ASSEMBLEY MANUAL

CHASSIS PREPARATION.

The Paris Chassis always comes complete. No further welding or fabrication is necessary, merely the final paint finish. Modern composite plastic bodies have at least a 25 year life span, bear this in mind when painting the chassis.

The chassis placed on axle stands at this stage, will assist you during the painting, through to fitting the suspension and pipework.

FRONT SUSPENSION.

From the assembly pack, take four or six square 6mm flat spacers and the two 30mm dia. barrel spacers and locate these in the positions shown in Fig.1. Depending on the year of the Cortina from which the beam came, the upper section of the chassis has two location holes each side. If late MK3 or MK4 use the lower hole. If you are unsure of the year or the model from which they came, the correct location holes will line up automatically, when offered to the chassis. Once the beam is secured to the chassis, it becomes much easier to work on. This is, therefore, a good time to replace the coil springs supplied in the kit and check for wear and tear in the ball joints and shock absorbers, if you have not already done so. Always use the spring lock washers from the assembly pack on the final assembly and take note of the Ford lock nuts and split pins, where used.

REAR AXLE SUSPENSION. (PLUS TWO CONFIGURATION).

Supplied with the kit are four pre-bushed suspension arms to replace those used on the Cortina. Fig. 2 shows the location of the arms. It will be necessary for the axle to be supported in its relative running position whilst the arms are fitted, then lowered during the assembly of the coil spring and damper units supplied in the kit and shown in Fig, 3. Use the 8 spacers supplied in the assembly pack whilst fitting the shock absorbers.

Note: The original Ford shock absorber mounts on the axle are not used in the Plus 2 configuration.

An essential part of the suspension is the Panhard rod. Its location is shown in Fig.4. It will be necessary to drill a hole 12.5mm dia. in the upper part of the N/S Ford shock absorber mount prior to fitting. Adjustment of the Panhard rod should be carried out with the body secured to the chassis and the suspension in its final running position. Alignment of the tyre edge to the wheel arches can then be achieved.

REAR AXLE SUSPENSION. (TWO SEAT CONFIGURATION).

The rear suspension is pure Cortina, utilising the springs from the 2 litre saloon, rate approx. 200 lbs. The bushes in the Cortina suspension arms will almost certainly have to be replaced. Some of these bushes are marked 'top' for correct fitting.

SELECTING THE USED PARTS.

The suspension parts required to complete the Paris chassis are taken from any MK 3, MK 4/5 Cortina. There are several reasons for selecting the Cortina as a base. The main reasons being the close ratio rack and pinion, disc brakes and wishbone front suspension all being excellent sports car components. The parts are also inexpensive to buy and are readily available.

Obtaining the used Cortina parts can be carried out in several ways. One way, of course, is to buy a complete car. Many late model wrecks and roll overs, or just tatty Cortinas have good suspensions and drivechains. The price of a used Cortina is usually determined more by the body and interior than mechanical condition. An early Cortina with tatty upholstery and rough bodywork could be acquired for as little as £200 to £300, although the engine, gearbox and running gear may well be in excellent condition. On the other hand, a clean sharp looking car, with a tired engine, may bring twice that amount. Sometimes an advertisement in the paper "Cortina wanted for parts" can bring some surprising results.

Another way to get the parts you need is simply to purchase them from your local breakers yard. In some respects this can be cheaper, allowing you to closely inspect the parts before you buy.

A good Cortina workshop manual will assist you in identifying parts and stripping off second hand components. Additionally, it will serve as an on going owner's manual and maintenance guide for your Merlin.

Cortina mechanical components adapted to our chassis, should have excellent longevity. The service life of the Cortina engine and running gear will exceed 150,000 miles, if well taken care of.

WORKING WITH FIBRE GLASS.

When drilling, cutting or sanding, use adequate eye protection.

Cover the bodywork and all exposed surfaces where possible, to avoid scratching the gel coat surface.

Marking on fibre glass surfaces is best accomplished with a pencil. An alternative method is to tape the surfaces to be marked with masking tape and use a pen. Felt marker pens sometimes leave a stain.

When drilling or cutting through fibreglass surfaces, always cut from the finished side, to avoid chipping or cracking. Cut or drill through masking tape wherever possible and where self tapping screws are to be used, countersink the hole to prevent the gel coat from cracking.

Flat washers should always be used against and between fibreglass and the head of a screw or bolt.

Round hole cutting instead of using hole saws can be accomplished by marking the hole diameter and carefully cutting with a jig saw. Another method is to drill a series of holes and finish with a file or rotary rasp, to obtain a smooth even appearance.

IMPORTANT

Fibreglass, in some cases, can often take up to 3 months to cure. The Merlin bonnet, being the largest unsupported panel, should be stored on its end if not fitted immediately.

GENERAL INSTRUCTIONS.

Prior to each operation, carefully check the instructions, figures and parts, to ensure that you understand what needs to be done and how best to do it.

All part descriptions to left and right, top and bottom, front and rear, are always determined from the normal driving position.

ENGINE AND GEARBOX.

If a lifting hoist is to be used, then both the engine and the gearbox can be pre-bolted and fitted as one unit, locating first the engine mounts to the chassis and then lowering the gearbox on to the previously fitted gearbox mount. See Fig. 5.

Remove the reversing light switch from the gearbox prior to lowering the body on to the chassis. A separate inspection hole is required in the tunnel to re-locate the switch.

Note: The original Ford engine mounts on the front beam are no longer used. The mounting brackets are now located further back on the chassis. See Fig. 1.

REAR AXLE CONVERSION. (MERLIN PLUS TWO ONLY).

Supplied with the Plus Two Kit are two axle conversion brackets. These require welding to the Ford axle in the positions shown in Fig. 6. These brackets are the rear location points for the trailing arms, lower location points for the coil springs and lower mounting point for the shock absorbers. Prior to welding, remove halfshafts and bearings. Also remove the differential backplate. The machine surface on the casing will form a vertical face from which the brackets can be aligned.

One of the benefits of the Merlin Kit is that once the chassis is rolling, only a small amount of space is required to complete your project. If necessary, at the end of the day, the body can be placed temporarily on the chassis and the whole car moved to a convenient position, or pushed back into the garage.

Before the body can be secured to the chassis, brake and fuel lines must be run along the chassis side member. See. Fig. 7. Special care must be taken where the body line runs closer to the chassis. See Fig. 7a.

BODY MOUNTING.

Securing the body to the chassis should be carried out on a flat surface, with the suspension and wheels fitted. Take measurements from the wheel arches to the ground, ensuring that each side is equal.

Because of the inconsistency of the hand laminated surfaces, occasionally shims are required between the body and the chassis mounts. Final measurements and adjustments should be carried out when the car is complete and fully loaded. Cut outs are required at the front of the body in order to clear the Ford crossmember. Centralise the body by measuring wheel to wing edge.

BONNET AND SCUTTLE.

Both the bonnet and scuttle should be fitted as one assembly. The bonnet fit will depend on the final position of the scuttle when bolted to the body. Once again, it is not unusual for shims to be used between the bolted surfaces. Drilling in the approximate positions shown in Fig. 8, bolt the scuttle to the body using a suitable sealant to prevent water or fumes entering the car. When a good bonnet fit has been achieved, the hinge fixings can be marked and drilled. See Fig. 9.

Note: Wherever the glassfibre is drilled, always countersink the gelcoat finish. This will prevent chipping if the fixings are removed.

The bonnet lock supplied by Paris Cars is strictly for security, therefore some secondary form of safety catch is strongly recommended.

BOOT LID.

Temporarily fit the boot lid and stainless steel hinge to the body marking and take note of the desired position of the hinge with the boot lid lying flush with the boot surround. Provision is made for a 1/8 inch thick weather seal to fit snugly in the boot access, as shown in Fig. 10.

Note: The locking bar on the boot lock will require bending.

FINAL BODY FINISH.

It is more convenient to temporarily fit the body panels and have them drilled prior to spraying. Ensure an etching primer is used.

DOORS.

Place the door into its opening using 3mm packers for a height guide. See Fig. 11. Slide the hinges into the door rebates, marking their positions on the body, taking reference to the distance they protrude.

Note: It may be necessary to clear the door hinge rebates with a square file prior to fitting the hinges.

Drill and countersink the brass hinges to suit 6mm set screws. See Fig. 12. Remove the doors and place each hinge on its appropriate body position and mark the door in the same way, taking care the hinges keep their original positions. Drill the doors and door openings 6.5mm. Hang the doors and adjust if necessary, prior to final tightening.

DOOR LATCH.

Position the door latch as shown in Fig. 13 and drill through the fitting holes to suit 8mm bolts. Secure the latch with the bolts supplied and lock in the latch position of the bolt. See Fig. 14. Using a square, continue the mark to the door shut. See Fig. 14a. Drill 12mm dia. and secure the latchbolt.

DOOR HANDLES.

Mark and drill the door as shown in Fig. 11 using the gasket supplied, with the handle as a template. If a large drill or hole cutter is not available, scribe a circle and drill a ring of small holes, making good with a round file. Fit the door handle assembly as shown in Fig.16 and Fig.17. The handle shaft will require cutting to length, leaving sufficient material for an anti-slip device for the latch mechanism. A simple method is to drill the shaft for a suitable lock pin and then shim with washers. For the handle to return, a suitable spring is required and fitted in the position shown in Fig.17.

LAMPS.

It is often favourable to temporarily fit the body accessories and remove them prior to spraying. Suggested lamps for the Merlin are listed, together with part numbers and suppliers, towards the back of the manual. Fig. 18 shows possible positions for some of these units.

WINDSCREEN.

The windscreen is supplied with laminated glass temporarily fitted to the frame. Fitting the frame to the body is probably best carried out with two people. Position the frame on the scuttle, carefully lining up the side mounting plates (Fig. 19). Mark through the frame fixing holes and remove the frame drill 8.3mm. Fix the windscreen frame with 8mm pan head screws supplied with the kit. Black silicon is ideal for sealing both the glass into the frame and the frame into the body. (Apply with sealant gun). Scribe the excess sealant with the head of a small dril while still wet. After several hours, this can be pealed away.

Figs. 20 - 25 cover the:

Battery, Master Cylinder, Fuel Tank, Hood Frame and Fuel Cap.

FITTING THE BUMPERS/OVERIDERS.

Position the front bumper brackets or overiders as shown in Fig.26 with the 12mm bolt supplied. Utilising one of the lower holes in the ford beam, mark and drill through the bracket for a secondary fixing. Once fitted, the body should be shaped to fit around the overider. (Fig. 26a).

WIPER AND HEATER SYSTEM.

Although wiper and heater systems have been specifically designed for the Merlin, many owners have found favourable alternatives. However, a parts list referring to the units fitted to our demonstration vehicle can be found in the manual, together with location and fitting detail. (See Figs. 27 & 28).

The use of aluminium sheets for various panels such as inner wings, boot lid panel and lower dash panel (to seal off unsightly wires) is strongly recommended. It is cheap, readily available and easy to work with.

DASHBOARD INSTRUMENTS.

One of the most important features of a classic style car is the dash board. An inexpensive method of reproducing a high quality fascia is to veneer a previously shaped plywood base, approximately 1/4 inch thick, with a popular grain such as French Walnut Burr. After sanding, either polish and laquer or cover with numerous coats of polyurathane, flattening the surface between coats. Prior to finishing the fascia panel, a suitable dash layout such as that shown in Fig.30 should be designed and cut into the fascia, to suit your chosen instruments and switches.

MASTER CYLINDER AND PEDALS.

Fit brake master cylinder to bulkhead shown in Fig.29. Support the complete pedal assembly under the inside bulkhead with a suitable prop and connect brake pedal to master cylinder pushrod. Align the pedal assembly and mark the bulkhead underside through the pedal box fixing holes. Remove pedal box and drill bulkhead.

An upper footwell bulkhead stiffening plate is recommended to restrict movement in the pedeal box during braking. 1/8" steel or 3/10" thick aluminium will be adequate.

ASSEMBLY PACK.

FRONT BEAM	4 x M12 x 90 Bolts. 4 x M12 Nyloc nuts.
REAR SUSPENSION P.200.	
TRAILING ARMS	4 x M12 Nyloc nuts. 4 x M12 x 70 Bolts.
REAR SHOCK ABSORBERS	2 x M12 x 90 Bolts. 2 x M12 Nyloc nuts. 2 x M10 x 60 Bolts. 2 x M10 Nyloc nuts.
REAR SUSPENSION P.400.	
TRAILING ARMS	8 x M12 x 70 Bolts. 8 x M12 Nyloc nuts.
PANHARD ROD	2 x M12 x 70 Bolts. 2 x M12 Nyloc nuts.
REAR SHOCK ABSORBERS.	4 x M12 x 100 Bolts. 4 x M12 Nuts and lock washers.
BODY/CHASSIS	15 x M10 x 30 Bolts. 15 x M10 Nuts and Lock Washers. 15 x M10 Flat Washers.
SCUTTLE.	12 x M10 x 30 Bolts. 12 x M10 Nuts and Lock Washers. 24 x M10 Flat Washers
BUMPER FITTING PACK	2 x M12 x 30 Bolts and Nyloc nuts. 6 x M8 Chrome Bumper Bolts. 6 x M8 Nuts and Lock Washers. 6 x M10 Nuts and Lock Washers.
FUEL TANK.	2 x M8 x 25 Bolts. 6 x M8 Nuts and Lock Washers. 2 x M8 Flat Washers.
WINDSCREEN	4 x M8 x 50 Panhead Bolts.
GRILLE	4 x M5 Nyloc Nuts and Washers.

HANDBRAKE CABLE BRACKETS	4 x M8 x 25mm Bolts. 4 x M8 Nuts and Lock Washers. 4 x M8 Flat Washers.
PEDAL BOX	4 x M8 x 25 Bolts. 4 x M8 Nuts and Lock Washers. 4 x M8 Flat Washers.
STEERING COLUMN BRACKET	2 x M8 x 25 Bolts. 2 x M8 Nuts and Lock Washers. 1 x M8 Flat Washer.
STEERING SHAFT	2 x M8 x 25 Bolts. 2 x M8 Nuts and Lock Washers.
MASTER CYLINDER EXTENSION	1 x M12 x 30 Bolt. 1 x M12 Nyloc nuts.
DOOR HINGES	24 x M6 x 15 CSK Bolts. 24 x M6 Nylock Nuts. 24 x M6 Flat Washers.
DOOR HANDLES	4 x 2BA x 1" CSK Bolts. 4 x 2BA Nylock Nuts.
LATCH BARS	4 x M6 x 15 Bolts. 4 x M6 Nylock Nuts.
DOOR LATCH	6 x M8 x 50 Panhead Bolts. 6 x M8 Nuts and Lock Washers.

CORTINA COMPONENTS REQUIRED FOR BUILDING ARE FROM FORD CORTINA MK3 73 - MK4 AND MK5 AS FOLLOWS:-

Front suspension beam, complete with steering rack, brakes and hubs. (Front springs not required).

Rear axle, complete with springs, shock absorbers, suspension arms and brakes. (MERLIN TWO SEATER ONLY).

Overhead cam engine, complete with all ancillaries (stainless steel exhaust system and four branch manifold available as option).

Gearbox, complete with rubber mounting block only.

Propshaft with Hardy Spicer type universal couplings only. (Propshaft requires modification).

Radiator and hoses.

Steering column complete with cowl and stalk. (Ford steering shaft not required).

Handbrake and pin (cables not required).

Pedals including clutch and accelerator cables.

Master cylinder (non servo type).

Battery and cables.

Starter motor.

Wiring loom (Merlin wiring loom available as an option).

IMPORTANT.

PLUS TWO BUILDERS PLEASE NOTE. THE FOLLOWING ITEMS ARE NOT REQUIRED FROM THE CORTINA.

Rear suspension arms.

Rear springs.

Rear shock absorbers.

VEHICLE REGISTRATION.

IN ORDER TO REGISTER/LICENCE A KIT BUILT OR REBUILT VEHICLE, IT WILL BE NECESSARY TO FORWARD THE FOLLOWING DOCUMENTS TO YOUR LOCAL VEHICLE LICENSING OFFICE:-

1. The V55/5 Form completed.

2. Receipts for all major components used during build.

3. The receipts should indicate chassis/frame and engine numbers, or the registration numbers of vehicles from which they came.

4. A brief letter explaining composition of vehicle.

5. The M.O.T. test certificate, which can be obtained on the chassis number if no registration number is affixed to the vehicle.

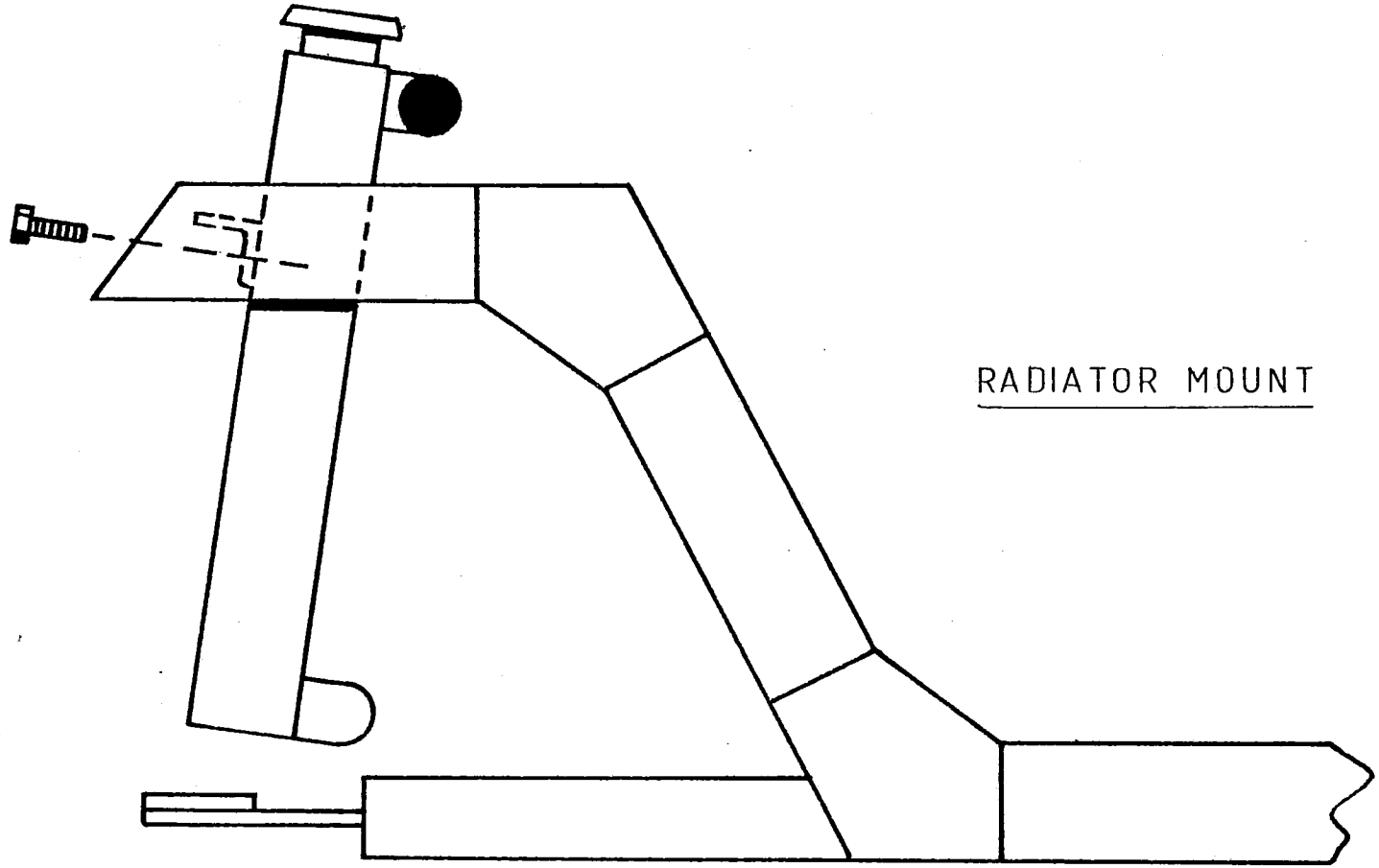
6. The certificate of insurance or cover note and the appropriate remittance.

7. The vehicle can then be inspected by an officer from your local Vehicle Licensing Department.

8. The registration mark and number will be decided upon from documents submitted and the Inspecting Officer's report.

9. Items in paragraph 5 and 6 can be forwarded after the inspection has taken place, if it is not possible to forward them with the initial application.

10. Where possible, please give a telephone number where you can be reached during normal working hours and indicate the address where the vehicle is kept, if different from that given on the completed form V55/5.



RADIATOR MOUNT

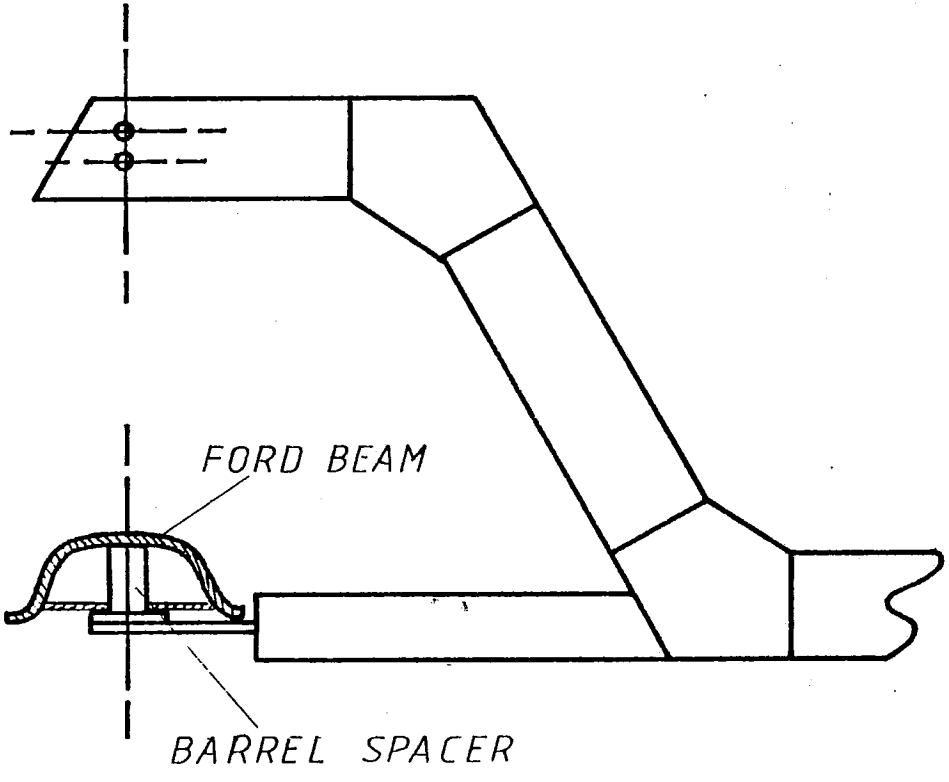
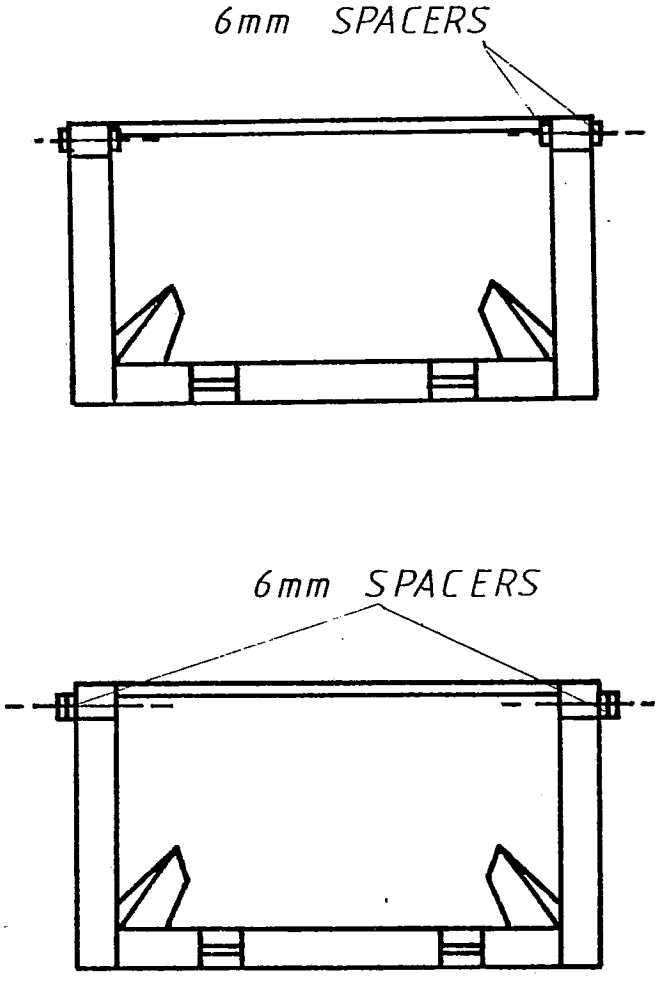


FIG. 1



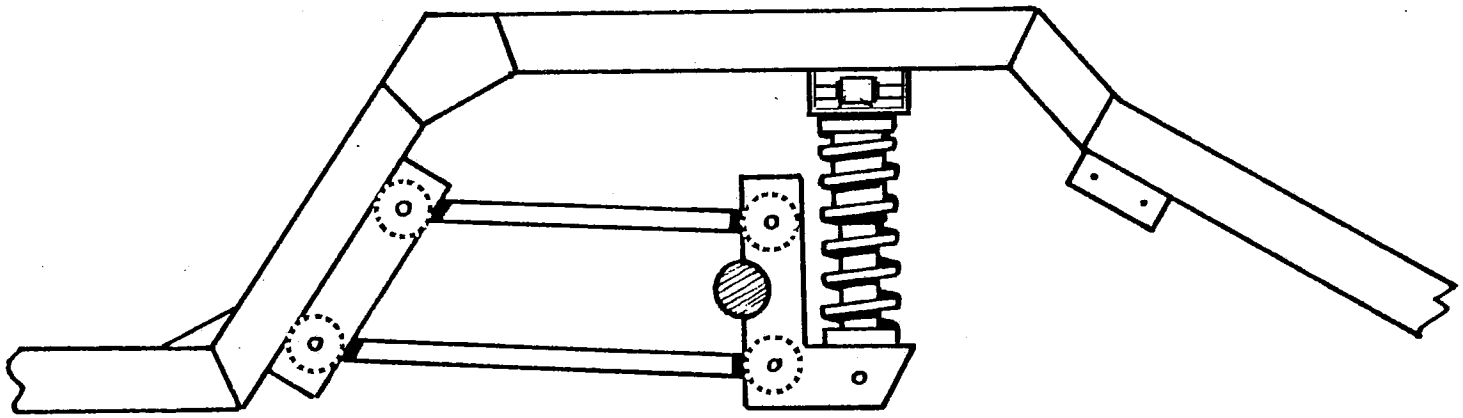
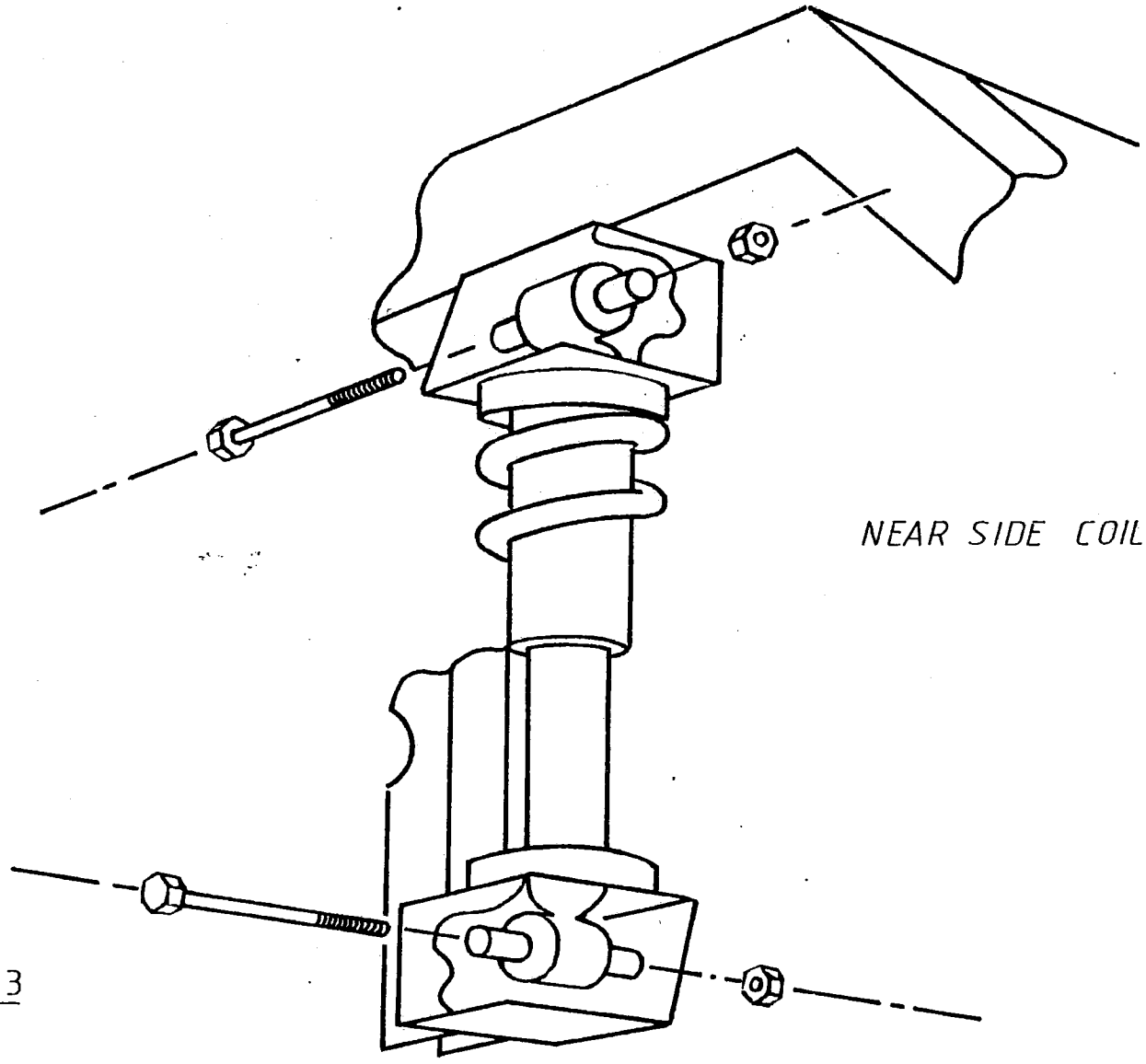


FIG. 2

NEAR SIDE TRAILING ARMS



NEAR SIDE COIL / DAMRER UNIT

FIG. 3

REAR AXLE VIEWED FROM THE REAR

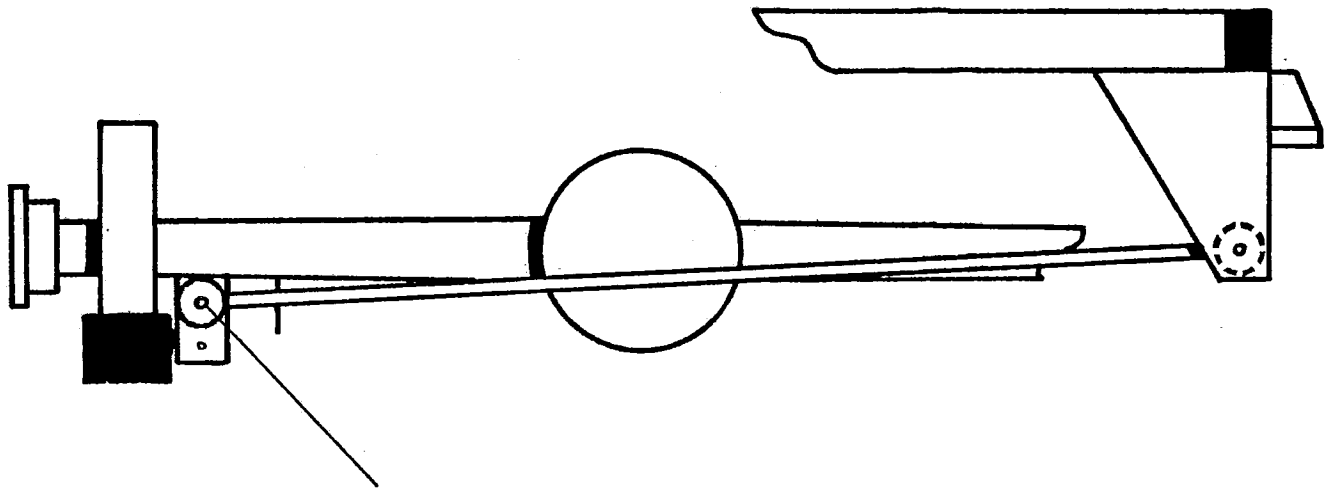


FIG. 4

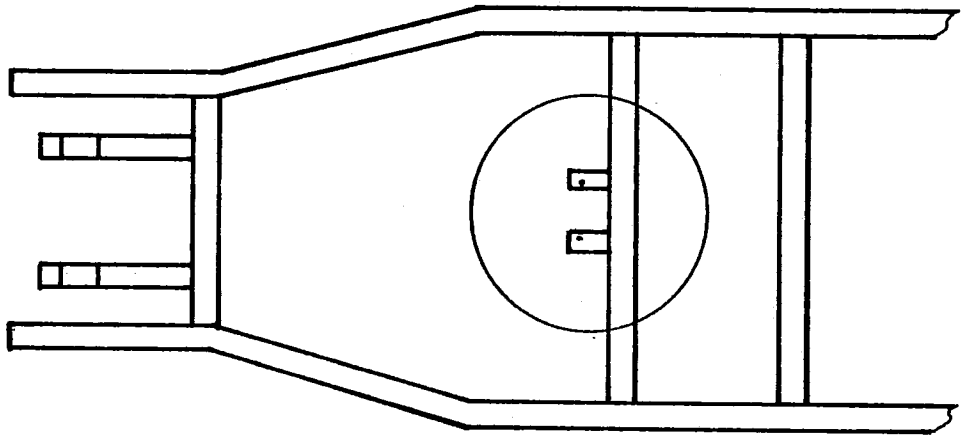
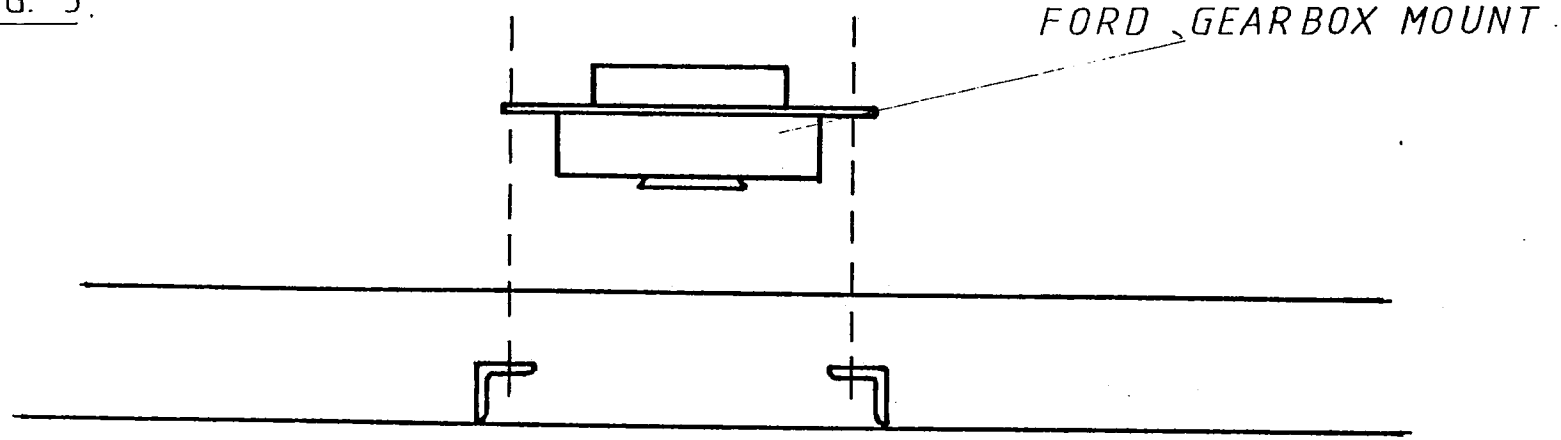


FIG. 5.



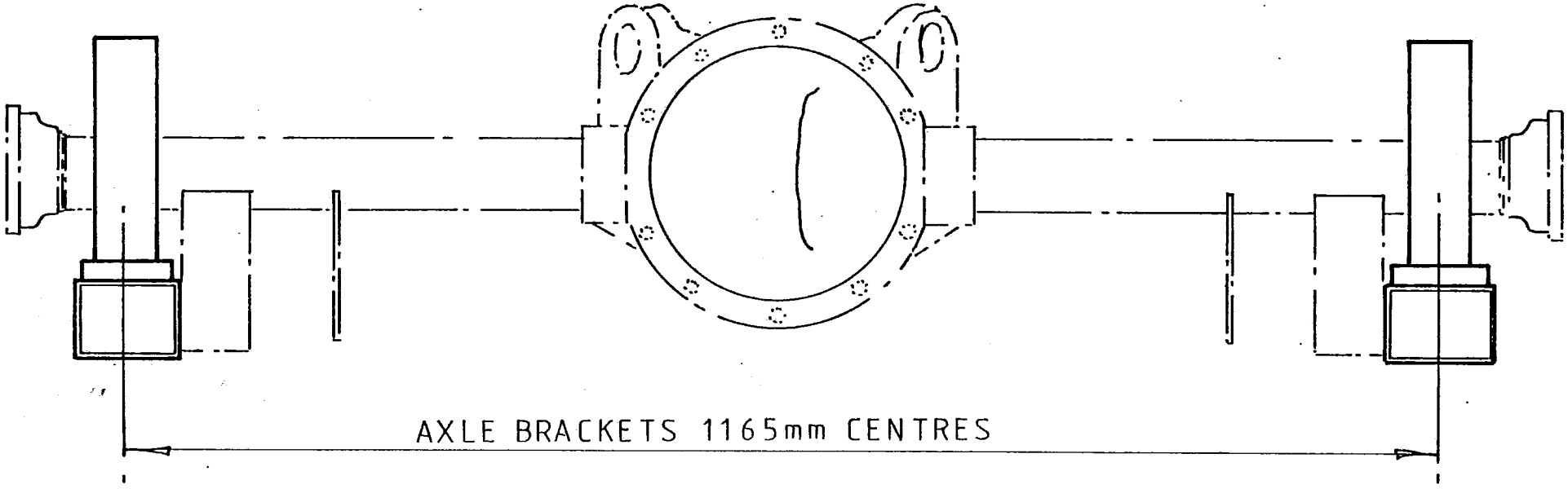
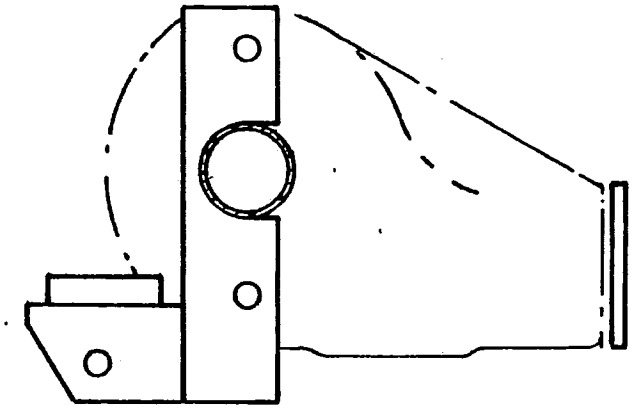


FIG. 6



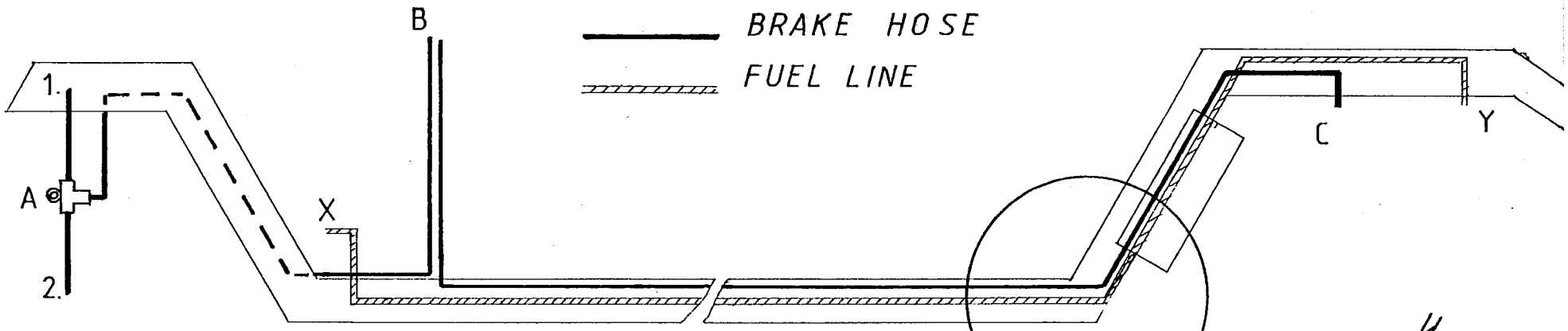


FIG. 7.

A = TRIPLE JUNCTION
1 = N/S FLEX. HOSE
2 = O/S FLEX. HOSE
B = MASTER CYLINDER
C = REAR FLEX. HOSE
X = FUEL PUMP
Y = FUEL TANK

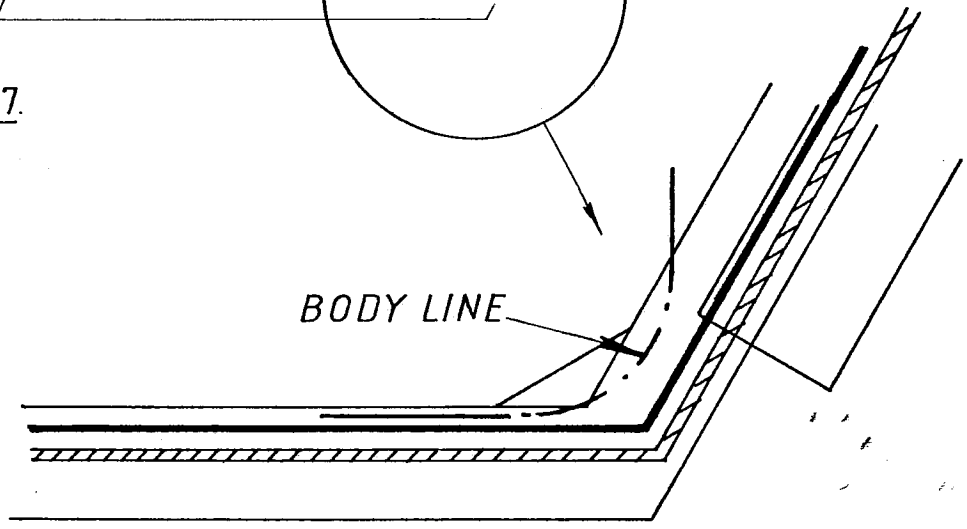
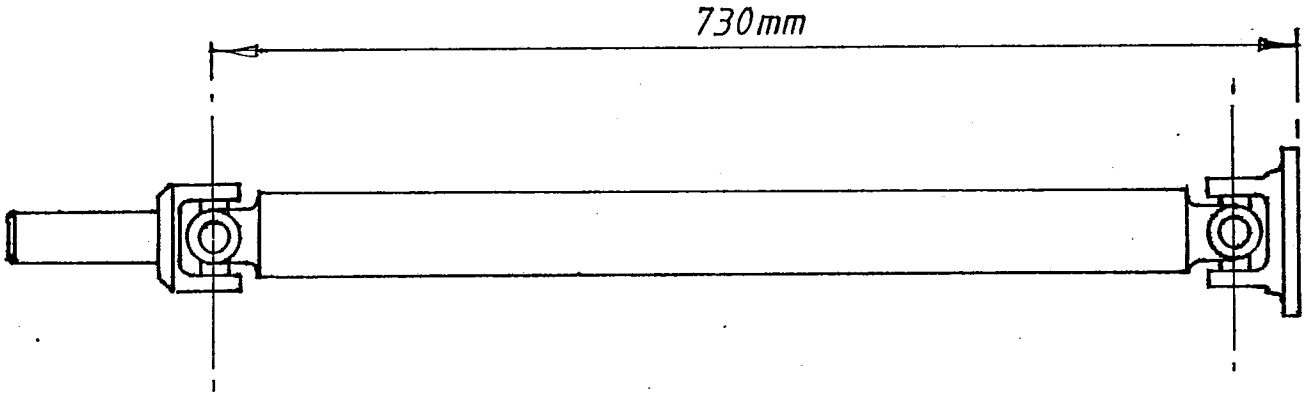
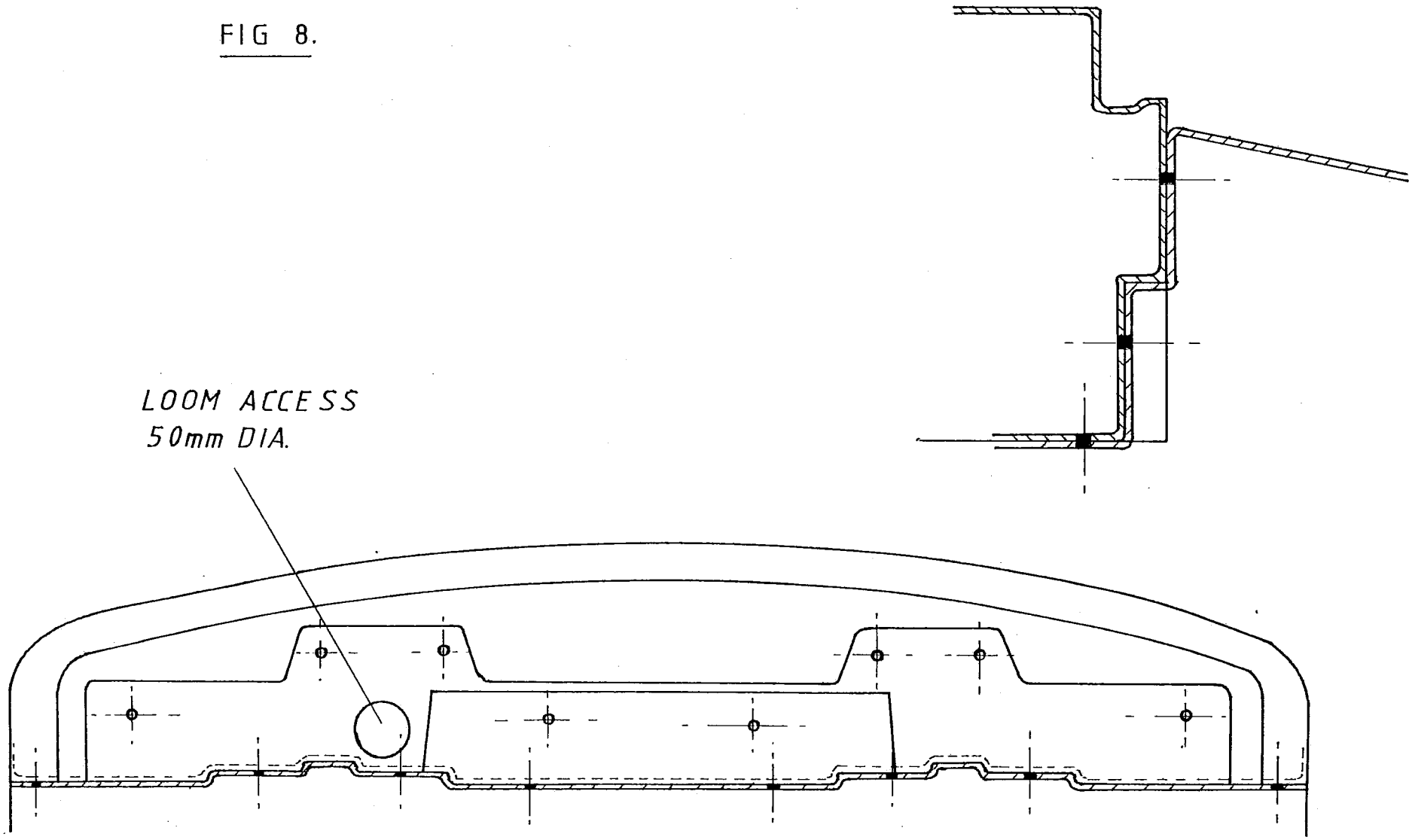


FIG. 7a.



PROPSHAFT MODIFICATION

FIG 8.



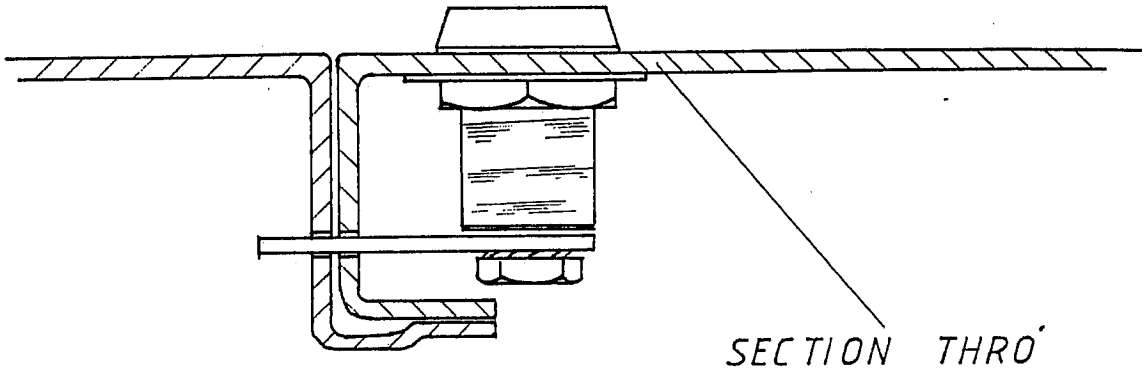
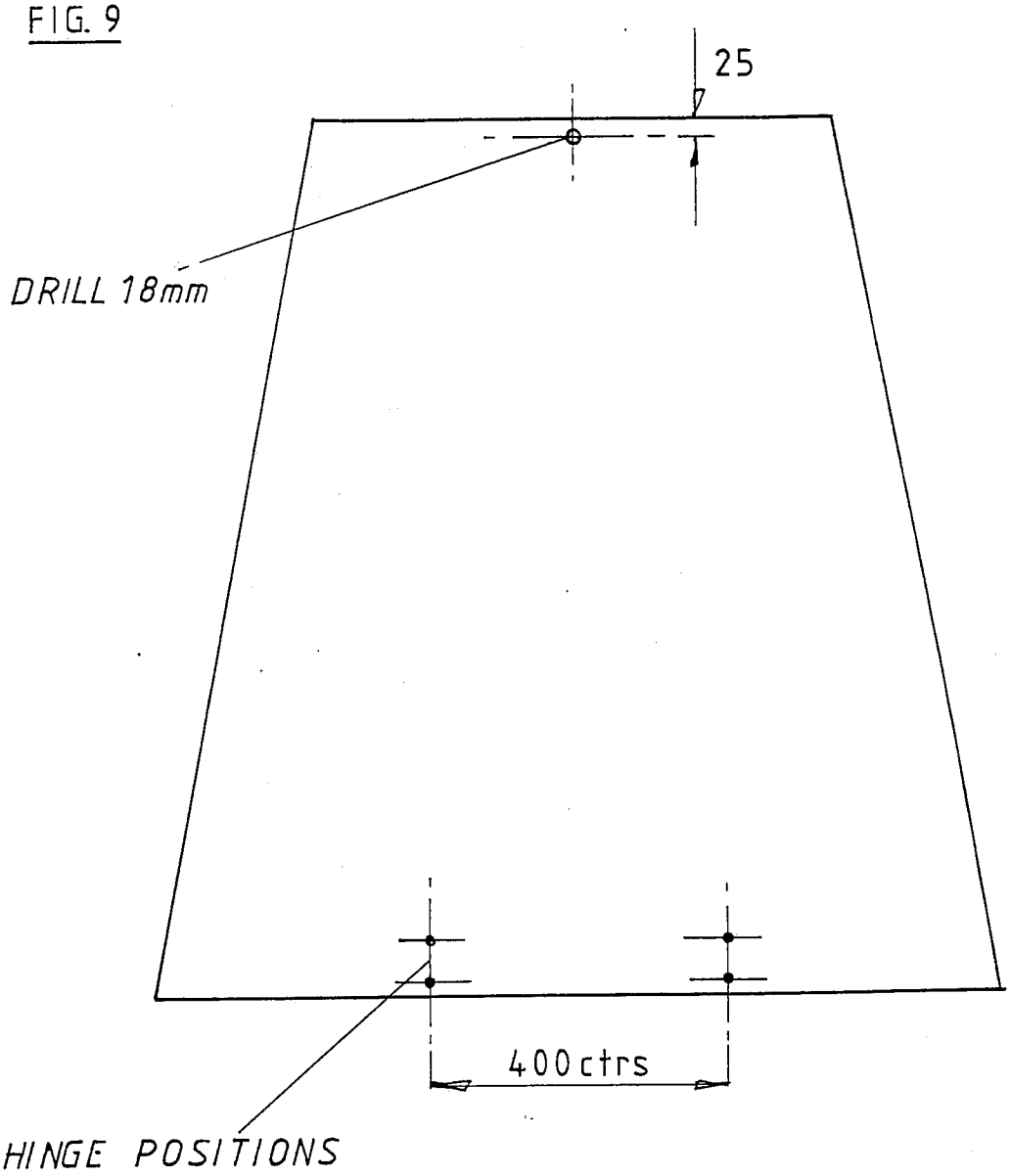

SECTION THRO'
BONNET LOCK

FIG. 9


25
DRILL 18mm
400 ctrs
HINGE POSITIONS

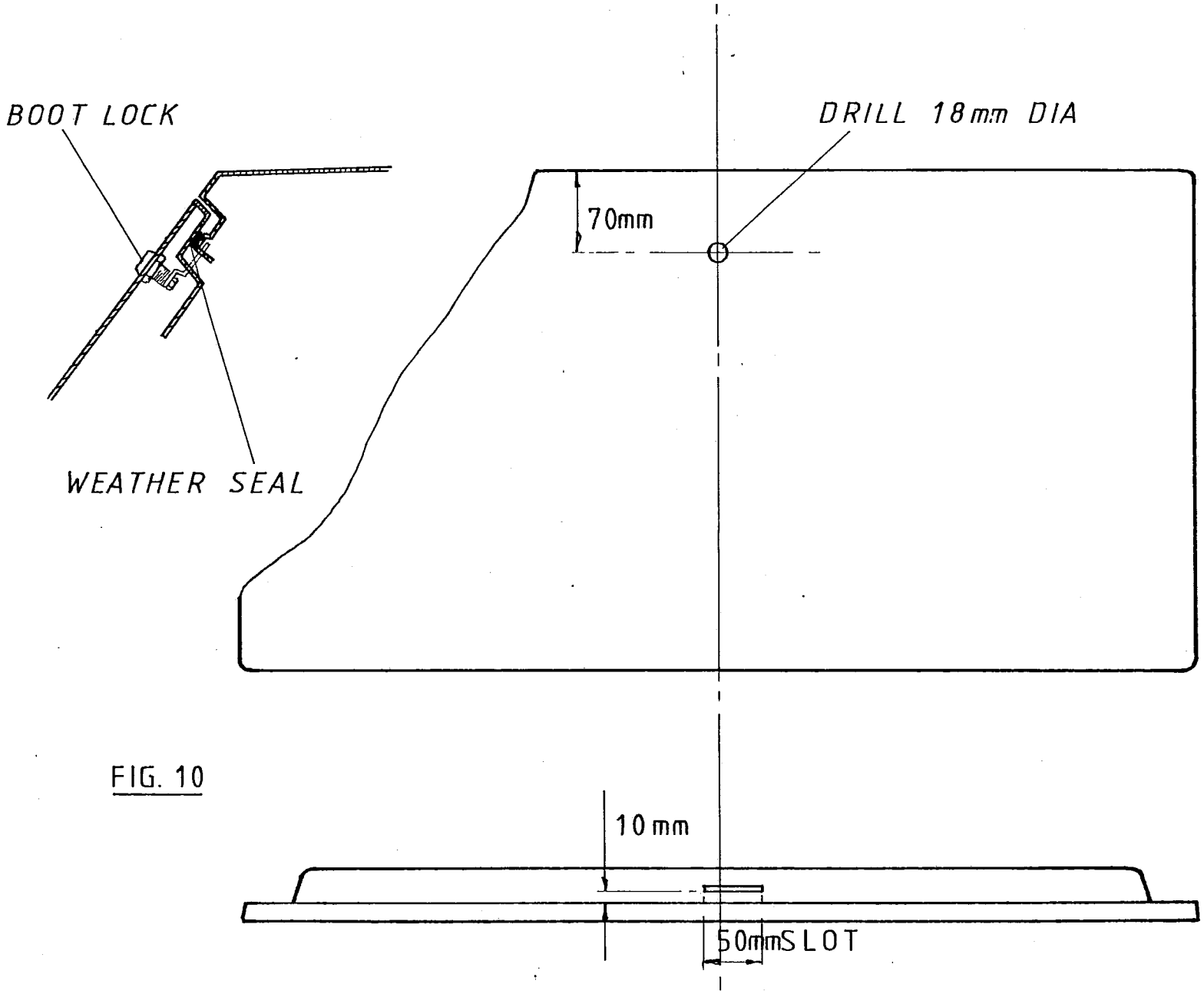
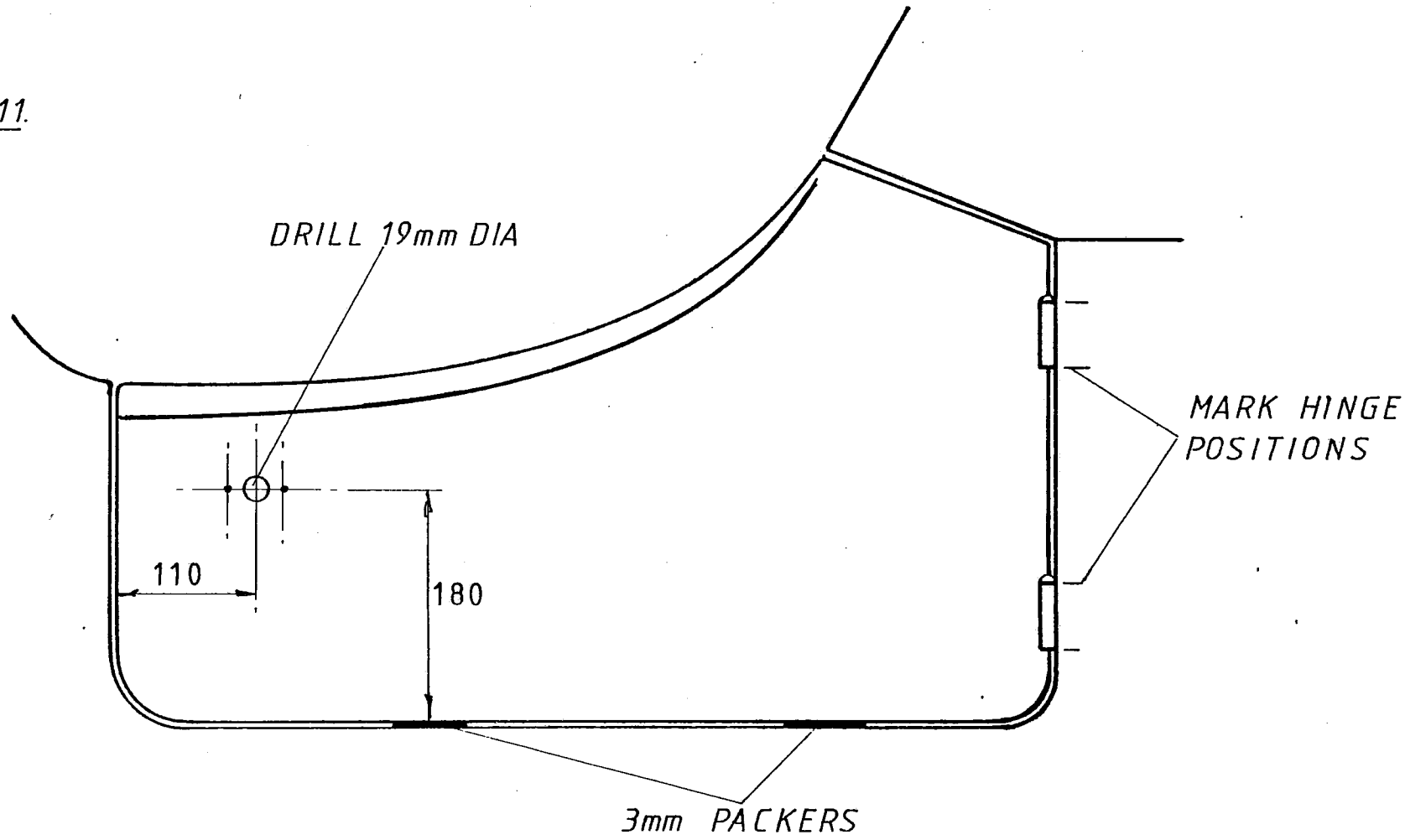
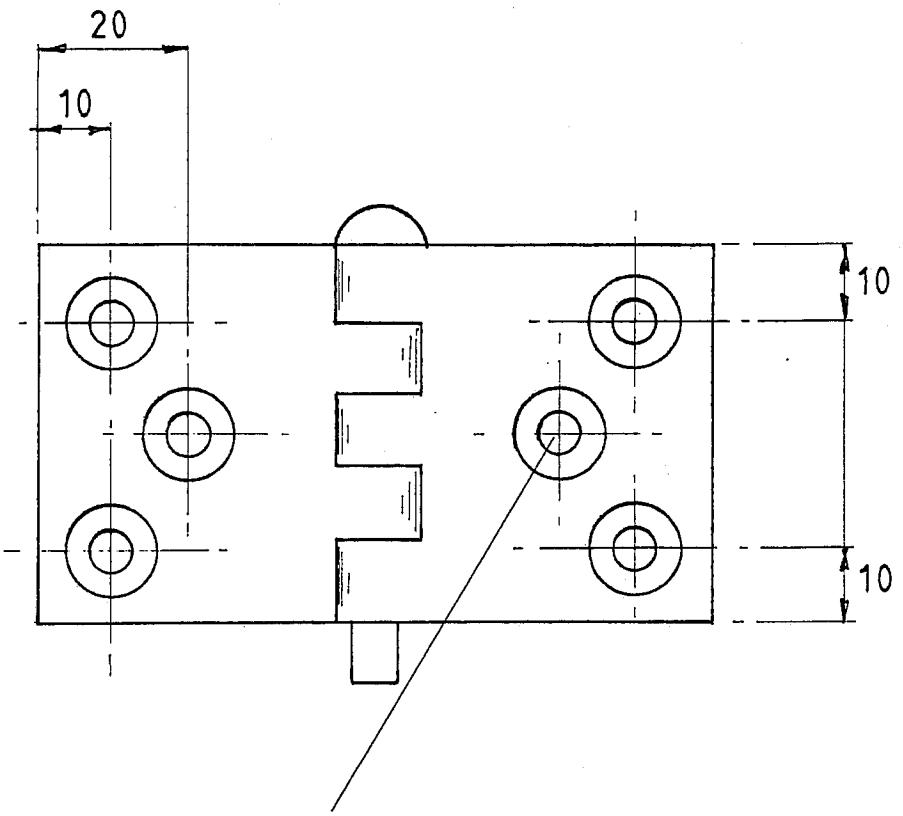


FIG. 10

FIG. 11.



DOOR HINGE



DRILL & COUNTERSINK TO SUIT
6mm SCREWS SUPPLIED

FIG. 12

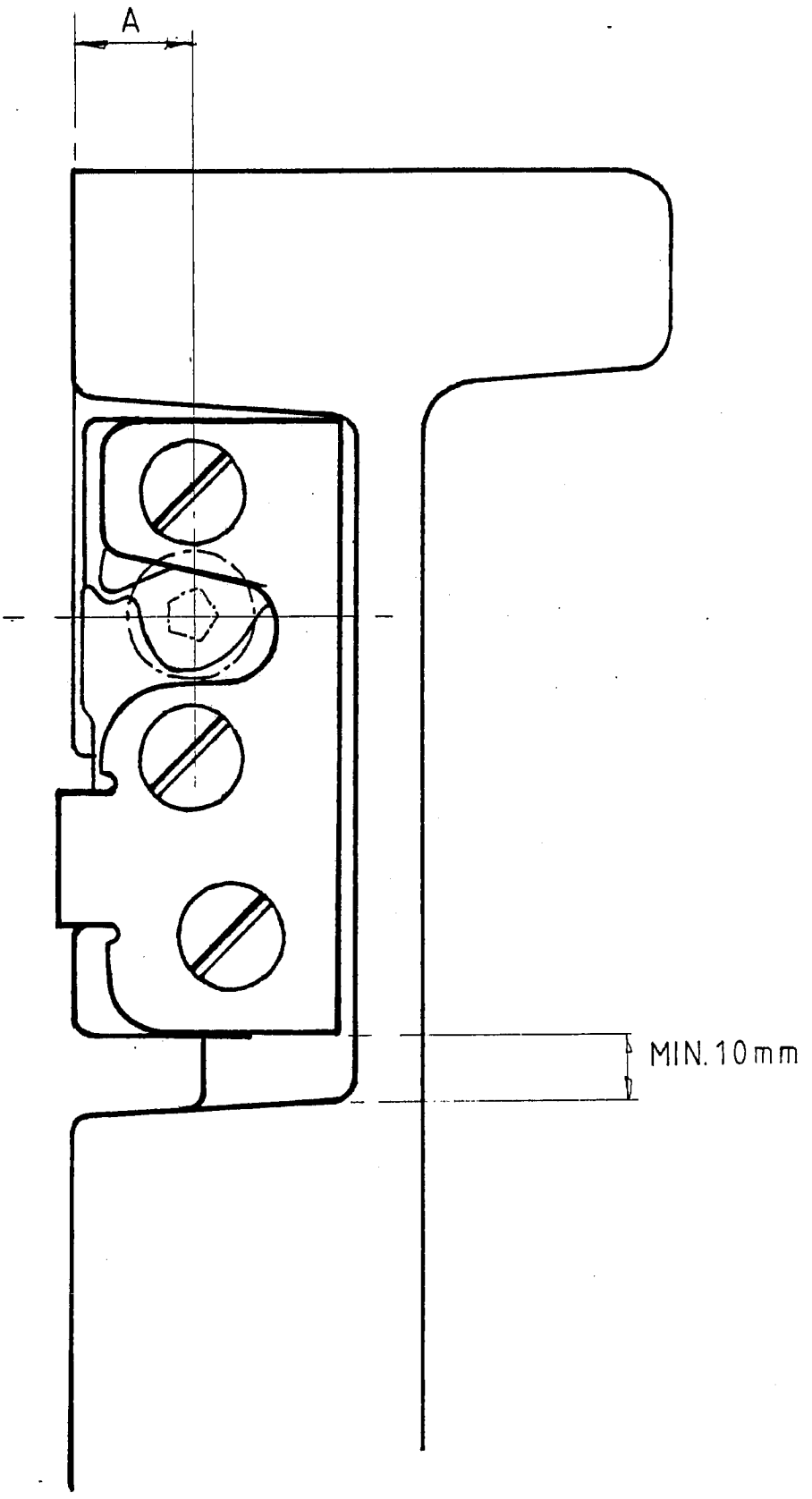


FIG. 13.

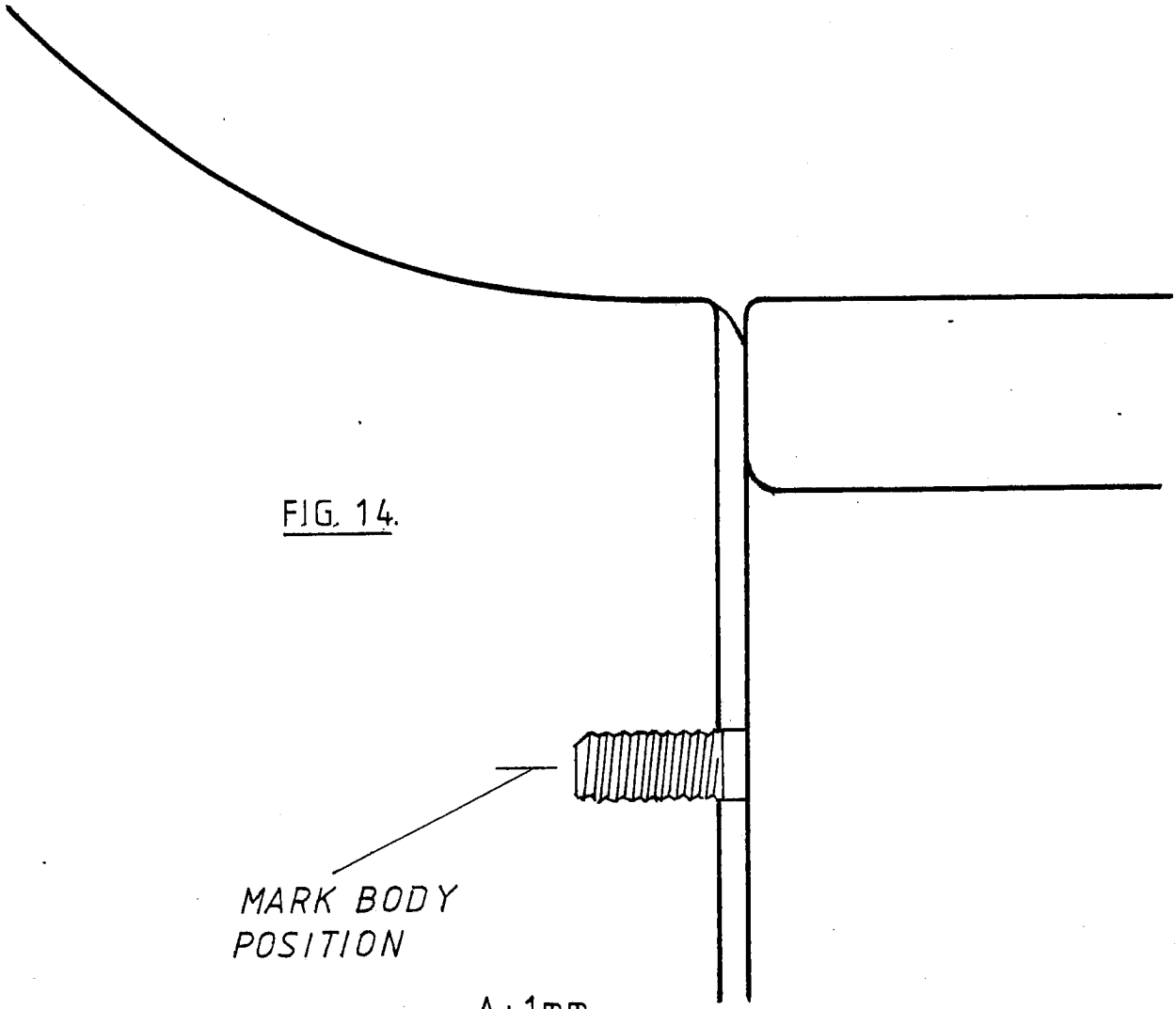


FIG. 14.

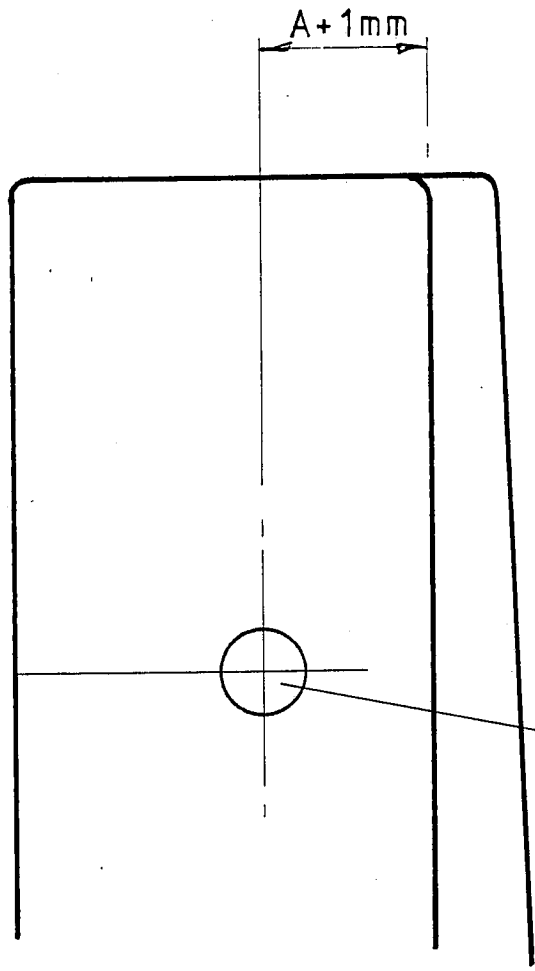


FIG. 14a.

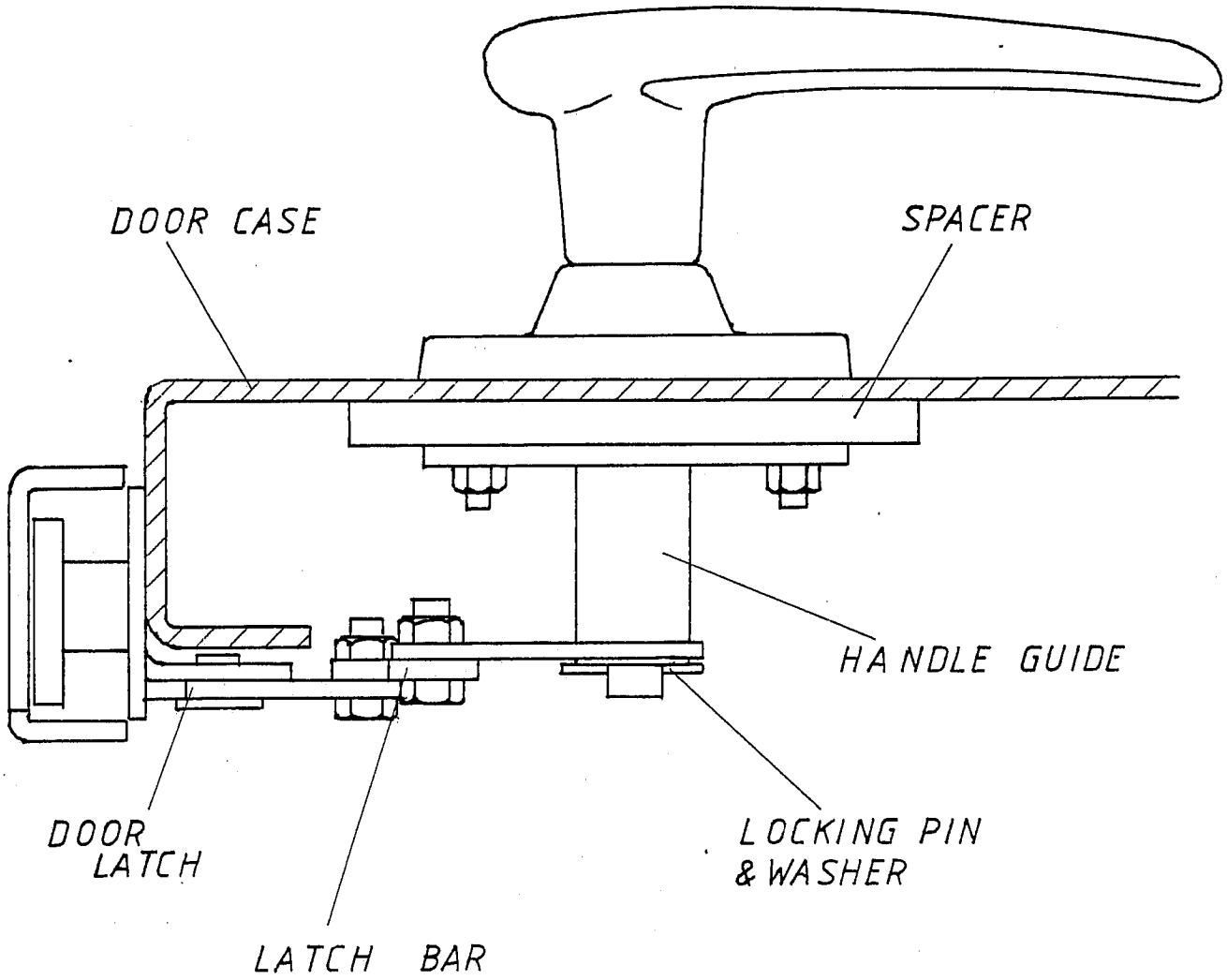

DOOR CASE
SPACER
HANDLE GUIDE
DOOR LATCH
LOCKING PIN & WASHER
LATCH BAR

FIG 16

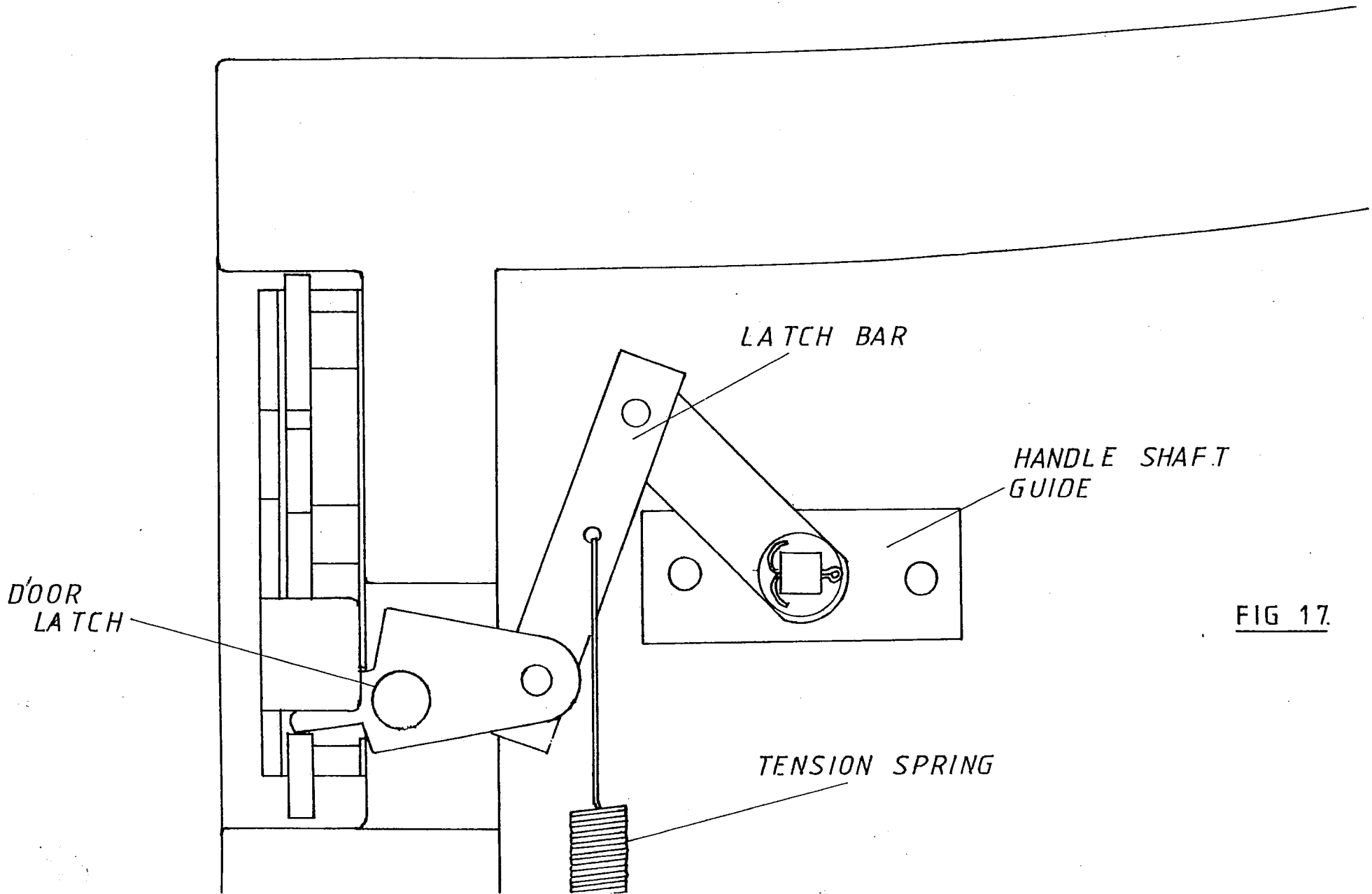


FIG 17.

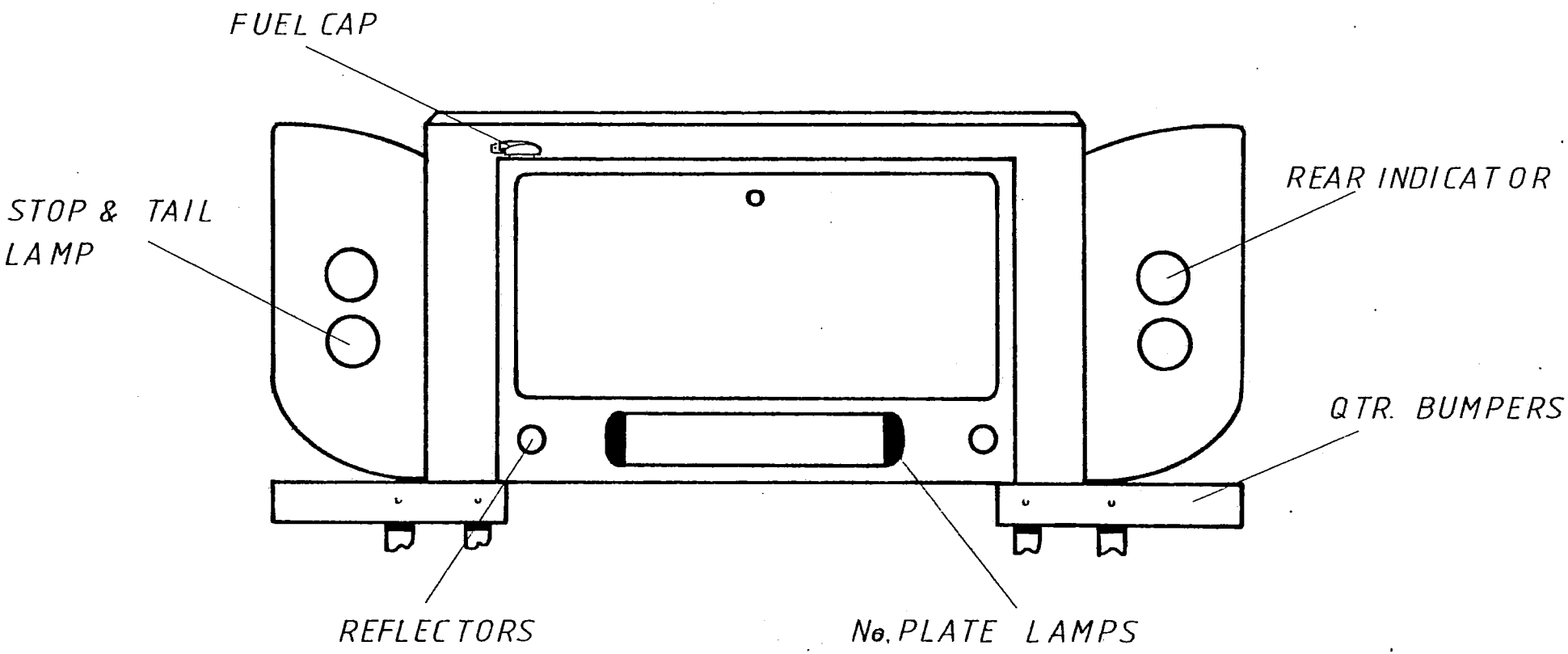

FUEL CAP
STOP & TAIL LAMP
REAR INDICATOR
QTR. BUMPERS
REFLECTORS
No. PLATE LAMPS

FIG. 18.

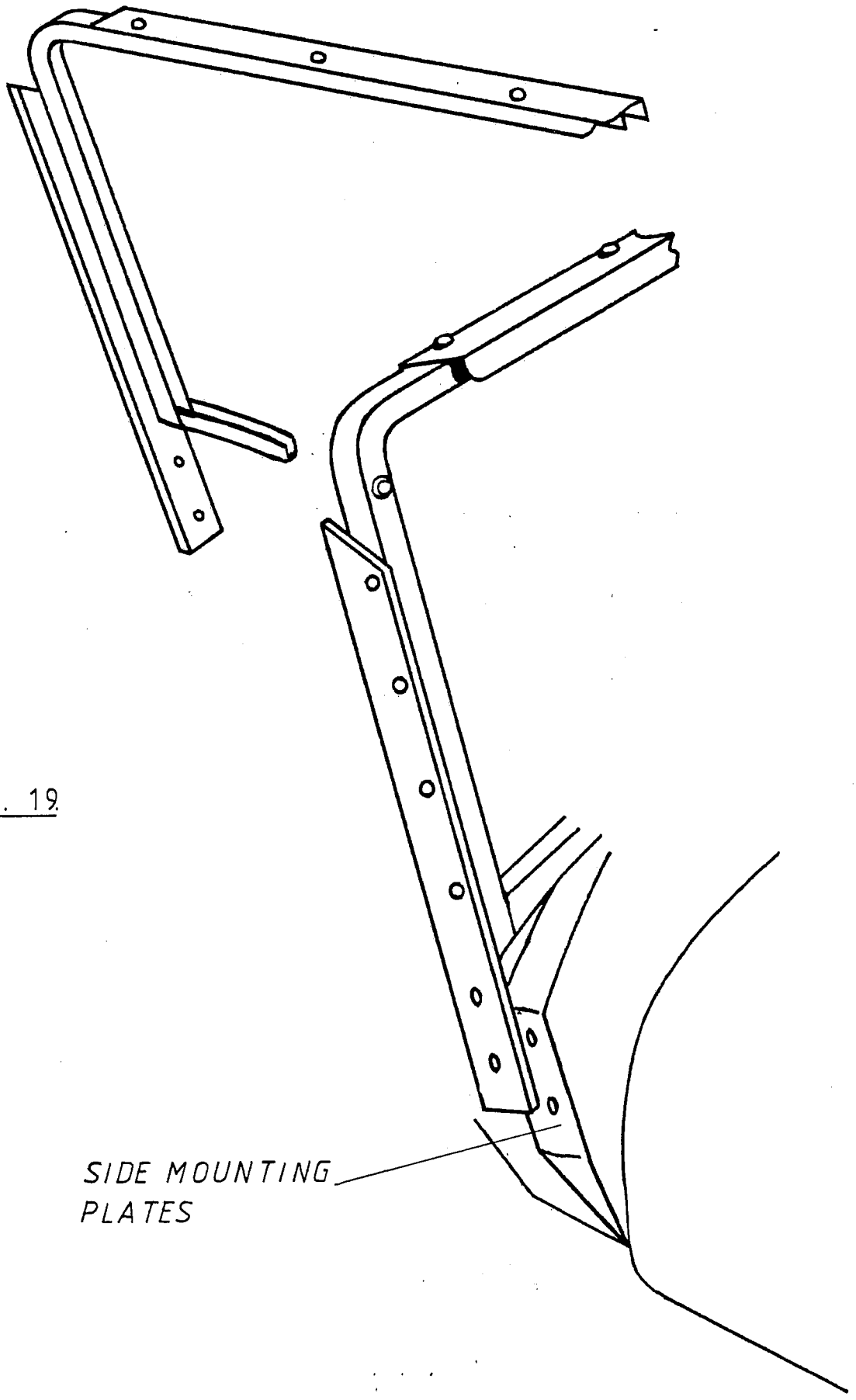


FIG. 19

HANDBRAKE LOCATION

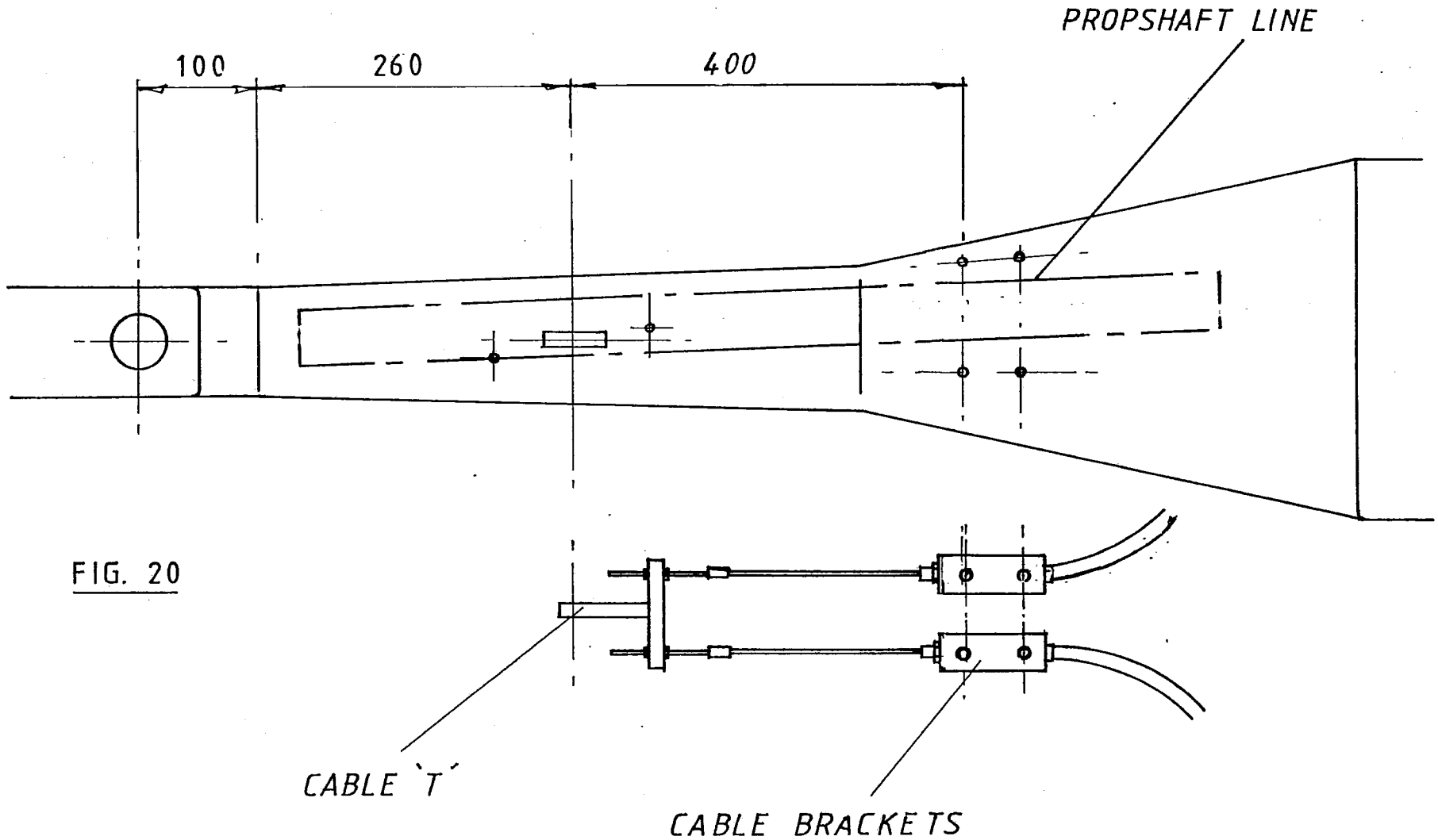


FIG. 20

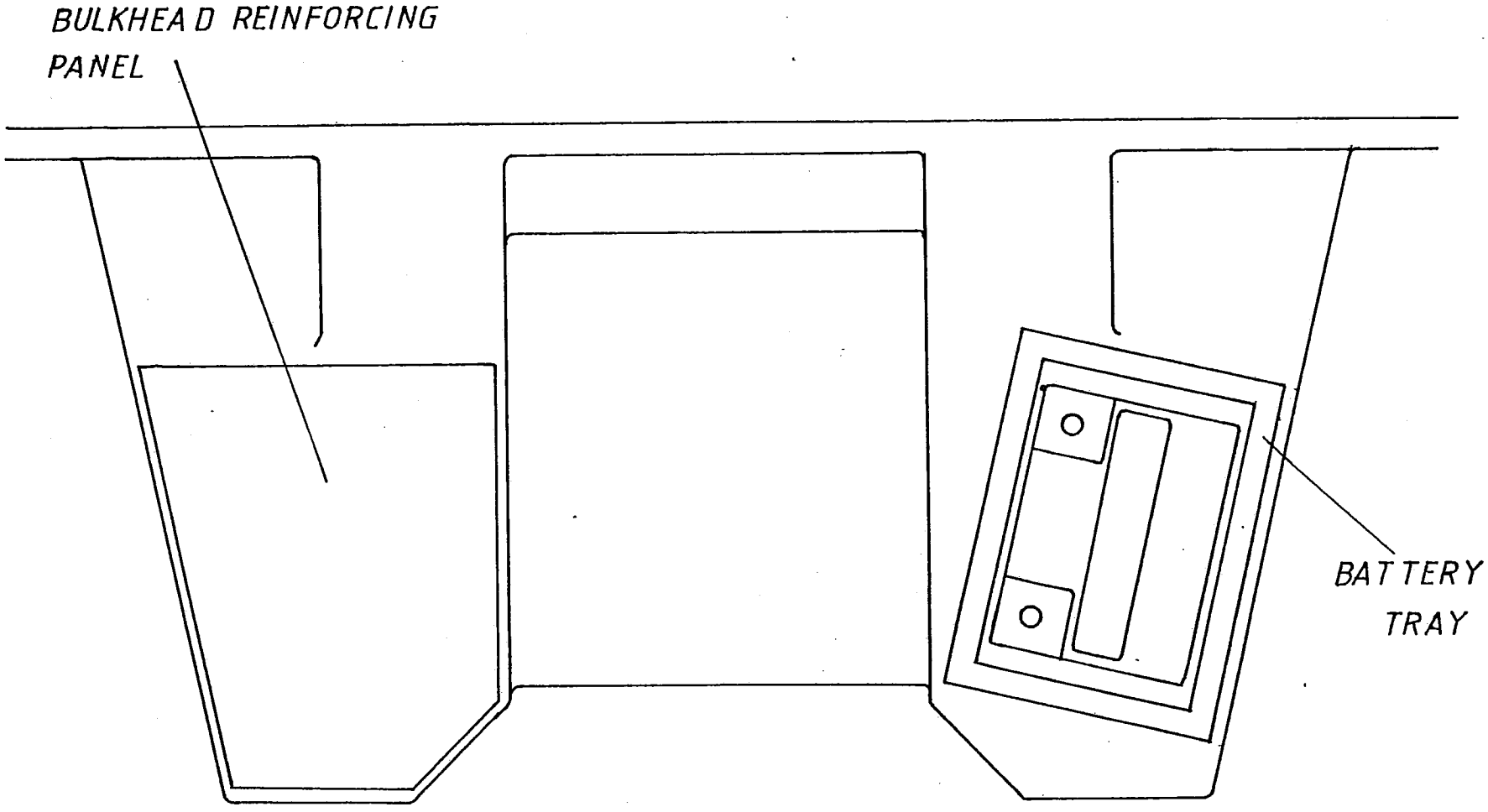


FIG. 21.

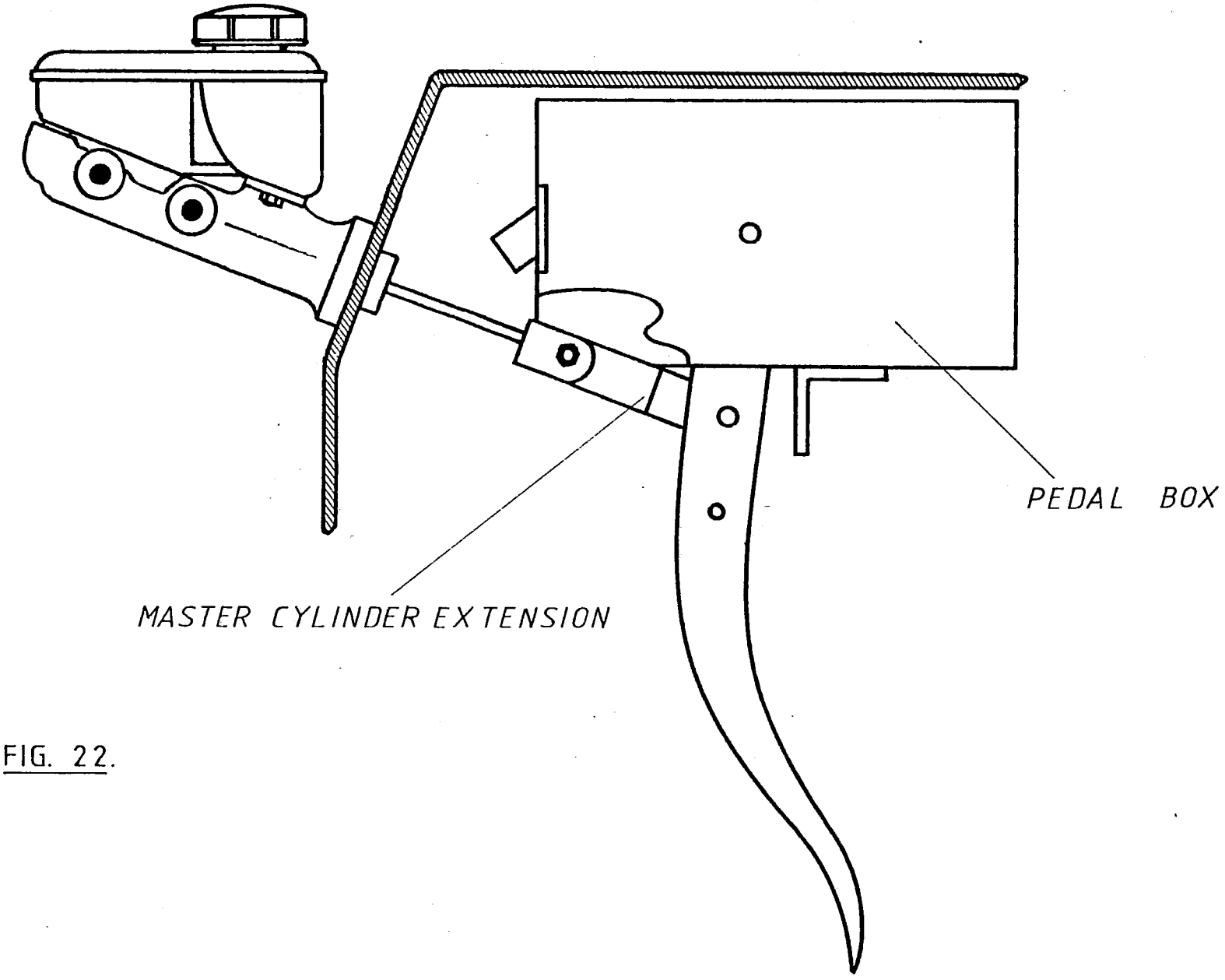


FIG. 22.

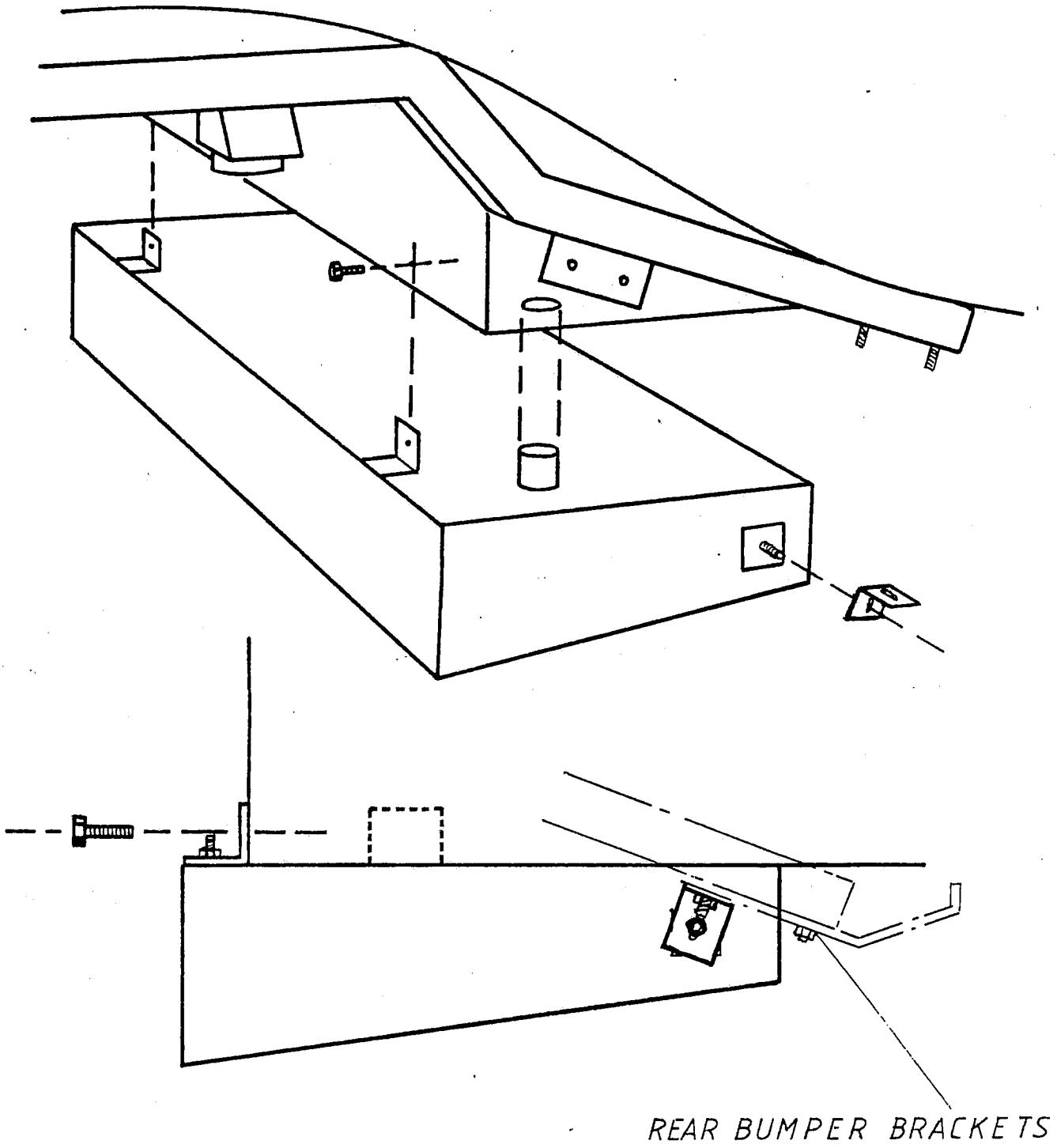


FIG. 23.

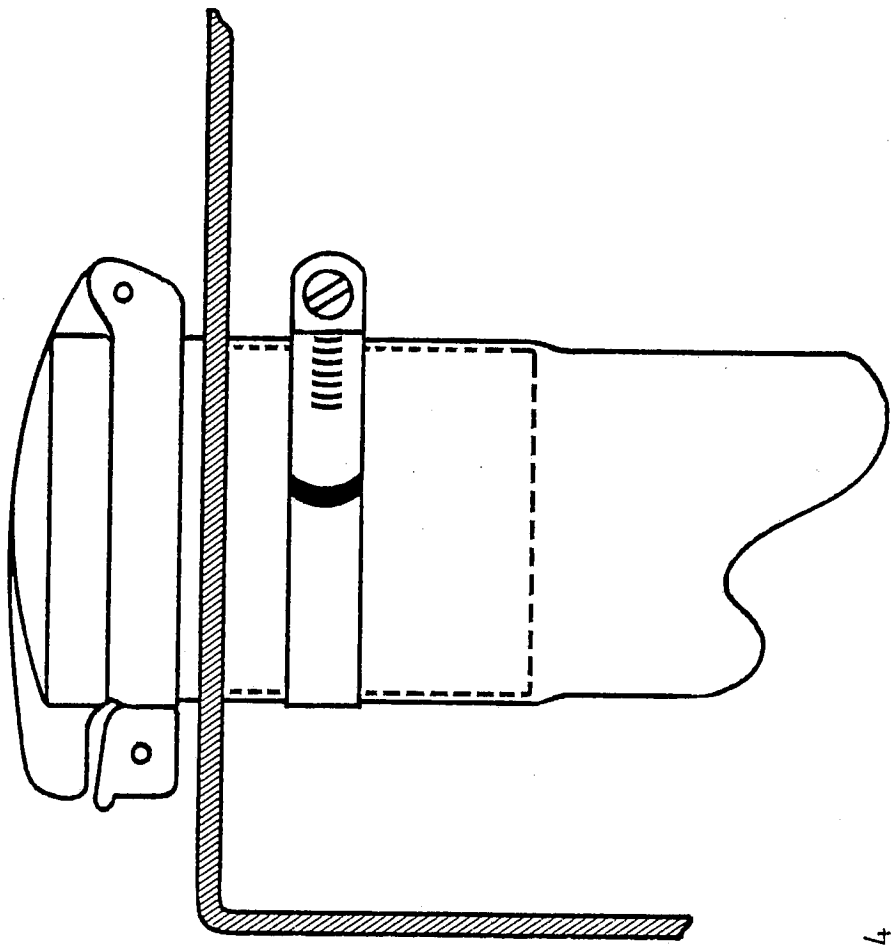


FIG. 24

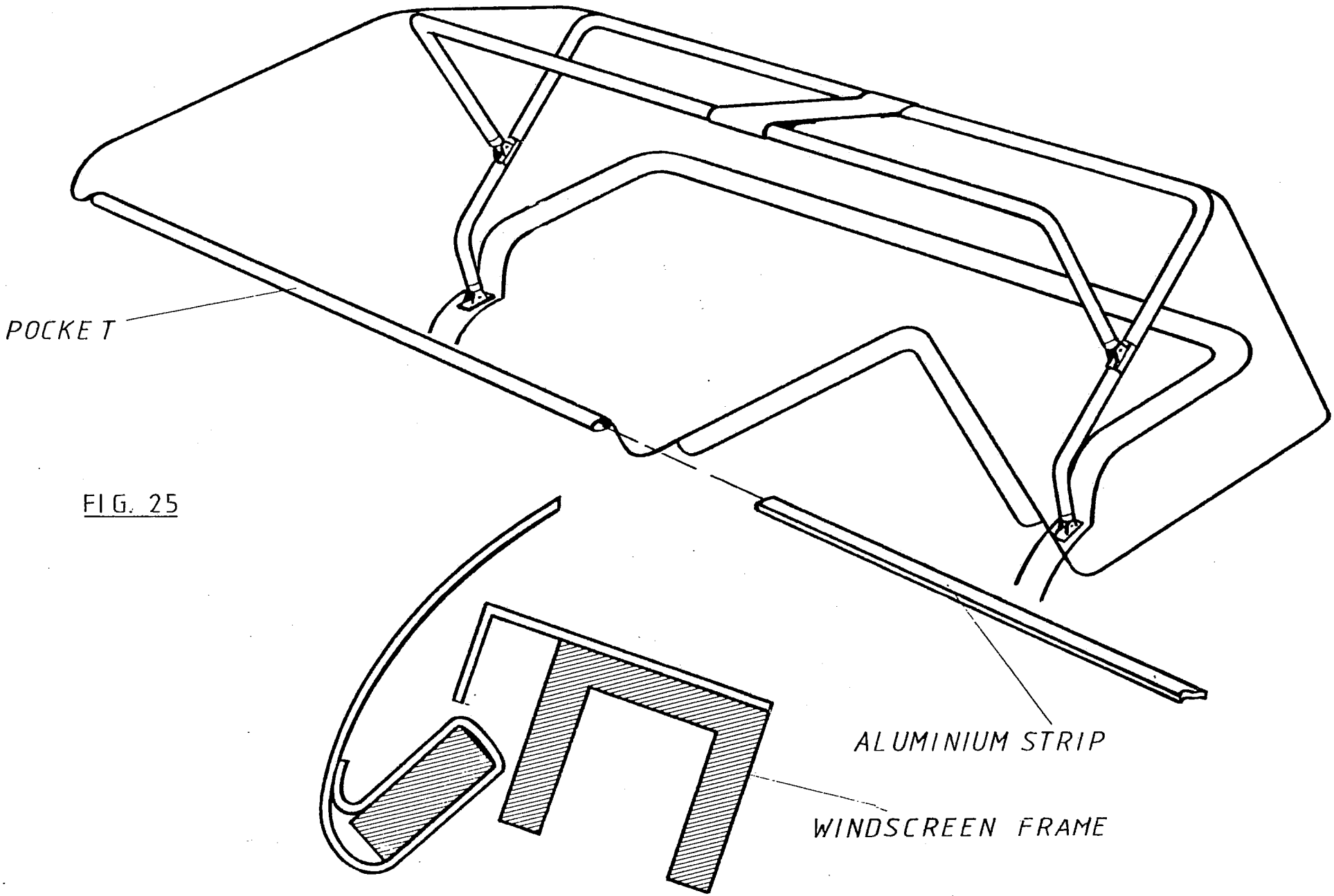


FIG. 25

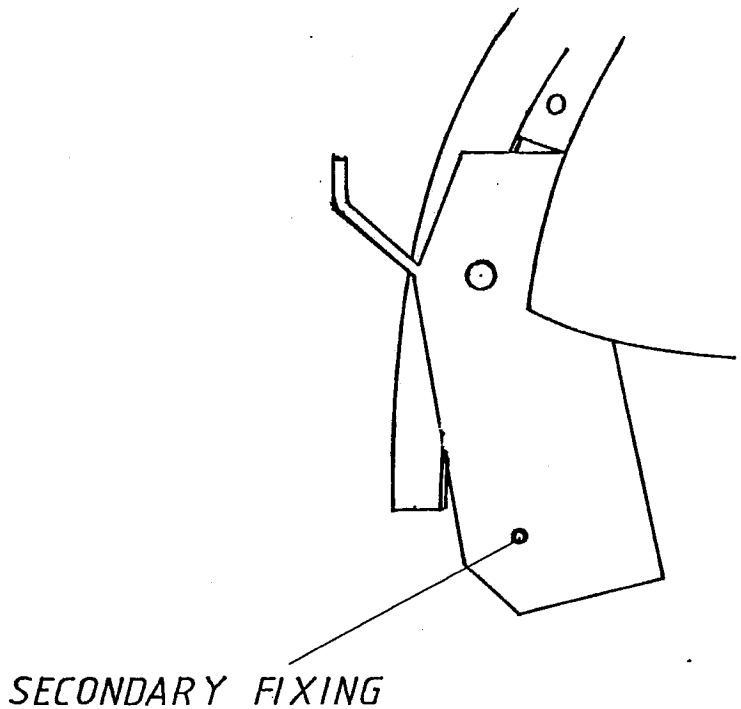


FIG. 26

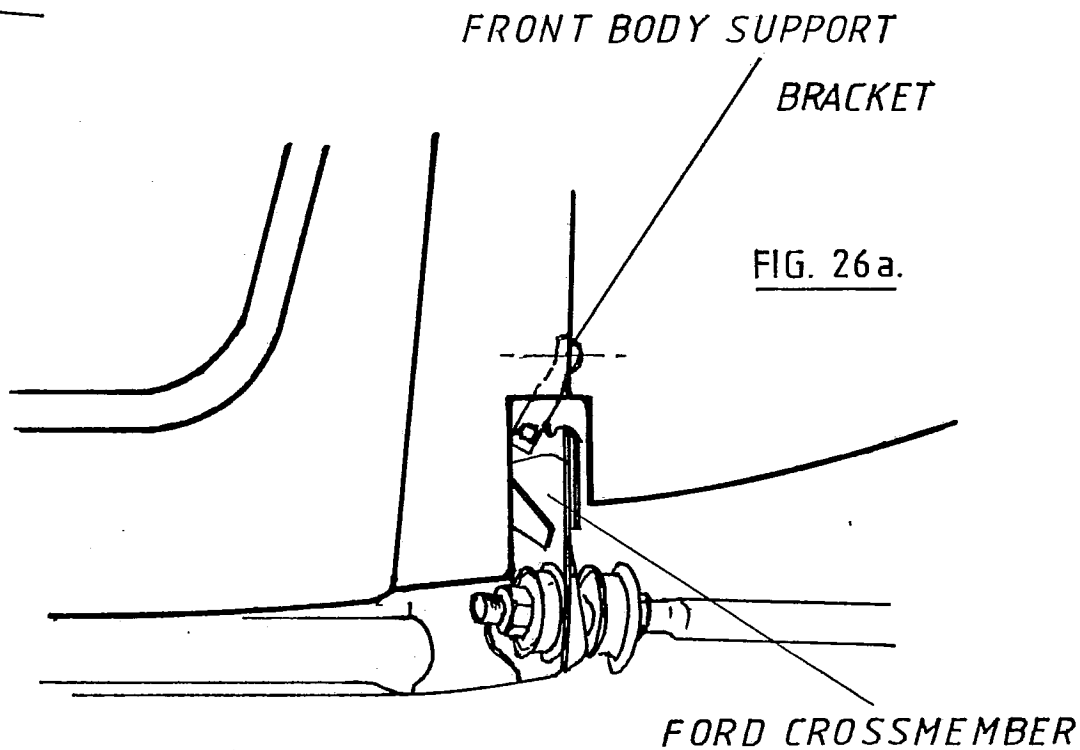
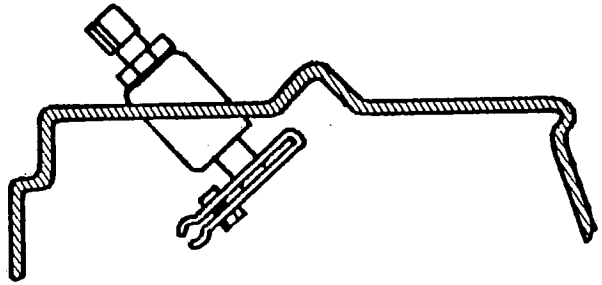
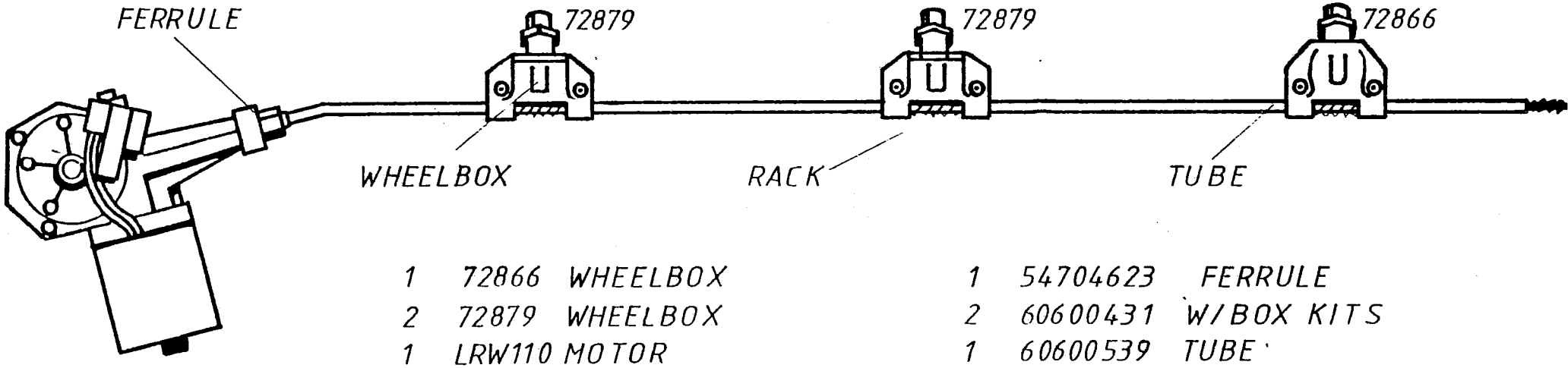


FIG. 26a.

LUCAS TRIPLE WIPER SYSTEM

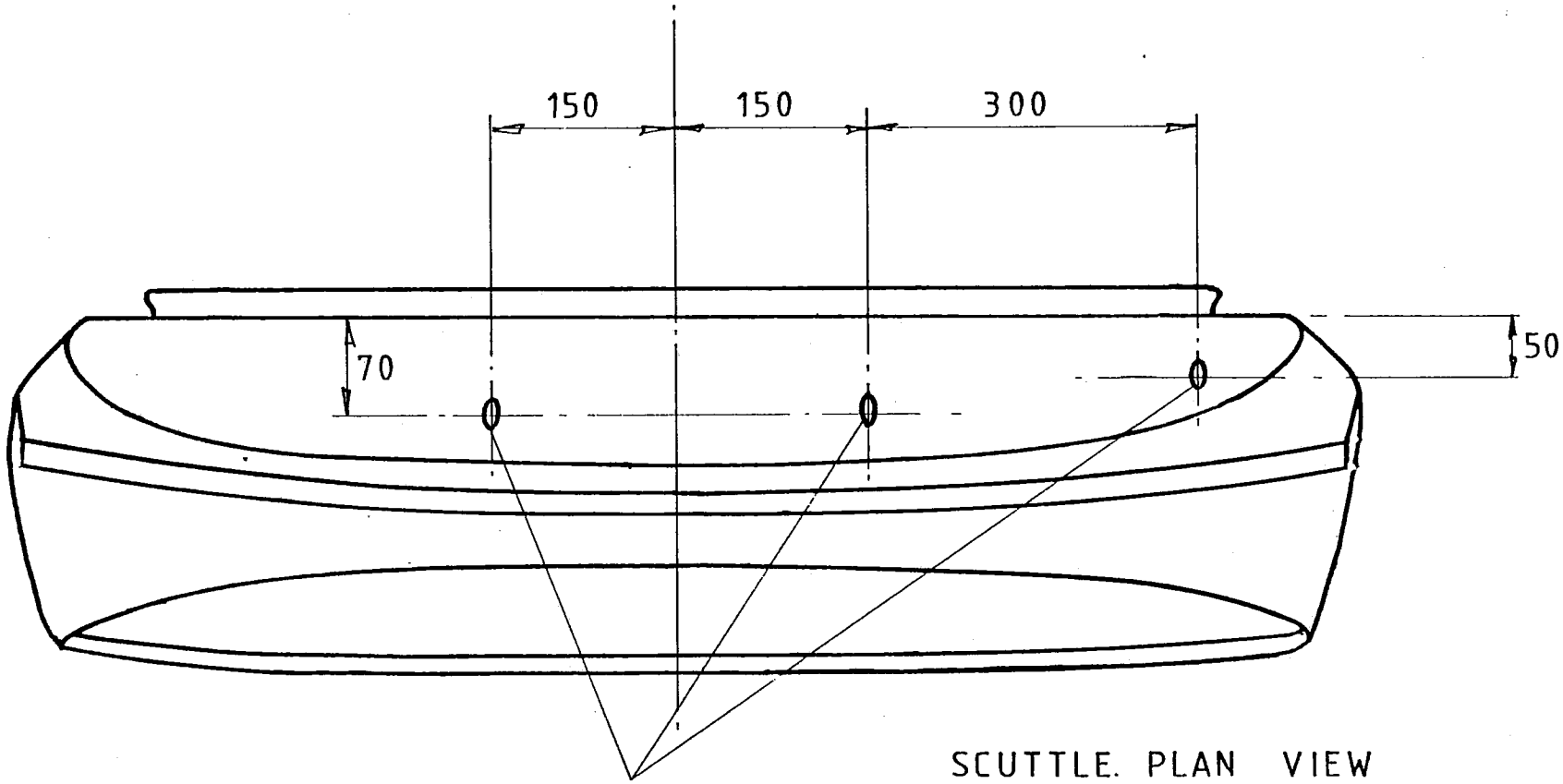
FIG. 27.





1	72866	WHEELBOX
2	72879	WHEELBOX
1	LRW110	MOTOR
1	743221	RACK
1	WGB223	GEAR
3	WAB401	WIPER ARMS
3	WBB100	WIPER BLADES

1	54704623	FERRULE
2	60600431	W/BOX KITS
1	60600539	TUBE
1	54701831	PAD

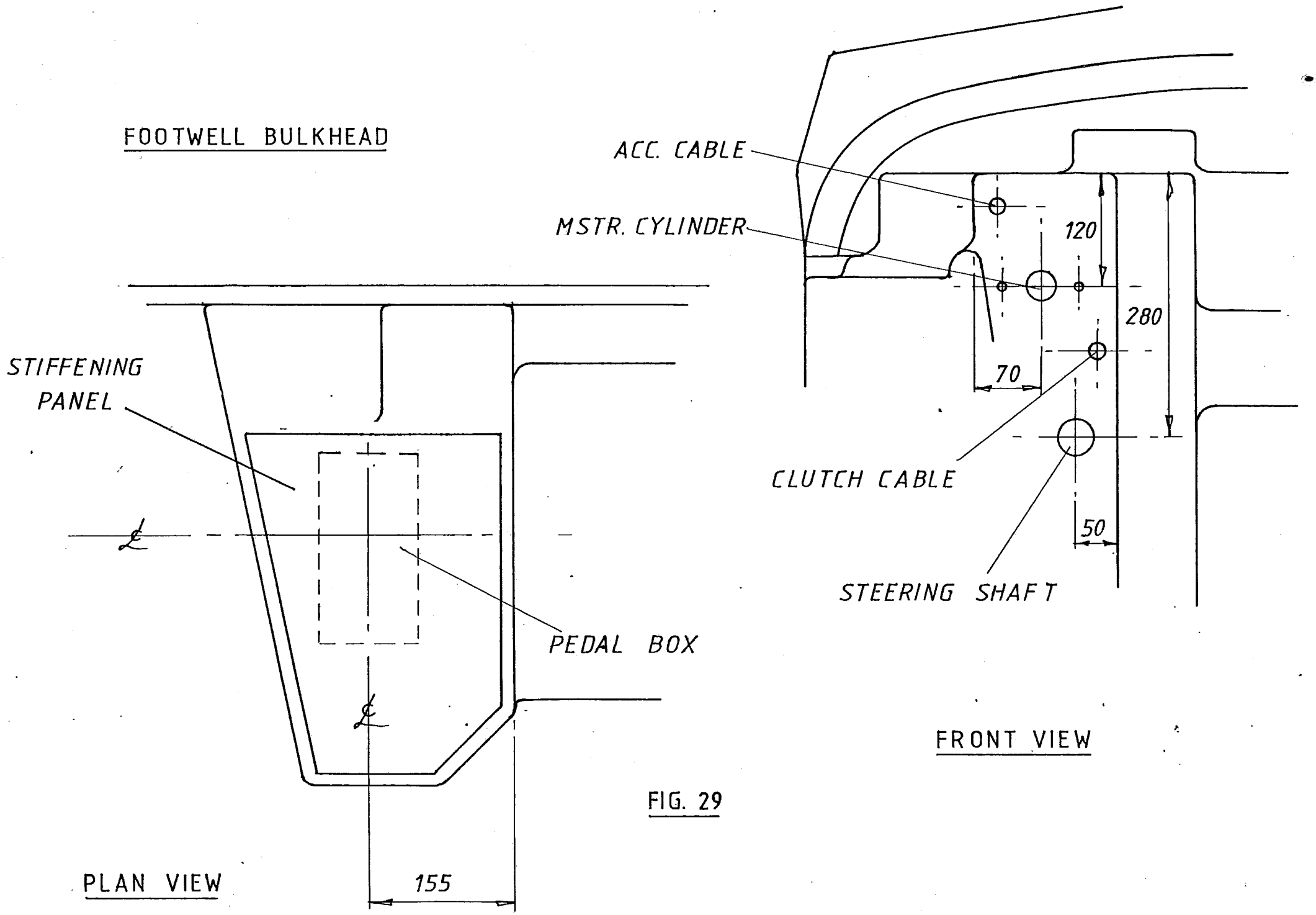


SCUTTLE. PLAN VIEW

DRILL 3 HOLES 16mm DIAMETER
AT APPROX. 45° TO THE VERTICAL
DIMENSIONS IN MILLIMETRES

FIG. 28.

FOOTWELL BULKHEAD



FRONT VIEW

PLAN VIEW

FIG. 29

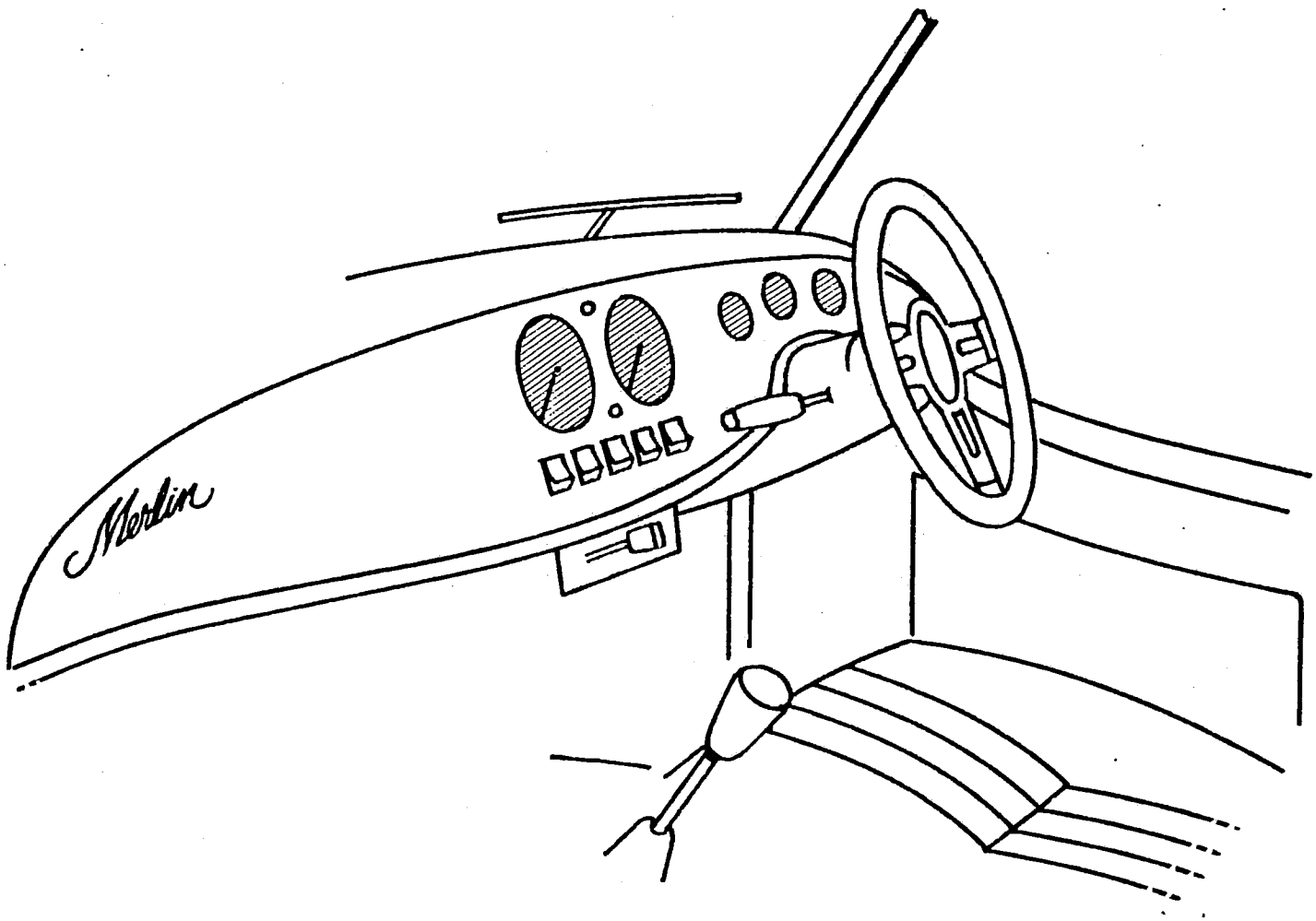


FIG. 30

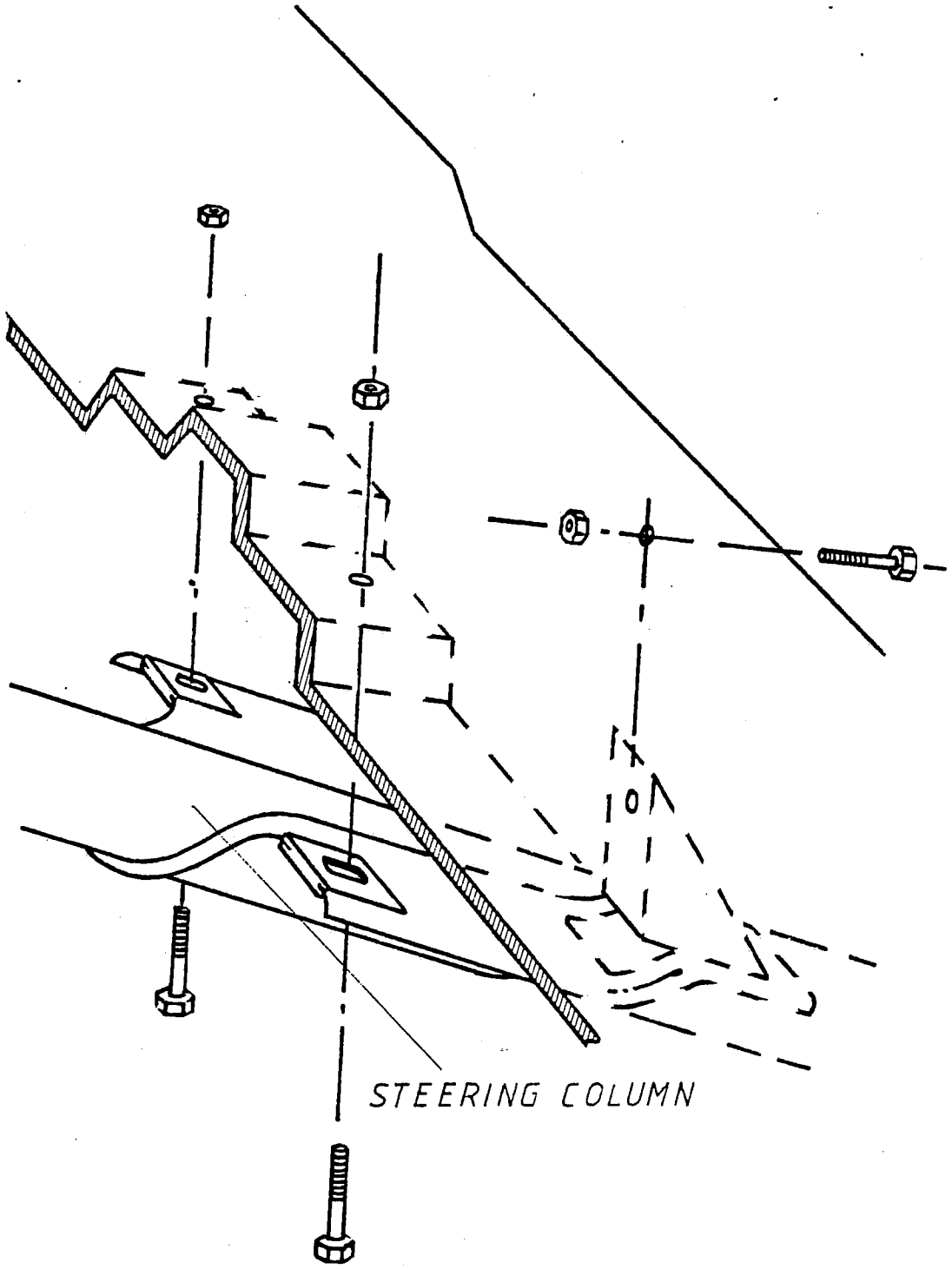


FIG 31.

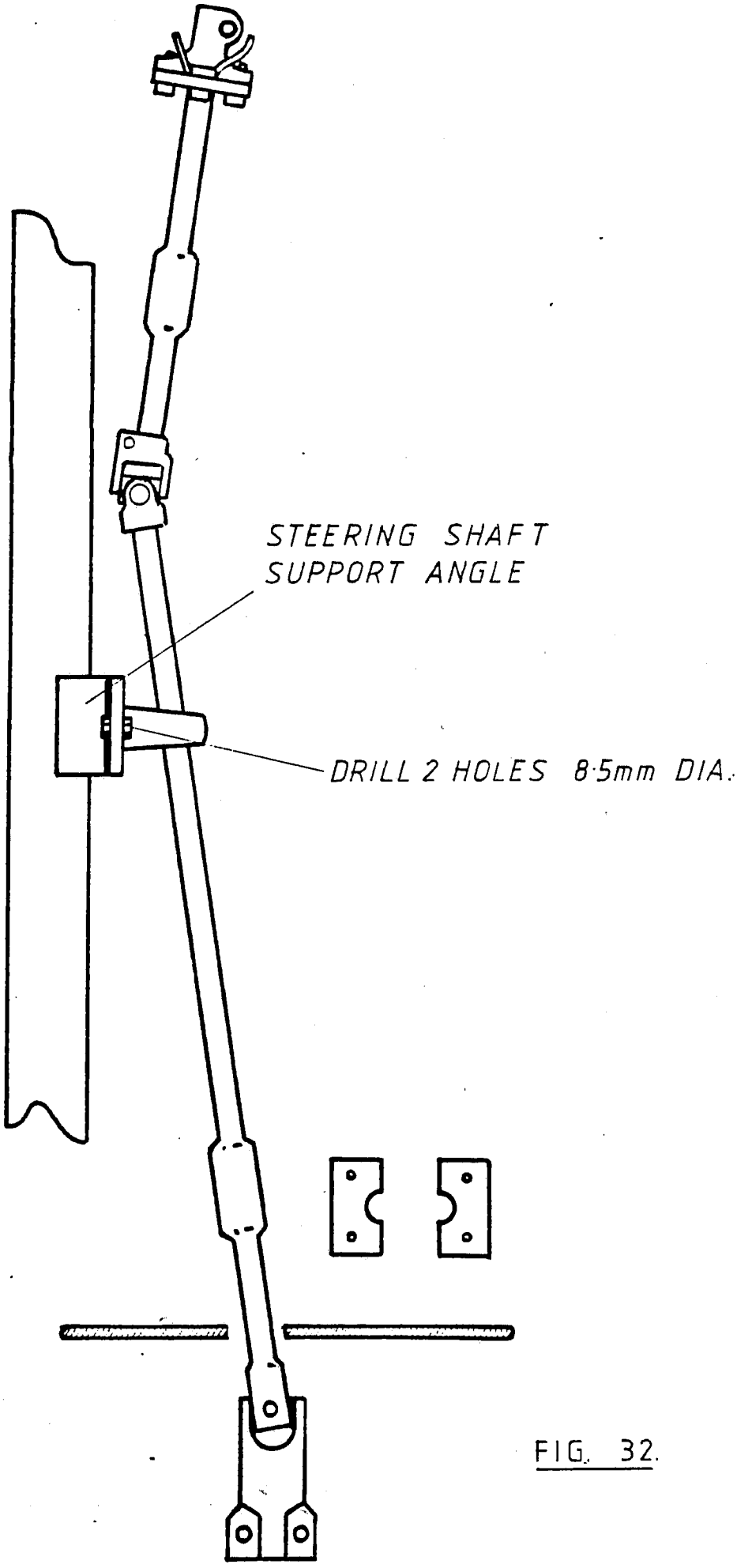
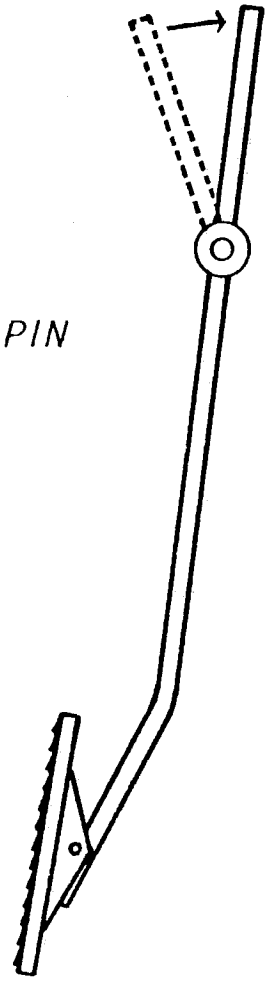
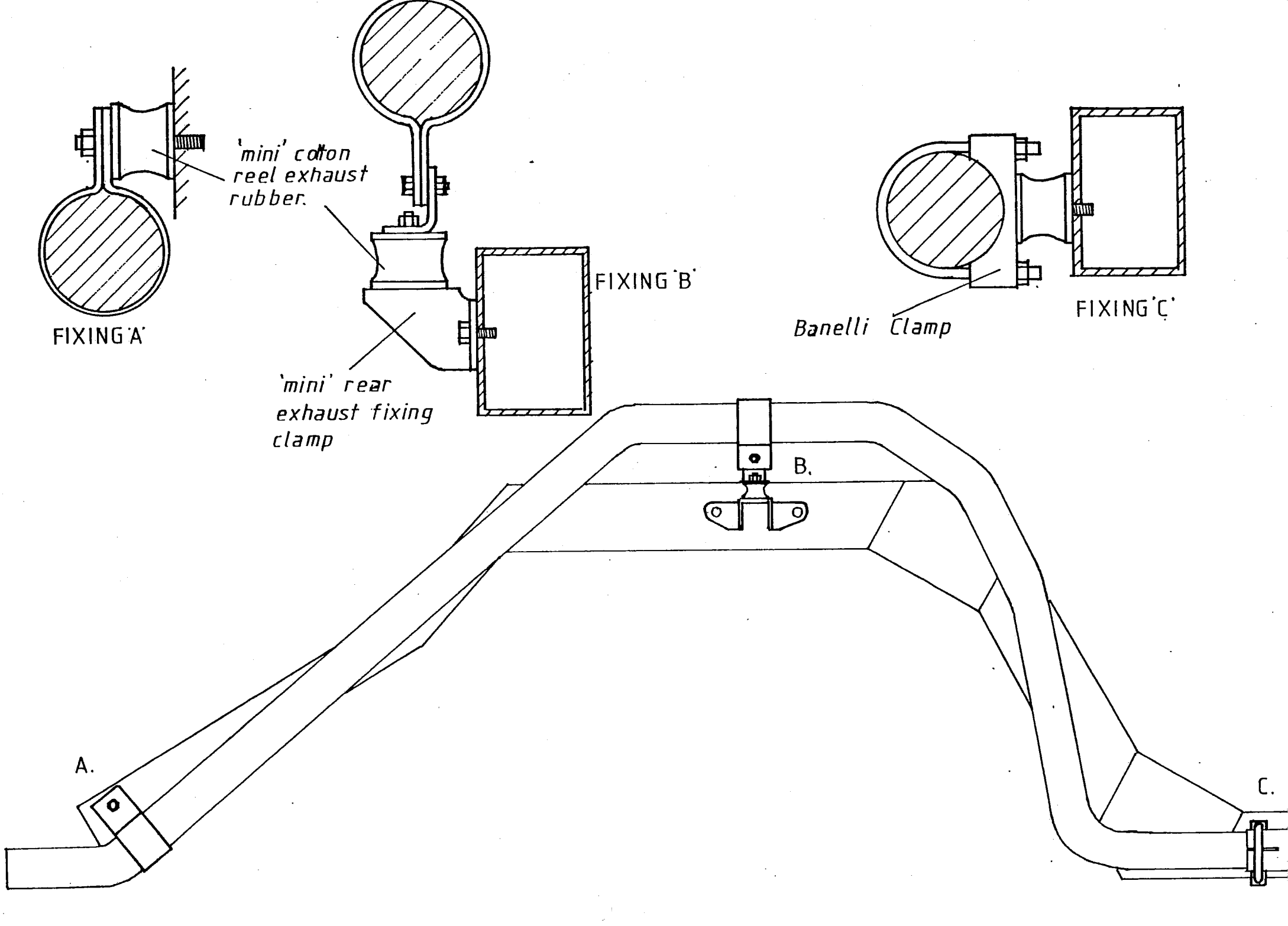


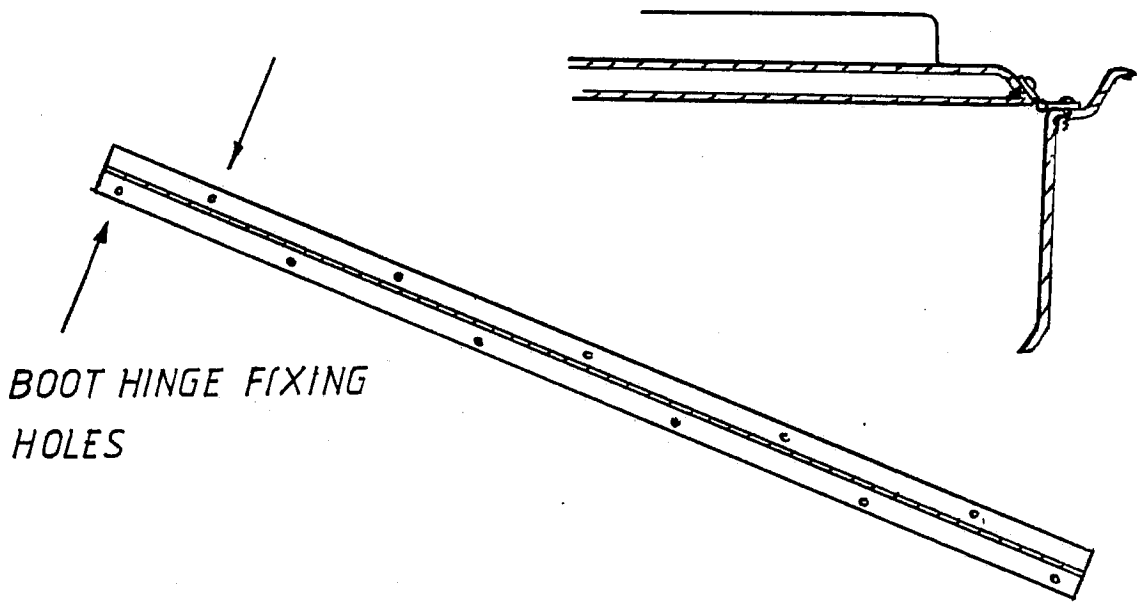
FIG. 32.

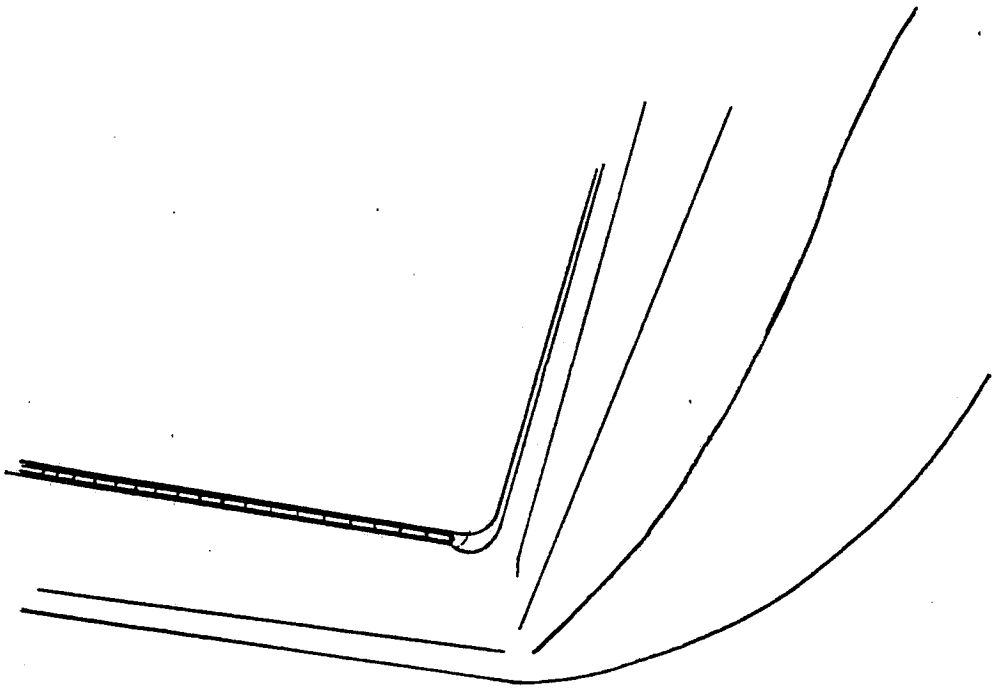
THROTLE PEDAL
MODIFICATION

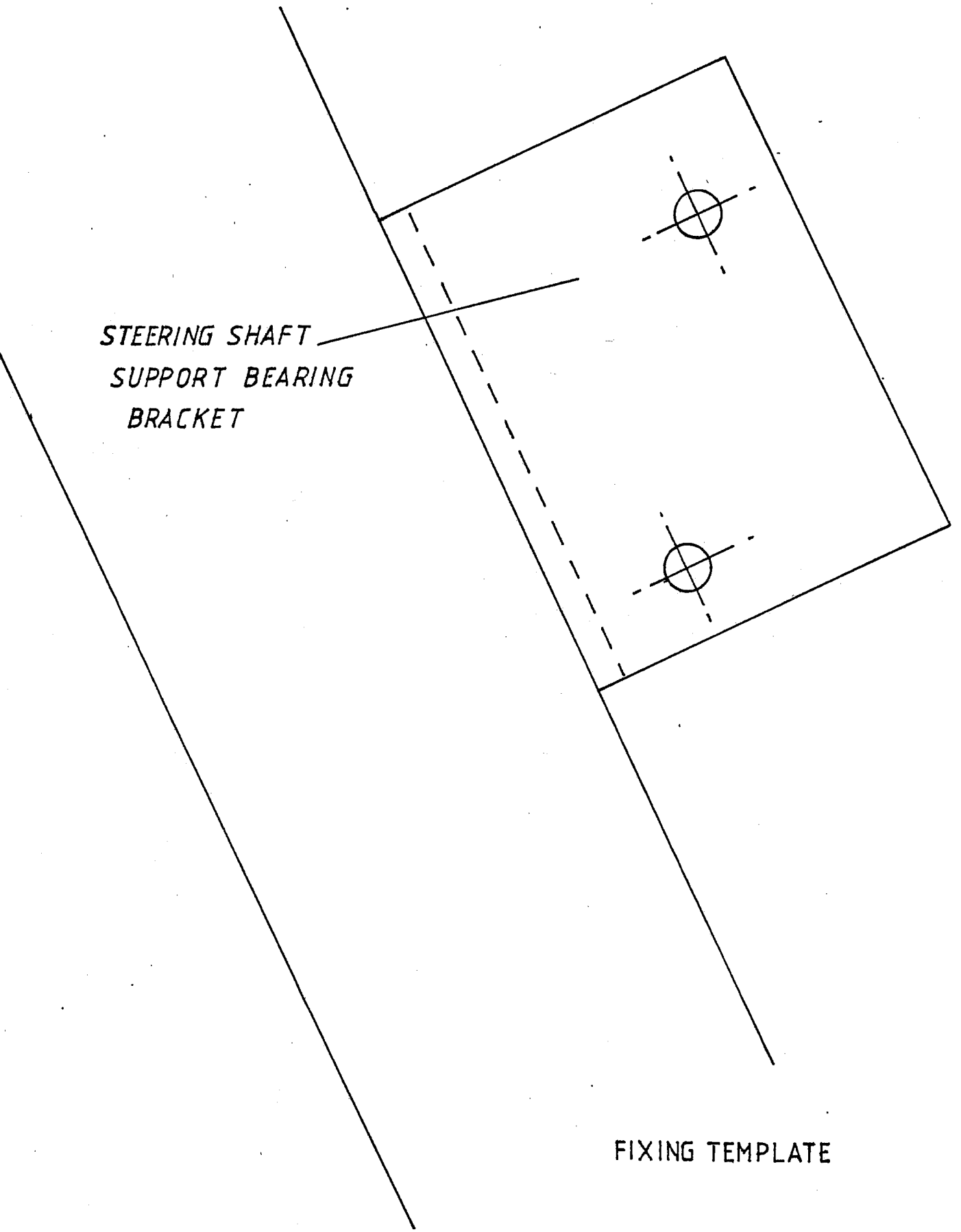
REMOVE PIVOT PIN




'mini' cotton reel exhaust rubber.
FIXING 'A'
'mini' rear exhaust fixing clamp
FIXING 'B'
Banelli Clamp
FIXING 'C'
A.
B.
C.


BOOT HINGE FIXING
HOLES

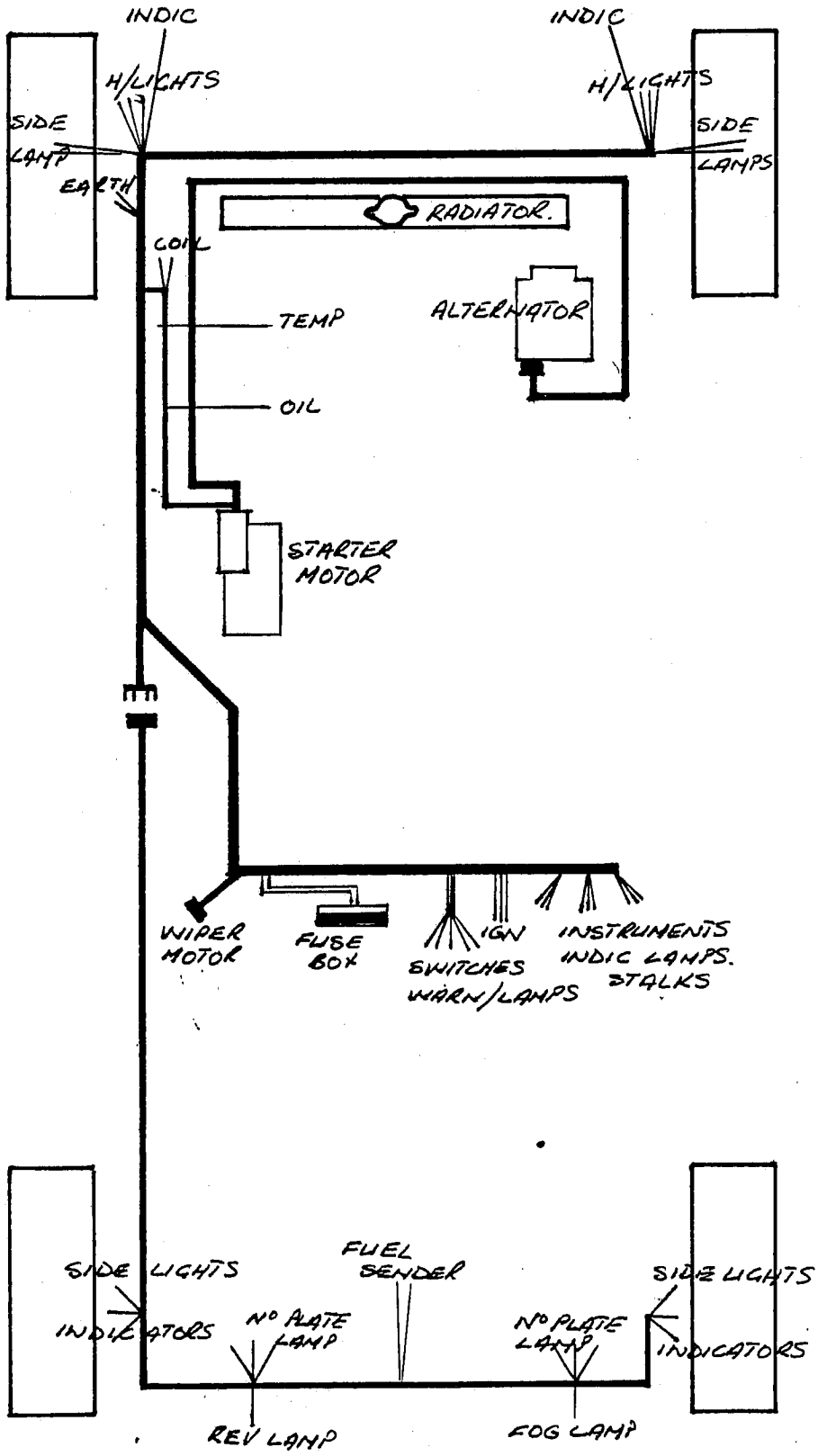




FIXING TEMPLATE

MODEL. MERLIN PLUS 2

lay loom in the car as shown below, identify and label with masking tape each wire end and plug, familiarising yourself with each part prior to final fitting.



LIGHTS

Sidelights	Red	Connect to each sidelight and numberplate lamp. Where two red wires emerge from loom use a connector and include both wires.	
Headlights	Blue/Red	Dip beam	Connect to lamps
	Blue/White	Main beam	Connect to lamps
Brakelights	Green/Purple	Connect to lamps. Where two wires emerge from loom use a connector and include both wires.	
Indicators	Green/White	Right hand	Connect to lamps
	Green/Red	Left hand	Connect to lamps
Rear fog	Red /Yellow		Connect to lamps
Reverse	Green/Brown		Connect to lamps
Earths	Black	Use black wires to earth lamps where necessary, where two wires emerge from loom use a connector and include both wires.	

SWITCHES

Lights	Brown	Power	
	Red	Sidelights	Plug fitted
	Blue	Headlights	
Wiper (Ford stalk)	Brown/Green	Park	
	Red/Green	Slow	
	Blue/Green	Fast	
	Green	Power	Plug fitted
Wash	Green	Power	
	Green/Black	Pump	Plug fitted
Heater	Green	Power	
	Green/yellow	Slow	
	Green/Slate	Fast	Plug fitted
Reverse (gear box)	Green	Power	
	Green/Brown	Lights	Connect to switch
Rear fog	Red/Black	Power	
	Red/Yellow	Lights	Plug fitted
Hazard	Green/White		
	Lt.Green brown		
	Green/Brown		Plug fitted

GUAGES

Tachometer	White	Power from ignition switch
	White/Black	Wire to coil
	Black	Earth
Temperature	White	Power from ignition
	Green/Blue	Wire from sender unit
	Black	Earth
Fuel	White	Power from ignition
	Green/Black	Wire from sender unit
	Black	Earth
Oil	White	Power from ignition
	White/Purple	Wire from sender unit
Volts	White	Power to '+'
	Black	Power to '-'

WARNING LIGHTS

Ignition	White	Power
	Brown/yellow	From alternator
Oil pressure	White	Power
	White/Purple	From sender
Indicators	Green/White	Right
	Green/Red	Left
	Black	Earth
Main beam	Blue/White	Power
	Black	Earth
Rear fog	Red/Yellow	Power
	Black	Earth

ENGINE

Alternator	Plug	Insert into rear of unit
Starter	Brown	Connect to solenoid along with battery cable.
	White/Red	Connect to spade terminal on solenoid
Coil	White	Ignition. Connect to '+' terminal
	White/Black	Tachometer if used. Connect to '+'. (CONNECT ONLY ONE WIRE)
Temp sender	Green/Blue	Connect to sender unit on cylinder head.
Oil sender	White/Purple	Connect to sender unit on engine block.

OTHER

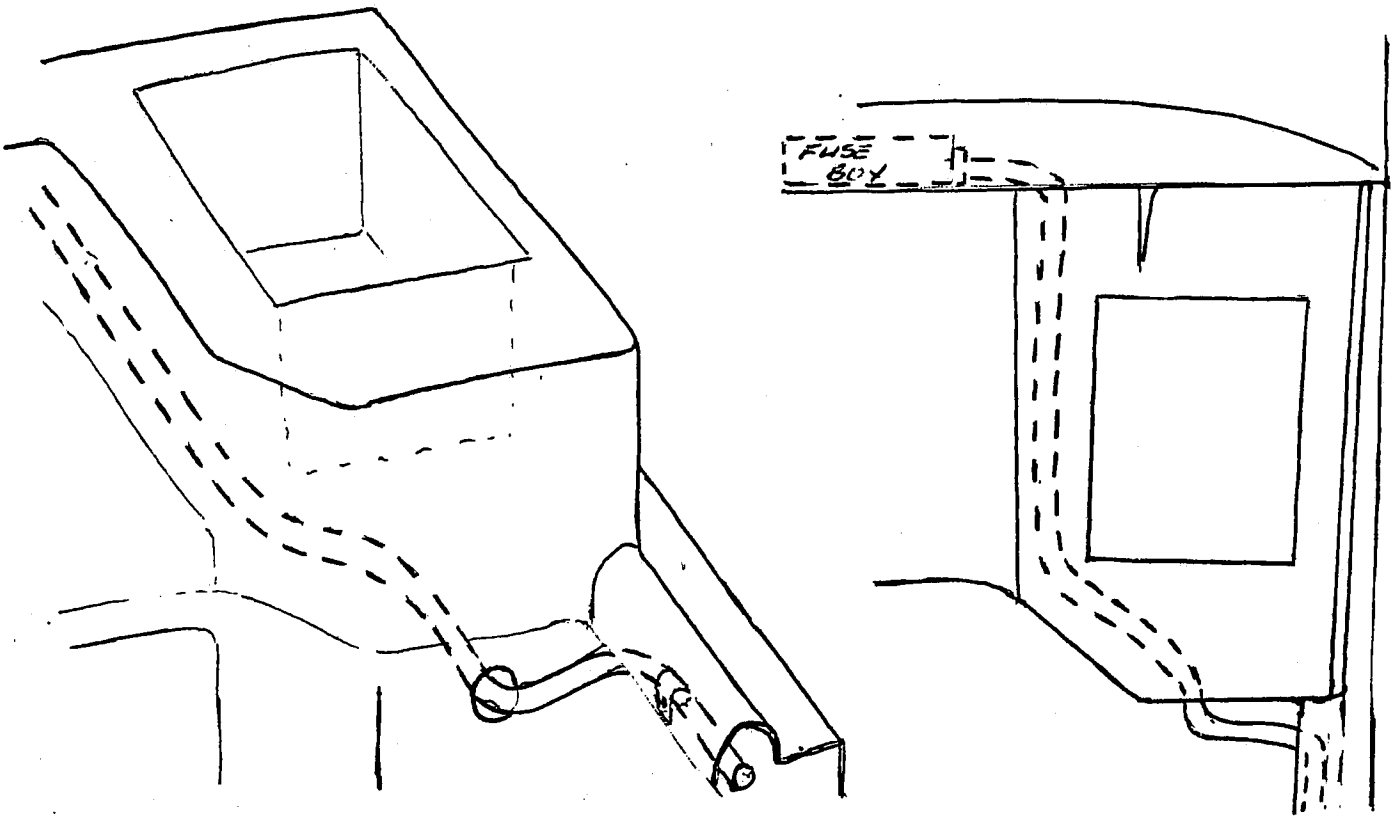
Horn	Purple/Black	From horn stalk	Connect to '+' terminal
	Black	Earth	Connect to '-' terminal
Brake Switch	Purple	Power	Connect to switch
	Green/Purple	Lights	Connect to switch
Fuel sender	Green/Black	Guage	Connect to sender
	Black	Earth	Connect to sender
Wiper Motor	Plug		Push in to motor
Washer Motor	Green	Power	Connect to '+' terminal
	Black	Earth	Connect to '-' terminal
Disributor	Black	Earth	Connect to '-' terminal on coil
Battery	Red	Solenoid	Conect to main bolt terminal on solenoid
	Black	Earth	Connect to chassis or engine.

Ballast resistor: Connect between '+'term on coil and ignition wire.

Note: When ballast resistor is used connect a wire from the push on terminal on the solenoid to the '+' terminal on the coil together with an ignition wire.

Earths: Bolt earth wires to good earthing points on the chassis. Ensure a good earth connection between engine and chassis

JOIN TOGETHER BROWN/YELLOW WIRE FROM ALTERNATOR TO BROWN/YELLOW ON LOOM



The Merlin should have twice the normal road life of a regular production sports car, additionally, the Merlin will be easy and inexpensive to maintain. The fibre-glass body will not rust and the light weight will result in less engine wear, longer lasting tyres, improved mileage and superb performance. Expect to drive the car a great deal, as the excite-ment of ownership and sheer fun of driving becomes habit forming.