July 16, 1935. C. W. DAKE ET AL 2,008,173

BRAKE DRUM

Filed March 12, 1934

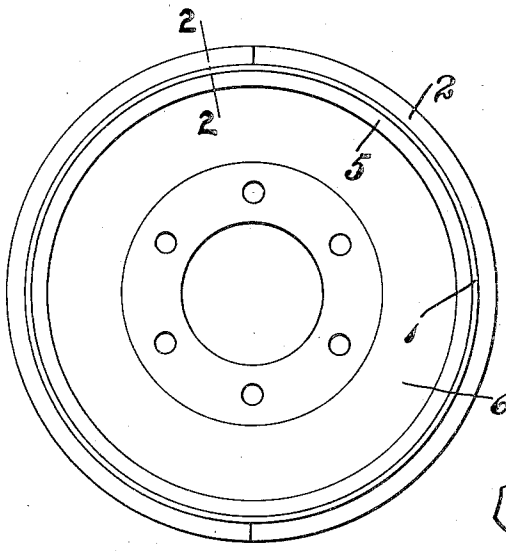

Fig. 1.

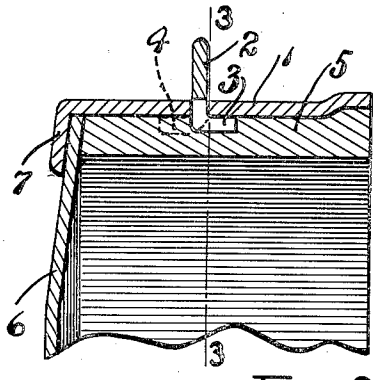

Fig. 2.

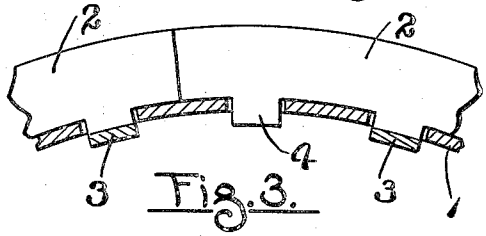

Fig. 3.

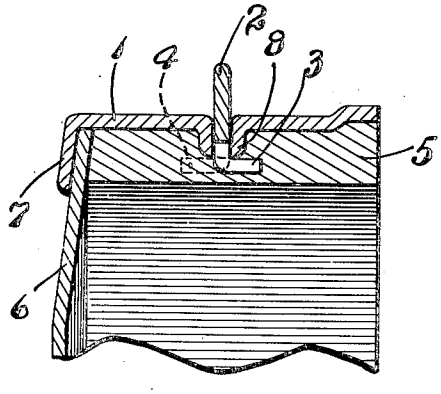

Fig. 5.

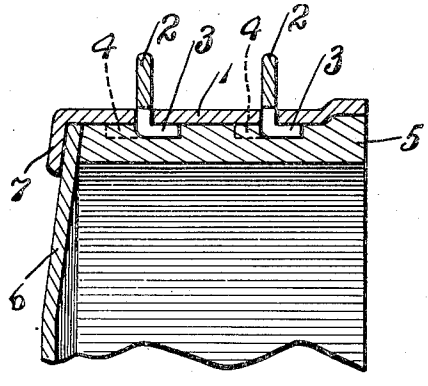

Fig. 4.

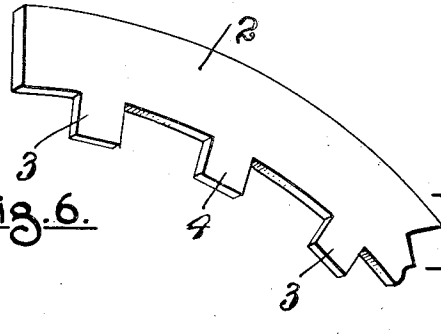

Fig. 6.

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UNITED STATES PATENT OFFICE

2,008,173

BRAKE DRUM

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Application March 12, 1934, Serial No. 715,076

1 Claim. (Cl. 188—218)

This invention relates to brake drums and is primarily concerned with a structure of brake drum having a novel heat dissipating fin or fins thereon. The invention further relates to a very simple and practical method of securing the heat dissipating fins to a drum of composite character having an inner wearing band of an alloy of cast iron preferably, and an outer strengthening band of steel, or any other suitable material having the requisite physical properties of toughness and strength. The invention, the objects thereof, and the manner in which the same are attained will fully appear as an understanding of the invention is had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is an elevation of a brake drum made in accordance with our invention.

Fig. 2 is a fragmentary enlarged transverse section on the plane of line 2—2 of Fig. 1.

Fig. 3 is a fragmentary vertical section taken substantially on the plane of line 3—3 of Fig. 2.

Fig. 4 is a view similar to Fig. 2 but showing the radiating fins greater in number than in Fig. 2.

Fig. 5 is a view similar to Fig. 2 illustrating a slight modification in the construction of the drum, and

Fig. 6 is a fragmentary perspective view of a radiating fin before it is applied to the drum.

Like reference characters refer to like parts in the different figures of the drawing.

In the construction of the drum, there is an outer substantially cylindrical shell 1 of suitable wrought metal, such as low carbon steel or any other metal of substantially like characteristics and properties. The shell, preferably, as shown in Fig. 2, is substantially plain and has applied thereto substantially midway between its ends a radiating fin 2 which is of curved form so as to go around the drum shell and which is equipped with spaced apart inwardly extending tongues 3 and 4. The shell 1 is provided with suitable openings to receive the tongues 3 and 4 and after the same have been passed through the shell 1 the tongues are bent alternately in opposite directions.

In applying the annular outwardly extending metal fin to the drum shell such fin may be made in a plurality of sections, two of the same being shown in Fig. 1; and where the ends come together they may be welded if desired. The number of sections may be increased to greater than two or it is possible to merely make a continuous ring and part it at one side only for applying the same to the drum, thereafter welding or otherwise suitably joining the same at the meeting ends at the parting.

In Fig. 2 one of the heat dissipating fins is shown. The number may be increased as shown in Fig. 4, there being merely a duplication of the openings through the shell 1 for the passage of the tongues 3 and 4 and, of course, a locating of the openings at the proper positions so as to space the fins from each other and properly position them around the drum shell.

After the fins have been attached in the manner described the shell is lined with cast metal 5 to provide a wearing band. The process of casting a cast iron wearing band within a wrought steel shell has been the subject matter of previous applications one of which is that to Donald J. Campbell, Serial No. 631,040, filed August 30, 1932.

The molten cast iron, heated to a very high degree of temperature, in practice approaching 3000° F. is deposited in a rotating drum shell of wrought steel, which is also heated to a high degree of temperature, in the neighborhood of 1500° F., and there is a fused joinder of the cast iron and steel.

The same method of providing the cast metal band 5 herein may be followed. The drum shell with the fins attached will likewise be heated to a temperature in the neighborhood of 1500° F. The molten metal coming into engagement with the inner sides of the shell 1 and with the tongues 3 and 4 fuses and, in effect, makes an integral intermolecular joinder of the contacting portions of the cast iron 5 and the metal of the shell 1 and the tongues 3 and 4.

In Fig. 5 a slight modification is shown in that an inwardly pressed or rolled annular groove 8 is made around the shell 1, having suitably spaced openings at the bottom of the groove for the passage of the tongues 3 and 4 which are bent, as shown, in opposite directions to secure the fin to the shell. Thereafter the molten metal is applied in the manner previously described and completely covers and encloses the tongues 3 and 4, as shown.

A brake drum web 6 is connected with the completed composite drum flange. For example, one edge portion 7 of the shell 1 is bent inwardly so as to come against the outer face of the peripheral portion of the web 6 and welded thereto, the peripheral portion of the web bearing against an edge of the cast metal lining 5. It is, of course, evident that it makes little or no difference whether the web 6 is at the inner side of the inturned flange 7 or the outer

side so long as it is permanently connected thereto, as by welding or equivalent connection.

The material of the shell 1 is preferably and practically of low carbon steel. The liner 5 is cast iron of a suitable composition. The fins 2 may be of like low carbon steel, such as is used in manufacturing the drums 1, though there is a greater variation in the percentage of carbon in the steel used for the fins 2 than is permitted in the steel used in the drums 1. The fins 2 also may be of copper. Copper has the quality of high heat conductivity and its melting temperature is not far from that of the steel used in the drum so that it works very satisfactorily when used as the material from which to make the fins 2.

With this construction heat radiating fins are very simply and easily secured to a composite brake drum and in the process of producing the composite drum the fins are permanently and inseparably attached. They serve to conduct heat outwardly and dissipate the same from the wearing portion 5 of the drum in which heat is generated by the friction of brake shoes bearing against such inner wearing or braking member.

The invention is defined in the appended claim and is to be considered comprehensive of all forms of structure coming within its scope.

We claim:

In a brake drum, a substantially cylindrical shell of wrought metal having a radial inwardly extending portion and an axially extending portion, the latter portion having a plurality of holes therein, a heat radiating fin located around the shell and having inwardly extending parts passing through said shell whereby the fin is held against the inwardly extending portion of the shell and an inner lining band of cast iron alloy fused to the shell and the inwardly extending parts.

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