Oct. 9, 1923. 1,470,475

C. D. PETTIS

BRAKE SHOE

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Fig. 1.

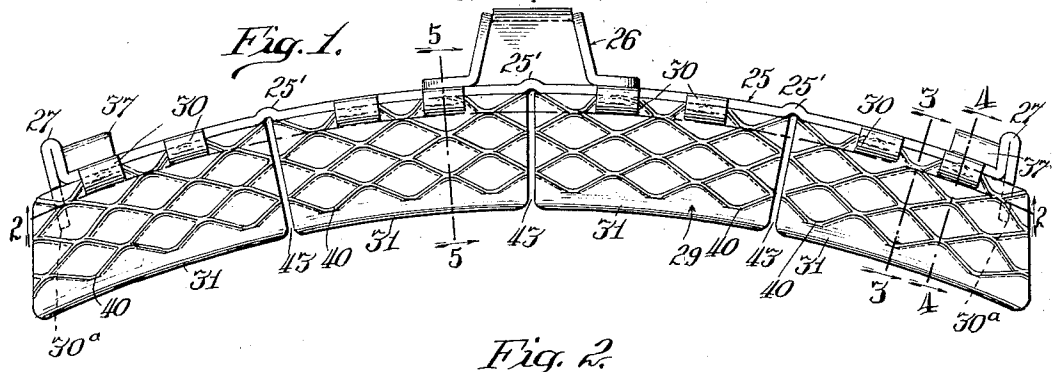


Fig. 2.

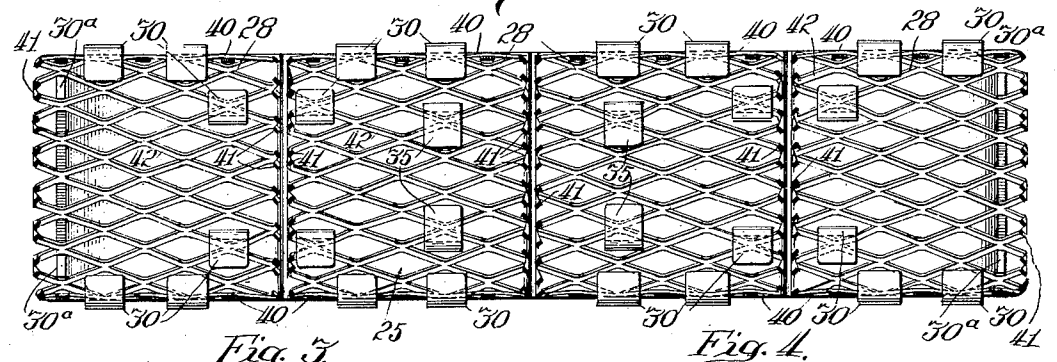


Fig. 3.

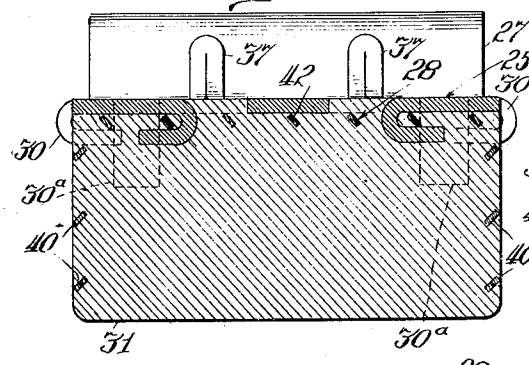


Fig. 4.

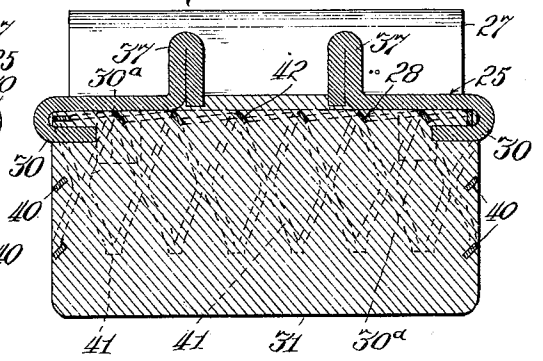
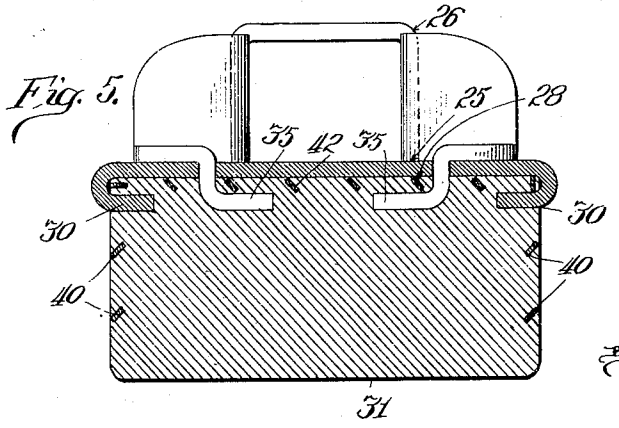


Fig. 5.



Inventor.
Clifton D. Pettis
By Fisher Towle Clapp & Sears
Attorneys.

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Fig. 6

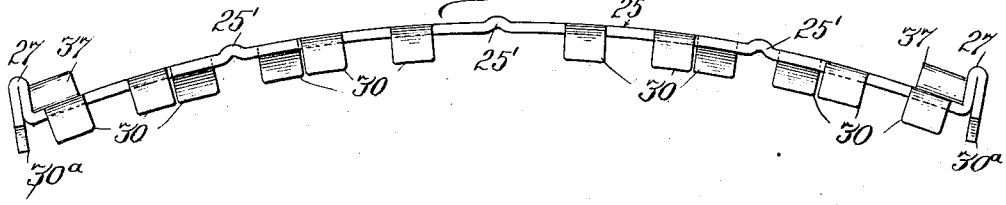


Fig. 7.

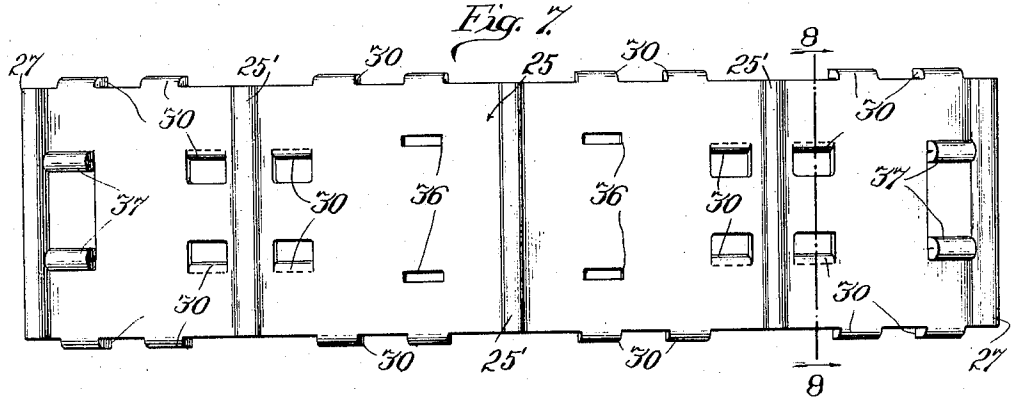


Fig. 8.

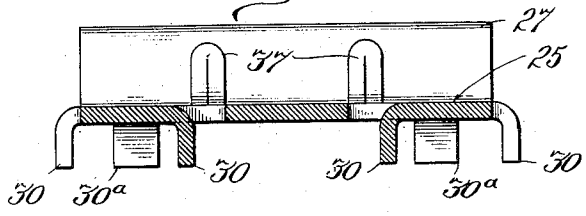
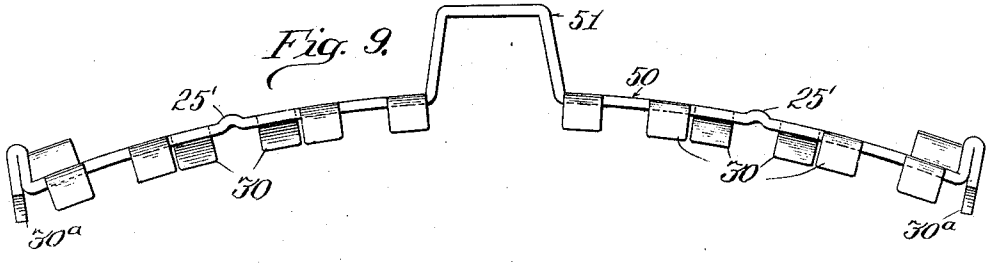


Fig. 9.



Inventor

Clifton D. Pettis

By Fisher Towle Clapp & Sears

Attorneys

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BRAKE SHOE

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Fig. 10.

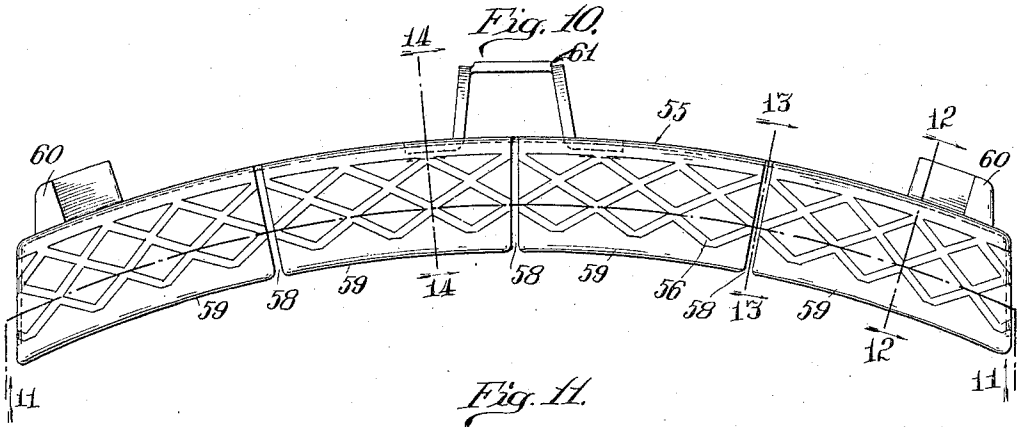


Fig. 11.

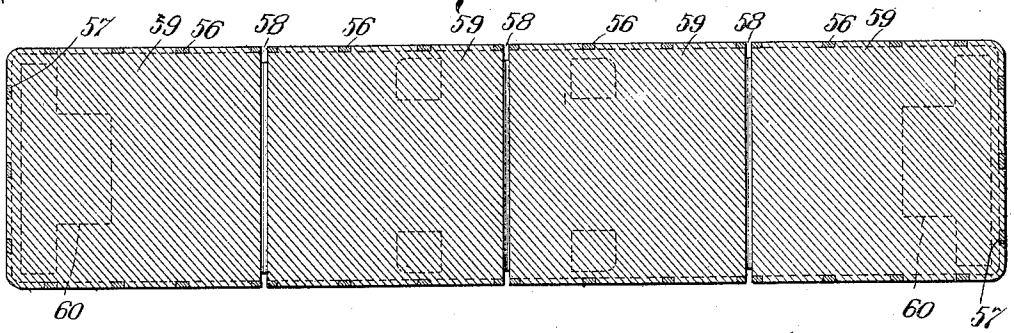


Fig. 12.

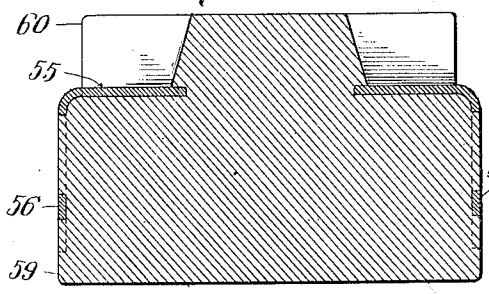


Fig. 13.

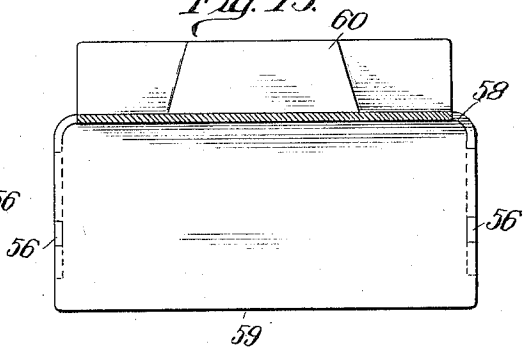
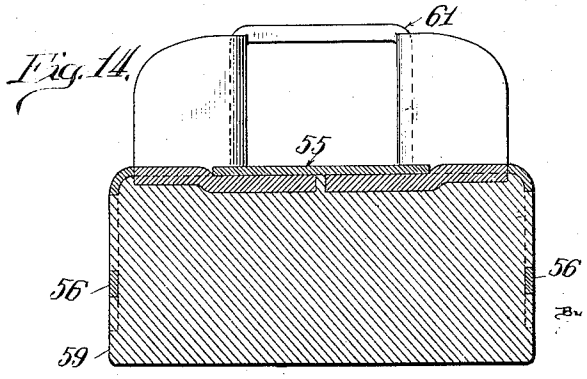


Fig. 14.



Inventor

Clifton D. Pettis

Fisher, Towle, Clapp & Sears

Attorneys.

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C. D. PETTIS

BRAKE SHOE

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Fig. 15

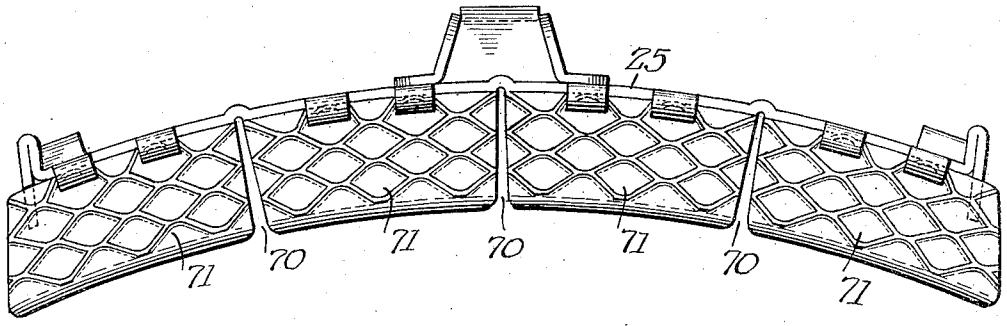
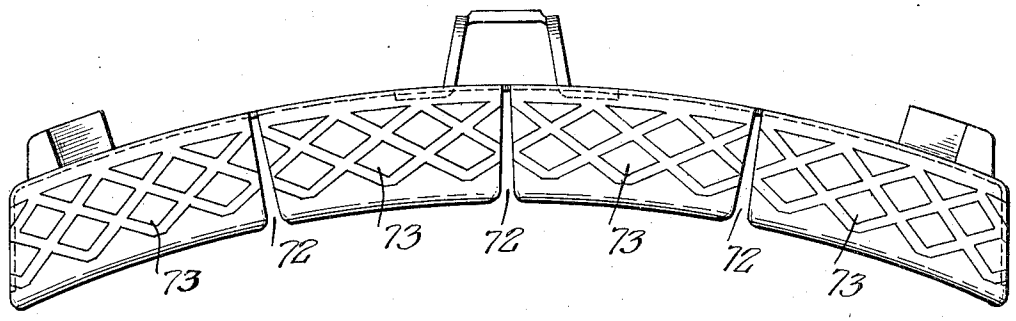


Fig. 16



Inventor:
Clifton D. Pettis,
By Fisher, Towle, Clapp & Sears
attys.

Patented Oct. 9, 1923. 1,470,475

UNITED STATES PATENT OFFICE.

CLIFTON D. PETTIS, OF NEW YORK, N. Y.

BRAKE SHOE.

Application filed September 2, 1922. Serial No. 585,903.

To all whom it may concern:

Be it known that I, CLIFTON D. PETTIS, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Brake Shoes, of which the following is a specification.

My invention relates to brake shoes, but more particularly to the sectional type, in which the cast body is divided transversely into two or more parts joined by a reinforcing back of tough ductile metal, and has for its primary object to provide an improved construction of this type which may be economically produced and which is more strong and durable than devices of a similar character heretofore known.

The many other objects and advantages of my invention will be better understood by reference to the following specification when considered in connection with the accompanying drawings illustrating selected embodiments thereof, in which:—

Fig. 1 is a side elevation of the brake shoe complete;

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged transverse section on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged transverse section on the line 4—4 of Fig. 1;

Fig. 5 is an enlarged transverse section on the line 5—5 of Fig. 1;

Fig. 6 is a detail side elevation of the back plate shown in Fig. 1;

Fig. 7 is a top plan view of the plate shown in Fig. 6;

Fig. 8 is an enlarged transverse section on the line 8—8 of Fig. 7;

Fig. 9 is a side elevation of a modified form of back plate;

Fig. 10 is a side elevation of a modified form of brake shoe.

Fig. 11 is an inverted sectional plan on the line 11—11 of Fig. 10;

Fig. 12 is an enlarged transverse section on the line 12—12 of Fig. 10;

Fig. 13 is an enlarged transverse section on the line 13—13 of Fig. 10;

Fig. 14 is a transverse section on the line 14—14 of Fig. 10;

Fig. 15 is a side elevation of a modified form of the brake shoe shown in Fig. 1, and

Fig. 16 is a side elevation of a modified form of the brake shoe shown in Fig. 10.

Referring to the drawings and particularly to Figs. 1 to 9 inclusive, the brake shoe comprises a back plate 25, a key lug 26, and lugs 27, a plurality of individual reinforcing members 28, and a cast body 29. The reinforcing members or shells 28 are arranged end to end and are secured to the back 25 by a series of bent down lugs 30. These shells 28, in the present embodiment, are constructed in the form of cages or pockets of reticulated or expanded metal and the pockets are connected through the medium of the back plate 25. The body of the shoe is divided transversely into sections 31 each incorporating one of the reinforcing shells 28.

Lugs 30 are preferably struck downwardly from the body of the back 25 and are bent laterally beneath the body of the plate after the shells have been placed in proper position relative thereto. These lugs 30 provide a locking engagement between the back and the cages in the manner indicated.

The key lug 26 is provided with attaching members 35 which are bent downwardly and inserted through slots 36 provided for the purpose in the back plate 25 and the lower portion of these members is then bent upwardly beneath the plate and the upper portions of the corresponding reinforcing shells 28 to secure the lug upon the plate and provide an additional attachment between the plate and the shells.

The end lugs 27 are formed by bending upwardly and then downwardly the end portions of the back plate to form upstanding ribs of double thickness of metal. These end lugs extend completely across the back plate. Guide flanges 37 are struck up from the plate 25 and then bent downwardly to provide a double thickness of metal similar in form to the end lugs 27. The prongs 30ª on the end lugs may be bent upwardly beneath the body of the plate in the same manner as the lugs 30.

Each of the shells 28 is composed of sides 40, end walls 41 and a top 42, the baskets being open at the bottom. These shells may be made of expanded metal, wire fabric, or other material suitable for the purpose. A

slight interval 43 is preferably provided between the end walls of adjacent shells when the same are attached to the reinforcing back. This interval is maintained between the body sections cast thereon and permits a certain yielding of the shoe to conform to variations in the diameter of the car wheel, also variations in the radius of the face of the shoe from variations in temperature. Offsets 25′ are preferably formed in the back 25.

In the assembling of the shoe the back plate is formed in the manner illustrated in Figs. 6 to 9, with the lugs 30 bent downwardly from the reinforcing plate. The shells 28 are then placed in position on the under face of this plate. Certain of the lugs 30 project through openings in the shells and others extend outside the same. These lugs 30 are now bent up to bind the shells tightly in place on the under face of the back. The center lug 26 is attached in the manner described and the sections of the shoe are cast upon the combined back and shells in the usual manner. In the modified form of reinforcing back 50, shown in Fig. 9 the key lug 51 is formed integral with the back instead of separate therefrom and attached thereto.

This form of brake shoe is very advantageous as each of the sections of the shoe is thoroughly reinforced by the individual ductile metal shell or pocket embedded therein and the various sections are securely connected by the back plate. The lugs 30 firmly secure the shells 28 upon the back plate prior to the casting of the body and this body adds to the strength of the attachment.

In the modified form of the invention shown in Figs. 10 to 14 inclusive, the ductile metal reinforcing back 55 is provided with side walls 56 and end walls 57 of reticulated metal. The side walls 56 are divided transversely as at 58 and a sectional shoe 59 is cast on the back with the divisions between sections corresponding to the divisions in the side walls of the back. A substantially T-shaped opening is provided near each end of the reinforcing back to permit the cast metal of the body to pass therethrough and form the end lugs 60. The key lug 61 is attached to the reinforcing back prior to the casting of the body thereon. This form of brake shoe is substantial in construction, as the reticulated side and end walls of the back plate are embedded in the body of the shoe and the entire shoe is sufficiently flexible to provide for any variations which may occur in the diameter of the car wheel or in the radius of the face of the shoe from variations in temperature.

In the modified form of the invention shown in Fig. 15 the slots 70 between the sections 71 of the shoe taper from the face of the shoe to the back instead of having the substantially parallel walls shown in Fig. 1. This construction is advantageous. Fig. 16 shows a similar modification of the brake shoe illustrated in Fig. 10 in which the walls of the slots 72 between the sections 73 are likewise tapered.

I am aware that various other changes in the form and arrangement of the parts may be made without departing from the spirit of my invention, and I reserve the right to make all such as fall within the scope of the following claims.

I claim:

1. A brake shoe comprising a reinforcing shell having the side walls thereof oppositely divided transversely of the shoe, and a sectional body cast on said shell with the divisions between sections coinciding with the corresponding divisions in the side walls of the shell.

2. A brake shoe comprising a transversely divided sectional shell, and a transversely divided sectional body cast on said shell with the sectional division of the body coinciding with the corresponding divisions of said shell.

3. A brake shoe comprising a plurality of cast sections each provided with individual reinforcement embedded therein.

4. A brake shoe comprising a plurality of cast sections each provided with individual reinforcement embedded therein, and a ductile metal back connecting said reinforcements.

5. A brake shoe comprising a ductile metal reinforcing back and a plurality of cast metal body sections having individual reinforcing shells embedded therein and attached to said back.

6. A brake shoe comprising a ductile metal reinforcing back, and a plurality of cast body sections having individual reinforcing shells embedded therein and attached to said back by lugs formed on said back.

7. A brake shoe comprising a plurality of cast body sections provided with individual reinforcing pockets of reticulated metal.

8. A brake shoe comprising a plurality of cast body sections arranged end to end and having individual reinforcing shells of reticulated metal each including a top, sides, and end walls.

9. A brake shoe comprising a transversely divided sectional shell, a transversely divided sectional body cast on said shell with the sectional division of the body coinciding with the corresponding divisions of said shell, and a back plate connecting the shell sections.

10. A brake shoe comprising a reinforcing shell having the side walls thereof oppositely divided transversely of the shoe, and a sectional body cast on said shell with the divisions between sections coinciding with the corresponding divisions in the side

walls of the shell, the slots formed between the opposing end walls of the sections tapering toward the back of the shoes.

11. A brake shoe comprising a back having a transversely divided sectional shoe body cast thereon, the slots formed between the opposing ends of the shoe sections tapering from the face of the shoe to the back.

12. A brake shoe comprising a ductile metal reinforcing back having a transversely divided sectional shoe cast thereon, the opposing end walls of the sections being oppositely inclined to form tapering slots between the sections.

CLIFTON D. PETTIS.