May 29, 1934. E. S. MIX 1,961,066

COMPASS OR OTHER INSTRUMENT FOR BELTS

Filed Nov. 30, 1931

Fig. 1.

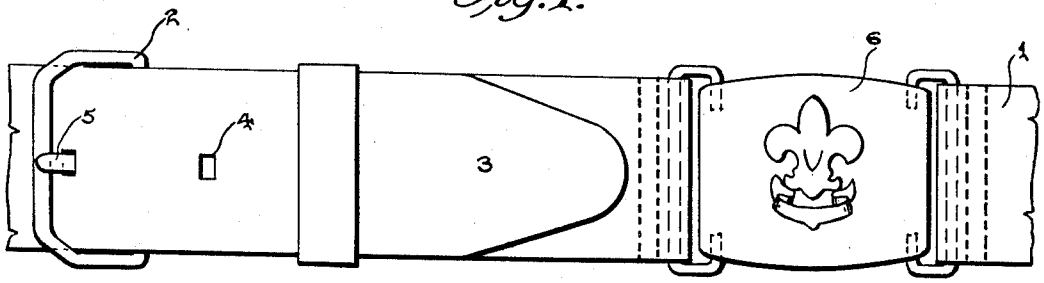


Fig. 2.

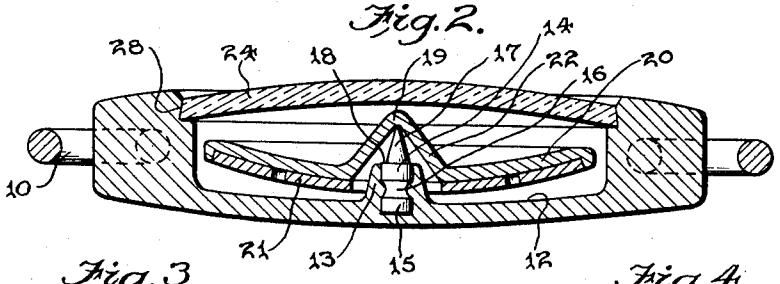


Fig. 3.

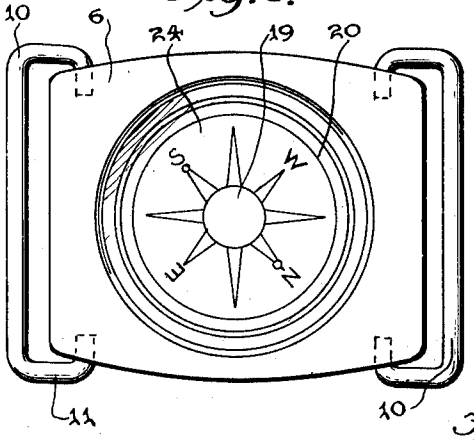


Fig. 4.

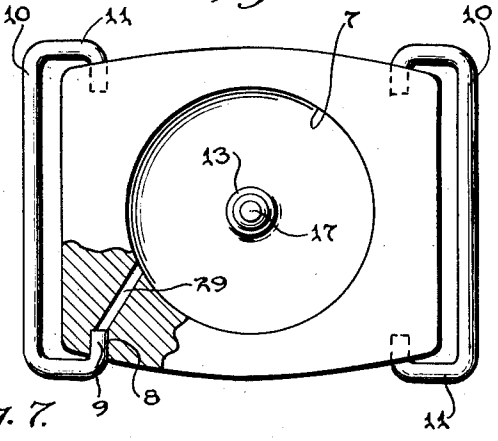


Fig. 7.

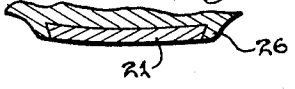


Fig. 5.

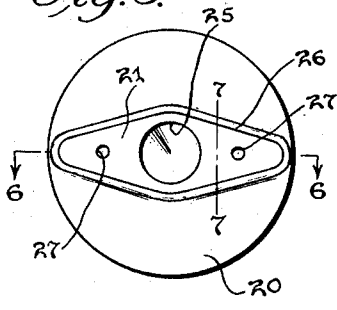


Fig. 8.

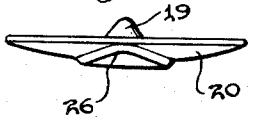
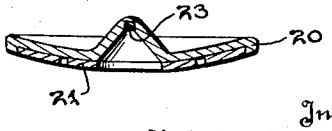


Fig. 6.



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UNITED STATES PATENT OFFICE

1,961,066

COMPASS OR OTHER INSTRUMENT FOR BELTS

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Application November 30, 1931, Serial No. 578,150

6 Claims. (Cl. 33—222)

The invention relates to compasses or other instruments.

The invention particularly relates to a compass construction useful in a belt for personal wear.

The invention is particularly directed to a compass equipped with a crystal adapted to be snapped into place like the crystal of a watch and capable of being easily and quickly removed by introducing compressed air into the chamber beneath the crystal and blowing off the latter thereby obviating the necessity of employing instruments for this purpose and the injury liable to result either to the crystal or the casing from the use of an instrument in an attempt to remove the crystal. The invention also relates to the arrangement of the air passage through which the compressed air is supplied for blowing off the crystal and to the arrangement of certain parts of the compass construction whereby the air passage is normally covered and closed.

With these and other objects in view the invention consists in the novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

Figure 1 is a front elevation of a portion of a compass belt constructed in accordance with this invention.

Fig. 2 is a central longitudinal sectional view of the same.

Fig. 3 is an enlarged elevation of a compass viewed from the inner face thereof.

Fig. 4 is an elevation of the body or casing, part of it broken away at one corner of the same to illustrate the air passage.

Fig. 5 is a detail reverse plan view of the compass dial and the magnetic needle.

Fig. 6 is a detail sectional view of the same on the line 6—6 of Fig. 5.

Fig. 7 is a detail sectional view on the line 7—7 of Fig. 5.

Fig. 8 is an edge view of the dial and magnetic needle.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention 1 designates a belt for personal wear having a buckle 2 at one end and provided at its other end 3 with holes to receive the tongue 5 of the buckle in the usual manner. The belt is provided adjacent the buckle end with a compass having a body 6 of bakelite or other suitable plastic material, but any suitable material may of course be employed in the construction of the body of the compass. The body which is provided with a circular chamber 7, constitutes the casing of the compass and is substantially oblong and is slightly tapered in thickness at its ends, as clearly illustrated in Fig. 2 of the drawing.

The body or casing is provided at its ends at opposite sides with bearing recesses 8 for the reception of internal inturned terminals or journals 9 of swinging bars 10 consisting of loops or bails constructed of suitable metal and each consisting of a straight piece of metal having its terminals bent at right angles to form approximately L-shaped end portions 11 to provide the said journals 9 and to form loops of the said bars 10 to receive the adjacent portions or sections of the belt. The adjacent portions or sections of the belt may be passed through the loops and around the bars 10 and stitched or otherwise secured to confine the bars within the adjacent portions or sections of the belt. Any other suitable means may, however, be employed for connecting the ends of the body 6 with the adjacent portions of the belt.

When the compass is arranged in a horizontal position, as illustrated in Fig. 2 of the drawing, the bottom wall 12 of the chamber 7 is slightly curved as shown and is provided with an inwardly projecting boss 13 in which is molded a pivot pin 14 forming the pivot of the compass and consisting of a shank 15 of substantially cylindrical form provided intermediate of its ends with an annular groove 16 into which the bakelite flows in the molding of the body whereby the pivot pin is keyed in the bakelite. The pin is provided with a projecting conical pivot portion 17 and has an annular shoulder 18 surrounding the base of the conical pivot portion and adapted to facilitate the accurate placing of the pivot pin in the mold which forms the bakelite body 6.

The conical pivot portion 17 of the pin 14 is adapted to fit in a cone bearing 19 of a concavo convex dial 20 constructed preferably of bakelite or other suitable plastic material and carrying a magnetic needle 21 which is molded in the bakelite of the concavo convex dial as an insert during the operation of molding the said dial. The concavo convex dial which presents a

concave upper face and a convex lower face has a hollow central conical portion 22 forming the said cone bearing and adapted to permit a free floating action of the dial 20 which is a direct reading dial and which in practice will have the cardinal and other points of the compass engraved or otherwise marked on its upper concave face. In practice the bakelite dial will be molded with highly polished molds and under a sufficient heat to produce a highly polished surface and it has been found in practice that with dials of this construction it is not necessary to provide crystal bearings for the pivot pin but if desired a crystal bearing 23 may be provided, as indicated in Fig. 6 of the drawing. This hard surface is characteristic of bakelite in that the gums contained in the material tend to gravitate towards the surface producing an intensely fine hard grain under the action of a baking heat essential to this type of product.

The concavo convex disk presents a lower convex surface to the bottom wall of the chamber 7 and with its centrally arranged hollow cone lowers the center of gravity and eliminates the major portion of the clearance which usually occurs between floating dials and the bottom walls of chambers in which they are mounted and thereby reduces the thickness of the compass and provides a comparatively very thin compass which is especially adapted for use in belts for personal wear.

This curvature of the dial enables a much thinner over all assembly to be constructed than has been possible with compasses having dials of the ordinary construction and at the same time free movement and accuracy of operation are assured by such construction. Also the lowering of the center of gravity provides greater steadiness in the floating action of the dial of the compass when the same is in a horizontal position and permits the bearing portion of the hollow cone to slide off the end of the pivot pin when the compass is arranged in its normal vertical position. This will enable the dial to rest against the crystal 24 and also the wall of the chamber at the bottom thereof and to be seated in a firm supported position practically independently of the pivot pin thereby preventing floating movement or vibration of the dial when the same is not in use and at the same time relieving the point of the pivot pin of strain. The portions of the belt with which the compass is connected are adapted to be twisted a half turn to carry the compass from a vertical position, such as is illustrated in Fig. 1 of the drawing, to the horizonton position shown in Fig. 2. When the compass is in its normal vertical position the dial is held against movement, but when the belt is partially twisted to arrange the compass in a horizontal position the dial automatically seats itself in a floating position upon the end of the pivot pin.

The magnetic needle 21 which is constructed of magnetic metal in sheet form is oppositely tapered, as clearly illustrated in Fig. 5 of the drawing, and is provided with a central opening 25 which is of the same diameter as the base of the hollow cone 22 to permit the boss 13 and the pivot pin to extend into the hollow cone.

This brings the lower face of the magnetic needle in close proximity to the bottom wall of the chamber 7 but at the same time provides all the clearance that is necessary for an accurate floating operation of the dial. The magnetic needle is curved longitudinally to present a concave upper face and a convex lower face to conform to the configuration of the lower face of the dial 20 and it is molded in the bakelite of the dial in the formation of the latter as an insert thereof. The bakelite provides a marginal bead 26 around the entire periphery of the magnetic needle 21 which is keyed in the bakelite by a marginal burr formed by stamping out the magnetic needle. An integral unit is thereby formed of the dial and the magnetic needle. The magnetic needle is provided at the end portions with holes 27 spaced from the central opening 25 and adapted to receive mold pins for properly positioning the magnetic needle in the mold with relation to the engraving or other markings of the cardinal points and other points of the compass on the upper concave face of the dial.

The crystal 24 which is preferably of the nonbreakable type is seated in an annular groove 28 forming an annular seat for the crystal and an inclined wall to retain the crystal on the seat. The crystal is snapped into the groove similar to a watch crystal and should it be desired to remove the crystal during manufacture of the compass or to correct adjustment or any other purpose, compressed air through a suitable source of supply is introduced into the chamber 7 for the purpose of blowing the crystal off its seat.

The body 6 is provided at one of its corners with an air passage 29 extending from one of the bearing recesses 8 to and communicating with the chamber 7. This will enable compressed air to be introduced into the chamber 7 under sufficient pressure to blow the crystal off its seat. Compressed air may be readily applied to the chamber 7 before the swinging bar 10 is assembled on the body but if it should become necessary to use the air passage after the end bars 10 have been assembled the one at the passage 29 may be readily removed to expose the passage 29 which is concealed when the compass is assembled in the belt. Also the bar 10 may be readily removed to enable compressed air to be applied to the chamber for blowing the crystal off the body or casing when required for repairs of replacements.

The open face of the compass by being located at the inner face of the belt assures protection of the compass by the body of the wearer and at the same time presents the solid unbroken outer face of the body of the casing exteriorly of the belt at the outer face of the same. The outer face of the body or casing may be ornamented with an insignia or any other suitable ornamentation and the color of the bakelite may be made to harmonize with the material of the belt. The compass may be arranged to form either a right hand or left hand belt as will be readily understood. No claim is made in the present application to the particular construction of the magnetic compass dial as such forms the subject matter of the divisional application filed February 26, 1932, Serial No. 595,374.

What is claimed is:

1. An instrument construction for use in a belt for personal wear, said instrument construction comprising means whereby it can be employed for connecting belt sections and thereby constituting a portion of the belt, said instrument construction including a casing structure having an instrument receiving chamber provided with a peripheral wall portion having at the forward peripheral portion thereof a bezelled seat into which a crystal may be snapped, and an

air passage extending inwardly from the exterior of the casing structure and leading to and communicating with said chamber which is behind said crystal, and which passageway is provided for permitting at will compressed air to be introduced into the chamber for blowing the crystal forwardly off said bezelled seat, the means whereby the instrument construction can be employed for connecting the belt sections also providing means whereby the outer end of the air passage is concealed and covered when the instrument is embodied in and made a part of the belt.

2. An instrument for use in a belt for personal wear, comprising a casing structure which can be employed as an element for connecting the sections of the belt and thereby constituting a portion of the length of the belt, said casing having an open front face and provided with a bezel seat in a peripheral wall portion thereof into which a crystal may be snapped, a crystal snapped in place in said seat, said peripheral wall portion having bearing recesses at what may be termed end portions thereof and provided with an air passageway extending from one of the bearing recesses to the interior of the casing for permitting compressed air to be introduced therein against the inner side of the crystal for the purpose of blowing the crystal forwardly off its seat, and bars arranged at the ends of the casing and provided with pivots paralleling the bars and extending toward each other and journaled in said bearing recesses, said bars being the means by which the belt sections are connected and one of said bars serving as means for concealing and protecting the outer end of the air passage.

3. An instrument for belts comprising a casing having a chamber and provided therein with an undercut crystal seat to permit a crystal to be snapped into the same, and a crystal snapped in place in said seat, said casing being also provided at its ends with bearing recesses and having an air passage extending from one of the recesses to the interior of said chamber to permit compressed air to be introduced into the same for blowing the crystal off its seat by the pressure of air directly applied to the inner face of the crystal, and bars having pivot providing ends arranged in said bearing recesses and one of said bar ends serving to conceal and cover the outer end of the air passage.

4. An instrument construction for use in a belt for personal wear, comprising means whereby it can be employed for connecting belt sections and thereby constituting a portion of the belt, said instrument construction including a casing having an instrument receiving chamber provided with a peripheral wall portion having a bezeled seat into which a crystal may be snapped, a crystal snapped in place in said seat, an air passage extending inwardly from the exterior of the casing structure and leading to and communicating with said chamber which chamber is formed in part by said crystal and which passage is provided for permitting at will compressed air to be introduced into the chamber for blowing the crystal off said bezeled seat, and means for connecting the instrument to the belt sections and one of which means constitutes means to conceal and cover the outer end of said air passage when the instrument is embodied in and made a part of the belt.

5. An instrument construction including a molded, one-piece casing having an instrument receiving chamber provided with a bottom and a peripheral wall portion relatively fixed with relation to the bottom to form a unitary structure, said peripheral wall portion having a bezeled seat into which a crystal may be snapped, a crystal snapped in place in said seat, and an air passage extending inwardly from the exterior of the casing and leading to and communicating with the said chamber, which chamber is formed in part by said crystal and which passage is provided for permitting at will compressed air to be introduced into the chamber for blowing the crystal off said bezeled seat, whereby the crystal may be removed without injuring either the crystal or the casing.

6. An instrument construction including a one-piece casing constructed of molded plastic material and having an instrument receiving chamber provided with a bottom and a peripheral wall portion relatively fixed with relation to the bottom to form a unitary structure, said peripheral wall portion having a bezeled seat into which a crystal may be snapped, a crystal snapped in place in said seat, and an air passage extending inwardly from the exterior of the casing and leading to and communicating with the said chamber, which chamber is formed in part by said crystal and which passage is provided for permitting at will compressed air to be introduced into the chamber for blowing the crystal off said bezeled seat, whereby the crystal may be removed without injuring either the crystal or the casing.

EDWIN S. MIX.

CERTIFICATE OF CORRECTION.

Patent No. 1,961,066. May 29, 1934.

EDWIN S. MIX.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 122, for "of" read or; page 2, line 141, beginning with the number and words "1. An instrument" strike out all to and including "belt." in line 13, page 3, comprising claim 1; and page 3, for the claim numbers "2, 3, 4, 5, and 6" respectively, read 1, 2, 3, 4, 5; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of July, A. D. 1934.

Bryan M. Battey

(Seal) Acting Commissioner of Patents.