BRUSH STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a brush structure, and more particularly to a brush structure for surface cleaning.

2. Description of the Prior Art

As shown in Fig. 9, a conventional brush structure comprises a roller member (50), a flexible member (51) and a sponge member (52). The flexible member (51) is meshed fiber fabric winding on the outer wall of the roller member (50). The sponge member (52) is coupled on the roller member (50). The inner side of the sponge member (52) is tightly connected with the flexible member (51) winding on the roller member (50).

As shown in Fig. 10, another conventional brush structure comprises a base (60) which has a passage (61) for filling a porous cushion material (70). The base (60) is combined with the cushion material (70). The porous cushion material (70) has an inner layer (71) to cover an inner surface (62) of the base (60) and an outer layer (72) to cover an outer surface (63) of the base (60). The outer layer (72) has protrusions (720).

The conventional brush structures have the following drawbacks.

1. Unstable configuration. The sponge member on the roller member is rotated and pressed at a high speed for a long time to cause elastic fatigue of the sponge member. The sponge member may disengage from the flexible member on the roller member so the sponge member and the roller member may be idling. Besides, the flexible member is wound manually. There may be inaccuracy to process the flexible member, which causes disengagement of the sponge member and the roller member. The base of the other brush structure has the passage for filling the porous cushion material. The base is combined with the cushion material. The porous cushion material has the inner layer to cover the inner surface of the base and the outer layer

to cover the outer surface of the base. The outer layer has the protrusions. The centrifugal force of rotation of the roller member pulls the inner layer of the sponge member and the filling in the passage of the base. The outer layer of the sponge member may be deformed by the applied force when pulled and cleaning. The filling in the passage to interconnect the inner layer and the outer layer of the base may be broken so its configuration is unstable.

2. Short service life span. The sponge member on the roller member is rotated and pressed at a high speed for a long time to cause elastic fatigue of the sponge member. The sponge member may disengage from the flexible member on the roller member so its service life span is short.

3. Bad cleaning effect. The flexible member on the roller member is meshed fiber fabric or yarn. The fiber fabric or yarn of the flexible member may come off the flexible member to scrape the surface of the article to be cleaned so its cleaning effect is not good.

Accordingly, the inventor of the present invention has devoted himself based on his many years of practical experiences to solve these problems.

SUMMARY OF THE INVENTION

The primary object of the present invention is to provide a brush structure which comprises a roller member, a sponge covering member, and a sponge axle member. The sponge covering member has an outer layer portion, a plurality of connection portions and a plurality of inner layer portions. The outer layer portion of the sponge covering member covers an outer wall of the roller member. The inner layer portions are disposed in circumferential hole portions of the roller member. The connection portions are disposed in connecting through hole portions of the roller member. Two ends of each of the connection portions are respectively interconnected to the outer layer portion and the inner layer portions. The sponge axle member is disposed in an axial hole portion of the roller member. Through the connection portions of the sponge covering member, the outer layer portion and the inner layer portions of the sponge covering member are firmly coupled to the outer wall of the roller member and the relative circumferential hole portions. When the roller member is turned, the sponge covering member is simultaneously driven so the roller member won't be idling. The sponge covering member won't disengage from the roller member

because of elastic fatigue, having a stable configuration and a long service life space.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of the present invention;

Fig. 2 is a partial sectional view of the present invention;

Fig. 3 is a side sectional view of the present invention;

Fig. 4 is a perspective view of the roller member of the present invention;

Fig. 5 is a processing diagram of the roller member, the sponge covering member and the sponge axle member of the present invention;

Fig. 6 is a sectional view showing the roller member having a plurality of water guide hole portions according to a first embodiment of the present invention;

Fig. 7 is a perspective view of the roller member according to the first embodiment of the present invention;

Fig. 8 is a sectional view showing the roller member with a rough outer surface according to a second embodiment of the present invention;

Fig. 9 is a perspective view of a first conventional brush; and

Fig. 10 is a sectional view of a second conventional brush.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings.

As shown in Fig. 1 through Fig. 4, the brush structure of the present invention comprises a roller member (10), a sponge covering member (20), and a sponge axle member (30).

The roller member (10) has an axial hole portion (11), a plurality of circumferential hole portions (12) surrounding the axial hole portion (11), a plurality of connecting guide holes (120) between the circumferential hole portions (12) and the axial hole portion (11), and a plurality of connecting through hole portions (13) between the circumferential hole portions (12) and an outer wall of the roller member (10).

The sponge covering member (20) has an outer layer portion (21), a plurality of connection portions (22) and a plurality of inner layer portions (23). The outer layer

portion (21) has a plurality of protrusions (210). The outer layer portion (21) of the sponge covering member (20) covers the outer wall of the roller member (10). The inner layer portions (23) are disposed in the relative circumferential hole portions (12) of the roller member (10). The connection portions (22) are disposed in the connecting through hole portions (13) and the connecting guide holes (120) between the circumferential hole portions (12) and the axial hole portion (11). Two ends of each connection portion (22) are respectively interconnected to the outer layer portion (21) and the inner layer portions (23).

The sponge axle member (30) has an axle hole portion (31). The sponge axle member (30) is disposed in the axial hole portion (11) of the roller member (10). The sponge axle member (30) is interconnected with the connection portions (22) of the sponge covering member (20).

Fig. 2 is a partial sectional view of the present invention. Fig. 3 is a side sectional view of the present invention. Fig. 4 is a perspective view of the roller member of the present invention. Fig. 5 is a processing diagram of the roller member, the sponge covering member and the sponge axle member of the present invention. The sponge covering member (20) is filled in between an outer mold member (40) and the roller member (10). Through the outer mold member (40), the outer layer portion (21) of the sponge covering member (20) covers the outer wall of the roller member (10), and the inner layer portions (23) are secured in the relative circumferential hole portions (12) of the roller member (10), and the connection portions (22) are formed in the connecting through hole portions (13) of the roller member (10) and the connecting guide holes (120) between the circumferential hole portions (12) and the axial hole portion (11). The two ends of each connection portion (22) are respectively interconnected to the outer layer portion (21) and the inner layer portions (23). The sponge axle member (30) is disposed in the axial hole portion (11) of the roller member (10). Through the connection portions (22) of the sponge covering member (20), the outer layer portion (21) and the inner layer portions (23) of the sponge covering member (20) are firmly coupled to the outer wall of the roller member (10) and the relative circumferential hole portions (12). When the roller member (10) is turned, the sponge covering member (20) is simultaneously driven so the roller member (10) won't be idling. The sponge covering member (20) won't disengage from the roller member (10) because of elastic fatigue, having a stable configuration and a long service life space.

Fig. 6 is a sectional view showing the roller member having a plurality of water guide hole portions according to a first embodiment of the present invention. Fig. 7 is a perspective view of the roller member according to the first embodiment of the present invention. The first embodiment has the same configuration as shown in Fig. 1 to Fig. 4 with the exceptions described hereinafter. A plurality of water guide hole portions (14) are formed between the axial hole portion (11) and the outer wall of the roller member (10). When the roller member (10) drives the sponge covering member (20) to turn, cleaning agent or detergent can be evenly spread to the sponge covering member (20) from the plurality of water guide hole portions (14).

Fig. 8 is a sectional view showing the roller member with a rough outer surface according to a second embodiment of the present invention. The second embodiment has the same configuration as shown in Fig. 1 to Fig. 4 with the exceptions described hereinafter. The roller member (10) has a rough outer surface (15) to enhance coefficient of friction between the outer layer portion (21) of the sponge covering member (20) and the roller member (10).

The present invention has the following advantages.

1. Having a stable configuration. Through the connection portions of the sponge covering member, the outer layer portion and the inner layer portions of the sponge covering member are firmly coupled to the outer wall of the roller member and the relative circumferential hole portions. When the roller member is turned, the sponge covering member will be simultaneously driven. The roller member won't be idling so its configuration is stable.

2. Having a long service life span. Through the connection portions of the sponge covering member, the outer layer portion and the inner layer portions of the sponge covering member are firmly coupled to the outer wall of the roller member and the relative circumferential hole portions. The sponge covering member won't disengage from the roller member, having a long service life space.

3. Having a better cleaning effect. There is no need for the roller member to be wound with flexible fiber fabric or yarn. The sponge covering member and the sponge axle member are connected steady. No fiber will come off to scrape the surface of the article to be cleaned so the present invention has a better cleaning effect.

Although particular embodiments of the present invention have been described in

detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the present invention. Accordingly, the present invention is not to be limited except as by the appended claims.

WHAT IS CLAIMED IS:

1. A brush structure, comprising:

a roller member (10), the roller member (10) having an axial hole portion (11), a plurality of circumferential hole portions (12) surrounding the axial hole portion (11), a plurality of connecting guide holes (120) between the circumferential hole portions (12) and the axial hole portion (11) and a plurality of connecting through hole portions (13) between the circumferential hole portions (12) and an outer wall of the roller member (10), the roller member (10) having a rough outer surface (15).

2. The brush structure as claimed in claim 1, wherein a plurality of water guide hole portions (14) are formed between the axial hole portion (11) and the outer wall of the roller member (10).

3. A brush structure, comprising:

a roller member (10), the roller member (10) having an axial hole portion (11), a plurality of circumferential hole portions (12) surrounding the axial hole portion (11) and a plurality of connecting through hole portions (13) between the circumferential hole portions (12) and an outer wall of the roller member (10), the roller member (10) having a rough outer surface (15); and

a sponge covering member (20), the sponge covering member (20) having an outer layer portion (21), a plurality of connection portions (22) and a plurality of inner layer portions (23), the outer layer portion (21) having a plurality of protrusions (210), the outer layer portion (21) of the sponge covering member (20) covering the outer wall of the roller member (10), the inner layer portions (23) being disposed in the relative circumferential hole portions (12) of the roller member (10), the connection portions (22) being disposed in the connecting through hole portions (13) of the roller member (10), two ends of each of the connection portions (22) being respectively interconnected to the outer layer portion (21) and the inner layer portions (23).

4. The brush structure as claimed in claim 3, wherein a plurality of water guide hole portions (14) are formed between the axial hole portion (11) and the outer wall of the roller member (10).

5. A brush structure, comprising:

a roller member (10), the roller member (10) having an axial hole portion (11), a

plurality of circumferential hole portions (12) surrounding the axial hole portion (11), a plurality of connecting guide holes (120) between the circumferential hole portions (12) and the axial hole portion (11) and a plurality of connecting through hole portions (13) between the circumferential hole portions (12) and an outer wall of the roller member (10);

a sponge covering member (20), the sponge covering member (20) having an outer layer portion (21), a plurality of connection portions (22) and a plurality of inner layer portions (23), the outer layer portion (21) having a plurality of protrusions (210), the outer layer portion (21) of the sponge covering member (20) covering the outer wall of the roller member (10), the inner layer portions (23) being disposed in the relative circumferential hole portions (12) of the roller member (10), the connection portions (22) being disposed in the connecting through hole portions (13) of the roller member (10) and the connecting guide holes (120) between the circumferential hole portions (12) and the axial hole portion (11), two ends of each of the connection portions (22) being respectively interconnected to the outer layer portion (21) and the inner layer portions (23); and

a sponge axle member (30), the sponge axle member (30) having an axle hole portion (31), the sponge axle member (30) being disposed in the axial hole portion (11) of the roller member (10), the sponge axle member (30) being interconnected with the connection portions (22) of the sponge covering member (20).

6. The brush structure as claimed in claim 5, wherein a plurality of water guide hole portions (14) are formed between the axial hole portion (11) and the outer wall of the roller member (10).

7. The brush structure as claimed in claim 5, wherein the roller member (10) has a rough outer surface (15).