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SHELF BRACKET HAVING CAM LOCK

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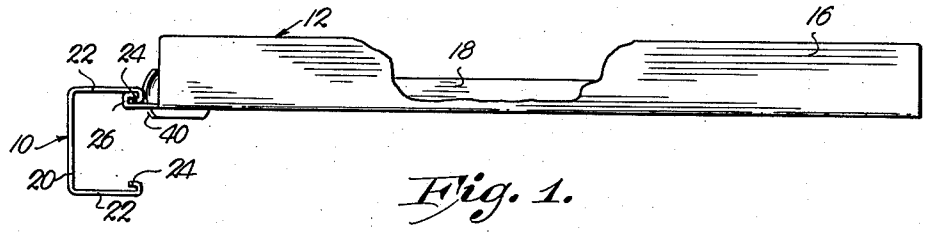


Fig. 1.

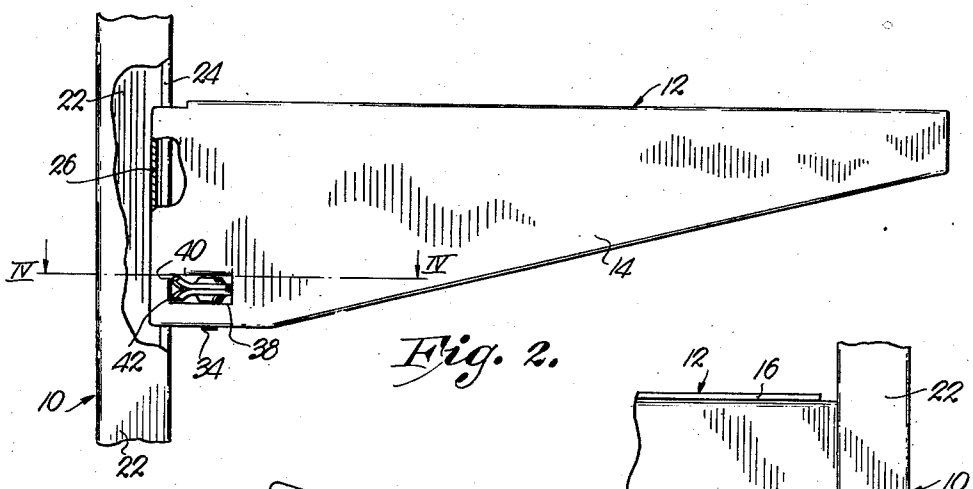


Fig. 2.

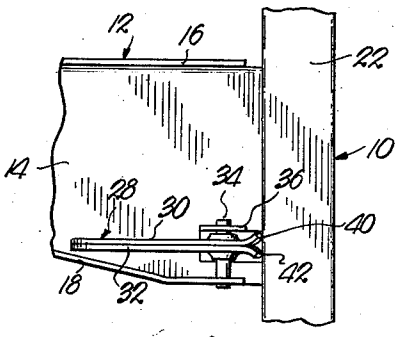


Fig. 3.

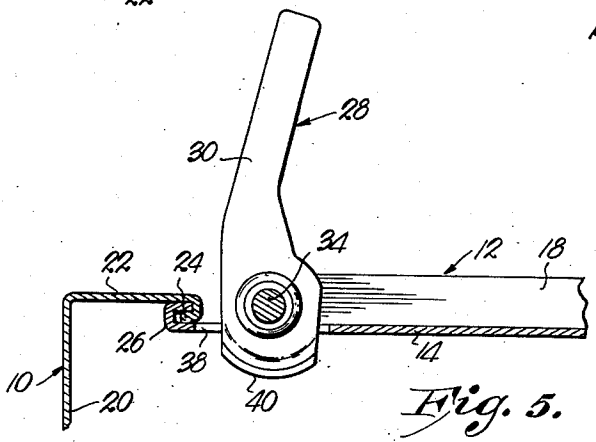


Fig. 5.

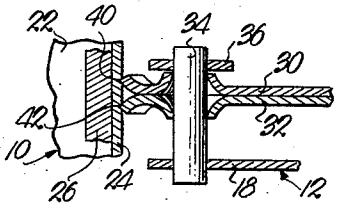


Fig. 6.

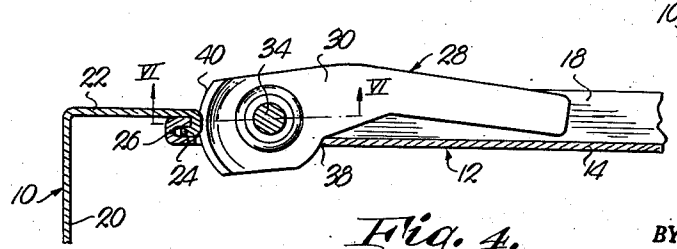


Fig. 4.

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SHELF BRACKET HAVING CAM LOCK

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8 Claims. (Cl. 248—245)

This invention relates to shelving structure, and particularly, to a bracket and support assembly having novel means for releasably attaching the bracket to the support at any desired point throughout the length of the support.

It is the most important object of the present invention to provide shelving structure of the aforementioned nature adapted to permit assembly and adjustment substantially without the use of any tools whatsoever.

Another important object of the present invention is to provide means of attachment for the bracket to the support that positively and firmly hold the bracket against displacement by virtue of a biting action between a cutting edge of a latch or lock carried by the bracket and acting on the support.

A further object of the present invention is to provide shelving structure that includes a cam latch which progressively increases an interlocking fit between hooks formed on the support and the bracket, together with a progressively increased cut into the hook of the support as the latch is swung to one end of its path of travel.

A still further object of the present invention is to provide shelving structure having a bracket which may be easily and quickly attached to the support or standard by movement of the bracket along a substantially straight horizontal line, thereby avoiding interference with previously attached brackets, shelving or other obstructions such as side walls, columns and the like.

Another important aim of the instant invention is the provision of shelving structure wherein a pair of brackets may be attached adjacent to one another without interference, each of which may additionally be shifted independently of the other.

Another aim of the instant invention is to utilize a cam lever type bracket wherein the holding power to prevent slippage does not depend upon the load carried by the shelf to clamp the same more firmly to its upright support.

Other objects include important details of construction to be made clear or become apparent as the following specification progresses.

In the drawing:

Fig. 1 is a plan view of a shelf bracket having a cam lock made pursuant to the present invention, parts being broken away for clearness.

Fig. 2 is a fragmentary, side elevational view of the shelving structure shown in Fig. 1, parts being broken away and in section for clearness.

Fig. 3 is a fragmentary view showing the opposite side of the shelving structure.

Fig. 4 is an enlarged, fragmentary, cross-sectional view taken on line IV—IV of Fig. 2.

Fig. 5 is a cross-sectional view similar to Fig. 4 showing the cam latch released; and

Fig. 6 is a fragmentary, detailed, cross-sectional view taken on line VI—VI of Fig. 4.

The essential components of the shelving structure embodying the improvements of the instant invention

include an upright standard or support **10** and a shelf-receiving bracket **12**, it being understood of course, that any number of vertically aligned brackets **12** may be attached to the standard **10** and that a plurality of horizontally aligned supports **10** each equipped with a number of brackets, may be employed to receive a plurality of horizontal shelves.

To this end, bracket **12** includes a vertical web **14** having a laterally extending flange or ledge **16** to which the shelf may be attached in any suitable manner such as through use of fasteners passing through openings (not shown) in the flange **16**. Additional reinforcement for the web **14** is provided by a lateral flange **18** at the lowermost edge thereof.

The standard **10** is especially formed for receiving the bracket **12** and may be made from channel stock, its transverse U-shaped configuration presenting a bight **20** and a pair of legs **22**, each of which in turn is provided with a rearwardly-facing hook **24** extending vertically throughout the longitudinal length of the standard **10**. By virtue of such construction therefore, each of the hooks **24** may receive a plurality of spaced, superimposed brackets **12**, but it is of course, understood that the invention is not limited to a standard construction wherein more than one of such hooks **24** is employed. Furthermore, the legs **22** and their hooks **24** may be interconnected in other manners than by an integral bight or back portion **20** forming a part of the standard **10**.

The rearmost end of the bracket **12** and particularly, the web **14** thereof, is also provided with a hook **26** extending throughout the length of the rearmost end of the web **14** and substantially in the nature of the hooks **24**. The hook **26** faces forwardly and complementally fits the hooks **24** in interlocking relationship for vertical sliding movement therealong as is evident from Figs. 4 and 5 of the drawing. It is to be noted that the flanges **16** and **18** terminate short of the hook **26** to accommodate the hook **24**.

Bracket **12** is provided with means for releasably attaching the same to the standard **10** and to, therefore, hold the bracket **12** against vertical sliding movement in any selected position throughout the length of hook **24**. Such holding means is in the nature of a latch **28** taking the form of a cam lever swingably secured to the bracket **12** for movement to the positions illustrated in Figs. 4 and 5.

Latch **28** includes a pair of superimposed plates **30** and **32** interconnected in any suitable manner such as by spot-welding and journaled on a pivot pin **34** disposed vertically along one face of the web **14**. Pin **34** is carried by flange **18** and by ear **36** struck from the web **14** presenting a clearance opening **38** in the latter for the latch **28**.

Arcuate cam means in the form of cutting edges eccentric to the pin **34**, are presented at one end of the latch means **28** adjacent the hook **24** by spreading the plates **30** and **32** apart. Such outwardly flared, arcuate ends of the plates **30** and **32**, present the aforementioned arcuate cutting edges **40** and **42** which bite into and form serrations in the hook **24** when the latch lever **28** is swung to the position illustrated in Fig. 4. By virtue of the eccentricity of the edges **40** and **42** to the vertical axis of swinging movement of the latch lever **28** about the pin **34**, hooks **24** and **26** are clamped together with progressively increased force, and the said serrations become progressively deeper in the hook **24** as the latch **28** is swung toward the web **14** to the position shown in Fig. 4.

It is now apparent that once the standard **10** is erected, each of the brackets **12** may be easily and quickly slipped into place by movement horizontally to a position where hook **26** may be interlocked with hook **24**. No tools of

any nature are required to force the lever **28** to the position shown in Fig. 4 and in order to release the latch **28** for removal of the bracket **12** or readjustment of the same vertically along the standard **10**, it is but necessayr at most to employ a screw driver or other prying instrument inserted between latch **28** and web **14**, to initiate the swinging movement of latch **28** toward the position shown in Fig. 5.

Other shelving, walls, columns and the like adjacent the tsandard **10**, will not interfere with either the attachment and removal of the bracket **12** or adjustment thereof. By the same token, the presence of a number of brackets attached to one of the hooks **24**, will not in any way interfere with attachment of another series of brackets **12** to the other hook **24**.

By virtue of the fact that the cam lever lock or latch means **28** is adapted to cut lateral serrations into the hook **24**, there is presented a firm clamping action which precludes any appreciable deflection of the bracket **12** with respect to the standard **10** when a load is placed thereon.

Manifestly, any number of single plate or double plate latching levers may be provided on the web **14** throughout the vertical width of the rearmost end thereof, and manifestly, means other than pivot pin **34** may be provided for mounting the same to the bracket **12** for horizontal swinging movement. However, mounting of the latch means **28** adjacent the rearmost end of the bracket **12** disposes the same in position for receiving the load and preventing sagging in the bracket **12** at the outermost free end of the latter as such load tends to pull the upper end of hook **26** into firm interlocking relationship with the hook **24**.

By virtue of the outwardly flared, innermost end of the latch **28** presenting the spaced, arcuate cutting edges **40** and **42**, cutting into the hook **24** in opposite directions, it is not possible for the bracket **12** to shift vertically in either direction along the hook **24** when the lever **28** is in the latched position shown in Fig. 4. Furthermore, the bracket **12** cannot swing horizontally or tilt in any direction because of the interlocking relationship of the hooks **24** and **26** and the way in which such interlocking is maintained by the action of cam edges **40** and **42** thereon.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. Shelving structure comprising an upright support having a return bent portion forming a hook; a shelf-receiving bracket including a vertical web extending laterally from the support and having a return bent portion forming a hook at the rearmost edge thereof interlocked with the hook of the support for vertical sliding therealong; and latch means swingable horizontally on the web to and from a position engaging the hook of the support for holding the bracket in selected positions relative to the support.

2. Shelving structure as set forth in claim 1 wherein said latch means is provided with cam means engageable with the hook of the support for clamping the hook of the bracket progressively tighter to the hook of the support as the latch means is swung toward one end of its path of travel.

3. Shelving structure as set forth in claim 2 wherein said cam means has an arcuate cutting edge eccentric to the axis of swinging movement of the latch means and biting into the hook of the support when the latch means is swung to said one end of its path of travel.

4. Shelving structure as set forth in claim 3 wherein said web has a clearance opening for said latch means adjacent the hooks.

5. Shelving structure as set forth in claim 2 wherein said cam means has a pair of spaced, arcuate cutting edges eccentric to the axis of swinging movement of the latch means and biting into the hook of the support when the latch means is swung to said one end of its path of travel.

6. Shelving structure as set forth in claim 5 wherein siad latch means includes a pair of plates each having cam means thereon provided with a cutting edge.

7. Shelving structure as set forth in claim 6 wherein cam means are flared laterally in opposite directions.

8. Shelving structure as set forth in claim 7 wherein said plates are interconnected.

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