May 9, 1933. G. J. THOMAS 1,908,460

BRAKE

Original Filed Nov. 3, 1924

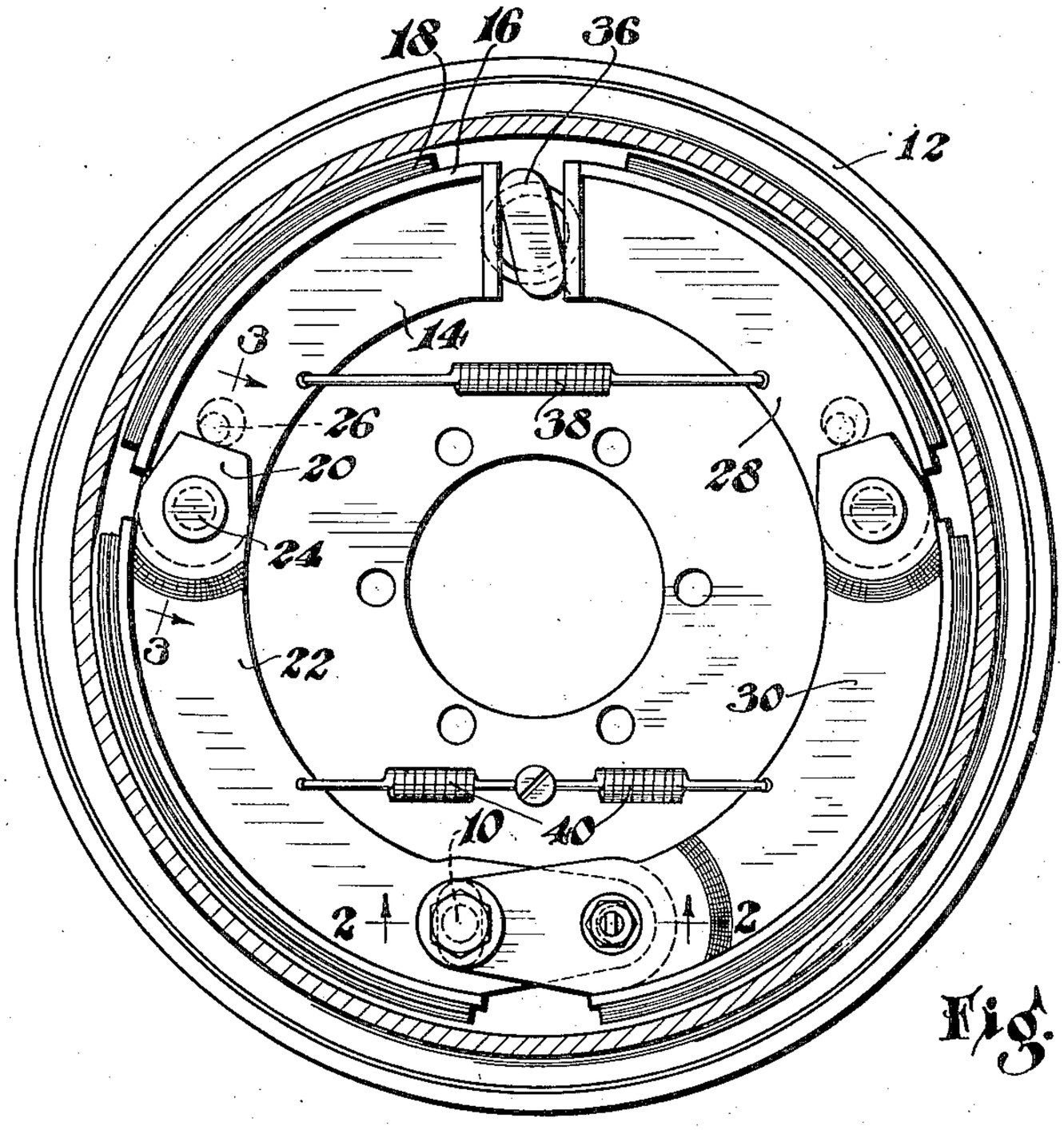
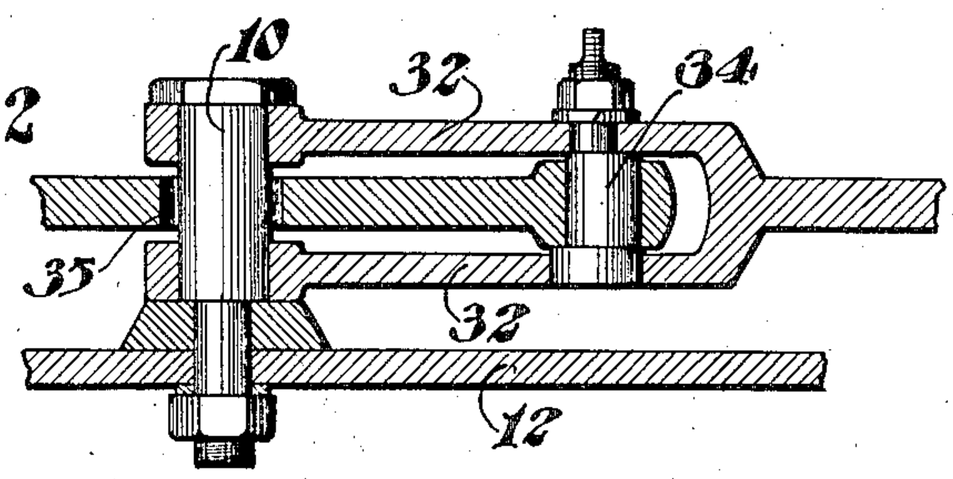


Fig. 1

Fig. 2



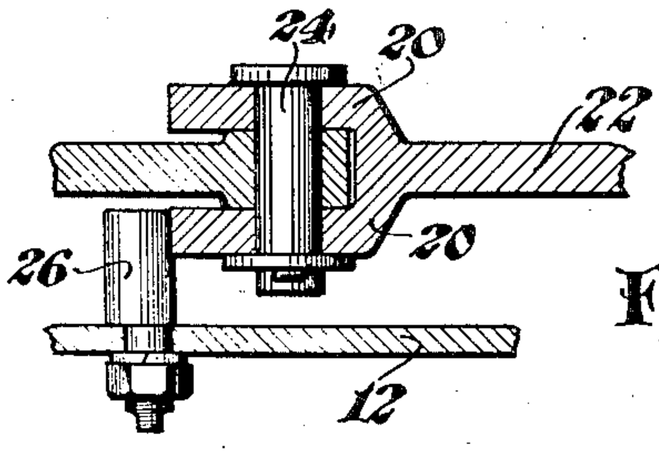


Fig. 3

INVENTOR
George J. Thomas
BY L. O. Clayton
ATTORNEY

Patented May 9, 1933 1,908,460

UNITED STATES PATENT OFFICE

GEORGE JOSEPH THOMAS, OF DETROIT, MICHIGAN, ASSIGNOR TO BENDIX BRAKE COMPANY, OF SOUTH BEND, INDIANA, A CORPORATION OF ILLINOIS

BRAKE

Original application filed November 3, 1924, Serial No. 747,669. Divided and this application filed March 25, 1929. Serial No. 349,747.

This invention relates to brakes and is illustrated as embodied in an internal expanding type of self energizing vehicle wheel brake.

An object of the invention is to provide an inexpensive brake of the four shoe type, suitable for light-weight cars, in which the braking torque of all four shoes of the brake is taken on a single anchor. A further object of the invention is to provide a brake wherein there is self-energizing action and servo action in both directions of drum rotation and to this end I preferably employ two separate sets of shoes, each set comprising two shoes, a primary and a secondary shoe. The shoes of each set are preferably connected by an articulating or floating joint, the primary shoe or servo shoe functioning, by virtue of the wiping action of the rotating drum, to apply the secondary or anchored shoe of the set. Each secondary shoe, by virtue of its fixed anchor, is rendered self energizing with the drum rotating toward its anchor.

My present invention is further directed to the problem of increasing the braking surface of the two sets of shoes to a maximum and at the same time obtaining the necessary drum clearance with a minimum of cam movement in taking up said clearance.

The above and other objects and desirable particular constructions and combinations of parts will be apparent from the detailed description of the invention and brief description of the drawing, in which:

Figure 1 is a side elevation of my novel brake looking toward the brake support and taken just inside the head of the brake drum;

Figure 2 is a partial section taken at 2—2 of Figure 1 through the single anchor member for the brake elements; and

Figure 3 is a section taken on the line 3—3 of Figure 1 showing the floating joint between the two shoes of one of the friction devices and further showing the adjustment of said joint.

As disclosed in Figure 1, the brake comprises two sets of two shoes each, each set comprising a servo shoe or primary shoe and a secondary shoe all anchored by a common anchor post 10 fixedly secured to the brake support plate 12. The set to the left in Figure 1 comprises the single webbed servo shoe 14 provided with a rim 16 and lining 18, the web thereof extending at one end, between the flat ended furcations 20 of the single webbed secondary shoe 22 of the set. An articulating pin 24 secures the webs together, and an eccentric 26, adjustably secured to the brake support, contacts the inner furcation 20 of the shoe 22 and functions as a stop to determine the idle position of the shoes of the set. The connection between the shoes 28 and 30 of the right hand friction device is a replica of the aforementioned connection between shoes 14 and 22.

An important feature of the novel brake combination resides in the connection between the two sets of shoes wherein shoe 30 is preferably bifurcated at one end to straddle the end of the web of shoe 22, all as clearly disclosed in Figure 2. The aforementioned pivot pin or anchor post 10 is journaled in the ends of the furcation 32 and detachably but rigidly connected to the support plate 12. The web of shoe 22 is preferably adjustably connected to the furcations 32 by an eccentric pin 34, the latter being detachably secured to one of the furcations 32. The web is also slotted at 35 to permit free movement of the shoe 22 about the pin 10.

In operation, movement of the brake cam 36, against the action of the return springs 38 and 40, functions to simultaneously spread the servo shoes 14 and 28 into drum contact. With the drum rotating counter-clockwise shoe 14 is moved bodily by the rotating drum and jointly under the action of the cam and its kinetic energy derived from the rotating drum, functions to apply shoe 22. With the same direction of drum rotation shoe 28 merely functions as a thrust link to apply shoe 30, both shoes being wiped away from the rotating drum, which action is neutralized by the cam action. With clockwise rotation the reverse of the aforementioned action is effected, shoes 28 and 30 functioning as do shoes 14 and 22 with counter-clockwise movement.

With counter-clockwise rotation of the

drum the braking torque of shoes 14 and 22 is taken by the compound pivot comprising pins 34 and 10, the ultimate anchoring being on pin 10 and with clockwise rotation shoes 28 and 30 are directly anchored on the anchor pin 10.

While but a single embodiment of the invention is disclosed and described in detail, it is not my desire to limit myself thereto, it being my intention to be limited only by the scope and terms of the appended claims.

This application constitutes a division of subject-matter disclosed in my co-pending application No. 747,669, filed November 3, 1924.

I claim:

1. A brake comprising, in combination with a drum, four brake shoes having a single anchor and a single applying device adjacent the drum and acting on said shoes to force them against the drum for simultaneous effectiveness, said anchor being laterally displaced from the drum diameter including the applying device.

2. A brake mechanism including a pair of friction devices jointly engaged by a common applying means, each friction device comprising articulated members, all members of the brake being anchored on a common anchor by a direct anchorage of one member.

3. A brake comprising four juxtaposed elements, two of said elements being anchored by a compound pivot.

4. A brake comprising, in combination, four shoes, a single stationary anchor pivot for the four shoes arranged intermediate the ends of one of the shoes and at the end of one of the shoes, two of said shoes being connected to adjacent shoes by floating pivots.

5. A brake comprising, in combination, a sub-assembly including four pivotally connected shoes at least two of said shoes being spaced apart at their juxtaposed ends, two of said shoes being connected by a single anchor pivot and applying means between the spaced apart shoes and arranged substantially diametrically opposite said pivot.

6. A brake comprising four shoes each approximately 90° in length and arranged end to end, all of said shoes anchoring on a single anchor.

7. A brake including a rotatable drum and friction means within the drum acting on a common zone thereof and comprising four articulated members positively anchored on a single common anchor member.

8. A single-anchor four-shoe brake comprising, in combination, an intermediate shoe anchored at one end, a pair of shoes pivotally connected to the intermediate shoe adjacent its opposite ends and a fourth shoe pivotally connected to one of the aforementioned pair of shoes to form a connected assembly.

9. A single-anchor four-shoe brake comprising, in combination, a backing plate, an anchor member projecting from the backing plate, an intermediate shoe having one end pivotally sleeved on said anchor, a pair of shoes overlapping opposite ends of said intermediate shoe and a servo shoe pivoted to one shoe of the pair of shoes.

10. A single-anchor four shoe brake comprising, in combination, two servo shoes each acting on a self-energizing shoe, the last-named shoes overlapping each other and anchored on a common anchor member.

11. A brake comprising four shoes acting on the same zone of a brake drum, said shoes being anchored by a common anchor means and each shoe having at least one end coacting against a fixed means.

12. A brake comprising two pairs of shoes anchored on a common anchor, and means on one pair for adjusting the other pair relative to the anchor.

13. A brake comprising two pairs of shoes anchored on a common anchor, one pair having an articulated connection to the anchor and a member on one pair for adjusting the other pair relative to the anchor.

14. A brake comprising two pairs of shoes anchored on a common anchor, one pair having a direct and the other pair an indirect connection to the anchor and means on the pair having a direct connection to the anchor for adjusting the other pair relative to the anchor.

In testimony whereof I have hereunto signed my name.

GEORGE JOSEPH THOMAS.