Nov. 6, 1945. W. F. REGENHARDT 2,388,572

INTERLOCKING CLIP

Filed July 19, 1944

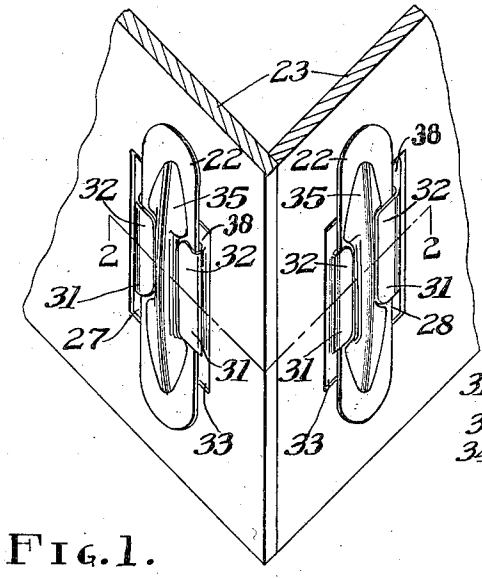


FIG. 1.

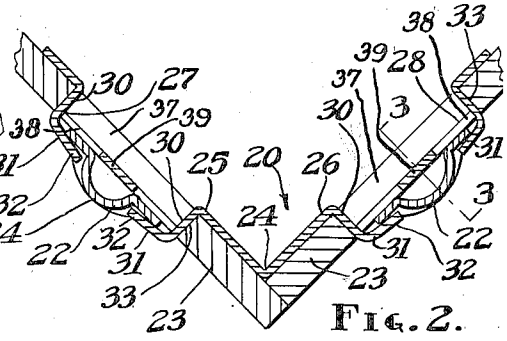


FIG. 2.

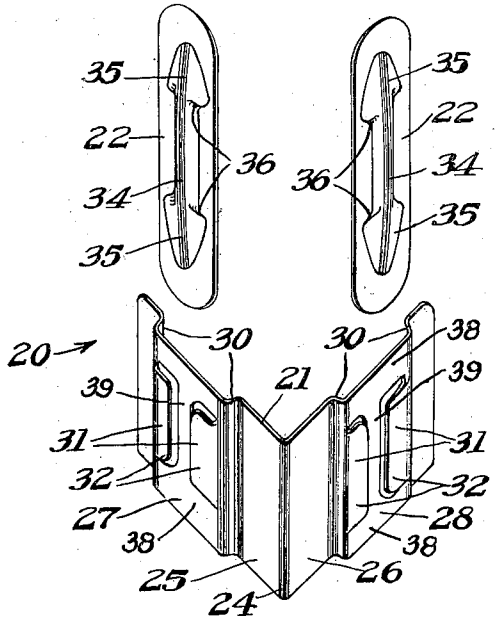


FIG. 4.

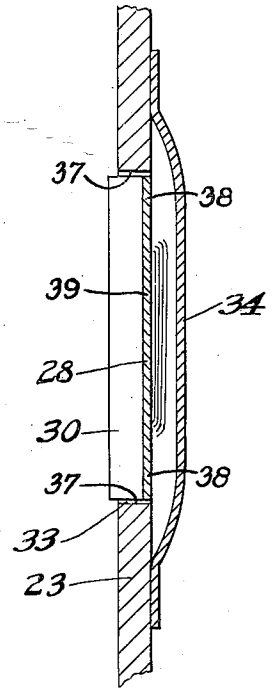


FIG. 3

INVENTOR
WALTER F. REGENHARDT
BY
Warren H. F. Schmieding
ATTORNEY

Patented Nov. 6, 1945 2,388,572

UNITED STATES PATENT OFFICE

2,388,572

INTERLOCKING CLIP

Walter F. Regenhardt, Wooster, Ohio

Application July 19, 1944, Serial No. 545,613

6 Claims. (Cl. 20—92)

This invention relates to fastening devices and is particularly directed to devices for uniting relatively thin flat sheet-like elements employed in the fabrication of filing cabinets, lockers, wardrobes and similar receptacles.

An object of this invention is to provide a simple fastening device which may be applied to a pair of sheet-like elements to secure them in assembled relationship without the use of conventional fasteners or tools.

Another object of the invention is to provide a fastening device having a body portion formed for application to the sheet elements to prevent their separation and a plurality of locking members which engage the body and the sheets to retain the body in holding position on the sheets, the connection between the locking members and the body being such that the article can readily be dismantled and reassembled without destruction of the parts.

An object also is to provide a fastening device for joining sheet members which device has a body portion for engaging a surface of each of the sheet members to maintain their positions and locking means for engaging the opposite surfaces of the sheets and the body to prevent the release of the sheets.

A further object is to provide a fastening device having a body formed with shoulders for engaging abutments on the sheets to be joined, and guides for locking members employed to prevent accidental removal of the body from the sheets, the locking members having shoulders also to retain them in locking positions.

An object also is to provide a fastening device suitable for joining sheets of fiber board or like materials, the sheets having perforations into which projections on the body portion of the fastening device may be inserted, locking strips being utilized to engage the projections and the surrounding portions of the sheets to hold the body of the fastening device in sheet joining position.

A still further object consists in providing sheet assembling means having a sheet metal body bent to form angularly related sections having offset portions, each of the sections engaging a surface of a sheet adjacent an opening therein whereby the offset portions will be disposed in the openings in the sheets to preclude separation of the sheets, the offset portions of the sections having outwardly disposed tongues to slidably receive locking strips which are of a length sufficient to engage the surfaces of the sheets adjacent the openings on the sides opposite those engaged by the body, the inter engagement of the tongues, the sheets and the locking strips serving to hold the body and the sheets in assembled relationship.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred form of embodiment of the invention is clearly shown.

In the drawing:

Fig. 1 is a perspective view of the corner of a filing case or similar article formed of sheet-like elements connected by the fastening means comprising the subject matter of the present invention;

Fig. 2 is a detail horizontal sectional view taken on the plane indicated by the line 2—2 of Fig. 1;

Fig. 3 is a detail vertical sectional view taken on the plane indicated by the line 3—3 of Fig. 2; and

Fig. 4 is a perspective view of the elements comprising a fastening member arranged in a group.

Referring more particularly to the drawing, the complete fastening device is indicated generally by the numeral 20. This fastening device includes a body 21 and a pair of locking members 22. In the form of the invention illustrated, the fastening device is utilized to connect a pair of sheet-like elements 23 which are disposed in angular relation. The elements 23 may be of fiber board or any other material suitable for the formation of file cabinets and analogous articles.

In the form of the invention shown in the drawing, the body 21 is formed from a strip of sheet metal bent as at 24 to provide angularly related sections 25 and 26. The intermediate portions of the sections 25 and 26 are also bent to form offset portions or projections 27 and 28 which are spaced from the sections 25 and 26 by walls 30, these walls forming spaced shoulders. As illustrated in Figs. 2 and 4 the offset portions 27 and 28 have tongues 31 struck outwardly therefrom, the outer portions of the tongues being directed toward one another. This formation of the tongues 31 provides over-hanging portions 32 which are spaced outwardly from the offset portions 27 and 28.

In the use of the fastening device, the sheet-like elements 23 are disposed as shown in Figs. 1 and 2 with an edge of one sheet abutting the surface of the other adjacent one edge thereof. This arrangement disposes perforations 33 in the sheets adjacent one another so that when the

body 21 is positioned in the corner formed by the sheets, the projections 27 and 28 will enter the openings 33. When so positioned, the exterior surfaces of the sections 25 and 26 engage the inner surfaces of the sheets 23 in the vicinity of the openings 33 and the walls 30 or shoulders formed thereby engage the opposed edges of the openings 33 to prevent relative movement between the body and the sheets and the separation of the latter.

To prevent accidental withdrawal of the projections from the holes in the sheets, a pair of locking strips 22 are employed. These strips comprise short sections of sheet metal which are slipped between the tongues 31 on each projection. These locking strips are of such length that the end portions project beyond the edges of the projections 27 and 28 and overlie the adjoining portions of the sheets 23. The sheets are thus engaged on the inner surface by the body and on the outer surface by the end portions of the locking strips 22. Since the intermediate portions of the locking strips are disposed behind the over-hanging portions 32 of the tongues 31 separation of the body from the sheets will be precluded.

To prevent the displacement of the locking strips 22, these elements have longitudinally extending ribs 34 formed therein. These ribs terminate in arrow heads 35 which provide opposed spaced shoulders 36. When the locking strips are properly positioned, the shoulders 36 engage the end edges of the tongues 31 and resist relative movement between the locking strips and the projections. The ribs 34 and arrow heads 35 are formed in the locking strips by a pressing operation, the edges of these formations blending into the surface of the locking strips. The outer ends of the arrow heads 35 are thus inclined to facilitate the insertion of the locking strips between the tongues 31 and the offset portions 27 and 28 of the body. The rib 34 also serves to strengthen the locking strips longitudinally whereby lighter gage metal may be employed to thus effect a saving of critical materials and strength imparted to the strip to resist force exerted when the locking strips are inserted and withdrawn. They also resist bending of the locking strips when forces tending to separate the sheets from the body 21 are applied. The tongues 31 are so spaced on the projections 27 and 28 as to constitute guiding means for the locking strips 22, the ends of these latter elements being rounded to enhance their appearance and facilitate their insertion into the spaces between the tongues.

One of the advantages of the present invention lies in the reduction of cost of the box or filing cabinet. Only a small amount of sheet metal or the like is necessary for the fastening device, yet providing a sturdily constructed cabinet which can withstand considerable abuse. It will be observed from the drawing, that large sections of the top and bottom edges of the body are disposed for engagement with the top and bottom walls 37 of the opening 33 in the sheet to be fastened. In fact, these edges substantially span the entire widths of the walls forming the opening. Thus, the cutting effects of the sheet metal, caused by jostling the cabinet, is distributed over wide areas to thus minimize the cutting and tearing of the sheets about the openings 33. This feature of the invention is accomplished by forming the spanning or connecting sections 38 for the tongues 31 and those parts of the body, which are disposed on opposite sides of the openings 33 in the sheet, in the offset portions 27 and 28. The vertical sections 39, remaining between the tongues 31, connect with the spanning sections 38 to add further stability to the device.

When the fastening elements comprising this invention are employed in the formation of a file cabinet, the smooth inner surfaces of the bodies 21 serve as supports for sliding drawers or other movable elements.

Due to the particular design of the fastening device, the filing cabinets and other structures on which they are employed may be shipped in disassembled or "knocked down" condition and assembled at the point of use by relatively unskilled labor without the use of additional fastening elements or any tools. After once being assembled these structures may readily be disassembled and stored or shipped without the destruction of any parts, yet when the parts of the structures are in assembled condition they will be securely retained against separation.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

I claim:

1. A fastening device for connecting two sheet-like elements provided with spaced openings comprising, in combination, body means formed for engagement with one surface of each sheet-like element, spaced offset portions formed on said body, means for reception by the openings in the sheet-like element for locating the respective positions of said elements, outwardly offset tongues formed on each of said offset portions, the ends of the tongues of an offset portion confronting one another and being spaced from one another, said offset portions each having a section spanning the both tongues thereof; and a locking strip for each of said offset portions, said locking strip being formed for slidable interposition between the tongues and spanning section of an offset portion and for overlying opposite edges of the opening on the surface of the sheet obverse to the first mentioned surface.

2. A fastening device for connecting two sheet-like elements provided with spaced openings comprising, in combination, body means formed for engagement with one surface of each sheet-like element, spaced offset portions formed on said body, means for reception by the openings in the sheet-like element for locating the respective positions of said elements, outwardly offset tongues formed on each of said offset portions, the ends of the tongues of an offset portion confronting one another and being spaced from one another, said offset portions each having sections spanning both tongues on opposite sides thereof; and a locking strip for each of said offset portions, said locking strip being formed for slidable interposition between the tongues and spanning sections of an offset portion and for overlying opposite edges of the opening on the surface of the sheet obverse to the first mentioned surface.

3. A fastening device for connecting two sheet-like elements provided with spaced openings comprising, in combination, body means formed for engagement with one surface of each sheet-like element, spaced offset portions formed on said body, means for reception by the openings in the sheet-like element for locating the respective positions of said elements, outwardly offset tongues formed on each of said offset portions, the ends of the tongues of an offset portion confronting one another and being spaced from one another,

said offset portions each having sections spanning both tongues on opposite sides thereof and a section extending across the tongues and connecting the spanning sections; and a locking strip for each of said offset portions, said locking strip being formed for slidable interposition between the tongues and spanning sections of an offset portion and for overlying opposite edges of the opening on the surface of the sheet obverse to the first mentioned surface.

4. A fastening device for connecting two sheet-like elements provided with spaced openings comprising, in combination, body means formed for engagement with one surface of each sheet-like element, spaced offset portions formed on said body, means for reception by the openings in the sheet-like element for locating the respective positions of said elements, outwardly offset tongues formed on each of said offset portions, the ends of the tongues of an offset portion confronting one another and being spaced from one another, said offset portions each having a section spanning the both tongues thereof; and a locking strip for each of said offset portions, said locking strip being formed for slidable interposition between the tongues and spanning section of an offset portion and for overlying opposite edges of the opening on the surface of the sheet obverse to the first mentioned surface, said strip having a shoulder arranged to engage a side edge of a tongue to limit the movement of the strip.

5. A fastening device for connecting two sheet-like elements provided with spaced openings comprising, in combination, body means formed for engagement with one surface of each sheet-like element, spaced offset portions formed on said body, means for reception by the openings in the sheet-like element for locating the respective positions of said elements, outwardly offset tongues formed on each of said offset portions, the ends of the tongues of an offset portion confronting one another and being spaced from one another, said offset portions each having a section spanning the both tongues thereof; and a locking strip for each of said offset portions, said locking strip being formed for slidable interposition between the tongues and spanning section of an offset portion and for overlying opposite edges of the opening on the surface of the sheet obverse to the first mentioned surface, said strip having spaced shoulders arranged to engage opposite side edges of a tongue to limit movement of the strip in either direction.

6. A fastening device for connecting two sheet-like elements provided with spaced openings comprising, in combination, body means formed for engagement with one surface of each sheet-like element, spaced offset portions formed on said body, means for reception by the openings in the sheet-like element for locating the respective positions of said elements, outwardly offset tongues formed on each of said offset portions, the ends of the tongues of an offset portion confronting one another and being spaced from one another, said offset portions each having a section spanning the both tongues thereof; and a locking strip for each of said offset portions, said locking strip being formed for slidable interposition between the tongues and spanning section of an offset portion and for overlying opposite edges of the opening on the surface of the sheet obverse to the first mentioned surface, said strip having a portion inclining longitudinally of the strip from adjacent one end thereof and terminating as a shoulder arranged to engage a side edge of a tongue to limit the movement of the strip.

WALTER F. REGENHARDT.