

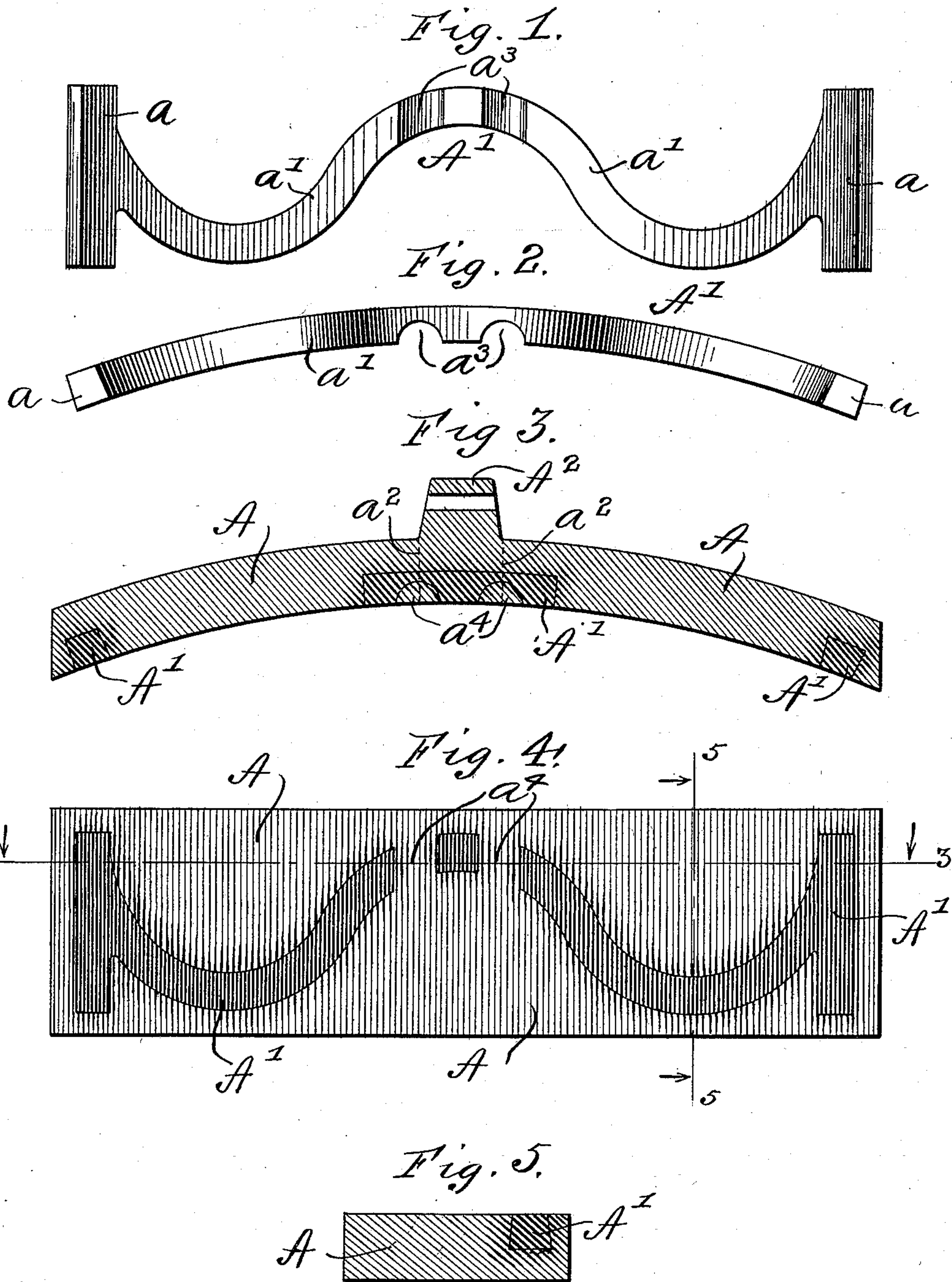
No. 624,262.

Patented May 2, 1899.

A. L. STREETER.
BRAKE SHOE.

(Application filed Aug. 16, 1897.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

ALFRED L. STREETER, OF CHICAGO, ILLINOIS.

BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 624,262, dated May 2, 1899.

Application filed August 16, 1897. Serial No. 648,407. (No model.)

To all whom it may concern:

Be it known that I, ALFRED L. STREETER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Brake-Shoe, of which the following is a specification.

This invention relates to improvements in brake-shoes, and relates particularly to improvements in brake-shoes of the type consisting of a cast-metal body portion, the face or friction-surface of which comprises a piece or pieces of relatively hard metal embedded therein. I am aware that brake-shoes of this general type, consisting either of body portions of cast-iron and pieces of steel, wrought-iron, or cast-iron embedded in the faces or friction-surfaces thereof are old in the art. Prior to my invention, however, many brake-shoes of this type have been objectionable for the reason, among others, that they cut and gouge the treads of ordinary steel-tired truck-wheels to such an extent that they are entirely unadapted for use on and are practically unused on such wheels.

A primary object of my invention is to provide a brake-shoe of this type adapted for use on steel-tired wheels and which will be relatively very cheap and durable.

A brake-shoe embodying my invention comprises a body portion of cast-iron, in the face or friction-surface of which is or are embedded a piece or pieces of white cast-iron, the body portion of said brake-shoe in contact with said piece or pieces so embedded therein being chilled and the chill decreasing at points remote therefrom.

In the manufacture of my improved brake-shoe I first cast a piece or pieces of white cast-iron of desired size and shape either in a "chilling-mold" or in an ordinary sand-mold. Said piece or pieces are then removed from the molds in which they are cast and are seated in an ordinary sand mold for the body portion of said brake-shoe, which is then cast therein. The body portion of the shoe in contact with the piece or pieces so embedded therein will thus be chilled and hardened and will decrease in hardness at points remote

therefrom. I have discovered also that a body of white cast-iron will not become annealed or softened when molten metal is cast around it, but will retain its original hardness. White cast-iron being substantially the same in chemical composition and in physical properties as chilled cast-iron, it therefore results from the structure of my brake-shoes and the method of manufacture that they will have relatively hard pieces embedded in their faces or friction-surfaces and that the body portions thereof in contact with said pieces so embedded therein will be chilled and will be of practically the same hardness as said pieces and will decrease in hardness at points remote therefrom.

A brake-shoe embodying my invention also comprises the various other features and details of construction hereinafter described and claimed.

In the accompanying drawings a brake-shoe embodying my invention is fully illustrated.

Figures 1 and 2 are plan and side views, respectively, of a piece designed to be embedded in the face or friction-surface of my improved brake-shoe. Fig. 3 is a sectional view of my improved brake-shoe on the line 3 3 of Fig. 4. Fig. 4 is a plan view of the face or friction-surface of a shoe embodying my invention, and Fig. 5 is a transverse sectional view of my improved shoe on the line 5 5 of Fig. 4.

Referring now to the drawings, A designates the body portion of a brake-shoe, and A' a piece of white cast-iron embedded therein so that it will be exposed at the face or friction-surface thereof, which for purposes of convenient reference I will hereinafter designate as an "insert."

As shown, the insert A' consists of two transverse end portions *a*, which are connected by a curved or sinuous longitudinal portion *a'*. I do not desire, however, to be limited either to a single insert or to an insert of the specific shape shown, as my invention contemplates the use of any desired number of inserts of any desired form.

In the manufacture of my improved brake-

shoe I first form the insert A', which will preferably be thinner at one edge than at the other—say, for example, three-eighths ($\frac{3}{8}$) of an inch at the edge designed to be exposed
 5 at the face or friction-surface of the shoe and seven-sixteenths ($\frac{7}{16}$) of an inch at its other edge. The insert A' may be cast either in an ordinary sand mold or in a chill-mold; but
 10 in practice I prefer to use an ordinary sand mold.

In the manufacture of my improved brake-shoes I have made the inserts A' from what is commonly known as "car-wheel" cast-iron, which I find do not become annealed or softened when the body portions A of the shoes
 15 are cast around them. I do not desire, however, to limit myself to this particular grade of cast-iron for making said inserts, as other grades of cast-iron may retain their hardness
 20 equally well. My invention therefore contemplates the use of any grade of cast-iron that will not become annealed or softened when molten metal is cast around it. The insert A' is then placed in an ordinary sand
 25 mold in proper position, after which the cast-iron for the body portion in a molten state is poured around it. Owing to its shape, as described, the insert A' will be dovetailed and rigidly secured in the body portion A of said
 30 shoe against possibility of accidental displacement. The insert A' will operate in a familiar manner to chill the body portion A of said shoe immediately adjacent thereto. Said body portion of said shoe in contact with the
 35 insert A' will thus be of practically the same hardness as said insert, and the hardness thereof will decrease at points remote therefrom.

Brake-shoes embodying my invention possess a very great advantage over other shoes
 40 of this type, for the reason that they are adapted for use on steel-tired wheels, it being a well-known fact that brake-shoes of this type have not heretofore been used on
 45 steel-tired wheels on account of the manner in which they cut and gouge the treads thereof.

In Figs. 3, 4, and 5 of the drawings the chilled and hardened portions of said brake-
 50 shoe are indicated by the darkened sections.

An objectionable feature of brake-shoes of this general type as heretofore constructed has been their liability to break in handling. It is a well-known fact that when a brake-
 55 shoe having a piece or pieces embedded in the face or friction-surface thereof is thrown down or is allowed to fall, so as to strike on the attaching-lug, said shoe is very liable to break transversely at one end or the other
 60 of said attaching-lug. In the drawings, Fig. 3, the dotted lines a^2 indicate approximately the probable lines of fracture in a shoe of the construction shown. A further object of my invention is to remedy this defect by
 65 strengthening the shoe at these points. As

it relates to this feature my invention consists in forming transverse grooves a^3 in the face of the inserts A', designed to be exposed
 70 at the friction-surface of said shoe and opposite to the shoulders at each end of the attaching-lug A²—that is, where the lines of fracture a^2 will intersect said insert when embedded in the shoe. When the body portion A of the shoe is cast around said insert,
 75 it will fill said grooves and will form strengthening-ties a^4 , which will reinforce the shoe at these points, where they are most liable to break.

I do not desire to limit myself to ties a^4 located in the exact positions shown in the
 80 drawings, as such ties may be provided at any place in the face of a brake-shoe where it is desired to strengthen or reinforce it.

I claim—

1. As a new article of manufacture, a brake-
 85 shoe having an insert or inserts of white cast-iron embedded in the face or friction-surface thereof, the body portion of said brake-shoe in contact with said insert or inserts being
 90 chilled and the chill decreasing at points remote therefrom, substantially as described.

2. As a new article of manufacture, a brake-
 shoe having an insert of white cast-iron embedded in the face or friction-surface thereof, said insert comprising transverse end portions connected by a curved or sinuous longitudinal
 95 portion, the body portion of said brake-shoe in contact with said insert being chilled and the chill decreasing at points remote therefrom, substantially as described. 100

3. As a new article of manufacture, a brake-
 shoe having an insert or inserts embedded in the face or friction-surface thereof, said shoe being reinforced or strengthened at points
 105 opposite to the sides or ends of the attaching-lug by ties formed integral with the body portion of said shoe and extending transversely across the front or exposed side or sides of
 110 said insert or inserts, said insert or inserts being grooved transversely to receive said ties, substantially as described.

4. As a new article of manufacture, a brake-
 shoe having an insert of white cast-iron embedded in the face or friction-surface thereof, said insert comprising a piece which extends
 115 longitudinally of said brake-shoe, the body portion of said brake-shoe in contact with said insert being chilled and the chill decreasing at points remote therefrom, said brake-shoe being reinforced or strengthened
 120 at points opposite the sides or ends of the attaching-lug of said shoe by transverse ties formed integral with the body portion of said shoe, said insert being grooved transversely to receive said strengthening-ties, substantially as described. 125

5. As a new article of manufacture, a brake-
 shoe having an insert or inserts embedded in the face or friction-surface thereof, said
 130 shoe being reinforced or strengthened by ties

formed integral with the body portion of said shoe and extending transversely across the front or exposed side or sides of said insert or inserts, said insert or inserts being grooved
5 transversely to receive said ties, substantially as described.

In testimony that I claim the foregoing as

my invention I have hereunto set my hand this 14th day of August, 1897.

ALFRED L. STREETER.

Witnesses:

JAMES W. THATCHER,
CLARA CRIM.