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H. C. BOWEN

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BRAKE

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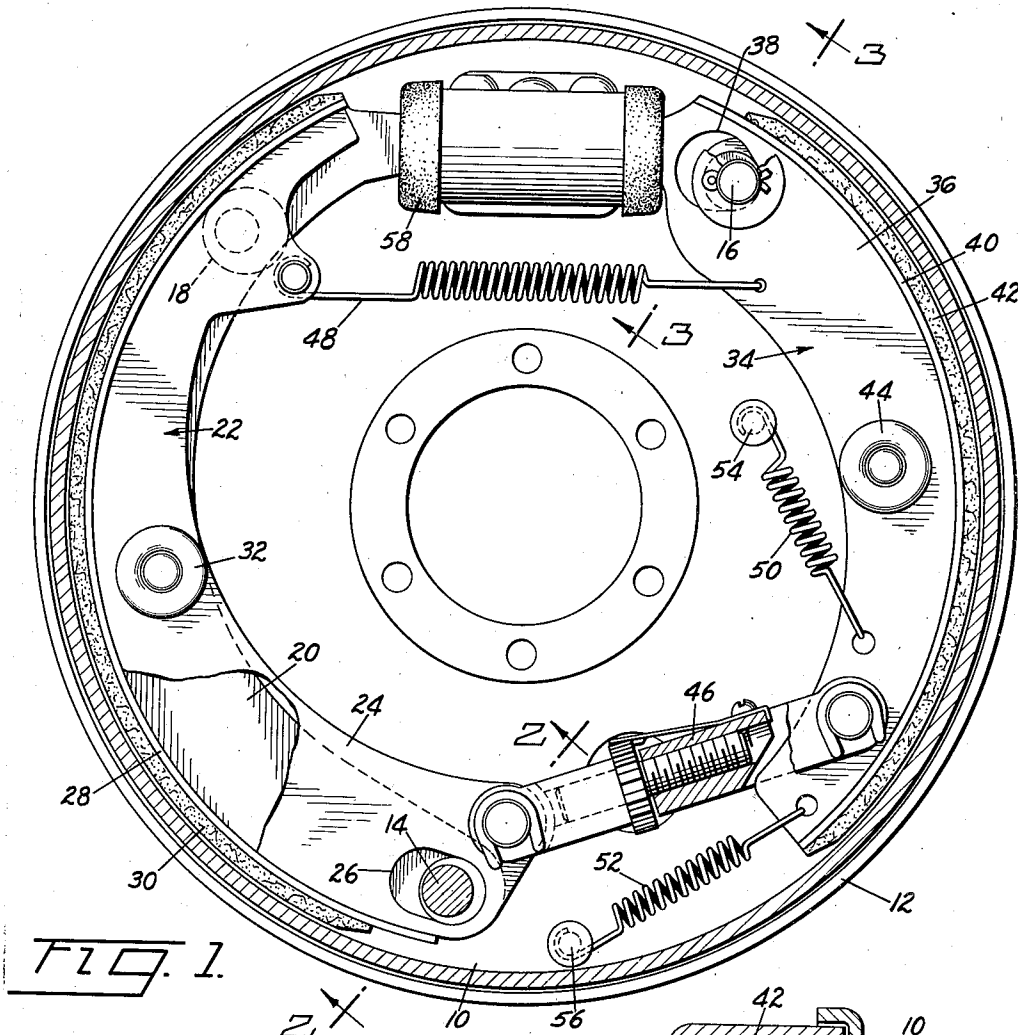


FIG. 1.

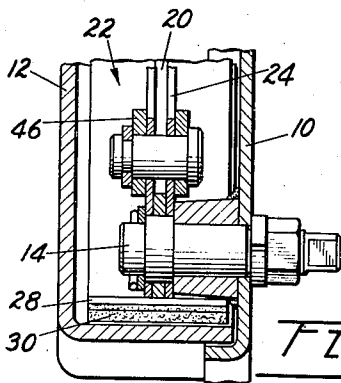


FIG. 2.

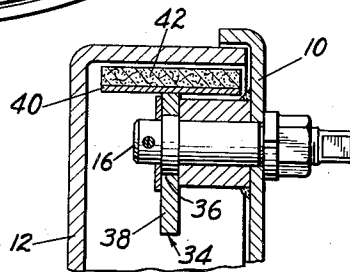


FIG. 3.

INVENTOR.
HERBERT C. BOWEN

BY

H. Fowler

ATTORNEY.

UNITED STATES PATENT OFFICE

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BRAKE

Herbert C. Bowen, Detroit, Mich., assignor to
Hydraulic Brake Company, Detroit, Mich., a
corporation of California

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9 Claims. (Cl. 188—78)

This invention relates to brakes, and more particularly to brakes for motor vehicles.

Broadly the invention comprehends a brake structure of the type wherein a part of the braking force of one braking element or shoe is transferred to the other braking element or shoe so as to improve the effectiveness of the brake as a whole.

An object of the invention is to provide a brake constructed and operated in such a manner as to save pedal travel.

Another object of the invention is to provide a brake wherein more effective control of the forward braking element may be attained.

Another object of the invention is to provide a brake wherein a part of the braking force of the forward braking shoe may be transferred to the trailing or reverse braking shoe.

A further object of the invention is to provide a brake of the type wherein the forward braking shoe may move circumferentially with respect to the drum so as to inhibit the building up of excessive force at the heel of the shoe.

Other objects and advantages of the invention will appear from the following description taken in connection with the drawing forming a part of this specification, and in which—

Fig. 1 is a vertical sectional view of a brake taken just back of the head of the drum illustrating the invention as applied;

Fig. 2 is a sectional view substantially on line 2—2, Fig. 1; and

Fig. 3 is a sectional view substantially on line 3—3, Fig. 1.

Referring to the drawing for more specific details of the invention, 10 represents a fixed support or backing plate adapted to be secured to an axle or an axle housing, not shown, and 12 represents a rotatable drum associated with the backing plate and adapted to be secured to a wheel, not shown.

The backing plate has arranged thereon diametrically disposed adjustable anchors 14 and 16, also an adjustable retractile stop 18. A lever 20 has its fulcrumed end pivotally mounted on the anchor 14, and slidably mounted on the lever is a braking shoe 22.

As shown, the shoe 22 has a channeled web 24 embracing the lever. The web is slotted at 26 for the reception of the anchor 14, and a rim 28 supported by the web has secured thereto a lining 30 suitable for cooperation with the drum. The lever 20 and the shoe 22 are supported on the backing plate 10 by a suitable steady rest

32, and when in retracted position the shoe is supported by the retractile stop 18.

A shoe 34 shiftably mounted on the anchor 16 includes a web 36 having a slot 38 receiving the anchor and a rim 40 supported on the web having secured thereto a lining 42 suitable for cooperation with the drum. The shoe 34 is supported on the backing plate as by a conventional steady rest 44, and connected by an adjustable link 46 to the sliding shoe 22.

The shoes 22 and 34 are connected by a retractile spring 48, and the shoe 34 is connected by springs 50 and 52 to fixed supports 54 and 56. The spring 48 serves to return the shoes to their retracted position upon conclusion of a braking operation, the spring 50 serves to lift the shoe 34 against its anchor 16, and the spring 52 serves to return the shiftable shoe 22 to its retracted position.

The shoes are actuated by a conventional fluid pressure actuated motor 58 mounted on the backing plate 10 and suitably connected to the force-applying end of the lever 20 and the force applying end of the shoe 34.

In a normal forward braking operation, upon energization of the motor 58, the shoes 22 and 34 are moved from their retracted position into engagement with the drum 12 against the resistance of the retractile spring 48. When the shoe 22 engages the drum 12, due to the wiping action of the drum, the shoe is slightly shifted on the lever 20 circumferentially with respect to the drum. During this movement the shoe slides on the anchor 14 and is guided thereby to inhibit radially outward movement of the anchored end of the shoe so as to avoid building up excessive pressure at the heel of the shoe.

The applied actuating force of the shoe 22, augmented by the wiping action of the drum 12, is partly transmitted from the shoe 22 through the adjustable link 46 to the toe of the shoe 34, so as to apply the shoe 34 with increased effectiveness. The shoe 22 functions as a servo shoe, controlled so as to provide a smooth operation.

Upon concluding this braking operation, the applied actuating force is released. This results in the motor 58 and the shoes 22 and 34 returning to their retracted position under the influence of the spring 48. The spring 50 serves to lift the shoe 34 against its anchor 16, and the spring 52 imposes force on the toe of the shoe 34, and this force is transmitted through the link 46 to the shoe 22, resulting in movement of the shoe 22 against its anchor 14.

In a reverse braking operation, upon energiza-

tion of the motor 40, the shoes 22 and 24 are moved from their retracted position into engagement with the drum 12 against the resistance of the retractile spring 46. When the shoes engage the drum, the shoe 24 moves from its anchor 16 and becomes in effect a servo shoe, transmitting force therefrom through the link 46 to the heel of the shoe 22 so as to apply the shoe 22 with increased effectiveness. Upon conclusion of this braking operation, the brake returns to the position of rest, as hereinabove described in connection with a forward braking operation.

While this invention has been described in connection with certain specific embodiments, the principle involved is susceptible of numerous other applications that will readily occur to persons skilled in the art. The invention is, therefore, to be limited only as indicated by the scope of the appended claims.

20 Having thus described the various features of the invention, what I claim as new and desire to secure by Letters Patent is:

1. A brake comprising a fixed support, an anchor thereon, a lever fulcrumed on the anchor, a shoe 25 slidable on the lever having a slot receiving the anchor, and means for actuating the lever.

2. A brake comprising a fixed support, a drum associated therewith, an anchor on the support, a lever fulcrumed on the anchor, a shoe slidable 30 on the lever having a slot receiving the anchor, a shoe slidably anchored on the support, a link connecting the shoes, and means for actuating the lever and the shoe anchored on the support.

3. A brake comprising a fixed support, a rotatable drum associated therewith, an anchor on the support, a lever fulcrumed on the anchor, a shoe 35 embracing the lever and slidable thereon having a slot receiving the anchor, a shoe shiftably anchored on the fixed support, a link connecting the shoes, and means for actuating the shoes.

4. A brake comprising a fixed support, a rotatable drum associated therewith, a lever pivoted on the support, a shoe slidable on the lever, a shoe shiftably anchored on the support, a link 40 connecting the shoe on the lever to the shiftably anchored shoe, and means for actuating the lever and shiftably anchored shoe.

5. A brake comprising a fixed support, a rotatable drum associated therewith, diametrically 45 disposed anchors on the support, a lever pivotally

mounted on one of the anchors, a shoe slidable on the lever having a slot receiving the anchor, a shoe shiftably mounted on the other anchor, a link connecting the shoes, and means for actuating the lever and the last-mentioned shoe. 5

6. A brake comprising a fixed support, a rotatable drum associated therewith, diametrically disposed anchors on the fixed support, a lever fulcrumed on one of the anchors, a shoe shiftably mounted on the other anchor, a shoe slidable 10 on the lever, a link connecting the shoes, and means for actuating the lever and the shiftably mounted shoe.

7. A brake comprising a fixed support, a drum associated therewith, diametrically disposed anchors on the support, a lever fulcrumed on one 15 of the anchors, a shoe shiftably mounted on the other anchor, a shoe slidable on the lever having a slot receiving the anchor constituting the fulcrum for the lever, a link connecting the shoe 20 on the lever to the unanchored end of the shiftably mounted shoe, and a motor for actuating the lever and the shiftably mounted shoe.

8. A brake comprising a fixed support, a rotatable drum associated therewith, a pair of diametrically disposed anchors on the support, a lever fulcrumed on one of the anchors, a shoe shiftably mounted on the other anchor, a shoe 25 having a channeled web embracing the lever and slidable thereon, said shoe being shiftably anchored on the anchor constituting the fulcrum of the shoe, a link connecting the shoe on the lever 30 to the unanchored end of the other shoe, and a motor for actuating the lever and the shiftably anchored shoe. 35

9. A brake comprising a fixed support, a rotatable drum associated therewith, a pair of diametrically disposed anchors on the support, a lever fulcrumed on one of the anchors, a shoe shiftably mounted on the other anchor, a shoe 40 having a channeled web straddling the lever, said last mentioned shoe slidable on the lever and shiftably anchored on the anchor constituting the fulcrum for the lever, an adjustable link connecting the shoe on the lever to the unanchored 45 end of the other shoe, and a motor for actuating the lever and the shoe shiftably anchored on the support.

HERBERT C. BOWEN. 50