M. NIÉLL.

COMPASSES.

APPLICATION FILED JULY 13, 1917.

1,275,979. Patented Aug. 13, 1918.

FIG. 1

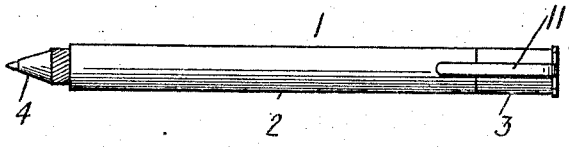


FIG. 2

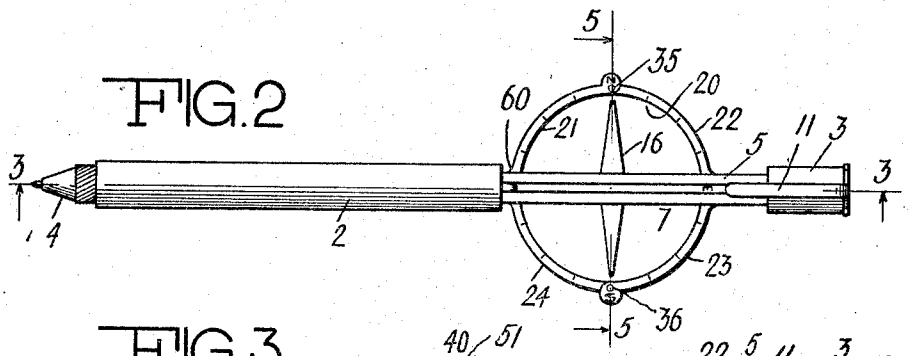


FIG. 3

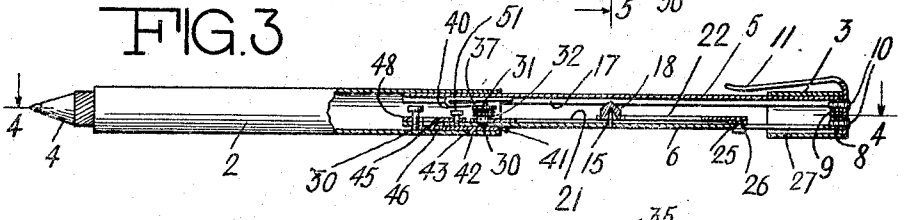
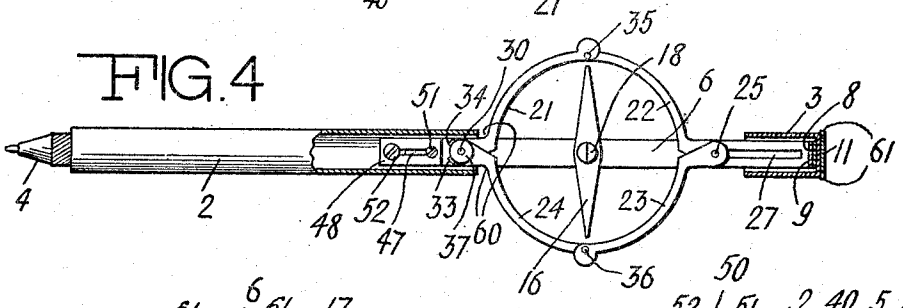


FIG. 4



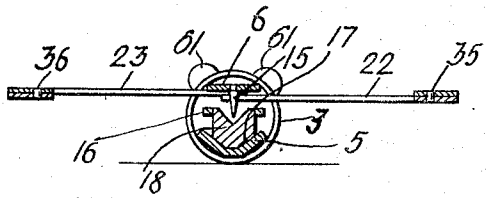


FIG. 5

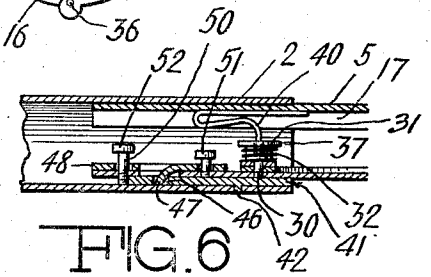


FIG. 6

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COMPASSES.

1,275,979. Specification of Letters Patent. Patented Aug. 13, 1918.

Application filed July 13, 1917. Serial No. 180,341.

To all whom it may concern:

Be it known that I, MAGNUS NIÉLL, a subject of the King of Sweden, residing at Stockholm, Sweden, have invented certain new and useful Improvements in Compasses, of which the following is a specification.

This invention relates to compasses and with regard to certain more specific features thereof, to compasses of a collapsible type adapted to be incased to render them conveniently portable.

One of the objects of the present invention is to provide a simple, durable and extremely compact compass of the type above specified.

Another object of the invention is to provide inexpensive, and otherwise improved, means, whereby a compass may be collapsed and concealed in a portable form, said means further providing for quickly and conveniently extending or setting up the compass in an exposed position.

Another object of the invention lies in the provision of conveniently operable means, whereby the compass parts may be collapsed within a tubular casing of small diameter. For instance, the usual diameter of a pencil stem, so that, if desired, the parts may be manufactured and marketed in combination with a pen or pencil, in order that the readings or findings of the compass may be recorded.

Other objects of the invention will be, in part obvious, and in part particularly pointed out hereinafter.

In the accompanying drawings, wherein is shown one of the various possible embodiments of the invention,—

Figure 1 is a view of a combined pencil and compass comprising features of the invention.

Fig. 2 is a view of the same, with the split casing parts relatively withdrawn to extend and expose the compass parts in operative position.

Fig. 3 is a longitudinal section, taken on line 3—3 of Fig. 2.

Fig. 4 is a longitudinal section taken on line 4—4 of Fig. 3.

Fig. 5 is a somewhat enlarged sectional view, taken on line 5—5 of Fig. 2, except that the compass parts are inverted to position the needle for closure of the casing, and

Fig. 6 is an enlarged sectional view of the locking mechanism shown in Fig. 3.

Referring now more particularly to the drawing, there is indicated at 1 a pencil casing split into two parts 2 and 3, these parts being adapted for relative longitudinal movement, as indicated in the various figures of the drawing. Both parts of the casing are tubular in form and the part 2 is comparatively long and is provided at one end with a split lead-holding pencil point 4 of usual construction. The part 3 of the casing is comparatively short and has secured therein two longitudinal rails 5 and 6 constituting upper and lower needle-supporting members of a compass frame or box indicated generally at 7. These upper and lower supporting members are secured within the casing 3 by turning down their respective extremities, 8 and 9, in juxtaposition, and threading in the small screws 10, which pass through the end of the casing member 3, and also retain on the outside thereof a spring clip 11, the latter serving as a retaining device, enabling the tubular casing to be carried in a pocket and fastened to an edge thereof. Except when locked in compass-exposing position, as will more fully hereafter appear, the rails are slidably contained within the tubular casing part 2. A needle-supporting pin 15 projects inwardly from the rail 6, which is the lower rail in the normal operative position of the compass, and pivotally mounted on this pin is a compass needle 16 adapted to swivel thereon in the usual way under magnetic influences. The upper rail or supporting member 5 is fashioned with a substantially V-shaped channel 17, which is adapted to cooperate with a V-shaped head 18, provided on the compass needle directly over the pivotal region. This head and groove serve, when the compass is turned from normal position through substantially 180°, to cam the needle into position parallel with the direction of closing movement of the tubular casing, this being effected by the action of gravity overcoming the magnetic influence from the needle.

There is also mounted between the upper and lower supporting rails, a collapsible compass ring 20, formed in four pivoted quadrants, 21, 22, 23 and 24. The quadrants 22 and 23 are pivotally secured together by the small pivot stud 25, which has a head portion 26, adapted to reciprocate in a longitudinal groove 27, provided near one end of the lower supporting rail 6. The quadrants 21 and 24 are connected together for

relative pivotal movement by a pin 30 secured in and projecting inwardly from the lower supporting rail 6. This pin is provided with an enlarged shank portion 31, about which is coiled a torsion spring 32, one end of which bears against an up-turned lug 33 of the quadrant 21, and the other end of which bears against an up-turned lug 34 of the quadrant 24. It will thus be seen that the action of the spring is to urge the quadrant members into full extended position, where they will assume the circular form shown in Figs. 2 and 4 of the drawing. The quadrants 22 and 21 are connected by the pin 35, and the quadrants 24 and 23 are, in like manner, connected by a pin 36. The enlarged shank 31 of the pin 30 is provided with a retaining cap 37, which serves to hold the coiled spring 32 in position. A bent spring 40 has one end seated within the shank 31 of pin 30, and the other end extended to rest in the V-channel 17 and create a slight spreading tendency of the rails to improve the sliding fit characteristic of the rails within the tubular casing part 2.

It will be noted that the lower rail 6 is substantially flat, and to complete the fit between this rail and the inner surface of the tubular casing part 2, a filler member 41 is introduced. This filler member is constructed with a short pin 42, the latter being adapted to be sprung into engaging position with a pin hole 43 provided in the casing part 2. This filler strip serves, additionally, as a part of a locking mechanism, indicated generally at 45, in that it is slotted, as at 46, to receive the locking bolt or tongue 47 of a gravity lock member 48. This lock member is usually mounted upon two pins, a long pin 50 and a somewhat shorter pin 51, so that when the tubular casing and associated parts are turned through substantially 180° from normal position to what may be termed "the needle-locating position", the gravity lock member 48 will fall and fulcrum around the head 52 of pin 50 until the tongue 47 is completely released from engagement with the end wall of the slot 46 in the filler member 41.

It will be seen that this filler member is practically integral with the casing part 2, so that, when the casing parts are relatively separated and the compass is in extended, exposed and normal position, the casing parts will not be closed, due to the fact that the tongue 47 is bearing against the end wall of the slot 46. The quadrants 21 and 24 are filleted, as at 60, to facilitate the camming of the quadrants into collapsed position by engagement of the end edge of the casing part 2 therewith when the casing parts are relatively longitudinally moved to compass concealing position. In operation, assuming the parts to be in closed position, as shown in Fig. 1, if it is desired to open and set up the compass, this may be done by the operator simply drawing the casing parts 2 and 3 away from each other in a longitudinal direction. As soon as the casing part 2 is passed beyond the pivot points 35 and 36 of the quadrant, the spring 32 acts to extend the compass ring, and when the parts are separated to their fullest extent, the quadrants are completely extended into a circular form, and the needle may receive its magnetic action as soon as a suitable balance for the same is obtained. To facilitate this balance the clip 11 is provided with a pair of feet 61, (Figs. 4 and 5) which extend slightly beyond the diameter of the tubular casing, and serve to locate the device in normal operative position. The cardinal compass points may be designated on the ring or on the supporting surface, or both, as may be deemed expedient, and if desired, the ring may serve for the markings of the bi-cardinal and minor compass points, as indicated in Fig. 2. With all the parts in this extended and exposed position, the casing parts 2 and 3 are locked in separated relation. When it is desired to collapse and conceal the compass parts, the same may be readily effected by inverting the device so that gravity will effect the cam action of the needle heretofore described, and at the same time release the locking tongue 47 from its locking position. The needle now being in parallelism with the supporting rails and protected thereby, the casing parts may be longitudinally moved toward each other to the closed position shown in Fig. 1.

In addition to the ease with which the device may be operated and its general simplicity, attention is directed to the ease of assembly of the parts and the general simplicity and durability of the device.

What is claimed is:—

1. In a device of the character described, in combination, a casing, a needle frame mounted to slide into said casing and connected thereto and comprising a ring collapsible within said casing and supporting means for the compass needle, and a compass needle swiveled in said frame.

2. In a device of the character described, in combination, a casing, comprising two longitudinally relatively movable parts, a needle frame comprising a collapsible ring and upper and lower needle supporting members mounted to slide into said casing parts and connected thereto, a compass needle loosely supported between said members, and means for collapsing said ring upon relative movement of said casing parts toward each other.

3. In a device of the character described, in combination, a casing comprising two longitudinally relatively movable parts, a needle frame comprising a collapsible ring and upper and lower needle supporting

members mounted to slide into said casing parts, a compass needle loosely supported between said members, means for automatically locking said needle in position to be incased, and means for collapsing said ring upon relative movement of said casing parts toward each other.

4. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable, a compass needle frame mounted within said casing comprising upper and lower needle supporting members and a collapsible ring, a magnetic needle pivotally mounted on one of said supporting members, means on the other of said members for positioning said needle for closure of said casing, and means for extending or collapsing said ring upon relative longitudinal movement of said casing parts.

5. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable, a compass needle frame mounted within said casing and connected thereto and comprising upper and lower needle supporting members and a collapsible ring, a magnetic needle pivotally mounted on one of said supporting members, means on the other of said members for positioning said needle for closure of said casing, means for extending or collapsing said ring upon relative longitudinal movement of said casing parts, and locking means for holding the needle frame in extended position.

6. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable to compass exposing or concealing position, and an extensible and collapsible compass device contained in said casing and connected thereto to be operated to extended and exposed position by relative movement of the casing parts.

7. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable to compass exposing or concealing position, an extensible and collapsible compass device contained in said casing and connected thereto to be operated to extended and exposed position by relative movement of the casing parts, and a needle locating device for positioning the needle for closure of the casing.

8. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable to compass exposing or concealing position, an extensible and collapsible compass device contained in said casing and connected thereto to be operated to extended and exposed position by relative movement of the casing parts, a needle locating device for positioning the needle for closure of the casing, and means for locking the casing parts in relatively spaced positions with the compass device extended and exposed.

9. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable to compass exposing or concealing position, an extensible and collapsible compass device contained in said casing and connected thereto to be operated to extended and exposed position by relative movement of the casing parts, a needle locating device for positioning the needle for closure of the casing, and means for locking the casing parts in relatively spaced positions with the compass device extended and exposed.

10. In a device of the character described, in combination, a split casing, the parts of which are relatively longitudinally movable to compass exposing or concealing position, an extensible and collapsible compass device contained in said casing and connected thereto to be operated to extended and exposed position by relative movement of the casing parts, a needle locating device for positioning the needle for closure of the casing, and means for locking the casing parts in relatively spaced positions with the compass device extended and exposed, said needle locating device being operative and said locking means being inoperative when the aforesaid parts are moved rotatively to a certain position, whereby the casing may be closed over the collapsed frame.

MAGNUS NIÉLL.