Print Stand - Design

Introduction

Camera Clubs commonly display prints on 50x40cm mounts. Clubs have a variety of styles of print stands for the purpose. Many are heavy, have multiple separate parts, require separate fixings, and take several people to assemble.

I wanted a design which was collapsible, portable, transportable, requiring minimal parts, and easy to assemble ideally by one person.

In order for a stand to remain upright, it has to be cross-strutted. Most designs use solid struts for this purpose, which work in both tension and compression. However, a print stand will have horizontal rails which can manage compression meaning the cross-struts can be flexible wires only required to work in tension. Use of flexible wires means the cross-struts can be permanently attached while the stand can be easily collapsible.

Likewise, many designs fix the rails using bolts, whereas this design has the rails simply clip onto screw heads via keyhole slots in the rails.

Summary Design

The stand is a total width of 200cm allowing for 4 landscape prints (or 5 portrait), and will have three rows.

The stored length is 200cm (rail length), and the diameter is no more than 10cm.

Parts List (for one stand)

Wood for uprights, 2x1” (prepared). 4 of 180cm length.

Hinges, 2 of 2” plus suitable screws for fixing

J-section aluminium. 2.5cm gap, 4cm high, 3 of 200cm length

Wood batten. 2cm x 4mm, 3 of 200cm length

Steel staples, 4 of 8mm

Screws, 12 of 5/8” No.6, galvanised steel, crosshead

Ring, 1 of narrow washer or small keyring

Curtain wire, about 4.5m

Curtain wire hooks/eyes, 12 of either type as they will be opened and crimped shut

Velcro or other fixing to go round the stand in storage

Construction

Lay two pieces of the 180cm wood uprights end to end and in a straight line. Fix together with a hinge. Fold and check alignment.

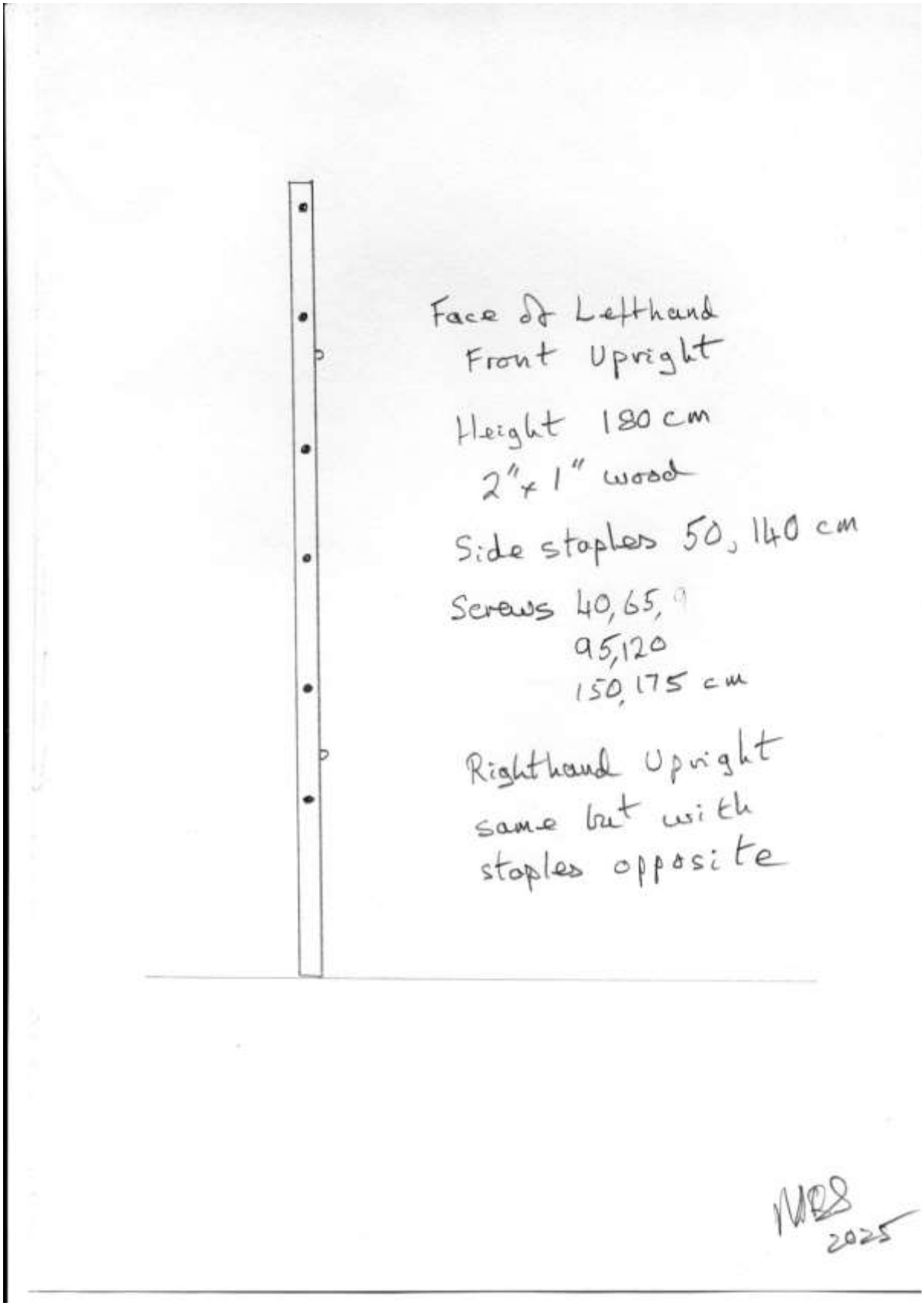
Repeat for the other two pieces of upright.

For each upright, decide which side is the front, and then which will be left and which will be right.

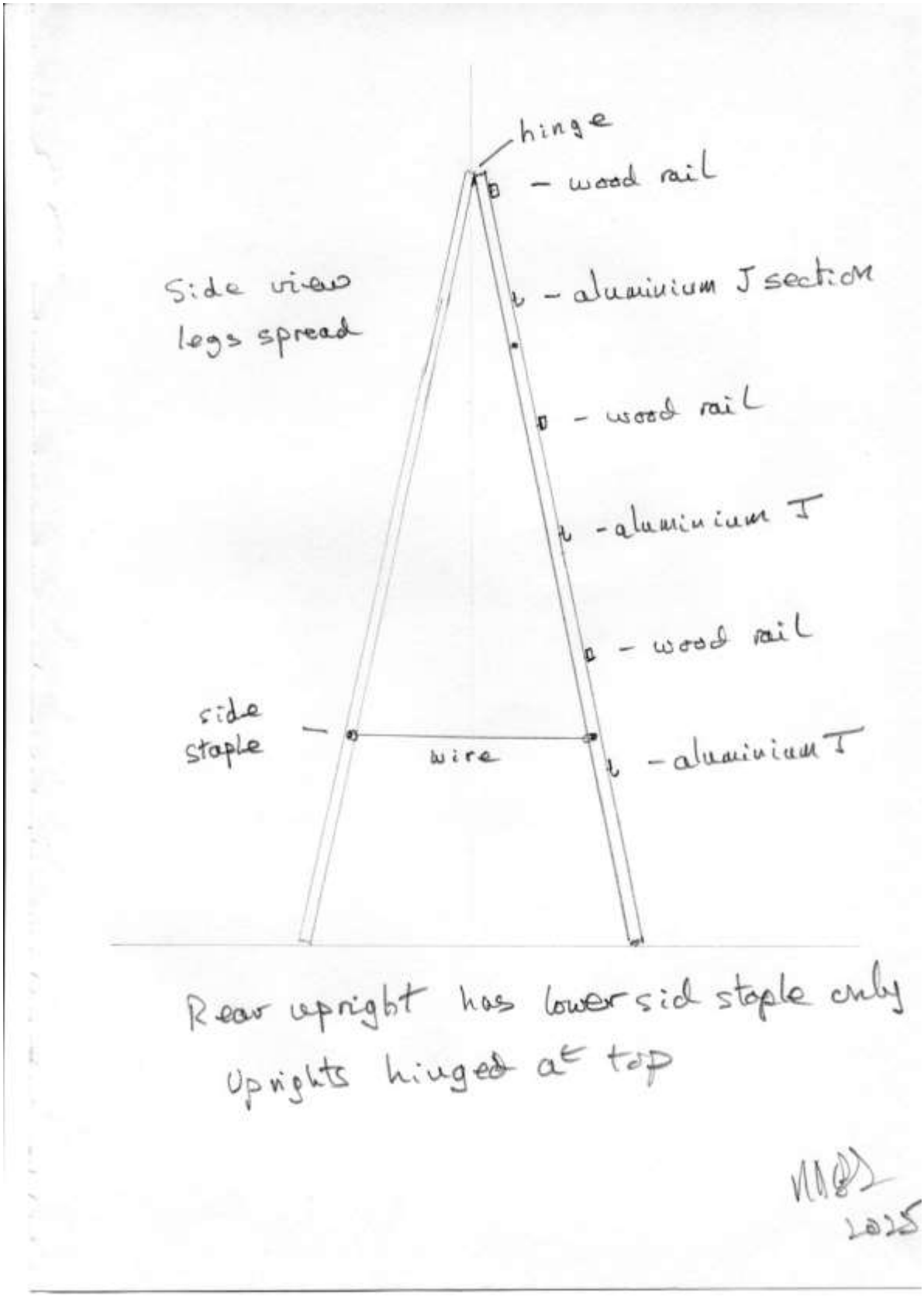
Places screws in both fronts at the heights shown in Figure 1, leaving them proud for adjustment later.

Fix staples on the right of the left upright and on the left of the right upright. The fronts have two staples as shown in Figure 1. The rears only have the lower staple. Leave enough space in the staples to fix curtain wire eyes later.

Figure 1.



Cut 2 x 55cm curtain wire and fit eyes to the ends. On both uprights, connect the front lower staple to the rear staple, crimping the eyes. This will fix the spread of the legs when used as shown in Figure 2.



The screw heads on the uprights are used to hold the rails. From the bottom, the rails will be aluminium then wood for the lower row of prints; aluminium then wood for the middle row of prints and aluminium then wood for the upper row of prints.

Mark out the aluminium rails 30cm in from each end, which should be 140cm between the marks.

At the marks, drill an inverted keyhole shape. Ie, there will be a hole allowing the screw head to pass through, and a slot above only wide enough to permit the screw shank.

Details of the J-section aluminium. The gap is approximately 2.5cm. Ideally do not choose a narrower section.	
Detail of an inverted keyhole for clipping an aluminium rail.	

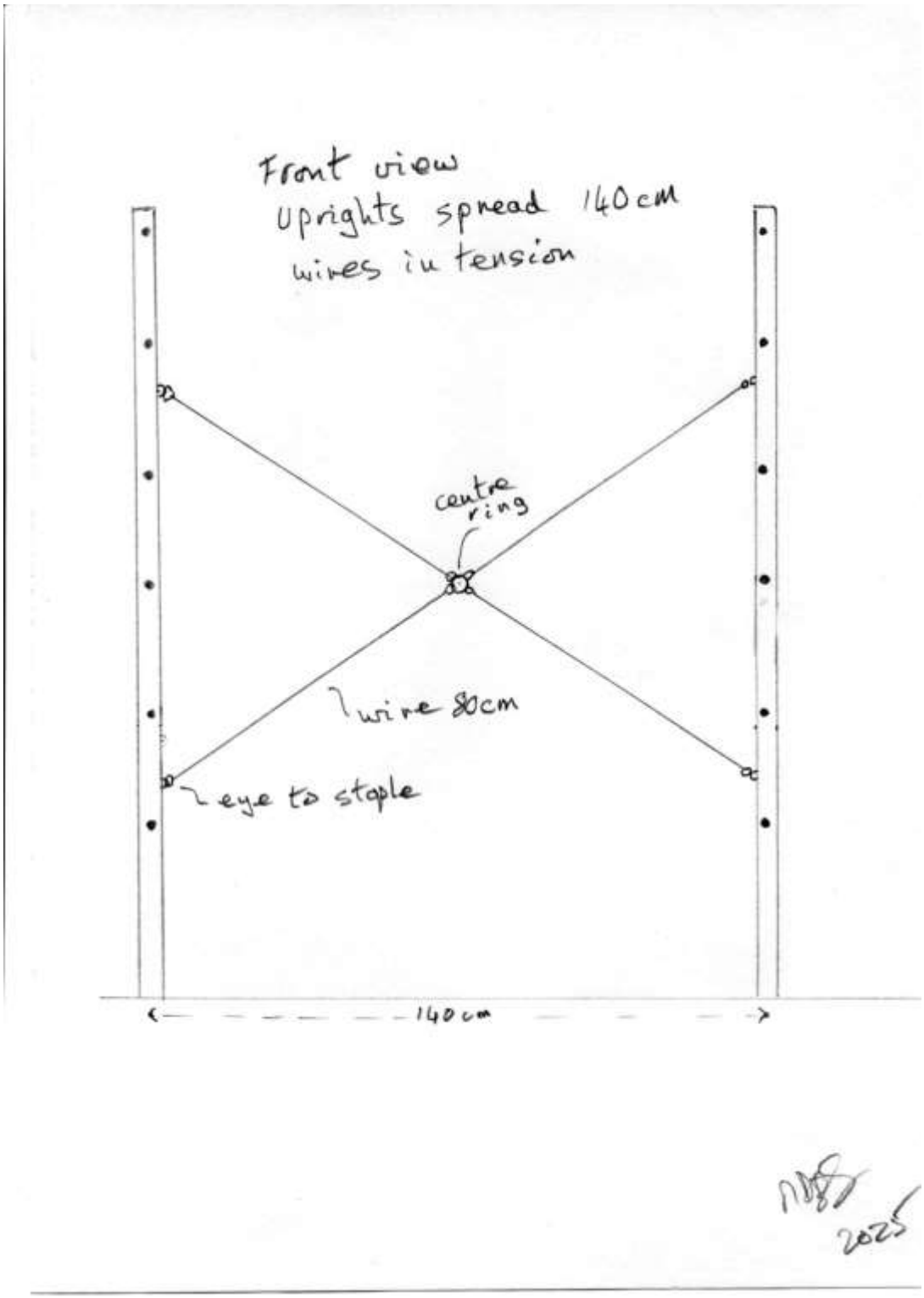
Lay the two uprights on the floor, face up, with the foot ends against a wall.

Fit the aluminium rails and adjust the screw depths. It should be possible to fit any aluminium rail in any aluminium rail position.

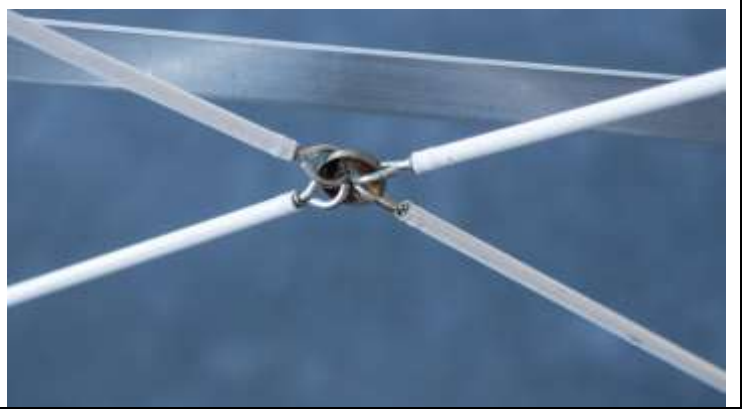
At this point the uprights will be the correct distance apart and the assembly will be square.

Cut four sections of curtain wire slightly over 80cm length and fix eyes into one end only of each. Fit those eyes to the four staples in the front uprights and crimp closed.

Place the metal ring in the centre and working diagonally, adjust the wire lengths so that when an eye is fitted to the wire and ring, the wire is in slight tension. Crimp the eyes.



Note: Aluminium rails not shown in Figure 3.

Detail of the four diagonals connected to the centre ring. In this case a small washer. The use of a centre ring prevents the two wires sliding across one another which would allow a diagonal collapse of the stand.	

Mark out the wood rails 30cm in from each end, which should be 140cm between the marks.

At the marks, drill an inverted keyhole shape. Ie, there will be a hole allowing the screw head to pass through, and a slot above only wide enough to permit the screw shank. The wood rails also need to be countersunk to take the screw head when the rail is clipped in position.

Temporarily fit each rail while the uprights are lying down and adjust the screw depths. It should be possible to fit any wood rail into any wood rail position.

The construction is then complete.

Detail of an inverted keyhole for clipping a wooden rail	
Detail of a diagonal wire attached to the top staple of an upright.	

Detail of a lower front staple showing attachment of a diagonal wire (left) and a spreader wire (right).	

Storage

Stand the uprights with the backs together ie, with screw heads facing away, and with the wires on one side.

Slot each wood rail into the J of each aluminium rail.

Place the three rail pairs side by side on the wire side of the uprights to hold the wires in place.

Strap the assembly top and bottom using double sided Velcro or another suitable wrapping method.

Note that with the staples at the given heights and with the wires at the given lengths, the wires do not trail on the floor when the uprights are brought together.

The print stand can be stored on end. It can also be laid on a shelf. When carrying, take care not to damage the free ends of the rails.