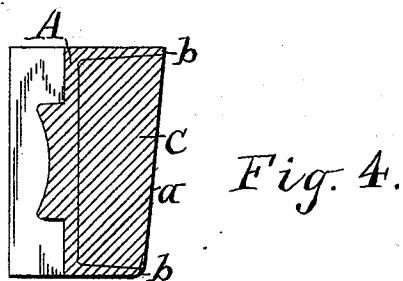
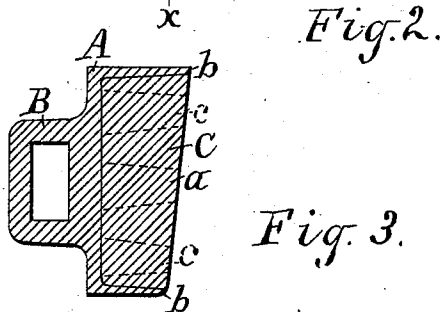
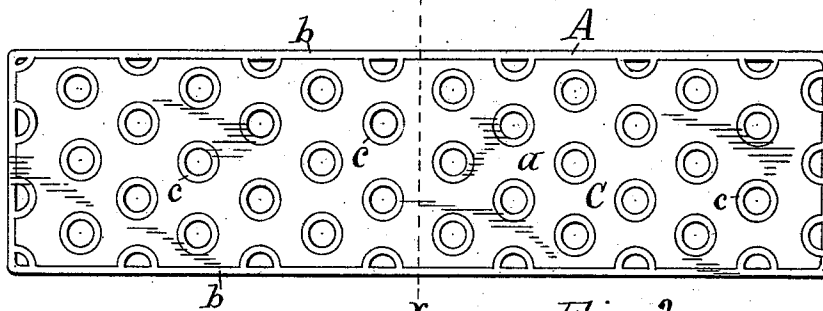
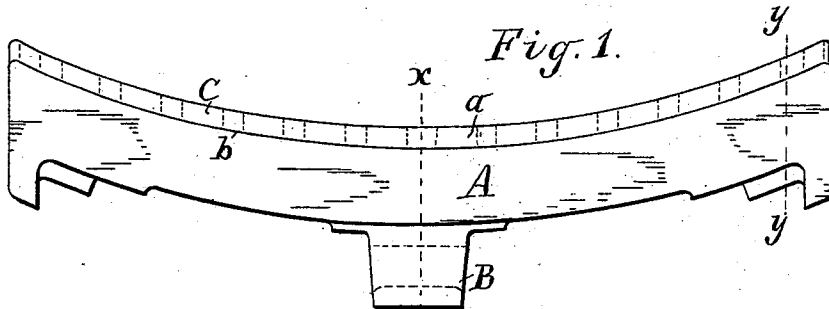


(No Model.)

E. CLIFF.
BRAKE SHOE.

No. 529,897.

Patented Nov. 27, 1894.



Witnesses:

Mark W. Dewey
R. S. Demer

Inventor.

Edward Cliff
By C. H. Dwell
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UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 529,897, dated November 27, 1894.

Application filed July 2, 1894. Serial No. 516,285. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFF, of Newark, in the county of Essex, in the State of New Jersey, have invented new and useful
5 Improvements in Brake-Shoes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to brake shoes and the
10 object is to provide a stronger and more durable shoe.

To this end my invention consists essentially in a brake-shoe having a case formed integral with the fastening lug, projections
15 extending from the inner side of the case toward and to the bearing surface of the shoe, perforations extending longitudinally through the projections, and a filling of metal differing from that of the case between the
20 projections and extending to the bearing surface of the shoe.

With the old cast shoes the metal used is soft so that they will hold the wheel. Therefore they rapidly wear out, but with my invention the shoe wears a great length of time
25 and evenly as both the soft and hard metals extend from the wearing surface into the body of the shoe; and my invention consists in certain other combinations of parts.

30 Figure 1 is a side elevation of a brake-shoe embodying my invention. Fig. 2 is a front elevation of the same. Fig. 3 is a sectional view on line *x, x*, of Figs. 1 and 2, and Fig. 4 is a transverse section on line *y, y*, of Fig. 1.

35 Referring specifically to the drawings, A indicates the frame or case of the shoe which may be formed externally in any suitable and well known shape.

B is the lug or projection on the rear side
40 of the shoe by means of which it is secured or fastened to the brake head. This frame or case, A, is preferably made of malleable iron or soft steel, but any other suitable metal may be used. The case is recessed in its front side
45 or wearing surface, *a*, so that only a border, *b*, and a series of projections or pegs, *c*, within the border extend to the wearing surface, *a*, of the shoe. These projections or pegs are preferably made solid, but each may be made

hollow or provided with a hole extending lon- 50
gitudinally through it and through the rear side of the case to allow the air to circulate through the shoe to keep it cool. After the case is thus formed, hard metal, C, as gray iron, or, in fact, any other suitable metal, is poured 55
in between and around the projections or pegs, *c*, to the same height as the pegs so as to make a uniform bearing or wearing surface. The projections or pegs, *c*, and the border of the case, *b*, may be shaped as desired, but are 60
shown with their sides inclined so that the case may be cast easily. I preferably arrange the pegs, *c*, of opposite series in different transverse planes as shown clearly in Fig. 2 of the drawings, as this arrangement tends 65
to strengthen the shoe.

It will be apparent that the two metals used in forming the shoe may be the same in kind, but different simply in degree of hardness, and further that, if desired, the case may be 70
made of harder metal than the filling, C, although the opposite is preferred.

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

75 1. A brake-shoe having a case formed integral with the fastening lug, projections extending from the inner side of the case toward and to the bearing surface of the shoe, perforations extending longitudinally through 80
the projections, and a filling of metal differing from that of the case between the projections and extending to the bearing surface of the shoe, as set forth.

85 2. A brake-shoe having its back formed integral with the fastening lug and a series of circular projections extending to and tapering toward the bearing surface of the shoe, holes extending through said projections and said back of the shoe, and a different metal 90
between the projections and extending to the height of the latter as set forth.

In testimony whereof I have hereunto signed my name.

EDWARD CLIFF. [L. S.]

Witnesses:

BENJ. W. TUCKER,

J. CLIFF.