

SPECIFICATION

Improvements in and relating to microfilm reading apparatus

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The invention relates to a device for holding and guiding a microfiche in a microfilm reading apparatus having a support unit which is so mounted on the apparatus housing as to be movable in a first direction and which has guide means that in use so guide a microfiche holder that it is moveable in a second direction perpendicular to the first direction.

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Devices of this type are disclosed in, for example, German Gebrauchsmuster No. 77 27 582 and German Gebrauchsmuster No. 76 35 429. In the case of the first mentioned Gebrauchsmuster, the microfiche holder is removably attached by means of magnetic strips to the guide means which are mounted on the support unit, and in the case of the second Gebrauchsmuster, the guide means, which are fastened to the microfiche holder, are releasably attached to the support unit. In both cases locking pins are additionally provided for fixing the microfiche holder into position. Both arrangements permit microfiche holders to be exchanged relatively quickly and easily when, in order to use different microfiche formats, microfiche holders that are designed for these formats are to be used. When exchanging microfiches having the same format the microfiche holder can remain in the apparatus, and in order to change the microfiche it is necessary simply to lift up the upper of the two transparent plates that are customarily used and between which the microfiche is held.

The microfiches used by the operator are usually housed either in a drawer or inside the housing of the reading apparatus or alternatively in a filing box, microfiche album or the like near to the reading apparatus. In order to change microfiches the operator must select a microfiche from the microfiche store, take it in his hand and insert it into the microfiche holder, it being necessary to take care that the microfiche is correctly positioned in the microfiche holder so that the index markings for the individual micro-images of the microfiche, which are usually provided on the reading apparatus, are in line with the actual position of the microfiche on the microfiche holder.

The procedure for changing microfiches described above, which is customary with the reading apparatus on the market at present, has some disadvantages. The microfiches that are not in use must usually be stored in a closed container in order to avoid soiling and damage. When selecting and inserting the microfiches, they must necessarily be handled which means that, in order to avoid soiling the microfiches, the operator must have fairly clean hands. However, it may be difficult or impossible to comply with this last require-

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ment especially when using the reading apparatus in less clean places of work, for example, in a motor vehicle workshop.

For many applications it is therefore desirable to provide each microfiche with its own microfiche holder and, when changing the microfiche, to exchange the whole microfiche holder each time. This is especially advantageous when the number of microfiches required to contain all the necessary data is small, as is the case with many users.

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It is an object of the present invention to provide a holding and guiding arrangement which is easy to handle, saves space and has relatively low manufacturing costs.

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The invention provides a device for holding and guiding a microfiche in a microfiche reading apparatus for moving a microfiche relative to a projection lens in two perpendicular co-ordinate directions having a support unit which is so mounted on the apparatus housing as to be movable with respect to the housing in a first direction and which has guide means that in operation so guide a microfiche holder that it is movable with respect to the support unit in a second direction perpendicular to the first direction, wherein the microfiche holder comprises a flat plate which is transparent at least in the region of a support face for a microfiche, on the underside of which there is constructed at least one guide means that when the microfiche holder is in its operative position on the support unit runs parallel to the second direction and engages positively with the guide means on the support unit, and to which there is attached a transparent sheet that covers the support face for the microfiches and adheres to the plate and/or to a microfiche on the plate. The construction of the microfiche in the form of a flat plate with an adhesive film resting on this plate enables the microfiche holder to be of extremely flat and light construction, resulting in more convenient handling and in less storage space being required for the microfiche holders. Furthermore, the holding and guiding arrangement is simplified by the fact that guiding means for the microfiche holder are shaped onto its underside, and co-operate positively with guiding means constructed on the support member, for example, a groove and spring guide.

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For the purpose of guiding the microfiche holder on the support member, the support member, for example, may be provided with a groove which guides pegs shaped onto the underside of the microfiche holder. Especially advantageously, however, a guide groove is constructed on the underside of the plate, the groove being guided on a guide rib constructed on the support member when the plate is in the operating position. As it is thus possible to avoid raised portions on the plate, the microfiche holder can be of extremely flat construction.

In terms of manufacturing techniques, the plate is advantageously constructed in one piece and is manufactured from a transparent material, especially transparent plastics material, thus producing an extremely economical microfiche holder, which is of increased importance insofar as the user usually requires several microfiche holders for one microfilm reading apparatus.

In order to facilitate handling the microfiche holder, an opening allowing a hand-grip may be constructed in the plate.

Microfiche holders are known which have a supporting rib constructed on the rear portion, as seen from the point of view of the operator, this rib supporting the microfiche holder on the support member. Instead, however, a support element is advantageously attached to the support member on the side opposite the guide means and, when the plate is in its operating position, this support element supports the rear region of the plate opposite the guide means on the plate. As the support element is now constructed on the support member, the rear region of the microfiche holder can also be of flat construction and have no projections. The support element preferably has an inclined face up which the plate runs when pushed in the direction of the supporting element.

One form of holding and guiding device constructed in accordance with the invention will now be described by way of example only with reference to the accompanying drawings, in which:

Figure 1 is a schematic perspective view of the holding and guiding device on a microfiche reading apparatus;

Figure 2 shows a schematic section through the holding and guiding device with a microfiche holder partially inserted into the operating position; and

Figure 3 shows a similar section with the microfiche holder in the operating position.

Referring to the drawings, on the lower part 1 of a microfilm reading apparatus there are attached two parallel guide rails 2 and 3 carrying a support plate 4 which can be moved relative to the lower part of the apparatus in the direction of arrow A in Fig. 1. On the front side, facing the user of the apparatus, of the support plate 4 there is a rail 5, on which a guide rail 5a and stop pins 5b are arranged. The rear portion of the support plate 4 carries a support element 6 of which the face 6a facing the operator is sloped back and forms an acute angle with the support plate 4. A locking spring 17 is arranged near the track 2 and in the forward stop position of the support plate 4 snaps into a stop recess 18 formed in the rail 5.

A microfiche holder 7 comprises a transparent, rectangular plate 8, on the underside of which, parallel to the front edge, facing the user, is a groove 9, in which the guide rail 5a

engages when the microfiche holder is in the operating position shown in Fig. 1, so that the microfiche holder, indicated generally by the reference numeral 7, can be moved relative to the support plate 4 in the direction of arrow B. At its rear side, remote from the user, the microfiche holder 7 rests on the upper face 6b of the support element 6.

A transparent plastics sheet 10 is fastened, for example, by glueing, by its edge 10a to the upper face of the transparent plate 10. A microfiche 11 is inserted between this sheet 10 and the transparent plate 8. The correct position of the microfiche 11 on the transparent plate 8 is indicated by corner markings 12. The transparent cover sheet 10, which is made of, for example polyethylene or polyester, sticks to the microfiche and to the transparent plate 8 as a result of adhesive forces, perhaps assisted by an adhesive coating, so that the microfiche is held securely in the correct position within the corner markings 12.

Figs. 2 and 3 show schematically the projection lens 13 which is mounted on a flat spring 15 attached to the housing 14 of the apparatus and, as is shown in Fig. 3, rests resiliently on the microfiche holder 7. When there is no microfiche holder 7 in the guiding arrangement of the reading apparatus, the lens 13 dips a little below the position shown in Fig. 3, but there is still sufficient space between the underside of the lens and the support plate 4 for the microfiche holder to be pushed between them.

The microfiche holder is used as follows:

The user normally has several microfiche holders 7 which he keeps ready to hand in or near the reading apparatus. There is a microfiche 11 in each of the microfiche holders 7. The number of microfiche holders 7 should be at least equal to the number of microfiches 11 that are frequently used. When a microfiche holder 7 is to be inserted into the reading apparatus, the user first of all pulls the support plate 4 towards him in the direction of the arrow A until the locking spring 17 snaps into the locking recess 18. The support plate 4 is now in its outermost stop position, which is the most convenient position for changing the microfiche holder 7.

The user then takes the required microfiche holder 7 and inserts it, as shown in Fig. 2, into the apparatus the rear edge of the microfiche holder sliding along the upper face of the support plate 4. When the microfiche holder 7 is raised by sliding up the sloped face 6a, the lens 13 is also raised and rests resiliently on the microfiche holder. If the microfiche holder 7 is pushed into the apparatus to such an extent that the guide groove 9 lies above the guide rail 5a, the guide rail engages in the groove. The microfiche holder 7 is then in the operating position. By moving the microfiche holder in the plane defined by

the directions of the arrows A and B, any desired one of the micro-images on the microfiche 11 can be positioned in the path of the projection beam 19.

- 5 To remove the microfiche holder 7 from the apparatus it is only necessary to lift the microfiche holder slightly and pull it out of the apparatus. As is clear from the above description, it is possible to operate the arrangement described using only one hand. The microfiche holder can be exchanged extremely quickly and easily. When inserting the microfiche holder into the apparatus it is unnecessary to ensure that it is inserted in a particular position, because the guide rail 5a and the guide groove 9 will engage at any point along their lengths.

CLAIMS

- 20 1. A device for holding and guiding a microfiche in a microfiche reading apparatus for moving a microfiche relative to a projection lens in two perpendicular co-ordinate directions having a support unit which is so
25 mounted on the apparatus housing as to be movable with respect to the housing in a first direction and which has guide means that in operation so guide a microfiche holder that it is movable with respect to the support unit in
30 a second direction perpendicular to the first direction, wherein the microfiche holder comprises a flat plate which is transparent at least in the region of a support face for a microfiche, on the underside of which there is
35 constructed at least one guide means that when the microfiche holder is in its operative position on the support unit runs parallel to the second direction and engage positively with the guide means on the support unit,
40 and to which there is attached a transparent sheet that covers the support face for the microfiches and adheres to the plate and/or to a microfiche on the plate.
- 45 2. A device as claimed in claim 1, wherein the plate is constructed in one piece and is manufactured from a transparent material.
3. A device as claimed in claim 2, wherein the plate consists of transparent plastics material.
- 50 4. A device as claimed in any one of claims 1 to 3, wherein a guide groove is provided on the underside of the plate, which groove is guided on a guide rib constructed on the support unit when the plate is in the
55 operating position.
5. A device as claimed in any one of claims 1 to 4, wherein an opening allowing a hand-grip is provided in the plate.
- 60 6. A device as claimed in any one of claims 1 to 5, wherein a supporting element is attached to the side edge portion of the support unit opposite the guide means and, when the plate is in its operating position, supports the rear region of the plate opposite
65 the guide means.

7. A device as claimed in claim 6, wherein the supporting element has an inclined face up which the plate runs when pushed towards the supporting element.

- 70 8. A device as claimed in claim 1 and substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

9. A microfiche reading apparatus wherein
75 in use a microfiche being read is held and guided by a device as claimed in any one of claims 1 to 8.

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6. A device as claimed in any one of
60 claims 1 to 5, wherein a supporting element is attached to the side edge portion of the support unit opposite the guide means and, when the plate is in its operating position, supports the rear region of the plate opposite
65 the guide means.

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- 70 8. A device as claimed in claim 1 and substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

- 75 9. A microfiche reading apparatus wherein in use a microfiche being read is held and guided by a device as claimed in any one of claims 1 to 8.

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