A hole liner and/or post mounting, such as a golf hole cup (10), has a removable end cap (18), for blanking an otherwise exposed lower end of a mounting stem bore (15) for a removable post, such as a flag stick (36); an integrated end cap and optional closure plate variant has a conical, rib bladed, tapered mounting spike profile, for ground penetration and engagement, to promote installed hole cup stability.
HOLE LINER AND/OR POST MOUNT

[0001] This invention relates to a hole liner and/or post mount, and is particularly, but not exclusively, concerned with so-called hole cups for a golf game.

[0002] The term 'golf' is used herein to embrace a diversity of games in which a mobile playing element, most commonly a ball (but conceivably a sliding puck), is driven into a target receptacle, to effect a score.

[0003] That said, the primary use is in relation to golf and putting greens with target holes.

[0004] Professional golf rules—such as the ‘Royal & Ancient (Golf Club of St Andrews)’ or the US PGA—admit provision of a hole marker flag, or so-called flag stick.

[0005] Terminology

[0006] The term ‘stick’ is used herein for consistency with such rules, but the term ‘pin’ is also used colloquially in practice, so the terms can be regarded as interchangeable.

[0007] Thus Rule 17 defines a (flag) stick as . . . a movable straight indicator, with our without bunting or other material attached, centered in the hole to show its position—and of circular cross-section.

[0008] Bespoke so-called ‘hole cups’ have evolved for flag stick support.

[0009] Such hole cups also serve as a robust hole liner or sleeve, to preserve hole integrity and thereby ensure a prescribed consistent (target) hole size.

[0010] Hole lining or reinforcement inhibits hole degradation or collapse, under green surfactant trampling in the hole proximity, or under ambient weathering.

[0011] A hole cup itself represents a relatively stable bracing structure, of fixed form.

[0012] However, the ground upon which a course is laid, and in which holes are cut, is an organic soil medium, and so in a constant change of flux.

[0013] Soil is subject to natural particle movement, under weathering and ambient condition, including swelling under moisture and shrinkage under drought.

[0014] Sandy soils, such as found on coastal sites, (including certain championship courses) have a loosely-bound character of low stability, and as such are particularly vulnerable to disturbance.

[0015] On the other hand clay soils can swell and shrink markedly with moisture content and water table.

[0016] Similarly, temperature changes impact upon ground hardness and reaction to surface loading.

[0017] Thus a hole made in the ground does not necessarily retain indefinitely a stable configuration.

[0018] Rather, hole shape and size can vary unpredictably.

[0019] Nor is the ground necessarily a secure basis or platform for driving in a flag stick.

[0020] A resilient flag stick can flex, bend or ‘whip’ significantly in prevailing winds—such as experienced on exposed coastal golf course sites—and this imposes severe loads upon the ground and any hole cup mounting.

[0021] A poorly bound soil is a weak basis for flag stick mounting.

[0022] Thus there is a mismatch, or ‘behavioral disconformity’ between a relatively stable—or fixed format—hole cup and natural (less stable) soil movement and hole form variation.

[0023] Once installed, hole instability can engender hole cup movement.

[0024] So overall hole cup and flag pin mounting and installation are problematic.

[0025] Post/Flag Stick Mounting

[0026] Hole cups commonly incorporate a mounting sleeve for a removable flag stick, pin, pole, post, or mast—to help locate, identify and target the hole, from a distance.

[0027] The flag stick is generally mounted upright and centrally, vis on the hole axis.

[0028] The cup dimensions allow (carefully targeted) golf ball entry between the stick stem or Shank and the hole walls.

[0029] If a ball should become lodged between hole and stick, the Rules allow that a ball falling into the hole upon stick removal shall be counted as a score.

[0030] Provision for smooth stick removal is thus helpful.

[0031] A certain slack interfit tolerance can be contrived between stick and hole cup mounting sleeve to allow for this—whilst preserving a generally upright stick stance.

[0032] Nevertheless, sticks can jam in their hole cup mounting sleeves, with the ingress of soil, sand, debris and other contaminants.

[0033] Moreover, the stick itself represents an obstruction and can generate ball deflection, when impacted.

[0034] Certain impact deflections promote ball entry, but most divert a ball away from the hole.

[0035] Flag stick construction and material have an effect upon ball behavior after impact.

[0036] Thus flexible flag sticks can absorb ball impact energy and engender ball drop down the stick into the hole.

[0037] Hence the stick is removed, by the player or the player’s caddy, to avoid hole obstruction, before taking, or before arrival of, closer shots.

[0038] Installation

[0039] In practice, for hole cup installation, prescribed holes are first drilled or cut into the course, generally using a bespoke core cutter tool, such as one with curved blades upon opposed scissor action arms.

[0040] The hole cutter generates a standardised unitary cylindrical soil core, available for hole refill—useful when relocating holes to even or (re-)distribute green wear.

[0041] The hole may be tapered, that is of greater diameter at the top than at the bottom, to facilitate hole cup insertion.

[0042] Alternatively, a uniform, straight-sided, outer diameter may be used, particularly with metal hole cups, which are more readily extruded or spun.
The hole cup is a snug inter-fit in the hole thus cut or drilled and commonly also incorporates a slight sleeve taper, complementary to the hole tape profile, to facilitate insertion and removal.

The cup is periodically removed (by an approved, qualified, course superintendent, or green keeper) for cleaning—typically with a pressure washer lance and brush—and to allow re-setting, if necessary in a freshly cut hole.

Game rules prescribe the (internal) dimensions (diameter) and depth of a hole cup and that the upper rim of the cup is set somewhat (typically an inch or so) below the prevailing soil surface, so as not to impede ball play and hole entry.

However, local trampling of the ground surface around the hole, aside from surface wear and tear, generates vibration and underlying soil compaction.

Consequently, the cups can become progressively unsettled or dislodged in (depth) position and/or orientation.

In addition, hole cups become progressively filled (and eventually clogged) with dirt (bunker sand, grass clippings, soil, wind borne leaves and other debris), say from the surrounding surface.

Water can also accumulate in the hole cup if clogged, and can spill into the stick mounting bore.

Upon removal, a damp or wet stick can drop moisture on the green, which can adversely affect green performance for putting.

A certain amount of hole cup disturbance also arises upon flag stick removal and (re-) insertion.

Thus, if the flag stick is re-instated vigorously, a cup can sink in the hole.

If the flag stick is levered sideways, the cup as a whole becomes tilted and its fit loosened or undermined.

If the flag stick seat jams in the hole cup, its forced removal may unseat the cup.

Hole Cup Configuration

A hole cup generally features an internal base, somewhat inset from a lower rim, to provide a prescribed depth of ball container, allowing secure ball retention, but enabling ready removal once the hole is taken.

Provision is commonly made for hole cup drainage through apertures in the inset base.

The apertures are typically disposed radially about a central mounting hub or sleeve for a flag stick, or more particularly a mounting ferrule upon the stick lower end.

The hub itself has a through-bore, for ease of moulding in manufacture.

In a conventional hole cup, flag stick longitudinal travel in the hub bore is thus limited only by stick ferrule and hole cup mounting seat interaction.

Both rain and debris can fall through the inset base apertures.

Whilst rain soaks away in the underlying and surrounding soil, solid debris accumulates.

Thus such fallen debris may eventually clog the chamber underlying the inset base.

The hole cup may then become unseated, with the inset base riding insecurely upon compacted debris layers.

A similar fate can befall the stick mounting hub bore, displacing an inserted stick end and obstructing full stick insertion.

The risk is aggravated if the hole cup sinks as a whole.

Upon sinkage, the internal soil level rises closer to the underside of the inset base.

This reduces the capacity for debris and the stick mounting bore depth.

If the stick cannot be driven fully home, it will not sit securely and squarely within the mounting hub and will likely tilt over.

Even an installed stick can be progressively lifted, upon cup sinkage and entry of soil into the lower throat of the stick mounting bore.

Should prevailing winds promote stick (sway) motion and tilting, the stick may eventually fall over.

In doing so the hole cup itself can become dislodged.

Material

Hole cups are commonly moulded (or extruded) from synthetic plastics material, such as ABS, of a grade which will withstand weathering and sunlight (UV) exposure.

Alternatively, hole cups can be fabricated from aluminium or alloy (eg turned die castings).

Hole cup feature complexity reflects the material production process used.

Thus re-entrant features, such as lipped edges to the hub locating spokes and threaded hub bores may be contrived.

Ferrule & Mounting Stem

The Applicant has previously devised a complementary inter-fitting segmented—in particular fluted stem—flag stick mounting ferrule and ‘lead-in’ profile or mouth to a hole cup sleeve or hub.

This stick ferrule and hole cup mounting hub interfit inhibits relative rotational movement and attendant wear, particular with ingress of soil particles intervening between ferrule and sleeve bore.

The stick mounting ferrule may be of metal, such as an aluminum alloy, or plastics.

However, a relatively soft plastics hole cup material is particularly susceptible to wear from a relatively hard metal ferrule.

The ferrule embodies a slight taper—as may the corresponding stem bore—to facilitate insertion and removal and to promote a close contact interfit upon insertion.
The ferrule has a flared head underside, to limit insertion depth, and which sits upon a complementary seat in the mounting hub.

More particularly, ribs aligned with the ferrule splines and underlying the head, sit in corresponding recesses or pockets around the circumference of the hub seat, at the head of a stick mounting stem.

Flutes along the tapered shank below the flared seat reduce the local contact between ferrule base stem and seat and thus reduce the risk of mutual jamming upon ingress of soil, sand or debris.

Cup Removal

A bespoke tool (not illustrated) may be used for cup removal, with, say, diametrically opposed radial lugs upon an end of an elongate shaft.

Lug insertion into the apertures, between hub location spokes, allows the lugs to travel below the inset base.

Upon stem rotation, the spokes are engaged from beneath by the lugs.

The entire cup can then be withdrawn, by pulling the shaft upwards.

A hole cup might be removed for putting green maintenance—even merely green cutting—or hole re-setting.

Statement of Invention

According to one aspect of the invention,

A hole liner and/or post mounting, comprising

a hollow sleeve,

with an inset base,

a hollow, post mounting stub,

disposed in the base,

and configured to locate an end closure cap.

When installed, such a cap inhibits ingress—from below into the flag stick mounting bore—of debris which might otherwise drive the stick ferrule upward, or impede full stick insertion travel, so undermining stick mounting security, or jam the stick ferrule in situ.

Cap removal, upon withdrawal of a hole cup from a hole, facilitates cleaning debris from the hole cup and in particular the stick mounting edge.

The cap may be a snug press (interference) fit upon the sleeve mounting stem, but for security of installation, a threaded fitment is advantageous.

To that end, internal or external threads might be employed.

Thus the mounting stem may be provided with a threaded internal bore, for complementary interfit with an external cap thread.

The cap body may be waisted at the thread, to achieve an inset threaded shank, for mounting stem insertion and a more consistent outer surface diameter of cap and stem.

The stem bore cap may be of metal, such as brass (or an aluminum alloy), for resistance to corrosion.

Attendant cap weight also contributes modestly to keeping the hole cup upright and stable.

A thread on a metal cap may be used as a thread cutter on a relatively soft (synthetic plastics) mounting stem.

Alternatively, a metal thread insert or liner could be press fitted or integrally moulded into the stem lower mouth, for locating a metal cap thread.

For an all-plastics construction, a plastic end cap, with integrally moulded threads, could fit upon a plastics mounting stem.

For an all-metal construction, an aluminum or alloy hole cup and end cap assembly, with threaded interfit, could be contrived.

Cap Drainage Apertures

Apertures in the cap, such as radial or diametral holes in the cap wall, can allow drainage of water ingress into the stem mounting bore.

Cap Turning

Diametrically-opposed cap drainage apertures could also be used as (de-)mounting fitments, to gain turning purchase or leverage for cap installation and removal.

A bespoke interfitting cap turning tool, say with diametrically opposed arms or lugs, could be contrived.

Internal Cap Profile—Stick Ferrule Location

The internal cap wall profile could be adapted better to locate an inserted stick end ferrule, and thus inhibit stick movement without undue risk of stick jamming.

Thus internal cap projections could locate within recesses in an inserted flag stick, or rather a stick end ferrule.

For example, a central upstanding internal cap base spigot could locate within an end aperture or bore of a stick ferrule.

Similarly, an internal circumferential recess or groove could locate an O-ring seal providing a resilient fit with the circumference of a stick ferrule.

Yet again, ribs, lugs or upstands could locate between stick ferrule ribs.

Stem Projection Stub or Stake

The lower end of the hub stem may project somewhat beyond the lower sleeve rim, as a ground engaging—or even penetrating—stub or stake.

Hub stem projection also facilitates cap installation.

Inset Stem

Alternatively, the lower hub stem and associated end cap may be inset within and (axially) inboard of the circumference of the sleeve lower rim, so that the cap is wholly or partially enshrouded by the sleeve when fitted.

Conical Seat

The base is conveniently configured as conical seat, about a central mounting stem bore.
[0132] A (golf) ball falling into the cup thus transits to the centre, subject to (pre-)insertion of a flag stick in the mounting stem.

[0133] The mounting stem bore itself is desirably slightly tapered from top to bottom, to allow a self-weighting tight interfit with a corresponding tapered base to a post, pole, shaft or stick.

[0134] Multiple segmented apertures could be disposed through the base wall thickness or depth, around the central mounting hub, to allow passage of dirt and debris to below.

[0135] Webs between such segments could be extended longitudinally as base stiffening and support lugs.

[0136] Such lugs also afford purchase for a cup removal tool, with elements which pass through the base apertures and engage the lugs upon rotation.

[0137] Ferrule Nose Rib Profile Rounding & Base Web Chamfer

[0138] Relative (self-) location and seating of ferrule and hub is promoted by:

[0139] rounding or radiussing of ferrule nose rib profile; and

[0140] chamfered faces of webs between base apertures.

[0141] Cap Profile

[0142] The cap could be ribbed, serrated or burred finish, for ease of grip, upon installation and rotation.

[0143] Cap (outer) profiling could incorporate projections, such as ribs, lugs, spades (ie bladed lugs) studs, or spikes, to facilitate ground penetration, as a supplementary stabilising foot to the hole cup sleeve interfit with the hole walls.

[0144] This could inhibit hole cup loosening, even when hole cups are fitted to holes deliberately cut somewhat under-size.

[0145] The cap could locate, or be integrated with, an end closure washer or plate.

[0146] Either or both cap and end closure plate could feature outer end profiling—such as projecting ribs, studs, blades or spikes, etc—for ground penetration.

[0147] Stem Profile

[0148] Similar considerations—i.e of ribs etc—could apply to the mounting stem outer profile.

[0149] Embodiment(s)

[0150] There now follows a description of some particular embodiments of the invention, by way of example only, with reference to the accompanying diagrammatic and schematic drawings, in which:

[0151] FIG. 1A shows a part-sectional, part-cut away, elevation of a hole cup (section taken along line a-b in FIG. 1B);

[0152] FIG. 1B shows an upper plan view of hole cup of FIG. 1A;

[0153] FIG. 1C shows an underside plan view of the hole cup of FIG. 1A;

[0154] FIGS. 2A through 2C show a flag stick mounting ferrule, for use with the hole cup of FIGS. 1A through 1C;

[0155] More specifically,

[0156] FIG. 2A shows a side elevation of a stick mounting ferrule with flutes upon a tapered lower stem;

[0157] FIG. 2B shows a plan view of the stick mounting ferrule of FIG. 2A, with rounded profile location ribs upon a flared cap nose;

[0158] FIG. 2C shows an underside view of the stick mounting ferrule of FIGS. 2A and 2B, with juxtaposed cap ribs and stem flutes;

[0159] FIGS. 3A through 3C show upper plan views depicting introduction, location and seating stages of installing a flag stick with mounting ferrule in a hole cup;

[0160] Companion inset detail shows the indexing interaction between ferrule and hole cup pockets;

[0161] Thus, more specifically,

[0162] FIG. 3A shows an upper plan view of a flag stick with mounting ferrule offered up to a hole cup;

[0163] The inset shows, in detail, chamfered longitudinal (upright), radial (lateral) and circumferential web edges at hole cup base apertures, to promote ferrule self-seating;

[0164] FIG. 3B shows an upper plan view of a flag stick with mounting ferrule partially inserted into a mounting stem bore and allowed to self-settle rotationally preparatory to full insertion;

[0165] The inset detail shows a ferrule rib interacting with the chamfered profile of the hole cup web, to promote rib seating in cup pocket;

[0166] FIG. 3C shows a flag stick with base mounting ferrule fully inserted into a hole cup;

[0167] The inset detail shows the ferrule rib seated in the hole cup pocket;

[0168] FIGS. 4A through 4C show corresponding side elevations of FIGS. 3A through 3C respectively;

[0169] Thus, more specifically:

[0170] FIG. 4A shows a part-sectioned, part cut-away side elevation, taken along the line a-b in FIG. 3A;

[0171] FIG. 4B shows a part-sectioned, part cut-away side elevation of FIG. 3B;

[0172] FIG. 4C shows a part-sectioned, part cut-away side elevation of FIG. 4C;

[0173] FIGS. 5A through 5C show part-sectioned, part cut-away side elevations of variant end cap and stick mounting ferrule configurations;

[0174] Thus, more specifically:

[0175] FIG. 5A shows a flag stick and mounting ferrule partially inserted into a hole cup;

[0176] FIG. 5B shows an enlarged detail of hole cup end cap, with an internal axial stub projection, to locate within the hollow end of a stick mounting ferrule;

[0177] FIG. 5C shows the end cap of FIG. 5B with inserted stick mounting ferrule;
FIG. 5D shows a variant end cap to FIG. 5A, with inset locating shoulders or webs to locate stick mounting ferrule ribs;

FIG. 5E shows the end cap variant of FIG. 5D with inserted stick mounting ferrule;

FIGS. 6A through 6C show variant hole cup aperture configurations;

Thus, more specifically:

FIG. 6A shows an upper plan view of a hole cup with a somewhat denser (radiating) array, or greater multiplicity, of correspondingly individually smaller vane apertures than with, say, the variant of FIG. 1A;

FIG. 6B shows an upper plan view of a hole cup with a somewhat lesser number of larger (radiating) vane apertures that the variants of either FIGS. 1A or 6A;

FIG. 6C shows an upper plan view of a hole cup with a spiral or swirl array of vane apertures; and

FIG. 7 shows a perspective exploded 3-D perspective view of axially aligned mounting ferrule, hole cup, end closure plate or washer and end cap;

FIGS. 8A through 8F show variant end closure cap (ground engagement) profiles, for a central (flag stick) mounting hub—each admitting of diverse fittings, including external or internal threads;

Thus, more specifically:

FIG. 8A shows a longitudinal ribbed circumferential cap side wall profile;

FIG. 8B shows a tapered rib circumferential side wall and differentiated ribbed tapered spigot end cap profile;

FIG. 8C shows a curvilinear contiguous format of aligned tapered ribbed side wall and end spigot profile;

FIG. 8D shows a (diametral) bladed end cap outer circumferential and end plate profile;

FIG. 8E shows a multiple ribbed cap and contiguous stub blade end profile;

FIG. 8F shows a variant of FIG. 8E with more pronounced curvilinear format tapered end blades;

FIGS. 9A through 9D show variant hole cup end closure—vis: cap and (integrated) cover plate—configurations;

Thus, more specifically:

FIG. 9A shows a fragmentary exploded underside perspective view of a hole cup stem lower end—and juxtaposed integral (flag stick) mounting stem closure cap and cover plate, with a smooth flat end surface profile, for ground abutment;

FIG. 9B shows the hole cup end closure arrangement of FIG. 9A assembled;

FIG. 9C shows a variant integral mounting stub closure cap and end cover plate to that of FIGS. 9A and 9B—with a continuous aligned tapered ribbed side wall and end spigot profile, generally corresponding to that of FIG. 8C, for ground penetration and engagement;

FIG. 9D shows a variant integral mounting stub closure cap and end cover plate to that of FIG. 9A—with a pronounced rib pattern contiguous tapered bladed end profile for ground engagement, generally corresponding to that of FIG. 8F;

FIGS. 10A and 10B show a conical 3-D profile integrated end cap and closure plate variant to those of FIGS. 9A through 9D;

Thus, more specifically:

FIG. 10A shows an exploded perspective view, taken somewhat from below and one side, of an integral conical end cap and closure plate, with pronounced ribbed profile, juxtaposed with a hole cup sleeve lower end;

FIG. 10B shows the hole cap end closure arrangement of FIG. 11A assembled;

FIGS. 11A and 11B show another variant integrated end cap and closure plate to that of FIGS. 10A and 10B;

Thus, more specifically:

FIG. 11A is an upright sectional view of the lower end of a hole cup, fitted with an integral mounting stem closure cap and end cover plate, configured as a mounting spike, with tapered radial web blades, for ground penetration and engagement;

FIG. 11B is a perspective view, taken somewhat from below and one side, of the bladed end closure of FIG. 11A.

Referring to the drawings, a hole cup or hole liner 10 comprises a hollow cylindrical, thin-walled, sleeve or barrel 11, with a conical profile internal base floor or seat 12 inset somewhat from one (lower) end.

Centrally and axially disposed within the base 12 is a mounting stem or sleeve 14, with a tapered mounting bore 15, for a flag stick (not shown), or more particularly, a stick ferrule 30, shown individually in FIGS. 2A through 2C.

Upon the lower end of the mounting stem 14 is fitted a threaded end cap 18, as a closure projecting (in this example) somewhat below the (lower) end of the cup 12.

In this example, the cap 18 has an external threaded bore 22, for complementary interfit with a corresponding internal thread 24 upon the inner neck (or neck collar insert) of the mounting stem 14.

In practice, the end cap 18 and mounting stem thread 24 may be composed of a relatively hard material, say metal, such as brass or even aluminum alloy mounting.

The (metal) internal stem thread 24 may be formed upon an insert 27, bonded or integrally moulded into a recess in the lower part of stem 14, to preserve a continuous bore profile 15 upon end cap 18 installation—for ferrule 30 insertion.

Alternatively, using a relatively soft material, say synthetic plastics, such as ABS, for the hole cup 10, the internal stem thread 24 may initially be cut by a relatively hard, say metal, cap thread 22.

The end cap 18 has diametrically opposed radial apertures 19 through its wall, as drainage channels communicating with the stem bore 15.
The holes 19 may also be used as torque leverage or purchase points for cap 18 installation and removal—using a bespoke turning wrench (not shown), with corresponding diametrical locating sticks on a tool head.

The conical inset base 12 has a series of radial aperture segments 17, uniformly circumferentially disposed around the stem 14, as communication passages between opposite (upper and lower) sleeve ends 26, 28.

The terms upper and lower refer to sleeve 10 orientation in intended use, with a hole cup 10 sitting generally upright in a hole in the ground (not shown).

Between the aperture segments 17 are radial base wall support webs 16, extending somewhat longitudinally, as depicted in the sectional view of FIG. 1A.

The webs 16 also serve as a convenient location points for a hole cup removal tool (not shown), with limbs penetrating the segmented apertures 17 and turned to engage the webs 16 for cup rotation, to loosen it prior to longitudinal withdrawal.

The webs 16 also stiffen the overall structure, for resistance to bending and twisting loads imposed by a (relatively tall) flag stick (not shown) inserted into the mounting bore 15 (through an intervening mounting ferrule described later).

The end cap 18 inhibits ingress of soil, from below, when the hole cup 10 is installed—and particularly upon any hole cup 10 sinkage.

Thus the full extent of the mounting bore 15 remains available to a flag stick, which would otherwise be progressively displaced upwards therefrom.

The upper internal cup region 26 accommodates the flag stick, whilst leaving room for (golf) ball entry and descent to the conical inset base floor 12.

The lower internal cup region 28, at the underside of the conical inset base 12 accommodates debris falling through the apertures 17—which can accumulate there, without obstructing flag stick insertion or (golf) ball entry.

FIG. 1B depicts a series of pockets 23 around the upper entry mouth to the mounting stem 14 and stem bore 15.

FIG. 2A shows a flag stick (base) mounting ferrule 30, configured as a tapered hollow cylindrical stub, with a central axial (flag) stick mounting bore 35 and shallow depth, circumferentially spaced outer radial flutes 34 and webs 31 along a lower stem.

The ferrule 30 head has a truncated or ‘frusto’ conical form, with a tapered nose 33 surmounting a shoulder rim 37.

Overlying the shoulder rim 37, upon a conical seat 39, are a series of curved or round-shouldered radial ribs or webs 32, for locating within corresponding recessed pockets 23 at the mounting stem entry mouth in the hole cup 10.

The curved surface profile of both ribs 32, along with longitudinal (upright) edge chamfers 25C, radial edge chamfers 25A and circumferential edge chamfers 25C to web shoulders of seat lands or pockets 23, together promote a self-seating rotational settling under gravity action—as depicted in FIG. 3B and companion inset detail—once a ferrule 30 is inserted into a mounting stem 14 and its weight is transferred.

Thus the combined weight of ferrule 30 and flag stick 36, with minimal rotational ‘shuffling’ alignment, locates and seats the ribs 32 within the pockets 23.

The locating interfit of ferrule webs or ribs 32 and pockets 23 inhibits ferrule rotation in the mounting stem 14.

The flag stick 36 itself, is a tight (interference) fit within an axial bore 35 in ferrule 30.

This in turn inhibits (chafing) wear, between relatively hard (say diecast metal alloy) ferrule material and relatively soft, say ABS plastics, hole cup material.

Such relative wear would also be aggravated by any intervening grains or particles, such as from sandy soil or sand bunkers.

To accommodate differences in flag stick 36 diameters, it is envisaged that ferrules may have differential, say stepped, bore diameters.

FIG. 7 depicts an optional closure collar plate or washer 38—say, configured as an annular ring, of flexible material, such as rubber, or semi-rigid synthetic plastics—for fitment as an end blanking plate, to inhibit access (from below) the lower internal sleeve region 28.

The collar 38 could be an interference fit upon the outer profile of a protruding lower end of mounting stem 14 and/or held captive by end cap 18.

The collar 38 can be inset within the sleeve 11 wall internal periphery, or abut the sleeve end.

The collar 38 is readily removed, say for cleaning, upon end cap 18 removal.

Indeed, the end cap 18 itself could be an interference (ie sliding push) fit into the bespoke groove of the mounting stem 14 end stub—albeit a threaded interconnection is more secure.

The webs 16 could be of stepped end profile, as depicted in FIG. 7A, forming shallow ribs at the end of mounting stem 14, for end cap 18 engagement.

Rather than merely a ‘passive’ closure, the end cap 18 profile could be tailored to feature, say, a (tapered) ground penetration head or spike, or even a screw auger (not shown), for additional security of hole cup 10 mounting location and tilt resistance.

The various hole cup sleeve, mounting stem, closure cap and end cover plate refinements of FIGS. 8A through 11B are believed generally self-explanatory—from the respective drawings and attendant summary introduction.

The intention is to convey that feature profiles:

admit of considerable variation, for a given function; and

can afford supplementary functionality.

Thus, in particular, the mounting stem end cap (profile) treatment can promote more secure ground engagement—resisting hole cup disturbance, mis-alignment and dislodgement, upon repeated flag stick removal and re-insertion.
That same treatment can also help in manual grip and handling, for installation and removal.

The outer surface of the hole cup sleeve has been depicted as generally smooth and continuous, for close hole wall conformity, ease of manufacture and hole insertion.

That said, localised surface ‘disconformities’, irregularities or indeed protrusions (not shown)—such as the ribs or diametral edge blades, identified as options for the mounting stem end cap and closure plate—could be incorporated, to promote a tighter, more secure hole/sleeve interfitt.

Component list

- hole cup/liner
- 11 sleeve
- inset conical base
- mounting stem
- bore
- webs
- segments
- end cap
- apertures
- threads
- pockets
- threads
- chamfered radial edge of web
- chamfered circumferential edge of web
- chamfered lateral edge of web
- upper cup region
- insert
- lower cup region
- ferrule
- flute
- rib
- nose
- flute
- bore
- flag stick
- shoulder rim
- closure collar/washer
- seat

1. A hole liner and/or post mounting (10), comprising
   - a hollow sleeve (11),
   - with an inset base (12).

2. A hole liner and/or post mounting, as claimed in claim 1,
   - with a removable end cap (18),
   - for the post mounting stub,
   - to inhibit ingress, from below,
   - of soil or debris, into a stub bore.

3. A hole liner and/or post mounting, as claimed in claim 1,
   - with a removable end cap,
   - threaded upon the post mounting stub.

4. A hole liner and/or post mounting, as claimed in claim 1,
   - wherein the post mounting stub
   - is surrounded by a plurality of (radial) webs (16),
   - linking the stub to a peripheral sleeve wall (11),
   - and with intervening aperture segments (17),
   - through the base wall (12).

5. A hole liner and/or post mounting, as claimed in claim 1,
   - with a conical base configuration,
   - and a post mounting stub at the cone apex.

6. A hole liner and/or post mounting comprising an elongate hollow cylindrical sleeve,
   - a base inset from one sleeve end,
   - an inner mounting stem,
   - with a hollow bore,
   - disposed (axially) within the base,
   - and surrounded by apertures,
   - a removable (closure) cap,
   - [for blanking a bore lower end]

7. A hole liner and/or post mounting, as claimed in claim 6,
   - configured as a golf hole cup.

8. A golf hole cup (10),
   - configured as a hole liner and/or post mounting,
   - as claimed in claim 1,
   - with a removable end cap (18),
   - for blanking an otherwise exposed lower end of a mounting stem bore (15),
   - for a removable flag stick.
9. A removable end cap, for a hole liner/post mounting or golf hole cap, as claimed in claim 1.

10. A removable end cap, as claimed in claim 9,
    with one or more surface profile protrusions,
    such as spikes, studs, ribs, or blades,
    to promote ground penetration and engagement.

11. An integrated end cap and closure plate, for a golf hole cup, as claimed in claim 1.

12. An integrated end cap and closure plate, for a golf hole cup, as claimed in claim 1.
    with a surface profile,
    in particular protrusions,
    such as spikes, studs, ribs, or blades,
    to promote ground penetration and engagement.

* * * * *