We SAB INDUSTRI AB, of Instrumentgatan 15, (Pack), S-261 20 Landskrona, Sweden

hereby apply for the grant of a Standard Patent for an invention entitled: "A DEVICE AT A BRAKE ACTUATOR"

which is described in the accompanying complete specification.

Details of basic application(s):

Number of basic application 7811340-4
Name of Convention country in which basic application was filed Sweden
Date of basic application 2nd November, 1978

Number of basic application
Name of Convention country in which basic application was filed
Date of basic application

The address for service is care of DAVIES & COLLISON, Patent Attorneys of 1 Little Collins Street, Melbourne, in the State of Victoria, Commonwealth of Australia.

Dated this 17th day of October, 1979

TO: THE COMMISSIONER OF PATENTS

Davies & Collison, Melbourne and Canberra.

(a member of the firm of DAVIES & COLLISON for and on behalf of the Applicant)
PATENT OR PATENT OF ADDITION

(The declaration shall be made by the applicant, or, if the applicant is a body corporate, by a person authorized by the body corporate to make the declaration on its behalf).

In support of the Application made for a patent of addition for an invention entitled "A DEVICE AT A BRAKE ACTUATOR"

I Stellan Petri, of
We- SAB Industri AB, of
Instrumentsgatan 15 (Fack),
S-261 20 Landskrona, Sweden

do solemnly and sincerely declare as follows:

1. (a) I am the applicant for the patent of addition
or (b) I am authorized by

SAB Industri AB

the applicant for the patent of addition to make this declaration on its behalf.

2. (a) I am the actual inventor of the invention.
or (b) Bo Goran Stensson, of Korsgatan 22,
S-2020 Teckomatorp, Sweden; See Over

the actual inventor of the invention and the facts upon which the applicant is entitled to make the application are as follows:

The applicant is the assignee of the said actual inventors.

(Paragraphs 3 and 4 apply only to Convention applications).

3. The basic application as defined by Section 141 of the Act was made in Sweden on the 2nd November, 1978 by SAB Industri AB

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The basic application referred to in paragraph 3 of this Declaration was the first application made in a Convention country in respect of the invention the subject of the application.

Declared at Landskrona this 1st day of October, 1979

SAB Industri AB

Stellan Petri
(Authorized Signing Officer)
1. A device at a brake actuator for permitting thrust force transmission between an axially movable push rod of the actuator and a brake block holder moving out of line with the push rod, characterized in that a transmission part is arranged between the push rod and the brake block holder and has spherical surfaces in engagement therewith, these surfaces having a common center.
The following statement is a full description of this invention, including the best method of performing it known to us:---
A device at a brake actuator

Technical Field
This invention relates to a device at a brake actuator for thrust force transmission between an axially movable push rod of the actuator and a brake block holder moving out of line with the push rod.

Background of the Invention
A brake block holder often moves out of line with the brake actuator push rod acting thereon for brake application. Due to its normal suspension it will move along a circular line in the plane of the push rod axis, but sometimes it must also be laterally movable, which makes it necessary to find another solution than the simple type of transmission with a wedge engaging a groove as shown in GB 1 140 488.

For different reasons, for example the rough environment, it is also preferred to avoid any slippage between the different parts.

Disclosure of Invention
These requirements, together with the basic requirement of a faultless force transmission, and the need for a simple but reliable solution are according to the invention fulfilled in that a transmission part is arranged between the push rod and the brake block holder and has spherical surfaces in engagement therewith, these surfaces having a common center.
A preferred embodiment has the further feature that the end of the push rod has the form of a sleeve with a cup-shaped bottom and with axial slots for cooperating with pins on the transmission part, a rubber bushing being provided between said sleeve and the transmission part. In this way the push rod and the transmission part will be held together in a non-rotatable way, and the latter will be biased towards a neutral position in line with the push rod.

The brake block holder may be provided with a plane for cooperation with the transmission part and lateral flanges at either side of said plane, the flanges having the purpose to guide the transmission part laterally and prevent rotation thereof.

**Brief Description of the Drawing**

The invention will be described in further detail below reference being made to the accompanying drawing, in which Fig 1 is a side-view, partly in section, of an arrangement embodying the invention, Fig 2 is a section to a larger scale of the essential part of Fig 1, and Fig 3 is a section corresponding to Fig 2 but perpendicular thereto.

**Description of the Preferred Embodiment**

A conventional brake unit 1 is to be attached to a vehicle underframe (not shown) in an ordinary way. Only a limited part of this brake unit 1 is shown, namely a wall 2, an adjuster tube 3 and a push rod 4, which preferably is a threaded spindle of the slack adjuster built-into the brake unit. In the present case there are means (not shown), as indicated by arrows in Fig 1, to transform a movement downwards of a piston (not shown) at the admission of fluid under pressure into a movement to the left in the drawing of the push rod 4.
By means of a transmission part 5 this movement will be transmitted to a brake block holder 6, which is suspended from the vehicle underframe (not shown) by means of brake block hangers 7.

At its end in contact with the push rod 4 the transmission part 5 is spherical for coacting with a corresponding cup-shaped surface in the push rod, and at its other end the part 5 is likewise spherical for coacting with a flat surface on the brake block holder 6. These two spherical surfaces on the transmission part 5 have a common center, which in the shown case is rather close to the right hand end of the transmission part 5 but which could be placed elsewhere in said part depending on the circumstances. The feature with the common center for the two spherical surfaces means that no slippage will occur between the transmission part 5 and the members-coacting therewith, irrespective of the position of the brake block holder 6 relative to the push rod 4 or in other words irrespective of the angular departure of the transmission part 5 from its neutral position, this departure however in a practical case being limited to say 3.5-4°.

Forces perpendicular to the push rod 4 due to block holder movements will be reduced by the ratio between the radii of the spherical surfaces compared to the case with the push rod acting on the block holder directly.

Due to a comparatively loose suspension of the brake block holder 6 movements thereof will occur relative to the axial direction of the push rod 4. Due to the suspension the brake block holder 6 will always move along a circular line (in the plane of the push rod axis) during a brake application, but also in the lateral direction movements will be allowed, as illustrated in Fig 3. Due to the fact that the brake block holder 6 is provided with flanges 6° the transmission part 5 will
be forced to follow such lateral brake block holder movements, also with the brake in released position.

A rubber bushing 8 between the sleeve-shaped end of the push rod 4 and the transmission part 5 acts as a means for keeping these members together and will provide a force on the transmission part 5 biasing the same to its neutral position. The bushing 8 is held in proper position by a spring clip 9.

For the proper functioning of the slack adjuster built into the brake unit 1 and also for other reasons it may be essential to prevent rotational movements of the push rod 4, which as said is the spindle of the slack adjuster. This is in the shown case attained in that pins 10 extending outwardly from the transmission part 5 cooperate with axial slots in the push rod and also in that the transmission part 5 is held against rotation by means of its coaction with the brake block holder flanges 6°.

Although the term brake unit has been used this is not meant to exclude any brake actuator or the like.

Different modifications are possible within the scope of the appended claims. It is for example possible to have other arrangements than the bushing 8 and the pins 10 for returning the transmission part 5 to its neutral position and to prevent it from rotating.
The claims defining the invention are as follows:

1. A device at a brake actuator for permitting thrust force transmission between an axially movable push rod of the actuator and a brake block holder moving out of line with the push rod, characterized in that a transmission part is arranged between the push rod and the brake block holder and has spherical surfaces in engagement therewith, these surfaces having a common center.

2. A device according to claim 1, characterized in that the end of the push rod has the form of a sleeve with a cup-shaped bottom and with axial slots cooperating with pins on the transmission part, a rubber bushing being provided between said sleeve and the transmission part.

3. A device according to claim 1 or 2, characterized in that the brake block holder is provided with a plane for cooperating with the transmission part and lateral flanges at either side of said plane.

4. The steps or features disclosed herein or any combination thereof.

Dated this 17th day of October, 1979
SAB INDUSTRI AB
by its Patent Attorneys
DAVIES & COLLISON.