

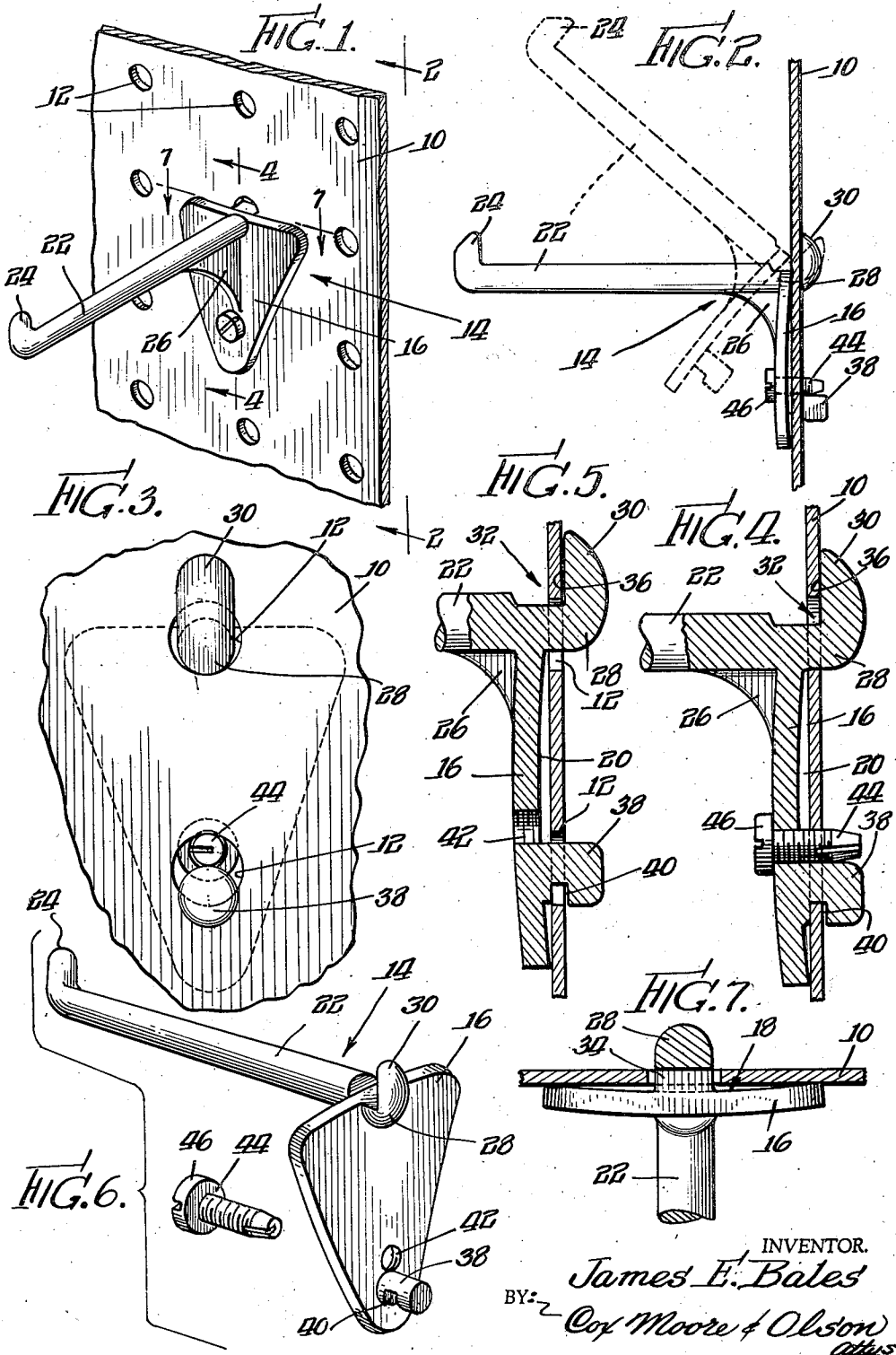
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HOOK

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HOOK

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This invention relates to adjustable supporting devices. More particularly, it relates to an adjustable or shiftable hook or peg.

In the case of open panels or cabinet structures having hooks or pegs for supporting materials in an orderly fashion out of the way, it is ordinarily desirable to secure the hooks or pegs in such a way as to provide a maximum of different positions in which the hook or peg may be located. Where the hooks or pegs may be readily located in a variety of positions a given structure obviously has a much wider field of use. This is important not only to the user, in permitting him to vary his storage arrangements at will, but also to the manufacturer of the equipment since it permits him to standardize the structure and offer it for sale for the storage of any of a wide variety of articles.

In the adjustable structures of this type heretofore known a very serious defect has, however, existed. In order that they might be readily removed, the hooks or pegs have been loosely supported in place so that they are very easily dislodged, not only when it is desired to relocate them but at other times as well. Thus, in the course of removing materials supported on the hooks or pegs they are frequently dislocated, necessitating their replacement in position before they can be used again. In many cases they may be displaced not only in removing materials but also in placing materials upon them or upon adjacent hooks or pegs.

It is, therefore, an object of this invention to provide a supporting structure, including hooks or pegs, for storing materials, which hooks or pegs are readily adjustable or shiftable to various positions on the support but which are not susceptible to being dislodged during ordinary usage, including placing or removing materials supported on such hooks or pegs.

Another object is to provide a hook to be used in connection with a perforated support, which hook may be readily shifted to any of a plurality of positions on said support and which may be removably secured in any of said positions in such a way that it cannot be dislodged in the normal usage of placing articles upon it or removing them.

A further object is to provide a material supporting structure including a panel comprising a plurality of spaced perforations and a hook or peg removably supportable in said perforations, in which structure the hook or peg cannot be dislodged accidentally in normal usage.

A more general object is to provide a support-

ing structure comprising hooks or pegs which are readily shiftable to a plurality of positions but cannot be accidentally dislodged in normal usage.

5 Another more general object is to provide a structure including members secured together by means of an opening in one, a lug in another and a threaded member associated therewith.

Other objects will appear hereinafter.

10 It has now been found that these objects may be accomplished by the structure illustrated in the accompanying drawing which forms a part of this specification and in which

15 Figure 1 is a view in perspective of a hook and a section of panel made in accordance with the present invention;

Figure 2 is a section on the line 2—2 in Figure 1;

20 Figure 3 is an enlarged rear elevation of the hook and the section of panel immediately surrounding it, in Figure 1;

Figure 4 is a vertical section on the line 4—4 in Figure 1;

25 Figure 5 is a view similar to Figure 4, showing the hook partially inserted in position on the panel;

Figure 6 is an exploded view of the hook and attaching screw; and

30 Figure 7 is a horizontal section on the line 7—7 in Figure 1.

Referring now particularly to Figure 1, a section of panel 10 is shown provided with aligned perforations 12 uniformly spaced both vertically and horizontally. Supported on this panel is 35 hook 14. Hook 14 comprises a generally triangular shaped base member 16 adapted to rest against the surface of panel 10. Centrally, both on a horizontal plane, as at 18, and on a vertical plane, as at 20, this member is bowed out away from the panel 10, with the result that the corner portions of the triangle extend more closely against the panel 10 than do the remaining parts.

40 Extending perpendicularly outwardly from the top central portion of base 16 is rod 22 upon which articles may be supported. The outer end 24 of rod 22 is turned upwardly to provide means for preventing articles supported on the rod from sliding off the end. A bridging portion 26 extends from the front face of base 16 to the under side of rod 22 to strengthen and support the rod.

45 Extending perpendicularly from the rear face of base 16 is a portion 28 which is substantially an extension of rod 22. Portion 28 is bent upwardly to provide an upward extension 30. In

the angle 32 formed by the horizontal portion 28 and upward extension 30, both the horizontal and vertical surfaces are cut away to provide flat faces 34 and 36.

Centrally located near the lower point of the triangular base 16 and extending perpendicularly from its rear face is a rod-like projection 38 generally circular in vertical cross section. On the under side of projection 38, spaced outwardly a short distance from the base, is a semicircular slot 40 wide enough to comfortably receive an edge of plate 10. Immediately above the projection 38 is a threaded opening 42 in base 16. This opening is threaded to receive a self-tapping screw 44.

As will be apparent, the hook 14 and panel 10 cooperate to make the hook shiftable to a variety of positions. For this purpose adjacent holes in a vertical direction are spaced so that the distance from the upper edge of the upper hole to the lower edge of the lower hole in a pair is just a little bit greater than the distance from face 34 to the lowermost point of projection 38, as can be seen in Figure 5, for example, or, conversely, the projection 38 is so spaced from the upper face 34 of portion 28 that the distance between the lowermost part of projection 38 and the face 34 is just slightly less than the distance between the upper edge of the upper one of a pair of vertically adjacent holes and the lower edge of the other. Also, the holes 12 are made slightly larger than the diameter of the projection 38 or, conversely, the diameter of the projection 38 is made slightly less than the diameter of the holes 12, as is also clearly shown in the figures.

To insert the hook into place on the panel, it is revolved to the position shown by the dotted line in Figure 2, in which position the upturned portion 30 may be readily passed through a hole 12. After the portion 30 has been inserted through the hole 12, the hook is then turned back to the position shown by the solid line in Figure 2, during which revolution the lower projection 38 passes through the hole 12 immediately below that through which the upwardly extending portion 30 has been passed. At this point the hook and panel are in the position shown in Figure 5. In order to secure the hook in place it is thereupon shifted vertically downwardly to the position shown in Figure 4 and the screw 44 is threaded into opening 42 and turned until the head 46 rests against the front face of base 16. As can be seen, during this operation the screw 44 passes through the opening 12 in which projection 38 extends and, since it is sufficiently large, it cuts a thread in the inner edge of the hole 12 through which it extends, thereby firmly securing the hook 14 in position on the panel 10.

It can clearly be seen that no jar encountered in ordinary usage will be sufficient to disengage the hook 14 from the position in which it is fixed, as described. On the other hand, when it is desired to shift the hook to a new position, it is only necessary to unscrew the screw 44 and reverse the operation just described, that is, raise the hook 14 from the position shown in Figure 4 to that shown in Figure 5 and then revolve it from the position shown in the solid lines in Figure 2 to that shown by the dotted lines, whereupon the upward extending portion 30 may be withdrawn from the hole 12 in which it is placed and the hook may be shifted to another pair of adjacent holes in the panel.

Although, as shown in the drawing, the panel is provided with holes over its entire face which

are equally spaced both vertically and horizontally, this is by no means essential to the invention. It is, on the contrary, within the scope of the present invention to provide holes spaced in any desired manner over a panel, which may or may not form a part of an enclosure, provided only that each hole be vertically spaced from another hole a uniform distance which, as described above, should be such that from the upper edge of the upper hole to the lower edge of the lower hole is a distance slightly greater than the distance between the face 34 of the hook to be used with the panel and the lower edge of the projection 38. Thus, it will be apparent that, while the horizontal spacing of the holes is generally immaterial, it is ordinarily desirable that the rows of holes be uniformly spaced vertically since with such a construction all but the upper and lower rows of holes can then be used to receive either the upwardly extending portion 30 or the projection 38.

The bowing of the rear face of base 16 is likewise not essential to the invention although it has the advantage that any slight unevenness on the rear face of base 16 does not then interfere with the positioning of the hook on the panel. For like purpose the slot 40 is spaced outwardly from the rear face of base 16 although it is within the scope of the invention to position it immediately adjacent the rear face. Also, the base 16 need not be triangular, with one of the points occupying the lowermost position. It may assume any other desired shape, it being only necessary to make it thick enough and large enough to provide the proper support for the rod 22. It could, for example, be made square or rectangular or could be made triangular with a point of the triangle uppermost rather than lowermost.

It will be apparent that where the rod 22 extends from the upper edge of the base 16 adjacent the point where the portion 30 is formed a minimum of shearing strain is put on the portion 30 by objects supported on the rod 22. It is not, however, essential to the invention that the rod 22 be located in this position, and having in mind the articles to be supported on the rod 22, if portion 30 is given sufficient strength, the rod 22 may be located lower down upon the base 16. Ordinarily, nothing is gained by positioning the rod 22 otherwise than as shown in the drawing, and accordingly this positioning of the rod is preferred.

Bridging portion 26 is preferred to add strength but the rod 22 may be of any desired form and construction. It need not necessarily be a rod and it is not essential that it extend perpendicularly from the base 16 nor is it essential that a turned up portion 24 be provided on the end. It is within the scope of the invention to provide any sort of extension from the forward face of base 16 which is adapted to support articles thereupon. Some form of gradual upward curve or bend is ordinarily desirable near the outer end of the supporting means such as rod 22 but it is recognized that for certain purposes such an upward extension may not be desirable and it can therefore be dispensed with.

The purpose of the screw 44 is to retain the portions 28 and 30 in the position shown in Figure 4 with respect to the adjacent pair of holes 12 in which they extend. It can be seen therefore that screws of types other than screw 44 shown in the drawing will be suitable for this purpose. They should have a slight taper to

facilitate their insertion through the hole 12 and preferably the screw will be large enough and the hole 42 will be so placed that a portion of the threads will come into contact with an edge of the hole 12. When so constructed the hook is more firmly secured in place and the contact between the threads of the screw and the panel 10 serves to prevent the screw from loosening and dropping out.

It is within the scope of the invention, however, to provide a screw and to so position the opening 42 that a tight fit is not obtained, provided the construction is such that when the screw is in position the hook cannot be shifted upwardly sufficiently to assume the position shown in Figure 5. Thus a very satisfactory construction may be obtained without having the screw contact the plate 10 at all if the screw is arranged so that the head portion can be turned up tightly against the forward face of base 16 so that it does not readily loosen.

More generally, any desired means may be employed to secure the hook against vertical shifting although preferably the means will be such that it can be readily inserted in and removed from the opening and has sufficient size so that when inserted in the lower opening 12 with projection 38 in its lowermost position it will prevent the projection 38 from moving upwardly to a position where it may be withdrawn from opening 12. It will be apparent that other means than a member threaded into the hook structure will be suitable for this purpose. The latter is preferred, however, because it is readily adjusted and can be made to position the structure firmly.

By reason of the cooperative relation between the pair of projections they are adapted to support the hook structure relatively firmly in the pair of spaced openings even without a member, such as screw 44, projecting into the lower opening. Accordingly, where maneuverability is more important than firm positioning a member, such as screw 44, may be omitted from the hook structure and the projections alone may be depended upon for keeping the hook in place.

The size and upward extent of projection 28 may be varied, as desired, as well as its form. This upwardly extending portion 30 of this projection need only be of such length that when the hook is shifted into the position shown in Figure 4 a portion of it extends above the hole 12. This portion may be longer or thicker or shorter or thinner, all depending upon the weight to be supported by the hook. Also, the slot 40 in the lower projection 38 may vary in depth, so long as it permits the hook to be shifted downwardly sufficiently to permit screw 44 to pass through the hole 12.

Preferably both projection 28 and projection 38 will be proportioned for insertion in openings 12 of the same dimensions since this makes for a maximum of shiftability. If desired, however, the two projections may be designed for association with holes of different sizes, in which case the pairs of openings in the supporting structure with which the hook is to be used will be proportioned likewise.

The advantages of the invention disclosed herein are believed to be clearly apparent from the foregoing description. Thus, although the hook is firmly secured when it is fixed in a pair of adjacent holes, it may be very readily shifted to some other point merely by loosening the screw 44 and withdrawing it as described. The number of positions to which the hook may be shifted

will, of course, depend upon the number of pairs of adjacent holes provided for the purpose. It will be obvious, of course, that where it is desired a sufficient number of holes may be provided to shift the hook to substantially any desired position on the supporting structure.

As will be clear to all who have had experience with positioning of materials upon shiftable hooks, it is a decided disadvantage of such hooks that they are ordinarily very easily dislodged during the operation of placing articles upon them or removing them. This disadvantage is entirely absent from the hook of the present invention which cannot be dislodged during ordinary usage.

Preferably the panel is formed of sheet-metal although it may be formed of any desired material having sufficient strength. The hook may be conveniently formed of cast-iron although it is also within the scope of the invention to form the hook of any other material and in any other way which results in a hook having sufficient strength for the purpose involved.

It is apparent that many widely different embodiments of the invention may be made without departing from the spirit and scope thereof, and therefore it is not intended to be limited except as indicated in the appended claims.

The invention is hereby claimed as follows:

1. The combination of a shiftable hook structure, adapted to be supported against dislodgment, by the weight of articles carried thereupon, in a pair of vertically spaced openings in a supporting structure by inserting projections on said hook structure through said openings and shifting said hook structure vertically downwardly, and means threaded in said hook structure adjacent the upper side of the lower one of said projections and adapted to be extended by turning with respect to said hook structure into the space remaining in the upper part of the lower of said openings when said hook structure is shifted downwardly with respect to said supporting structure whereby to prevent upward shifting of said hook structure and consequent dislodgement thereof, said threaded means being readily withdrawable from said openings by turning the same in a reverse direction with respect to said hook structure.

2. An adjustable device for supporting articles including in combination a supporting member provided with a plurality of pairs of spaced openings and a shiftable hook structure adapted to be supported in any of said pairs of spaced openings against dislodgement due to the weight of articles supported on said hook structure in any of said pairs of spaced openings by inserting projections on said hook structure through one of said pairs of openings and shifting said hook structure vertically downwardly, and means threaded in said hook structure adjacent the upper side of the lower one of said projections and adapted to be extended by turning with respect to said hook structure into the space remaining in the upper part of the lower of said openings when said hook structure is shifted downwardly with respect to said supporting structure whereby to prevent upward shifting of said hook structure and consequent dislodgment thereof, said threaded means being readily withdrawable from said openings by turning the same in a reverse direction with respect to said hook structure.

3. A structure comprising co-operating members adapted to be secured together, including

a member having an opening therein and a member having a lug formed thereon, said lug being adapted to extend into said opening and occupy only a portion thereof, said lug-carrying member having an opening therein adjacent said lug, said structure also including threaded means adapted to extend through the opening in said lug-carrying member and to be threadingly extended into the space remaining in said first named opening when said lug extends therein, said threaded member threadingly engaging the edge of said first named opening when extended therein and forcing said lug into engagement with another portion of the edge of said first named opening whereby said two members are secured together.

4. A structure comprising co-operating members adapted to be secured together including a member having a circular opening therein and a member having a lug formed thereon, said lug being adapted to extend into said circular opening and occupy only a portion thereof, said lug-carrying member having an opening therein adjacent said lug, said structure also including threaded means adapted to extend through the opening in said lug-carrying member and to be threadingly extended into the space remaining in said circular opening when said lug extends therein, said threaded member threadingly engaging the edge of said circular opening when extended therein and forcing said lug into engagement with another portion of the edge of

said circular opening, whereby said two members are secured together.

5. In a hook structure adapted to be supported in a plurality of spaced openings in a supporting structure, the combination of means on the hook structure for loosely removably supporting said hook in said opening, and threaded means associated with said last-named means and adapted to be projected into one of said openings along with said last-named means into threaded engagement with the edge of the supporting structure surrounding said last-named opening for preventing accidental dislodgment of said hook from said supporting structure.

6. In a hook structure adapted to be supported in a plurality of spaced openings in a supporting structure, the combination of means on the hook structure including a plurality of spaced projections having portions adapted to extend through said openings for loosely removably supporting said hook structure in said openings, and means associated with at least one of said spaced projections and including a pin portion adapted to be projected into one of said openings along with the associated projection into threaded engagement with the edge of the supporting structure surrounding said last-named opening and means for preventing longitudinal displacement of said pin portion for preventing accidental dislodgment of said hook from said supporting structure.

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CERTIFICATE OF CORRECTION.

Patent No. 2,312,985.

March 2, 1943.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, second column, line 25-26, claim 6, strike out the word "threaded"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of August, A. D. 1943.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.