May 15, 1962 N. B. McCORMICK ETAL 3,034,815

HANDLE COUPLING

Filed March 27, 1959

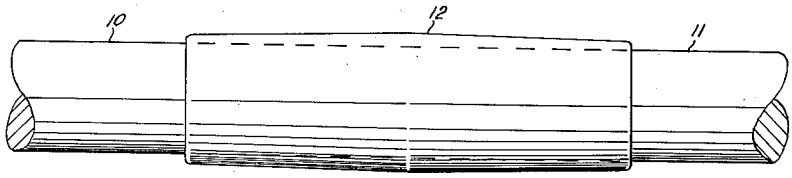


FIG. 1.

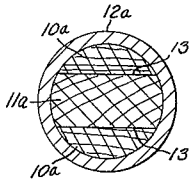


FIG. 3.

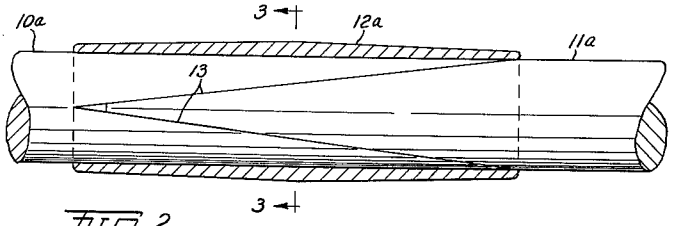


FIG. 2.

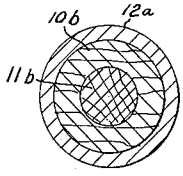


FIG. 5.

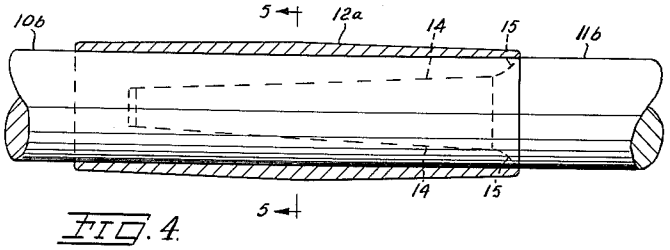


FIG. 4.

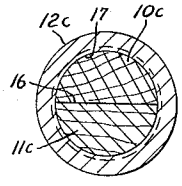


FIG. 7.

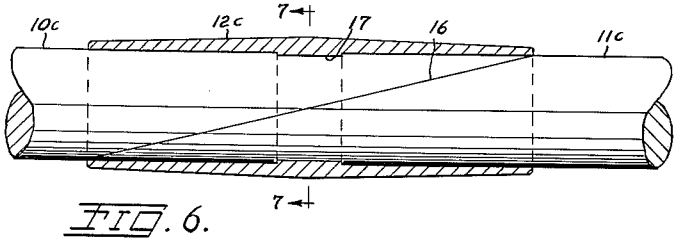


FIG. 6.

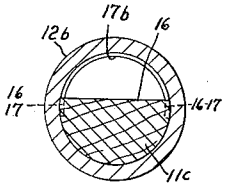


FIG. 9.

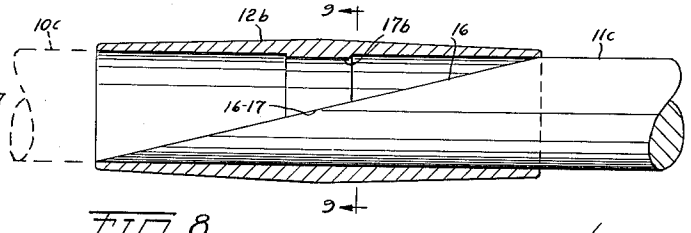


FIG. 8.

INVENTORS
Nelle B. McCormick
Norman W. Barmeier

BY

AGENT

United States Patent Office 3,034,815 Patented May 15, 1962

3,034,815

HANDLE COUPLING

Nelle B. McCormick and Norman W. Barmeier, St. Helens, Oreg., assignors to St. Helens Wood Products Company, St. Helens, Oreg., a corporation of Oregon

Filed Mar. 27, 1959, Ser. No. 802,396
2 Claims. (Cl. 287—104)

This invention relates generally to wooden handles for push brooms or mops and more particularly to a handle made of two half lengths sections coupled together to make a complete handle.

For many reasons including cost, custom, poor heat conductivity, light weight, feel, etc., the great majority of broom and mop handles are made of wood and are equally acceptable in the trade when made either of hardwood or semi-hard wood. However, clear, straight pieces of wood suitable for making handles therefrom are getting more and more expensive and less readily available.

For this reason more and more effort is being put to the discovery of ways and means satisfactorily to make full length handles from shorter pieces of wood.

It is a principal object of this invention to provide a method and means for adapting for assembly and assembling two half-length sections of wood handle material into a completely assembled low cost wood handle for a push broom or mop.

It is a second object to provide a completely satisfactory low cost coupling for assembling a pair of half-length sections of wood handle into a full length handle.

It is a third object to provide an improved wood handle for a mop or a push broom which improved handle consists of a pair of half-length wood handle sections together with a plastic coupling for reinforcing the joint between the wood sections.

It is a fourth object to disclose a plurality of joint designs for the mating ends of the two half sections of a wood handle and a plurality of coupling designs best adapted respectively to be used with the plurality of joint designs.

How these and other objects are attained is disclosed in the following specifications referring to the attached drawing in which FIG. 1 shows an exterior view in side elevation of the adjacent fragmental ends of a pair of half length wood handle sections securely joined together with one of the plastic couplings of this invention to provide one of the improved handles of this invention.

FIG. 2 is a fragmental view in side sectional elevation of one form of the coupling of this invention applied to a mating pair of adjacent handle section ends with which the particular coupling form is adapted to be used.

FIG. 3 is a section viewed along the line 3—3 of FIG. 2.

FIG. 4 is a fragmental view in side sectional elevation of the coupling of FIG. 2 applied to a different mating pair of adjacent handle section ends with which the same coupling form is adapted to be used.

FIG. 5 is a section viewed along the line 5—5 of FIG. 4.

FIG. 6 is a fragmental view in side sectional elevation of a second form of the coupling of this invention applied to a mating pair of adjacent handle section ends to which the particular coupling form is adapted to be applied.

FIG. 7 is a section viewed along the line 7—7 of FIG. 6.

FIG. 8 is a fragmental view in side sectional elevation of a third form of the coupling of this invention showing how a mating pair of adjacent handle section ends can best be coupled by this specific coupling.

FIG. 9 is a view in section along the line 9—9 of FIG. 8.

Like reference numerals refer to like parts in the several figures of the drawing.

Referring now to the drawing in FIG. 1 there is shown,

in side elevation, adjacent end fragments of a pair of half lengths **10** and **11** of a full length wood handle for a mop or a push broom made by coupling the half lengths, **10**, **11**, together with a plastic coupling sleeve **12**.

FIGS. 2 and 3 show specific forms of half length handles, **10***a*, **11***a*, and sleeve, **12***a*, with which one form of a complete handle of this invention is made. The end of half length round wood handle, **10***a*, is shown to be notched along the lines **13** for about the length of coupling **12***a* and inserted into the smoothly cylindrical interior surface of sleeve **12***a* the full length thereof, after which the chisel pointed end of half length round wood handle, **11***a*, is inserted into the other end of sleeve **12***a* to engage half handle **10***a* along the surfaces **13**.

Handles of the types shown here have been successfully made and used in which the round wood handle parts have been close to seven eighths of an inch in diameter. The length of the coupling sleeve is about three and one half inches and the inside diameter of the sleeve is about four mils larger than the diameter of the round wood handle parts. The outer diameter of the sleeve is greatest at its mid-length and converges towards its respective ends. The sleeve wall is about thirteen mils thick at its mid-length and about six mils thick at its ends.

The sleeve is molded of a high strength plastic material. Good results have been secured by using a high impact styrene plastic such as "High Test 88" of the Monsanto Chemical Company. The adhesive used with this material to secure the sleeve to the wood handle parts and to secure the wood handle parts together is made up of a solvent, like benzene, for the plastic into which a small amount of the plastic is dissolved.

In the above described assembly of the parts of FIGS. 2 and 3 the forked end of part **10***a* was dipped into the solvent for the length of the sleeve then pushed into the sleeve. Then the chisel end of part **11***a* was dipped into the solvent for the length of the sleeve and then firmly engaged through the other end of the sleeve with the sleeve and part **10***a* along the lines **13**. Parts **10***a*, **11***a* and **12***a* quickly are found to be firmly and permanently secured together. Rather than interfering with the use of the handle the plastic sleeve becomes a useful hand grip aiding in the use of the broom or mop to which the handle is applied.

FIGS. 4 and 5 show at the mating ends of half length wood handle parts **10***b* and **11***b* another form of handle structure in which the sleeve **12***a* is conveniently used. In this specific form of this invention it is seen that the end of wood handle part **10***b* is formed with an axial hole sunk therein having a conical surface **14**, opening outwardly at the end of part **10***b* with a smooth bell end **15**. The end of wood handle part **11***b* is formed as shown to be inserted into the end of part **10***b* to mate therewith along the surfaces **14** and **15**.

In this case the end of part **10***b* would be dipped in adhesive liquid and pushed into the full length of sleeve **12***a* which then would become a strengthening ferrule for part **10***b*. Next the reduced diameter end of part **11***b* would be dipped into the adhesive liquid and firmly pushed into the end of part **10***b* to seat firmly therein along the surfaces **14** and **15**.

A preferred form of the complete handle of this invention is fragmentally shown in FIGS. 6 and 7 in which the mating ends of the two wood handle parts **10***c* and **11***c* are identically ended along a plane oval surface **16** at a large angle to the plane **7—7**. This is the simplest form with which to terminate the parts **10***c* and **11***c* and to use the sleeve **12***c* to give the greatest strength to the union of parts **10***c*, **11***c*, and **12***c*. It is desirable that part **12***c* will give a maximum of radial support to parts **10***c* and **11***c* at and near the section **7—7**. For this reason, for

about one fourth inch on either side of section 7—7 the inner surface of sleeve **12***c* is interrupted for an appreciable distance longitudinally thereof to form an inwardly extending annular band **17** about four mils thick. In this case when the sloping ends of parts **10***c* and **11***c* are dipped into the liquid adhesive and pressed endwise together from either end into sleeve **12***c*, parts **10***c* and **11***c* will slide endwise towards each other along their surfaces **16** and exert radially on annular band **17** a pressure several times as great as the endwise assembly pressure exerted on parts **10***c* and **11***c*. Although the outward radial pressure will finally be exerted by parts **10***c* and **11***c* on the entire inner surface of sleeve **12***c*, the greatest support area of sleeve **12** for the mating ends of parts **10***c* and **11***c* will come at band **17**.

FIGS. 8 and 9 show a variation **12***b* of the sleeve **12***c* which is desirable to be used where it is desired to secure the sleeve **12***b* to the wood handle part **11***c* at the factory and to secure the wood handle part **10***c* to parts **11***c* and **12***b* at the time the handle is to be put into use. In the case of sleeve form **12***b* the band **17***b* is seen to be formed on the inner surface of sleeve **12***b* only upwardly of the surface **16**.

To assemble the part **11***c* into sleeve **12***b*, the end of part **11***c* for the length of surface **16** is inserted from the proper end into sleeve **12***b* until the sharp outer edges of surface **16** of part **11***c* engage under the ends of half band **17***b* along the surfaces **16—17**. Later when it is desired to complete the handle the mating end of handle part **10***c* will be dipped into the adhesive liquid and then pushed firmly into the vacant part of the interior of sleeve **12***b* to slide along the surface **16** and finally come to rest secured between part **11**–*c* at surface **16** and the curved interior of sleeve **12***b* with the greatest support of sleeve **12***b* on part **10***c* being given under part band **17***b*.

Having recited some of the objects of our invention, illustrated and described several forms in which our invention can be practiced and explained the operations thereof, we claim

1. A coupling section including the adjacent coaxial overlapping similar ends of a pair of substantially rigid round wooden bars formed within said section to be substantially uniform in outer surface and divided one from the other for the approximate length of said coupling section along a plane oval surface at a large angle to a plane normal to the axis of said section, together with a one piece continuous coupling tube secured over the outer cylindrical surfaces of said ends of said bars at said coupling section, the inner surface of said coupling tube at said coupling section including means formed thereon to engage said outer cylindrical surfaces of said ends of said bars when said oval surface of said rods are engaged one on the other to prevent either of said rods from turning in said tube.

2. A handle coupling for coupling a sectional wooden handle for a mop or broom, said handle including alining sections having lapping abutting ends bevelled to provide opposed wedges each having a flat face contacting with the flat face of the opposed wedge and said coupling comprising a high impact strength molded plastic sleeve surrounding the lapping ends of said wooden handle sections, said coupling being formed to be conically increasing in outside diameter from near either its ends to its center cross section, said coupling being formed with a uniform bore adapted to receive through its ends the lapping ends of said wood handle sections and said bore of said plastic coupling being interrupted for an appreciable distance longitudinally thereof to a smaller diameter to engage the surface of said alining wooden section with the interruption in the inner surface of said bore when said alining sections are longitudinally shifted to subject said sleeve to outward pressure thereby to restrain said ends against movement one from the other without perforating the wall of said plastic coupling.

References Cited in the file of this patent

UNITED STATES PATENTS

284,939	Bain	Sept. 11, 1883
1,194,894	Standefer	Aug. 15, 1916
1,263,050	Fargo	Apr. 16, 1918
1,446,144	Adams	Feb. 20, 1923
1,467,115	Rauhoff	Sept. 4, 1923
1,870,976	Welch	Aug. 9, 1932
1,972,653	Hart	Sept. 4, 1934
2,062,986	Baxter	Dec. 1, 1936
2,167,865	Beecher	Aug. 1, 1939
2,379,990	Rembert	July 10, 1945
2,468,985	Krotz	May 3, 1949
2,490,316	Ostrak	Dec. 6, 1949
2,498,831	Veitch	Feb. 28, 1950
2,763,506	Denker et al.	Sept. 18, 1956
2,832,816	Curtiss	Apr. 29, 1958
2,849,741	Hardman et al.	Sept. 2, 1958
2,854,684	Hardman et al.	Oct. 7, 1958