

(No Model.)

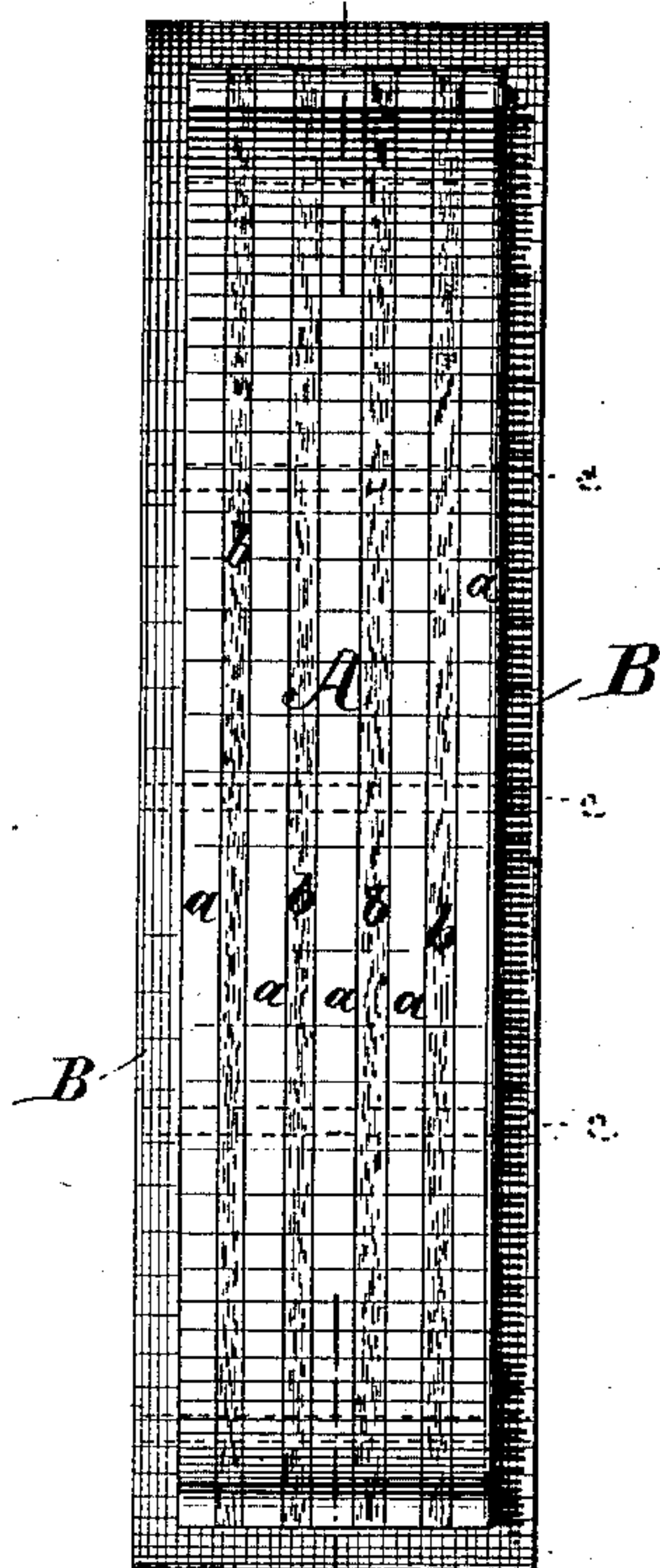
R. N. ALLEN.

BRAKE SHOE.

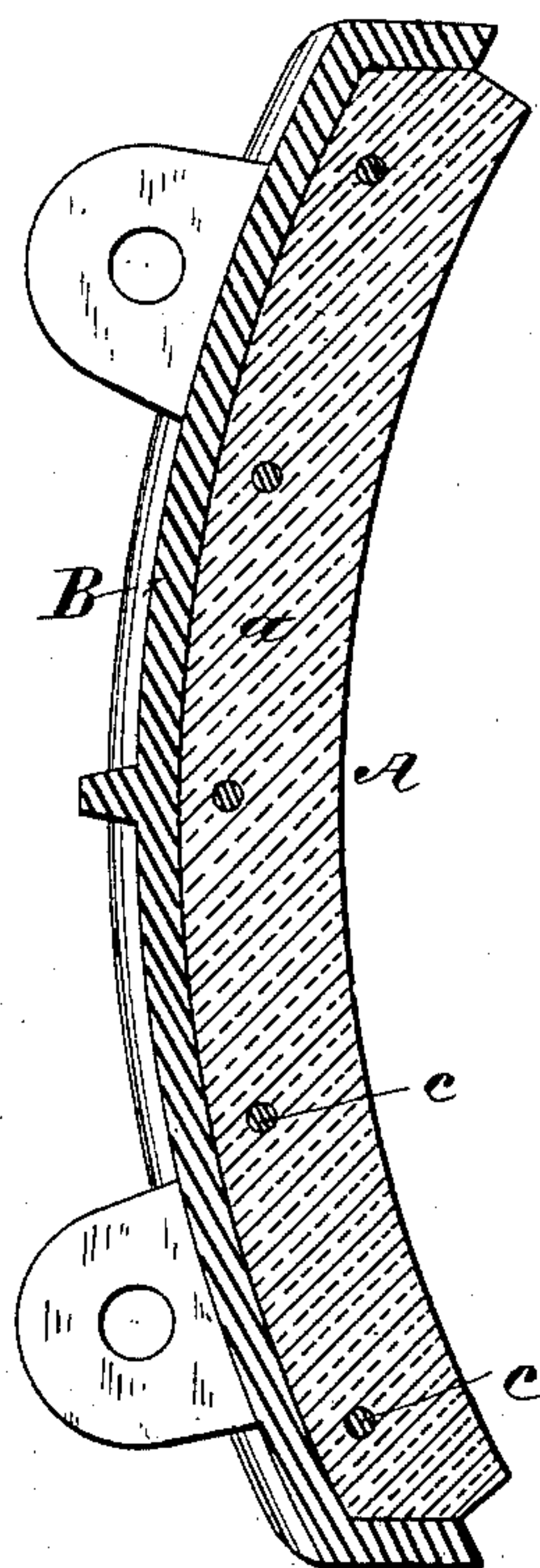
No. 315,213.

Patented Apr. 7, 1885.

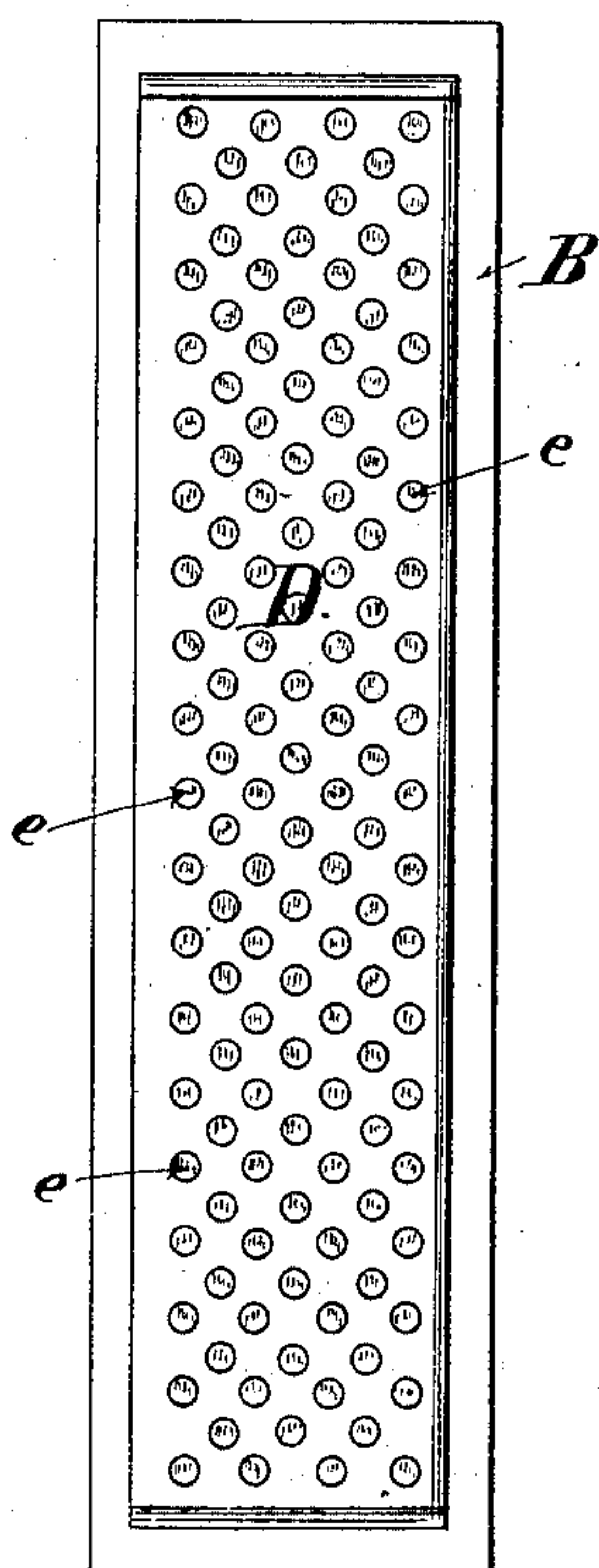
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Witnesses:*

*Robt. W. Duncan.*

*Edw. S. Sledge*

*Inventor*

*Richard N. Allen*

*by Saml. A. Duncan*  
*Atty.*



# UNITED STATES PATENT OFFICE.

RICHARD N. ALLEN, OF CLEVELAND, OHIO.

## BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 315,213, dated April 7, 1885.

Application filed October 13, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD N. ALLEN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Brake-Shoes for Cars and other Vehicles, of which the following is a specification.

This invention relates to brake-shoes especially designed for use upon railway-cars, but capable of application to vehicles of various kinds; and it consists in forming the frictional face or wearing-surface of the shoe (the part which is pressed against the tread of the wheel or other revolving part of the car or other vehicle) of compressed paper and lead or equivalent soft metal.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a plan view of the frictional face or wearing-surface of a brake-shoe containing my invention. Fig. 2 is a longitudinal section of the same on the line *x x* of Fig. 1, and Fig. 3 is a plan view of the frictional face of a shoe having a different style of combination of the compressed paper and lead from that shown in Fig. 1.

Compressed paper and lead may be united in a great variety of ways to form the frictional or wearing face or surface of a brake-shoe. In Fig. 1 of the drawings this part represented by A is made up of alternate layers of compressed paper, *a*, and common metallic lead *b*, closely fitted or forced into a frame or holder, B, so that the outer edges of the layers form the frictional surface of the shoe, while their inner edges rest against the back of the frame or holder, the layers being held in the frame by any desirable means, as by forced superficial contact, or by means of pins or bolts *c*, passed through the layers and the sides of the frame.

The frame B is made of any material having sufficient strength, preferably of iron or steel, and may be connected to the brake head and lever in any convenient way.

Instead of arranging the layers of compressed paper and lead longitudinally of the frame, as shown in Fig. 1 of the drawings, they may be arranged transversely or diagonally thereto.

Fig. 3 of the drawings shows a block of

compressed paper, D, with a series of bolts or slugs of lead, *e*, driven into holes formed in the surface of the block and secured in a proper frame, B.

The invention is not intended to be limited to the special ways of uniting the compressed paper with lead shown in the drawings and herein described, as it is evident that many other ways may be adopted—as, for instance, the lead in a melted state may be run into cavities or perforations formed in a block of compressed paper, or the lead, preferably in a partially-softened condition by heat, may be mixed with sheets of paper or with paper-pulp, and the mixture be subjected to great pressure, as in the manufacture of compressed paper. Neither is it intended that the invention should be limited in any respect to any special form of the shoe, or the means of securing the parts together, or of operating it, since the invention is simply for a brake-shoe whose frictional face or surface is made of compressed paper and lead.

The design and object of the invention is to overcome a serious defect in brake-shoes when made of compressed paper alone, or compressed paper and iron combined, as described and claimed in Letters Patent No. 202,772, granted to me April 23, 1878. It has been found that such shoes, while very efficient so long as their frictional surfaces are kept dry, yet when they become wet, as is necessarily the case in rainy weather, lose to a certain extent their capacity for proper frictional contact, and fail to maintain an efficient hold upon the wheel.

By combining with compressed paper a soft metal, like lead, which will have a strong frictional hold upon the iron or steel of the wheel when pressed into close contact therewith even when the parts in contact are wet, a brake-shoe is produced having the desired efficiency, and possessing the advantages of compressed paper in durability, and at the same time free from many of the objections incident to shoes made of iron or steel.

In case the lead is combined with the compressed paper in separate layers or parts, as shown in the drawings, the particles of lead as they are removed by the wear of the wheels will, by reason of their softness and ductility,

become largely attached to and associated with the compressed paper.

Instead of lead for the purpose above indicated, other soft metals or alloys may be used—  
5 for example, copper or zinc, alloys of lead with copper or zinc, or with both, or alloys of copper with zinc, these being regarded the equivalents of lead for this purpose. Lead is, however, preferred on account of its cheap-  
10 ness.

What is claimed as new is—

A brake-shoe for railway-cars and other vehicles, composed of compressed paper and lead or other equivalent soft metal, substantially as and for the purpose described.

RICHARD N. ALLEN.

Witnesses:

ROBT. H. DUNCAN,  
W. H. KENYON.