

PATENT SPECIFICATION

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- (21) Application No. 8408/73 (22) Filed 21 Feb. 1973
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 B3R 31 32A 32B
 (72) Inventor KAZUD MAEDA



(54) APPARATUS FOR ALIGNING WORKPIECES TO BE WELDED TO EACH OTHER

(71) We, MITSUI SHIPBUILDING AND ENGINEERING CO., LTD., a corporation organized under the laws of Japan, of 6-4 Tsukiji 5-chome, Chuoku, Tokyo, Japan, do hereby declare this invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to an apparatus for aligning workpieces to be welded to each other such as hull modules used in shipbuilding.

15 According to this invention there is provided apparatus for aligning workpieces to be welded to each other, said apparatus including two roller means interconnected by connecting means which can extend through a gap between the workpieces being aligned so that the roller means can be disposed on opposite sides of the workpieces, the roller means extending laterally on each side of said connecting means so as to be able to span the gap between the workpieces, fluid-actuated means being provided for urging the roller means towards each other so as to urge the workpieces into alignment, rollers of the roller means being rotatable to enable movement of the apparatus along a gap between workpieces aligned by the apparatus.

30 A preferred embodiment of the invention will now be described by way of example only, with reference to the accompanying drawing wherein:—

35 Figure 1 is a perspective view of aligning apparatus embodying the present invention;

Figure 2 is a plan view of the apparatus shown in Figure 1; and

40 Figure 3 is a vertical sectional view of the apparatus shown in Figure 1.

45 In the drawing numerals 1 and 2 denote shell plates of hull modules to be butt welded together. Frame 3 on one side of the shell plate carries two pairs of press rollers 4 each having a length sufficient to span both shell plates, each pair of the rollers being supported by a frame member 5. Each of the rollers has

a flange 6 at its middle which engages the gap between the shell plates to a depth determined by bevels at the edges of the shell plates. Secured to each frame member 5 is an end of a piston rod 8 of an associated hydraulic ram 7 secured to the frame 3. A frame 10 disposed on the side of the shell plates remote from the frame 3 carries two press rollers 11 disposed on a line passing between the rollers 4 and along the piston rod 8.

Connecting plates 12 extend through the gap between the shell plates and interconnect the frames 3 and 10. These connecting plates are secured to the frame 10 by bolts 13. In this condition, pressure oil is supplied to the respective hydraulic rams 7 to move the pistons and so urge the rollers 4 against the shell plates 1 and 2 while the back side of frame 10 is urged toward the plates by means of the connecting plates 12 and hence the press rollers 11 are also urged against the shell plates. In these circumstances the frame 3 can be moved vertically along the gap between the shell plates by a suitable means, and the edges of both shell plates 1 and 2 are urged into welding alignment. The frame 3 also carries welding machine 14 to perform welding together of the shell plates simultaneously with movement of the frame.

WHAT WE CLAIM IS:—

1. Apparatus for aligning workpieces to be welded to each other, said apparatus including two roller means interconnected by connecting means which can extend through a gap between the workpieces being aligned so that the roller means can be disposed on opposite sides of the workpieces, the roller means extending laterally on each side of said connecting means so as to be able to span the gap between the workpieces, fluid actuated means being provided for urging the roller means towards each other so as to urge the workpieces into alignment, rollers of the roller means being rotatable to enable movement of the apparatus along a gap between workpieces aligned by the apparatus.

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The present invention relates to an apparatus for aligning workpieces to be welded to each other such as hull modules used in ship-building.

According to this invention there is provided apparatus for aligning workpieces to be welded to each other, said apparatus including two roller means interconnected by connecting means which can extend through a gap between the workpieces being aligned so that the roller means can be disposed on opposite sides of the workpieces, the roller means extending laterally on each side of said connecting means so as to be able to span the gap between the workpieces, fluid-actuated means being provided for urging the roller means towards each other so as to urge the workpieces into alignment, rollers of the roller means being rotatable to enable movement of the apparatus along a gap between workpieces aligned by the apparatus.

A preferred embodiment of the invention will now be described by way of example only, with reference to the accompanying drawing wherein:—

Figure 1 is a perspective view of aligning apparatus embodying the present invention;

Figure 2 is a plan view of the apparatus shown in Figure 1; and

Figure 3 is a vertical sectional view of the apparatus shown in Figure 1.

In the drawing numerals 1 and 2 denote shell plates of hull modules to be butt welded together. Frame 3 on one side of the shell plate carries two pairs of press rollers 4 each having a length sufficient to span both shell plates, each pair of the rollers being supported by a frame member 5. Each of the rollers has

a flange 6 at its middle which engages the gap between the shell plates to a depth determined by bevels at the edges of the shell plates. Secured to each frame member 5 is an end of a piston rod 8 of an associated hydraulic ram 7 secured to the frame 3. A frame 10 disposed on the side of the shell plates remote from the frame 3 carries two press rollers 11 disposed on a line passing between the rollers 4 and along the piston rod 8.

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WHAT WE CLAIM IS:—

1. Apparatus for aligning workpieces to be welded to each other, said apparatus including two roller means interconnected by connecting means which can extend through a gap between the workpieces being aligned so that the roller means can be disposed on opposite sides of the workpieces, the roller means extending laterally on each side of said connecting means so as to be able to span the gap between the workpieces, fluid actuated means being provided for urging the roller means towards each other so as to urge the workpieces into alignment, rollers of the roller means being rotatable to enable movement of the apparatus along a gap between workpieces aligned by the apparatus.



* C L M S *

2. Apparatus according to claim 1 wherein one of the roller means includes a pair of rollers and the other of the roller means provides a co-operating roller movable by said urging means relative to said pair of rollers along a line passing between the rollers of said pair.

3. Apparatus according to claim 2 wherein said one roller means includes two of said pairs and the other roller means includes two of said co-operating rollers.

4. Apparatus according to any one of the preceding claims wherein the rollers extend laterally on each side of the connecting members.

5. Apparatus according to claim 4 wherein each of said rollers of one of the roller means has a flange intermediate its ends for engaging a gap between workpieces.

6. Apparatus according to any one of the preceding claims wherein said roller means are mounted on respective frame members and said connecting members comprise substantially coplanar plates extending between the frame members at spaced positions.

7. Apparatus according to any one of the preceding claims and further including welding means.

8. Apparatus for aligning workpieces to be welded to each other, said apparatus being substantially as described herein with reference to the accompanying drawing.

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