

PATENT SPECIFICATION

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(19)



(54) IMPROVEMENTS IN OR RELATING TO A BROOM HEAD

(71) I, HENRI, JOSEPH, MARIE, ADRIEN LEROY, a citizen of the Republic of France, residing at 5, rue d'Estienne d'Orves 93 310 Le-Pre-Saint-Gervais (France), do hereby
5 declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to an improved broom constituted by a multiplicity of stems, preferably of plastics material, serving as brushing elements, which stems are disposed as a bundle around the periphery of a tubular member adapted to receive therein a broom handle, an end portion of the bundle being fitted into a protective sleeve around the said tubular member.

20 Brooms are known which are composed of a plurality of birch twigs tightened round a handle. Such brooms are generally used for street sweeping. However, they are frangible, liable to wear out rapidly and require frequent replacement of the
25 bundle of twigs.

The improved broom according to the present invention is intended to remedy or minimise the aforementioned drawbacks. It is of elaborate design and at the same time
30 extremely simple and inexpensive.

According to the invention there is provided a broom head comprising a multiplicity of stems serving as brushing elements, each stem having a pair of mutually
35 opposite first and second indentations, a tubular member for receiving a broom handle, the stems having been disposed as a bundle around the periphery of the tubular member, and a protective sleeve around
40 the said tubular member into which sleeve an end portion of the bundle has been fitted, the bundle of stems and the said sleeve forming an assembly wherein
45 said stems have been applied transversely

to a strip, the binding strip having been secured to the first indentation of each stem, and the binding strip with the said stems secured thereto having been wound in a plurality of turns around the said tubular member whereby the thickness of the
50 strip for the or each successive turn of the strip around the said tubular member is accommodated by the second indentation of each stem of the previous turn.

55 The stem-fixing means advantageously allow the stems to be securely held while at the same time allowing for a more reliable assembling of the broom parts.

According to a preferred feature of the invention the strap is provided with perforations spaced apart in a predetermined manner along the length of the strip and the first indentations of the strip are provided with projections which engage the perforations.
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The binding strip may be integral with the first indentations or otherwise secured thereto, e.g. by riveting or welding the said first indentations.
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Advantageously the second indentations have a wall which is bevelled to facilitate the slipping of the bundle of stems into the protective sleeve.

Preferably each stem has a third indentation, with an undercut surface, on the same side or face of the stem as the second indentation but spaced apart from the second indentation, the third indentation serving to retain the stem on a peripheral edge of the said sleeve and having a wall which is bevelled to facilitate the slipping of the bundle of stems into the protective sleeve until the said peripheral edge is engaged by the said undercut surface.
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According to still another preferred feature of the invention, the aforesaid tubular member is provided with a collar having a plurality of annular grooves at an end portion of the tubular member remote from the
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free ends of the said stems and an opposite end portion of the said tubular member is provided with ribs forming a constriction to facilitate retention of a broom handle by the ribs.

Furthermore, the said tubular member may have a rectilinear strip along its length, a portion of the split near the free ends of the said stems being indented so as to constitute a non-rectilinear split portion.

According to another preferred feature of the invention, the protective sleeve has an internal annular shoulder having a bevelled peripheral edge to facilitate the slipping of the bundle of stems into the said sleeve, the sleeve being provided with a cover having an internal collar, the cover being mounted on an external annular shoulder of a portion of the sleeve remote from the free ends of the said stems.

According to still another preferred feature of the invention at least one ring around the bundle of stems is provided, the ring being slidable along the stems, and the bundle of stems is provided with projections constituting means for holding the said ring in a desired position.

By way of example a preferred form of the invention will be described with reference to the appended drawings, wherein:

Figure 1 is a partial elevational view of a stem of plastics material of a broom head embodying the invention, the stem being shown frontwise and in longitudinal section;

Figure 2 is a partial view of a binding strip laid flat;

Figure 3 is an axial sectional view of a tubular member;

Figure 4 is a sectional view upon the line IV-IV of Figure 3;

Figure 5 is an axial sectional view of a sleeve and its associated cover;

Figure 6 is an axial sectional view of the sleeve, a cover and the tubular member in the assembled position, with the stems held therein;

Figure 7 is a perspective view of a broom embodying the invention;

Figure 8 is an elevational view of the broom handle provided with a pointed end;

Figure 9 is a perspective view of the broom with its sleeve and cover removed, and

Figure 10 is another front and profile view of a stem.

Referring to the appended drawings, there is shown a broom head which comprises essentially a plurality of stems 28 preferably of plastics material, assembled together by a binding strip 10 (Figure 2) and the strip wound round a tubular member 20 (Figure 3). Around the stems 28 thus assembled around the tubular member 20 is mounted a protective sleeve 23 on which is fitted a cover 24. A broom handle

21 may be tightly introduced into the tubular member 20 so as to finally constitute a broom which is seen in Figure 7.

Reference is now made to the appended drawings for a detailed description of the above essential elements.

Referring to Figure 1, it is seen that the stems 28 of plastics material having a suitably shaped, e.g. U-shaped, cross-section, comprise a skewed upper end 5, an indentation 6 and two mutually opposite indentations 7 and 8. The indentations 6 and 8 are each provided with a right-angled wall 12 and 14, respectively. The wall 12 serves as a hooking means for retaining the stems 28 on the peripheral edge 25 of the sleeve 23. The binding strip 10, of a suitable flexible material such as for example a metal or plastics material is used to assemble the stems 28 together and is fastened in the indentations 7 of the stems 28. The strip 10 may be fastened to the indentations 7 of the stems 28 by any suitable means, e.g. by riveting or welding. In the embodiment illustrated by Figure 1, the indentation 7 is provided with projections 9 adapted to penetrate into the perforations 11 provided in the strip 10. The middle stem 28 of Figure 1 will have projections 9 in the indentation 7 like the right hand stem but the projections 9 have been omitted from the middle stem for the sake of clarity so that the shape of the indentation 7 can be seen more clearly. Thereafter, the projections 9 are flattened, e.g. press-flattened, to form rivet heads so that each stem 28 is fixed to the strip 10 and is securely retained on the strip. The indentations 8 are of sufficient depth to accommodate the thickness of a or each successive turn of the binding strip 10 during the winding of the strip round the tubular member 20. It will be appreciated that after one complete turn of the strip (with its attached stems 28) around the tubular member 20 the inside of the strip 20 will then abut against the indentations 8 of the preceding turn. The indentations 6 and 8 are provided with bevelled portions 13 and 15, respectively, for the purpose of facilitating the slipping of the sleeve 23 and its fitting onto the whole set of stems 28 wound round the tubular member 20.

As seen more clearly in Figure 3, this tube is split along a line 16 which is preferably indented at the lower portion of the tube, as shown at 16a. The split 16 advantageously imparts to the member 20 a certain radial elasticity allowing the handle 21 to be inserted tightly, as seen clearly in Figure 3, as compared with Figure 6 where the gap formed by the split is obviously smaller than when the handle 21 is introduced into the member 20. At 17 is shown a collar including a plurality of annular grooves 18. This collar has a generally cone-shaped

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general configuration so as to drive back the upper ends of the stem 28 outwardly in order to facilitate the hooking of the walls 12 of the indentations 6 onto the edge 25 of the protective sleeve 23. As shown at 19 in Figures 3 and 4, ribs are provided so as to form a constriction ensuring the retention of the pointed end 21a of the handle 21.

It is seen in Figure 5 that the protective sleeve 23 is provided with an annular shoulder 25a to receive the cover 24, e.g. by screwing or snap-in fitting, and another bevelled internal shoulder 25b so as to allow the skewed upper portion 5 of the stems 28 to slide during the fitting of the sleeve 23 onto the bundle of stems 28. As appears clearly from Figure 5, the cover 24 is of course provided with a passage orifice 26 for the handle 21 and with a specially designed bottom, for example a collar 27, allowing a pressure to be exerted on the collar 17 of the tubular member 20, as seen in Figure 6.

In the illustrated embodiment all the stems 28 are of the same shape and length for the same of simplicity and for ease of manufacture. In Figure 6 the stem 28 next to the tubular member 20 has had its shape distorted by being forced towards the axis of the bundle of stems 28 when mounting the cover 24 on the sleeve 23. Hence the said stem 28 is shown as displaced downwards a little with respect to the other stem 28 shown in Figure 6.

The latter Figure clearly shows how the sleeve 23, the cover 24, the tubular member 20 and the stems 28 co-operate to ensure secure and reliable fitting of the latter while at the same time allowing the handle 21 to be inserted tightly. Besides, the inserted handle will strengthen the whole assembly.

In Figures 7 and 9 is shown a ring 31 around a bundle of stems 28. The ring 31 slidable along the stems 28 and allows the diameter and therefore the rigidity of the bundle to be adjusted at will. Projections 29 are provided on the stems 28 to retain the ring in the desired position.

The plastics stems 28 may also be provided with branchlets 28a so as to increase the density of the bundle of stems.

The assembling of the broom embodying the invention just described is readily inferred from the foregoing description.

The stems 28 laid flat are joined together by means of the strip 10 so as to obtain a series of assembled stem. Thereafter, the strip with the stems thus assembled wound round the tubular member 20. The protective sleeve 23 is then fitted on to the bundle of stems. Thereafter, the cover 24 is placed on the sleeve 23. Lastly, the handle 21 is tightly inserted into the tubular member 20.

The broom described and illustrated is

therefore particularly simple and strong owing to the co-operation of the elements just described. Moreover, the broom allows efficient sweeping to be performed even under very difficult conditions, e.g. under stationary cars.

Of course, the invention is by no means limited to the form of embodiment described and illustrated, which has been given by way of example only.

WHAT I CLAIM IS:—

1. A broom head comprising a multiplicity of stems serving as brushing elements, each stem having a pair of mutually opposite first and second indentations, a tubular member for receiving a broom handle, the stems having been disposed as a bundle around the periphery of the tubular member, and a protective sleeve around the said tubular member into which sleeve an end portion of the bundle has been fitted, the bundle of stems and the said sleeve forming an assembly wherein the said stems have been applied transversely to a strip, the binding strip having been secured to the first indentation of each stem, and the binding strip with the said stems secured thereto having been wound in a plurality of turns around the said tubular member whereby the thickness of the strip for the or each successive turn of the strip around the said tubular member is accommodated by the second indentation of each stem of the previous turn.

2. A broom head according to Claim 1, wherein the strip is provided with perforations spaced apart in a predetermined manner along the length of the strip and the first indentations of the strips are provided with projections which engage the perforations.

3. A broom head according to Claim 1 or Claim 2, wherein the binding strip is secured to the first indentations by riveting or welding.

4. A broom head according to Claim 1, wherein the binding strip is integral with the first indentations.

5. A broom head according to any preceding claim, wherein the second indentations have a wall which is bevelled to facilitate the slipping of the bundle of stems into the protective sleeve.

6. A broom head according to any preceding claim, wherein each stem has a third indentation, with an undercut surface, on the same side or face of the stem as the second indentation but spaced apart from the second indentation, the third indentation serving to retain by its undercut surface the stem on a peripheral edge of the said sleeve and having a wall which is bevelled to facilitate the slipping of the bundle of stems

(12)

general configuration so as to drive back the upper ends of the stem 28 outwardly in order to facilitate the hooking of the walls 12 of the indentations 6 onto the edge 25 of the protective sleeve 23. As shown at 19 in Figures 3 and 4, ribs are provided so as to form a constriction ensuring the retention of the pointed end 21a of the handle 21.

It is seen in Figure 5 that the protective sleeve 23 is provided with an annular shoulder 25a to receive the cover 24, e.g. by screwing or snap-in fitting, and another bevelled internal shoulder 25b so as to allow the skewed upper portion 5 of the stems 28 to slide during the fitting of the sleeve 23 onto the bundle of stems 28. As appears clearly from Figure 5, the cover 24 is of course provided with a passage orifice 26 for the handle 21 and with a specially designed bottom, for example a collar 27, allowing a pressure to be exerted on the collar 17 of the tubular member 20, as seen in Figure 6.

In the illustrated embodiment all the stems 28 are of the same shape and length for the same of simplicity and for ease of manufacture. In Figure 6 the stem 28 next to the tubular member 20 has had its shape distorted by being forced towards the axis of the bundle of stems 28 when mounting the cover 24 on the sleeve 23. Hence the said stem 28 is shown as displaced downwards a little with respect to the other stem 28 shown in Figure 6.

The latter Figure clearly shows how the sleeve 23, the cover 24, the tubular member 20 and the stems 28 co-operate to ensure secure and reliable fitting of the latter while at the same time allowing the handle 21 to be inserted tightly. Besides, the inserted handle will strengthen the whole assembly.

In Figures 7 and 9 is shown a ring 31 around a bundle of stems 28. The ring 31 slidable along the stems 28 and allows the diameter and therefore the rigidity of the bundle to be adjusted at will. Projections 29 are provided on the stems 28 to retain the ring in the desired position.

The plastics stems 28 may also be provided with branchlets 28a so as to increase the density of the bundle of stems.

The assembling of the broom embodying the invention just described is readily inferred from the foregoing description.

The stems 28 laid flat are joined together by means of the strip 10 so as to obtain a series of assembled stem. Thereafter, the strip with the stems thus assembled wound round the tubular member 20. The protective sleeve 23 is then fitted on to the bundle of stems. Thereafter, the cover 24 is placed on the sleeve 23. Lastly, the handle 21 is tightly inserted into the tubular member 20.

The broom described and illustrated is

therefore particularly simple and strong owing to the co-operation of the elements just described. Moreover, the broom allows efficient sweeping to be performed even under very difficult conditions, e.g. under stationary cars.

Of course, the invention is by no means limited to the form of embodiment described and illustrated, which has been given by way of example only.

WHAT I CLAIM IS:—

1. A broom head comprising a multiplicity of stems serving as brushing elements, each stem having a pair of mutually opposite first and second indentations, a tubular member for receiving a broom handle, the stems having been disposed as a bundle around the periphery of the tubular member, and a protective sleeve around the said tubular member into which sleeve an end portion of the bundle has been fitted, the bundle of stems and the said sleeve forming an assembly wherein the said stems have been applied transversely to a strip, the binding strip having been secured to the first indentation of each stem, and the binding strip with the said stems secured thereto having been wound in a plurality of turns around the said tubular member whereby the thickness of the strip for the or each successive turn of the strip around the said tubular member is accommodated by the second indentation of each stem of the previous turn.

2. A broom head according to Claim 1, wherein the strip is provided with perforations spaced apart in a predetermined manner along the length of the strip and the first indentations of the strips are provided with projections which engage the perforations.

3. A broom head according to Claim 1 or Claim 2, wherein the binding strip is secured to the first indentations by riveting or welding.

4. A broom head according to Claim 1, wherein the binding strip is integral with the first indentations.

5. A broom head according to any preceding claim, wherein the second indentations have a wall which is bevelled to facilitate the slipping of the bundle of stems into the protective sleeve.

6. A broom head according to any preceding claim, wherein each stem has a third indentation, with an undercut surface, on the same side or face of the stem as the second indentation but spaced apart from the second indentation, the third indentation serving to retain by its undercut surface the stem on a peripheral edge of the said sleeve and having a wall which is bevelled to facilitate the slipping of the bundle of stems



into the protective sleeve until the said peripheral edge is engaged by the said undercut surface.

7. A broom head according to any preceding claim, wherein the said tubular member is provided with a collar having a plurality of annular grooves at an end portion of the tubular member remote from the free ends of the said stems and an opposite end portion of the said tubular member is provided with ribs forming a constriction to facilitate retention of a broom handle by the ribs.

8. A broom head according to any preceding claim, wherein the said tubular member has a rectilinear split along its length, a portion of the split near the free ends of the said stems being indented so as to constitute a non-rectilinear split portion.

9. A broom head according to any preceding claim, wherein the protective sleeve has an internal annular shoulder having a bevelled peripheral edge to facilitate the slipping of the bundle of stems into the said sleeve, the sleeve being provided with a cover having an internal collar, the cover

being mounted on an external annular shoulder of a portion of the sleeve remote from the free ends of the said stems.

10. A broom head according to any preceding claim, wherein at least one ring around the bundle of stems is provided, the ring being slidable along the stems, and the bundle of stems is provided with projections constituting means for holding the said ring in a desired position.

11. A broom head according to any preceding claim, wherein the stems are of plastics material.

12. An improved broom head substantially as herein described with reference to and as illustrated in Figures 1 to 10 of the accompanying drawings.

13. A broom constituted by a broom head as claimed in any preceding claim and a broom handle fitted into the said tubular member.

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