No. 636,394. Patented Nov. 7, 1899.

T. R. BAILEY.

SLIDE VALVE.

(Application filed Apr. 28, 1899.)

(No Model.)

Fig. 1.

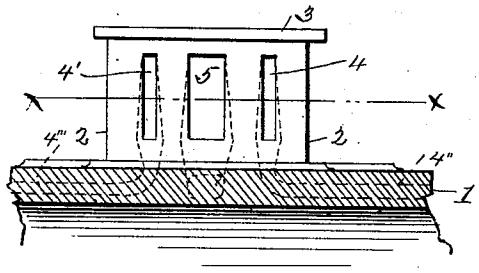


Fig. 2.

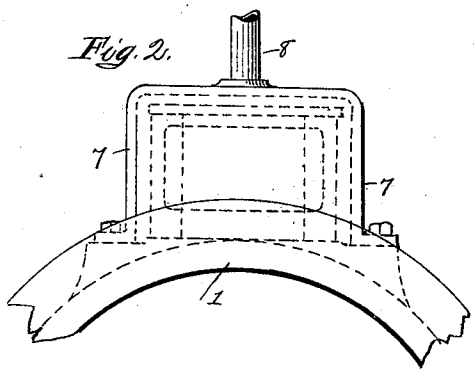


Fig. 3.

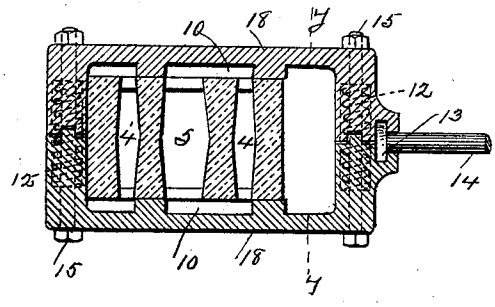


Fig. 4.

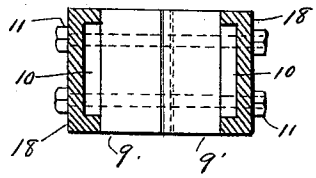


Fig. 5.

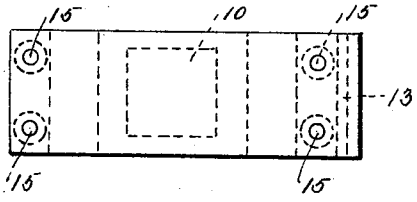
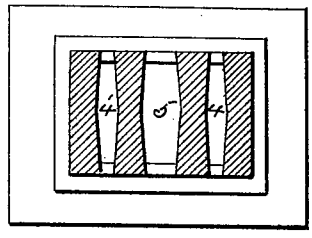


Fig. 6.



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UNITED STATES PATENT OFFICE.

THOMAS R. BAILEY, OF PITTSBURG, PENNSYLVANIA.

SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 636,394, dated November 7, 1899.

Application filed April 28, 1899. Serial No. 714,910. (No model.)

To all whom it may concern:

Be it known that I, THOMAS R. BAILEY, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Steam Slide-Valves; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved steam slide-valve adapted for use upon locomotives or stationary engines; and it consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of my improved port-chamber, having the double yoke or slide-valve removed therefrom, showing the location of the several ports. Fig. 2 is an end elevation of the same, having the covering of the "steam-chest" in position. Fig. 3 is a sectional plan view taken upon the line X X of Fig. 1, showing the slide-valve and its operative mechanism. Fig. 4 is a cross-section of the same, Fig. 3, taken upon the line Y Y. Fig. 5 is a side elevation of the slide-valve or yoke. Fig. 6 is a sectional plan view of the stationary port-chamber of my improved valve.

To construct a non-frictional slide-valve in accordance with my invention, I form either integral with the cylinder 1 or of a separate casting a stationary port-chamber 2, having the three ports 4, 4′, and 5, the two, 4 4′, leading to opposite ends of the said cylinder and the other or middle port, 5, to the exhaust. This structure 2 is provided with a flange or guide 3 for the purpose of confining and properly guiding a sliding yoke or valve 18, which is moved back and forward by a valve-rod 14, by eccentrics, or in any manner well known in the art. This yoke or valve consists of two separate pieces, the one analogous with the other and held or confined about the said stationary portion 2 by means of a suitable number of bolts 15, passed transversely through the ends of the said sliding valve or yoke. These two sections of the sliding valve 18 are connected the one with the other by a tongue and groove 17 and are in close contact with the stationary portion 2. Each of these sections of the sliding valve 18 is provided with rectangular recesses 10, capable of spanning or covering one of the steam-ports 4′ and the exhaust 5, as shown at Fig. 3 of the drawings, and by a short movement in the direction of its length closing the said steam-port 4′ and connecting the exhaust-port 5 with the steam-port 4 on the opposite end of the cylinder.

The connection between the one section of the sliding valve 18 with the other, as above mentioned, is formed by a tongue and groove and the one section held separate the one from the other by means of strong spiral springs 12, surrounding the tribolts 15 and adapted to keep the tongue-and-groove connection slightly separated in order that the sliding valve may be adjusted slightly toward or away from the stationary portion 2, and thereby reduce any unnecessary friction upon the ports. It will be noticed that by this construction and arrangement of a steam-valve as the metal used in the seat or stationary portion 2 is in the same proportion as that of the movable or valve part 18 therefore the expansion and contraction of the two ports are equal, thus reducing any friction on the ports to the minimum.

The springs 12 are of a sufficient strength to overcome the pressure of the steam against the side walls of the sliding valve and not permit the said valve to bear with any undue pressure against the stationary portion 2 of the valve. This stationary portion consists of three ports, two for steam and one for the exhaust, and each port is formed with an expanded or enlarged exhaust (which is best seen at Figs. 1, 3, and 6 of the drawings) to permit a free and uninterrupted passage of the steam either entering the cylinder or leaving the same. The tension of the springs 12 tends to separate the sliding valve 18, and the bolts 15 are used to keep the said sliding valve in close working contact, and any wear upon the ports may be taken up by the said bolts, as is obvious.

It is a recognized fact that about one-fourth to one-half of the steam-pressure of any engine is wasted or lost upon the operation of

the valves governing the cylinder. This loss of power is due to friction of the ports, and by the use of a valve constructed as described the friction is reduced to the minimum.

It is obvious that various modifications may be made in the mechanical construction of my improved slide-valve. Therefore I do not confine myself to the exact construction shown and described.

Having thus described my invention, I claim—

A slide-valve for cylinders, consisting of a stationary portion 2, a flange or guide formed integral with the upper end thereof, suitable inlet and exhaust ports arranged in said stationary portion, a valve inclosing said stationary portion consisting of a yoke formed of two sections means for attaching the said sections together, and a tension-spring for separating its sections, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

THOMAS R. BAILEY.

Witnesses:
JOHN DOWNEY,
JAMES J. CLOONAN.