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Lees

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[54] **CURLING BROOM AND COVER**

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[51] **Int. Cl.** **A46b 17/04,** A63b 67/14

[58] **Field of Search** ..... 15/114, 160, 168–171, 15/175, 210 R, 247; 273/128 CS

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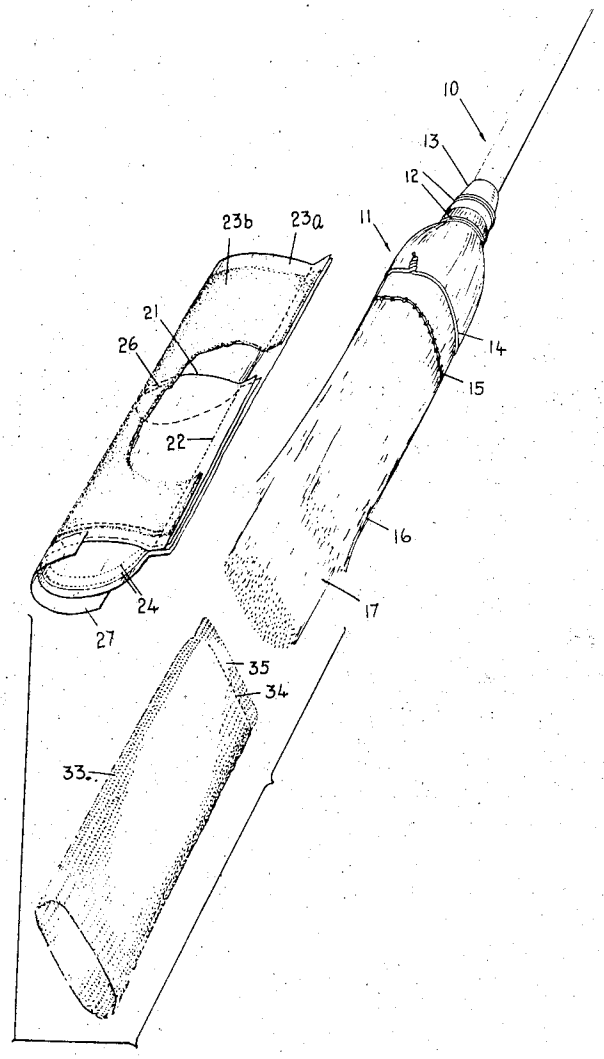
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Primary Examiner—Daniel Blum
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[57] **ABSTRACT**

A curling broom is provided with a sock of knitted fibrous material enclosing the parts of the broom bristles that would ordinarily contact the ice, or alternatively covering such parts except for the tips of the bristles at the lower end of the broom, the sock providing a coarse surface for rubbing the ice while holding the broom bristles together. Within the sock is a lining having a surface that permits relative movement of the bristles during sweeping without catching on the sock or the lining, the sock and lining forming a cover having means for preventing undue stretching or twisting of the sock relative to the bristles.

11 Claims, 12 Drawing Figures



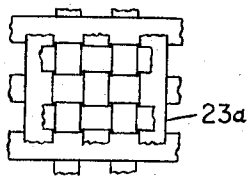


Fig. 1a

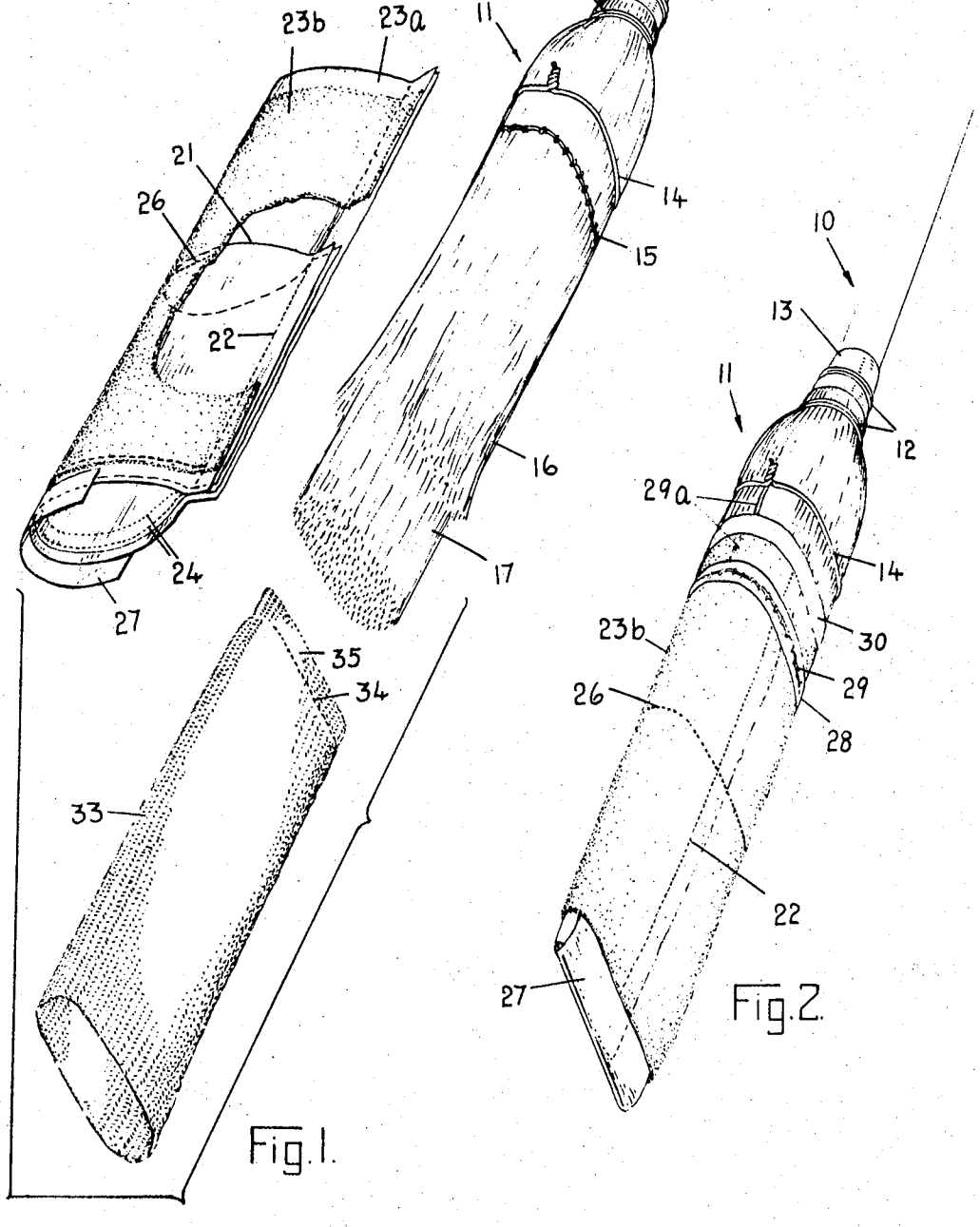


Fig. 1.

Fig. 2.

Fig. 3.

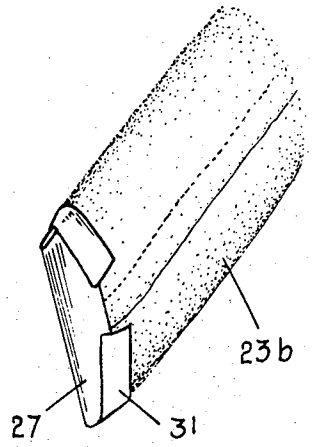


Fig. 4.

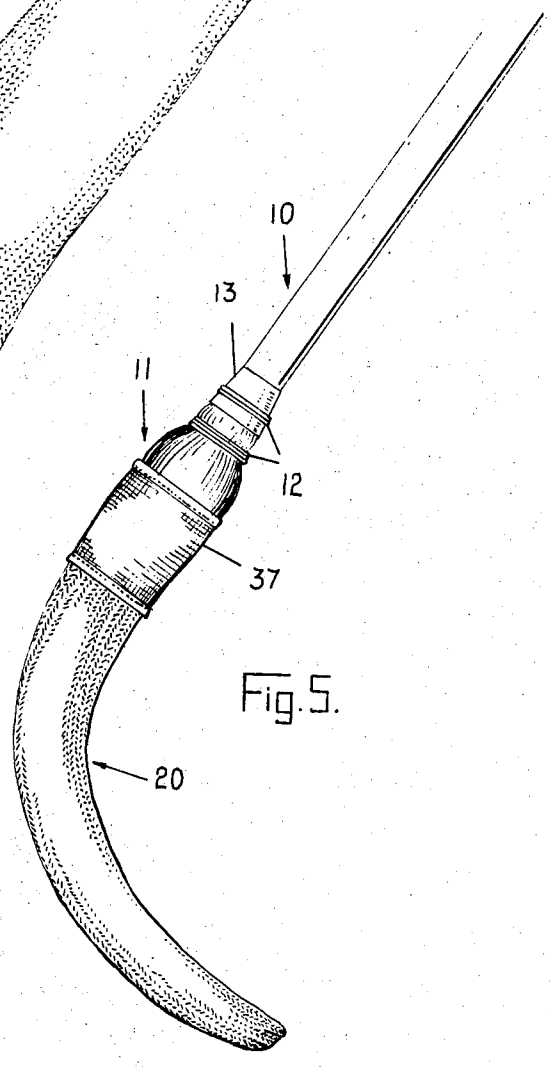


Fig. 5.

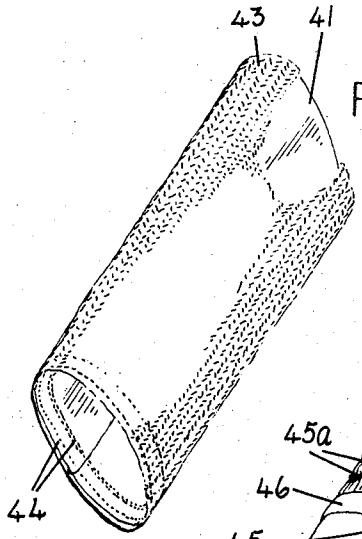


Fig. 8.

Fig. 7.

Fig. 6.

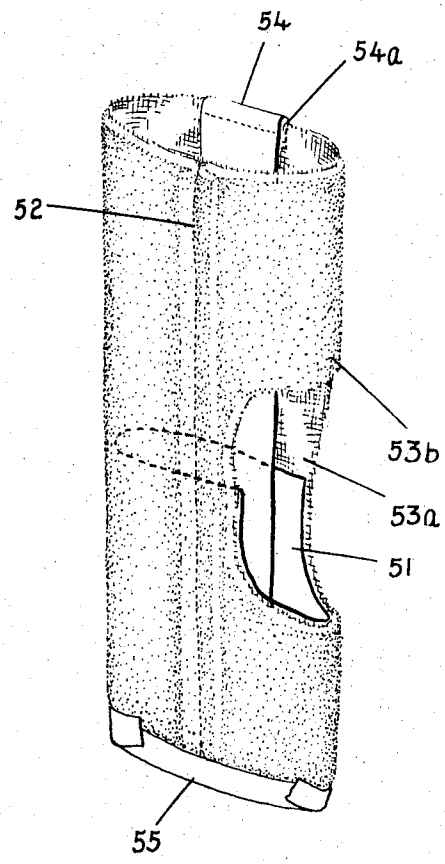
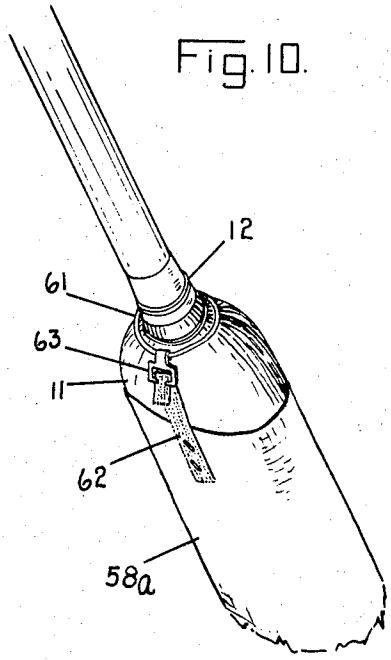


Fig. 9.

Fig. 10.



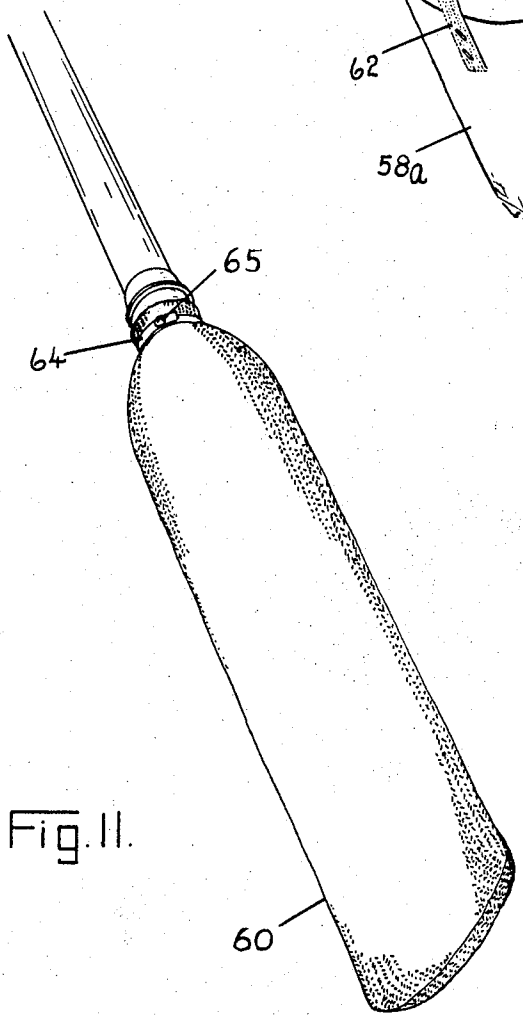


Fig. 11.

CURLING BROOM AND COVER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to curling brooms, in particular to brooms having a head formed of elongated bristles bundled together, the bristles preferably being corn bristles.

2. Description of the Prior Art

The sweeping action of curlers may be vigorous, and it is desirable to prevent the bristles of their brooms from splaying outwardly, while allowing longitudinal flexing of the broom head.

During sweeping, bits of the vegetable fibre bristles of conventional brooms may break off and fall into the path of the curling stone.

SUMMARY OF THE INVENTION

The present invention provides a flexible cover for the while or for a major part of the flexible portion of the broom head. The upper end of the cover is secured to the broom, and the cover does not bind the bristles so tightly that they cannot slide relative to one another and the cover. Thus, although the cover holds the bristles together at the lower end of the broom, it is sufficiently loose that the bristles can slide and the broom head can flex. The cover preferably has an inner surface on which the bristles can slide easily without snagging or catching on it. The outer surface of the cover is wear-resistant and coarse, so as to provide a good rubbing action on the surface of the ice, but is free of relatively hard portions that would score or damage the ice. Thus the ice is polished primarily by the cover rather than by the bristles, but the broom can have the same flexibility and "feel" as a conventional corn broom. The cover can enclose the ends of the bristles so that if bits of bristles break off they are retained within the cover and are not strewn on the ice. When the cover encloses the ends of the bristles it provides room for relative longitudinal movement of the bristles within the cover as the head flexes, to minimize breakage.

Preferably the cover is pervious to air so that if moisture penetrates to the bristles they can dry out.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention are illustrated by way of example in the accompanying drawings.

FIG. 1 is a perspective view of components of a curling broom before assembly, parts being broken away;

FIG. 1a is an enlarged view of part of one of the fabrics used in the embodiment of FIG. 1;

FIG. 2 is a perspective view showing a stage in the assembly of components illustrated in FIG 1;

FIG. 3 is a perspective view of the lower end of the curling broom illustrated in FIG. 2 in a further stage of assembly;

FIG. 4 is a perspective view, with parts broken away, of the curling broom illustrated in FIGS. 2 and 3 in its final assembled condition;

FIG. 5 is a side view of the broom of FIG. 4 with its head flexed as in sweeping;

FIG. 6 is a perspective view of another curling broom, of different construction than the broom of FIG. 5, also with its head flexed;

FIG. 7 is a perspective view, partly broken away, of the broom illustrated in FIG. 6;

FIG. 8 is a perspective view, partly broken away, of the cover of the curling broom illustrated in FIGS. 6 and 7;

FIG. 9 is a perspective view of alternative parts of a curling broom cover;

FIG. 10 is a perspective view, partly broken away, showing an alternative manner of attaching parts of a cover to a broom; and

FIG. 11 is a perspective view of the broom of FIG. 10 with the cover completely assembled on the broom.

DESCRIPTION OF THE PREFERRED EMBODIMENTS:

The curling broom of FIGS. 1 to 5 inclusive has an elongated wooden handle 10 and a sweeping head 11 (FIG. 1). The head 11 consists of elongated broom corn bristles (sweeping straws) bundled together and fastened to the handle with the aid of wires 12 and a metal cap 13. Well up the head 11 are a tight wire binding 14 and a tight string binding 15. The broom head has a skirt 16 of bristles which terminate short of the lower end of the bulk 17 of the bristles. As so far described the broom is of conventional construction. Although bristles of materials other than broom corn can be used, broom corn bristles have the weight, flexibility and other characteristics that are generally preferred to give the desired sweeping action of a straw curling broom.

According to the present invention the head 11 or the flexible portion of the head, i.e., the portion beginning below the tight binding 15, or at least a major part of said flexible portion, is provided with a flexible cover. In the embodiment of FIGS. 1 to 5 the cover is designated by reference numeral 20 and in the embodiment of FIGS. 6 to 8 by reference numeral 20'. The cover fits snugly around the broom head but is sufficiently loose-fitting that it does not interfere substantially with the flexing of the head. As the head flexes, the individual bristles of the head slide longitudinally relative to one another, and the cover permits such relative longitudinal movement, the cover being fastened to or suspended from the broom adjacent its upper end only.

The cover 20 of FIGS. 1 to 5 has three principal layers. The inner layer or lining 21 has a smooth inner surface with a low coefficient of friction to permit the bristles within it to slide without catching or snagging on the cover. The layer 21 can suitably consist of a polyvinyl chloride sheet stitched or otherwise fastened along a line 22 to form a tube, and this tube surrounds the longer bristles 17 and extends upwardly for enough to surround the lower ends of the shorter bristles 16 in any condition of flexure that the head can assume.

The next or intermediate layer of the cover 20 consists of an inner tubular part 23*a* and an outer soft fibrous covering 23*b*. The tube 23*a* is relatively inextensible (as is the inner layer 21), and, as will be seen, it is the part of the cover which can be firmly secured at its upper end to the broom. It consists preferably of a sheet of woven synthetic plastic material, for example the polyolefin film material sold by E.I. DuPont de Nemours under the trade mark "Fabrene", stitched, glued, taped or stapled as at 22 to form a tube. The lower end of the tube 23*a* is fastened to the inner layer 21 by a double row of stitching 24 or other means. If, as in the embodiment illustrated, the inner layer 21 does not completely line the tube 23*a*, it is desirable

that this tube **23***a* present to the broom bristles a surface along which the bristles can easily slide, and the "Fabrene" fabric, which is woven of thin flat ribbons or strips (see FIG. **1***a*), presents a smooth surface with a low coefficient of friction and serves the purpose well. It has the advantage that (like the fibrous covering **23***b* and the outer layer **33** described below) it is pervious to air so that if the broom becomes wet it can dry out with the cover in place on the broom head. Being woven the tube **23***a* is flexible. The polyvinyl inner layer **21** provides a superior surface for sliding of the bristles without catching, but is not pervious to air and is somewhat stiffer and that is why it is preferred to terminate this inner layer short of the upper end of the cover **20** so that the cover is particularly flexible above it, i.e., about midway along the length of the head **11** where the greatest flexure is required. The inner layer **21** provides some additional weight at the part of the broom which strikes the ice.

At the lower end of the tube **23***a* is attached an adhesive tape **27** (adhesive on its inner surface only). The tape **27** forms a flap that can be folded over as shown in FIG. **2** to close the lower ends of the tubes **23***a* and **21**, although other means of closing and sealing the lower ends of the tubes can be employed. The broom head **11** is inserted into the tubes **23***a* and **21** until the lower ends of the bristles are about one to two inches above the closed ends of the tubes, and the tube **23***a* is then firmly secured to the head of the broom, one way of doing this being to wrap adhesive masking tape **28** around the layer **23***a*, **23***b* and then to apply a tight string binding **29** around the broom and sewn through the bristles. String ties **29***a* can be provided between the binding **29** and the bindings **15** and **14** to ensure that the cover cannot slide downwardly off the broom. Adhesive tape **30** can then be wound around the upper edges of the tube **23***a* and covering **23***b*, this tape also covering the string binding **15.**

The tape **27**, or other means of sealing the ends of the tubes **23***a* and **21**, reinforces the lower ends of the tubes against wear from both the inside and outside. These lower ends are spaced sufficiently below the ends of bristles **17** that when the broom end if flexed in sweeping there is room for relative longitudinal movement of the bristles towards the closed ends without undue restraint on the ends of the broom corn fibres. If room is not provided, the tips of the bristles can be bent or broken.

As shown in FIG. **3**, an additional strip of tape **31** may be provided to hold the flap **27** closed.

The outer layer **33** of the broom cover is a fabric consisting preferably of a knitted tubular sock. One end of the sock is closed by stitching **34.** The sock **33** is pulled over the assembly shown in FIG. **2** or **3**, being turned inside out in the process so that the fringe **35**, beyond the stitching **34**, is concealed within the cover. The upper end of the sock overlaps the binding **29** and the tape **30**, which is adhesive on both sides and thus sticks to the sock. The sock can be further held at its upper end by winding adhesive tape **36** around its upper end and up around the wire binding **14** (see FIG. **4**). Alternatively, the sock can be secured at its upper end to the broom head by inserting it under the wire binding **14** before tightening the binding **14.** A conventional ornamental band **37** can then be slipped over the broom head to conceal the tape **36.**

The sock **33**, being knitted, provides a coarse outer surface for the cover **20.** A coarse surface is desired because it is this surface which contacts the ice during sweeping, and the surface should be rough to rub against the ice and dislodge any foreign matter, and to polish the ice. Vigorously sweeping the ice with the broom can produce a thin film of water like that obtained by sweeping with a conventional curling broom. The outer surface of the cover is soft and free of hard portions that might score the ice.

The sock **33** is preferably made of synthetic fibres, such as the polyester nylon, having a fibrous surface. Such a knitted sock is stretchable. However, as already noted, the intermediate tube **23***a*, which is fixed at its upper end to the broom, is relatively inextensible and has a fibrous covering **23***b*. This covering cannot be displaced from the tube **23***a*, being attached to it by peripheral stitching **24, 26, 29,** by one or more rows of longitudinal stitching **22,** and by the tapes **28, 30** and **36.** The fibrous covering **23***b* is in close contact with the sock **33** and holds the sock against stretching and twisting relative to the rest of the broom. A suitable fibrous covering **23***b* is provided by the polyethylene terephthalate (polyester) fibre sold by CEL-CIL Fibres Limited under the trade mark "Fortrel"; this is a fuzzy or hairy material that clings to the sock and does an excellent job of holding the sock in place. It also provides a cushion as the sides of the broom strike the ice during vigorous sweeping.

Where the outer layer or sock **33** is made of nylon it has a long life, but if the sock becomes worn it can easily be replaced by removing the tape **36.** If bits of broom corn break off, they collect in the closed end of the tube **21** of cover **20** and are not strewn on the ice, and they do not interfere with the use of the broom. The sock **33** protects the bristles from wear, and a broom made as shown in FIGS. **1** to **5** can outwear a conventional broom without having to replace the sock, but the sock can be replaced, as noted above, if it is torn or worn.

To ensure that the broom has about the same weight and "feel" as a conventional broom, the number of bristles **17** at the lower end can be reduced about 15 percent as compared to a conventional broom, the resultant loss of weight being compensated for by the weight of the cover. If it is desired to vary the flexibility or "flop" of the broom, the stiffness of the cover can be increased by winding a tape around its midportion.

FIGS. **6** to **8** illustrate an alternative construction in which the cover **20'** does not provide as much protection for the broom corn, and does not prevent broken bits from reaching the ice but which nevertheless provides a broom with an excellent sweeping action, the bristles below their tight bindings **14** and **15** being collected by the cover. The cover **20'** consists of only two layers, the inner layer **41** being a tube made from a woven sheet of "Fabrene" similar to the sheet from which tube **23***a* was made in the first embodiment. The outer layer **43** is a softer tubular sock of knitted nylon. Before the tube **41** is put onto the broom head the lower ends of the tube **41** and sock **43** are fastened together by sewing, glue, tape, staples or other means, as at **44.** Then the cover is pulled over the handle **10** and down the broom to the position shown in FIG. **7**, where a tight binding **45** is stitched around the upper end of the tube **41** and through the broom head and is connected by ties **45a** to the bindings **15** and **14.** Tape **46,**

adhesive on both sides, is wound around the upper end of the tube **41** and then the upper end of the sock **43** is pressed onto this tape **46** and sticks to the tape, or alternatively the upper end of the sock can be fastened under the metal binding **14.** A further layer of tape (not shown) similar to the tape **36** of FIG. **4,** and adhesive on its inner surface only, is then wound around the upper part of the sock and over the bindings **15** and **14,** and an ornamental band **37** is slipped over this. Because, in this embodiment, both ends of the sock **43** are attached to the corresponding ends of the relatively inextensible tube **41,** no intermediate layer is required to hold the sock against being stretched out of shape, although the sock between its ends can stretch and oscillate relative to the tube **41** during sweeping as the sock is brought into contact with and drawn over the ice surface. In the construction of FIGS. **1** to **5,** where the cover extends around the lower end of the broom, the sock (save at its upper end) is preferably free of tight attachment to the other parts of the broom, particularly at its lower end, but the frictional grip of the intermediate layer **23b** permits limited oscillation of the sock relative to the tube **23a** while restraining the sock from being pulled out of shape.

In the broom of FIGS. **6** to **8** the tips of the bristles **17** contact the ice, and these tips are held in a compact bundle by the cover **20'** which is sufficiently loose-fitting and sufficiently smooth on its innermost surface that it does not impede relative sliding of the bristles. During vigorous sweeping the sock **43** also contacts the ice, and its coarse outer surface does an effective sweeping job.

In FIG. **9** is shown another arrangement of inner and intermediate layers of a curling broom cover, for use instead of the assembly **21, 23***a* and **23***b* shown in FIG. **1.** In the embodiment of FIG. **9,** the inner layer **51** is a polyvinyl chloride sheet similar to the layer or lining **21,** but the intermediate layer consists of a tube **53a** of closely woven and durable cloth of, for example, nylon, or the material sold by E.I. DuPont de Nemours under the trade mark "Dacron". To the outside of tube **53***a* is adhered a soft fibrous covering **53***b* of "Fortrel" or the like. In the embodiment shown, the inner and intermediate layers **51, 53***a*, *53b* are formed into a tube by a line of stitching **52,** and inside the tube, opposite the stitching **52,** is inserted a strip **54** of woven "Fabrene" material, the strip **54** being approximately as wide as the head of the broom. This strip **54** provides smooth reinforcement for the tube opposite the reinforcement provided by the stitching **52,** in an area where the tube is likely to wear. The lower part of the strip **54** can be stitched to the layers **51, 53***a*, *53b*, and its upper end is bent over, as at **54***a*, and stitched with the rest of the tube to the head of the broom in the same way as the tube **23***a* of FIG. **1.** The lower end of the tube of FIG. **9** can be taped shut, as at **55,** and of course the tube is then enclosed by a flexible, coarse, but soft covering, as for example by a knitted sock similar to the sock **33** heretofore described.

FIGS. **10** and **11** illustrate the preferred way of fastening the broom cover to the broom head. The cover illustrated consists of an inner, relatively inextensible, flexible tube **58***a* (which could be the same as the tube **23***a* of FIGS. **1** to **5,** or as the tube **53***a* of FIG. **9**), closed at its lower end (not shown) and an outer knitted sock **60.** Instead of being stitched to the broom head **11** the tube **58***a* is suspended by a pair of identical elastic bands **62** (only one band **62** is visible in FIG. **10,** the other being at the opposite side of the broom). The bands **62** may consist of elastic webbing secured to the tube **58***a* by stapling, stitching or other means, and pass at their upper ends through buckles **63** hooked to a stiff wire loop **61** which fits loosely around the end of the head **11** close to the wire binding **12.** The longitudinal position of the tube **58***a* on the head **11** and the tension in the bands **62** can be adjusted by adjustment of the bands **62** relative to the buckles **63.** When the head **11** is flexed the bands **62** stretch, the tube **58***a* moving downwardly as the bristles of the head slide relative to one another. When the head **11** ceases to be flexed the bands **62** restore the tube **58***a* to its position before flexure. The outer sock **60** is sufficiently long that it can be clasped around the top of the head **11** by an elastic band or web **64** secured by a dome fastener **65.** The longitudinal tension in the sock **60** can be adjusted by stretching the sock to the desired extent before wrapping the band **64** around it. The securement of the cover to the broom by means of the bands **62, 64** makes it possible to adjust the inner and outer parts of the cover independently and also makes it easy to remove the parts for replacement if necessary. To prevent undue stretching of the sock **60** the tube **58***a* should have a fibrous covering (not shown) similar to the covering **23***b* of FIG. **1.**

What I claim as my invention is:

1. A curling broom and cover comprising an elongated handle, a plurality of individual bristles bundled to constitute a broom head secured adjacent its upper end to the handle with its lower end free to flex, and a flexible cover surrounding at least a major portion of the head to hold the bristle together at the lower end of the broom, said cover having its upper end secured to the broom so as not to be be dislodged by sweeping and being sufficiently loose-fitting to permit movement of the individual bristles relative to one another and to said cover, the cover comprising an inner layer having an inner surface, with a low coefficient of friction, along which the bristles can slide during sweeping without snagging, an outer ice-contacting layer having a coarse wear-resistant surface for rubbing the ice, and an intermediate layer adapted to limit relative movement between said inner and outer layers, all outer parts of the cover that contact the ice during sweeping being soft so as not to damage a smooth ice surface on striking it.

2. A curling broom and cover as claimed in claim **1,** wherein the bristles are vegetable fibre bristles slidable along said inner surface which is smoother and harder than said outer surface.

3. A curling broom and cover as claimed in claim **1,** wherein said cover is closed at its lower end to enclose the lower end of said head but provides sufficient room within the cover to permit relative movement of said bristles during sweeping.

4. A curling broom and cover as claimed in claim **3,** including outer bristles shorter than inner bristles, the cover having an additional flexible layer at its lower end adding to the weight thereof.

5. A curling broom and cover as claimed in claim **1,** wherein said intermediate layer is fixed to the inner layer, the inner and intermediate layers being substantially inextensible, the intermediate layer having an outer fibrous surface that frictionally engages the outer layer to restrain stretching and twisting thereof.

6. A curling broom and cover comprising an elongated handle, a plurality of individual bristles bundled to constitute a broom head secured adjacent its upper end to the handle with its lower end free to flex, and a flexible cover pervious to air and surrounding at least a major portion of the head to hold the bristles together at the lower end of the broom, said cover being closed at its lower end to enclose the lower end of the broom and having its upper end secured to the broom so as not to be dislodged by sweeping and being sufficiently loose-fitting to permit movement of the individual bristles relative to one another and to said cover, the cover having an inner surface of air pervious plastic material along which the bristles can slide during sweeping without snagging and an outer air pervious coarse wear-resistant surface for rubbing the ice, all parts of the cover that contact the ice during sweeping being soft so as not to damage a smooth ice surface on striking it.

7. A curling broom and cover as claimed in claim 6, wherein said air pervious plastic material comprises a fabric lining of woven plastic strips.

8. A curling broom and cover comprising an elongated handle, a plurality of individual bristles bundled to constitute a broom head secured adjacent its upper end to the handle with its lower end free to flex, and a flexible cover surrounding at least a major portion of the head to hold the bristles together at the lower end of the broom, said cover being closed at its lower end to enclose the lower end of the broom and having its upper end fixed to the broom by an elastic connection which prevents the cover from being dislodged by sweeping but permits relative longitudinal movement between the cover and the broom during sweeping, the cover being sufficiently loose-fitting to permit movement of the individual bristles relative to one another and to said cover, the cover having an inner surface along which the bristles can slide during sweeping without snagging and an outer coarse wearresistant surface for rubbing the ice, all parts of the cover that contact the ice during sweeping being soft so as not to damage a smooth ice surface on striking it.

9. A curling broom and cover as claimed in claim 8, wherein said cover comprises an inner layer having a low coefficient of friction, an outer ice-contacting layer having said coarse surface, and an intermediate layer adapted to limit relative movement between said inner and outer layers.

10. A curling broom and cover comprising an elongated handle, a plurality of individual bristles bundled to constitute a broom head secured adjacent its upper end to the handle with its lower end free to flex, and a flexible cover surrounding at least a major portion of the head to hold the bristles together at the lower end of the broom, said cover having its upper end secured to the broom so as not be be dislodged by sweeping and being sufficiently loosefitting to permit movement of the individual bristles relative to one another and to said cover, the cover surrounding substantially the entire flexible portion of the head but at least the bulk of the individual bristles extending beyond the lower end of the cover, the cover comprising a tubular lining having an inner surface along which the bristles can slide during sweeping without snagging and an outer tube having an outer wear-resistant surface, less smooth than said inner surface, for rubbing the ice, the lining being secured at its ends to the ends of the tube, all parts of the cover that contact the ice during sweeping being soft so as not to damage a smooth ice surface on striking it.

11. A curling broom and cover as claimed in claim 10, wherein the outer surface is of coarse knitted fibrous material and the inner surface is of harder plastic material and the bristles are vegetable fibre bristles.

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