# CHAPTER 3. SEEDBED PREPARATION

#### 3.6 MAINTENANCE AND REPAIR

### 3.6.2. PLOUGH PARTS MADE BY THE BLACKSMITH

#### INTRODUCTION

Various replacement parts can be made by the trained blacksmith. This Module gives some examples of the work which he should be able to undertake such as parts for the Arara plough. He will already have prepared certain special tools such as templates and punches.

## REPLACEMENT SHARES

Shares are made from special steels and replacements may be made using a scrap piece of leaf spring from a vehicle, some 10 mm thick. A template is used to mark out the shape to be cut from the metal which is then progressively forged to the required dimensions. Once the share is filed clean, it is heated and then quenched in oil for hardening. The various steps during the manufacture are summarised in Fig.1.

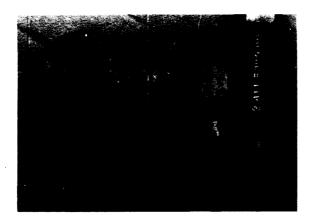


Fig. 1 The stages in making a plough share: the raw material, cutting out the shape, the forged share, the holes punched and the finished part (right). Source: FAO, 1991

NOTE: All photographs used in this Module are reproduced from the FAO Filmstrip "Training for Rural Blacksmiths". Maintenance and repair of tillage and transport equipment. FAO, Rome, 1991. Authors: B.Mignolet and W.Spettel; Photos: M.Sinko and J.Van Acker.

## THE LANDSIDE

The landside can either be fashioned from an old 6 mm leaf spring or from a piece of mild steel flat  $60 \times 6$  mm. A template is used to trace out the shape and to mark the position to punch the holes. The blacksmith must already have made a special set of punches which can form the holes for the bolts with two lugs (**Fig.2**).

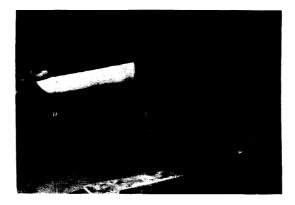


Fig. 2 Punching the fixing holes in the landside with a special set of punches made previously.

Source: FAO, 1991

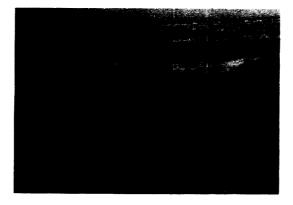


Fig. 3 The raw material used for making the landside, the shape cut out, the holes punched and the finished piece.

Source: FAO, 1991

## REPLACING THE SUPPORT WHEEL AND BUSH

The wheel rim is made from a strip of mild steel flat, riveted and the 4 spokes hammered into place. The two pieces for the mould are cut from thin metal sheet and placed in position to form the shape of the outside of the hub (Fig.4). Now a metal tube is held at the centre so that aluminium from old pistons may be poured (Fig.5).

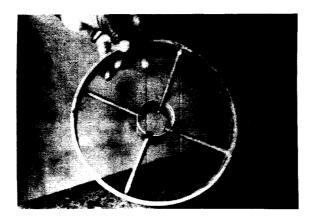


Fig. 4 The wheel rim has been made and the spokes placed. Half of the mould for the wheel hub is shown in position.

Source: FAO, 1991



Fig. 5 Placing the bush ready for pouring molten aluminium into the space between the bush and the mould, so forming the hub.

Source: FAO, 1991

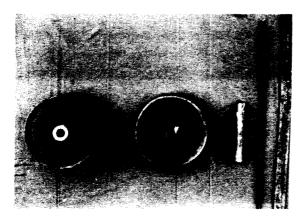


Fig. 6 The various parts prepared to make the plough support wheel. Source: FAO, 1991

## REPLACING THE WHEEL AXLE

The wheel axle may be forged from a piece of 20 mm round bar. One end is split with a hacksaw, heated and the ends hammered over. The axle must be carefully shaped and a hole punched at the other end for locating the split pin which holds the wheel in place (Fig.7).

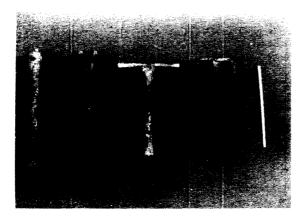


Fig. 7 The stages for making the wheel axle and the split pin for securing the wheel.

Source: FAO, 1991