HOLDING DEVICE WITH A STEM PART INCLUDING A FIN

Fig 2


Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,
The present disclosure relates to a holding device and a combination of a support device and such a holding device. The support device comprises an attachment surface having rows with elongated slot openings. The holding device comprises an attachment part and a carrier part, the attachment part being intended to be attached to the support device by being partly inserted into a first slot, such that the holding device can take up a load directed in the plane of attachment surface, and the carrier part being capable of supporting an item to be stored.

Different variations of such holding devices and support devices have been used for a long time. The support device may for instance be a sheet metal plate that is attached to a wall, and different holding devices can be attached at different locations over the plate, in different openings, such that a configuration desired by the user is achieved. Items of various kinds may then be stored on the sheet metal plate, e.g. tools.

One problem associated with such devices is to improve their reliability and usefulness.

This object is achieved by a combination as defined in claim 1 and a holding device as defined in claim 7.

More specifically, the combination then includes a support device and a holding device, the support device comprising an attachment surface having rows with elongated slot openings. The holding device comprises an attachment part and a carrier part, the attachment part being intended to be attached to the support device by being partly inserted into a first slot such that the
holding device can take up a load directed in the plane of attachment surface, and the carrier part being capable of supporting an item to be stored. A stem part interconnects the attachment part and the carrier part and the stem part includes a fin that fits into a second slot, which is located under the first slot, in the same row. Thanks to this configuration, it is prevented that the holding device swings sideways, pivoted at the attachment part. This provides a more reliable attachment.

The attachment part may be hook shaped, having a first leg extending substantially perpendicularly from the stem, and a second leg extending from the first leg and obliquely towards the stem, such that a triangular opening is formed between the stem, and the first and second legs. This allows the holding device to be readily attached to support devices with different thicknesses.

A projection may be formed close to the end of the second leg and extending towards the stem, and the distance between the projection and the first leg may correspond to the minimum distance between two adjacent openings in the carrier device. This locks the attached holding device to some extent as the projection may snap into the lower opening.

The carrier part may be e.g. in the form of a hook, a basket, a box or a tool holder.

A holding device suitable for such a combination is also considered.

Brief description of the drawings

Fig 1 shows a support device in the form of a support plate.

Fig 2 illustrates how a holding device in the form of a hook can be attached to a support device in the form of a support plate.

Fig 3 illustrates details of the holding device in fig 2.

Fig 4 shows a cross section through a support device with an attached holding device.

Fig 5 illustrates a portion of a cross section corresponding to fig 4, but where a thicker support device is used.

Fig 6 shows an alternative example of a support device.
Fig 7 shows a perspective view of an alternative holding device having a double attachment part.

Fig 8 is a plan view of the holding device in fig 7 as seen from a support plate.

Fig 9 shows the holding device of fig 7 when attached to a support plate.

**Detailed description**

The present disclosure relates in general to storage systems for storing items of different kinds.

Fig 1 shows a support device in the form of a support plate 1. The support plate 1 presents an attachment surface with a number of elongated slot openings 3 (in the illustrated case 8x40), which are arranged in rows 5, e.g. with a centre-centre distance of 10.5 mm between the rows. The elongated directions of the slots 3 are aligned with the rows 5. The slot length may be e.g. 20 mm and the width 3.5 mm. The plate 1 may for instance be 1.45 mm thick, and the elongated slot openings 3 are through holes. The support plate 1 may typically be wall mounted, for instance in a garage, and may be attached to a wall using bolts and distance elements (not shown) in such a way that there is e.g. a 25 mm distance between the wall and the support plate 1, which may extend more or less in parallel. The attachment surface is then substantially vertically oriented as is the rows of slots.

Fig 2 illustrates how a holding device in the form of a hook 7 can be attached to a support device in the form of a support plate 1. The hook 7 has an attachment part 9 and a carrier part 11, which is capable of supporting an item to be stored. In the illustrated case, the carrier part has a hook which defines the holding device as a whole as a hook. However, a number of other carrier part embodiments are possible as will be discussed later.

The attachment part 9, in the form of an attachment hook, is intended to be attached to the support plate 1 by being inserted into a slot 3 and being hooked over the lower edge of the slot 3, such that the holding device can take up a load directed downwards in the plane of attachment surface.
The holding device can easily be relocated to other slots, and a user can obtain many different configurations of holding devices on a support device.

Fig 3 illustrates details of the holding device in fig 2. The attachment part 9 and the carrier part 11 are interconnected by a stem part 13, which is intended to extend in parallel with the attachment surface of the support device 1, when attached.

The stem part 13 has a fin 15 which extends from the stem part in the direction facing the support device 1. This fin 15 may therefore extend into a support device opening 3, that is located under the opening in which the attachment part 9 is inserted, as will be shown in fig 4.

The attachment part 9, as mentioned, provides an attachment hook, which is formed by a first leg 17, which may be substantially perpendicular to the stem 13, extending in through a support device opening 3 when the holding device is mounted, and a second leg 19, which extends downwards behind the support device attachment surface when the holding device 7 is mounted. The second leg may be partly inclined towards the stem 13, as illustrated, such that a triangular opening 21 is formed between the stem 13, and the first and second legs 17, 19.

The end of the second leg 19 may include a projection 23, extending towards the stem, which more or less reaches the stem part 13. The first and second legs 17, 19 may be bent from the stem 13 in such a way that the second leg 19, close to the end thereof, is urged against the stem 13, but thanks to the projection 23 an elongated space 25, where there is a distance between the second leg 19 and the stem 13, is provided over the projection 23. Under the projection 23, the distance between the stem 13 and the second leg 19 may increase gradually to form a tapering space 27, that tapers towards the projection 23 to facilitate the attachment of the holding device to a support device.

Fig 4 shows a cross section through a support device with an attached holding device. The location of the cross section 29 is indicated in fig 2. The hook/holding device is attached to a relatively thin support plate. In fig 5, a
corresponding portion of the arrangement in fig 4 is shown, where a thicker support plate is used.

In fig 4, advantageous dimensioning of the attachment part of the holding device is illustrated, in relation to the support device. As can be seen, the distance between the projection 23 and the first leg 17 of the attachment part may correspond to the distance between two adjacent openings (cf. 31 in fig 2, e.g. 12 mm) in a row 5 of openings. This means that the projection 23 snaps into the opening 3' below the opening 3 in which the attachment part has been inserted. Thereby, the attachment part becomes somewhat locked from being moved upwards, such that the risk that the attachment part is accidently removed is reduced.

As can be seen in fig 4, the fin 15 of the stem part 13 is inserted into the above mentioned lower opening 3'. This prevents the carrier part 11 from swinging sideways, i.e. to be pivoted about the first leg of the attachment part, in parallel with the plane of the support device attachment surface. The fin thus has a width that is, at least partly, smaller than the width of the opening.

The triangular opening 21, formed by the first leg of the attachment part allows the attachment part to be fitted with support devices with different thicknesses as illustrated in fig 5.

Fig 6 shows another example of a support device, in form of a U-shaped rail element 33 having two vertical rows of elongated openings in the bottom part of the "U". Such a rail can be mounted extending vertically on a wall with the bottom part and the openings facing outwards in order to leave a free space between the openings and the wall. Alternatively, such a rail may be provided with as a free-standing arrangement. The rail element as such is well known, and is used e.g. to carry cantilevered consoles.

Fig 7 shows a perspective view of an alternative holding device having a double attachment part, including two legs 35, 37 and a stem with two fins 39, 41. This hook is wider and can carry a greater load. The legs 35, 37 have an intervening gap 43 at the top to allow the legs to be introduced in two slots in adjacent rows, as shown in fig 8. Fig 9 shows, from the backside of the support device, the holding device of fig 7 when attached to a support plate.
As can be seen, the distance between the legs of the attachment part corresponds to the distance between two adjacent slit rows.

The present disclosure is not restricted to the above illustrated embodiments and may be varied and altered in different ways within the scope of the appended claims.

For instance, the carrier part of the holding device, which when illustrated above is a single hook, may be provided with alternative features such as multiple hooks, a basket, a box, or other carrier parts adapted e.g. to hold a tool of a certain kind. It is also possible to interconnect carrier parts of multiple holding devices.
CLAIMS

1. A combination of a support device (1, 33) and a holding device (7),
the support device comprising an attachment surface having rows (5) with
elongated slot openings (3, 3'), the holding device comprising an attachment
part (9) and a carrier part (11), the attachment part being adapted to be
attached to the support device by being partly inserted into a first slot (3) such
that the holding device can take up a load directed in the plane of attachment
surface, and the carrier part (11) being capable of supporting an item to be
stored, characterized in that a stem part (13) interconnects the attachment
part and the carrier part and in that the stem part includes a fin (15) that fits
into a second slot (3') which is located under said first slot (3).

2. A combination according to claim 1, wherein the attachment part is
hook shaped, having a first leg (17) extending substantially perpendicularly
from the stem (13), and a second leg (19) extending from the first leg and
obliquely towards the stem, such that a triangular opening is formed between
the stem, and the first and second legs.

3. A combination according to claim 2, wherein a projection (23) is
formed close to the end of the second leg (19), the projection extending
towards the stem (13).

4. A combination according to claim 3, wherein the distance between
the projection (23) and the first leg (17) corresponds to the minimum distance
between two adjacent openings (3, 3') in the carrier device.

5. A combination according to any of the preceding claims, wherein the
carrier part (11) is in the form of a hook.
6. A combination according to any of claims 1-4, wherein the carrier part is in a form of a basket, a box or a tool holder.

7. A holding device comprising an attachment part (9) and a carrier part (11), the attachment part being adapted to be attached to a support device comprising an attachment surface having rows with elongated slot openings, and the carrier part being capable of supporting an item to be stored, characterized in that a stem part (13) interconnects the attachment part and the carrier part, the stem part including a fin, extending along at least a part of the stem part.

8. A holding device according to claim 7, wherein the attachment part is hook shaped, having a first leg (17) extending substantially perpendicularly from the stem (13), and a second leg (19) extending from the first leg and obliquely towards the stem, such that a triangular opening is formed between the stem, and the first and second legs.

9. A holding device according to claim 8, wherein a projection (23) is formed close to the end of the second leg (19), the projection extending towards the stem (13).

10. A holding device according to any of the claims 7-9, wherein the carrier part (11) is in the form of a hook.

11. A holding device according to any of claims 7-9, wherein the carrier part is in a form of a basket, a box or a tool holder.

12. A holding device according to any of claims 7-11, wherein the holding device has two attachment parts (39, 41) and wherein the top portion of the attachment parts are separated by a gap (43).
**A. CLASSIFICATION OF SUBJECT MATTER**

IPC: see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC: A47F, B25H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, PAJ, WPI data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:
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Date of the actual completion of the international search: 25-09-2013

Date of mailing of the international search report: 27-09-2013

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B25H 3/04 (2006.01 )
A47F5/08 (2006.01 )
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