

(No Model.)

W. W. WHITCOMB.
BRAKE SHOE.

No. 548,939.

Patented Oct. 29, 1895.

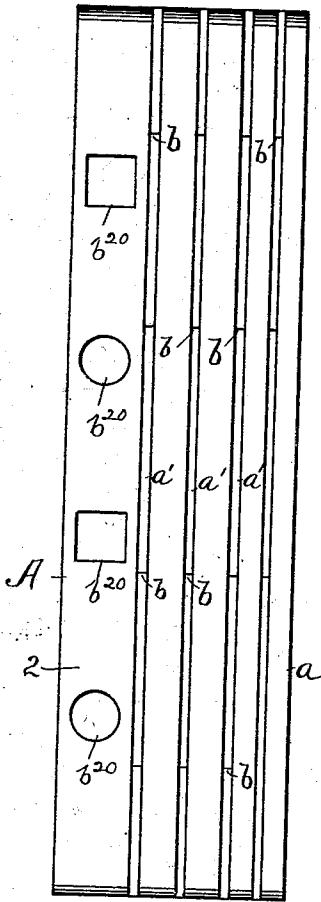


Fig. 1.

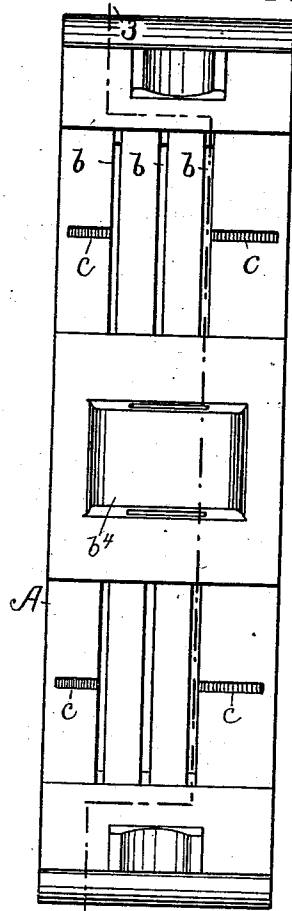


Fig. 2.

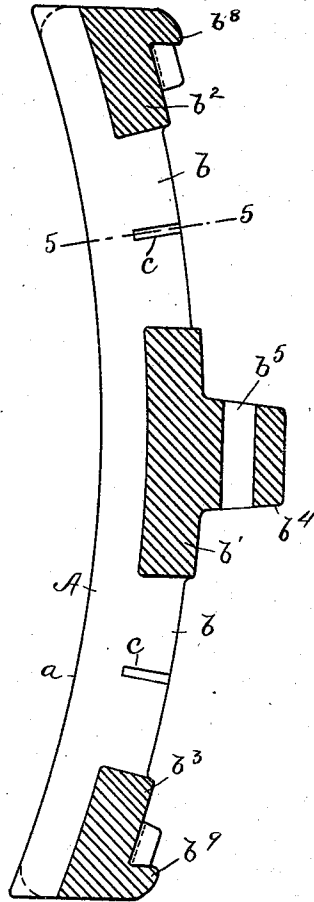


Fig. 3.

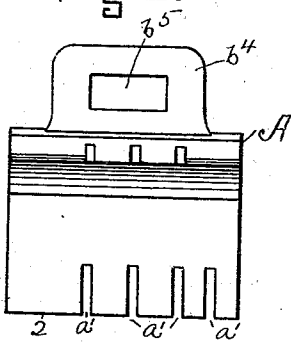


Fig. 4.

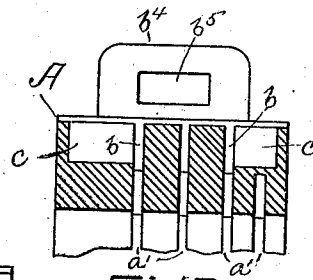


Fig. 5.

INVENTOR.

William W. Whitcomb
By Jas. F. Churchill

ATTY.

WITNESSES.
Matthew M. Shunt.
J. Murphy.

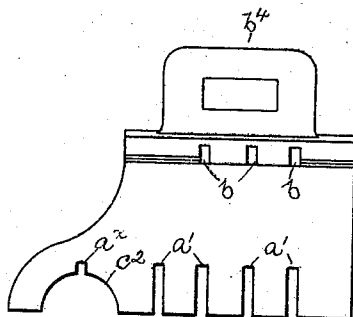


Fig. 6.

UNITED STATES PATENT OFFICE.

WILLIAM W. WHITCOMB, OF BROOKLINE, ASSIGNOR TO THE COMPOSITE
BRAKE SHOE COMPANY, OF BOSTON, MASSACHUSETTS.

BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 548,939, dated October 29, 1895.

Application filed February 1, 1895. Serial No. 536,979. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. WHITCOMB, residing in Brookline, county of Norfolk, and State of Massachusetts, have invented an Improvement in Brake-Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to brake-shoes especially adapted for use on steam and surface railways.

Prior to this invention, I am aware that brake-shoes have been made of different constructions and designs to meet the requirements of the service, and especially to avoid the serious effects upon the car-wheels with which they co-operate.

Brake-shoes have been constructed of cast-iron with a chilled face; but such a shoe is objectionable on account of the burning action of the shoe upon the tread of the car-wheel, and more especially when the latter is made of cast-iron with a chilled rim or tread. This burning action is due to the heat generated in the shoe when the latter is applied to the car-wheel.

Soft-iron or cast-iron shoes with chilled sections or unchilled faces are also productive of the heating effect, but not to such extent as the chilled cast-iron shoe; but soft-iron shoes are defective on account of the rapid wearing away of the shoe, which results, in addition to the heating, in the formation of a fine powder or grit between the shoe and the tread of the wheel, which powder or grit has a deleterious grinding and cutting action on the tread of the wheel. Furthermore, steel brake-shoes have been made, which are open to the same objection as to heating.

My present invention has for its object to provide a brake-shoe in which the injurious effect of the chilled cast-iron shoe is avoided or reduced to a minimum and in which the injurious heating and grinding or cutting effect of the softer shoes is avoided or reduced to a minimum, so that the improved brake-shoe may be made of either soft iron or steel or with cast-iron having a face chilled in whole or in part. This result is accomplished by

a novel construction of brake-shoe, as will be described.

Figure 1 is a front elevation or face view of a brake-shoe embodying this invention; Fig. 2, a rear elevation or back view of the brake-shoe shown in Fig. 1; Fig. 3, a longitudinal section of the brake-shoe on the irregular line 3 3, Fig. 2; Fig. 4, a top or plan view of the shoe shown in Fig. 1; Fig. 5, a cross-section of the shoe on the line 5 5, Fig. 3; and Fig. 6, a top or plan view of a brake-shoe embodying this invention and of the form used with a driving-wheel.

Referring to Figs. 1 to 5, inclusive, A represents a brake-shoe of the Master Car-Builders' type and such as is usually employed with wheels of railway-cars. The brake-shoe A may, and preferably will, be made of cast-iron on account of its cheapness.

In order to avoid the injurious effects of heating and also grinding or cutting of the soft-iron shoe, the shoe A is provided on its face *a*, which makes contact with the wheel, with preferably a plurality of longitudinal slits, grooves, or channels *a'*, herein shown as four in number, but which may be of any desired number, and which are made of a depth preferably substantially equal to one-half of the thickness of the said shoe. The slits or channels *a'* may be made straight or sinuous, as desired. The slits, grooves, or channels *a'* are, for the best results, made substantially narrow and extend preferably the entire length of the face *a* of the shoe and communicate with the secondary slits or channels *b*, extended, preferably, through the back of the shoe, as shown in Figs. 2 and 3, which slits or channels *b* in the shoe herein shown are located between the solid center back portion *b'* and the end back portions *b² b³*, the said center portion *b'* being provided with the transverse projection or boss *b⁴*, having the slot or opening *b⁵* for the reception of the usual key, (not shown,) but which is used to fasten the brake-shoe to the usual brake-head. (Not shown.) The end portions *b² b³* are provided, as shown, with the lugs or projections *b⁸ b⁹*, which co-operate with the ends of the brake-head to prevent longitudinal movement of the shoe on the brake-head. The center

back portion b' and the end portions $b^2 b^3$ are left unslitted, as shown, so as to leave the shoe of the required or desired strength.

The longitudinal slits or grooves a' are preferably arranged so as to leave a substantially wide portion of surface 2 of the shoe plain or unslitted, which portion may be provided with additional metallic or non-metallic sections b^{20} , secured into it, and which portion is designed to bear against and dress the unflanged portion of the rim or tread of the wheel.

By means of the longitudinal slits or grooves a' the continuity of the face a of the brake-shoe is interrupted and air-spaces are formed, which serve to dissipate the heat generated at the points of contact of the shoe with the tread of the wheel, and which spaces afford channels for the circulation of the air along the plane or surface of contact, and the currents of air circulating through the shoe at its face absorb the heat and carry it away from the shoe, thereby reducing to a minimum the injurious effects resulting from said heating. Furthermore, the currents of air circulating through the longitudinal slits or channels a' carry off or away from the surface of contact of the shoe with the wheel the fine particles or movable globules of metal produced in wearing away of the shoe and wheel, but more especially of the shoe, thereby reducing to a minimum the injurious grinding or cutting action upon the wheel of such fine particles and also tending to promote a closer contact of the shoe with the wheel.

The above-mentioned beneficial results are augmented by means of the auxiliary channels b , and the heating effect may be still further guarded against by means of transverse slits c , extending from the auxiliary channels or slits b toward the sides of the shoe on its back side, but which preferably do not extend through the shoe to its face a , as in this latter case cutting-edges transverse to the tread of the wheel would be formed.

In some instances it may be found sufficient to have the longitudinal slits a' extend from opposite sides of a central portion of the face a of the shoe—that is, instead of extending the said slits the entire length of the face of the shoe, they may start from the middle of the face and extend toward its opposite ends, leaving a solid portion at the longitudinal center of the face a intermediate of the slits; but I prefer the construction shown. Furthermore, it may be found that sufficiently-good results may be obtained with the longitudinal slits a'

without the auxiliary slits $b c$; but I prefer to construct the shoe as shown.

In Fig. 6 I have shown a driving brake-shoe constructed in accordance with this invention, it being provided with the longitudinal slits a' in its face, and the groove c^3 , which embraces the flange of the wheel, may also be provided with a longitudinal slit a^x .

In order to avoid or reduce to a minimum cutting-edges at the opposite ends of the shoe—that is, the extreme ends of the face a —the shoe may be made curved or rounding at the ends of the face a , as indicated by dotted lines in Fig. 5, the rounding portion curving toward the back of the shoe and away from the wheel.

I claim—

1. A brake-shoe having its wheel contacting face provided with a plurality of substantially parallel slits or channels a' made side by side longitudinally in the said shoe at the surface which makes contact with the car wheel.

2. A brake-shoe provided on its wheel contacting face with a plurality of substantially parallel narrow longitudinal slits or channels a' in the shoe at the surface, which makes contact with the wheel and with a plurality of auxiliary channels or slits b extended through the back of the shoe and communicating with the longitudinal channels or slits, substantially as described.

3. A brakeshoe provided with the longitudinal slits or channels a' , the auxiliary slits or channels b communicating therewith, and the transverse slits c communicating with the slits or channels b , substantially as and for the purpose specified.

4. A brake-shoe having its wheel containing face provided with a plurality of longitudinal slits or openings located substantially close together at one side of the said face to leave a substantially wide, unslitted portion 2, substantially as described.

5. A brakeshoe having its wheel contacting face provided with a plurality of longitudinal substantially narrow slits or channels and having the substantially wide, unslitted portion 2 provided with the sections b^{20} , for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM W. WHITCOMB.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.