe, a sand valve working on a valve face on the reinforcing ring and controlling the opening of the tubular extension thereof, an operating shaft actuating the sand valve, a top member secured to the body member and having an inlet opening, and a segmentally curved bottom plate member secured to the body member.

3. In a metallic locomotive sand box, the combination of a body member which is outwardly curved around its bottom and also segmentally curved at bottom in an axial plane to fit on a convex supporting surface, said body member having opposite lateral openings, reinforcing rings secured to the body member around said openings and having tubular extensions for the connection of sand discharge pipes, sand valves working on valve faces on the reinforcing rings and controlling the openings of the tubular extensions thereof, an operating shaft passing through said rings and actuating the sand valves, a top member secured to the body member and having an inlet opening, and a segmentally curved bottom plate member secured to the body member and having a downwardly extending transverse channel for the reception of the operating shaft.

4. In a metallic locomotive sand box, the combination of a body member which is provided with a sand discharge opening, and is outwardly curved around its bottom and also segmentally curved at bottom in an axial plane to fit on a convex supporting surface, a top member secured thereto and having an inlet opening, a segmentally curved bottom plate member, angle plates

riveted to the body member, and bolts connecting said angle plates to the bottom plate member.

5 In a metallic locomotive sand box, the combination of a body member which is provided with a sand discharge opening, and is outwardly curved around its bottom and also segmentally curved at bottom in an axial plane to fit on a convex supporting
10 surface, a top member secured thereto and having an inlet opening, a segmentally curved bottom plate member, angle plates riveted to the bottom plate member, bolts passing through said angle plates and
15 through the bottom plate member and threaded to engage the shell of a locomotive boiler, and spacers fitted around said bolts, between the bottom plate member and their location of engagement with the boiler
20 shell.

6. In a metallic locomotive sand box, the combination with a casing comprising a top member having an inlet opening surrounded by an upwardly projecting rim or
25 flange, a body member, and a bottom member, of a removable cover closing the inlet opening and grooved to fit over its rim, and having a projecting member on its inner side fitting under the rim on the forward
30 side of the inlet opening, to prevent lifting of the cover by air currents on a rapidly moving locomotive.

7. In a metallic locomotive sand box, the combination, with a casing comprising a top
35 member having an inlet opening surrounded by an upwardly projecting rim or flange, a body member, and a bottom member, of a

removable cover closing the inlet opening and grooved to fit over its rim, a bar abutting the inner side of the cover and fitting
40 under the rim on the forward side of the inlet opening, a handle on the outer side of the cover, and rivets extending through, and securing together, the handle, cover, and
45 bar.

8. In a metallic locomotive sand box, the combination with a casing comprising a top member having an inlet opening surrounded by an upwardly projecting flange or rim, a
50 body member, and a bottom member, of a removable cover closing the inlet opening and grooved to fit over its rim, a bar fixed to the inner side of the cover and fitting under the rim on the forward side of the
55 inlet opening, a handle fixed to the outer side of the cover, and a safety chain coupling the cover to the top member.

9. In a metallic locomotive sand box, the combination of a bottom member which is provided with a sand discharge opening, and is outwardly curved around its bottom,
60 and also segmentally curved at bottom in an axial plane to fit on a convex supporting surface, a top member secured thereto, and having an inlet opening, and a segmentally curved bottom plate member extending outwardly beyond the vertical portion of the
65 body member and of smaller diameter than the lower and outwardly curved portion thereof, to which portion it is secured.

CHARLES L. HEISLER.

Witnesses:

J. SNOWDEN BELL,
A. S. FOWLER.