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A. Y. DODGE

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BRAKE

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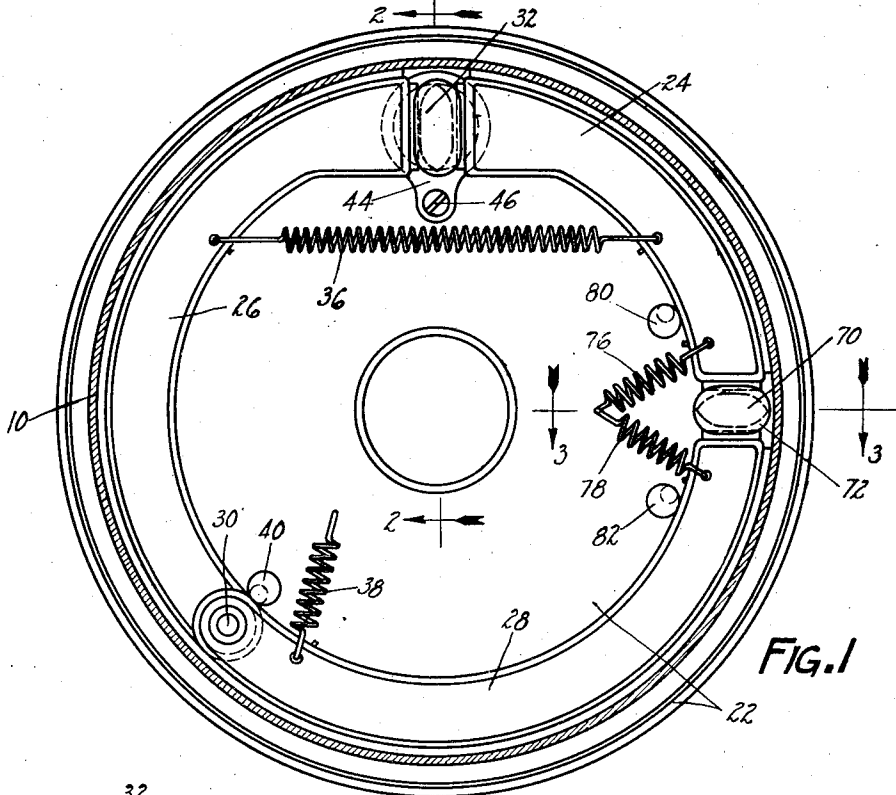


FIG. 1

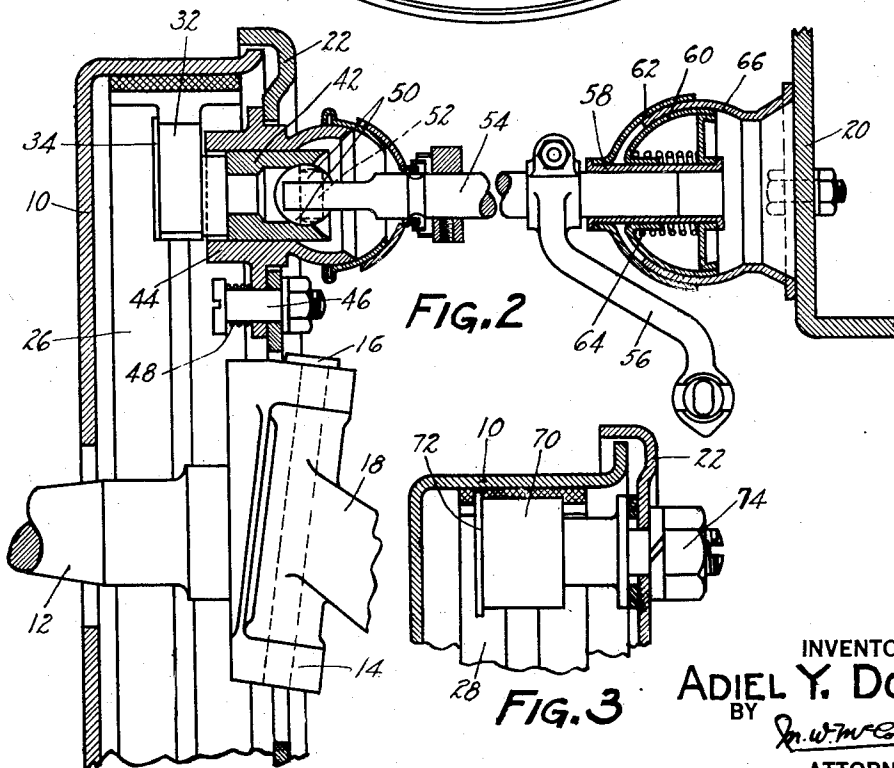


FIG. 2

FIG. 3

INVENTOR
ADIEL Y. DODGE
BY *J. W. M. Combs*
ATTORNEY

UNITED STATES PATENT OFFICE.

ADIEL Y. DODGE, OF SOUTH BEND, INDIANA, ASSIGNOR TO BENDIX BRAKE COMPANY,
OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BRAKE.

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This invention relates to brakes, and is illustrated as embodied in an internal expanding automobile brake. An object of the invention is to provide a novel and simple brake anchor, preferably adjustable to compensate for wear of the brake lining, as for example by using an angularly adjustable cam or the like. It is desirable to use a cam as nearly like the brake-applying cam as possible, and preferably interchangeable therewith, and it is best that the brake-applying cam be supported on a pivoted bracket or in some other manner permitting it to float to balance the pressure on the shoes.

In the particular brake illustrated, there are a single shoe and a plurality of connected shoes anchored as described, with a spring arranged to insure successive application of the connected shoes. One important feature of the arrangement relates to arranging a spring for each anchored shoe end, each urging its shoe end against the cam or other abutment and also inwardly against a stop such as an adjustable eccentric.

Another and very important object of the invention is to secure an efficient "servo" action in a novel and simple manner, by so arranging the shoes that one may act on another through the expanding means. A shiftable expanding device such, for example, as a floating cam may be used, and the ends of the shoes are not pivoted, but merely engage a fixed abutment which serves as an anchor. Thus the one shoe may be urged away from the anchor by the drum friction to act through the shiftable expanding device on the other shoe.

The above and other objects and features of the invention, including various novel combinations and parts and desirable particular constructions, will be apparent from the following description of one illustrative embodiment shown in the accompanying drawing, in which:

Fig. 1 is a vertical section through the brake, just inside the head of the drum;

Fig. 2 is a vertical section through the brake when arranged on a front axle, on the line 2-2 of Fig. 1; and

Fig. 3 is a partial radial section on the line 3-3 of Fig. 1, showing the novel anchor.

The illustrated brake includes a drum 10

rotating with a wheel (not shown) mounted on the spindle 12 of a knuckle 14 swivelled, for example by a king pin 16, at one end of an axle 18. Axle 18, with a rear axle (not shown) supports a chassis frame 20 through the usual springs. At the open side of the drum there may be arranged a suitable support such as a backing plate 22 carried by knuckle 14.

This particular brake includes three shoes: a single floating shoe 24, which is most effective when the vehicle is moving backward, and a pair of floating shoes 26 and 28 connected by means such as a pivot 30. Shoes 24 and 26 are forced apart, to apply the brake, by means shown as a double cam 32 having (Fig. 2) an end flange 34 confining the shoe ends laterally, against the resistance of a return spring 36 connected at its ends to the two shoes. An auxiliary spring 38, connected at its ends to backing plate 22 and to shoe 28, insures that shoe 26 will first engage the drum and will then turn with the drum and apply shoe 28 (the vehicle moving forward), thus applying shoes 26 and 28 successively. Spring 38 urges shoe 28 against an eccentric adjustable stop 40.

When it is desired that cam 32 should float, to balance the pressures on shoes 24 and 26, I prefer to operate it by a short cam-shaft 42 journaled in a bracket 44 mounted on backing plate 22 by a pivot 46 having its axis between the cam and the drum axis. A spring 48 may be provided to clamp bracket 44 lightly against backing plate 22, so that it will not usually shift when the brake is released, although it can readily shift when the brake is applied.

Cam-shaft 42 is shown with a cylindrical cross bore in its end receiving a pair of outwardly-cylindrical connectors 50, between which is swivelled by a pin 52 the flattened end of a brake-applying shaft 54 rocked by an arm 56. The inner end of shaft 56 is shown slidably supported by a sleeve 58 carried by inner and outer hemispherical stampings 60 and 62 held by a spring 64 against a spherical bracket 66 mounted on the chassis frame 20.

According to an important feature of the invention, the braking torque of all of the shoes is taken by a stationary but adjustable

cam 70 between the adjacent ends of shoes 24 and 28, and having an end flange 72 confining the shoe ends laterally. Cam 70 may be securely clamped, after adjustment, to the backing plate 22 by means of a nut 74.

There are two springs, 76 and 78, connected at their inner ends to the backing plate 22, and connected respectively at their outer ends to the ends of shoes 24 and 28, and which are arranged at such angles as to urge the shoe ends against cam 70 and also toward eccentric adjustable stops 80 and 82 on backing plate 22. Cam 70 is preferably of the same form as cam 32.

I prefer that the construction with the shiftable cam, or other shiftable expanding device, be used, inasmuch as this permits of a substantial "servo" or self-applying action taking place by one of the shoes 24 or 26 acting on the other through the expanding device. This is only possible when the shoes are not positively restrained from movement away from the anchoring means, and when the expanding device permits of the transmission through it of pressure from one shoe to the other,—i. e. when it may shift or balance itself. Thus if the drum in Figure 1 is turning counter-clockwise, shoe 24 is free to be urged away from anchor 70, by the friction of the drum, thus acting on shoe 26 with a very substantial "servo" action. The shoe would not, if the brake is properly adjusted, actually leave the anchor, but the torque on the shoe due to the drum friction is not taken from the shoe by the upper side of the anchor but is transmitted through shoes 26 and 28 to the lower side of the anchor.

While one illustrative embodiment has been described in detail, it is not my intention to limit the scope of the invention to that particular embodiment, or otherwise than by the terms of the appended claims.

I claim:

1. A brake comprising, in combination, a drum, a single shoe and a plurality of floating pivotally-connected shoes arranged end to end within the drum and engageable with the same zone of drum surface, an adjustable stationary abutment between one unconnected end of the plurality of shoes and the adjacent end of the single shoe and arranged to take the torque of all the shoes, and an applying device between the other unconnected end of the plurality of shoes and the other end of the single shoe.

2. A brake comprising, in combination, a drum, a single shoe and a plurality of floating pivotally-connected shoes arranged end to end within the drum and engageable with the same zone of the drum surface, an adjustable stationary double cam between one unconnected end of the plurality of shoes and the adjacent end of the single shoe and arranged to take the torque of all the shoes, and an applying device between the other un-

connected end of the plurality of shoes and the other end of the single shoe.

3. A brake comprising, in combination, a drum, a single shoe and a plurality of pivotally-connected shoes arranged end to end within the drum and engageable with the same zone of the drum surface, an adjustable stationary abutment between the one unconnected end of the plurality of shoes and the adjacent end of the single shoe and arranged to take the torque of all the shoes, an applying device between the other unconnected end of the plurality of shoes and the other end of the single shoe, a spring connected at one end to the single shoe and at the other end to the connected shoe next the applying device, a stationary support, and an auxiliary spring connected at one end to the connected shoe next the abutment and at the other end to said support and arranged to secure successive engagement of the connected shoes with the drum.

4. A brake comprising, in combination, a drum, a single shoe and a plurality of pivotally-connected shoes arranged end to end within the drum and engageable with the same zone of the drum surface, an adjustable stationary abutment between one unconnected end of the plurality of shoes and the adjacent end of the single shoe and arranged to take the torque of all the shoes, an applying device between the other unconnected end of the plurality of shoes and the other end of the single shoe, a stationary support, a spring connected at one end to the connected shoe next the abutment and at the other end to said support and arranged to secure successive engagement of the connected shoes with the drum and springs engaging the support, said connected shoe, and said single shoe to secure engagement of the same with the abutment.

5. A brake comprising, in combination, a drum, a plurality of shoes engageable with the drum, a stationary adjustable cam between adjacent shoe ends and taking the torque of all of the shoes, and an angularly movable cam between other adjacent shoe ends and serving to apply the brake and shiftable about an axis between the cam and the axis of the drum to balance the pressures on the shoes.

6. A brake comprising, in combination, a plurality of floating shoes, an abutment between adjacent shoe ends serving as an anchor, a spring connected to each of said shoe ends and urging it radially inward and toward the abutment, and a stop inside of each shoe end against which it is urged by its spring.

7. A brake comprising, in combination, a plurality of floating shoes, an adjustable cam between adjacent shoe ends serving as an anchor, a spring connected to each of said shoe ends and urging it radially inward and

toward the cam, and a stop inside of each shoe end against which it is urged by its spring.

5 8. A brake comprising, in combination, a plurality of floating shoes, an abutment between adjacent shoe ends serving as an anchor, a spring connected to each of said shoe

ends and urging it radially inward and toward the abutment, and a stationary but adjustable eccentric stop inside of each shoe end against which it is urged by its spring. 10

In testimony whereof, I have hereunto signed my name.

ADIEL Y. DODGE.