PATENT SPECIFICATION

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International Classification:—F 06 d.

COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Improvements in Shoe Drum Brakes

WE, GIRLING LIMITED, a British Company, of Kings Road, Tyseley, Birmingham, 11., do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention relates to improvements in shoe drum brakes and relates more particularly to actuating means for separating the shoes to bring them into engagement with the drum.

According to our invention, adjacent ends of the shoes in a shoe drum brake are separated by a pair of complementary levers of which the outer ends lie between and engage with the shoe ends and the inner ends are adapted to be urged towards each other by mechanical actuating means, the levers being pivoted at or fulcrumming about intermediate points in their lengths.

The levers will generally be used for applying the brake from a hand lever for parking and emergency braking, and for normal braking the shoes will be separated by a double-ended hydraulic cylinder and piston assembly mounted on the stationary backplate of the brake and acting on abutments on the shoe webs disposed inwards from the ends of the shoes which are engaged by the levers.

In one convenient arrangement the levers are pivoted on pins integral with or mounted on the hydraulic cylinder, the levers being retained on the pins by a plate which is detachably secured to the cylinder by a screw or bolt and may serve as an anchorage for pull-off springs connected to the shoes.

Various methods of operating the levers may be employed.

A shoe drum brake of the duo-servo type embodying shoe actuating means in accordance with our invention is illustrated by way of example in the accompanying drawings in which :—

Figure 1 is an end elevation of the brake without the brake drum ;

Figure 2 is a section on the line 2-2 of Figure 1 ; and

Figure 3 is a fragmentary section on the line 3-3 of Figure 1.

The brake illustrated incorporates two opposed arcuate brake shoes 10, 11 carrying linings 12 of friction material for engagement with a rotatable drum (not shown). The shoes are mounted on a stationary backplate 13.

The shoe webs at one end of the shoes are held by a tension spring 14 in engagement with notches in opposite ends of a coupling member 15 of adjustable length, the adjustment being effected by rotation of a toothed wheel 16 which is accessible through an opening in the back-plate.

At the other ends of the shoes the webs are notched for engagement with opposite sides of an anchor pin 17 fixed in the backplate.

For normal braking the shoes are separated by a double-ended hydraulic cylinder and piston assembly 18 mounted on the back-plate radially inwards from the anchor pin and acting on abutments 19 on the shoe webs.

For parking or emergency braking the shoe ends are separated by complementary substantially radial levers 21, 22 which are pivotally mounted at intermediate points in their lengths on pins 23 integral with or mounted on the hydraulic cylinder. The levers are retained on the pins by a plate 24 which is secured to the cylinder by a bolt 25. The plate also serves as an anchorage for the pull-off springs 26 connected to the shoes. The outer ends of the levers are

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cranked or stepped towards the back-plate for engagement with arcuate reinforcing abutments 27 welded or otherwise secured to the shoe webs.

The inner ends of the levers are bifurcated and a trunnion 28 is pivotally mounted in each. A flexible cable 29 passes through both trunnions and on its free end is secured a nipple 31 forming an abutment engaging the outer side of one trunnion.

The cable is carried through a length of conduit 32 of which one end bears on the outer side of the other trunnion and the other end is received in a socket 33 mounted in the back-plate. The cable is carried out through the socket and its free end carries a fitting 34 adapted to be connected by a rod or cable to a hand-brake lever.

When a pull is applied to the cable the forces applied to the shoes through the levers are balanced.

In a modification the levers instead of pivoting on pins carried by the hydraulic cylinder may fulcrum on an abutment or abutments located on the cylinder between the inner edges of the levers.

While our improved actuator has been illustrated as applied to a brake of the duo-servo type it will be appreciated that it can be applied equally well to a brake of the type in which non-actuated ends of the shoes pivot or rock and slide on stationary pivots or abutments.

One advantage of our improved actuating means is that adjustment of the shoes at their non-actuated ends does not call for any consequent adjustment of the hand-brake linkage.

The cable is preferably maintained under sufficient tension to cause the levers to follow the shoes when the brake is applied hydraulically so that there is no tendency for the levers to rattle.

Where the brake is located on the rear wheel of a vehicle and the levers are actuated by a cable and conduit, the cable and conduit may be connected to the brakes on both wheels and be carried over a pulley which is actuated by a hand-lever so that compensation between the brakes on the two wheels is automatically obtained.

WHAT WE CLAIM IS:—

1. Actuating means for separating the shoes of a shoe drum brake comprising a pair of complementary levers of which the outer ends lie between and engage with abutments on the shoes at or adjacent to their ends, and mechanical means for urging the inner ends of the levers towards each other, the levers being pivoted at or fulcrumming about intermediate points in their lengths on a stationary part.

2. Actuating means as claimed in Claim 1 in which the inner ends of the levers are urged towards each other by a flexible cable coupled to the inner end of one lever and working through a conduit bearing on the other lever.

3. A shoe drum brake incorporating means for separating the shoe ends as claimed in Claim 1 or 2 in combination with hydraulic means for separating the shoe ends, the hydraulic means comprising a double-ended hydraulic cylinder and piston assembly.

4. A shoe drum brake as claimed in Claim 3 in which the levers for separating the shoe ends mechanically are pivoted on pins integral with or mounted on the hydraulic cylinder.

5. A shoe drum brake as claimed in Claim 4, in which the levers are retained on the pins by a plate which is detachably secured to the cylinder and also serves as an anchorage for pull-off spring connected to the shoes.

6. A shoe drum brake as claimed in Claim 3, in which the levers for separating the shoe ends fulcrum on abutments integral with or mounted on the hydraulic cylinder.

7. A shoe drum brake as claimed in Claim 3, in which the brake is of the duo-servo type and the shoes anchor on a pin mounted on the back-plate and located radially outwards from the hydraulic cylinder.

8. Actuating means for the shoes of a shoe drum brake substantially as described with reference to the accompanying drawings.

9. A shoe drum brake substantially as described with reference to the accompanying drawings.

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