

# MAKING A PACKSADDLE



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## Introduction

One of the biggest success stories that we have had in the last few years has been the introduction of a simple, cheap, and easy to make pack saddle into various regions of Ethiopia. It's not really a pack saddle, it's more of a back protector, but it can be used either on its own or under a rigid frame.

Since we introduced this pattern nearly four years ago it has proved to be very popular with the local donkey owners, many of whom have now been taught how to make it for themselves. It has been mentioned in several publications, and as a result we have received quite a few requests from people all over the world for detailed instructions on how to make it for their own donkeys; this has in turn led to this little booklet which I hope will provide that information.



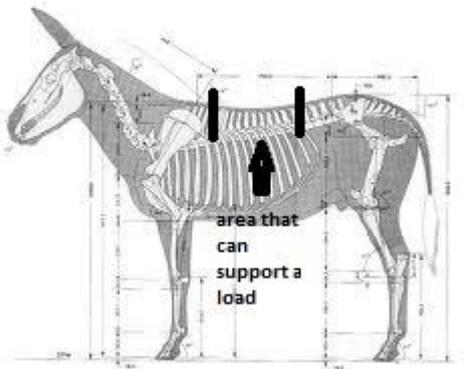
## History

We have been making a packsaddle in Debra Zeit, Ethiopia for many years, but we decided 4 years ago to simplify it. The new pattern is actually based upon the frame of the quite complex saddle used in Egypt with one major addition. The Egyptian model is quite a nice saddle, but has no gullet space. This is the gap that sits over the donkey's spine and which should prevent any part of the load rubbing on this sensitive area. Failure to provide this can lead to the horrendous wounds that are the bane of working equines all over the world. We looked at several materials and decided on jute/sisal sacks stuffed with straw or

hay, depending on what was available. The main considerations were that it had to help the donkeys, and that the materials and the tools to make it, as well as the expertise to put it together, were realistically available to the actual donkey owners who we wanted to adopt it. The basic model is now being retailed at about £1.30 by some of the market groups that we have since trained up once the initial trials proved successful. This includes all the materials and their profit. After an initial period of receiving some support from us they are now totally independent; without that important separation, no solution to any problem can ever become sustainable. The vets working in areas where we have introduced the saddles have reported a significant drop in back sores on the donkeys over the last few years.

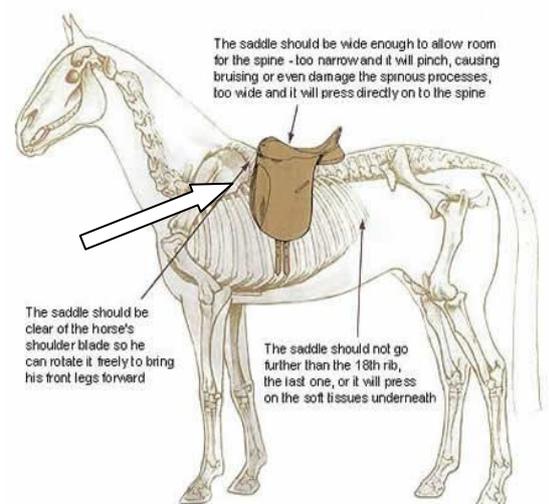
The saddle was adapted in many ways by the donkey owners and us until we found mutually acceptable patterns that suit each area's particular needs, climate or terrain. The only part that has to remain consistent is the gullet space, and the bars that lie each side of the donkey's spine and distribute the weight of the cargo evenly over as wide a space as possible; that and the fact that any material actually in contact with the donkey must be a natural material, since synthetic materials don't breathe, are hot, and will often cause a wound no matter how soft or smooth they may appear.

### Saddle Fitting



*Whatever the equine, and whatever the saddle type, it should rest on the area of muscle (longissimus dorsi) that lies along the animal's back either side of the spine, and should cover only the area supported by the animal's rib cage.*

*Equines have a floating shoulder blade which moves backwards and forwards during movement. Horses should have a minimum of a two finger width space between the shoulder blade and the saddle, donkeys need a little more. Whilst this should be taken into account, our saddle is pretty giving and since it is principally there to protect the donkey from the cargo sometimes we do go closer to the shoulder blades.*



## Width fitting

This is essential in any type of saddle with a rigid frame, but with our packsaddle being non-rigid it will conform to the donkey's shape no matter what.

## Making the pack saddle.

### Materials needed:

Sisal sack

Thread

Straw or hay (Large sack full at least)

### Tools needed:

Tape measure

Marker pen

Knife or scissors

Large needle, (we use 5" mattress needles, but any large needle will do)

Stuffing rod, about 1 metre long. (Broomstick with a flattened 'V' shape carved in one end, see picture).

*stuffing rod*



Time taken: allow at least ½ a day for the first attempt, our best saddle makers now do about 5 a day but they have made hundreds.

## Preparing the sack

The sacks are stuffed through what is now the long seam running from the top to the bottom of your sack, so we have to start by closing up the open end. Fold the two sides of the end over a little to form a hem and starting at either end whip stitch across to the other side.

In the picture there's slightly different model showing a nylon sack. The technique is the same and we'll cover that model as an alternative later.

Once the open end has been sealed, open up that long side seam. If you want to be really efficient save the removed string for use later.

*Whip stitch (below)*





*The open sided sack ready to mark.*

### Marking out

The sack is divided into segments to give 1/ the gullet space, 2/ the two side bars and 3/ the panels as in the picture below. Before you do this find your centre mark by folding the sack in two and marking the seam at both sides. Sacks are not particularly exact in their measurements, so don't try using the tape measure for this, just do it by eye.



The Gullet 1/ is marked at 40 mm each side of the centre mark, so is 80 mm wide in total. The bars 2/ are measured at 200 mm from the gullet line down on each side. The panels 3/ are whatever is left, but should be equal, more or less.

## Stitching



*Each of the lines just marked now need to be stitched along, a simple running stitch is fine, and this will give 5 separate pockets ready for stuffing. The line between the stitching in this photo is the centre line; you can just make a small mark each side.*



*Running stitch (above)*

## Stuffing

This is the most crucial part of the job. Start by stuffing the bars (2). Don't think that by making them soft you will make the saddle more comfortable for the donkey, you want to get as much straw or hay in there as you can, beating it down regularly to shape it and allow you to get a bit more in. If you don't then all that will happen is that the straw will compress with use, your bars will become thin and the cargo will start to catch on the donkey's back.

I like to use a longish straw for this job, take a small bundle, around 1 cm thick in your left hand, twist and fold it in half and place it between the 'V' in your stuffing rod.



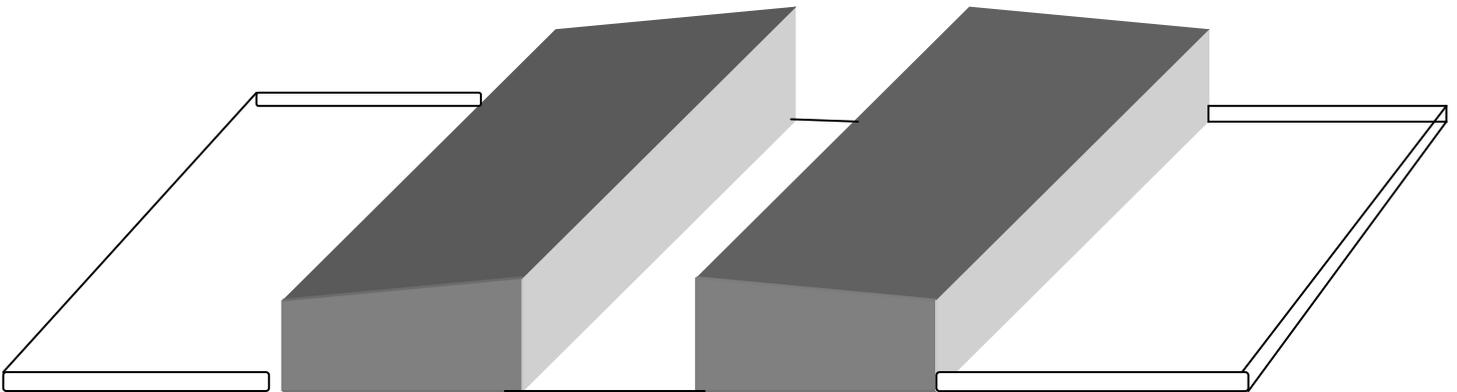
Picture left, holding down one end of the straw or hay in your left hand, twist and bend it over the 'V'.

Picture right, holding both ends of the hay/straw and moving your right hand back to the haft, you are now ready to place the straw into the sack.



You can now use the rod to place the stems right into the bottom corner of your first bar. Build on this, placing each bundle carefully, then, when it's looking fairly full beat it down, hard, carry on laying more straw on top, and working your way back up the bar. You don't want a round sausage shape; try to get it to a squarish cross section. Before you start it is worth sprinkling a little water over your pile of straw to dampen it a little. This will allow you to bend and twist your bundle without it just snapping in two.

*Stylised diagram showing the 'ideal shape'*



*. It looks as if the wedge should be the other way around, with the thinner edge against the gullet space, but this shape will cause the material over the gullet to tighten up and lift away from the donkey's back once the pack saddle is turned over and in place.*

As you work your way back up the bars, take the time to make sure that you have no bumps or hollows as you can't sort these out later, it has to be done as you go. Every bump or hollow will cause a pressure point, which may lead to sores on your donkey. We need to provide a platform that will spread the weight of the cargo over as wide an area as possible and as evenly as possible.



*One of our harness team making his first pack saddle. He is concentrating on filling the space a little too much, and is getting a sausage shape. He did manage to correct this by beating and working in more layers of straw above the original, but it's better to try and get the shape right as you go. This takes practice and time.*



*Stuff both of the bars, making sure that both are even and equally full.*

### Stuffing the panels (3)

The density of the stuffing in the two side panels needs to be about one third to a half of the density of the bars (2). Once these are finished they will be quite a bit thinner, and, depending on use, are sometimes left with no stuffing at all.



You should now have something that looks like the picture *left*: Starting at either end you can now seal the ends off with a whip stitch like you used before. Make sure, on the bars that the ends you are closing are topped up with straw as some will invariably have dropped out since you stuffed them.

## Quilting

The panels (3) need to be quilted. Because they are quite large and the stuffing is not that dense, it has to be physically held in place or it will all work its way down to the bottom and be totally useless. It's best to mark out your quilting stitches with a straight edge and a marking pen first, and to make sure that the stuffing is evenly spread and goes right into the corners. As you are stitching, keep beating the stuffing down and tightening up the stitches to produce a firm even panel.

### QUILTING DIAGRAM

fig 1  
view  
of the  
panel  
from  
the  
top

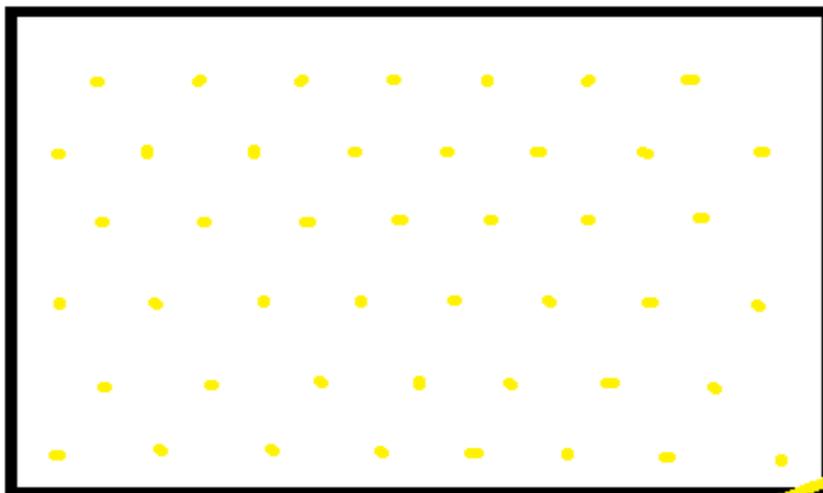


fig 2, one  
way of  
quilting



fig3,  
another  
option

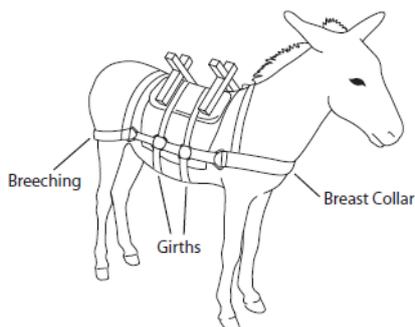


*Hopefully your pack saddle will now look something like the one below.*



Girths, Breast Collars, Breeching straps.

For flat land you'll probably only need a girth. In the previous picture there is a hand woven girth made from sisal string attached to the saddle. But if you are going up and down hills then you may want to change that for a breast collar and breeching. If necessary you may want to have all three. Girths can be done up pretty tight, but the breast collar/breeching combination should have a little give, about 10 cm, or one hands width of free play. If they are too tight then you'll find that they restrict your donkey's leg movement and may wear away bald patches, or even cause sores. Any of these straps should be about 6 cms in width and made of natural fibre. You can use nylon web but it must be lined with a material such as denim, cotton or wool where it is in contact with your donkey.



*The diagram shows a sawbuck saddle with girth, breast collar and breeching attachments, these would be much the same if you wanted to fit them on your packsaddle.*



### Alternative designs

In many of the pictures used here you'll have seen that there are nylon sacks being used. This is an adaptation of the original all sisal sack design. Because many of the people in Ethiopia are using these packsaddles for carrying water, they found that the sisal sack allowed the water to pass straight through, soaking the hay or straw inside, making it heavy and causing it to rot very quickly. We worked on that and came up with an adaptation that involves completely separating the two sides of the sack, and replacing the top side with a similar piece taken from a nylon sack. This has had two knock on effects. The overall cost of the materials decreased since nylon sacks are generally cheaper than sisal, and we found that it is also wears better in some cases.

If using this under a wooden frame then you'd probably need to make the bars a little finer, or the saddle frame ends up being very high and unstable. With a good framed saddle you wouldn't really be using this packsaddle in this form at all, you'd be using a blanket, numnah, or saddle cloth - we only use this because most of the wooden framed pack saddles in Ethiopia are not very donkey friendly and there needs to be substantial protection.

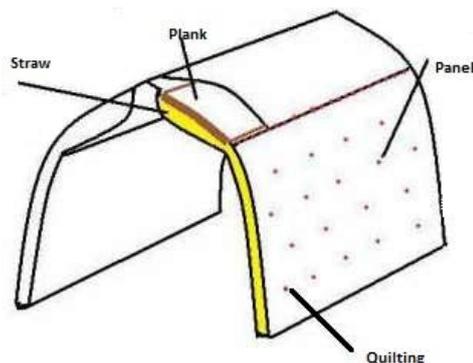
If there are no Jute or sisal sacks available then you can make it with the nylon sacks, but you should line the underneath, the side against the donkey, with some natural material such as a woollen blanket, or heavy duty cotton.



*Ethiopian rigid frame pack saddle*

### Dealing with Wounds

If your donkey has, or develops, a wound it's likely to be either on the dorsal process, the spine, or under the bars of the packsaddle. If the saddle is well stuffed and maintained then the cargo should not be touching the donkey's spine, if it is then you need to re-stuff, or look at the way your cargo is sitting. Obviously if something in the cargo is putting enough downward pressure in this area then it is going to overcome the protection offered by the straw. In this case you either need to change the way your actual cargo is packed, or go to a rigid framed pack saddle such as a sawbuck. One alternative that hasn't yet been tested is to put 2 planks about 1cm thick cut to the same size as the bars inside the sack prior to stuffing. This would give you a solid base each side of the spine to put the load onto.





*If the wound is under the bars then do not use a doughnut, yes these relieve the pressure to the actual wound site, but they increase the pressure all around it causing more wounds over the surrounding area. It's best to beat a depression into the stuffing on the underside of the saddle then put a couple of stitches in, straight through all the material and pull them up tight. This will keep the saddle away from the wound, allowing it to heal without putting extra pressure onto the surrounding area*

It goes without saying that the best thing to do if your donkey is wounded is to treat the area and take it off work until it is healed. The reality is that this saddle is used in areas where the donkey is an integral part of a hand to mouth existence. If the donkey doesn't work today then there is no water or no food tomorrow. Therefore wounds have to heal whilst the donkey keeps going.

### Durability

In Ethiopia these pack saddles last up to 6 months, but they have a pretty tough life and the donkey owners don't, as a rule, look after them very well. In Mexico recently I saw a similar model being used which the owner claimed he'd had for over 20 years. He did take care of it, and laid a piece of canvas over the top before loading it. He carried firewood from the forest to his home, a distance of about 12 km, three times a week, and also to the market where he sold it. The key points to longevity are keeping it dry and well maintained.



*Mexican donkey owner with his jute sack pack saddle, note the piece of canvas over the top, protecting it from both rain and physical damage from the firewood he carries. This packsaddle was used on a different donkey before this one.*

*This is typical of the average load carried by this donkey up to 3 times a week for distances of around 12 km. There were no signs of stress or wounds, he was quiet and very friendly with his owner. The donkey also turned out to be about 20 years*



*old.*



*The ropes used to tie the cargo in place often cause wounds. Note that the owner always uses the girth as protection for his donkey's belly - as a result, although the ropes were tight the donkey had no signs of a wound, or even tenderness in this area, or anywhere else.*

### Sawbuck Saddles

I've mentioned these a few times. They've been around for a long time, were used by both the British and the U.S. armies, and still are by the Indian army in one form or another. They are used with either a blanket, numnah or saddle cloth underneath them, or an Aperejo, which is a Mexican term for a back protector traditionally used in Central and North America.

*Typical Sawbuck saddle frame*



Recommended reading for more information on all aspects of packing equines:

*Manual of Pack Transportation by H.W. Daly.*

*ISBN 1-59048-045-7*

*Horse Packing by Charles Johnson Post*

*ISBN-10: 1-60239-166-1*

*also ISBN-13: 978-1-60239-166-6*

Finally

I hope this book has given you all the information you need, if you have any questions or feedback, good or bad it's all useful, then. Please feel free to contact me at

[chrisgarrett@hotmail.fr](mailto:chrisgarrett@hotmail.fr)

Chris Garrett, February 2012 ©

Chris is an English Master Saddler and Harness Maker who has, for the last ten years, been working overseas as a trainer and consultant. He uses locally available materials and techniques wherever possible and hasn't used any 'imported goods' in his work for the last four years. He has worked in India, Africa and Central America, and still does for that matter.