Feb. 26, 1946. J. S. IRVING ET AL 2,395,551

VEHICLE BRAKE

Filed Aug. 24, 1944

FIG. 1

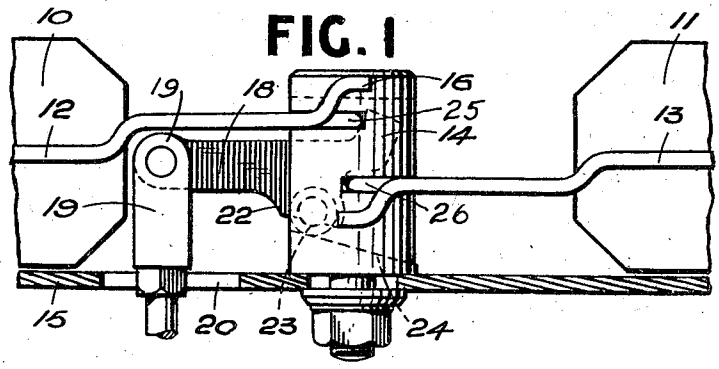


FIG. 2

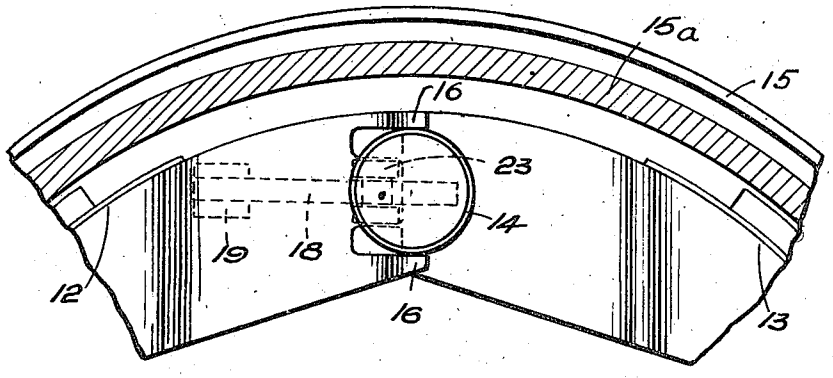
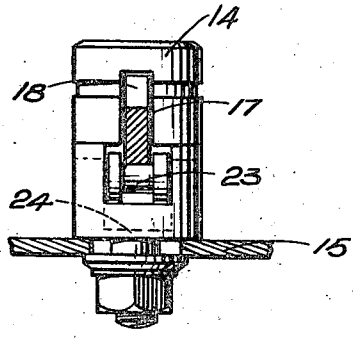


FIG. 3



Inventors
John Samuel Irving
Thomas Kemp Mace
By
Williams, Bradbury & Hinkle
attorneys

Patented Feb. 26, 1946

2,395,551

UNITED STATES PATENT OFFICE

2,395,551

VEHICLE BRAKE

John Samuel Irving and Thomas K. Mace,
Birmingham, England

Application August 24, 1944, Serial No. 550,922
In Great Britain June 12, 1943

4 Claims. (Cl. 188—78)

This invention relates to improvements in vehicle brakes and refers particularly to brakes of the type in which a pair of opposed shoes mounted within a brake drum are adapted to be urged outwardly into contact with the drum by separating or spreading means arranged between the shoes at one end, and the shoes are permitted a limited circumferential movement with respect to the drum when the brake is applied.

One object of our invention is to provide simple and effective shoe separating means for a brake of this type which permits substantial variation of the effort applied to the individual shoes according to requirements and enables a powerful braking effort to be obtained with a relatively small applying force.

According to our invention the adjacent ends of a pair of opposed shoes are adapted to be separated by angular movement of a floating lever engaging at spaced points with staggered abutments on the shoe ends and the lever has a rolling fulcrum on a surface on the back-plate of the brake or on a part mounted thereon which surface is inclined with respect to the plane of the back-plate so that movement of the fulcrum along the surface varies the effective spacing of the fulcrum from the plane of the back-plate. This variation can be used to vary the relative effort applied to the shoes in proportion dependent on the spacing between the points of the engagement of the lever with the shoes and the fulcrum and the inclination of the surface on which the fulcrum rolls.

One practical arrangement is shown by way of example in the accompanying drawing in which:

Figure 1 is a plan of the shoe separating mechanism and the adjacent shoe ends.

Figure 2 is an elevation.

Figure 3 is an elevation of the steady post in which the mechanism is housed.

In Figures 1 and 2, 10, 11 are the brake shoes and 12, 13 are the shoe webs. The webs are extended beyond the end of the shoes and the extended parts are offset on opposite sides of the central plane of the shoes as shown in Figure 1. The lengths of the extended parts of the webs are such that they overlap slightly in the "off" position of the brake, and their extremities are received in notches in opposite sides of a cylindrical steady post 14 which is secured to the back-plate 15 of the brake and forms a stop for the shoes in the "off" position of the brake.

The shoe webs are located against lateral displacement by cranking a tongue portion of each out of alignment with the rest to bear on each side of the post as shown at 16 in Figures 1 and 2.

A longitudinal slot 17 in the post which is intersected by the notches serves to house a lever 18 which is a pressing or stamping of approximately L outline having one short and one long arm. The short arm of the lever extends substantially at right angles to the back-plate between the ends of the shoe webs, the inner edge of the arm engaging the web 12 which is furthest from the back-plate and the outer edge of the arm engaging the other web 13. The long arm of the lever extends substantially parallel to the back-plate and to its free end is pivotally connected a fork end 19 extending through an opening 20 in the back-plate. The fork end is adapted to receive a pull-rod 21 or other means for applying a force to the lever in a direction substantially at right angles to the back-plate.

On the long limb of the lever adjacent the junction of the limbs there is a lug 22 notched to receive the reduced central part of a roller 23 of bobbin form. This roller engages a track 24 which is formed by the inner end of the slot 17 and is inclined at an angle to the back-plate.

When a pull is applied to the free end of the long limb of the lever in a direction at right angles to the back-plate the lever rocks about the roller 22 as a fulcrum and the short arm of the lever applies oppositely directed thrusts to the ends of the shoe webs to urge the shoes outwardly into engagement with the drum 15a. The roller meanwhile rolls down the inclined track 24 until one shoe engages the drum and the lever then continues to roll down the inclined track while fulcruming on the extremity of the web of the stationary shoe until both shoes are in full engagement with the drum.

The reaction on the roller is at right angles to the inclined track and this results in different braking efforts being applied to the two shoes.

Whether this effect is an increase or decrease of the braking effort applied to one particular shoe depends on the direction of inclination of the track 24 relative to the direction of rotation of the drum, but normally the arrangement will be such that application of the brake causes a greater load to be applied to the trailing shoe than to the leading shoe. The difference in the loading of the two shoes is dependent solely on the inclination of the track 23 relative to the plane of the back-plate.

In the embodiment illustrated the lever engages with staggered abutments formed by offsetting extensions of the shoe webs but the abut-

ments may be formed by offset pressings secured to the shoe webs, or the webs themselves may be offset on opposite sides of the central plane of the shoes.

In the embodiment illustrated the lever engages with staggered abutments formed by offsetting extensions of the shoe webs but the abutments **25**, **26** may be formed by offset pressings secured to the shoe webs, or the webs themselves may be offset on opposite sides of the central plane of the shoes.

We claim:

1. A vehicle brake comprising a rotatable drum, a stationary back-plate, shoes mounted within the drum for limited circumferential movement therewith when the shoes are brought into contact with the drum, staggered abutments on adjacent shoe ends, a floating lever engaging between said abutments, a surface on the back-plate with which the lever has a rolling fulcrum engagement and inclined with respect to the plane of the back-plate, and means for rocking the lever about its fulcrum to separate the shoe ends.

2. A vehicle brake comprising a rotatable drum, a stationary back-plate, shoes mounted within the drum for limited circumferential movement therewith when the shoes are brought into contact with the drum, staggered abutments on adjacent shoe ends, an L shaped floating lever having one arm extending substantially at right angles to the back-plate between said abutments and a long arm extending substantially parallel to the back-plate, a roller mounted on the long arm of the lever adjacent the junction of the arms, a surface on the back-plate with which said roller engages to form a rolling fulcrum for the lever of which the surface is inclined with respect to the plane of the back-plate, and means for applying a force to the long arm of the lever in a direction substantially at right angles to the back-plate to move the lever angularly about the roller as a fulcrum.

3. A vehicle brake comprising a rotatable drum, a stationary back-plate, shoes mounted within the drum for limited circumferential movement therewith when the shoes are brought into contact with the drum, staggered abutments on adjacent shoe ends, a steady post mounted on the back-plate and extending between the said abutments, staggered notches in the post on opposite sides thereof into which said abutments enter, a longitudinal slot in the post intersected by said notches, an inclined end surface to said slot adjacent the back-plate, a floating lever housed in said slot between said abutments and having a rolling fulcrum engagement with said inclined surface, and means for applying a turning movement to the lever.

4. A vehicle brake comprising a rotatable drum, a stationary back-plate, shoes mounted within the drum for relative separation into engagement therewith, staggered abutments on adjacent shoe ends, a floating lever engaging between the abutments and a surface on the back-plate with which said lever has a rolling fulcrum engagement and which is inclined with respect to the plane of the back-plate.

JOHN SAMUEL IRVING.
T. K. MACE.