

No. 860,673.

PATENTED JULY 23, 1907

VAN BUREN LAMB.
BRAKING DEVICE.

APPLICATION FILED OCT. 28, 1906.

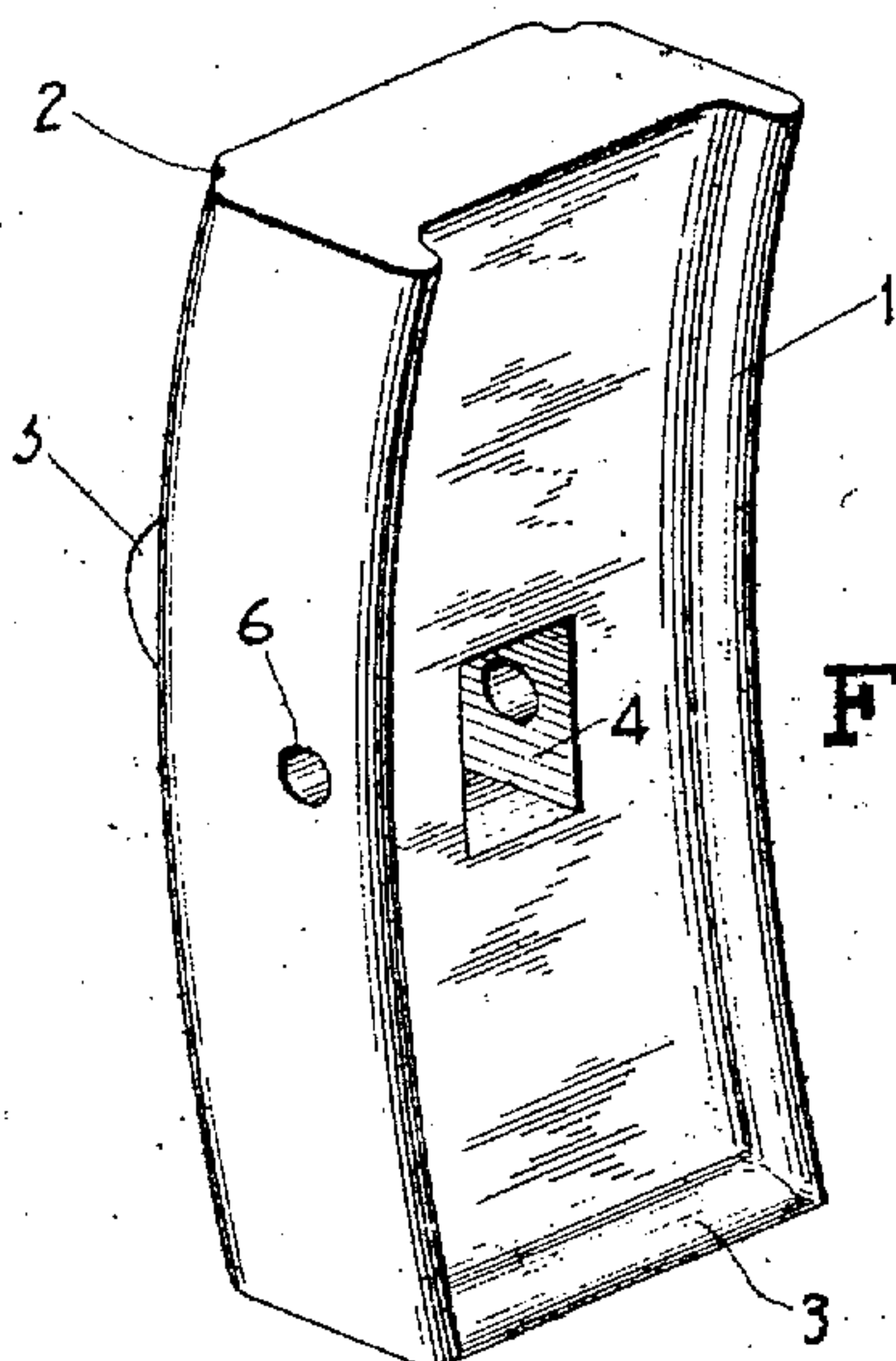


Fig. 1.

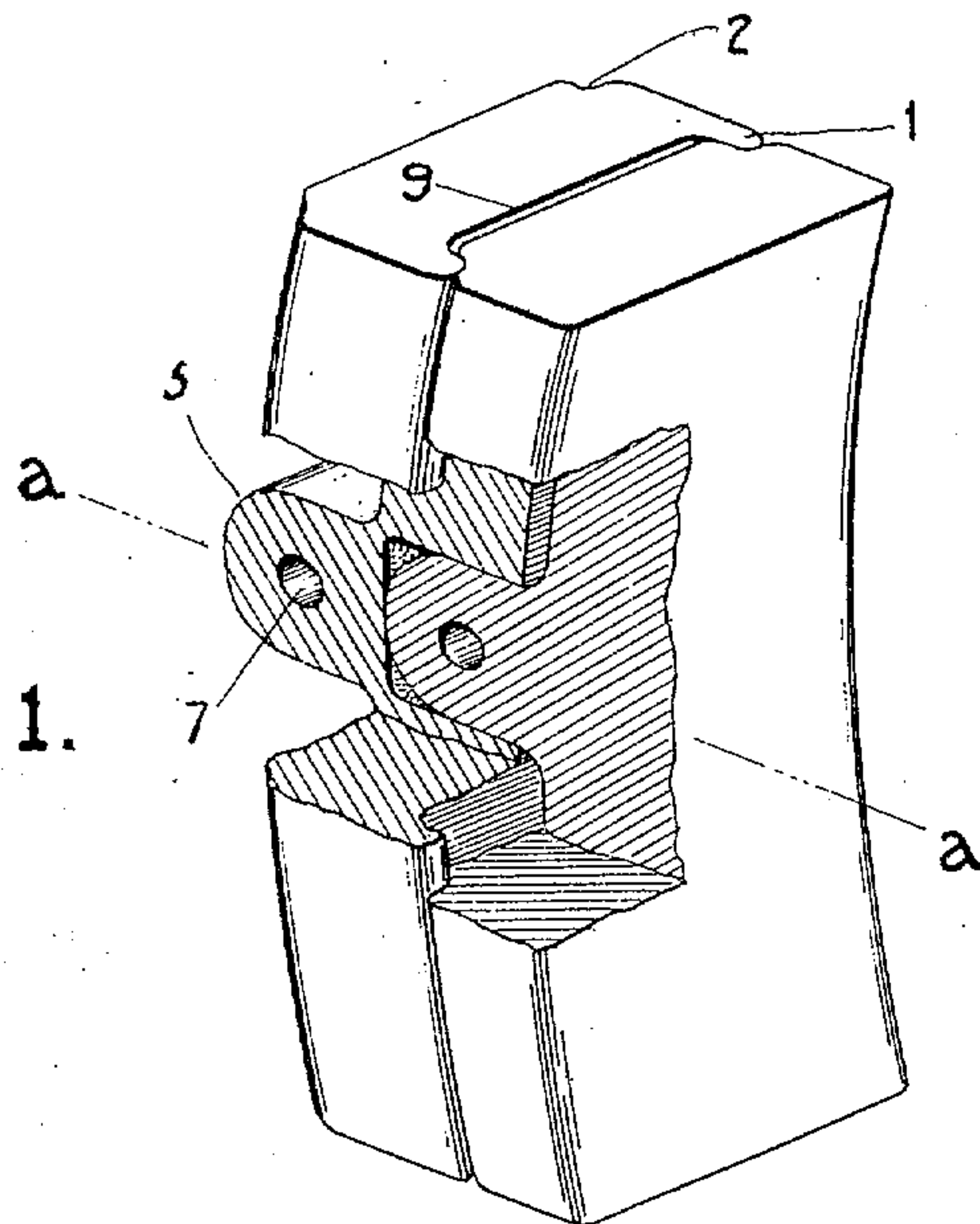


Fig. 2.

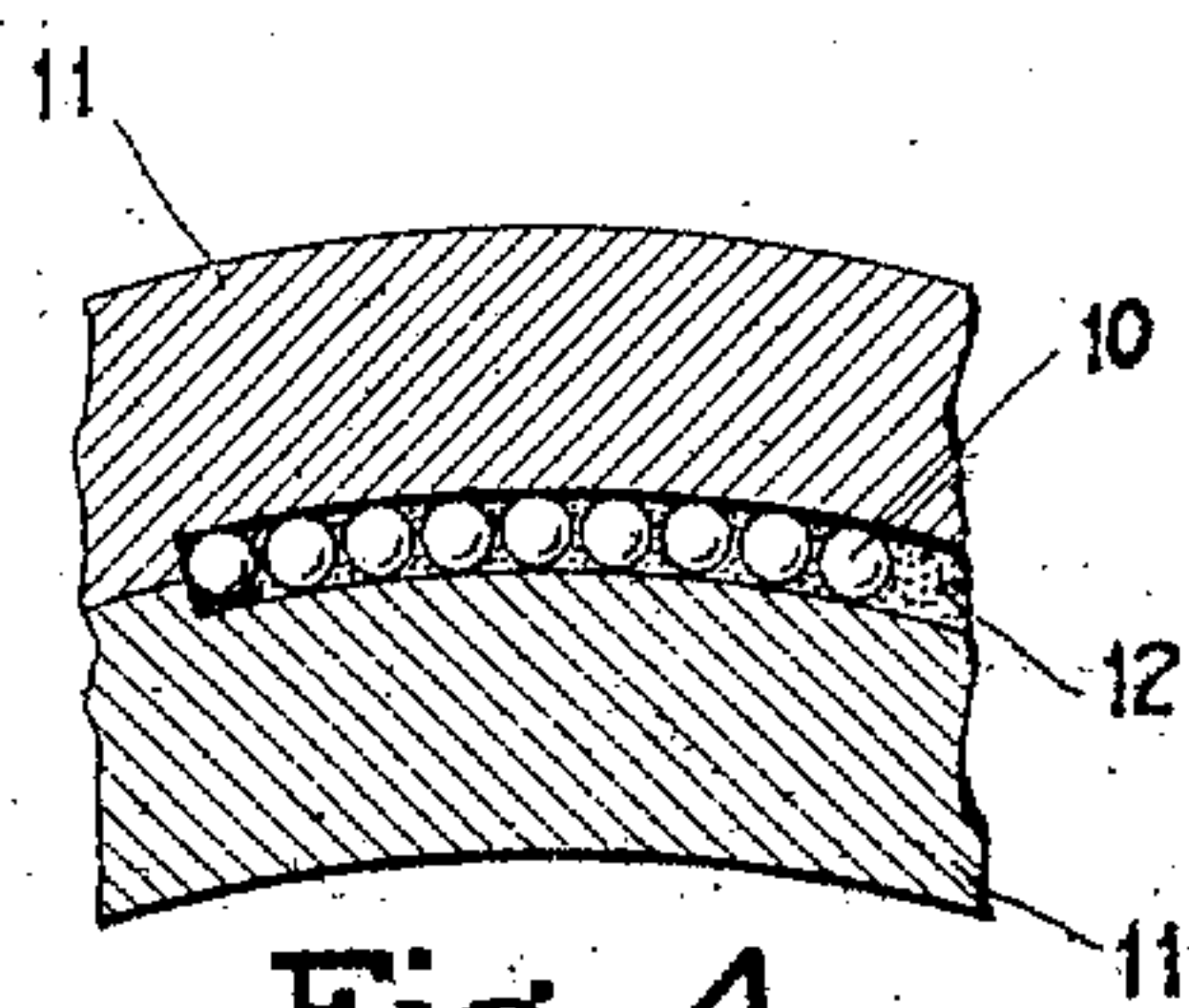


Fig. 4.

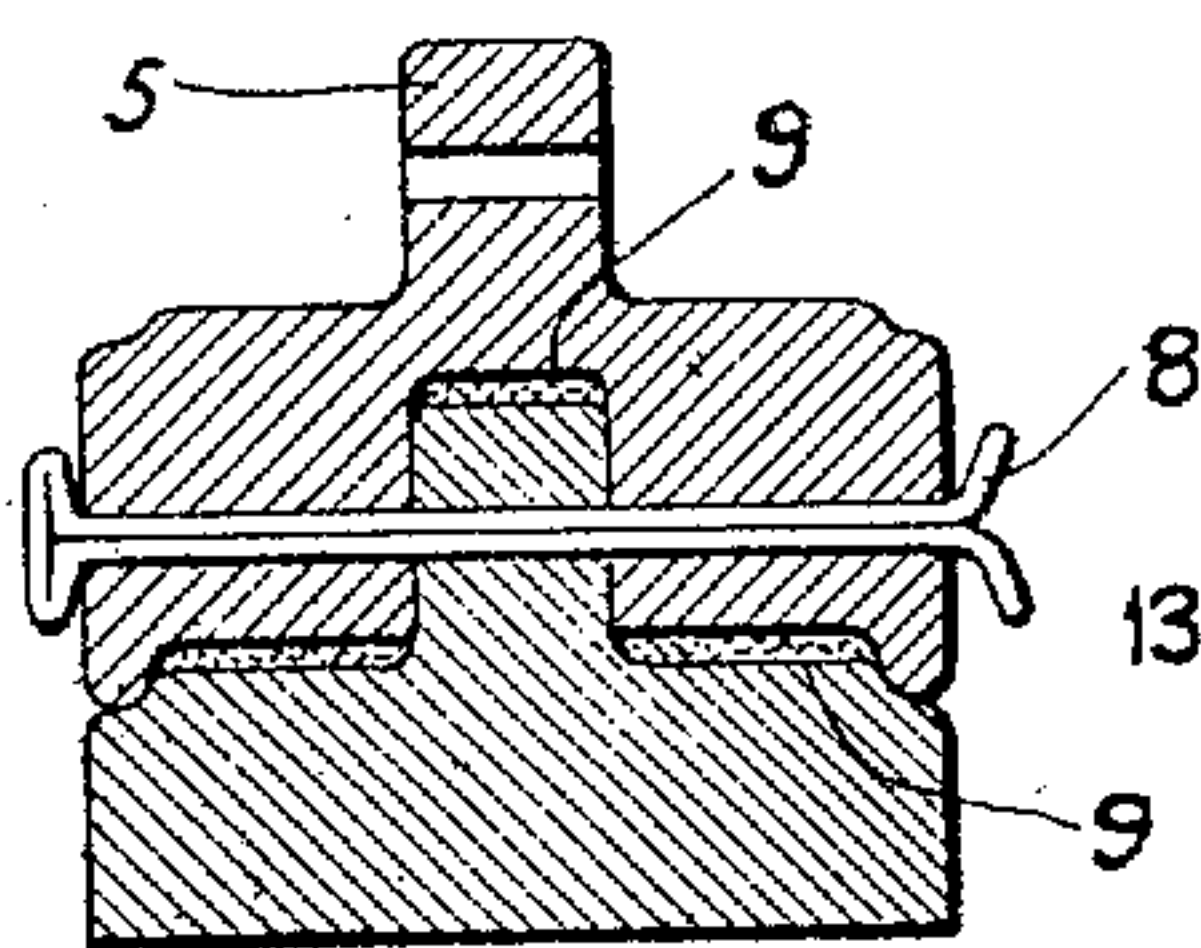


Fig. 3.

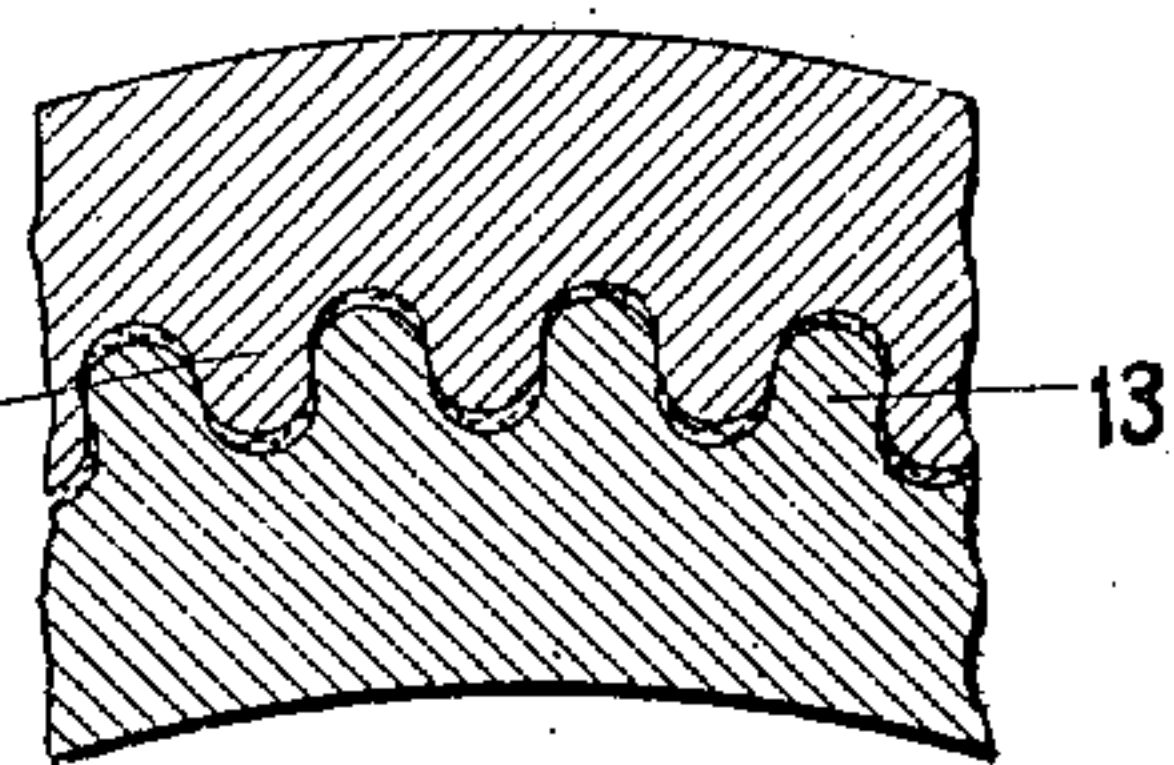


Fig. 6.

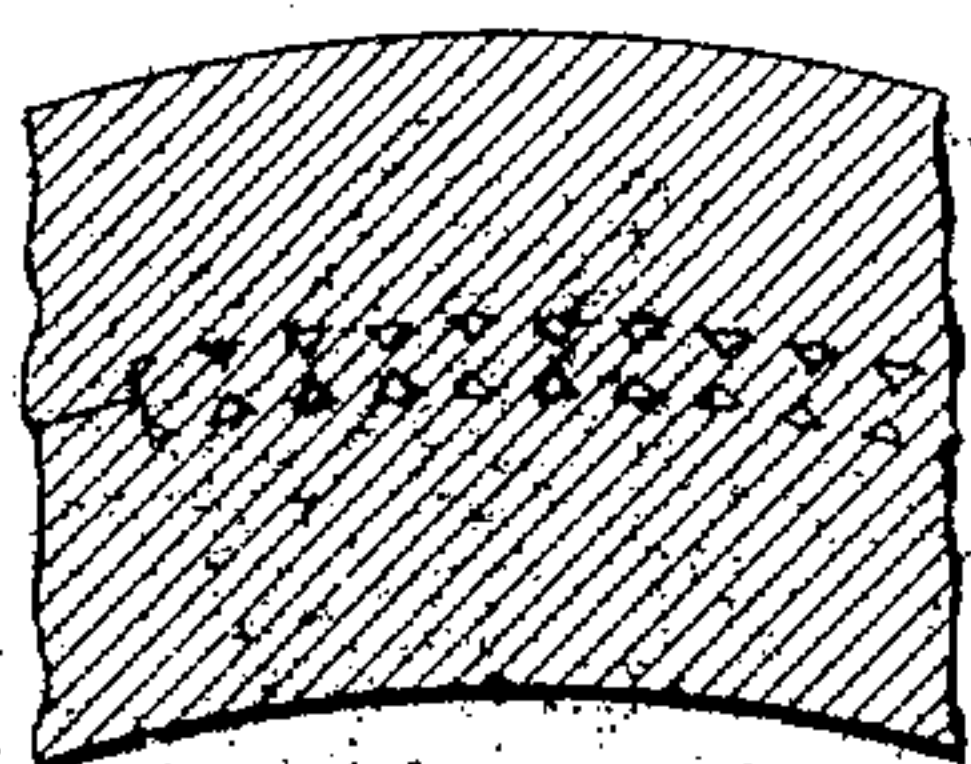


Fig. 5.

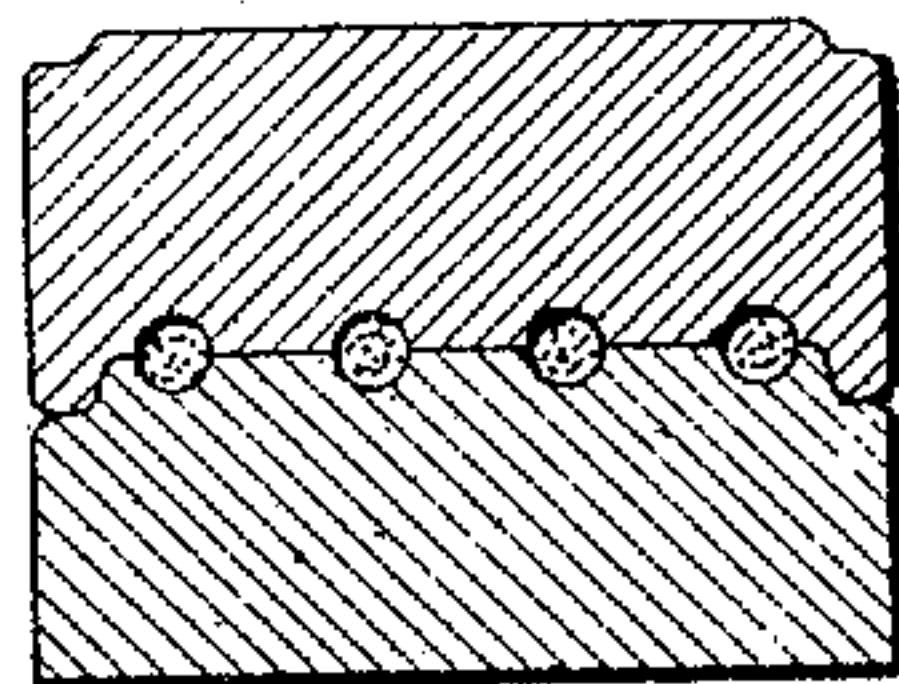


Fig. 9.

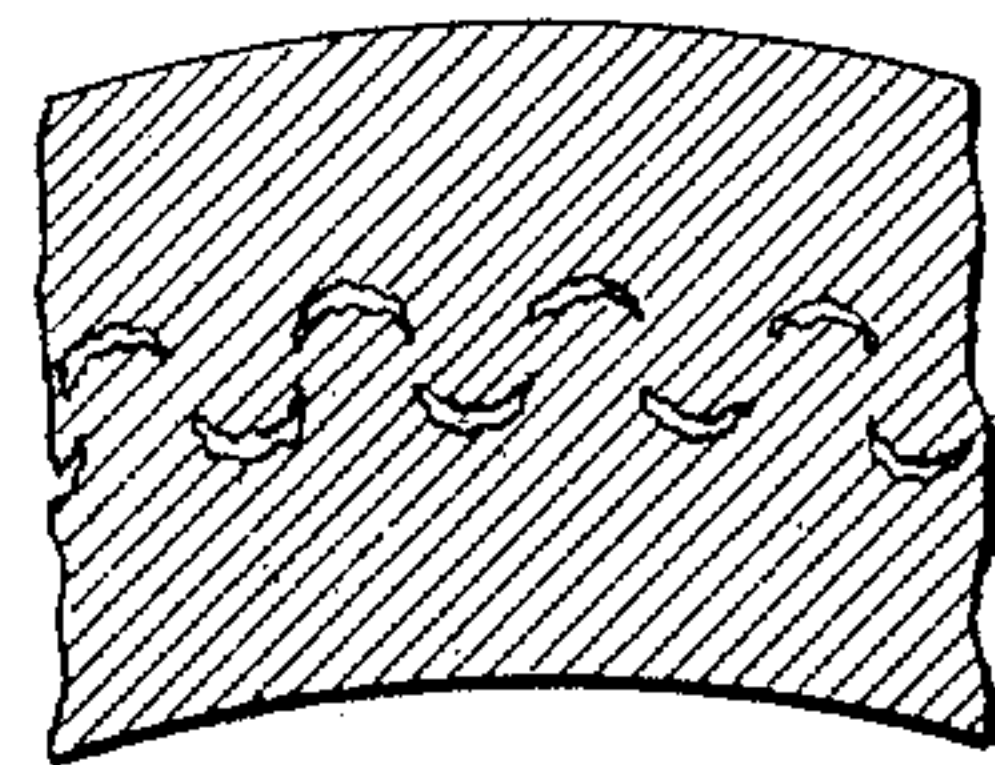


Fig. 7.

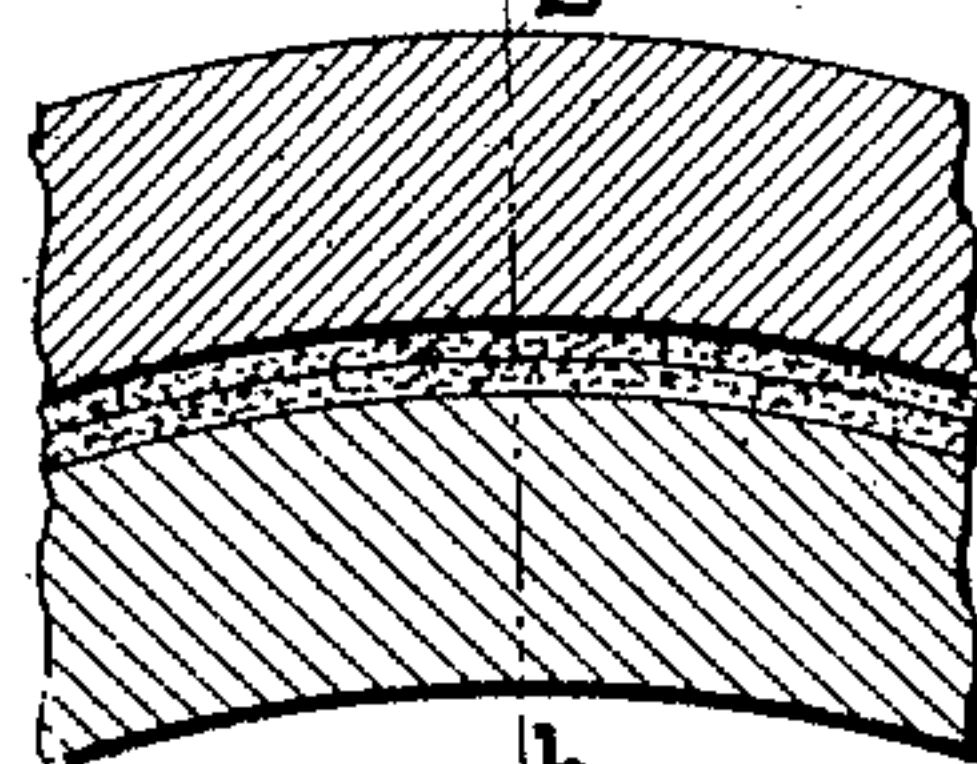


Fig. 8.

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UNITED STATES PATENT OFFICE.

VAN BUREN LAMB, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO KEYSTONE BRAKE-SHOE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BRAKING DEVICE.

No. 860,673.

Specification of Letters Patent.

Patented July 23, 1907.

Application filed October 28, 1905. Serial No. 284,922.

To all whom it may concern:

Be it known that I, VAN BUREN LAMB, residing at New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful

5 Improvements in Braking Devices, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention concerns the replenishment of wear accruing in braking means in which a positively controlled body is so contacted with a moving surface that a retardation of the relative movement therebetween is accomplished and it has particular utility in its application to brakes analogous to those employed in railroad moving stock in which a suitable shoe is pressed against some portion of a wheel, such as the tread, or against the track. Such shoes and like bodies undergo a very considerable abrasion in service and fresh material must after a time be supplied to take the place of that worn away. Obviously, a great saving of material and other adherent advantages are had if the new material be so added to the residual shoe that the latter continues its braking function until every particle thereof is consumed in wear only and no part is discarded by removal, breaking off or otherwise wasted except in actual service.

Heretofore, the partially worn shoe has been affixed to the wearing face of a fresh shoe by means of one or more lugs protruding from the back of the worn shoe so as to transversely extend in an axial direction. Such lugs mechanically interlock with the wearing face of the fresh shoe which is matrixed in correspondence with the rear lugged face of the worn shoe and, as the attachment entirely depends upon such lugs it fails as soon as the wear closely approaches the same, inasmuch as the shoe, being supported at a few points only, is subject to easy fracture at other points and once divided it readily detaches in parts from the fresh shoe. Moreover, such lugs and portions as may temporarily cohere to the fresh shoe are liable at any time to suddenly shift in position while in contact with the wheel, either severely cutting the tread thereof or so tightly wedging thereagainst as to entirely stop its rotation, thereby producing a "flat" wheel which is highly injurious to all parts of the rolling stock.

This invention has in view, among other objects, the provision of such a system of unitary shoes and mode of joining the same as will be applicable to any arrangement of braking means to overcome the above stated defects.

This invention also aims to produce shoes with inter-fitting faces so contoured that when joined and worn the features thereof will not present transverse facets which in practice would otherwise cut and injuriously

scratch the tread of the wheel, and will be held rigidly in place.

Another object is to devise a bond between worn and fresh shoes which will for all practical purposes so merge the two together as a substantial entity that the contacting portions will be integral and in wear not subject to detachment.

An additional object is to formulate a manner of integrally and otherwise effectively uniting metallic bodies, such as brake shoe units and the like, which is so inherently simple in operation as to be adapted for being readily employed in any place by ordinary unskilled labor unassisted by cumbersome or unusual mechanical appliances.

In its more specific application, this invention contemplates a union and mode of producing the same between contiguous parts of brake shoes which will substantially constitute a true weld joint which however may also be more or less in the nature of a "solder joint" according to circumstances.

Other objects and advantages will be in part obvious and in part more specifically pointed out hereinafter.

With the aforesaid and other ends in view, my invention accordingly consists in the combination of parts, features and modes of construction, and arrangement of elements hereinafter more specifically stated as an exemplification of the invention.

That this invention may be more fully understood, and made comprehensible to those skilled in its relating arts, I have accompanied the following description by drawings illustrating one of many possible embodiments thereof and now upon making reference to such drawings through the instrumentality of reference letters it will be observed that like letters denote corresponding parts throughout all the views, of which:

Figure 1 is a general perspective of a brake shoe embodying structural characteristics adapted for being conveniently treated by my novel mode of uniting such parts. Fig. 2 is a sectional perspective illustrating the structure shown in Fig. 1 as assembled with a like structure preparatory to carrying out my method of joining the same. Fig. 3 is a horizontal sectional view taken along line *a-a* of Fig. 2. Fig. 4 illustrates a simple deviation from the preceding in which a plurality of metallic granules are applied within the spaces intermediate the faces of the shoes for further uniting the same according to my invention. Fig. 5 is a view of the structure shown by Fig. 4 after undergoing treatment in accordance with my improved process. Fig. 6 denotes the manner in which the opposing faces of the brake shoes may be corrugated or pebbled to insure a better uniting contact. Fig. 7 is a view of the structure corresponding to Fig. 6 but after having undergone the manner of joining prescribed by this invention. Fig. 8 denotes a manner of grooving the op-

posing faces so as to constitute channels for the reception of the uniting substance. Fig. 9 is a sectional view of Fig. 8 taken along line b—b of the same.

Referring now to the drawings more specifically by reference letters, in relation to Figs. 1, 2 and 3, 1 indicates side lugs positioned on the shoe so as to match with corresponding grooves or recesses 2 on the rear face of a like shoe. The bottom edge of such shoe is correspondingly divided with a like lug adapted to fit in a corresponding recess in the rear face of another shoe. Each shoe is also preferably provided with a recess such as 4 adapted to receive a correspondingly shaped and positioned lug 5. This will be apparent on inspection of Fig. 2. Preferably, alining apertures 6 and 7 are provided for the reception of any suitable joining pin 8 which will serve to hold the unitary shoes together during the permanent uniting thereof by means of my process.

To facilitate the application of my process to such shoes a space 9 is provided intermediate the adjacent faces for the reception of the uniting substance. Obviously, such space or spaces may be given any preferred shape, proportions or configuration. Escape vents may be especially provided for the exit of gases arising during the permanent uniting of the shoes according to the herein described process, or reliance may be had for this purpose upon the ordinary permeability of the matching faces. Likewise, entrance ports may be provided in case it is desired that the uniting substance be introduced after having brought the shoe members into the desired juxtaposition, although this invention also contemplates the application of such uniting substance to the faces of the shoe in the form of a plastic paste, in which case the ports for the introduction of the same may be dispensed with. Thus in Fig. 2 the uniting substance, which is usually of a pulverant flowing nature may be introduced through the opening at the top of the figure in which the transverse lug similar to that shown at the bottom is dispensed with. To facilitate the introduction of such substance, I may provide openings of a funnel shape in which case a lug similar to 3 would also be provided at the top of the shoe so that it would be joined to the mate along the whole exterior contour.

For the welding substance I prefer in practice to employ any of the well known compositions adapted to spontaneously react and fuse at a high temperature upon being suitably started. Many such substances are in common use and generally contain pulverulent aluminium mixed with some suitable metallic oxidation product such as a metallic sulfid, oxid, chlorid or the like. A mixture of aluminium and iron oxid may be resorted to in this connection. Such composition may be employed in various ways, thus as heretofore indicated it may be externally applied to the interstices between shoes when fitted together through one or more small openings leading from the said interstices to the outside of the shoe. Such application may be readily made at any point or locality as it requires nothing more than a suitable receptacle for pouring the pulverant material into place. This operation, as will be understood, is such as may be readily performed by ordinary unskilled labor and no unusual or costly implements are required.

Another manner by which the same end may be

easily attained within the scope of the herein described invention, is by applying such self-fusing composition in the form of a paste to the proper surface of each unitary brake-shoe so that the whole constitutes a self-contained device adapted for being instantly affixed mechanically to a worn shoe and by a simple ignition at a suitable point becomes at once permanently welded to such worn shoe.

Many other obvious ways may be resorted to, thus a paste may in some cases be substituted by a pulverant mass suitably retained in place by means of properly shaped pockets or films of combustible or other harmless material.

To increase the efficacy of this composition I may commingle therewith granules of iron, solder or other material adapted to unite with the material of the shoe under the conditions of a high temperature.

In Fig. 4 I have illustrated one manner in which a bond may be effected between the shoes through the assistance of granules designated by 10. Such granules which ordinarily might be said to consist of iron are in contact with the wall portion 11 of interfitting brake shoes. Commingled with such granules is the substance 12 which upon ignition undergoes a self fuse, thereby melting all of the adjacent metallic surfaces and causing them to unite somewhat after the fashion designated and shown by Fig. 5.

Fig. 6 illustrates a slight deviation from the foregoing forms, the opposing faces of the shoes being pebbled or provided with other interfitting sutures 13 so as to provide a sufficient space adjacent to contacting portions for the introduction of a composition having the character as stated. After undergoing ignition the contacting portions will fuse together somewhat after the fashion illustrated by Fig. 7.

Fig. 8 exemplifies another arrangement in which channels are provided for the introduction of the self-fusing compound. Fig. 9 shows the above in section.

Many other variations and adaptations are implied by and deducible from the foregoing description and drawing, both of which are to be understood as being employed in an explanatory and disclosive, but nowise limiting sense. Thus it is well within the contemplation of my invention to so vary the constitution of the self-reactive, bonding substance as to arrive at ends made preferable by practice, such as employing a composition whose reactive products possess desired physical properties, as softness, malleability, strength or the like. Likewise, such substance may set between suitable interfitting elements of respective shoes to serve as a key in addition to a weld. Also, discharge ports may be provided for excess or undesirable reaction products.

It will also be understood that this invention is not confined to supplying fresh material to the rear face of the worn shoe, since, by the use of the welding substance, new shoes may be adapted for convenient application directly to the worn surfaces or to the head.

Other arrangements and modifications are within the scope of the following claims, and it is to be understood that this invention is eminently fitted for the mounting of shoes upon brake heads, as well as two shoes one upon the other, and the term "brake shoes" is used through the following claims in a broad sense as comprehensive of the part better known as brake heads.

1. The process of uniting brake shoes consisting in juxta-positioning faces thereof and intermediately applying a fusing heat whereby such faces are welded together at one or more places.
- 5 2. The process of uniting brake shoes consisting in juxta-positioning faces thereof whereby certain portions are in contact and other portions have interstices therebetween, and applying a fusing heat within such interstices whereby adjacent parts are fused together.
- 10 3. The process of uniting brake shoes consisting in contacting faces thereof whereby certain portions match and others provide interstices therebetween, and raising the temperature within such interstices until portions of the shoe are fused or welded together.
- 15 4. The process of uniting brake shoes consisting in juxta-positioning faces thereof, whereby interstices are provided therebetween, and bringing a material within such interstices to a temperature sufficient to fuse together contacting brake side walls.
- 20 5. The process of uniting brake shoes consisting in juxta-positioning faces thereof whereby parts are slightly spaced apart, and introducing into such spaces a highly heated welding substance.
- 25 6. The process of uniting brake shoes consisting in juxta-positioning faces thereof so as to provide intermediate spaces, and introducing into such spaces a highly heated substance adapted to fuse together contacting faces and unite therewith.
- 30 7. The process of uniting brake shoes consisting in juxta-positioning male and female faces thereof and introducing into interstices therebetween a compound adapted to be hardened therein and thereby act as a key for locking the faces together.
- 35 8. The process of uniting brake shoes consisting in juxta-positioning faces thereof whereby parts are slightly spaced apart and other parts constitute inter-fitting elements, and fusing into the spaces a compound adapted to set therewithin and so unite to the aforesaid spaces as to permanently unite them together.
- 40 9. The process of uniting brake shoes consisting in juxta-positioning faces thereof whereby certain portions are in contact and other portions provide spaces therebetween, and introducing into such spaces a highly heated welding substance.
- 45 10. The process of uniting brake shoes consisting in bringing together faces thereof whereby certain portions match and others are spaced apart to provide interstices therebetween, and introducing into such interstices a highly heated welding substance.
- 50 11. The process of uniting brake shoes consisting in juxta-positioning male and female faces thereof and introducing into interstices therebetween a compound adapted to so react as to come to a fusing temperature, thereby welding together said shoe faces, and on subsequently cooling to harden into a key for further uniting the faces.
- 55 12. The process of uniting brake shoes consisting in juxta-positioning the faces thereof with certain parts in contact, and applying intermediate the other parts a self fusing welding substance.
- 60 13. The process of uniting brake shoes consisting in juxta-positioning the faces thereof whereby certain portions are in contact and other portions provide interstices therebetween and filling such interstices with a self fusing substance adapted to weld together and otherwise permanently unite said contacting faces.
- 65 14. The process of uniting brake shoes consisting in contacting faces thereof whereby certain portions match and others provide interstices therebetween, and introducing within such interstices a self fusing substance adapted to melt together adjacent portions of the contacting faces and become welded thereto.
- 70 15. The process of uniting brake shoes consisting in juxta-positioning faces thereof whereby corresponding recesses will be brought into registry and filling said recesses with a self fusing substance adapted to weld together contacting surfaces and subsequently set within said recesses to permanently lock together said shoe faces.
- 75 16. The process of uniting brake shoes, consisting in bringing together faces thereof so as to provide intermediate spaces, and introducing thereinto a self fusing substance adapted to weld together contacting surfaces and become fused thereto.
17. The process of uniting brake shoes, consisting in bringing together male and female faces thereof and introducing into interstices therebetween a self fusing composition adapted to weld together contacting surfaces and subsequently set to form a key for further securing the shoes together.
18. The process of uniting brake shoes, consisting in juxta-positioning faces thereof whereby certain parts are slightly spaced apart and other parts constitute interfitting elements, and filling the spaces with a self fusing compound adapted to melt together joints in the adjacent shoe faces and to set within the spaces and thereby permanently key the shoes together.
19. The process of uniting brake shoes, consisting in juxta-positioning the faces thereof with certain parts in contact and applying intermediate the other parts a pulverant self fusing welding substance.
20. A process of uniting brake shoes, consisting in contacting faces thereof whereby certain portions match and others provide interstices therebetween and introducing within such interstices a self-fusing pulverant compound adapted to generate sufficient heat to melt together adjacent portions of the contacting faces and to become welded to the same.
21. A process of uniting brake shoes, consisting in juxta-positioning male and female faces thereof, and introducing into interstices therebetween a pulverant compound of a self-fusing nature adapted to subsequently harden therein and serve as a key for locking the faces together.
22. A process of uniting brake shoes consisting in juxta-positioning male and female faces thereof and introducing into interstices therebetween a compound of a pulverant nature and adapted to so react as to come to a fusing temperature, thereby welding together said shoe faces, and on subsequently cooling to harden into a key for further uniting the faces.
23. The process of uniting brake shoes consisting in juxta-positioning the faces thereof with certain parts in contact and applying intermediate the other parts a self fusing welding substance comprising pulverant aluminium as an essential constituent.
24. The process of uniting brake shoes, consisting in juxta-positioning the faces thereof with certain parts in contact and applying intermediate the other parts a self-fusing composition containing an ingredient adapted to weld to and thereby connect the brake shoes.
25. The process of uniting brake shoes, consisting in juxta-positioning the faces thereof whereby certain parts contact and other parts provide intermediate interstices and applying thereto a pulverant self-fusing welding composition containing granules adapted to be melted and fused adjacent contacting faces.
26. A brake shoe having applied to one face thereof a self-fusing welding substance whereby such shoe may be permanently affixed to another.
27. A plurality of brake shoes having interfitting faces and provided with interstices therebetween with a self-fusing hardening substance adapted to weld and key together said shoes.
28. A plurality of brake shoes having interfitting faces welded together by a self-fusing compound.
29. A system of brake shoes constituting units consisting of a brake shoe portion and a self-reacting composition applied to suitable parts thereof whereby such units are self-contained and adapted for being welded together by setting up a reaction in said composition.
30. A plurality of brake shoes having contacting and interfitting portions fused or welded together and having recesses intermediate other portions containing a self-fusing substance adapted to bond and key such latter portions together.

In testimony whereof I affix my signature, in the presence of two witnesses.

VAN BUREN LAMB.

Witnesses:

LEROY A. BUCKINGHAM,
WILLIAM BRYAN.