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COMBINATION Scribing AND COMPASS UNIT

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3 Claims. (Cl. 33—27)

1 This invention relates to improvements in combination scribning and compass units of the type in which the unit is usable for instance, as a pencil or pen compass or for pencil or pen service alone, the compass portion being housed within and carried permanently by the pencil body and capable of being rendered active at will, the pencil forming one of the legs of the compass during the latter use.

Various forms of such units have been proposed, the purpose being to provide a unit which is usable either as a compass or as a pencil or pen at will, but in which all of the elements are permanently carried by the unit, the compass portion being housed within the pencil casing when inactive. The present invention pertains to such devices and is designed to simplify the structures thereof and to render them more efficient.

Generally such structures have their hinging zones formed of a composite of both the pencil portion and the compass portion. In the present invention, the hinging zone is actually a section of the compass portion, being in the form of a head zone arranged to form the rear end zone of the pencil and removable secured to the pencil casing by screw-thread connection. As a result, the compass portion may be used interchangeably with other drafting implements. For instance, instead of the pencil casing forming the second leg of the compass, this leg may be provided by a casing carrying a ruling pen formation, thus enabling the combination to be used for both pen and pencil drafting, with the casing of the pen equipped for housing the compass portion, the pen, similar to the pencil assembly shown, can be used alone for pen drawing or as a member of the pen compass.

In fact, the primary feature of the present invention pertains to such head zone of the combination, it being of special type, being designed more particularly to simplify the hinging zone and yet make it possible to practically lock the compass in its adjusted position at will, thus permitting a hinging zone based on different degrees of friction in service; a normal joint action, or an increased frictional component even approaching a locked condition.

In addition, the compass leg is of extensible type to render it retractable and housed within the pencil casing, the extension being telescoped within the main section of the leg body, thereby limiting the extent to which the pencil casing is affected by the presence of the compass feature.

To these and other ends, the nature of which will be understood as the invention is hereinafter described, said invention consists in the improved construction and combinations of parts hereinafter more fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the accompanying drawings, in which similar reference characters indicate similar parts in each of the views,

Fig. 1 is a side elevation of a pencil unit, with the compass portion housed, as in pencil service.
Fig. 2 is a vertical longitudinal sectional view of the same.
Fig. 3 is a vertical longitudinal section showing the compass portion exposed to thereby complete the compass formation.
Fig. 4 is a fragmentary section of the head zone, the section being taken on line 4—4 of Fig. 2.
Fig. 5 is a side elevation, partially in longitudinal section.
Fig. 6 is an elevation of the leg of Fig. 5.
Fig. 7 is a view in elevation of the extension section.

In the drawing, 10 indicates the casing of a writing or scribning implement, which could be a pen or a casing having the lower end zone equipped as a ruling pen for drafting purposes. The lead-feed mechanism of the pencil is not shown in detail, since the present invention pertains rather to the service as a member of a compass unit than its individual pencil service, so that the specific invention reaches more to the casing portion of the pencil which is designed to form a housing for the second leg of the compass unit when the compass service is inactive. A conventional cap is applied in a conventional manner to cover the writing end of the implement. Hence, the specific type of lead-feed of the pencil may be of any preferred form, provision being made therein for the substitution of lead, their feeding etc., as is common in pencils of this type. The mechanical pencil type is preferred, since it provides for a casing of constant length and is thus available for service as one of the legs of the compass unit, the opposite leg of which is positionable as a leg of similar length, thus enabling proper compass action.

The casing is shown as having a hollow core 41 which extends to the inner end of the casing, the end being shown as extending on a plane at right angles to such core, with the end zone of the core internally threaded, as at 12, this zone being designed to receive the threaded end 13.
of a head element 14 associated with and forming a carrier for the compass leg. The casing 10 includes an external, longitudinally extending recess 15 of definite length and extending from the upper end of the casing to an intermediate point in the length of the casing above the lead adjusting zone of the pencil, said recess being adapted to receive and contain the inactive compass leg formation as a housing therefor, the outer face of the compass leg being preferably formed to conform to the shape and curvature of the casing periphery, so that in housed position it practically closes the recess, leaving the casing surface as having the contour of a pencil of this type. The length of recess 15 is determined by the length of the main section of the compass leg, the lower end of the latter being housed within the lower end zone of the recess. Hence, in the housed condition of the compass leg, the assembly has the general characteristics as to shape and general appearance of the mechanical pencil and is usable as such with no interfering conditions presented by the compass leg structure.

The head element 14 is preferably metallic with a plane lower face carrying the threaded projection 13. It is of suitable length and peripherally symmetrical in correspondence with the preferred contour of the pencil casing, to complete the symmetry of the latter. The element provides the head zone for the compass formation, the element having a recess 16 of uniform width extending inwardly from one side face in the diametrical direction of the element, said recess 16, when the element is properly seated, being aligned with the end of recess 15. A major portion of the bottom of recess 16 is of circular contour, such contour being concentric with a pivoting pin 17 which extends diametrically of the element and transversely through recess 16, the contour curvature being complete at the upper side of the recess with the lower side being formed to merge into recess 15, as indicated in Figs. 2 and 3.

Recess 16 is designed to receive the upper hinging end of the main section 16 of the compass leg, said hinging end being in the form of a head 19 coaxial with pin 17, and, as indicated in Fig. 6, substantially in width throughout its length. As indicated in Fig. 5, the upper contour of the head is semi-circular, and, as indicated in Figs. 4 and 6, this peripheral face is formed grooved, as at 20, the grooves being preferably V-shaped in cross section, with the periphery of slightly less external diameter than the internal diameter of recess 15. Groove 29 is aligned with the axis of the head element, the latter carrying a threaded headed member 21, extending inwardly in the axis of the element, with its free end pointed, in the periphery with the bottom face of groove 20. As will be understood, when member 21 is loosened, head 19 can swing pivotally on pin 17, the freedom of motion depending upon any friction component which may be present between the side faces of the head and the free end pointed portion of the periphery with the bottom face of groove 20. As will be understood, when member 21 is tightened into engagement with the bottom face of groove 20, head 19 will be practically locked against any swinging movement through the frictional conditions produced by the engagement of opposite faces of the pointed end zone of member 21 with opposing zones of the groove bottom, regardless of the position the leg may be occupying. Hence, the leg can be locked in its housed position or in any selected projected position, the latter making it possible to use the pencil at will while maintaining a selected compass setting.

This form of head zone differs from the structural formations of the head zones of drafting instruments as usually provided, the latter relying upon the friction component produced between the opposing side faces of the hinging structures employed, dependence being placed on the friction for maintaining the position in service while permitting sufficient freedom for adjusting the leg positions, the hinging zones being provided with adjusting means which permits tightening of the joint when wear has unduly reduced the friction value. The present arrangement permits the use of less friction on the side faces with free adjustment possibilities, thus tending to decrease or delay the development of wear conditions, the ability to practically lock the joint by setting of member 21 in groove 20, at will, rendering the maintenance of position of the legs more certain and provides a very definite advantage in the formation of the hinging zone of drafting instruments, due to the ability to more firmly anchor the legs in adjusted position for service, and yet provide for greater ease in producing the adjustments. These conditions lead to greater efficiency in service as well as for longer life to the instrument through the decrease in wear development.

The main section 18 of the compass leg leads from the hinging zone to the form of an elevated arm designed to form a carrier for an extensible section 22 of the leg, the latter, when in extended position, producing a leg length such as to render the distance from the pivoting pin 17 to the pointed end of extension 22 practically equal to the distance from such pivot to the end of the lead which projects from the lower end of the pencil casing. Since the extension section 22 is formed to be housed by the main section 18 when the leg is inactive, it will be understood that the main section is of the greater length.

As indicated in Fig. 6, the main section 18 is of substantially uniform width, the section being variable in depth dimension, due to the fact that while the inner or bottom side of the section is substantially constant, the outer or top face is formed to conform to the shape of the pencil casing, so that in the housed position of the leg, in which section 18 is located in recess 15, the surface of the pencil will appear practically continuous, thus permitting pencil use in the usual manner without interference from the housed compass leg. Hence, the length and dimensions of recess 15 are determined by the length and dimensions of main section 18, with the length of the latter determined by the length of extension 22, and with the width determined by the relation of the working length of the pencil, to thereby provide development of a compass formation composed of the pencil as one of the legs with the other leg provided by such sections 18 and 22 with the latter in its working position.

The Body or, when members 8 has its head zone contoured to blend or merge into the body portion, as indicated in Figs. 2, 5 and 6. The body of the section is provided with a longitudinal bore 23 to receive extension 22, said bore extending from the free end of the section in the direction of the head zone, with the bore length sufficient to completely house the extension. The lower end zone of the section 18 is formed solid,
5 with the exception of bore 23, so that when ex-

6 tension 22 is in housed position, its pointed end zone will be completely within this end zone of the main section, thereby protecting such pointed end zone from any possibility of being damaged. Since the extension 22 carries a laterally extending pin 22a at its inner end, the body 5, beyond such lower end zone, is formed with a lon-

7 gitudinal recess 18a extending inwardly from its inner face and into said bore, thus providing an open channel within which pin 22a can move lengthwise of the recess of channel 18a in pro-

8 viding for the extension housing movement, the wall on either or both sides of channel 18a being

9 provided with a laterally extended slot 19b at the lower end of channel 18a, into which pin 22a

10 can be moved by rotating the extension 22 when the latter is in its projected position, thus lock-

11 ing the extension against longitudinal movement lengthwise of section 18 to thereby provide a stable leg formation. By turning the projected extension to place pin 22a within channel 18a, the extension can be moved longitudinally of section 18 by end wrenching. Since extension is exposed below section 18, the pin and finger contact be-

12 ing then employed to move the pointed end zone of the extension into its housed position within the lower end zone of section 18. To properly retum the extension within its housed position, the casing 10 is formed with a recess 19a into which the end of pin 22a passes when the leg section is moved to housed position, thus locking the extension in its housed position, with the pointed end zone of extension 22 localized within the said lower end zone of section 18.

13 Extension 22 is in the form of a steel rod of uniform diameter, having one of its end zones tapered to a point. The opposite end may be bent laterally, as indicated in Fig. 7, to provide the effect of pin 22a, or a pin may be added to the latter zone, as by end 21, so that extension 22 carries the lateral pin 22a with channel 18a closed in the lower zone of section 18, the extension is inserted into section 18 by being initially posi-

14 tioned within the channel above such lower end with the pointed end downward, the extension then moving downward to be secured in either of the two slot positions, depending upon whether the extension is to be housed with the housed leg, or projected for actual compass service.

15 Since the pencil casing shown is of the me-

16 chanical pencil type, utilizing inscribable leads, it is apparent that a pointed steel rod having the lead dimensions could be temporarily substituted for a lead within the casing. Such substitution would permit the compass assembly to be em-

17 ployed as compass dividers. A rod of such type is contemplated within the compass.

18 While the scribing implement member of the combination is shown as of mechanical pencil type, it is apparent that the lower section of pencil casing 10 can be formed as of ruling pen structure, instead of the pencil assembly, the upper portion of the casing being as shown. The combination would then serve as a compass ruling pen. A combination for commercial marketing can include a pair of such members, each hav-

19 ing the upper zone of casing 10 with one lower zone fashioned for pencil service and the other

20 for ruling pen service, thus simulating the com-

21 mercial pen and pencil set assemblages. By mount-

22 ing the compass leg to either member through the threaded connection 13, with the compass section housed, the implement would be employable for pencil writing or drawing purposes with the possibilities of the present, it would be possible to first employ the pencil structure for pencilling in the drawing, then trans-

23 ferring the compass section to the pen unit and completing the inking of the drawing. In either case, the casing element could be used service, or the compass section moved from its housed to its active position to permit compass service. An assemblage of this type is contemplated within the present invention.

24 As is apparent, a dominant feature of the pres-

25 ent invention is the arcurate groove 20 and the member 21. Since the tapered end of the latter cooperates with the opposite faces of the groove, it is apparent that with the compass leg active and member 21 screwed down tight, the friction on the opposite sides would practically hold the fastening of the leg against swinging on the pivot under pressure applied to either or both legs. It would be neces-

26 sary to manually release the member to reduce the friction, since the contact with the opposite sides of the groove would prevent turning of the member under pressure. When the member is turned, the friction on the other side and preventing the development of a threading action by such pressure. In other

27 words, the tightened member practically locks the assembly against accidental change, whether the parts be in the housing position, in the compass form. The change depends upon the preliminary loosening of member 21 manually, and is, therefore, wholly under the control of the user.

28 By forming the end zone of the combination as a part of the compass structure, it is possible to fashion it with the niceties and accuracies provided by instrument makers, and at the same time provide a somewhat ornamental appear-

29 ance to the end of the writing implement when the compass structure 22 is used and inactive. In addition, it permits of the ready application of the compass feature for either pencil or ruling pen service, as indicated.

30 One of the characteristic features of the pres-

31 ent invention is made evident by a comparison of Figs. 1 and 2, the former showing the im-

32 plement in service as an individual, the latter indicating the compass service. The position and relation of the end member 14 to casing 10 remains unchanged by and when the compass leg element is made active. Since the leg ele-

33 ment emerges from the side of the end member, it tends to present the misleading impression that the leg element is an attachment to the im-

34 plement. Structurally, the reverse is true, the compass portion forming the base structure of the assemblage with the implement as the at-

35 tachment used to complete the compass assem-

36 bly, thus being analogous to a drafting compass set which has attachments for both pencil and ink service, one of which must be used to com-

37 plete the compass, the two attachments being interchangeable.

38 A similar condition is present herein, espe-

39 cially if the assemblage is marketed with the individual scribing structures designed specifically for pencil and for inking services. The fundamental distinction over such drafting com-
pass is the fact that in the present invention the scribing implement, although an attachment, is service usable as an individual alone or as a member of the compass at the will of the user, a condition that is impracticable with the drafting compass.

The characteristic is due to the fact that the implement casing has a length sufficiently less than that of the compass leg length, as to permit a portion of the hinging zone of the compass to form a short part of such leg, thus permitting the end member of the assembly to carry the hinging zone with the end member formed of metal capable of the needed accuracy in production for efficient compass service. Casing length is needed for housing the leg element, but the additional length required is provided within the end member itself in the blending of the head zone of the main section of the leg element into the shank zone of such section, as indicated.

As will be understood, an implement designed for inking, instead of pencil service, differs from the showing of Fig. 2, for instance, only within the lower portion of the casing by the substitution of ruling pen structure for the pencilling structure shown, the casing otherwise being similar to that shown to permit of the proper housing of the compass leg element.

As is evident from Fig. 1, the disclosure of the specific form of the penciling structure in the lower portion of the casing is illustrative and not necessarily the detail structure of the scribing means actually used; the showing being of conventional forms of such means. The specific form which each may have pertains to the specific implement individually and as such is an invention independent of the present combination, since the specific form of the implement does not affect the combination.

While I have herein disclosed the invention in particular form, it is apparent that changes and modifications therein may be found desirable or essential under service conditions, and I reserve the right to make such changes or modifications insofar as the same may fall within the spirit and scope of the invention as expressed in the appended claims.

I claim:

1. A compass pencil comprising a pencil casing having its periphery provided with a recess extending longitudinally thereof, a head portion removably secured to the upper end of said casing, a compass leg element comprising a main section pivotally secured to said head portion and an extension section telescoping into said main section to permit housing of the telescoped sections in the longitudinal recess of the casing, the upper end portion of said main section having a V-shaped groove and a taper pointed threaded member carried by the head member to cooperate with the groove bottom and provide friction anchoring of the main and extension sections.

2. The structure of claim 1 in which said extension section is of rod-like cross section having a pointed end front and a laterally extended rear portion, said main section being recessed to permit assembly of the sections and movement of the extension pointed end into and out of such main section by the telescoping action, said main section having a lower end of tubular construction to form a housing for the pointed end when the extension is in its telescoped position and spaced slots in the main section side walls to receive the laterally extended portion of said extension when the latter is in projected position.

3. The structure of claim 2 in which the upper end of the recessed pencil casing is provided with an opening to receive the laterally extending end of the extension in the telescoped position of the extension.

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