DISPLAY RACK ASSEMBLY FOR WRENCHES WITH DIFFERENT HANDLES

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ABSTRACT
A display rack assembly includes a rack having two coupling sections for releasably and fixedly coupling with a first wrench with a first handle and a second wrench with a second handle. The second handle includes a handle section having two opposite wider faces perpendicular to two opposite wider faces of the first handle. The handle section further includes two opposite narrower faces perpendicular to two opposite narrower faces of the first handle. A customer may hold one of the narrower faces of the first handle and one of the wider faces of the handle section of the second handle and apply a rotational force to try the wrenches.
Fig. 2
DISPLAY RACK ASSEMBLY FOR WRENCHES WITH DIFFERENT HANDLES

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a display rack assembly and, more particularly, to a display rack assembly allowing try-on of wrenches with different handles.

[0002] To provide a display effect for attracting potential buyers, wrenches are often packaged in hanger boards hung on hooks in a market. The hanger boards are arranged according to the types of the wrenches to obtain the required display effect without try-on function. Taiwan Patent Application No. 94117498 discloses a display rack to which a wrench is rotatably mounted to provide a try-on function. Display racks of other arrangements have also been proposed allowing users to try wrenches. However, none of them allow try-on of wrenches under load. Specifically, none of the currently existing display racks provide simulation of operating conditions of wrenches, particularly wrenches with twisted handles or wrenches with handles having tapered widths in each of two pairs of opposite faces thereof. Potential customers are, thus, lost.

[0003] A need exists for a display rack that simulates operating conditions of wrenches with different handles to allow try-on.

BRIEF SUMMARY OF THE INVENTION

[0004] The present invention solves this need and other problems in the field of try-on of wrenches with different handles by providing, in a preferred form, a display rack assembly including a rack having first and second coupling sections for receiving first and second wrenches. Each of the first and second coupling section includes two parallel, spaced positioning walls defining a positioning groove.

[0005] According to the preferred form, the first wrench includes a first handle having two ends for driving fasteners. The first handle includes two opposite first wider faces and two opposite first narrower faces extending between and perpendicular to the first wider faces. An engaging hole extends from one of the first wider faces through the other first wider face. Each first wider face has a width between the first narrower faces and substantially the same as a spacing between the positioning walls of the first coupling section of the rack. The first wrench is fixed in the positioning groove of the first coupling section by extending a screw through the engaging hole of the first handle into a screw hole in a bottom wall between the positioning walls of the first coupling section. The first narrower faces of the first handle respectively abut with inner faces of the positioning walls of the first coupling section.

[0006] According to the preferred form, the second wrench includes a second handle having two ends for driving fasteners and a transition section between the ends. A first handle section is formed between an end of the second handle and the transition section. A second handle section is formed between the other end of the second handle and the transition section. The first handle section of the second handle includes two opposite second wider faces and two opposite second narrower faces extending between and perpendicular to the second wider faces. An engaging hole extends from one of the second wider faces through the other second wider face. Each second wider face has a width between the second narrower faces and substantially the same as a spacing between the positioning walls of the second coupling section. The second handle section of the second handle includes two opposite third wider faces and two opposite third narrower faces extending between and perpendicular to the third wider faces. The third wider faces are perpendicular to the second wider faces. The third narrower faces are perpendicular to the second narrower faces. The first handle section of the second wrench is fixed in the positioning groove of the second coupling section of the rack by extending another screw through the engaging hole of the first handle section of the second handle into a screw hole in a bottom wall between the positioning walls of the second coupling section. The second narrower faces of the first handle section of the second handle respectively abut with inner faces of the positioning walls of the second coupling section. The third wider faces of the second handle section of the second wrench are perpendicular to the first narrower faces of the first wrench, and the third narrower faces of the second handle section of the second wrench are perpendicular to the first wider faces of the first wrench.

[0007] A customer may grasp one of the first narrower faces distant to the second wrench and one of the third wider faces distant to the first wrench and apply a rotational force to try the first and second wrenches. Since the first and second wrenches are fixed, simulated operating conditions of the first and second wrenches are provided.

[0008] The present invention will become clearer in light of the following detailed description of an illustrative embodiment of this invention described in connection with the drawings.

DESCRIPTION OF THE DRAWINGS

[0009] The illustrative embodiment may best be described by reference to the accompanying drawings where:

[0010] FIG. 1 shows a front perspective view of a display rack assembly of a first embodiment according to the preferred teachings of the present invention.

[0011] FIG. 2 shows a rear perspective view of the display rack assembly of FIG. 1.

[0012] FIG. 3 shows an exploded perspective view of the display rack assembly of FIG. 1.

[0013] FIG. 4 shows a front elevational view of the display rack assembly of FIG. 1 depicting try-on of wrenches in a holding direction.

[0014] FIG. 5 shows a rear elevational view of the display rack assembly of FIG. 1 depicting try-on of wrenches in another holding direction.

[0015] FIG. 6 shows a perspective view of a display rack assembly of a second embodiment according to the preferred teachings of the present invention.

[0016] FIG. 7 shows a front elevational view of the display rack assembly of FIG. 6 depicting try-on of wrenches in a holding direction.

[0017] FIG. 8 shows a rear elevational view of the display rack assembly of FIG. 6 depicting try-on of wrenches in another holding direction.

[0018] All figures are drawn for ease of explanation of the basic teachings of the present invention only; the extensions of the Figures with respect to number, position, relationship, and dimensions of the parts to form the preferred embodiment will be explained or will be within the skill of the art after the following teachings of the present invention have been read and understood. Further, the exact dimensions and dimensional proportions to conform to specific force, weight,
strength, and similar requirements will likewise be within the
skill of the art after the following teachings of the present
invention have been read and understood.

[0019] Where used in the various figures of the drawings,
the same numerals designate the same or similar parts.
Furthermore, when the terms “first”, “second”, “third”, “end”,
“section”, “spacing”, “width”, and similar terms are used
herein, it should be understood that these terms have refer-
ence only to the structure shown in the drawings as it would
appear to a person viewing the drawings and are utilized only
to facilitate describing the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] A display rack assembly of a first embodiment
according to the preferred teachings of the present invention
is shown in FIGS. 1-5 of the drawings and generally design-
nated 100. The display rack assembly 100 includes a rack 10
having first and second coupling sections 11. According to
the preferred form shown, the rack 10 includes rectangular cross
sections and has a front face 101 and a rear face 102. Each of
the first and second coupling sections 11 includes two par-
allel, spaced positioning walls 12 on the rear face 102 thereof.
A positioning groove 18 is defined between the positioning
walls 12 of each of the first and second coupling sections 11
and includes a bottom wall 16 having a screw hole 13.

[0021] A first wrench 20 includes a first handle 201 in the
most preferred form of a flat handle having first and second
ends 202 for driving fasteners. The first and second ends 202
of the first wrench 20 may be of any desired forms including
but not limited to open ends and box ends with or without
ratcheting mechanisms. According to the preferred form
shown, two opposite first wider faces 21 extend from the first
end 202 through the second end 202 of the first handle 201.
An engaging hole 23 in the most preferred form of a screw hole
extends from one of the first wider faces 21 through the other
first wider face 21. The engaging hole 23 includes an enlarged
section 231 in one of the first wider faces 21 distant to the rack
10. Two opposite first narrower faces 22 extend from the first
end 202 through the second end 202 of the first handle 201
and between and perpendicular to the first wider faces 21.
Each first wider face 21 has a width between the first narrower
faces 22 and substantially the same as a spacing between the
positioning walls 12 of the first coupling section 11. Each first
narrower face 22 has a width between the first wider faces 21
and smaller than that of each first wider face 21. The first
wrench 20 is coupled with the first coupling section 11 of the
rack 10 by extending a screw 14 through the engaging hole 23
of the first handle 201 into the screw hole 13 of the first
coupling section 11 for fixing the first wrench 20 in the
positioning groove 18 of the first coupling section 11. The
screw 14 has an enlarged screw head 141 received in the
enlarged section 231 of the engaging hole 23 of the first
handle 201. It is noted that the first narrower faces 22 of the
first handle 201 respectively abut with inner faces of the
positioning walls 12 of the first coupling section 11. Thus,
movement of the first wrench 20 relative to the rack 10 is
avoided.

[0022] A second wrench 30 includes a second handle 301 in
the most preferred form of a twisted handle having first and
second ends 302 for driving fasteners and a transition section
34 between the first and second ends 302. The first and second
ends 302 of the second wrench 30 may be of any desired
forms including but not limited to open ends and box ends
with or without ratcheting mechanisms. According to the
preferred form shown, a first handle section 36a is formed
between the first end 302 of the second handle 301 and the
transition section 34. A second handle section 36b of the
second handle 301 includes two opposite second wider faces
31 and two opposite second narrower faces 32 extending
between and perpendicular to the second wider faces 31. An
engaging hole 33 in the most preferred form of a screw hole
extends from one of the second wider faces 31 through the
other second wider face 31. The engaging hole 33 includes an
enlarged section 331 in one of the second wider faces 31
distant to the rack 10. Each second wider face 31 has a width
between the second narrower faces 32 and substantially the
same as a spacing between the positioning walls 12 of the
second coupling section 11. Each second narrower face 32
has a width between the second wider face 31 and smaller
than that of each second wider face 31. The second handle
section 36b of the second handle 301 includes two opposite
third wider faces 31 and two opposite third narrower faces 32
extending between and perpendicular to the third wider faces
31. The third wider faces 31 are perpendicular to the second
wider faces 31. The third narrower faces 32 are perpendicular
to the second narrower faces 32. Each third wider face 31 has
a width between the third narrower face 32. Each third
narrower face 32 a width between the third wider faces 31
and smaller than that of each third wider face 31.

[0023] The first handle section 36a of the second wrench 30
is coupled with the second coupling section 11 of the rack 10
by extending another screw 14 through the engaging hole 33 of
the first handle section 36a of the second handle 301 into the
screw hole 13 of the second coupling section 11 for fixing the
first handle section 36a of the second wrench 30 in the
positioning groove 18 of the second coupling section 11. The
screw 14 for fixing the first handle section 36a has an enlarged
screw head 141 received in the enlarged section 331 of the
engaging hole 33 of the second handle 301. The second
narrower faces 32 of the first handle section 36a of the second
handle 301 respectively abut with inner faces of the positioning
walls 12 of the second coupling section 11. Thus, move-
ment of the second wrench 30 relative to the rack 10 is
avoided. It is noted that the third wider faces 31 of the second
handle section 36b of the second wrench 30 are perpendicular
to the first narrower faces 22 of the first wrench 20 and that the
third narrower faces 32 of the second handle section 36b of
the second wrench 30 are perpendicular to the first wider
faces 21 of the first wrench 20.

[0024] It can be appreciated that a distance T (FIG. 5)
between one of the first narrower faces 22 of the first wrench
30 and the second wrench 30 of the third wider faces 31 of the
second handle section 36b of the second wrench 30 distant to the first wrench 20 allows a person trying the
first and second wrenches 20 and 30 to hold the first and
second wrenches 20 and 30 with a single hand. Preferably, the
distance T is smaller than the distance from the part between
the thumb and index finger of a hand of a general user to the
proximal interphalangeal joint of the middle finger of the
hand of the general user. Specifically, the first and second
wrenches 20 and 30 can be held by a hand of a person by
grasping one of the first narrower faces 22 distant to the
second wrench 30 and one of the third wider faces 31 distant
to the first wrench 20. Since movements of the first and
second wrenches 20 and 30 are prohibited, simulated operating
conditions of the first and second wrenches 20 and 30 are
provided. Particularly, the person may hold the first and second wrenches 20 and 30 in a manner shown in FIG. 4, wherein the fingers of the hand are in contact with one of the third wider faces 31 of the second wrench 30 distant to the first wrench 20 whereas the palm of the person's hand is in contact with one of the first narrower faces 22 of the first wrench 20 distant to the second wrench 30. Since the first and second wrenches 20 and 30 are fixed, when the person applies a rotational force to the first and second wrenches 20 and 30, the reactive force acting on the hand of the person makes the person feel pain in the part between the thumb and the index finger in contact with the first narrower face 22 having a smaller area, for the pressure is in inverse proportion to the surface area on which the force acts. The person will not feel pain at the fingers that are in contact with the third wider face 31.

[0025] The person may hold the first and second wrenches 20 and 30 in a different manner shown in FIG. 5, wherein the palm of the hand is in contact with one of the third wider faces 31 of the second wrench 30 distant to the first wrench 20 whereas the fingers of the hand are in contact with one of the first narrower faces 22 of the first wrench 20 distant to the second wrench 30. Since the first and second wrenches 20 and 30 are fixed, when the person applies a rotational force to the first and second wrenches 20 and 30, the reactive force acting on the hand of the person makes the person feel pain at the fingers in contact with the first narrower face 22 having a smaller area. The person will not feel pain in the part between the thumb and the index finger that is in contact with the third wider face 31.

[0026] The person is, thus, capable of experiencing simulated operating conditions of first and second wrenches 20 and 30 having different first and second handles 201 and 301 and feeling the differences therebetween. This will greatly encourage the person to buy the wrenches 20 and 30.

[0027] FIGS. 6-8 show a display rack assembly 100 of a second embodiment according to the preferred teachings of the present invention. The second embodiment is substantially identical to the first embodiment except in the transition section 34a of the second handle 30. Specifically, the transition section 34a of the second handle 301 of the second wrench 30 includes two opposite faces 38a each of which is interconnected between one of the second wider faces 31 of the first handle section 36a and one of the third narrower faces 32 of the second handle section 36b and has increased widths toward one of the second wider faces 31. The transition section 34a further includes another two opposite faces 38b between the faces 38a. Each of the faces 38b is interconnected between one of the second narrower faces 31 of the first handle section 36a and one of the third wider faces 31 of the second handle section 36b and has increased widths toward one of the third wider faces 31. Since the transition section 34a does not affect the try-on of the first and second wrenches 20 and 30, the display rack assembly 100 of the second embodiment provides the same advantages as the first embodiment. It can be appreciated that other forms of the transition section 34, 43a of the second handle 30 would be within the skill of the art.

[0028] Now that the basic teachings of the present invention have been explained, many extensions and variations will be obvious to one having ordinary skill in the art. For example, a sticker may be bonded to the front face 101 of the rack 10 and include descriptions encouraging customers to try the wrenches 20 and 30. Trademarks and/or descriptions encour-
tion of the second wrench being perpendicular to the first wider faces of the first wrench, and with the first and second wrenches being adapted to be held by a hand of a person trying the first and second wrenches by grasping one of the first narrower faces distant to the second wrench and one of the third wider faces distant to the first wrench.

2. The display rack as claimed in claim 1, with the first coupling section including two parallel, spaced positioning walls defining a positioning groove therebetween for receiving the first handle, with a spacing between the positioning walls being substantially the same as that of the width of each of the first wider faces of the first handle, and with the first narrower faces of the first handle respectively abutting with inner faces of the positioning walls.

3. The display rack as claimed in claim 2, with the positioning groove including a bottom wall between the positioning walls, with the bottom wall including a screw hole, with the first handle further including an engaging hole extending from one of the first wider faces through the other first wider face, further comprising, in combination: a screw extending through the engaging hole of the first handle into the screw hole for fixing the first wrench in the positioning groove.

4. The display rack as claimed in claim 3, with the engaging hole of the first handle being a screw hole.

5. The display rack as claimed in claim 1, with the second coupling section including two parallel, spaced positioning walls defining a positioning groove therebetween for receiving the first handle section of the second handle, with a spacing between the positioning walls being substantially the same as that of the width of each of the second wider faces of the first handle section of the second handle, and with the second narrower faces of the first handle section of the second handle respectively abutting with inner faces of the positioning walls.

6. The display rack as claimed in claim 5, with the positioning groove including a bottom wall between the positioning walls, with the bottom wall including a screw hole, with the first handle section of the second handle further including an engaging hole extending from one of the second wider faces through the other second wider face, further comprising, in combination: a screw extending through the engaging hole of the second handle into the screw hole for fixing the first handle section of the second wrench in the positioning groove.

7. The display rack as claimed in claim 6, with the engaging hole of the first handle section of the second wrench being a screw hole.

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