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HOLDER CONSTRUCTION FOR REFILLABLE WRITING OR ERASING INSTRUMENTS

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This invention relates to writing or erasing instruments as pertaining to the graphic arts, and more particularly is directed to an improvement in refillable pencil, crayon or eraser holder constructions.

Among the objects of the invention is to improve holder constructions of the character described which shall comprise few and simple parts which are readily assembled to provide neat and attractive appearing instruments, which shall be cheap to manufacture, which shall be sized and shaped for convenient manipulation and refilling with conventionally available types of pencil, crayon or eraser elements, which shall accommodate writing and eraser elements having a wide range of hardness properties from relatively resilient eraser rubber to rigid crayon chalk or slate pencil writing elements and which shall be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists of features of constructions, combination of elements and arrangements of parts which will be exemplified in the constructions hereinafter disclosed, the scope of the application of which will be indicated in the claims following.

In the accompanying drawing in which various embodiments of the invention are shown.

Fig. 1 is a front elevational view of a crayon holder construction formed with plastic casing embodying the invention, showing in dotted lines a more resilient clutching leading end.

Fig. 2 is a cross-sectional view taken on line 2—2 in Fig. 1 and showing details of the releasable locking interconnection between the pusher member and the stop anchoring ring.

Fig. 3 is a fragmentary enlarged cross-sectional view of the interior assembly of the improved holder construction taken on line 3—3 in Fig. 1 showing the wedged position in full lines and released position in dotted lines.

Fig. 4 is a front elevational view of a slate pencil and the like, or rubber eraser holder construction embodying the invention formed with a non-metallic casing, such as a molded plastic.

Fig. 5 is a front elevational view of a crayon holder construction formed with a sheet metal casing partly broken embodying the invention with the casing formed with a demountable leading end portion; and

Figs. 6 and 7 are front elevational views partly broken away of holder each similar to Fig. 4 constructed for use with a slate pencil and the like, or rubber eraser element, except that Fig. 6 shows an embodiment of the invention formed with sheet metal casing having a demountable leading end portion of a non-metallic, such as plastic, and Fig. 7 another embodiment formed with a non-metallic casing or plastic having a demountable leading end portion of sheet metal.

In my Patent No. 2,132,633, granted October 11, 1938, there is disclosed a refillable lead-pencil holder construction of a pusher feed-type with an abutment slider stop-ring therefor. The invention herein described and shown includes additional combination of novel features in providing an improved releasable locking interconnector means between the pusher member and a stop anchoring ring, and also having spring gripping means integrally formed with the leading end portion of the holder to cooperate with the pusher member to clamp a refill writing or eraser element within the holder in the novel manner as herein described and shown in the drawing.

Referring in detail to the Figs. 1 to 3 of the drawing, 20 denotes a refillable crayon holder construction embodying the invention which is seen to comprise an elongated casing 21, here shown as a drawn sheet metal tubular structure formed with an axially extending bore 21a in which is fitted a crayon 22 such as for example, a piece of chalk.

Said crayon 22 may be of any recognized standard dimension and shape and said casing bore 21a of such corresponding cross-section that the crayon 22 is mounted for sliding movement through said bore 21a.

The casing 21 may terminate at its leading end portion 21b in an integral tapering or pyramid shaped section, here shown as a conical formation uniformly slitted with longitudinally spaced apart slits 21c, the ends of each slit 21c terminating in a through-opening 21d of somewhat larger diameter than the width of said slits 21c so as to provide a series of spring clutching finger portions 21e for yieldably but firmly gripping the crayon 22 adjacent an exposed portion thereof projecting beyond the leading end finger portions 21c.

As is clear from Figs. 1 and 3, at rear end 21f of casing 21 opposite said pyramid shaped leading end 21d a suitable closure cap 23 may be removably seated, said closure cap 23 being releasably secured in seated position by a screw thread joint 23a or other equivalent coupling means, in the well understood manner.

Extending substantially the length of casing 21 from a distance back, that is, just short of a plane passing through said openings 21d to the extreme rim edge of rear end 21f there is provided a relatively narrow straight elongated through slot 21g which communicates with casing bore 21a, and mounted for selective movement in said bore 21a rearwardly of said crayon 22 there is a pusher member 24.

Said pusher member 24 may comprise a plunger head 24a fitted to normally slide freely in said bore 21a, said plunger head 24a having extending therefrom a thin neck or shank 24b which passes through slot 23 and terminates at the exterior of the casing 21 in a suitable enlarged finger manipulating means, such as knob 24c. Said plunger head 24a may have extending in alignment with said shank 24b and knob 24c a rearwardly extending fin 24d which has an edge portion 24e thereof projecting through slot 21g and beyond the exterior of the casing 21 as seen in Fig. 3.

Said plunger head 24a, shank 24b, knob 24c and fin 24d, may, if desired, be made of a single
piece of material or joined pieces secured by a rivet 26 as shown in Fig. 3, said member 24 being positioned in bore 21a so that end from facing surface 24f of plunger head 24a opposite said fin 24d abuts the rearward end 22a of crayon 22 thus serving on movement of said plunger head 24a as a feeding or adjusting means for projecting the crayon 22 through the casing 21 so that business or marking end 22b of the crayon 22 is exposed beyond clamping finger portion 21c.

For anchoring pusher member 24 in a desired set position to rigidly retain crayon 22 effective to project as shown in Figs. 1 and 3, there is provided a wedge locking ring 25 encircling casing 21 which is mounted for sliding along the exterior of casing 21 with pusher member 24 having limited relative movement with respect thereto by a loose engagement of said ring 25 with fin 24d. To that end, ring 25 may be formed with an extending shoe section 25a having a groove 25b in which exposed projecting fin edge portion 24e rides and serves as a track therefor. Track fin edge 24c may be formed to slope rearwardly with respect to an axis of the bore 21a and shoe section 25a correspondingly sloped but of relatively shorter length than said fin edge 24c so that the ring 25 may be retracted therefrom toward the cramping finger portion 21c of the casing 21 in the manner as described above for holder 20.

If desired, said loose engagement of ring 25 with fin 24d may form an inseparable unit by preventing displacement separation thereof when the pusher-member 24 and ring 25 are removed from casing 21 when refilling with a crayon 22. As shown in Figs. 1 to 3 such separation prevention may be accomplished by providing a retainer extension portion 24g offsetting from fin 24d over said track edge 24e to freely project through a passage 28c in said ring section 25a as not to interfere with the wedge locking movement of the ring 25 on the fin edge 24f thereby preserving said loose interconnection against accidental separation displacement of the ring groove 25b from a cooperative position with fin projecting edge 24e in readiness for said wedge locking action when assembled in casing 21.

The practical application of the invention will now be apparent after constructing the various parts of complete holder 20 as described above and shown in Figs. 1 to 3, said parts may be readily assembled by sliding the crayon 22 into casing bore 21a through rear open end 21f thereof with cap 23 removed. The pusher member 24 with said ring 25 loosely interconnected therewith which may form an inseparable unit if desired, can next be positioned in place by sliding pusher head 24a into the casing bore 21a behind the crayon 22 with the ring 25 encircling said casing 21 and with the shank 24b and fin projecting edge 24e extending through slot or groove 25b. The cap 23 may then be screwed on the casing rear open end 21f to form a closure.

To adjust the pusher member 24 into effective position, said ring 25 may be first retracted, that is, moved into the doped line position shown in Fig. 3 to release the wedging action of the ring groove 25b on fin projecting edge 24f. Then pusher member 24 and loosely interconnecting ring 25 may be together advanced along casing 21 and then retracted with cap 23 until the desired business end 22b of the latter projects beyond the spring clamping finger portion 21c of casing leading tapered end 21b. The ring 25 is then moved in a forwardly direction with relation to fin projecting edge 24e thereby rigidly wedging the ring 25, pusher member 24 through fin projecting edge 24e to the casing 21, and as a result clamping crayon 22 in bore 21a between said clamping finger portion 21c and the plunger head end 24a of the casing 21 thus firmly retained in an effective operating position for use in writing or marking in the well understood manner.

The clamping finger portions 21c may be made to have spring pressure suitable to correspond to the character of writing elements such as crayons 22, or an eraser when used in place of the crayon 22. Thus with chalk crayon 22 a comparative stiff structure may be required since chalk is relatively hard while with a wax crayon or eraser element said slots 31c forming finger portions 21c may be made longer and the through-opening 21d positioned as shown in dotted lines in Fig. 1 to give a greater resiliency and less stiff clamping structure.

Movement of pusher member 24 and ring 25 is facilitated through manipulation of knob 24c, and crayon 22 may be replaced or adjusted for marking by releasing said wedging of the ring 25 as described above.

When the retainer extension 24g is provided, accidental separation of ring 25 from pusher member 24 as a unit is prevented when the latter and said ring 25 are removed from the casing 21 during refilling or replacing of crayon 22 therein.

In Fig. 4 a modified construction of the invention in the form of holder 30 is shown for use with a slate pencil or an erasing element 32 instead of a crayon 22. Casing 31 of holder 30 may be made of molded plastic and for convenience said casing 31 is made approximately cross-sectional size of a conventional lead pencil. All the other parts and construction may be similar to that described above for holder 20 to conform to the size, shape and requirement of casing 31 as for example providing casing 31 with a bore suitably sized for slidingly fitting said element 32 the along elongated slot 31g pusher member 34 with knob 34c and fin projecting edge 34e. Also if desired, said holder 30 may include a retainer extension 34g, ring 35 for cooperating with said edge 34e, and a leading end portion 31b having spaced slits 31c and through openings 31d. Said holder 30 may be used in the identical manner described above either as a refillable writing and marking instrument or as an erasing means.

In Fig. 5 another modification of the invention is shown in which a crayon holder construction 40 is formed with a closed rear end 43 for casing 41 instead of a removable cap, said casing 41 having a longitudinal extending slot 41g extending into bore 41a thereof, and being fitted with demountable leading end portion 41b. The latter may be rigidly secured in position in any suitable manner, and as shown here by screw joint 45, and may be tapered to conform to leading end 21b of holder 20 described above, said leading end portion 41b being formed with spaced slits 41c and through-openings 41d to form clamping finger 41e.

Pusher member 44 of said holder 40 has knob 44c and fin projecting edge 44e loosely interconnecting with locking ring 45, the latter being provided in the assembly with casing 41 in the same manner as described above for holder con-
struction 20. However since refilling of crayon 42 into casing 41 can be carried out when said leading end portion 41b is dismantled there is no need to remove the pusher-member 44 with loosely interconnected ring 25 from bore 41a and consequently no retainer extension 24y to pusher member is required, but instead merely stop extension 44g.

It should be noted that casing slot 41g need not extend to be open-ended, in which case the pusher member 44 may be assembled by inserting plunging head 44a partly into the open end of the casing 41e. Then by slipping fin 44d into the slot 41g and through ring 45, the fin 44d may be riveted to said plunging head 44g. As is clear from Fig. 5, when constructed as described, the unit formed by pusher member 44 and ring 45 cannot readily be removed from the assembly with casing 41.

In Figs. 6 and 7 two additional holder constructions 50 and 60 respectively, are shown.

Holder construction 50 shown in Fig. 6 may be the same as that described above for holder 40, having identical parts except that demountable leading end portion 51b thereof is made of mold plastic instead of said metal end portion 41b, said portion 51b being fitted on metallic casing 51. Likewise holder construction 60, shown in Fig. 7, is made of similar parts to the assembly of holder 40 except that casing 61 thereof is formed of a molded plastic and is fitted with a demountable metallic leading end portion 61b.

All of said holder construction 20, 40, 50 and 60 when assembled are each manipulated and can be used in the same manner as holder construction 20 above described.

It will thus be seen that there is provided writing or erasing devices of the character described, whereby the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not as a limiting sense.

Having thus described my Invention, I claim as new and desire to secure by Letters Patent:

1. For instruments having slotted holder casings each formed with an axial bore, a pusher member comprising a plunging-head fitted for sliding movement along said bore, a fin terminating said plunging-head to extend through said slotted holder casing, and a finger knob engaging said shank adjacent an exterior surface of the holder casing for selective movement of said plunging-head thereby, a fin aligning with said shank extending in a rearward direction from said plunging-head in said bore with an exposed wedge-shaped edge portion carried by said fin projecting through said slotted holder casing beyond the exterior surface thereof, an anchoring ring slidably mounted on said holder casing exterior surface having a shoe portion for releasably engaging said fin edge portion to wedgily interlock said plunging-head in a selective desired position along said holder casing on a straight line movement of said ring shoe portion with respect to the wedge shaped fin edge portion, said fin projecting edge includes an extension retainer, said locking ring having a passage through which said extension retainer passes for limiting relative movements of the ring by a loose interconnection securing said ring against accidental disengagement with respect to the fin projecting edge on complete removal of the said pusher member with the ring from the casing.

2. For refillable graphic art instruments of the character described as defined in claim 1 in which said casing leading end with said finger portions form a demountable tapered structural portion of said casing, and coupling means for securing said structural portion in effective position.

3. For refillable graphic art instruments of the character described each having an elongated tubular holder casing formed with an axially extending bore and a through-slot extending lengthwise said bore adapted to have replaceably fitted therein an elongated element pertaining to said art for partially filling a length of said bore with the business end of the element extending in an effective projecting position beyond a leading open end of said casing, of a plunging-head fitted for selective sliding movement along said bore having a front facing surface positioned behind said element against an end of the latter opposite said elements projecting business end, a shank carried by said plunging-head to extend through said slot, a finger knob terminating said shank at an exterior side of the casing for selective movement of the plunging-head thereby, a fin rigidly mounted to extend in a rearward direction from said plunging-head having a projecting portion serving as a track extending through said slot and beyond the casing, a single ring mounted for sliding movement over said casing having a shoe slot into which said fin projecting portion extends in cooperative relation with said knob for releasably wedge-locking said plunging-head against movement with respect to the casing on movement of the fin portion and knob with respect to said ring, resilient finger portions provided on said casing leading end for clutching said element in the effective projecting position to rigidly clamp said element partially filling said bore between the finger portions and the plunging-head front facing surface, and a loose interconnection includes an extension retainer offsetting over said track to interconnect with said ring for limiting relative movement of said ring along the track, said ring having a passage spaced from the track through which said extension retainer rides for securing said ring against accidental disengagement with respect to the fin projecting portion on removal of said plunging-head and ring from the casing.

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