No. 646,301. Patented Mar 27, 1900.

# J. F. MORRISON & A. J. ALLEN.

## BRAKE SHOE.

(Application filed July 25, 1899.)

(No Model.)

Fig. 1

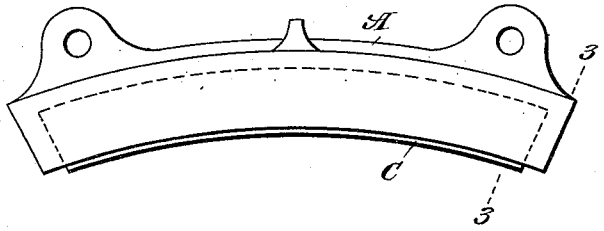



Fig. 2

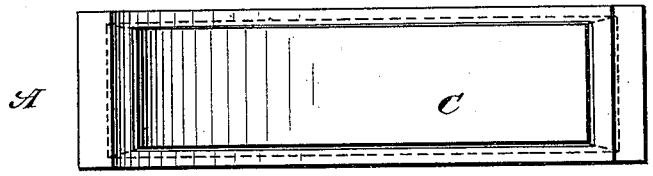
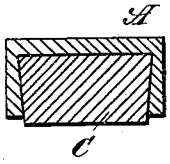



Fig. 3

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# UNITED STATES PATENT OFFICE.

JAMES FRANCIS MORRISON AND ANDREW JACKSON ALLEN, OF CHICAGO, ILLINOIS.

## BRAKE-SHOE.

SPECIFICATION forming part of Letters Patent No. 646,301, dated March 27, 1900.

Application filed July 25, 1899. Serial No. 725,108. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES FRANCIS MORRISON and ANDREW JACKSON ALLEN, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Brake-Shoe, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved composition brake-shoe arranged to prevent disintegration of the ingredients in case the shoe comes in contact with oil, acid, and the like and to prevent the shoe from unduly wearing the tire of the wheel on which the shoe is applied, at the same time, however, producing excellent qualities.

We have found by experiments that compositions for brake-shoes—such, for instance, as contain iron, asphaltum, and rock and heretofore used—are liable to disintegrate when oil or acid comes in contact with the composition, principally the asphaltum, and the latter upon disintegration causes the composition of the shoe to become soft and disintegrated and drop out of its shell. Furthermore, the rock employed in the composition wears very heavily on steel and cast tires, and this objection, as well as the other one mentioned above, is completely overcome by the new composition, which renders the asphaltum impervious to oil and at the same time increases its resistance and temperature by mixing a percentage of sulfur therewith.

In connection with the following description reference is to be had to the accompanying drawings, in which—

Figure 1 is a side view of our improved brake-shoe. Fig. 2 is a front view thereof, and Fig. 3 is a transverse section on the line 3 3 of Fig. 1.

The composition of which we form our brake-shoe consists, essentially, of comminuted iron, sixteen parts; asphaltum, eight parts; sulfur, one part. These ingredients are thoroughly intermixed with the asphaltum in a melted condition—say of 400° Fahrenheit—and the comminuted iron in the form of iron chips or iron turnings. This composition is forced into a shell A while in a hot state, and as the mass C thus forming the shoe is not liable to become disintegrated when coming in contact with oils and acids it is evident that the shoe will remain at all times in position in the shell and wear evenly and uniformly when used.

By using sulfur with the asphaltum the melting-point of the latter is raised, and consequently is not liable to be heated excessively when applying the brakes very frequently, and, furthermore, it is not necessary to use a separate ingredient for counteracting the elasticity of the asphaltum, as this is accomplished by the addition of sulfur and the iron, it being understood that the sulfur has a tendency to harden the asphaltum without making it unduly brittle. The sulfur added to the asphaltum increases the life of the asphaltum and at the same time permits of making a very economical brake-shoe with the addition of the iron above mentioned.

The use of rock in the composition for brake-shoes as heretofore constructed is detrimental to tires, as it causes undue wear, and hence an ingredient in the composition which avoids this objection and at the same time increases heat resistance of the asphaltum is of great consequence, especially as the life of the shoe and the braking power are increased and the wear on the wheel-tires is decreased.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A composition for brake-shoes, consisting of comminuted iron, asphaltum, and an ingredient for rendering the asphaltum impervious to oil, acid or any other substance tending to disintegrate the asphaltum, and to allow of subjecting the shoe to an increased temperature when in use.

2. A composition for brake-shoes, consisting of comminuted iron, asphaltum and sulfur intermixed in about the proportions specified.

JAMES FRANCIS MORRISON.
ANDREW JACKSON ALLEN.

Witnesses to James F. Morrison's signature:
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Witnesses to Andrew J. Allen's signature:
THEO. G. HOSTER,
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