

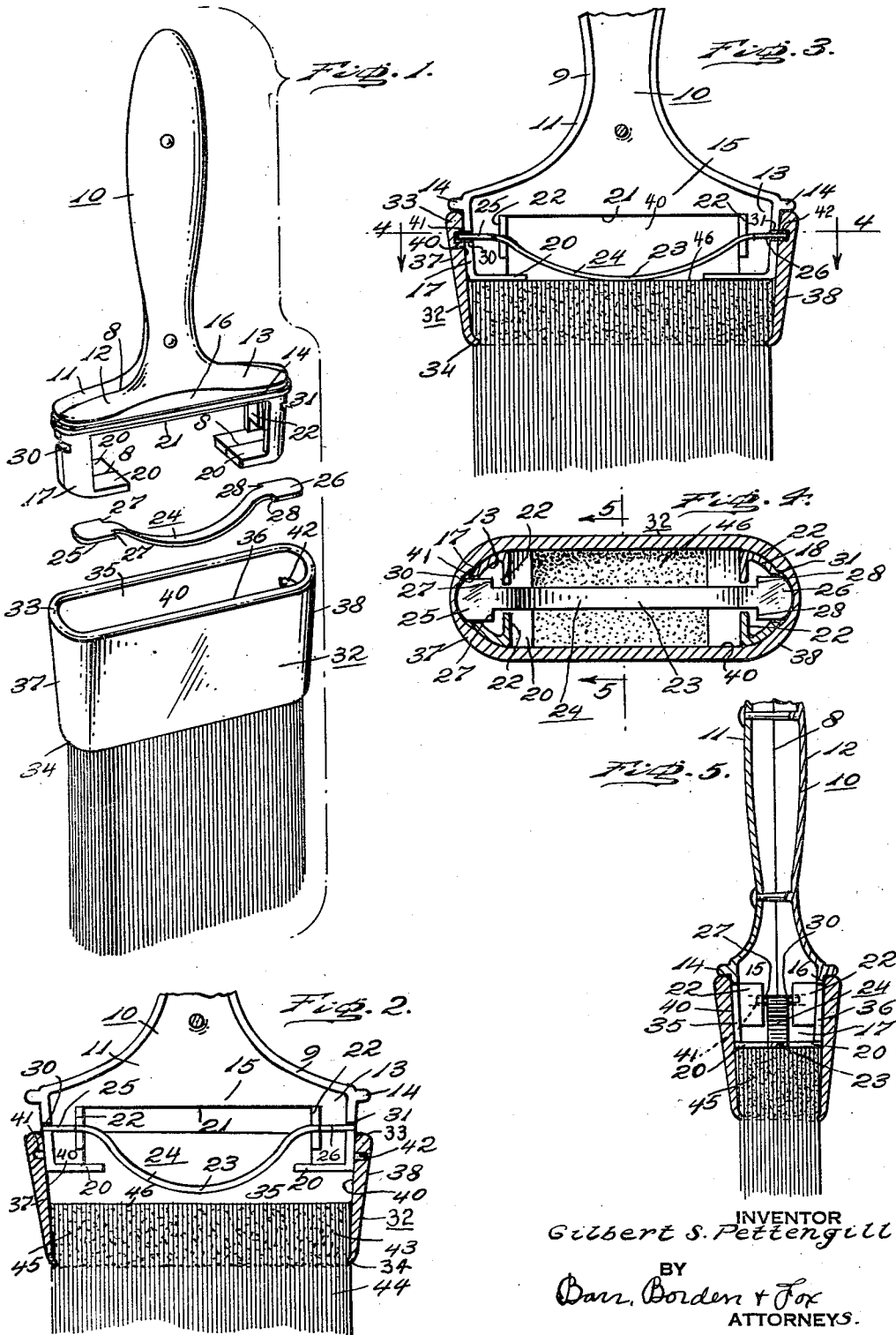
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HANDLE AND FERRULE ASSEMBLY FOR BRUSHES

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HANDLE AND FERRULE ASSEMBLY FOR BRUSHES

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4 Claims. (Cl. 15—171)

This invention relates to brushes, and particularly to improvements in handle and ferrule assembly for paint brushes, and the like.

Paint brushes as presently conventionally formed usually incorporate a wooden handle portion having an enlargement which is generally oval in section transverse of the handle. A thin sheet metal ferrule is provided of proper internal dimensions as to slide over and surround the enlargement. The ferrule contains the ends of the bristles embedded in a layer of plastic such as rubber or like thermoplastic or thermosetting material. Brush stapling or nailing machines have become conventional, by which the telescoped handle enlargement and ferrule are nailed from both sides to attach the ferrule and enlargement into anchored relation, so that the bristles projecting from the ferrule are connected firmly to the handle.

There are numerous disadvantages to conventional brushes as thus provided. The proper wood properly seasoned has become scarcer and more expensive. The ferrules, being formed of light sheet metal, have inadequate strength to resist expansion of the portions contained therein and are frequently ruptured with a consequent scrapping of the brush, as incidents to varying moisture and heat exposures on the assembled brush. The nailing or stapling operation is an added labor and material expense that increases the production costs. With certain of the larger sizes of brushes attempts have been made to minimize the forces of expansion by additional nails or staples passing through the ferrule and into the upper ends of the bristles and the mass in which they are embedded. This adds to the costs without being any definite assurance that rupture or distortion of the ferrule and scrapping of the brush will not follow expansion within the ferrule.

In recognition of the possession by most present day brush manufacturers of the nailing and stapling machinery necessary for nailing assembled ferrules to wooden handles, while avoiding the necessity for the use of large units of scarce wood in the formation of brushes, applicant has invented a metal handle with a formed compartment in which a nailable block, such as a small block of wood, can be mounted for association with the ferrule assembly, using the conventional nailing techniques to anchor the parts together. This invention forms the subject matter of an application Serial Number 669,322, filed by applicant on May 13, 1946. This has now matured into Patent No. 2,532,780, issued December 5, 1950.

The invention of said application as noted above, is quite satisfactory and compares quite favorably with wooden handle brush assemblies both in weight and cost. It is found, however, with conventional sheet metal ferrules, either soldered or riveted together in ferrule form, using said invention with a nailable block of wood, that expansion within the ferrule frequently disrupts same, and in any case the nailing or stapling step with its labor and material costs is necessary.

It is among the objects of this invention to improve the

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art of brushes; to provide improvements in ferrules for brushes; to provide a paint brush handle and ferrule of metal with means for anchoring them together without the use of nails or staples; to provide anchoring means forming resilient latches or bolts to anchor metal ferrules on metal handles for paint brushes; to provide a latching device for anchoring ferrules and handles of paint brushes together utilizing the telescoping of the parts for causing the latching device to engage and prevent retraction of the ferrule from the handle; to provide a paint brush handle and ferrule combination formed completely of metal which is light in weight and rigid in assembly; to effect improvements on the metal handle of Patent No. 2,532,780; and other objects and advantages will become more apparent as the description proceeds.

In the accompanying drawings forming part of this description:

Fig. 1 represents an exploded perspective of the metal handle, latching spring, and ferrule with its attached bristles.

Fig. 2 represents a transverse section of the partially telescoped ferrule and handle enlargement just prior to latched and bolted final assembly, with the handle portion in elevation.

Fig. 3 represents a similar section with the parts in fully telescoped permanently latched and locked assembly.

Fig. 4 represents a transverse section through the assembly of Fig. 3 taken on line 4—4 thereof.

Fig. 5 represents a vertical section through the assembled brush taken on line 5—5 of Fig. 4.

A feature of the said patent is that in forming the all-metal handle, it may be made in various forms and by various procedures. Thus, it may be a sand or like solid casting, it may be made of complementary stampings secured together, or it may be made of complementary die-cast halves. Within the broad scope of this invention, the handle portion may be made as desired, although for maintenance of light weight it is preferred to form complementary die or like cast halves, riveted together. The riveting may be either by separately attached rivets or a partial rivet may be cast integral with one half opposite a complementary aperture in the other half, so that the assembly of the handle, and of the latch to be described, can be a simple swaging or upsetting function, which forms a rigid complete handle with the spring latch anchored between the halves thereof.

In order to simplify the casting operations and to form a universal handle arranged either to receive a wooden or like nailable block in a compartment formed in the handle for the purpose, or alternatively with the latching device to be described, according to the wishes of the particular user, it may be found expedient to use a handle as disclosed in said Patent No. 2,532,780, slotted to receive the latch, as will be described.

Referring to the drawings, a metal handle is provided, comprising a shank portion 10, formed of complementary halves 11 and 12, preferably having mating edge surfaces 9 forming in assembly a thin parting line 8. The shank 10 merges into the enlargement 13, of generally oval contour having a short and a long axis, when the brush is to have a generally oval contour. The enlargement is preferably provided with a peripheral bead 14, extending longitudinally along the generally planar parallel faces 15 and 16, and generally arcuately about the generally arcuate terminal surfaces 17 and 18. The arcuate faces are continued axially of the shank in preferably slightly tapered disposition to termination at the lower end, opposite to the shank, in the terminal flanges 20. To save material and weight, the side faces 15 and 16 are cut away as at 21. Preferably, each half 11 and 12 is provided with short inward transverse flanges 22 mounted

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on the sides of the arcuate end portions 17 and 18 disposed normal to and above the flanges 20. These are preliminary anchoring devices for retaining the spring latch to be described within the handle portions when the latter are assembled.

A bowed spring element 24 is provided having a median bowed surface 23 and latching free ends 25 and 26 comprising bolts suitably shouldered as at 27 and 28 so as to engage behind the anchoring flanges 22, as shown in Fig. 2 with the spring 24 passing between and guided by the spaced juxtaposed flanges 22. In longitudinal alignment with the latching bolt ends 25 and 26 respectively, the arcuate end portions of the enlargement are provided with slots 30 and 31. In the normal assembly of the bowed spring latching device the latching ends terminate within the slots 30 and 31 so as not to protrude therefrom until pressure is applied generally in the center 23 of the bow 24. In the assembly of latching device and the assembled metal handle, the bowed center 23 of the spring 24 extends axially of the shank below the level of the longitudinally aligned flanges 20 on the arcuate end portions. This provides means whereby the bristle and plastic assembly in the ferrule, to be described, contacts and deforms the spring to force the latching ends thereof into latching assembly with the ferrule, as will be explained.

A ferrule 32 is provided which is generally oval in shape to conform to the profile of the enlargement on the handle, and has a general taper for this same purpose. The ferrule is preferably a single integral casting having a thickened upper end 33, tapering to a thinner internal lower end 34, and having generally parallel side walls 35 and 36 connected by generally arcuate end walls 37 and 38. An illustrative form of the ferrule provides a thickness at the upper edge of approximately $\frac{1}{8}$ ", and the ferrule tapers to a lower edge of approximately $\frac{1}{16}$ ". The internal surface of the ferrule is suitably formed with recesses, ribs and the like, to enhance the grip of the bristle-anchoring plastic mass, to be described, and additionally may be provided with a lower terminal internal bead or rib extending peripherally about the ferrule. Preferably the thin lower edge is slightly intumed, as shown, to anchor the bristles and their anchoring plastic means. The inner surface 40 of the ferrule, where it passes across the arcuate end surfaces, is provided with latching grooves or recesses forming downwardly presenting latching or keeper surfaces for the ends of bolts 25 and 26, respectively 41 in end wall 35, and 42 in end wall 36, disposed in longitudinal alignment of the ferrule, and both spaced above the lower terminal edge 34 so as to be above the plastic mass to be described, and below the upper edge or end 33 so as to register with the respective slots 27 and 28 respectively when the ferrule is in completely telescoped anchored assembly with the handle.

The ferrule as described is rigid and strong and capable of withstanding great force without yielding, and when both the handle and the ferrule are formed of light weight metal such as aluminum or the like, are light enough to be usably comparable with the weight of a wooden handle and sheet metal ferrule and nail assembly.

As a preliminary to the assembly with the metal handle formed as described above, the ferrule 32 is placed in telescoped relation to the upper ends 43 of the brush bristles 44, and these are held in relatively fixed relation while the plastic mass, such as the rubber-like compound customarily used, is poured into the ferrule below the transverse latch surfaces 40 and 41, and when hardened and set forms a solid transverse horizontal wall 45 having a generally flat upper surface 46 normal to the axis of the ferrule 30.

With the handle assembled as described and riveted into unitary form, and with the central part of the bow extending below the plane of the flanges 20—20, a predetermined amount necessary for the result to be described,

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a complete ferrule is brought into registration with the end of the enlargement in the beginning of a telescoping action of the ferrule over the enlargement. As the latching ends of the spring 24 are initially retracted and disposed within or internally of the respective slots 27 and 28, the bristle-mounting ferrule passes readily up upon the handle enlargement until the bow portion 23 of spring 24 is abutted by the relatively moving upper surface 46 of the substantially rigid plastic mass 45. Preferably, this engagement occurs before the ferrule attains its ultimate telescoped relation, so that deformation of the spring exerts lateral extending pressure on the free bolt ends 25 and 26, forcing them against the inner surface 40. Continuation of the axial movement increases the spring deformation and increases the extending pressure on the spring free ends against the inner surface 40. As the ferrule attains its ultimate telescoped relation with the upper end 33 thereof abutting with and disposed against and substantially under the peripheral bead 14 of the handle enlargement the spring bolt ends 25 and 26 respectively clear the latching surfaces or shoulders 41 and 42, permitting the ends to snap longitudinally outwardly through the slots 27 and 28 respectively and into locked interengagement with and under the latching keeper surfaces 41 and 42. When this ultimate interlocking telescoping relation has been established, the snugly fitted ferrule is anchored tightly on the handle enlargement, the locking tight fit is anchored by the engagement of the latching free bolt ends 25 and 26 under the latching keeper surfaces 41 and 42, and as the extension of these free ends is maintained by the pressure on the bowed spring 24 from the upper surface of the plastic mass, the interlocking is permanent.

It will be understood that in the preferred form of the invention the parts are "precision made" with relatively small tolerances so that the ferrule has a tight and relatively immovable engagement on the slightly tapering enlargement of the handle.

It will be obvious that many changes may be made in the handle and ferrule assembly described without departing from the spirit and intent of the invention thereof. For instance, although light weight metal is preferred, it is not essential, nor is it essential that either or both parts be of metal, as certain of the thermosetting or thermoplastic resins may be used to form the desired parts. All such changes and alternative forms are to be considered as within the scope of the invention as recited in the appended claims.

Having described my invention, I claim:

1. A metal handle for brushes comprising a shank, an enlargement on the shank, a ferrule having telescopic relation with the enlargement and comprising keepers, and means for latching the ferrule and enlargement into permanent engagement, said means comprising a single integral bowed spring having free bolt ends, said keepers and enlargement having complementary latching surfaces to receive and interengage with said free bolt ends.

2. A brush handle comprising a shank having an enlargement, said enlargement having a long and a short axis, said enlargement having slots in substantial alignment on the long axis, a ferrule for telescoping with the enlargement and having latching keeper surfaces, latching bolt means movable in said slots and into engagement with said latching keeper surfaces to anchor the ferrule and enlargement together upon attainment of substantial alignment between the slots and latching keeper surfaces.

3. A brush handle comprising a shank and an enlargement, said enlargement having aligned slots extending transversely of the axis of the handle, a bowed spring device having free bolt ends and with the substantial center of the device extending away from the handle axially spaced from the slots, a ferrule having transversely aligned latching keeper surfaces, means in the ferrule forming a contact surface, said ferrule being telescoped with the enlargement, and said contact surface engaging said sub-

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stantial center of the device and deforming the spring device to force the free bolt ends thereof into engagement with said latching keeper surfaces, said free bolt ends passing through said slots adjacent to said latching keeper surfaces to anchor the ferrule and said enlargement.

4. A brush comprising a handle having an enlargement including spaced lateral surfaces extending generally axially of the handle, said lateral surfaces having latching slots, a ferrule having an internal surface for telescoping with said enlargement, said internal surface having latching keeper surfaces in substantial alignment with the respective slots when the ferrule is telescoped, and means operated by the telescoping of the ferrule for extending

latching bolt means bridging the slots and latching keeper surfaces to anchor the ferrule on the enlargement.

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