A quick assembly blade for a ceiling fan includes a blade frame, a blade and a press board. The blade frame is fixed with three studs and an engage position-limiting unit located among the three studs, with the engage pin able to be shifted up and down at the top end of the position-limiting unit. The blade is bored with a through hole at a location matching with the position-limiting unit of the blade frame. The press board is pressed and fixed on the blade, provided with a position-limiting portion. When the press board is pushed to move horizontally to the rear end of the blade, the engage pin will automatically be inserted in the position-limiting portion to keep the press board in position and prevent it from disengaging from the blade, able to quickly assemble the blade on the blade frame.
QUICK ASSEMBLY BLADE FOR A CEILING FAN (3)

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to a ceiling fan blade, particularly to one able to be quickly and stably assembled on a blade frame.

[0003] 2. Description of the Prior Art

[0004] A conventional way of quickly assembling a blade of a ceiling fan on a blade frame, as disclosed in a U.S. Pat. No. 6,932,576, titled "QUICK CONNECT CEILING FAN BLADE", is to have the clamping buttons of the blade frame respectively inserted in the clamping holes of the blade. The blade frame is further bored with a positioning hole at the rear side of the engage buttons, and the blade is bored with an engage hole matching with the positioning hole of the blade frame, and a rotary button is inserted through the engage hole of the blade and positioned in the positioning hole of the blade frame. After the rotary button is turned for an angle, the lower portion of the rotary button will be engaged in the positioning hole and its upper portion will be pressed on the blade to fix the blade on the blade frame.

[0005] However, the rotary button and the blade are separate members; therefore, during assembling of the blade, the rotary button has to be first aligned to both the engage hole of the blade and the positioning hole of the blade frame and then turned to be fitted tightly with the positioning hole, complicated in assembling. In addition, the rotary button is easy to be loosened and disengaged when the ceiling fan is rotated, rendering the blade frame and the blade separated from each other and causing danger.

SUMMARY OF THE INVENTION

[0006] The objective of this invention is to offer a quick assembly blade for a ceiling fan, including a blade frame, a blade and a press board. The blade frame is fixed with three studs spaced apart and respectively locked thereon with a fastener for the insert holes of the blade and the engage holes of the press board to be fitted thereon. The head of the fasteners are respectively extended out of the insert holes of the blade, and the engage holes of the press board are respectively engaged and secured on the undersides of the fasteners. The engage holes of the press board have their rear ends respectively expanded and formed with a receiving hole with a comparitively large diameter. The blade frame is further disposed with a position-limiting unit at a location among the three studs, and an engage pin is provided on the top end of the position-limiting unit, able to be shifted up and down. The blade is also bored with a through hole at a location among the insert holes for receiving the position-limiting unit therein, and the press board is provided with a position-limiting portion at a location corresponding to the through hole of the blade. When the press board is pushed to move horizontally toward the rear end of the blade, the engage pin will be inserted in the position-limiting portion to fix the press board in position and prevent it from disengaging, able to assemble the blade on the blade frame quickly and stably.

BRIEF DESCRIPTION OF DRAWINGS

[0007] This invention will be better understood by referring to the accompanying drawings, wherein:

[0008] FIG. 1 is an exploded perspective view of a first preferred embodiment of a quick assembly blade for a ceiling fan in the present invention;

[0009] FIG. 2 is a perspective view of the first preferred embodiment of the quick assembly blade to be assembled on a blade frame in the present invention;

[0010] FIG. 3 is a side cross-sectional view of the first preferred embodiment of the quick assembly blade to be assembled on the blade frame in the present invention;

[0011] FIG. 4 is a perspective view of the first preferred embodiment of the quick assembly blade assembled on the blade frame in the present invention;

[0012] FIG. 5 is a side cross-sectional of the first preferred embodiment of the quick assembly blade assembled on the blade frame in the present invention; and

[0013] FIG. 6 is an exploded perspective view of a second preferred embodiment of a quick assembly blade for a ceiling fan.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] A first preferred embodiment of a quick assembly blade for ceiling fan in the present invention, as shown in FIGS. 1, 2 and 3, includes a blade frame 10, a blade 20 and a press board 30 combined together.

[0015] The blade frame 10 has its rear end extended and formed with a framework 11 having its end expanding backward to form a pan-shaped body 12 formed integral with three studs 13 extending upward. One of the three studs 13 is positioned at the front end of the pan-shaped body 12, while the other two studs 13 are separately located at the rear end of the pan-shaped body 12, with the three studs 13 spaced apart and arranged into a triangle in position. The three studs 13 are respectively bored with a threaded hole 131 in the center and respectively fitted thereon with a bushing 14, which is a hollow cylinder made of rubber. The studs 13 have their top sides respectively secured thereon with a fastener 15, which is a bolt having its top end formed with a round head 151 with a comparatively large diameter and its lower end provided with threads 152 to be combined with the threaded hole 131 of the stud 13. Further, the pan-shaped body 12 of the blade frame 10 is fixed with a position-limiting unit 16 at a location among the three studs 13. The position-limiting unit 16 is composed of a base 161, an elastic member 162, an engage pin 163 and a base cover 164. The base 161 formed integrally at a location among the three studs 13 has its central portion fixed with a positioning member 1611 extending upward and its opposite sides respectively bored with a through hole 1612. The elastic member 162 is a compression spring having its lower end fitted on the positioning member 166. The engage pin 163 is composed of a bottom portion 1631 and a vertical pin 1632 extending upward from the bottom portion 1631, with the bottom portion 1631 positioned on the top end of the elastic member 162. The base cover 164 is secured on the base 161 by means of two screws 165 respectively inserted and engaged with the two threaded holes 1612 of the base 161, having its central portion formed with an accommodating space 1641 for receiving the elastic member 162 and the engage pin 164 therein, and its top end bored with a pin hole 1642 for the vertical pin 1632 to extend out therethrough. The bottom portion 1631 of the engage pin 163 is restricted in position by the upper inner wall of the accommodating space 1641.
The blade 20 is a long plate having its front end formed with a combining portion 21 vertically bored with three insert holes 22 to be respectively fitted on the bushings 14 of the studs 13. The combining portion 21 of the blade 20 is further bored with a through hole 23 at a location among the three insert holes 22 for receiving the position-limiting unit 16 therein to let the vertical pin 1632 of the engage pin 163 extend out of the topside of the through hole 23.

The press board 30 is a triangular board formed integrally of plastic to be pressed and fixed on the combining portion 21 of the blade 20, bored with three engage holes 31 at locations corresponding to the three insert holes 22 of the blade 20. The engage holes 31 have their rear ends respectively expanded and formed with a receiving hole 32 with a comparatively large diameter and are respectively to be engaged and secured on the lower surface 153 of the head 151 of the fastener 15. Further, the press board 30 has its three side edges respectively disposed with an elastic press member 33 arranged staggering with the three engage holes 31. Each elastic press member 33 has a connecting edge 331 connected with the press board 30 and a free edge separated from the press board 30, extended downward obliquely from the connecting edge 331 and then bent upward to connect with the free edge 332 and protruding out of the bottom 301 of the press board 30. Furthermore, the press board 30 is provided with a position-limiting portion 34 at a location matching with the through hole 23 of the blade 20. The position-limiting portion 34 is a through round hole with a diameter somewhat larger than the outer diameter of the vertical pin 1632 of the engage pin 163. The press board 30 also has the annular edge of its front end fixed with a push member 35 protruding upward. The press board 30 can also be formed of metallic material by compression.

In assembling, as shown in FIG. 3, firstly, the bushings 14 together with the fasteners 15 are respectively positioned in the insert holes 22 of the blade 20 and then the insert holes 22 of the blade 20 are respectively and correspondingly fitted on the studs 13 of the blade frame 10. Next, apply force upon the press board 30 to have its bottom 301 pressed flatly on the combining portion 21 of the blade 20. At this time, the heads 151 of the fasteners 15 are respectively positioned in the receiving holes 32 of the press board 30, and the engage pin 163 of the position-limiting unit 16 is pressed by the bottom 301 of the press board 30 to compress the elastic member 162 below, letting the vertical pin 1632 contracted and positioned in the pin hole 1642 of the base cover 164 and the elastic press members 33 pressed flatly on the combining portion 21 of the blade 20. Subsequently, the push member 35 is pushed to actuate the press board 30 to move horizontally toward the rear end of the blade 20 and meanwhile, the engage holes 31 of the press board 30 will be respectively stuck on the lower surfaces 153 of the heads 151 and secured on the fasteners 15 for clamping and fixing the blade 20 between the press board 30 and the blade frame 10, as shown in FIGS. 4 and 5. Simultaneously, the position-limiting portion 34 is shifted to the engage pin 163 and, after the engage pin 163 is freed from pressing force and the elastic member 162 recovers its elastic force, the vertical pin 1632 of the engage pin 163 will be pushed upward to extend out of the topside of the pin hole 1642 and automatically inserted in the position-limiting portion 34 of the press board 30 to fix the press board 30 in position and prevent it from disengaging, thus quickly finishing assembling of the blade.

A second preferred embodiment of a quick assembly blade for a ceiling fan in the present invention, as shown in FIG. 6, includes a blade frame 10, a blade 20 and a press board 30. The blade frame 10 and the blade 20 have the same structure and assembly mode as those described in the first preferred embodiment. The press board 30 is bored with three engage holes 31 having their rear ends respectively expanded and formed with a receiving hole 32 with a comparatively large diameter and respectively corresponding to the insert holes 22 of the combining portion 21 of the blade 20. The press board 30 is further provided with a position-limiting portion 34 at a location among the three engage holes 31 to match with the position-limiting unit 16 on the blade frame 10. After the press board 30 is pushed to move toward the rear end of the blade 20, the vertical pin 1632 of the engage pin 163 will be inserted in the position-limiting portion 34 of the press board 30 to prevent the press board 30 from disengaging from the blade 20, equally achieving effect of quickly assembling the blade. The press board 30 also has the annular edge of its front end provided with a push member 35 protruding upward.

By so designing, the blade of this invention can be stably pressed by the press board 30 and firmly assembled on the blade frame, and the engage pin can be pushed upward by the elastic member and automatically inserted in the position-limiting portion of the press board for keeping tightly the press board in position and preventing it from disengaging from the blade 20, able to quickly assemble the blade. In addition, the elastic press members of the press board can produce reverse elastic force to press against the blade for enhancing assembled stability of the blade.

While the preferred embodiments of the invention have been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all such modifications that may fall within the spirit and scope of the invention.

1. A quick assemblage blade for a ceiling fan comprising: a blade frame having its rear end extended and formed with a framework, said framework having its end extended to form a pan-shaped body, said pan-shaped body fixed thereon with three studs extending upward and spaced apart, each said stud having its topside locked with a fastener, said fastener having its top end formed with a head, said pan-shaped body secured with a position-limiting unit at a location among said three studs, said position-limiting unit having its top end disposed with an engage pin, said engage pin able to be actuated to shift up and down at top end of said position-limiting unit; a blade having its front end provided with a combining portion to be assembled on said pan-shaped body of said blade frame, said combining portion of said blade bored with three insert holes to be respectively fitted on said three studs of said blade frame, said head of said fastener extended out of said insert hole of said blade, said blade further bored with a through hole at a location among said three insert holes for receiving said position-limiting unit of said blade frame, said engage pin extended out of said through hole; and a press board fixed on said combining portion of said blade, said press board bored with engage holes at locations corresponding to said insert holes of said blade, said engage holes of said press board respectively engaged and secured on underside of said head of said fastener,
said engage holes of said press board having their rear ends respectively extended and formed with a receiving hole with a comparatively large diameter, said press board further provided with a position-limiting portion at a location matching with said through hole of said blade, said press board pushed to move horizontally toward rear end of said blade to let said engage pin inserted in said position-limiting portion.

2. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said position-limiting unit is composed of a base, an elastic member, an engage pin and a base cover, said base fixed at a location among said three studs, said elastic member positioned on said base, said engage pin formed with a bottom portion and a vertical pin extended upward from said bottom portion, said bottom portion of said engage pin positioned at the top end of said elastic member, said base cover secured on said base and formed with an accommodating space in the center for receiving said elastic member and said engage pin therein, said accommodating space having its top end bored with a pin hole for said vertical pin to extend out therethrough, said bottom portion of said engage pin restricted in position by upper inner wall of said accommodating space.

3. The quick assembly blade for a ceiling fan as claimed in claim 2, wherein said elastic member is a compression spring.

4. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said position-limiting portion is a round hole through said press board.

5. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said press board is a triangular board having its three edges respectively fixed with an elastic press member arranged staggering with said engage holes, each said elastic press member having a connecting edge connected with said press board and a free edge separated from said press board, each said elastic press member extended downward obliquely from said connecting edge and then bent upward to connect with said free edge, each said elastic press member extended out of an underside of said press board.

6. The quick assembly blade for a ceiling fan as claimed in claim 5, wherein said press board has the annular edge of its front end formed with a push member protruding upward.

7. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said studs are integrally formed on said pan-shaped body of said blade frame, spaced apart, arranged into a triangle in position and respectively bored with a threaded hole in the center, said studs respectively having a bushing fitted thereon, said fastener being a bolt having its top end formed with a round head with a comparatively large diameter and its lower end formed with threads to be combined with said threaded hole of said stud.

8. The quick assembly blade for a ceiling fan as claimed in claim 7, wherein said bushing is a hollow cylinder made of rubber.

9. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said press board is provided with a push member protruding along annular edge of its front end.

10. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said press board is formed of metallic material by compression.

11. The quick assembly blade for a ceiling fan as claimed in claim 1, wherein said press board is formed integrally of plastic.

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