March 20, 1956 H. E. HINZ 2,739,022

FASTENER DEVICE FOR CABINET ANTENNA PLATE

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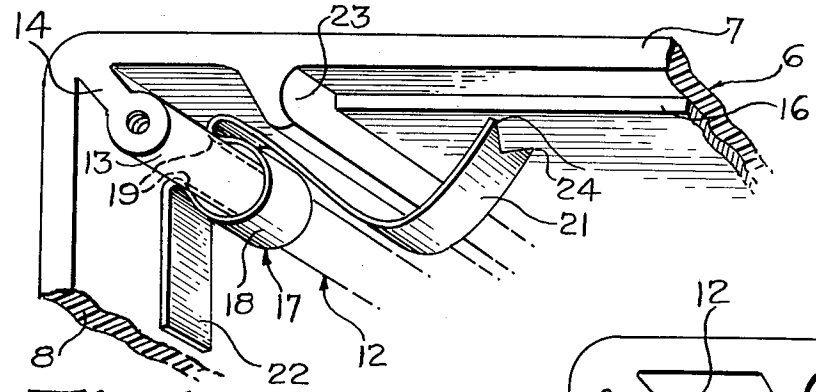


Fig. 1

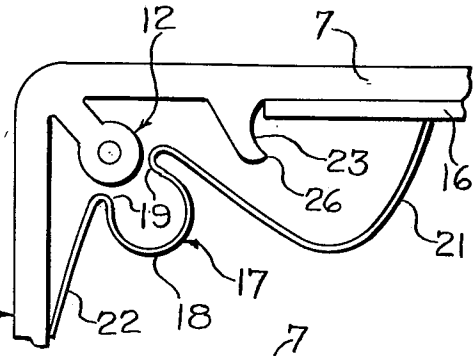


Fig. 2

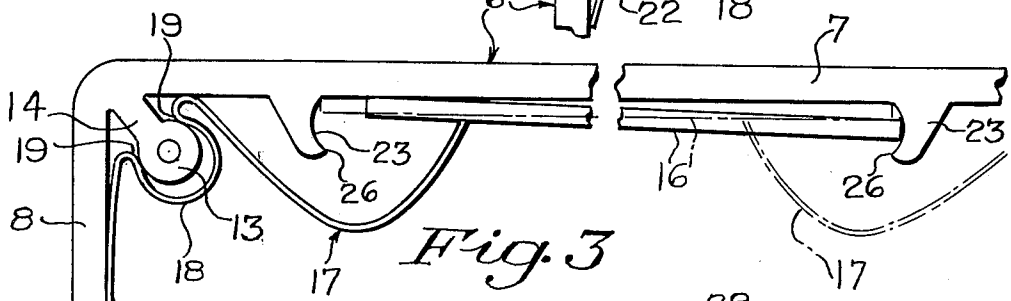


Fig. 3

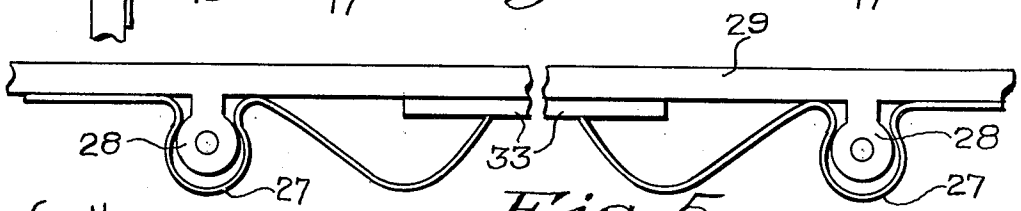


Fig. 5

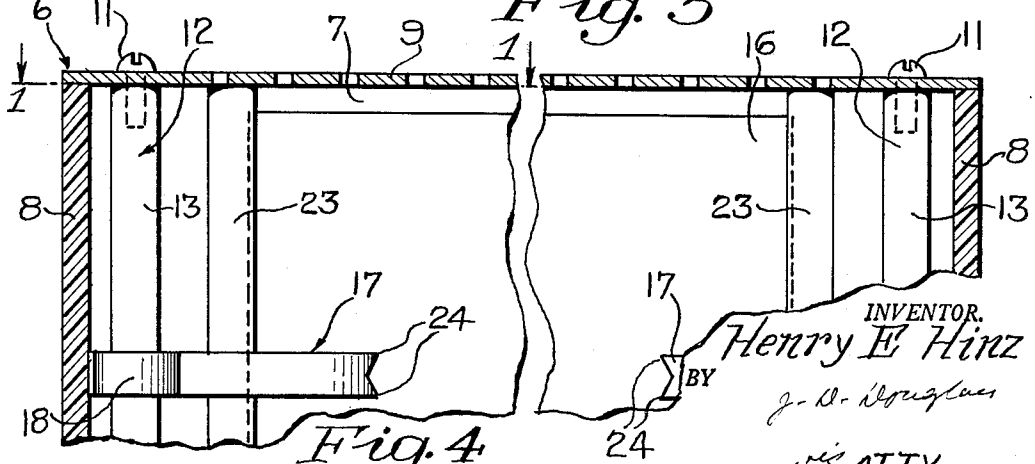


Fig. 4

INVENTOR.
Henry E. Hinz
BY
J. A. Douglas
his ATTY.

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FASTENER DEVICE FOR CABINET ANTENNA PLATE

Henry E. Hinz, La Grange Park, Ill., assignor to Admiral Corporation, Chicago, Ill., a corporation of Delaware

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4 Claims. (Cl. 312—7)

This invention relates to a spring fastener adapted to secure a planar object in association with a wall surface. More especially, the invention comprehends a wall surface with which a planar object is adapted to be fixedly associated by a clip of novel construction, the clip being adapted to be anchored to a protruding member on the wall surface by extension around a portion of the member and being adapted to concurrently bias the planar object toward the wall surface adequately for the association.

The fastener of this invention is particularly adapted to secure a built-in antenna in the upper portion of a plastic cabinet.

Previously the antenna bearing plate was attached to the cabinet of a plastic television receiver by support members extending downward from the top of the cabinet. The support members were hook-shaped in vertical section and included lateral end portions, extending toward each other, on which the antenna plate rested, the support members usually being integral parts of the cabinet. This method of support was found to be inadequate for mass production methods. For one thing, it was difficult to maintain desired dimensions and owing to this, the antenna plate either too often failed to go between the support members or was so loose that it did not stay on its supports and dropped down on the tube. This was hazardous when a metal backed picture tube was in operation below the antenna due to the possibility of shock to the operator of the receiving set when he tried to adjust the antenna. Furthermore, the antenna was often objectionably loose in its supports.

Due to the present invention, the foregoing disadvantages have been overcome since the clip operates to constantly hold the planar object toward one of the walls of the cabinet and fixedly associate the object therewith. Additionally, the clip is simple, inexpensive, easy to manufacture and readily applied by production line workers.

For a further and better understanding of the invention besides one manner of carrying it out, reference may be had to the accompanying drawing in which:

Fig. 1 is a fragmentary view, in perspective, of the upper left corner of the cabinet indicated in Fig. 4, the back thereof having been removed to show the novel features;

Fig. 2 is a view corresponding to Fig. 1, the parts being shown in elevation and one of the same in a different position;

Fig. 3 is a view corresponding to the Fig. 2 view to show an additional function of the fastener;

Fig. 4 is a horizontal section of the cabinet shown in Fig. 3, as viewed from below the level of the fasteners and showing the back attached to the cabinet; and

Fig. 5 is a view corresponding to Fig. 3 showing a second embodiment of the invention.

In the drawings, the reference character 6 is used to denote a one-part cabinet in its entirety. It is of some suitable plastic material such as Bakelite. The cabinet includes a top wall 7 and spaced apart side walls 8 integral

with the top wall. The back of the cabinet is usually open. The back may be closed by a separate wall 9 which may take the form of a foraminous plate through the corners of which screws 11 pass freely but are threaded in the ends of ribs 12, also integral portions of the cabinet 6.

Preferably, the ribs 12 are located at the junction of the top and side walls since they are, at these points, least likely to interfere with insertion of the television apparatus into the cabinet. Cross-sectionally, each of the ribs 12 is formed with a head portion 13 which is spaced from the walls 7 and 8 by a web portion 14. The formation of the head portion 13 is substantially round, in cross-section, and of diameter adequate, of course, to provide anchorage for the screws 11.

Between the ribs 12 a planar object 16 is fixedly associated with the top wall 7. The object may take the form of the base plate of a television antenna assembly or it may take the form of some other plate-like object such as an instruction book or any other object having opposed parallel edges.

For securing the planar object 16 in association with the top wall 7 a novel clip or fastener 17 is provided for both of the ribs 12. The clip may be formed from a single metallic strip at least a portion of which is capable of at least limited flexing. A suitable clip 17 was made of spring steel about ½" in width and approximately .035 inch in thickness. Intermediate its ends, the clip is provided with a bow or pinch portion or loop 18, the maximum width of which between its two arms is greater than the thickness of the head portion 13. The loop 18 terminates in end portions or grippers 19 which are spaced from each other by less than the thickness of the head portion 13 when the clip 17 is in a state of relaxation. From the grippers 19 the remaining portions of the clip extend away from each other to provide arms 21 and 22.

In attaching it to the rib 12, the clip 17 is held transversely thereto and brought into proximity to the same until the free end of arm 22 engages wall 6 and the free end of arm 21 either engages the wall 7 or the plate 16 held against said wall 7 as indicated in Fig. 2. At this point the grippers 19 fall short of engagement with the rib 12. From this position the loop is forced toward rib 12 by deflecting the arms 21 and 22 transversely and within their elastic limit until the grippers 19 engage the head portion 13 which cams the grippers apart until they have passed the greatest width of said head beyond which the camming effect between the portion 13 and grippers 19 tends to urge said grippers constantly toward the web 14 to a limit provided by the walls 7 and 8. This cooperation between the loop 17 and rib 13 is adequate to anchor the clip to the rib adequately to resist its removal, even when the arm 21 is bent away from the wall 7 additionally, by the antenna plate 16 between the wall and arm 21. The arm 21 therefore exerts a biasing force on plate 16 in the direction of the top wall which is adequate to retain the antenna plate in association therewith. As shown in Fig. 4, pairs of clips 17 may bear against the plate 16 adjacent opposite sides thereof to retain it in association with the top wall of the cabinet.

Although the method of coupling the clips to the ribs, as described, involves springing them over the ribs from points perpendicular thereto, the method of threading the loop portions of the clip over the ribs from their ends at the back of the cabinet is also contemplated. And this is also of advantage when some regions of the clip are less susceptible of flexing than others, such as a construction in which the loop 18 is substantially rigid and the arms 21 and 22 substantially resilient.

If desired, means may be employed to assist in locating the antenna plate 16 in a predetermined position with respect to the top wall 7. Said means includes stop members or gauge members which extend downward from

the wall 7 and which may appropriately take the form of spaced apart ribs 23, also integral portions of the cabinet 6. The ribs 23 may be intimately associated with opposite edges of the plate 16 when it is therebetween and adjacent the top wall so that there is substantially no edgewise displacement of the antenna plate when it is later urged upward by the clip arm 21. In order that the arm 21 may clear the rib 23 when retaining the plate 16 in place, said arm is bowed away from the wall 7 from the end of loop 18 until the arm passes over the rib 23 without engagement with the same. Then the arm slants upward toward the plate 16 for engagement therewith. Also if desired, the plate engaging end of arm 21 may be provided with teeth or points 24 (Fig. 1) for cooperation with the antenna plate and better resist its removal from the predetermined position.

Although clips are usually employed in pairs to grip the plate 16 for securing it to the cabinet, the plate may be secured to the cabinet jointly by one of the clips 17 and one of the stops 23. The manner in which this is possible is illustrated in Fig. 3, where the lower ends of the ribs 23 extend slightly toward each other providing hooks as at 26, so that one of said ribs is adapted to support plate 16 at one of its sides while the force of arm 21 against the opposite side of the plate both supports said other side and prevents displacement of said plate from supporting engagement by the rib 23.

An additional embodiment of the clip is illustrated in Fig. 5, wherein a loop portion 27, resembling the loop 18, may be installed in combination with a rib 28 on a wall which is remote from any other wall. Arms 31 and 32 extend away from each other at an angle adequate for both to be under deflection when the rib 28 is grasped by the loop 27 and a planar object 33 is fixed in association with the wall 29.

Although two embodiments of the invention have been described, other and extensive departures may be made therefrom without departing from the spirit or scope of the invention.

I claim:

1. The combination with a cabinet having first and second walls intersecting each other, of means by which a planar object is adapted to be fixedly associated with one of the walls including a support member on the first wall having a head portion, the support member having opposed sides and being formed to provide seats on at least one of said sides, a clip formed from an elongated strip comprising a bow portion including a pair of free end portions normally spaced from each other by less than the thickness of the head portion and being adapted to be spread apart by said head portion by springing the ends over the head for straddling the support member and for pinching the same at the seat for anchoring the clip to said support member, an arm extending from one of said free end portions of the bow portion adjacent the first wall, the arm being adapted to be deflected away from the first wall when the planar object is inserted therebetween to bias said object into fixed association with said first wall, means in connection with the bow portion cooperative with the second wall to operatively resist turning of the bow portion about the support member when said planar object is fixedly associated with said first wall, gauge means on the first wall engageable by the planar object before it is retentively engaged by the arm thereby to station said object in a predetermined position with respect to said first wall, and antifriction means on the end of the arm engaging the planar object to resist edgewise displacement of the object with respect to the arm.

2. The combination with a television cabinet having top and side walls and a support member internally of the cabinet at either side of the top wall, the respective members having opposed sides formed to provide a seat on at least one of said sides, means by which an antenna plate is fixedly associated with the top wall between the supports including a pair of clips each of which is formed from an oblong strip at least a portion of which is capable of at least limited flexing, a pincher portion in the respective strips, the pincher portion having a pair of fingers extending from one side of the strip, a gripper portion at the ends of the fingers, the grippers when the clip is relaxed being spaced from each other by less than the greatest thickness of the support, the grippers being adapted to be sprung over the supports until the fingers straddle said supports and the grippers pinch the same at the seats for anchored association of the clip with the top wall, an arm in extension toward each other from adjacent grippers for association with the top wall, the planar object being adapted to be interposed between said wall and the arms thereby deflecting said arms away from the wall to bias the object into fixed association therewith, means in connection with both of the pincher portions to resist rotation of the clips about the support members by cooperation with the side walls when the arms are deflected, and a gauge member on the top wall between the support members, one of the edges of the antenna plate being adapted to be positioned in engagement with the gauge member to provide a predetermined positioned arrangement of said antenna plate with respect to the top wall before said plate is thus fixedly associated with the top wall.

3. The combination with an antenna plate and a cabinet having top and side walls, of first and second pairs of ribs on the top wall, the first pair of ribs being adapted to determine the position of the antenna plate with respect to the top wall when said plate is positioned between the ribs of the first pair and in substantially parallel relationship to said top wall, each of the ribs of the second pair being formed with a recess on at least one of its sides and having a head portion remote from the walls and of width greater than the width of the rib at the recesses, a fastener for association with both of the ribs of the second pair, each of the fasteners being formed from an oblong strip of material capable of flexing at least within limits, a loop in the strip, the loop having end portions normally spaced from each other by less than the thickness of the head portion and being adapted to be sprung over said head portion for anchored engagement therewith at the recessed portion by pinching the rib, a first arm on the end portions of both of the loops to operatively resist rotation of said loops when they are in operation by their engagement with the side walls, a second arm also on each opposite end portion of the loops, said second arms extending toward each other adjacent the top wall from adjacent ends of the respective loops and having end portions pointing toward the antenna plate when it is between the ribs of the first pair, said second pair of arms being under lateral deflection away from the top wall by the antenna plate when it is positioned between the ribs of the first pair and said top wall and end portions thereby biasing said plate into fixed association with said top wall.

4. The combination with a cabinet having integral top and side walls terminating in edges about an opening rearwardly of the cabinet, of a rib within the cabinet at the junction of adjacent walls, said rib extending from the opening, the rib including cross-sectionally thereof a head portion of greatest width and a web portion of lesser width spacing said head portion from the adjacent walls, means by which a planar object is adapted to be associated with the top wall including a clip formed from an oblong metallic strip, a loop portion intermediate the ends of the strip, and an arm on the respective ends of the loop, said arms extending away from each other, the free ends of both of the arms being adapted to engage the wall surfaces when the loop is brought into its greatest proximity to the rib and when the clip is relaxed, a gripper portion at the junction of the respective arms and loop, the grippers being spaced apart less than the thickness of the head portion, the arms being capable of at least limited flexing

to permit the loop to be slid over the head from the end of the rib rearwardly of the cabinet, the clip then being released for engagement of the rib by the grippers between the head portion and walls to anchor the clip to the rib, stop means on the top wall within the cabinet, said means when engaged by the planar object before the clip is anchored to the rib governing the location of said member with respect to the top wall, said planar member when interposed between one of the clip arms and the top wall deflecting the arm additionally therefrom and being thereby biased toward said top wall for fixed association therewith, the remaining arm serving to resist rotation of the clip about the rib when the planar object is associated with said top wall.

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