

(No Model.)

W. T. REASER.
BALANCED SLIDE VALVE.

No. 556,373.

Patented Mar. 17, 1896.

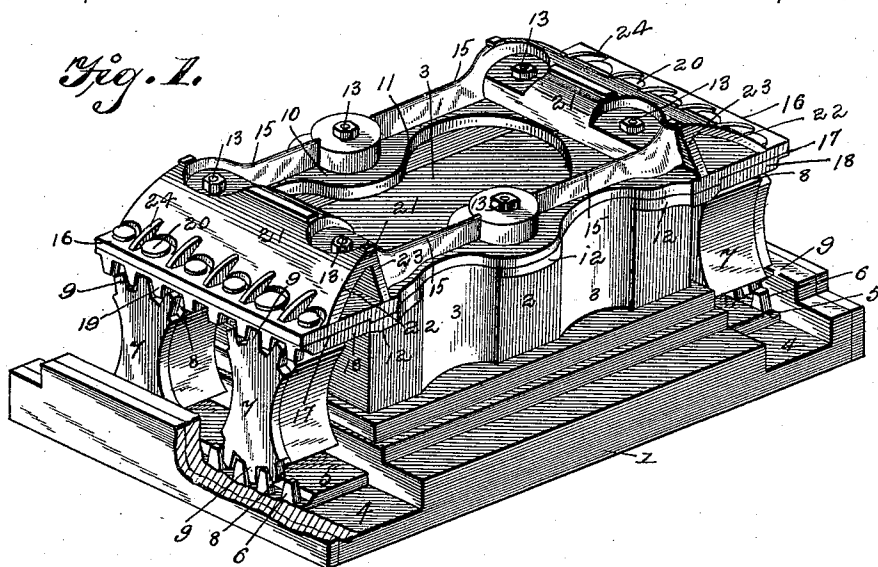


Fig. 2.

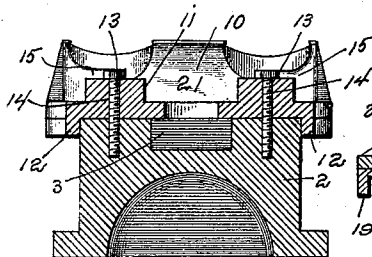


Fig. 4.

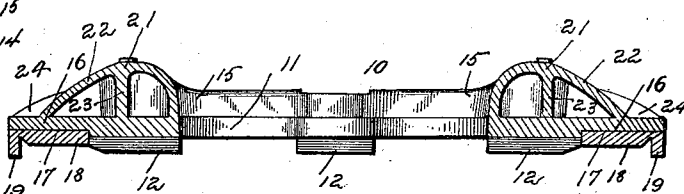
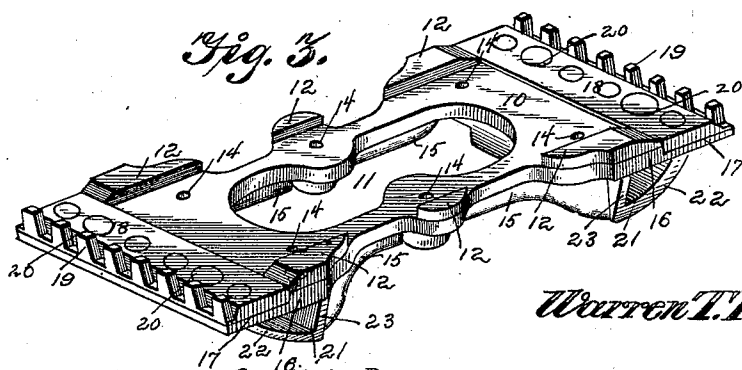


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

WARREN T. REASER, OF LINCOLN, NEBRASKA.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 556,373, dated March 17, 1896.

Application filed November 30, 1894. Serial No. 530,452. (No model.)

To all whom it may concern:

Be it known that I, WARREN T. REASER, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented a new and useful Carrier for Balanced Slide-Valves, of which the following is a specification.

This invention relates to carriers for balanced slide-valves; and it has for its object to provide a new and useful device of this character adapted for use in connection with balanced slide-valves having rolling supports.

To this end the main and primary object of the present invention is to effect certain improvements upon the construction set forth in my former patent, No. 404,363, whereby means shall be provided for sustaining the weight of the slide-valve and withstanding the pressure exerted thereagainst, so that the valve-seat will be entirely relieved from any undue wear, and to provide a carrier for the valve, which, when the steam is cut off from the steam-chest, will provide means for supporting the valve out of contact with its seat, whereby a cutting or scratching of the valve-seat is entirely obviated, but which is quite common in locomotive-engines when the steam is cut off from the cylinders and the valves are dragged loosely back and forth over their seats.

The invention also contemplates a construction of valve-carrier, in connection with balanced valves having rolling supports, that provides as light a construction of valve as possible, which is very desirable, and that is itself sufficiently light and strong to provide for carrying the valve back and forth on its supports without any lateral or side strain whatever on the fastenings between the carrier and the slide-valve.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a balanced slide-valve and its valve-seat, the valve being equipped with the herein-described improvements. Fig. 2 is a transverse sectional view of the slide-valve and the carrier-cap thereon. Fig. 3 is a detail in

perspective of the under side of the carrier-cap removed from the slide-valve. Fig. 4 is a central longitudinal sectional view thereof. 55

Referring to the accompanying drawings, 1 designates an ordinary valve-seat of a locomotive, marine, or other engine, and arranged to slide on the valve-seat over the ports therein is an ordinary slide-valve 2, but in the present invention the manner of supporting and carrying said slide-valve provides for materially reducing the weight thereof, and to secure this result the valve is lightened by providing the same at the sides and top with recessed portions 3. The valve-seat 1, on which the slide-valve works, is provided at and beyond the ends of the ports therein with the grooves or recesses 4, in which are seated rack-plates 5, provided at one edge with the teeth 6, and arranged to roll on said rack-plates within the grooves 4 are the lower segmental bearing ends of the rolling valve-supports 7. 60

The rolling valve-supports 7 are of substantially the same construction as shown in my former patent herein referred to, and are provided with opposite segmental bearing-ends 8, and at one side of each of said segmental bearing-ends with the toothed segments 9, the lower of which toothed segments mesh with the teeth of the rack-plates 5 to hold the rolling supports in a fixed rolling position, and arranged for support on the upper segmental bearing-ends of said rolling supports is the carrier-cap 10 that is removably fitted on top of the slide-valve 2. The carrier-cap 10 consists of a substantially rectangular metal plate or casting, and is provided with a central open or slotted portion 11, located directly over the top recess in the slide-valve, to provide for making the carrier-cap as light as possible without affecting the strength or durability thereof. 65

The carrier-cap 10 is provided at its opposite side edges and under side with a series of depending lug projections 12 that embrace the upper opposite side edges of the slide-valve 2, and the depending lug projections of the opposite parallel series are spaced from each other at distances apart, so as to engage against the sides of the slide-valve at points alternating with the side recesses 3 thereof. When the carrier-cap is fitted on the slide- 70 75 80 85 90 95 100

valve the under side thereof rests flat on said valve, so as to provide for the depending lug projections 12 snugly embracing the upper side edges of the slide-valve, and the said carrier-cap is securely and removably secured on the slide-valve by means of a series of stud-bolts 13, fitted in the slide-valve at opposite sides of the top recess therein, and securely bolted in the bolt-openings 14, formed in the carrier-cap at opposite sides of the central open or slotted portion thereof.

At opposite sides of the central open or slotted portion of the carrier-cap the latter is provided with longitudinally-disposed integral strengthening-ribs 15, that give the cap the necessary strength at both sides of the central open or slotted portion thereof, and at both ends the said carrier-cap is provided with the flange extensions 16, that project beyond the ends of the slide-valve and are provided in their under sides with the recesses 17, in which are fitted the rack-plates 18 that bear on the upper segmental bearing ends of the rolling supports 7, and the teeth 19 of which plates mesh with the upper toothed segments of said rolling supports. The said rack-plates 18 are securely held in position on the flange-extension 16 by means of a transverse row of rivets 20 passed through said flange extensions and said rack-plates.

The flange extensions 16 of the carrier-cap bear the entire weight of the slide-valve, including the strain incident to the pressure of steam on said slide-valve when working, and in order to provide for strengthening and bracing these flange extensions the carrier-cap is provided at both ends thereof on top of the flange extensions with integral transverse hollow braces 21 that provide both the necessary lightness and strength. The said integral transverse hollow braces 21 are provided with upwardly-inclined transverse brace-walls 22 and the upright brace-walls 23, which merge into the highest points of the transverse walls 22 and meet the flange extensions 16 at a point directly above the end-lug projections 12 at the corners of the slide-valves. The lower edges of the inclined brace-walls 22 meet the upper sides of the flange extensions 16, and a transverse series of short brace-ribs 24 are formed integrally on the upper side of the flange extensions 16 and the brace-walls 22, where these two parts of the carrier-cap meet.

From the above it will be obvious that the transverse hollow braces 21 subserve a very important function in bracing the flange extensions 16 in a direction that best withstands the strain placed thereon, and at this point

it will be noted that by reason of having the lug projections 12 engage against the opposite sides of the slide-valve, as said slide-valve is carried back and forth over its seat by the usual yoke embracing the same, said lug projections, which are also located directly at one side of the bolt-openings 14, will entirely relieve the stud-bolts 13 from lateral strain and prevent the same from breaking off, as has heretofore been quite common in similar constructions employing simply a plain cap bolted on top of the slide-valve, and many other advantages will readily suggest themselves to those skilled in the art.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a carrier for balanced slide-valves, the combination with a slide-valve, the valve-seat, and rolling supports at the ends of the valve; of a carrier-cap provided at opposite sides with longitudinal strengthening-ribs, a series of bolt-openings, and depending lug projections at one side of said bolt-openings and adapted to embrace the upper opposite side edges of the slide-valve, said carrier-cap being further provided at its ends with flange extensions adapted to bear on said rolling supports, and a series of bolts passed through said bolt-openings and fitted in the valve, substantially as set forth.

2. In a carrier for balanced slide-valves, the combination with a slide-valve, the valve-seat, and rolling supports at the ends of the valve, of a carrier-cap provided at its opposite side edges with a series of depending lug projections adapted to embrace the upper opposite side edges of the valve, said carrier-cap being further provided at its ends with flange extensions adapted to bear on said supports, and with integral transverse hollow braces consisting essentially of upwardly-inclined transverse brace-walls and upright brace-walls rising from said flange extensions and meeting the inclined brace-walls at their highest point, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WARREN T. REASER.

Witnesses:

JOHN H. SIGGERS,
G. C. SHOEMAKER.