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3,380,434

DECORATIVE PAINTING FIXTURE

Filed Aug. 27, 1965

3 Sheets-Sheet 1

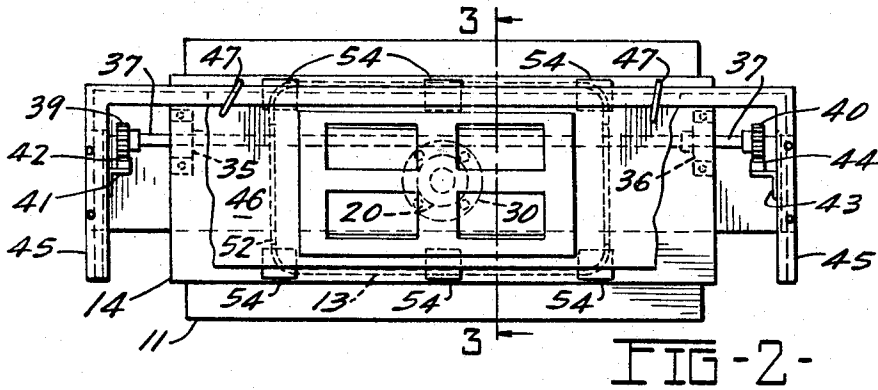


FIG. 2-

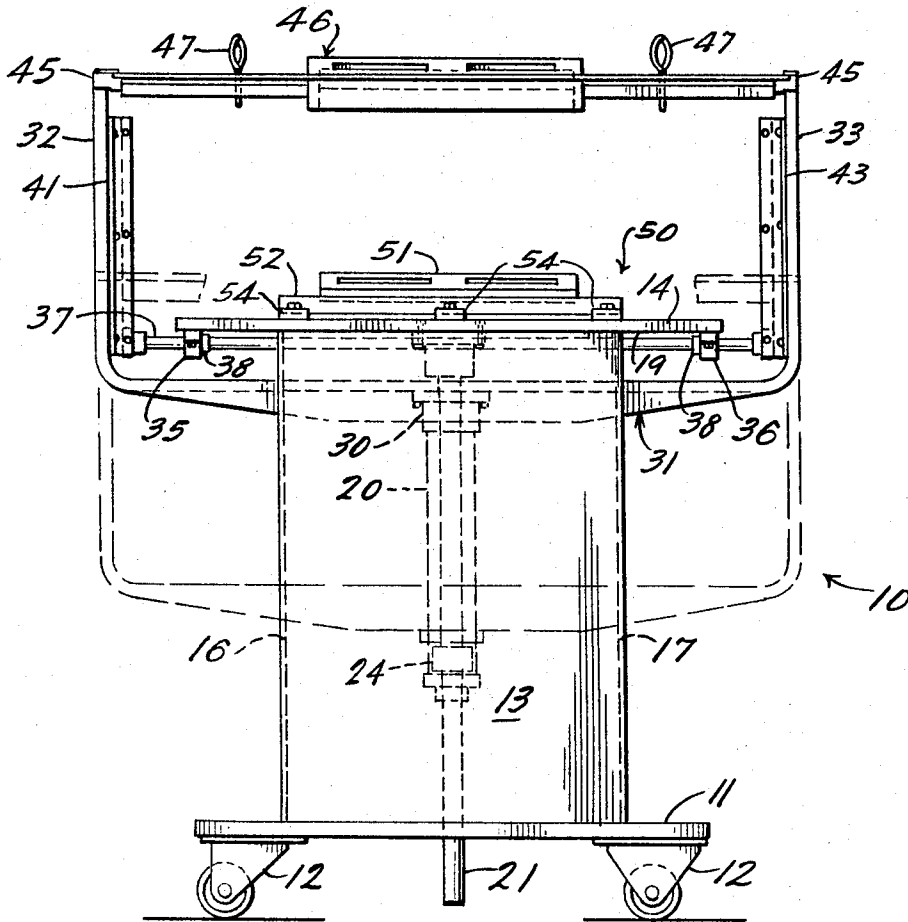


FIG. 1-

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3 Sheets-Sheet 2

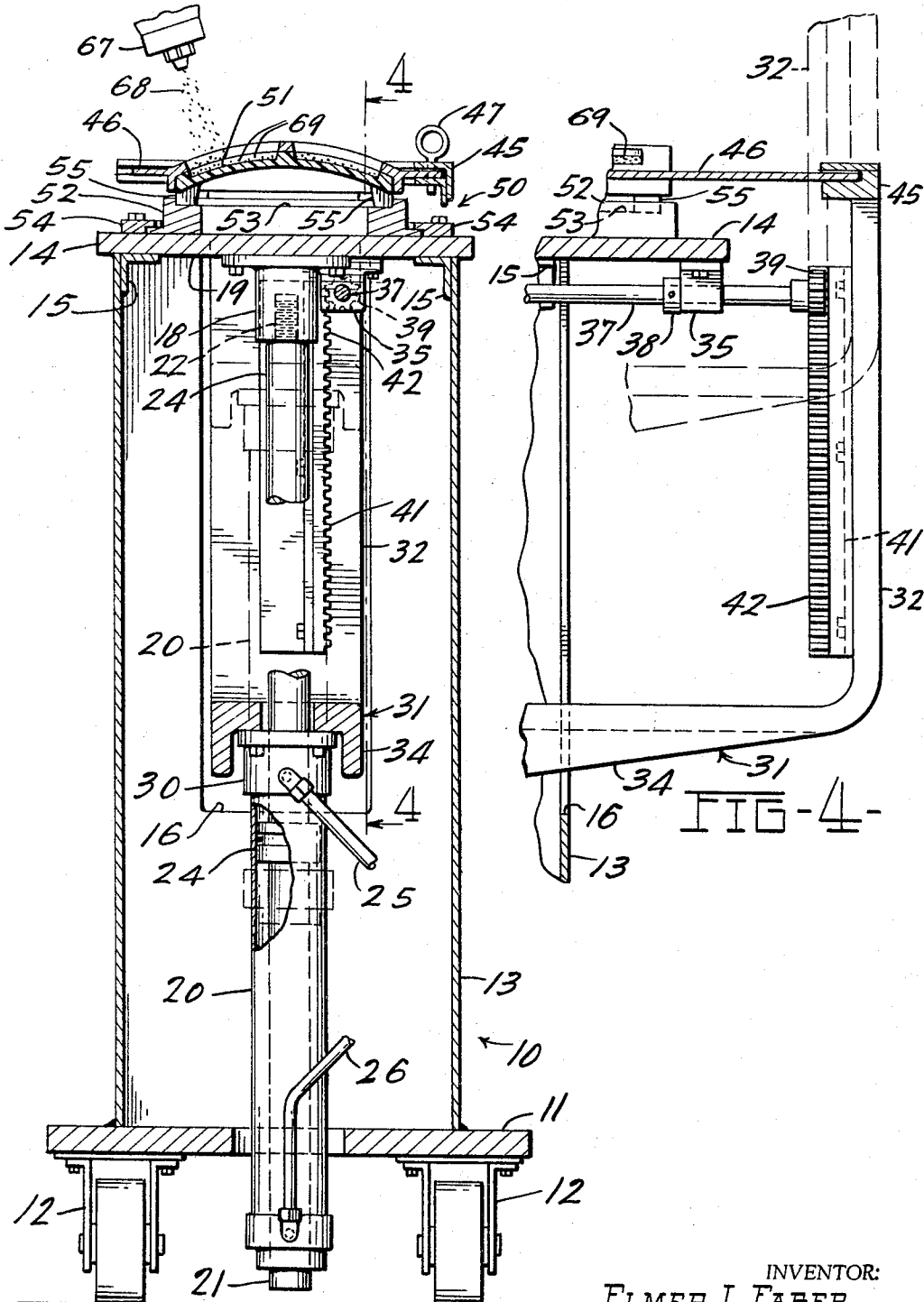


FIG-3-

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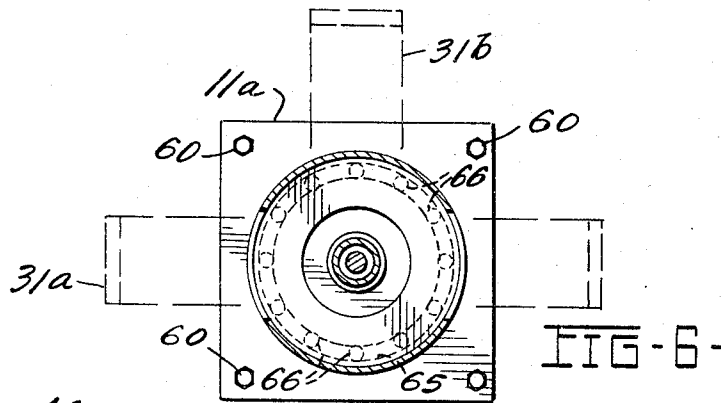
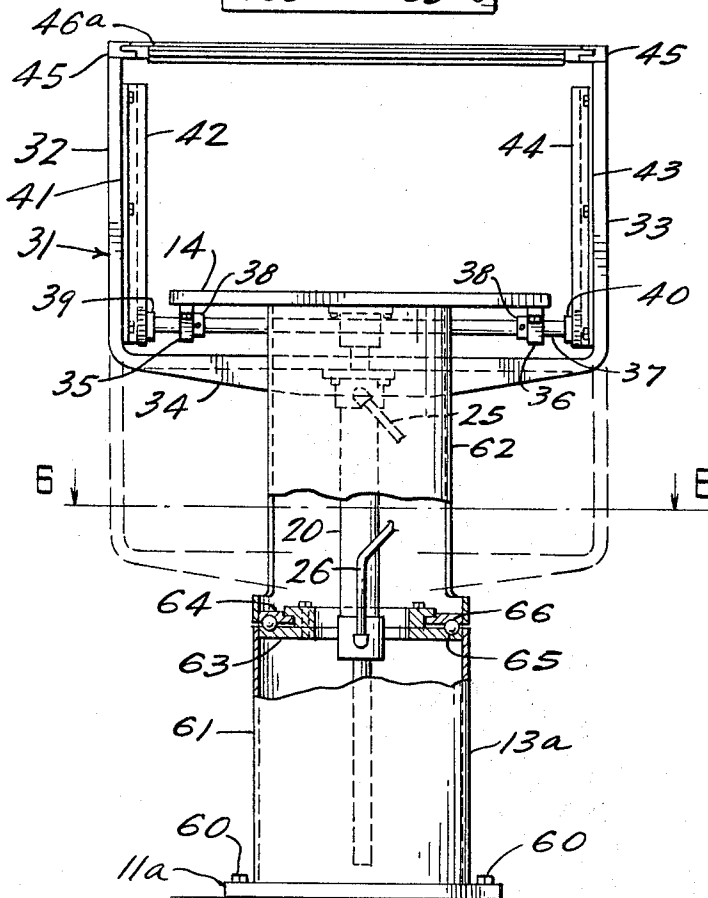
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DECORATIVE PAINTING FIXTURE

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3 Sheets-Sheet 3



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1

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DECORATIVE PAINTING FIXTURE

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ABSTRACT OF THE DISCLOSURE

A painting fixture having a base, hollow body defining opposed vertical openings, and a work platform mounted on the upper end of the body. A mask support having a transverse cross member and upwardly extending arms is moved upwardly and downwardly by a fluid cylinder mounted within the body. A mask holder is mounted on the upper ends of the arms and a mask held by the holder is moved into and out of registry with a workpiece positioned on the work platform. Cooperating members on the mask support and the work platform prevent rotation of the mask support relative to the work platform.

This invention relates to apparatus for holding parts to be painted, and, more particularly, to an improved decorative painting fixture.

The decorative painting fixture, according to the present invention, is used in the decorative painting of numerous articles, for example, manufactures' nameplates, automobile instrument panels, washing machine control panels, and television set front panels. The articles or workpieces, to be painted, are constructed of formed plastic, metallic die castings, or metallic stampings. Often, the workpieces contain recesses or raised portions which necessitate highly accurate masking techniques.

A decorative painting fixture must be capable of registering a decorative mask and a workpiece in a highly accurate manner and within production time limitations.

It is the primary object of the instant invention to provide an improved decorative painting fixture.

It is another object of the invention to provide an improved decorative painting fixture wherein the painting operation may be performed at a predetermined working height, such predetermined height being at a proper level for operator convenience.

It is another object of the present invention to provide an improved decorative painting fixture having novel means for preventing rotation of a mask support relative to a work platform on which a workpiece is supported.

It is still another object of the present invention to provide an improved decorative painting fixture which is capable of precisely registering a decorative mask and a workpiece.

Further objects of this invention will become apparent from the following specification and drawings in which:

FIG. 1 is a front view in elevation of one embodiment of a decorative painting fixture according to the instant invention and showing by dashed lines a lower position of the fixture;

FIG. 2 is a top plan view of the decorative painting fixture shown in FIG. 1 with parts omitted for clarity;

FIG. 3 is a vertical sectional view taken along the line 3—3 of FIG. 2, shown on an enlarged scale, and showing the mask support in the lowered position;

FIG. 4 is a fragmentary, vertical sectional view taken along the line 4—4 of FIG. 3;

FIG. 5 is a front elevational view, similar to FIG. 1, and showing another embodiment of a decorative painting fixture according to the present invention; and

FIG. 6 is a horizontal sectional view taken along the line 6—6 of FIG. 5 and indicating alternative positions of the mask support by dashed lines.

2

Briefly, the invention relates to an improved decorative painting fixture. The painting fixture includes an upwardly extending body mounted on a base. A work platform is mounted adjacent the upper end of the body. A mask support is movable between a lower operating position, wherein a mask mounted on the mask support cooperates or registers with a workpiece mounted on the work platform, and an upper position wherein the mask is spaced from the platform. The painting fixture also includes means for vertically moving the mask support with respect to the work platform.

Referring to FIGS. 1 and 2, a decorative painting fixture, according to the present invention, is generally indicated by the reference number 10. In this embodiment, the painting fixture 10 has a horizontal and rectangular base 11. A plurality of casters 12 depend from the corners of the base 11.

A hollow body 13, having a generally rectangular horizontal cross section, is mounted on the base 11, for example by welding, and extends upwardly from the base 11. The body 13 may be, for example, a sheet metal housing. A rectangular work platform 14 (see FIG. 3) is mounted on the upper end of the body 13. Preferably, reinforcing angles 15 are provided between the work platform 14 and the body 13. The body 13 defines a pair of opposed, vertically extending slots or openings 16 and 17.

Referring to FIG. 3, a bracket 18 is mounted to an underside 19 of the work platform 14 and depends downwardly into the interior of the body 13. A double acting fluid cylinder 20 is positioned within the body 13. The double acting cylinder 20 has a cylinder rod 21 which is connected to the depending bracket 13 by, for example, a screwed connection 22. An opening 23 is provided in the base 11 to receive the cylinder 20. The cylinder rod 21 journals a piston 24 and fluid supply lines 25 and 26 communicate with the interior of the cylinder 20 on opposite sides of the piston 24. Preferably, the fluid cylinder 20 is an air cylinder, however, it may be a hydraulic cylinder. The fluid supply lines 25 and 26 are in communication with a valved air supply (not shown).

The upper end of the cylinder 20 is provided with a flange support 30. A U-shaped mask support 31 is bolted or otherwise connected to the flange support 30. The mask support 31 includes opposed, upwardly extending arms 32 and 33 and a transverse cross member 34 which joins the lower ends of the opposed arms 32 and 33. The cross member 34 extends through the vertically extending openings 16 and 17 defined by the body 13.

A pair of guide shaft blocks 35 and 36 depend from the underside 19 of the work platform 14 and journal a horizontally extending guide shaft 37. A pair of collars 38 are mounted on the guide shaft 37 adjacent the guide shaft blocks 35 and 36 to prevent longitudinal movement of the shaft 37 with respect to the work platform 14.

Pinions 39 and 40 are mounted on opposed ends of the guide shaft 37. An angle 41 is mounted on the interior side of the mask support arm 32 and mounts a vertically extending rack 42. Similarly, an angle 43 is mounted on the interior side of the mask support arm 33 and mounts a vertically extending rack 44. The racks 42 and 44 are in vertical alignment and are in diametrically opposed relationship. The teeth of the pinion 39 are engaged with the teeth of the rack 42 in a cooperating relationship and similarly, the teeth of the pinion 40 are engaged with the teeth of the rack 44. This construction serves as means for preventing rotation of the mask support 31 with respect to the work platform 14. Also, because of the relationship of the rack and pinion combinations, a mask remains in successive parallel planes as the mask support 31 moves vertically upwardly or downwardly.

A three sided slotted frame 45 is mounted on the upper ends of the mask support arms 32 and 33 and serves as a mask holding means. A mask 46 is received by the slotted portion of the frame 45 and is held in proper alignment by a pair of indexing pins 47.

Referring to FIGS. 1 and 3, work holding means, generally indicated by the reference number 50, are provided on the work platform 14 to secure, for example, a plastic workpiece 51 in position. It should be noted that numerous types of work holding means may be utilized in practicing the present invention and the present invention is not limited to the embodiment disclosed.

The work holding means 50 includes a work holding jig 52 having a guide recess 53 (see FIG. 3). The jig 52 is removably secured in a predetermined location to the work platform 14 by a plurality of spaced apart hold-down clamps 54. The workpiece 51 has a plurality of depending legs 55 which fit snugly in the guide recess 53 of the jig 52 thereby holding the workpiece 51 in a predetermined position during the painting operation. Of course, the exact configuration of the work holding means 50 will vary depending upon the shape and size of the particular workpiece being coated.

Another embodiment of the present invention is illustrated in FIGS. 5 and 6. In this embodiment, the decorative painting fixture 10 has a base 11a which is permanently secured to a floor or pedestal by a plurality of anchor bolts 60. A cylindrically shaped body 13a extends upwardly from the base 11a. The body 13a has a lower section 61, which is secured to the base 11a and an upper section 62 which is coaxially aligned with the lower section 61.

The lower section 61 mounts a bearing plate 63 adjacent its upper end and similarly the upper section 62 mounts a bearing plate 64 adjacent its lower end. The opposed bearing plates 63 and 64 define a circular bearing race 65. A plurality of balls 66 are positioned within the race 65. The bearing connection, described above, allows the upper section 62 of the body 13a to rotate with respect to the lower section 61 around the common vertical axis.

Referring to FIG. 6, alternative positions of the mask support 31 are indicated by the reference numbers 31a and 31b. A mask 46a is retained in the frame 45 of the mask support 31. The remaining components of this embodiment of the present invention are substantially identical with the ones shown in the first embodiment (FIGS. 1-4).

In a normal decorative painting operation, the decorative painting fixture 10 is moved to the upper position (FIG. 1) wherein the mask 46 is spaced vertically from the work platform 14. It should be noted, that an important feature of the present invention is that the work platform 14 stays in a predetermined vertical position.

When the mask support 31 is in the upper position, the double acting cylinder 20 is closely adjacent the work platform 14 and the piston 24 is adjacent the lower end of the cylinder 20. It should be noted, that in the present embodiment, the cylinder rod 21 depends from the work platform 14 and remains stationary.

After the mask 46 is properly indexed within the frame 45 and is secured therein by the indexing pins 47, a workpiece 51 is placed within the work holding jig 52. Air is then supplied to the fluid supply line 26 moving the cylinder 20 downwardly along the cylinder rod 21 until a lower operating position is reached (FIG. 3). The mask 46, mounted on the mask support 31, registers with the workpiece 51 which is mounted on the work platform 14. Preferably, the mask 56 is under pressure against the workpiece 51 thereby providing a sharp definition of the masking lines.

As the mask support 31 moves upwardly or downward-

ly, the pinions 39 and 40 mounted on the guide shaft 31 cooperate with their respective racks 42 and 44 thereby serving as means for preventing rotation of the mask support 31 with respect to the work platform 14. The cooperating racks and pinions also provide a means for holding the mask 46 in its proper horizontal plane.

After the painting fixture 10 is in the operating position shown in FIG. 3, the workpiece 51 is painted. In FIG. 3, a spray nozzle 67 is shown spraying a plurality of paint particles, generally indicated at 68, upon the unmasked portions of the workpiece 51 forming a layer of paint 69. The spray nozzle 67 may be a manually operated spray gun or alternatively a plurality of automated spray nozzles may be utilized.

After the painting operation has been completed, air is introduced into the fluid supply line 25 moving the cylinder 20 upwardly along the cylinder rod 21. The upward movement continues until the upper position, shown in FIG. 1, is reached. At this time the workpiece 51, which has been painted, is removed from the jig 52. Another workpiece 51a (not shown) is then inserted into the jig 52 and the painting operation described above is repeated.

While the present invention has been disclosed in connection with a specific arrangement of parts, it should be expressly understood that numerous modifications and changes may be made without departing from the scope of the appended claims.

What I claim is:

1. A painting fixture comprising, in combination, a base, an upwardly extending hollow body mounted on said base, said body defining opposed vertically extending openings, a mask support having a transverse cross member and opposed upwardly extending arms, said transverse cross member extending through such vertically extending openings, a work platform mounted adjacent the upper end of said body, means on said work platform for releasably securing a workpiece, mask holding means adjacent the upper ends of said opposed upwardly extending arms, a fluid cylinder mounted within said body, said cylinder being operatively connected to said cross member for vertically moving said mask support along a predetermined vertical path, whereby said mask support is movable between a lower operating position wherein a mask mounted on said mask support registers with a workpiece mounted on said work platform, and an upper position wherein the mask is spaced from said work platform, and cooperating means on said mask support and said work platform for preventing rotation of said mask support relative to said work platform.

2. A painting fixture, according to claim 1, wherein said means for preventing rotation of said mask support includes vertically extending opposed racks mounted on said opposed upwardly extending arms, a horizontal guide shaft journaled on said work platform, and a pair of pinions mounted on opposed ends of said guide shaft, said pinions each being in a cooperating relationship with one of said opposed racks.

3. A painting fixture, according to claim 1, wherein said body has an upper section and a lower section, said upper section being coaxially aligned with said lower section and rotatable with respect thereto.

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