

July 29, 1969

F. N. STEFAN ET AL

3,458,057

DOOR HANDLING FIXTURE

Filed July 1, 1968

3 Sheets-Sheet 1

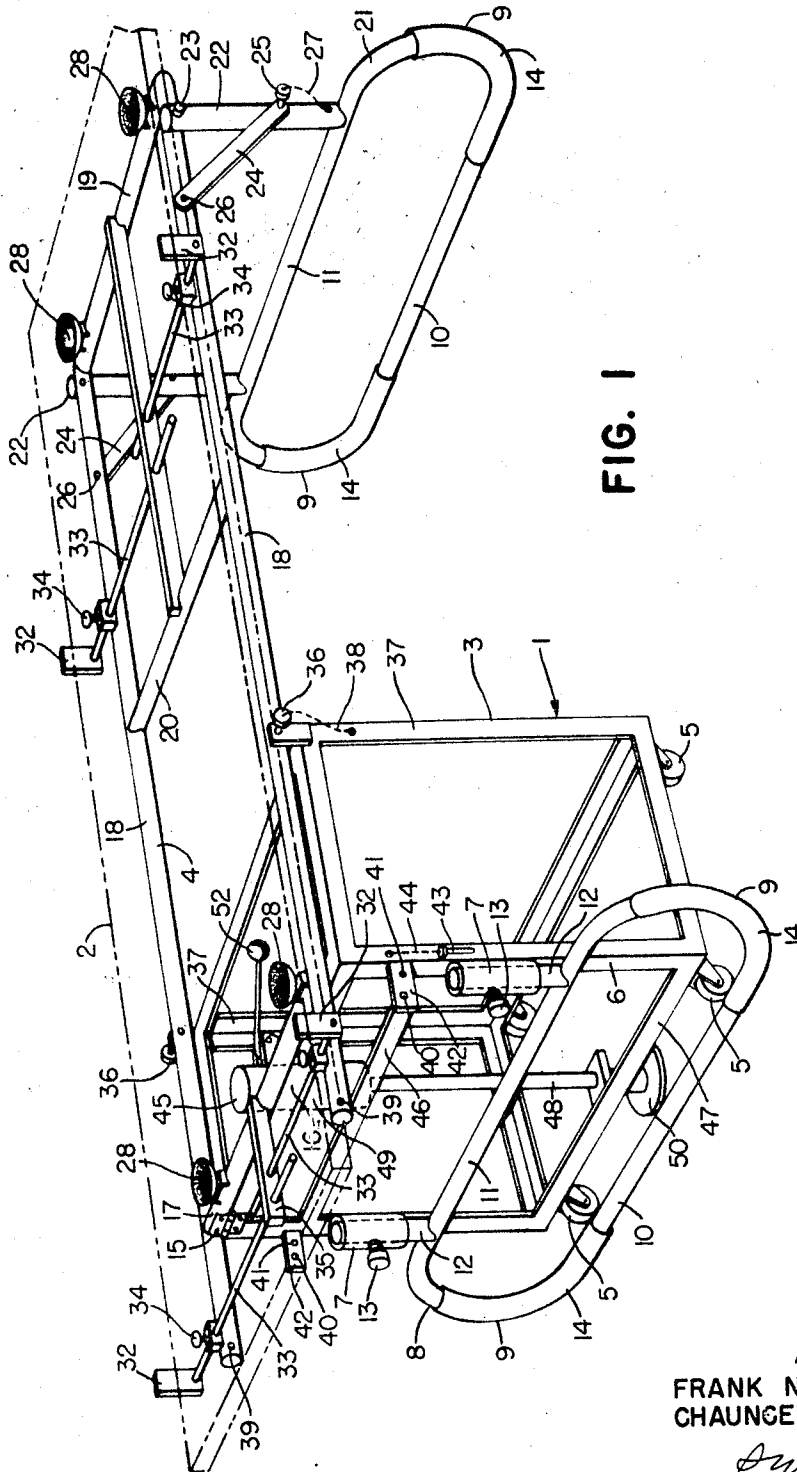


FIG. 1

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3 Sheets-Sheet 2

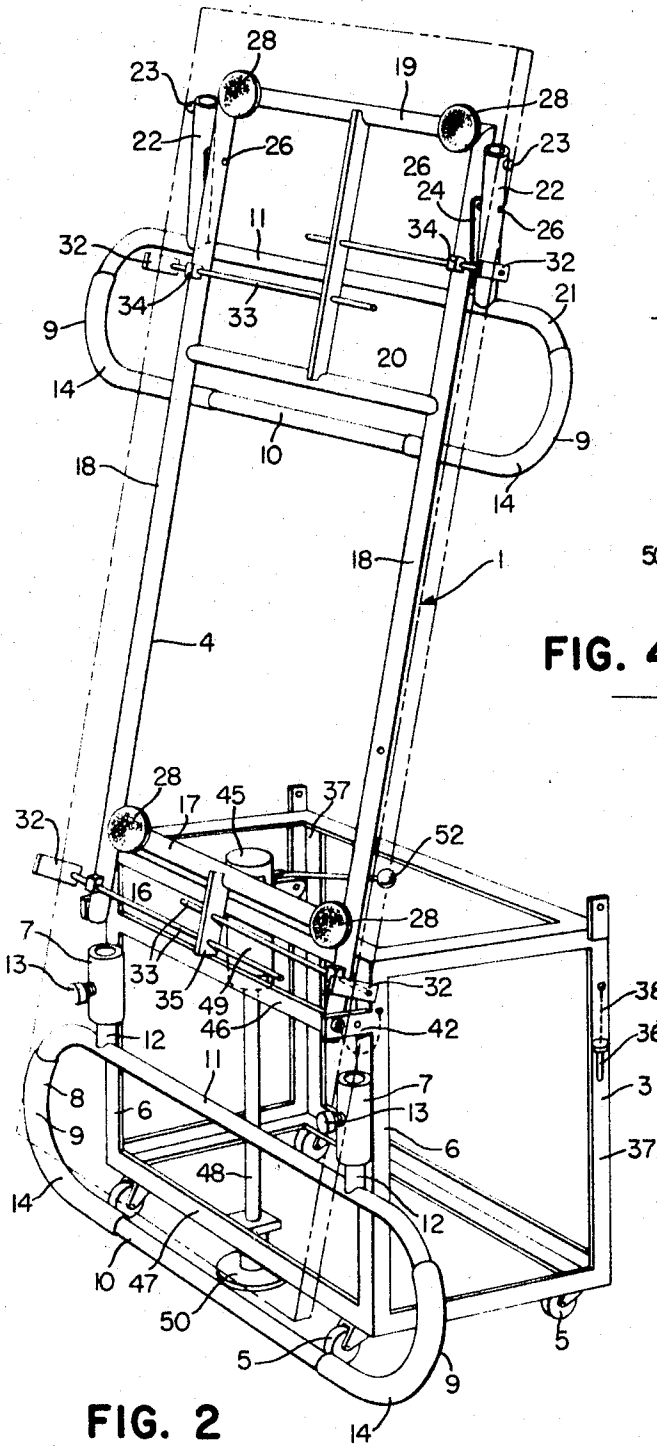


FIG. 2

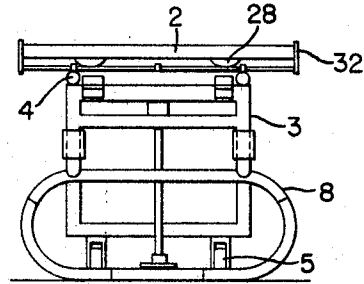


FIG. 3

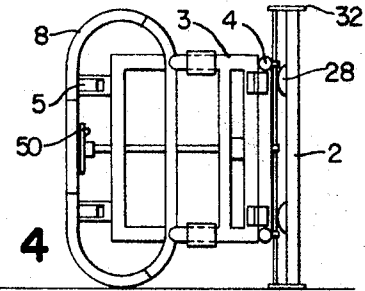


FIG. 4

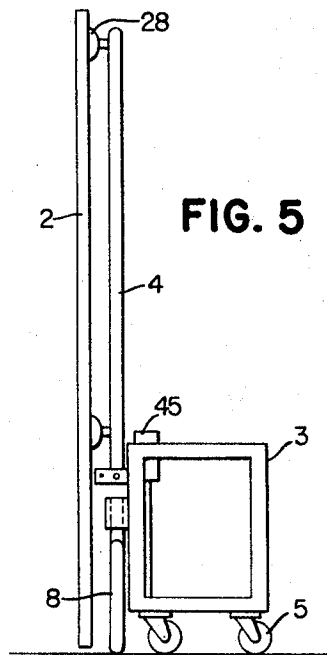


FIG. 5

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3 Sheets-Sheet 3

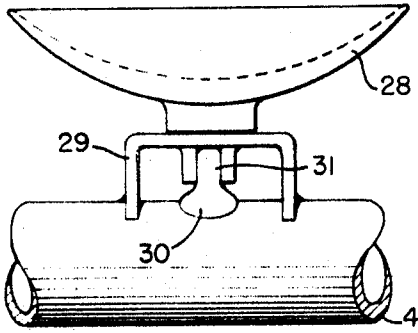


FIG. 6

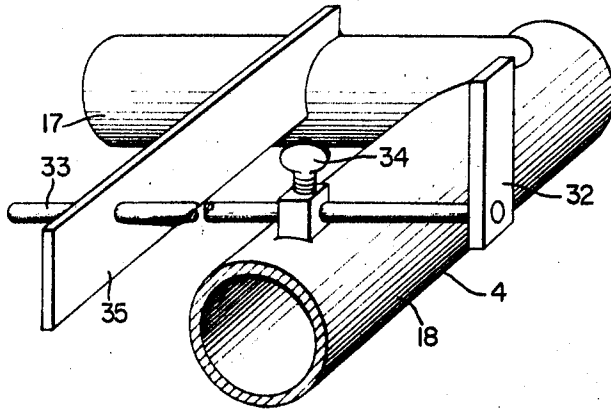


FIG. 7

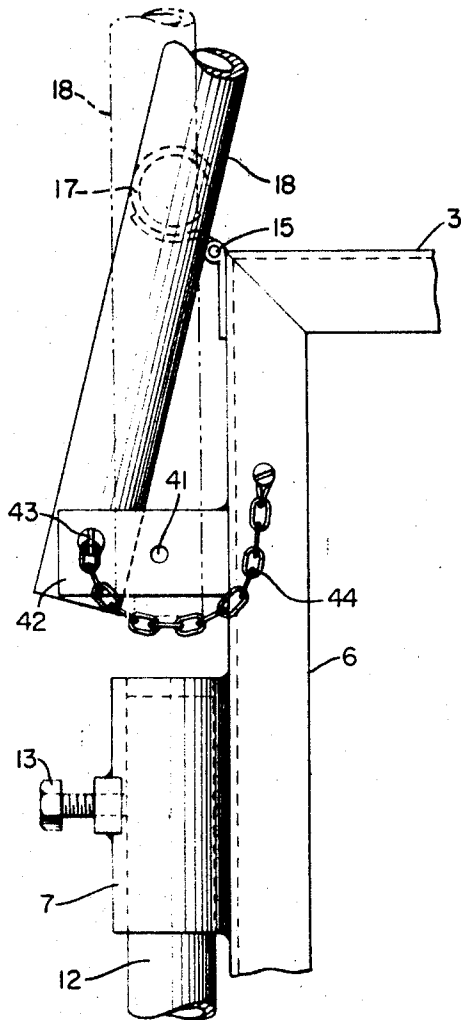


FIG. 8

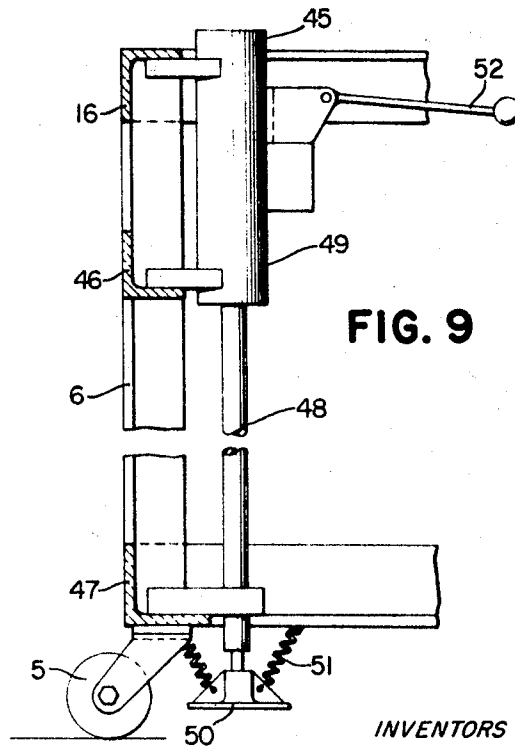


FIG. 9

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3,458,057

DOOR HANDLING FIXTURE

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Filed July 1, 1968, Ser. No. 741,690
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U.S. Cl. 214—1

6 Claims

ABSTRACT OF THE DISCLOSURE

A work table type fixture for supporting a door during machining of hinge and lock recesses and during the hanging of the door in an opening. This device has a casted base member with a substantially rectangular door supporting frame pivotally connected to the base in such manner as to support a door horizontally in a plane to the floor. The base has a curved roll bar attached thereto which is similar in contour to a curved leg member attached to the end of the door supporting frame at the opposite end to that which is attached to the base. The contour of the roll bar and the leg member are such that they readily permit the entire door handling fixture to be rolled over onto either of its sides in order to hold the door in a vertical position with one of its side edges extending upwardly for machining hinge or lock recesses. After the hinge and lock recesses have been machined in the door edges, the door supporting frame may be tilted upwardly on the base and locked in a substantially vertical position to hold the door in the proper position for mounting in a door opening. The entire fixture and the door may be then wheeled to the opening where it is to be installed.

This invention relates to a work table type fixture for supporting a door during machining of hinge and lock recesses and during the hanging of the door in an opening. The device will permit the door and the fixture to be tipped on its side for machining the door edges and will permit the door to be stood on its end and raised and lowered to position it in the opening.

Objects of the invention

The primary object of the invention is to provide a device to facilitate the handling of heavy wooden doors such as those frequently used in industrial or commercial buildings and which are of sufficient weight that they are extremely difficult for one individual to handle when machining hinge and lock openings and when aligning with a door opening in which they are to be hung.

Another object of the invention is to provide an apparatus in which the entire door handling fixture, with the door mounted thereon, can be easily wheeled from the area in which the machining operation was performed to the location where the door will be installed without removing the door from the fixture or without separating any parts of the fixture.

These and other objects of the invention will become more fully apparent as the description proceeds in the following specification and the appended drawings.

Brief description of the drawings

In the drawings:

FIGURE 1 is a perspective view of the fixture of this invention supporting a door in a horizontal position;

FIGURE 2 is a perspective view of the same fixture shown in FIGURE 1 but with the door supporting frame of the fixture having a door mounted thereon swung into a vertical position;

FIGURE 3 is a simplified end view of the fixture shown

in FIGURE 1 with a door supported in a horizontal position thereon;

FIGURE 4 is an end view similar to FIGURE 3 but with fixture rolled over on its side to stand the door on one of its side edges;

FIGURE 5 is a simplified side view showing the fixture of FIGURE 2 supporting a door in a substantially vertical position;

FIGURE 6 is an enlarged fragmentary view showing a segment of the door supporting frame with one of the suction cups used to secure the door to the frame;

FIGURE 7 is an enlarged fragmentary perspective view showing one of the stops for engaging one of the side edges of a door;

FIGURE 8 is an enlarged fragmentary view showing the manner in which the door supporting frame is locked in either a vertical or nearly vertical position on the fixture; and

FIGURE 9 is a fragmentary view through a portion of the base member of the fixture showing a built-in jack type mechanism for raising and lowering the entire fixture and the door with respect to a door opening.

Preferred embodiments of the invention

Referring now to FIGURE 1 of the drawings, the entire assembly of the door handling fixture indicated by the numeral 1 horizontally supports a door 2 indicated by a broken line in order to reveal the structural parts of the fixture which would otherwise be hidden by the door if it were shown in solid lines. The fixture 1 has two main parts, one of which is the base member 3, and the other is the door supporting frame 4. It may be readily observed from looking at FIGURES 1 and 2 that the overall structure of this fixture is made up of an open metal framework, part of which is constructed of L-shaped angular pieces of metal. Other parts are made of metal tubing and other parts are made of flat or round metal bars. In order to simplify the description of the apparatus and eliminate the need for a lengthy specification, every individual structural part of the fixture will not be described in minute detail but only the parts which bear a direct relationship on the operation of the fixture will be described in detail. It should also be recognized that this fixture, although shown as being constructed of metal, can also be made from wood or plastic parts or any material of sufficient strength to perform the desired function.

Referring again to FIGURE 1, the base member 3 is constructed of a plurality of metal angular frame members which define the shape of a rectangular solid. It is mounted on four casters 5 which permit the entire fixture 1, with a door thereon, to be easily moved from one location to another. The base member 3 has two upright outer corner frame members 6, each of which has a short tubular sleeve 7 welded thereto with the axis of each sleeve 7 being vertical. A roll bar 8 having curved side portions 9, a flat bottom portion 10 and a flat top portion 11 has a pair of upwardly extending straight shanks 12 welded to the top 11 of the roll bar 8 and extending upwardly in parallel relationship to telescopically fit inside the sleeves 7. The relative position of the roll bar 8 with respect to the base 3, may be adjusted by moving the roll bar 8 to a desired height and then tightening retaining bolts 13 in the sleeves 7 to bear against the shanks 12 and secure the roll bar 8 in the desired position. The roll bar 8 is provided with rubber covers 14 for cushioning the fixture and preventing it from skidding or marring the floor either when it is in an upright position or when it is rolled over on its side to machine the edge of a door. The door supporting frame 4 is substantially rectangular in shape and is made up of a tubular metal framework. The frame 4 is pivotally attached to the base 3 by hinges 15 which engage a cross member 16 on the base 3 and a cross

member 17 on the frame 4. The frame 4 has two longitudinal frame members 18 welded to each end of the cross member 17 and in addition, is welded to each end of a cross member 19 and an intermediate cross member 20.

For the purpose of describing the relative locations of the various parts of this fixture, the end of the fixture carried by the base 3 will be referred to as a front end, and the opposite end of the fixture will be referred to as the rear end. The rear end of the fixture is supported by a leg member 21 which is substantially identical in contour to the roll bar 8 located on the front end of the fixture and serves the same function as the roll bar 8 when the fixture is rolled over on its side. The leg member 21, like the roll bar 8, has a pair of curved side portions 9, a flat bottom portion 10, a flat top portion 11 and rubber covers 14. Instead of the shanks 12, however, a pair of tubular upright leg members 22 extend upwardly from the flat top portion 11 of the leg member 21 and are pivotally connected at their upper end to the rear end of the frame 4 by bolts 23. A brace member 24 extends between each leg member 22 and one of the longitudinal frame members 18 to prevent the leg member 21 from pivoting about the bolts 23 when the leg member 21 is being used to support the rear end of the fixture 1. In order to release the braces 24 so that the leg member 21 may be folded toward the supporting frame 4, a pin 25 is removed from the end of each brace 24 where it joins the upright leg member 22. Each of the braces 24 is then free to pivot about a retaining bolt 26 while allowing the leg member 21 to be folded. To prevent the pins 25 from becoming lost, they are secured to the upright leg members 22 by chains 27.

A pair of rubber suction cups 28 are mounted on the top of each of the cross members 17 and 19 for securely holding the door 2 on the supporting frame 4. The suction cups 28 are shown in FIGURE 6 attached to a metal bracket 29 mounted on one of the cross members. A thumb lever 30 rotates a cam 31 to cause the suction cups to either grip or release a door placed thereon. This type of cam actuated suction cup is a well-known mechanical device and will not be described in greater detail. Mounted on both the front and rear end of the supporting frame 4 are side stops 32, each of which is carried on a bar 33 passing through a thumb screw operated clamp 34 on one of the longitudinal frame members 18 and through a center guide bar 35. All four of the stops 32 may be moved transversely of the frame 4 to adjust to various widths of doors and to position the door at a given location on the frame 4. The stops 32 prevent the door from sliding sideways when the fixture 1 is rolled over on its side, as shown in FIGURE 4. After the fixture has been rolled on its side and the door is standing on one edge, the stops 32 contacting the upwardly facing edge of the door may be loosened and moved away from the door edge to permit machining of the lock or hinge recesses. They may then be replaced in position against the door when the fixture 1 is to be returned to an upright position. In order to lock the frame 4 in a horizontal position with respect to the base 3, a pin 36 passes through the upper end of upright frame members 37 and into an aligned hole in each of the longitudinal frame members 18. A chain 38 attaches both pins 36 to its respective frame member 37 so that it will not become lost in use. Whenever it is desired to swing the frame 4 into a vertical position, the pins 36 are removed and the frame 4 is swung upwardly about hinges 15 until a hole 39 near the front end of each of the frame members 18 is in alignment with either a hole 40 or a hole 41 located in an extension tab 42 welded to each of the upright members 6, as shown in detail in FIGURE 8. If the frame member 18 is pinned through the hole 40, the frame 4 and the door will be held in a slightly tilted position. If the frame member 18 is pinned through the hole 41, the frame 4 and the door will be held in a substantially vertical position for alignment with the door opening. The reason for providing hole 40 to

incline the door and the frame 4 at an angle is to tilt the door in such manner that it will pass through a door opening through which there would not be sufficient clearance if the door was in a vertical position. A pin 43 provided for pinning each of the frame members 18 to the tab 42 is fastened to the frame member 6 by a chain 44 to prevent losing the pins.

Referring now to FIGURES 2 and 9, a hydraulic jack 45 is welded to the cross members 16, 46 and 47 of the base 3. The jack 45 has an extension rod 48 extending downwardly from an actuator portion 49 of the jack 45. A circular foot pad 50 is mounted on the bottom of the rod 48 to distribute the load exerted by the rod 48 on the floor when the jack is used to raise and lower the entire fixture for positioning a door at the proper height in a door opening. A pair of return springs 51 are connected between the rod 48 and the cross member 47 to return the bar 48 to a retracted position when the hydraulic pressure is released from the jack 45. A handle 52 is provided for pumping pressure in the jack and for releasing the pressure.

In normal operation, a door is placed on the fixture 1 with the frame 4 locked in a horizontal position with pins 36 and with the leg member 21 locked in position by pins 25 passing through the braces 24. After the door 2 is placed in the desired location on the fixture, the thumb levers 30 are moved to a position to actuate the suction cups 28 and secure the door 2 to the frame 4. The side stops 32 are moved against the edges of the door and the thumb screws on the clamps 34 are tightened down. The roll bar 8 is permitted to rest on the floor and the bolts 13 are tightened to secure it in position on the base 3. The entire fixture, with the door thereon, may then be tilted on either side, as shown in FIGURE 4, to perform the machining operation. After machining has been completed, the fixture 1 is again turned upright. The bolts 13 are loosened, the roll bar 8 is lifted off the floor and the bolts 13 retightened to hold the roll bar 8 in a retracted position to permit the base 3 to roll on the casters 5. The frame 4 may then be swung into an upright or an inclined position and pinned as previously described. The entire fixture, with the door thereon, may then be wheeled to the location where it will be hung in an opening. The frame 4 is then pinned to hold the door in an upright position. The jack 45 may then be used to raise the mixture and the door to the desired height for aligning the door in the opening. After the door is on the hinges and secured in the opening, the stops 32 and the suction cups 28 are released and the fixture is moved away from the door.

Various changes can be made in the illustrative embodiments shown herein without departing from the scope of the invention.

What is claimed is:

1. A portable fixture for supporting a door during machining of hinge and lock recesses and during the hanging of the door in an opening comprising:

- (A) a casted base member;
- (B) a door supporting member pivotally connected to the base of tilting movement from a substantially horizontal position to a substantially vertical position;
- (C) a curved roll bar attached to the base member to facilitate rolling the entire fixture on its side;
- (D) a leg member of a contour similar to the roll bar attached to the end of the door supporting member opposite the end which is attached to the base to cooperate with the roll bar when the entire fixture is rolled over on its side;
- (E) locking means associated with the base member and the door supporting means to fasten the door supporting means to the base in either a substantially vertical or horizontal position;
- (F) means removably fastening a door to the door supporting means; and

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(G) a means for raising and lowering the entire fixture with a door thereon for aligning the door in an opening where it is to be hung.

2. A fixture as claimed in claim 1 including auxiliary stop means to prevent the door from sliding sideways on the door supporting member when the entire fixture is rolled over on its side. 5

3. A fixture as claimed in claim 1 wherein the leg member is pivotally attached to the door supporting member to permit it is to be folded when not in use and a means to fasten the leg member in an unfolded position when it is to be used. 10

4. A fixture as claimed in claim 1 wherein the means for fastening the door to the door supporting means is a plurality of suction cups.

5. A fixture as claimed in claim 1 where the major parts of the fixture are made of a welded metal framework. 15

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6. A fixture as claimed in claim 1 wherein the roll bar is vertically adjustable with respect to the base member so that it may be lowered to rest on the floor or raised to permit the base member to roll on its casters.

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