FRONT BRAKE

GIRLING 13 x 5 H.L.S.S.

Description

This is a hydraulic leading shoe sliding front brake. The two leading shoe principal is achieved by using a separate cylinder for each shoe operating on the leading end of the shoe web. The rotating drum assists considerably in the application of the brake and comparatively low input pressures are required.

The abutment ends of the shoes are shaped to allow the shoes to slide in the wheel cylinder abutments which are angled to a precise degree so that efficient use is made of the whole lining area. The combination of the thrust of the cylinder and the effort induced by the rotating drum impinges on the angled abutment causing an outward movement at the abutment end of the shoe similar to that at the operative end. Thus the pressure over

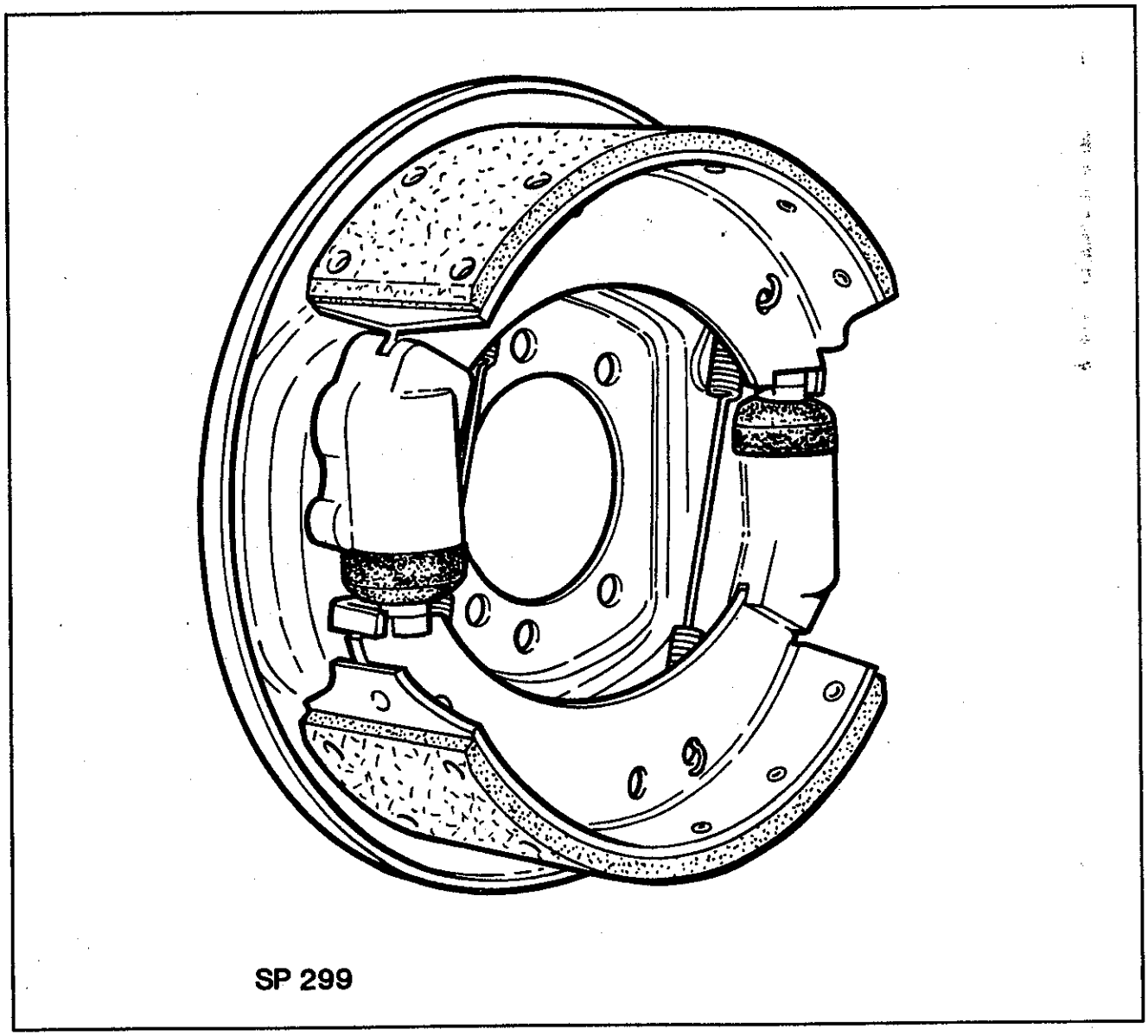

Fig. 1. *Front brake assembly*

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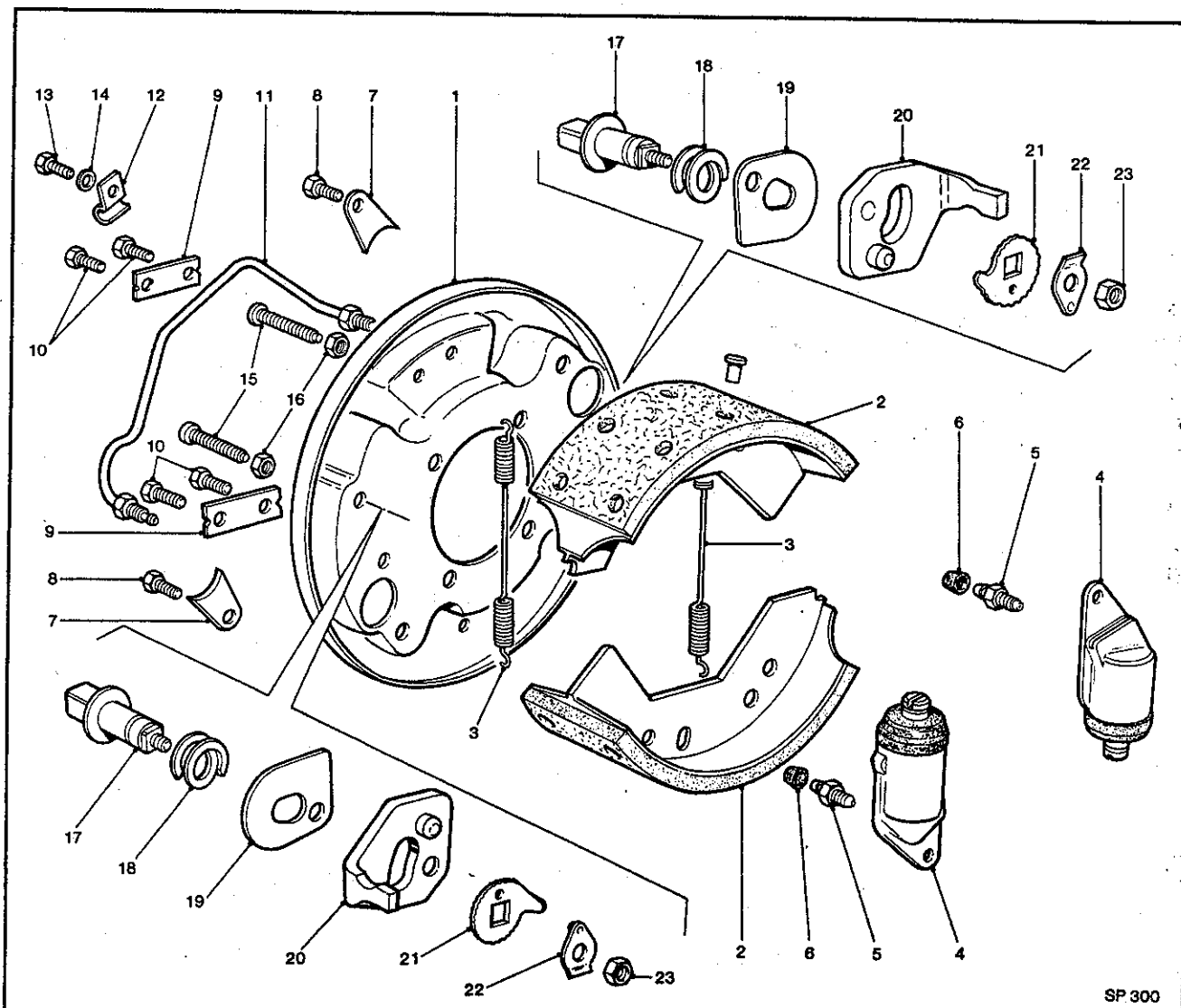
the lining area is equal, and the braking effort, wear and temperature is the same over the whole lining surface.

The wheel cylinders are located diametrically opposite each other and connected by a bridge pipe on the outside of the back plate.

There are two return springs connected between the webs of the shoes.

Snail cam adjusters are provided for each shoe to take up lining wear. The shoes rest against an abutment bracket which is moved by the snail cam. The abutment bracket rotates on a pivot, and



1	BACK PLATE	13	SCREW
2	BRAKE SHOE	14	WASHER
3	SHOE RETURN SPRING	15	SHOE STEADY POST
4	WHEEL CYLINDER	16	NUT
5	BLEED SCREW	17	ADJUSTER STEM
6	BLEED SCREW CAP	18	SPRING
7	LOCKING PLATE - WHEEL CYLINDER	19	SHIM
8	BOLT - WHEEL CYLINDER	20	ADJUSTER LEVER
9	LOCKING PLATE - WHEEL CYLINDER	21	CAM
10	BOLT - WHEEL CYLINDER	22	TAB WASHER
11	BRIDGE PIPE	23	NUT
12	PIPE CLIP		

Fig. 2 *Exploded view of 13 x 5 HLSS Front brake*

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when the cam is turned in a clockwise direction, moves the abutment bracket to bring the shoe closer to the drum. The piston automatically takes up the free play at the next brake application.

SHOE ADJUSTMENT

Jack up the wheel and turn the adjuster stem clockwise to bring the shoe into firm contact with the drum; applying a maximum torque of 40 Nm. (30 lbf ft.). Slacken back until the wheel just revolves freely, light rubbing contact is permissable. Repeat with the other adjuster.

With the system fully charged, apply the brakes using maximum pedal effort. Check the wheel for free rotation and slacken adjusters if necessary.

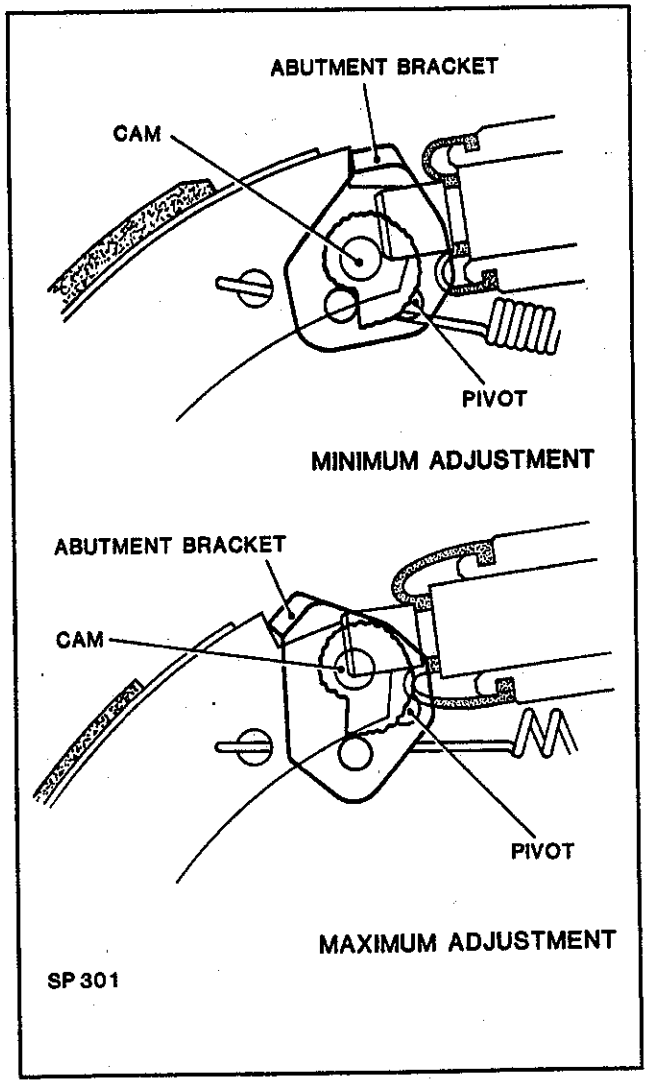

Fig.3 *Brake Shoe adjustment by snail cam*

FITTING NEW SHOES

When fitting new shoes, fit new return springs at the same time. Always fit new shoes in pairs to both sides of the vehicle.

Using a shoe horn, lever one of the shoe webs out of the angled abutment slot in the wheel cylinder body, then collapse the shoe in a pincer movement over the top of the cylinder. Both shoes and springs can now be removed.

Look to see if the wheel cylinders are leaking by lifting the rubber dust covers. If fluid escapes then new wheel cylinders should be fitted in pairs to both sides of the vehicle. Check the pistons for freedom of movement and temporarily fit an elastic band around the cylinders to retain the pistons.

Wash down the backplate with Lucas Girling Cleaning Fluid and allow to dry. Use a wire brush to remove any corrosion, take care not to damage the rubber dust covers on the wheel cylinders.

Ensure the adjuster heads are square and undamaged and confirm the movement of the adjusters. If an adjuster turns easily with no resistance, the cam will work back under the influence of the shoe return springs and cause a long pedal action. If the adjusters are seized, attempt to work them loose by gently rotating them backwards and forwards. New shoe tip adjusters can be fitted if necessary.

Lightly smear the abutment ends of the new shoes and the tips of the steady posts with Lucas Girling Brake Grease. Keep the grease away from all hydraulic parts and the linings on the shoes.

The replacement brake shoes must be fitted correctly to the brake so that the shoe lining appears to have been displaced on the shoe in the forward direction of rotation.

Attach the springs to the shoes.

Offer the assembly to the backplate and locate the uppermost shoe on the wheel cylinder abutments. Using a shoe horn locate the bottom shoe first on the wheel cylinder piston and then in the abutment slot in the opposite wheel cylinder body.

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NOTE: If the shoe is first located in the wheel cylinder abutment slot and then levered onto the opposite wheel cylinder piston it is probable that the dust cover on the cylinder will be damaged in the process.

Fit the drum, reset the steady posts, adjust the brakes and road test.

STEADY POST ADJUSTMENT

After fitting new shoes it is necessary to adjust the steady posts.

Slacken off the locknuts and screw out the steady posts two complete turns. Turn the brake adjusters clockwise to lock the shoes hard in the drum. Screw in each steady post until contact with the shoe web is made and tighten the locknuts. Ensure the steady post does not move when the locknut is tightened. Adjust the brakes as described under shoe adjustment.

WHEEL CYLINDER MAINTENANCE

When renewing or servicing wheel cylinders it is necessary to remove the brake shoe as described previously.

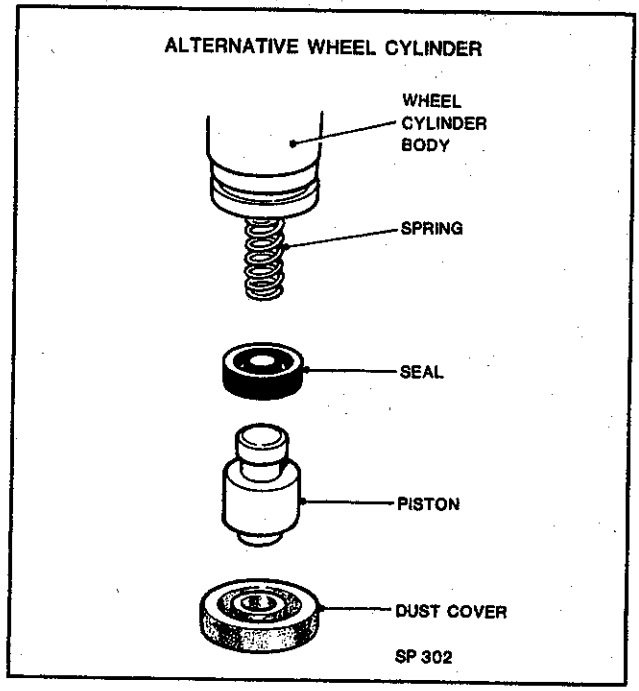

Fig. 4 *Alternative Wheel Cylinder*

NOTE: The use of a Lucas Girling hose clamp will keep fluid loss to a minimum and after servicing the wheel cylinders, only the affected parts require bleeding. The use of other tools to clamp hoses is not recommended because damage may be caused internally to the hose without it being noticed externally. If a hose clamp is not available it will be necessary to drain the system.

Remove the shoes as described previously, disconnect the hydraulic inlet pipe and bridge pipe. Unscrew the wheel cylinder securing bolts and remove the cylinders.

Keeping the parts separate, dismantle each cylinder in turn. Remove the dust covers and internal parts. Remove the seal from the piston. Clean all parts with Lucas Girling Cleaning Fluid or unused brake fluid. Place all cleaned parts on a sheet of clean paper.

Examine the cylinder bores and pistons for signs of corrosion, ridges or score markes. If there is the slightest doubt, parts or the complete wheel cylinder should be replaced. New seals are available in service kits. If new wheel cylinders are fitted they should be fitted in pairs to both sides of the vehicle.

Re-assemble the cleaned or new parts of the wheel cylinders. Ensure that the flat back of the seal is against the piston. Lubricate the piston seals and the cylinder bore with unused brake fluid before assembly.

Wash down the back plate as detailed under "Fitting New Shoes".

Refit the wheel cylinders.

Remove the hose clamp and connect the hydraulic hose. Fit the bridge pipe and ensure that it is properly supported by its clip.

Replace shoes and drum. Bleed the system.

REPLACING SHOE TIP ADJUSTERS

Worn shoe tip adjusters can be replaced. Service kits are available.

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To fit the new parts the Snail Cam Assembly tool shown in the Special Tool Section is required. See also Fig. 6.

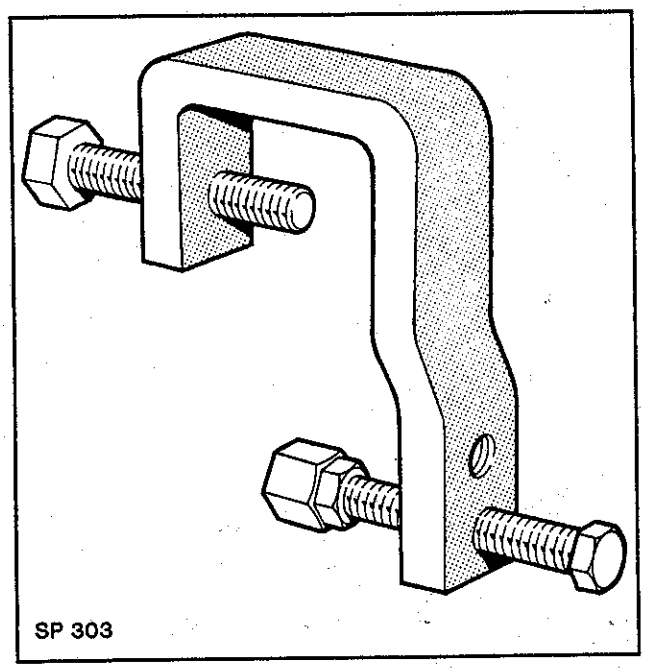

Fig. 5. *Snail Cam Assembly Tool*

Remove the brake drum and shoes and retain the wheel cylinder pistons with elastic bands.

File off the riveted head of the adjuster spindle and remove the worn snail cam and abutment bracket.

Fit the tool as shown in the illustrations "A" and "B" Fig. 6. Use the hole for the compression bolt which is most central to the spindle. Screw in the spring compression bolt and compress the opening until the thin plate can be removed. Remove the tool and discard the old adjuster parts.

Enlarge the existing hole to 13mm (½") and remove any rough edges.

Smear the new parts with Girling Brake grease. Place the spring on the adjuster spindle and fit the spindle into the enlarged hole. Place the thin plate over the projecting end of the spindle as shown in illustration "C" Fig. 6. Make certain that the small hole is aligned with the hole in the back plate and the corner is away from the wheel cylinder.

Refit the tool and compress the spring until the smaller end of the key hole in the thin plate can be fitted into the groove in the spindle. Locate the hole in the thin plate over the hole in the back plate and remove the tool.

Fit the snail cam so that clockwise rotation of the spindle (when viewed from the rear face of the back plate) will expand the shoes.

Fit the locking plate and nut, make sure the dimple in the plate sits in the recess in the snail cam. Tighten the nut securely and turn up the tab on the locking plate to lock the nut.

Turn the spindle anticlockwise to give minimum adjustment.

Refit the shoes and drum.

Adjust the shoes to the drum.

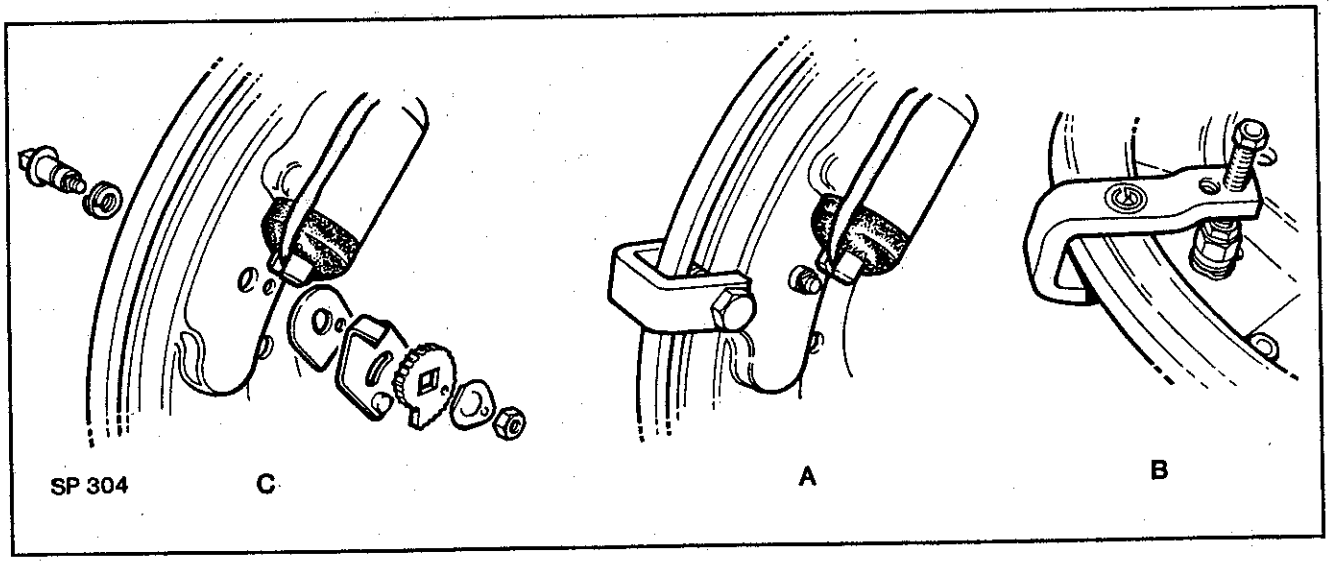

Fig. 6. *Snail Cam Assembly*

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