

This invention relates to a holder for accommodating a variable number of photographic prints, comprising a housing having a viewing window against which, in use, the photographic prints are pressed by means of a spring arrangement when the holder is closed, and having a slide which can be pulled out of the housing for removing the photographic prints and on the withdrawal of which the pressing action of the spring arrangement is suppressed. A holder of this type is known from DE-OS 27 42 347.8.

The problem underlying the invention is to provide a holder of the type described above such that, while the photographic prints are protected to a very great extent, they are nevertheless pressed substantially flat against the viewing window when the slide is pushed into the housing, and the slide can be pulled out substantially without jerking, although on so doing the pressing action of the spring arrangement is cancelled.

The present invention provides a holder for accommodating a variable number of photographic prints, comprising a housing having a viewing window against which, in use, the topmost photographic print is pressed by means of a spring arrangement when the holder is closed, and having a slide which can be pulled out of

the housing for removing the photographic prints and on the withdrawal of which the pressing action of the spring arrangement is suppressed, wherein the spring arrangement is fastened in the housing and has
5 contact regions which extend parallel to the direction of withdrawal of the slide and which, in use, rest against the bottommost photographic print, and that the slide is provided with a control bar extending transversely with respect to the direction of with-
10 drawal of the slide, the control bar having a first portion, arranged substantially at right angles to the viewing window, for pushing the said prints out of the housing when the slide is pulled, and a second portion arranged to slide up onto the contact regions on with-
15 drawal and press these regions away from the viewing window.

Two viewing holders for photographic prints constructed in accordance with the invention will now be described by way of example only with reference to
20 the accompanying drawings, in which:

Fig. 1 shows a longitudinal section through a first holder shown closed and without photographic prints,

25 Fig. 2 shows the holder with a slide pulled out and with a stack of several photographic prints inserted,

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Fig. 3 shows a half cross-section through the holder according to Fig. 1 with photographic prints inserted,

5 Fig. 4 shows, mirror-symmetrically with respect to Fig. 3, a half cross-section taken on the line 4 - 4 in Fig. 2.

Fig. 5 shows a perspective view of a spring used

in the holder,

Fig. 6 shows a perspective view of the construction of the slide,

Fig. 7 shows a detail of the slide,

5 Fig. 8 corresponds generally to Fig. 4 but shows in addition important structural details,

10 Fig. 9 shows a longitudinal section through a second holder of which the slide has the same construction as shown in Fig. 6; the holder being shown closed,

Fig.10 shows the holder according to Fig. 9 partly open,

15 Fig.11 shows a perspective view of a first component of a spring arrangement of the second holder,

Fig.12 shows a perspective view of another component of the spring arrangement,

20 Fig.13 is a section through the spring arrangement in the region of the connection of the two components,

Fig.14 shows a side view of the first component,

25 Fig.15 is a plan view of a lower housing shell of the holder having the spring arrangement mounted, and

Figs.16 and 17 show, analogously to Figs.11 and 14 respectively the first component of a spring arrangement for a holder of different dimensions.

Referring to Figs. 1 to 8, a holder for photographic prints has a housing 10 with a viewing window 12 and, looking towards the viewing window, is of substantially rectangular shape.

5 The holder is rectangular also in longitudinal section (as shown in Fig. 1), whilst in cross-section the side edges are rounded, as can be seen in Fig. 8. In Fig. 8 it can also be seen that the housing comprises a lower shell 14, an upper

10 shell 16 and a mounted viewing window component 18 in the latter; the viewing window is manufactured from transparent plastics material, whilst the rest of the housing^{and} the slide 20 preferably consists of coloured plastics material. Parts 14 - 16 - 18 of

15 the housing fit together in an interlocking manner and are rigidly connected to one another by adhesive or thermal bonding.

With the exception of an opening for withdrawing the slide 20, which opening has dimensions corresponding to the cross-sectional shape of the slide (Fig. 8), the housing 10 is completely closed. Since, furthermore, the slide has stops in the form of shoulders 22 which limit the withdrawal movement by running onto corresponding opposing stops 24 on

20 the housing, the holder is assembled by firstly attaching a spring arrangement, which has still to be described, to the floor 26 of the housing, then

25 inserting the slide into the lower shell and only then placing the upper shell, with the viewing window

already secured in it, onto the lower shell and bonding the upper shell to the lower shell.

The slide 20 has substantially the shape of an open frame with an end portion 28, side ledges 30 of angular cross-section and a control bar 32 opposite the end portion.

One form the spring arrangement can take is shown in Fig. 5 where the spring arrangement has the form of a one-piece sheet metal part 34 which will be referred to hereafter simply as a spring. The spring arrangement does not, however, have to take that form and the spring arrangement can be constructed, for example, in the form of a wire loop arranged to fulfil the same function as the spring of Fig. 5. An example of an alternative spring arrangement will be described later.

Referring to Fig. 5, the spring has an approximately trough-shaped cross-section perpendicular to the direction of withdrawal of the slide, although an approximately V- or U-shaped cross-section could alternatively be used.

The base or floor portion 36 of the spring 34 lies approximately flat on the floor 26 of the housing and is fastened to this by mounting it on small lugs 38 which are formed on the floor of the housing. If necessary, the small lugs, which project through openings 40 in the floor portion 36 of the spring, can be thermally-bonded on.

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The free edges 42 of the spring are bent towards the outside, so that smooth, rounded contact regions 46 are produced which rest against the back of the photographic prints 44. The length of the spring 34 in the region of these contact regions corresponds substantially to the dimension of the viewing window in the direction of withdrawal of the slide, and pressing the photographic prints against the viewing window along the two lines defined by the contact regions is sufficient to press even badly deformed (curved) photographic prints flat against the viewing window.

Accordingly, the contact regions 46 extend parallel to the viewing window and only at their ends move in to the end edges of the spring by way of rounded shoulders. The shoulders remote from the opening in the housing and facing the control bar of the slide when it is pushed in, form run-up sections 48 for the control bar and, as can be seen in Fig. 1, the control bar 32 of the slide 20 has an oblique surface 50 which when the slide is pulled out runs up onto these run-up sections 48 and thus presses the free edges of the spring 34 downwards, that is to say in the direction towards the floor 26 of the housing. When the slide is withdrawn further, the lower edge 52 of the control bar slides on the contact regions; (compare Figs. 3 and 4).

On each side of the oblique surface 50 there is provided a respective stop surface 54 arranged transversely with respect to the direction of withdrawal of the slide and thus perpendicular to the surface of the

inserted photographic prints, so that the prints are conveyed safely out of the housing when the slide 20 is pulled. On the upper side of the bar 32 there is a shallow cut-away 56 so that the upper edge of the bar cannot touch the viewing window when the slide is moved. Notches 58 and rails 60 are provided to prevent the uppermost inserted photographic print from jamming in the thus widened gap between the viewing window, or the frame around it, on the one side and the upper edge of the bar on the other. The notches 58 are provided in the upper side of the bar 32, close to its ends. In each of the notches a respective rail 60 (Fig.8), provided on the housing and projecting downwardly, engages in the manner of a comb and thus keeps the bar-facing edges of the photographic prints below the level of the upper side of the bar.

The movable side portions or "wings" 62 of the spring 35 are, according to the number of photographic prints inserted, more or less bent back about the bending lines 64. As a consequence, on withdrawal the control bar 32 of the slide 20 will strike the run-up sections after an initial path of length determined by the number of prints inserted. In order to avoid the jar which would otherwise occur, the spring 34 has centrally on its internal end remote from the opening in the housing a braking tongue 66 which is likewise punched out in one-piece with the main portion of the spring and rests against the lower edge of the bar, in

the region of projecting spurs 90 provided on the bar, with sufficient bias for the above-mentioned impact scarcely to be felt by the user; on the contrary, on withdrawal the slide is subjected to a substantially uniform frictional braking action. At its free end the braking tongue 66 is angled downwards in the direction towards the floor of the housing, and when the slide is fully inserted this angled part or cam 67 is positioned adjacent the projecting spurs 90 on the slide and holds the slide in the housing. The oblique angling helps to compensate for manufacturing tolerances.

On the side facing the opening in the housing, in front of the attachment points 30, 40, there are formed on the floor of the housing, nose portions 68 which project through the mounting openings 40 of the spring 34. The reason for providing the nose portions 68 is that otherwise when a slide loaded with photographic prints is to be pushed into the housing again, there could be a risk that the bottom-most photograph, facing the spring 34, will become caught in the attachment points 30, 40, especially if the photograph is curved downwards about a longitudinal axis. The nose portions 68 serve to deflect the edges of the bottom-most paper picture.

The front portion of the slide comprises a grip piece 70, against which those edges of the photographic prints on the side of the opening in the housing rest on the inside and, on each side of the grip piece, reinforcement walls 72. The outwardly-facing sides of these walls 72 are set back slightly with respect to the outer edges of the grip piece 70, side ledges 30 and floor piece 74, and are provided with an inwardly-projecting step 76 that faces the floor piece. Apertures 78 are formed in the lower edges of the side ledges 30 in front of the walls 72 to receive axle stubs 80 of a label window 82 formed from transparent plastics material, so that a label 84 can be inserted or removed. The window is locked with small projections 86 engaging in corresponding recesses 88 on the underside of the projecting grip piece edge.

No objections can be raised to the above-described holders so far as regards its operation, but it does have two shortcomings which it may be preferred to avoid.

On the one hand, the cost of manufacturing the spring is quite considerable and, on the other hand, the empty container, seen through the viewing window, is aesthetically unsatisfactory. Both disadvantages are avoided in the holder shown in Figs. 9 to 17 which has a slide of identical construction to that shown in Fig. 6.

In the holder of Figs. 9 to 17 the spring arrangement comprises two components: a one-piece spring punched and bent from flat material (Figs. 11 and 14 and 16 and 17) and a cover plate injection-moulded from plastics material and arranged above the side of the spring that faces the viewing window.

The housing differs in principle from the housing of the holder of Figs. 1 to 8 only in so far as modifications are required by the mounting of the spring; it therefore likewise comprises an upper shell and a lower shell, the lower shell being shown in Fig. 15.

Figs. 9 and 10 show the housing having the lower shell 100, upper shell 102 and a viewing window 104 inserted therein, and a standing foot of this type may also be provided for the first embodiment, and, for example, can form part of the projecting portion 14. The essential parts of the slide are marked with the reference numerals from Fig. 6.

It is also possible to see the stack of photographic prints 108 which is pressed against the viewing window 104 by the cover plate 110, since the cover plate is in its turn under the bias of a spring 112.

The locking of the slide in the housing by the cooperation of its projecting spurs 90 with the braking tongue 66' and cam 67' on spring 112 corresponds to that of the holder of Figs. 1 to 8 and need not be explained again.

When the slide is pulled out its oblique surfaces 50 slide onto an opposing oblique face 114 on the cover plate 110, so that, as in the case of the holder of Figs. 1 to 8, a gentle jerk-free transition can be achieved despite unavoidable tolerances; on withdrawal, the slide is subjected to a substantially uniform frictional braking action, the slide pressing the cover plate away from the viewing window against the force of a spring. When the slide is in the fully withdrawn position the opening-end 116 of the cover plate is, of course, still under the transverse bar or control bar 32 of the slide so that the slide can be pushed in again.

The construction of the spring can be seen in detail in Figs. 11 and 14, Fig. 11 showing the spring in the relaxed position and Fig. 14 showing the spring in the downwardly-pressed position.

The spring is cut to length from a spring band stock material, punched and bent into shape. It includes, in addition to the braking tongue 66' and cam 67', an angled portion 120, necessitated by a corresponding depression in the lower shell of the housing in the region of the projecting portion 14, and two connection bars 122, adjoining the angled portion 120, which adjoin the actual spring bow 124. Between the connection bars a fastening flap 126 projects freely from the angled portion 120 in the direction towards the spring bow. It has a fastening hole 128 with a barb 130. The spring bow is provided with a connection hole 132

for mounting the cover plate 110 and is bent backwards slightly at its free end at 134 so that this free end can slide with low friction on the floor of the housing when the spring bow is displaced.

Fig. 12 shows the cover plate 110 from below, that is to say, the side facing the spring. It is manufactured in the form of a one-piece plastics injection-moulded part, as are also the lower and upper shells of the housing and the slide; whilst its upper side facing the viewing window forms flat surfaces, on the underside there are provided reinforcement ribs 140 and assembly devices.

These assembly devices enable the spring pressing unit to be pre-assembled. A centring peg 142 on the underside of the cover plate 110 fits into the connection hole 132 in the spring bow, and two lateral lugs 141, formed on the ribs 140, engage beneath the side edges of the spring bow and secure the connection; to accomplish this assembly the cover plate 110 can be flexed about its longitudinal axis in the direction of the arrow 146 (Fig. 13). In order then to be able to fasten this pre-assembled unit in the lower shell of the housing, the fastening hole 128 in the flap 126 of the spring is placed over a projection 148, shaped to be complementary to the hole 128, on the inside of the floor 150 of the lower shell 100 and pressure is exerted on the cover plate in the region above this fastening hole 128. As a result the push pieces 152, which are formed at each

side of an opening 154 in the underside of the cover plate, strike the parts of the flap 126 close to the fastening hole 128 and press the flap over the projection 148, the barb 130 being displaced slightly and engaging firmly in the plastics material. The projection can be long enough to pass through the opening 154 and to be exactly flush with the surface, facing the viewing window, of the cover plate when the cover plate is in its lowest position, that is to say when its ribs 140 rest on the floor of the lower shell. It is to be noted that the construction is particularly good for automated assembly. On the upper side of the cover plate there is provided additionally a longitudinal channel 156 which forms a free movement path for the projecting spurs 90 of the slide, whilst the pressing downwards of the cover plate at the surface regions 158 (contact regions) located at the side thereof is effected by the oblique surfaces 50 of the slide.

Fig. 12 shows an inner cut-out portion 160 and an outer cut-out portion 162 in the cover plate. The inner cut-out portion leaves spacefree for the braking tongue 66' of the spring. The outer cut-out portion leaves space for a covering cap 164 which is formed on the floor 150 of the lower shell 100 of the housing and limits passage towards the inside of a hook or nail used to hang the holder by means of the hole 166 when the holder is used as a hanging frame.

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The covering cap prevents the hook or nail damaging the photographic print which faces it; on the other hand, however, it must be possible for the control bar of the slide to pass by this covering cap when the slide is pulled, and for this reason a space is provided between the two retaining cams 90.

The embodiment according to Figs. 6 and 9 to 15 described so far is intended for use in holders for accommodating photographic prints of relatively large format. With smaller formats, for example, the 9cm x 9cm format, it can be advantageous to replace the spring according to Figs. 11 and 14 by the modified spring according to Figs. 16 and 17 (it goes without saying that it is also necessary to adapt the dimensions of the housing, slide and cover plate).

In this case the spring projects into the region of the covering cap 164 and is therefore provided with a corresponding recess 179. The connection bars 122' in this case are mounted laterally on the spring bow 124', which is additionally supported on the floor of the housing by two arms 172; the material between the arms 172 is required for the fastening flap 126'.



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claims

1. A holder for accommodating a variable number of photographic prints, comprising a housing having a viewing window against which, in use, the topmost photographic print is pressed by means of a spring
5 arrangement when the holder is closed, and having a slide which can be pulled out of the housing for removing the photographic prints and on the withdrawal of which the pressing action of the spring arrangement is suppressed, wherein the spring arrangement is fastened
10 in the housing and has contact regions which extend parallel to the direction of withdrawal of the slide and which, in use, rest against the bottommost photographic print, and that the slide is provided with a control bar extending transversely with respect to the
15 direction of withdrawal of the slide, the control bar having a first portion, arranged substantially at right angles to the viewing window, for pushing the said prints out of the housing when the slide is pulled, and a second portion arranged to slide up onto the contact regions on
20 withdrawal and press these regions away from the viewing window.
2. A holder according to claim 1, characterised in that the control bar of the slide forms an inner rear wall of the slide.
- 25 3. A holder according to claims 1 or 2, characterised in that the spring arrangement is of a one-piece construction.

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4. A holder according to claim 3, characterised in that the spring arrangement has at least one bending



line, parallel to the direction of withdrawal of the slide and close to the floor of the housing opposite the viewing window.

5. A holder according to claim 4, characterised
5 in that transversely with respect to the direction of withdrawal of the slide the spring arrangement has a substantially trough-shaped cross-section, the floor side being secured to the floor of the housing and the free edges of the trough shape having the
10 contact regions.

6. A holder according to claim 5, characterised in that the spring arrangement is a one-piece sheet metal part.

7. A holder according to claim 5, characterised
15 in that the spring arrangement is bent from wire.

8. A holder according to claim 4, characterised in that the contact regions of the spring arrangement have run-up sections for the control bar of the slide, which sections make a transition into main sections
20 extending substantially parallel to the viewing window.

9. A holder according to claim 2, characterised in that the control bar of the slide extends over the width of the housing transversely with respect to the direction of withdrawal of the slide and that its edge
25 that faces the viewing window is set at a distance from the viewing window.





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10. A holder according to claim 9, characterised in that the control bar of the slide, on the one hand, and a frame portion of the housing surrounding the viewing window, on the other hand, have projections and grooves that engage one another in a comb-like manner.

11. A holder according to any preceding claim, characterised in that the spring arrangement has a locking cam that engages the control bar of the slide in order to retain the slide after it has been pushed into the housing.

12. A holder according to claim 11, characterised in that between the locking cam and run-up sections leading to the contact regions the spring arrangement has a braking tongue that acts against the control bar of the slide at the beginning of withdrawal of the slide.

13. A holder according to any preceding claim, characterised in that the housing has a hanging eyelet on its floor remote from the viewing window and that the spring arrangement has an opening in alignment with the hanging eyelet.

14. A holder according to claim 6, characterised in that the planar regions of the sheet metal spring that are fixed to the floor of the housing are substantially flat and that in the direction of insertion of the slide there are provided in front of the attachment points of the spring on the floor of the housing oblique run-up faces for the photographic prints.

15. A holder according to claim 1, characterised in

that the spring arrangement comprises a unit consisting of a metal spring and a cover plate which is arranged on the side of the spring facing the viewing window of the housing and has the contact regions.

16. A holder according to claim 15, characterised in that the unit is constructed in such a manner that it can be inserted into the housing in pre-assembled form.

17. A holder according to claim 16, characterised in that there is a snap connection between the spring and the cover plate.

18. A holder according to claim 16 or 17, characterised in that the cover plate has auxiliary elements for inserting and fastening the spring arrangement unit in the housing.

19. A holder according to any of claims 15 to 19, characterised in that the spring is punched and bent into shape from a sheet metal strip.

20. A holder for accommodating a variable number of photographic prints, the holder being substantially as herein described with reference to, and as illustrated by, Figs. 1 to 8 of the accompanying drawings.

21. A holder for accommodating a variable number of photographic prints, the holder being substantially as herein described with reference to, and as illustrated by, Figs. 6 and 9 to 15 of the accompanying drawings.



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22. A holder as claimed in claim 21 but modified substantially as herein described with reference to, and as illustrated by, Figs. 16 and 17 of the accompanying drawings.

