

A METHOD OF MANUFACTURING A BARRIER

5 TECHNICAL FIELD

This invention relates to a method of manufacturing a barrier. More specifically this invention relates to a method of manufacturing a barrier which is substantially rigid. The barrier is particularly suited for use as a door or gate and it will be convenient to hereinafter describe the invention in relation to that
10 exemplary application, however, it should be appreciated that the invention is not limited thereto.

BACKGROUND ART

A door or gate may be generically described as a movable barrier. Its
15 function is generally to physically obstruct the passage from one side of the barrier to the other. A moveable barrier can be hung in a variety of ways one of which is to connect a vertical edge of the barrier to a support via hinges. When hung in this way the barrier is effectively acting as a cantilever having an unsupported edge. In order to effectively function the barrier must be
20 transversely rigid so that any pressure applied to the unsupported edge of the barrier will cause it to rotate about the support rather than causing the barrier to bend.

Transverse rigidity could be achieved by manufacturing a frame sub-structure and cladding the frame with panels. The frame would structurally stiffen
25 the barrier whilst the panels would provide the physical obstruction generally required.

An alternative is to provide a pair of panels which are combined in a spaced relationship to create a void for receiving a firm setting foam, (pu foam). The foam acts as a sub-structure to provide the barrier with rigidity whilst the
30 panels provide the physical barrier.

In both the above described barriers the sub-structure is superfluous to the ultimate function of the door or gate providing a physical barrier. Accordingly the

added step of providing the material for and manufacturing the sub-structure unnecessarily complicates and adds to the expense of the method of manufacturing a movable barrier.

It would be advantageous to provide a method which addresses these
5 problems.

DISCLOSURE OF THE INVENTION

It is an object of this invention to provide a method of manufacturing a barrier from a panel having inherent rigidity.

10 According to this invention there is provided a method of manufacturing a barrier including the following steps:

cutting a pair of blanks from a supply of material, each set blank having a pair of side edges, a top edge and a bottom edge;

punching an aperture in each blank;

15 drawing the material of each blank adjacent the aperture in a direction transverse to the plane of the blank;

folding each side edge, top edge and bottom edge to extend in the same direction, forming a pair of panels;

arranging the side edges, top edge and bottom edge of one panel to abut
20 the side edges, top edge and bottom edge of the other panel, and

joining the abutting edges of each panel to form the barrier.

It is preferred that the pair of panels are joined at the abutting edges by welding.

Alternatively it is preferred that the pair of panels are joined at the abutting
25 edges by adhesive.

It is further preferred that the material be mild steel.

It is further preferred that the cutting step includes using a shearing machine.

It is further preferred that the aperture be punched using a turret punch.

30 It is further preferred that the method includes punching a plurality of apertures in the blank.

It is further preferred that the material adjacent the aperture be drawn using a hydraulic press.

It is further preferred that the folding step be performed using a pressbrake.

5 It is further preferred that the method includes coating the barrier with paint.

Alternatively it is preferred that the method includes coating the barrier with a powder.

10 It is further preferred that the method includes attaching hinges to one of the folded side edges of the barrier.

It is further preferred that the method includes attaching a locking device to the other folded side edge of the barrier.

The present invention is herein described and defined with reference to its in use orientation and terms such as top, bottom and side should be construed in
15 light of this orientation. However, it should be appreciated that other orientations are equally possible and the consequential changes in terms such as those above may be required in light of other orientations for proper understanding of the invention.

20 DESCRIPTION OF DRAWINGS

An embodiment of the invention will now be described, by way of non limiting example only, with reference to the accompanying drawings. In the drawings:

Figure 1 shows a front elevation of the barrier.

25 Figure 2 shows a cross-section through AA of the barrier from Figure 1.

Figure 3 shows a cross-section through BB of the barrier through Figure 1.

DETAILED DESCRIPTION OF AN EMBODIMENT

Referring to the figures in general there is shown a movable barrier 1
30 attached to a support 2. The movable barrier 1 is particularly suited to being hung via hinges (not shown) to the support 2 to permit the movable barrier 1 to move relative to the support 2. In order to function efficiently as a barrier the

movable barrier 1 must be transversely rigid when moving relative to the support 2. The movable barrier 1 is formed with vertical members 3 and horizontal members 4 to maintain its transverse rigidity.

5 The movable barrier 1 is formed from a pair of panels 5, 6. Each panel 5, 6 is substantially identical being formed from a planar sheet of material. Preferably the material is mild steel. A pair of sheets, one for each panel 5, 6 is cut to size using a shear machine. At least one aperture 7 is formed in each sheet using a turret punch. The edges of each sheet and the material adjacent the at least one aperture 7 is engaged, with the material adjacent the at least one aperture 7
10 being drawn by a press in a direction substantially perpendicular to the plane of the sheet. As the material adjacent the aperture 7 has been drawn this may have an effect on the edges of the sheet, and therefore the edges of the sheet can be further trimmed if necessary. The edges of the sheet can be trimmed using a shear machine.

15 The edges of each sheet are then folded using a pressbrake to form a top flange 8, support flange 9, bottom flange 10, and free flange 11, each of which extends substantially in the same direction and substantially the same distance as the drawn material adjacent the at least one aperture 7. This step completes the formation of the panels 5, 6.

20 The pair of panels 5, 6 are positioned adjacent each other such that top flanges 8, support flanges 9, bottom flanges 10 and free flanges 11 of each panel 5, 6 abut each other. The panels 5, 6 are joined at these flanges by either welding or using a suitable adhesive.

25 The drawn material adjacent the at least one aperture 7 with both the free flanges 11 and support flanges 9 combine to form the vertical members 3. The drawn material adjacent that at least one aperture 7 and the top flanges 8 and bottom flanges 10 combine to form the horizontal members 4.

It is envisaged that the panels 5, 6 may include a plurality of apertures, as is illustrated. In which case the drawn material adjacent one aperture 7 will
30 combine with the drawn material of another aperture 7 to form internal members 12 which extend both horizontally and vertically. These internal members will further increase the transverse rigidity of the movable barrier 1.

Once the movable barrier 1 has been formed, hinges could be added to the support flange 9 whilst a locking device 13 could be added adjacent the free flange 11. Furthermore the barrier could be painted or powder coated if required.

The movable barrier 1 formed by this method achieves increased
5 transverse rigidity over a planar barrier for the following reasons:

1. The top flange 8, support flange 9, bottom flange 10 and free flange 11 and drawn material adjacent the at least one aperture 7 provide the planar sheet with a dimension transverse to the plane of the planar sheet.

2. The joining of the flanges of one panel 5 to the other panel 6 limit
10 the movement of the one panel 5 relative to the other panel 6 in a direction transverse to the plane of the planar sheet.

The invention described herein is susceptible to variations, modifications and/or additions other than those specifically described and it is to be understood that the invention includes all such variations, modifications, and/or additions
15 which fall within the spirit and scope of the appended claims.

**THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:**

1. A method of manufacturing a barrier including the following steps:
cutting a pair of blanks from a supply of material, each set blank having a
5 pair of side edges, a top edge and a bottom edge;
punching an aperture in each blank;
drawing the material of each blank adjacent the aperture in a direction
transverse to the plane of the blank;
folding each side edge, top edge and bottom edge to extend in the same
10 direction, forming a pair of panels;
arranging the side edges, top edge and bottom edge of one panel to abut
the side edges, top edge and bottom edge of the other panel, and
joining the abutting edges of each panel to form the barrier.
- 15 2. A method of manufacturing a barrier according to claim 1, wherein the pair
of panels are joined at the abutting edges by welding.
3. A method of manufacturing a barrier according to claim 1, wherein the pair
of panels are joined at the abutting edges by adhesive.
- 20 4. A method of manufacturing a barrier according any one of the preceding
claims, wherein the material is mild steel.
5. A method of manufacturing a barrier according to any one of the preceding
25 claims wherein the cutting step includes using a shearing machine.
6. A method of manufacturing a barrier according to any one of the preceding
claims wherein the aperture be punched using a turret punch
- 30 7. A method of manufacturing a barrier according to any one of the preceding
claims wherein the method includes punching a plurality of apertures in the blank.



8. A method of manufacturing a barrier according to any one of the preceding claims wherein the method includes drawing the material adjacent the aperture using a hydraulic press.
- 5 9. A method of manufacturing a barrier according to any one of the preceding claims wherein the folding step be performed using a pressbrake.
10. A method of manufacturing a barrier according to any one of the preceding claims wherein the method includes coating the barrier with paint.
- 10 11. A method of manufacturing a barrier according to any one of the preceding claims wherein the method includes coating the barrier with a powder.
12. A method of manufacturing a barrier according to any one of the preceding claims wherein the method includes attaching hinges to one of the folded side edges of the barrier.
- 15 13. A method of manufacturing a barrier according to any one of the preceding claims wherein the method includes attaching a locking device to the other folded side edge of the barrier.
- 20