

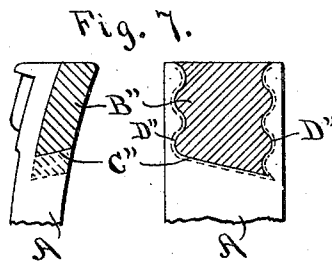
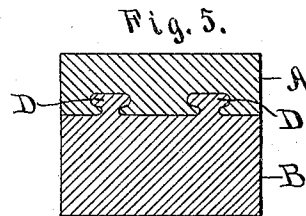
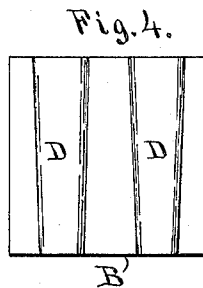
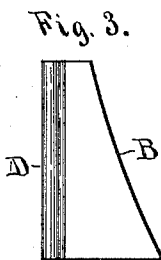
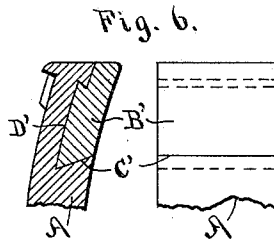
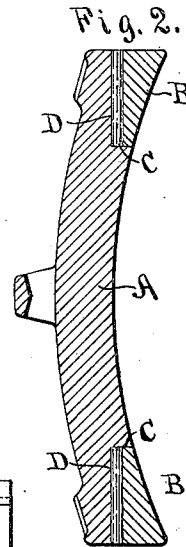
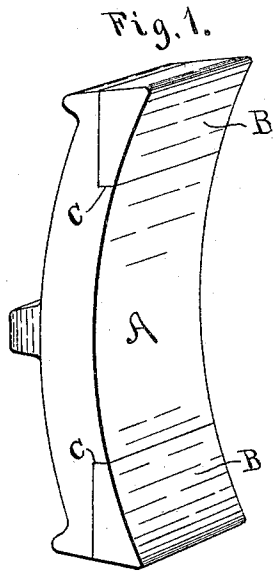
No. 684,559.

Patented Oct. 15, 1901.

G. O. VAIR.
BRAKE SHOE.

(Application filed Feb. 4, 1901.)

(No Model.)



WITNESSES:

M. E. Verbeck.
Edith L. Miller

INVENTOR

George O. Vair
BY *Eugene Diven*
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE O. VAIR, OF CORNING, NEW YORK, ASSIGNOR TO THE CORNING BRAKE SHOE COMPANY, OF CORNING, NEW YORK.

BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 684,559, dated October 15, 1901.

Application filed February 4, 1901. Serial No. 45,835. (No model.)

To all whom it may concern:

Be it known that I, GEORGE O. VAIR, a citizen of the United States, residing at Corning, in the county of Steuben and State of New York, have invented a new and useful Improvement in Brake-Shoes, of which the following is a specification.

My invention relates to improvements in that class of brake-shoes in which certain parts of the face of the shoe are formed of harder metal than the body portion.

From experience covering a number of years in the manufacture of brake-shoes I have found that chilling the surface of all or any portion of the shoe very materially weakens the shoe, for the reason that the depth to which a surface chill may be thrown cannot be calculated close enough by any modern method so but that at times it will be thrown through the entire depth of the shoe. This of course makes the shoe dangerous and worthless, as a brake-shoe thus chilled through its entire depth will not have sufficient strength to resist the brake-pressure and will consequently break and fall off, thereby causing great danger to life and property. To overcome this objection to a chilled shoe and yet retain the chilled or hardened surface portions and also to further reduce the cost of production, I have devised a brake-shoe comprising a body portion of soft strong non-chilling iron, having cast thereon at each end a chilled or hard iron or steel pad or end tip.

I attain the object of my improvement by means of the construction and arrangement of parts as illustrated in the accompanying drawings, in which—

Figure 1 represents in perspective a shoe embodying my improvement; Fig. 2, a sectional view of the same; Figs. 3, 4, and 5, details of the chilled or hard metal pads or end tips, and Figs. 6 and 7 modifications in the manner of attaching said chilled or hard metal pads.

Similar letters refer to like parts in the several views.

A represents the body of the shoe, which may be made from any close strong cast-iron, (preferably scrap,) but free from chilling qualities. The end tips or pads B B may be made from white iron or steel or they may be

chilled by being cast on a chill-mold. These pads are provided at the back with tapered dovetails D D, around which the metal of the body portion flows in the process of casting, thereby fastening the pads securely to said body portion. The inner ends of these pads B B are squared, so as to abut against shoulders C C in the body portion A. By reason of the tapering dovetails D D and these shoulders C the inward and outward frictional thrusts upon the pads when the brake is applied are opposed and the pads are held firmly secured in the body portion.

The method of manufacturing my improved brake-shoe is as follows: The end tips or pads are first cast from white iron or steel or upon a chill-mold. A wood or metal pattern having recesses in the ends is then placed upon a follow-board with the back down and surrounded by the drag part of the flask. In the recesses at the ends of the pattern are then laid the dovetails of the pads, so that the upper face of the shoe-pattern and the upper face of the pads are in the same circle. The whole is then covered with molding-sand and rammed up. The half-mold is then rolled over and the follow-board taken off. After this the cope part of the flask is put on and rammed up. The wood or body portion of the shoe-pattern is then withdrawn, leaving the end tips or pads as a component part of the mold. Iron is then poured into the mold, filling the body portion and running down into the interstices between the dovetails, thereby incorporating the dovetails into the body of the shoe and permanently fastening the end tips or pads to the shoe. By this method of manufacture I develop three very desirable qualities in my shoe—viz., a maximum of strength and durability, simplicity in molding, and minimum of cost, and, I may add, almost absolute immunity from breakage. The body or the larger portion of the shoe is made of a cheaper grade of iron than is the case where the chilled surfaces are formed integrally thereon, the more expensive metal being employed only in the comparatively small end portions or pads.

In practice I find that it is sometimes desirable, as in the case of a flanged shoe, to

run the dovetails D D laterally or diagonally across the face of the shoe. As a rule, however, they may run lengthwise of the body of the shoe. Moreover, different forms may
 5 be given to these dovetailed connections between the pads and the body of the shoe without departing from the spirit of my invention—as, for instance, that shown in Fig. 6, in which one broad dovetail D' runs trans-
 10 versely across the back of the pad B', or that shown in Fig. 7, in which the entire pad B'' is dovetailed into the end of the body part, being provided with a number of tapering
 15 flutes at the sides, into and around which the metal of the body portion runs, as shown at D''. In this latter form the pads do not extend quite across the face of the shoe, sufficient metal being run down on each side from the body part to grip and hold the pads
 20 in place.

I am aware that brake-shoes have heretofore been made with chilled-iron inserts. My shoe, however, does not have the chilled iron inserted, but has it attached to the body
 25 portion as a tip or end pad. In all shoes previously made with chilled-iron inserts such inserts are embedded well within the middle portion of the shoe, thereby causing weakness in the part of the shoe which receives
 30 the greatest strain. Also by being so embedded these inserts cannot be run across the entire face, and therefore present only a longitudinal middle portion, which is harder than the two longitudinal sections on the outside
 35 of the face of the shoe, thereby causing unequal wear on the tread of the wheel. In my shoe the chilled tips, running as they do entirely across the face of the shoe or practically so in the modification shown in Fig 7,
 40 overcome this unfavorable wear. I am also aware that a shoe has been made with the end

or tip portions chilled in the process of casting; but this latter construction is objectionable, inasmuch as the chill is difficult to control, as already stated hereinabove, and these
 45 integral chilled end portions having no strong backing from the body portion of the shoe are liable to be broken off by reason of their brittleness.

Having described my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A brake-shoe comprising a soft cast-iron body portion with hard-metal end tips or pads, said tips or pads being formed separately and
 55 locked into the extreme ends of the body portion in the process of casting.

2. A brake-shoe comprising a soft non-chilling cast-iron body portion with chilled-metal tips or pads at the ends backed by the
 60 metal of the body portion, said tips or pads being formed separately and locked into the extreme ends of the body portion in the process of casting.

3. A brake-shoe comprising a soft non-chilling cast-iron body portion with hard-metal tips or pads at the ends extending across the entire face of the shoe and backed by the
 65 body portion, said tips or pads being formed separately and locked into the extreme ends of the body portion in the process of casting.

4. A brake-shoe comprising a soft non-chilling cast-iron body portion with hard-metal tips or pads set into the extreme ends and secured thereto by dovetail connections
 75 in the process of casting.

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

GEORGE O. VAIR.

Witnesses:

H. T. MERCUR,

JOS. B. TERBELL.