Sept. 13, 1966 R. N. OLTON 3,271,919

DOOR EDGE PROTECTOR

Filed Aug. 5, 1964

2 Sheets-Sheet 1

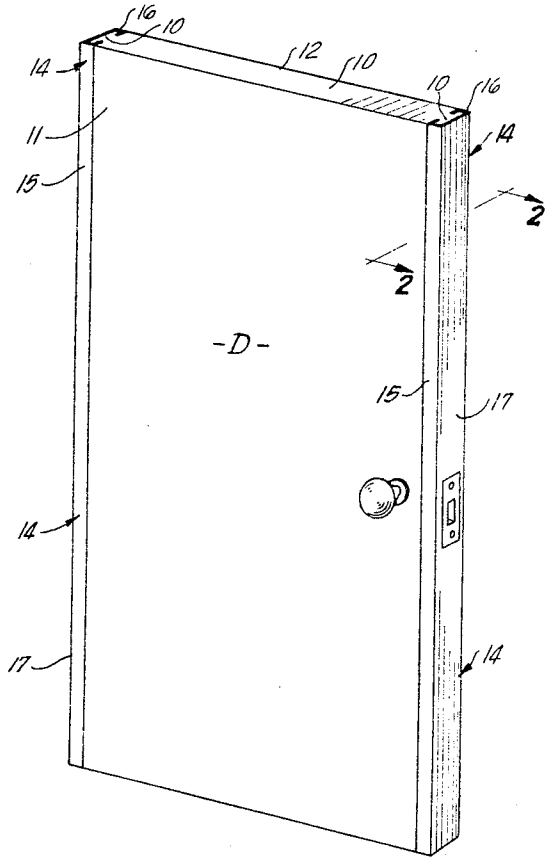


Fig. 1

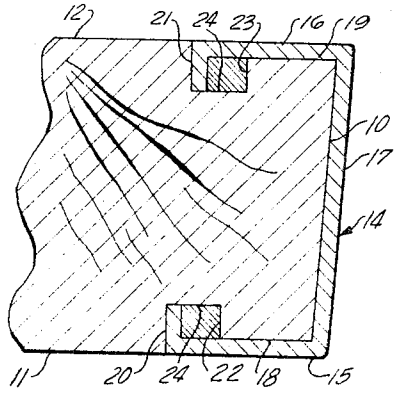


Fig. 2

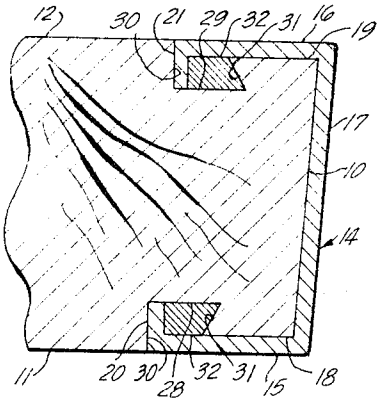


Fig. 3

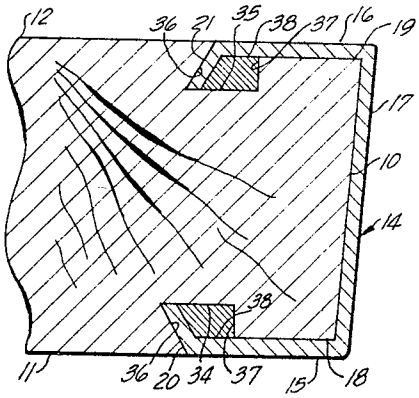


Fig. 4

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DOOR EDGE PROTECTOR

Filed Aug. 5, 1964 2 Sheets-Sheet 2

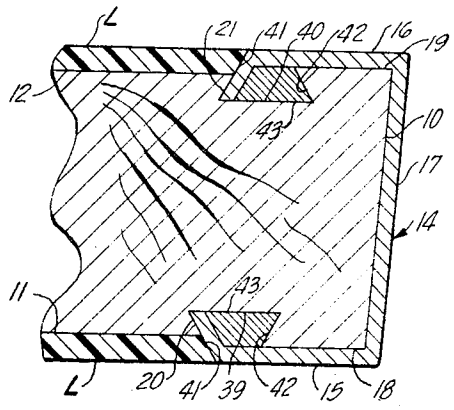


Fig. 5

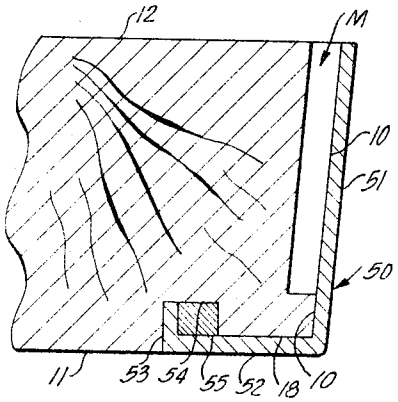


Fig. 6

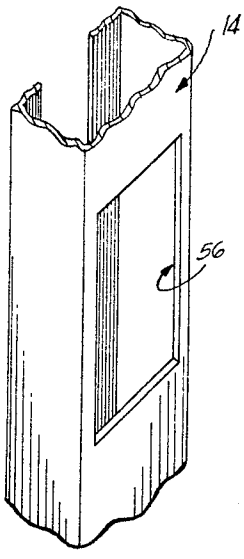


Fig. 7

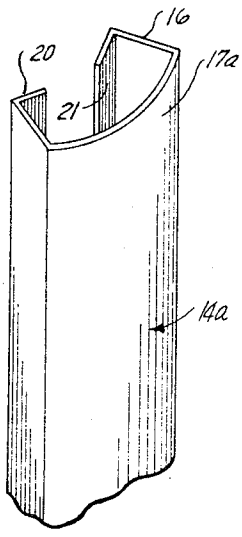


Fig. 9

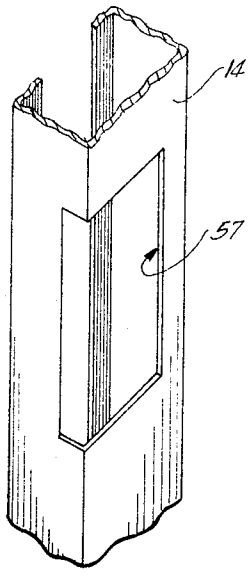


Fig. 8

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United States Patent Office 3,271,919 Patented Sept. 13, 1966

3,271,919

DOOR EDGE PROTECTOR

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Filed Aug. 5, 1964, Ser. No. 387,629
9 Claims. (Cl. 52—624)

This invention relates to door construction and particularly to decorative and protective edge protectors of durable material for preventing damage to the edges of architectural doors and, especially, the vertical side edges of such doors.

My invention is particularly adapted for use in connection with hollow- or solid-core wood doors and paneled wood doors. It is also useful in connection with metal doors.

Wood doors, whether flush or paneled, generally have a pair of longitudinally extending stiles along their opposite vertical sides. These stiles, or elements corresponding to and functioning as stiles, form the hinge side or edge of the door and the striker side or edge of the door. The stiles are generally interconnected by transversely extending rails at least at the upper and lower ends of the door. The door may otherwise consist of a hollow or solid core lying between parallel spaced apart door panels fixed to the opposite sides of the stiles and rails or it may consist of panels installed in and filling the paces between the rails and stiles. In steel doors, the vertical hinge and striker sides are usually each provided with a structural shape or element corresponding to a door stile and providing the hinge or striker side of the door.

Doors in public and/or institutional buildings are subjected to high rates of wear and tear. In particular, the hinge and striker edges of an open door are exposed to damaging bumps and blows when, for example, furniture or other large objects are moved through doorways and by the doors in them. Wood doors especially are easily split, cracked, chipped and dented. Even metal doors suger damage such as denting or they may have the finish scratched from them. Such damage to door edges detracts from the appearance of the door and, in fact, may structurally impair the door.

Door edges can be protected by providing covering strips of a material more durable than wood and, thus, able to prevent damage to the door edge which might otherwise occur as a result of normal wear and tear. In addition, the edge protector serves as an attractive, decorative trim. Door edge protectors embodying my invention can be adapted to cooperate with flush doors, for example, that are covered on their front and rear sides with plastic laminate to provide a highly serviceable door having all flush surfaces and that is easily cleaned and cared for.

Accordingly, it is an object of my invention to provide an edge protector for doors and particularly for the hinge and striker edges of wood doors which can be easily and conveniently fitted and attached to the door edges to be protected. Another object is to provide such door edge protectors which include novel means for securely attaching them to a suitably prepared door. Another object is to provide such fastening means which is hidden by the door edge protector and does not interrupt, project or otherwise interfere with the clean, unspoiled lines and surfaces of a door. Another object of this invention is to provide such a door edge protector which may entirely cover the otherwise exposed portions of the striker and hinge edges of a door and extend around onto and flush with the front and back surfaces of the door. Another object is to provide such a door edge protector which can easily accommodate the installation of lock plates and/or hinges after the installation of the edge protectors. Yet another object is to provide such a door edge protector in

a form which covers the entire hinge edge of the door, including the hinges which are mounted on the door prior to installation of the door edge protector. A general object of this invention is to provide a convenient and practical means for substantially increasing the durability and life of otherwise ordinary wood doors even when they are subjected to high rates of use and abuse.

Briefly, my invention consists of a longitudinally extending, channel-shaped edge protector having spaced apart legs joined together by a web and adapted to closely correspond to and fit over and around the edge and adjacent front and rear side marginal portions of the door to be protected. The web lies against the door edge and the legs overlie the marginal portions of the front and rear sides of the door adjacent the protected edge. A longitudinally extending groove is provided in the marginal portions of the front and rear sides of the door adjacent to, but laterally spaced from, the edge to be protected. The free edges of the door edge protector legs are provided with inwardly directed, longitudinally extending flanges adapted to enter the groove in the sides of the door. A fitting and fastening strip or key is provided in each groove and engages one side of the groove and the leg flange directed therein, pressing and holding the leg flange against the opposite side of the groove. The fastening strip or key lies inside the leg flange and the leg itself so that it is hidden from view by the leg. The edge of the leg from which the flange extends is urged into and held in tight engagement and preferably flush with the front or rear side of the door, as the case may be.

These and other advantages and features of my invention will become apparent from the following description of a preferred and modified form thereof taken together with the drawings in which:

FIGURE 1 is a perspective elevation view of an architectural door having an edge protector mounted on opposite edges thereof;

FIGURE 2 is a cross section elevation view taken in a generally horizontal plane including line 2—2 shown in FIGURE 1 and in enlarged scale;

FIGURES 3, 4, 5 and 6 are cross-sectional views, similar to FIGURE 2 but showing modified forms of door edge protectors, each as mounted on a door edge;

FIGURE 7 is a perspective elevation view of a portion of a door edge protector strip adapted to reveal the lock plate in the striker edge of a door;

FIGURE 8 is a perspective elevation view of a portion of a door edge protector strip adapted to reveal the hinge in the hinge edge of a door; and

FIGURE 9 is a perspective elevation view of a portion of another modified form of door edge protector strip.

As seen in FIGURES 1 and 2, the vertical portions of the edge **10** of door D lying between the laterally spaced opposite front and rear sides **11** and **12**, respectively, of the door are covered by a channel-shaped strip or molding formed of a durable material and indicated generally at **14**. Strip **14** consists of front and rear leg portions **15** and **16** and a web portion **17** interconnectiing corresponding and adjacent edges of legs **15** and **16**. Web **17** is so dimensioned with respect to the thickness of the door or the lateral extent of its edge **10** that legs **15** and **16** lie flat against and closely engage the marginal portions **18** and **19** of the front and rear sides **11** and **12**, respectively. Strip **14** further fits the edge **10** of the door so that web **17** overlies and engages edge **10**.

As described above in connection with FIGURES 1 and 2 of the accompanying drawings and as will appear from the other figures in the drawings and the description of them as it appears below, strip **14** comprising the door edge protector is made to substantially conform to the marginal and edge portions of a generally conventional

door. Conventional doors have parallel front and rear sides and an edge bounding the sides and extending between their marginal portions. As is well known, the generally vertical hinge and strike edges usually are angled with respect to front and rear sides or tapered with respect to a plane perpendicular to the front and rear sides. Generally speaking, the striker and hinge edges make angles with the front side of the door that are greater than 90° and with the rear side of the door that are less than 90°. Whether the door is provided with conventional vertical edge tapers or not, the door edge protector strip is preferably made to conform closely to the door. The thickness of the door is preferably reduced along the marginal portions adjacent the edge to be fitted with a door edge protector so that, when installed, the legs of the door edge protector lie flush with the surface of the front and rear sides and do not protrude or project beyond them.

The free edges of legs **15** and **16**, i.e. those edges remote from web **17**, are provided with inwardly and oppositely extending flanges **20** and **21**, respectively. Flanges **20** and **21** are adapted to fit in grooves in marginal portions **18** and **19** of the door as will be described more fully below.

Marginal portions **18** and **19** of front and rear sides **11** and **12** of the door are provided with grooves **22** and **23** extending longitudinally from the top to the bottom of the door and laterally spaced from its generally vertical edge **10**. The grooves are cut in marginal portions **18** and **19**. In the case of a wood door, they may be provided, for example, by a pass or passes of a kerfing saw in and along the stile of the door. In the form of my invention shown in FIGURE 2, the groove is approximately square with respect to the side surfaces. In a door 1¾ inches thick, for example, the grooves **22** and **23** could appropriately be 3/16 inch wide and ¼ inch deep. Also, as shown in FIGURE 2, the surfaces of outer marginal portions **18** and **19** of the door, i.e. that part of front and rear sides **11** and **12** lying between edge **10** and grooves **22** and **23**, are spaced apart a distance such that, when the gauge of the door edge protector is added thereto, front and rear legs **15** and **16** of the protector are flush with the main portions of the door surfaces.

Grooves **22** and **23** are so located in marginal portions **18** and **19** of the door that legs **15** and **16** of door edge protector strip **14** overlie and extend to the side of the grooves remote from their associated door edge **10** as seen in FIGURE 2. The door edge protector is held in place by a fastening means cooperating with flanges **20** and **21** and grooves **22** and **23**. The fastening means comprises a fitting and fastening strip **24** of material having strength and/or resiliency in compression which fills the space in grooves **22** and **23** between the inside surfaces of flanges **20** and **21** and the side of grooves **22** and **23** further therefrom. Fitting and fastening strip or key **24** fits snugly within the grooves so as to tend to urge flanges **20** and **21** into engagement with these sides of the grooves remote from the door edge. Strips or keys **24** also urge web **17** into tight engagement with edge **10** and legs **15** and **16** are held closely against marginal portions **18** and **19** of front and rear sides **11** and **12**, respectively.

Strips **24** may be made of wood or other relatively non-resilient material, for example. Such strips or keys are preferably made slightly narrower than the width of their cooperating groove by an amount approximately equal to the thickness of the flange of the door edge protector to be held in the groove. Strip **24** is preferably glued or otherwise fastened in place by a cement or glue. The door edge protector may be fitted and fastened to the door by simultaneously sliding door edge protector strip **14** and fitting and fastening strips **24** to which glue or cement has been applied into grooves **22** and **23** and over edge **10** beginning at the top or bottom of the door and continuing to the opposite end. It may be possible, in certain instances, to first cement or otherwise fasten the strips or

keys **24** into the grooves **22** and **23** and then longitudinally slide or even laterally spring or snap a resilient door edge protector into a suitable crack between the groove wall remote from the protected door edge and the fitting and fastening strip **24**. In either event, strip **24** fits and fastens the door edge protector in place. It also aids materially in the economical production of doors adapted to receive door edge protectors by providing a simple, yet highly effective, means for forming suitably narrow slots in the door sides for receiving flanges **20** and **21**. When 20 gauge metal is nsed for forming door edge protector strip **11**, for example, a space or slot is needed that is the same thickness or slightly less, depending upon the nature and properties of key **24** and/or strip **11**. Such a narrow groove cannot easily or economically be made in a wood door.

FIGURES 3 through 8 show various modifications and/or features of my invention. In the modifications, the same reference numerals as used in FIGURES 1 and 2 are used to identify like elements.

FIGURE 3 shows a modification of my invention having fastening grooves **28** and **29** formed with non-parallel side walls **30** and **31**. In this case, side walls **30** remote from associated door edge **10** lie in planes generally normal to the front and rear sides **11** and **12**. Each side wall **31** lies in a plane extending at an angle inwardly of side **11** or side **12** and away from its opposite and associated side wall **30**. Approximately shaped fitting and fastening strips **32** are provided and correspond in transverse cross section to the shape of grooves **28** and **29**. It is apparent that angled side walls **31** of grooves **28** and **29** have certain advantages in returning strips **32** within grooves **28** and **29** and, thus, helping to fit and fasten edge protector strip **14** on and to a door. It may, however, be more difficult to form.

In FIGURE 4, I have shown another modification having grooves **34** and **35** with side walls **36** and **37** remote from and near to associated edge **10**, respectively. Side walls **36** are angled with respect to front and rear sides **11** and **12** and extend inwardly and away from associated edge **10** of the door and side walls **37** are generally normal to sides **11** and **12** of the door. Flanges **20** and **21** are fitted and urged against angled side walls **36** by fitting fastening strips **38** appropriately shaped for grooves **34** and **35**.

FIGURE 5 shows a further modification in which grooves **39** and **40** are provided with non-parallel, inwardly diverging side walls **41** and **42** remote from and near to associated edge **10** of the door, respectively. Flanges **20** and **21** of strip **14** are urged against angled side walls **41** by a generally dovetail-shaped fitting and fastening strip **43**.

In the case of various ones of the prefered and modified forms of my invention described above, the fitting and fastening strips may take a form whose transverse cross-sectional shape does not correspond to the groove in which it is to be used. The fitting and fastening strips may be made, for example, of long extruded rubber strips of circular or oval cross section. In connection with the strips or keys to be used in any of the forms, it is important that they serve to fit the flanges on the front and rear legs of strip **14** closely against the side of the receiving groove remote from the associated edge of the door and thereby web **17** close against edge **10** and act to fasten and hold the flanges in place and, thus, the door edge protector strip **14** against and around the edge of the door. Generally, if the fitting and fastening strips or keys are made of a substantially non-compressible material or a hard material, it is preferable to glue them in place to the side walls of the groove which they directly engage.

In FIGURE 6 is shown a further modified form of my door edge protector comprising a strip **50** having a web **51** joined to one edge of a single leg **52** that is intended to lie on and along the front side **11** of the door. Single leg **52** is provided with a flange **53** for engagement with and

fastening in single groove **54** by cooperating fitting and fastening strip **55**. Groove **54** may take other shapes than the one shown as suggested by the modifications shown and described above. The mortise for a hinge is indicated generally at M. This form of door edge protector is intended primarily for use on the hinge edge of a door when it is desired to cover the hinge mortised into the edge of the door. While strip **50** of the one-legged form is not held onto the door edge by two flanges as the forms shown in the previous figures of the drawings, this form of door edge protector is entirely practical and useful and particularly enhances the hinge side of the door which is exposed when the door is open. Door edge protectors of the one-legged form shown in FIGURE 6 are preferably made of metal, such as stainless steel, in a thickness of gauge giving some resiliency to the strip. Further, the strips are formed so that the leg and web lie in planes intersecting at an angle slightly less than the angle between the door edge and side which they are intended to overlie. As a result, when the one legged strip is mounted and fitted and fastened by an appropriate key placed in a cooperating groove and in engagement with the flange of the single leg of the strip, the strip is sprung slightly and tends to be resiliently urged against the surfaces of the door which it overlies.

While I have mentioned stainless steel as being suitable material for the form of my invention shown in FIGURE 6, it is eminently suitable for the other forms of my invention, though the invention is not, in all its forms, limited in any way to one particular material. The door edge protector strip should preferably be made of a durable material that will withstand blows and abuse such as are encountered by and cause damage to exposed door edges. Such a material is, for example, 19 or 20 gauge stainless steel. Suitable plastic materials can be used as well.

Another feature of my invention is shown in FIGURE 7 in which the door edge protector strip **14** is fitted to the striker edge of a door and provided with a cutout indicated generally at **56** to expose the lock plate. In FIGURE 8 is shown the manner of cutout indicated generally at **57**, provided to expose and accommodate a hinge on the hinge edge of the door. It will be noted, in the case of a strip with a lock plate cutout and a strip with a hinge cutout, that the gripping flanges on the legs of the door edge protector strip are not interrupted and the cutouts do not tend to interfere with or weaken the mounting and fastening of the door edge protector on the door.

In FIGURE 9 is shown a length of door edge protector strip **14***a* standing alone and not in place on the edge of the door. The strip is similar to those shown and described above in that it has legs **15** and **16** and a web portion **17***a* interconnecting them. Each leg is provided with a flange **20** and **21** as described above. The difference between the strip shown in FIGURE 9 and the door edge protector strip described above is that, in the former, web **17***a* is formed with a curve in its lateral direction rather than flat. This curve throws legs **15** and **16** into generally converging planes as shown. Strips **14***a* is necessarily formed of a resilient material so that, when it is slid onto the edge of the door, legs **15** and **16** can be sprung apart and assume a generally parallel relationship and lie flat against the marginal portions of the front and rear sides of the door. When strip **14***a* is installed and legs **15** and **16** are sprung apart, web **17***a* will assume a generally flat position, both laterally and longitudinally, and have substantial surface engagement with the door edge to be protected. When strips **14** and **14***a*, formed with laterally flat and curved webs **17** and **17***a*, respectively, are in a protecting position on a door, no difference in the strip is apparent. The modified form of strip **14***a* thus employs the resilient nature of the material to aid the fitting and fastening strips in holding the door edge protector strip onto the edge of the door.

It will be noted that, in connection with wood core doors whose front and/or rear sides **11** and **12** are covered by a veneer of plastic laminate L or other material as shown in FIGURE 5, for example, the door edge protector strip, in any of its forms shown, may be and is preferably formed so that its legs lie flush with the surface of the veneer when installed on a door edge. While it is believed that this not only enhances the appearance of the door, it also produces an uninterrupted surface on the front and rear faces of the door that it easily cleaned and kept clean. In addition, it minimizes any tendency of the door edge protector strip to be inadvertently pulled or otherwise removed from the door through use of the door. If the legs of the door edge protector strip extend outwardly or above the surface of the front and rear sides of the door, an edge or corner at the intersection of the legs and their associated flanges protrudes and projects outwardly and can engage or be caught by objects passing nearby.

Those skilled in the art will appreciate that various other changes and modifications can be made in the preferred form of apparatus described herein without departing from the spirit and scope of the invention.

I claim:

1. The combination of a door and door edge protector including means for fitting and fastening said protector on and to an edge of said door,

said door comprising front and rear sides and an edge bounding said sides and extending between the marginal portions thereof, said front and rear sides having grooves therein extending longitudinally along said marginal portions associated with said edge to be protected and spaced laterally from said associated edge, said grooves each having laterally spaced apart, longitudinally extending side walls farther from and nearer to said associated edge, and an open side facing outwardly of a side of said door, and

said door edge protector comprising a longitudinally extending channel-shaped strip of durable material having laterally spaced apart legs joined together along their laterally opposite edges by a longitudinally extending web, said legs lying against and engaging said associated marginal portions and substantially covering said open sides of said grooves therein, and said web lying against and engaging said associated edge, flanges on said legs extending into said grooves along and adjacent said groove side walls farther from said associated edge, means for fitting and fastening said channel-shaped strip on said door edge comprising longitudinally extending fitting and fastening strips lying in said grooves inside of and hidden by said legs of said channel-shaped strip substantially covering said grooves, said fitting and fastening strips engaging and acting between said groove side walls nearer to said associated edge and said flanges and urging said flanges toward said groove side walls farther from said associated edge and tending to retain said flanges between and in engagement with said locking strips and said groove side walls farther from said associated edge.

2. The combination according to claim **1** in which the side walls of said grooves are parallel to each other.

3. The combination according to claim **2** in which the side walls of said grooves lie in planes normal to said front and rear sides of said door.

4. The combination according to claim **1** in which one side wall of each of said grooves is normal to said front and rear sides of said door and the other side wall of each of said grooves lies in a plane inclined at an angle other than 90° to said front and rear sides of said door.

5. The combination according to claim **4** in which said side wall nearer to said associated edge of each of said grooves extends inwardly from one of said sides of said door and at an angle toward said associated edge.

6. The combination according to claim **4** in which said side wall farther from said associated edge of each of said

grooves extends inwardly from one of said sides of said door and at an angle away from said associated edge.

7. The combination according to claim 1 in which the two side walls of each of said grooves lie in planes which extend inwardly from the front and rear sides of said door and at angles other than 90° thereto while diverging from each other so that said grooves comprise generally longitudinally extending dovetail mortises and said fitting and fastening strips correspond generally to longitudinally extending dovetail tenons.

8. The combination according to claim 1 in which said web is laterally curved to provide an outwardly facing laterally convex surface, said legs extending from said web in converging planes, and said strip being resiliently yieldable so that when said legs are positioned substantially parallel to each other said web is substantially laterally flat.

9. The combination of a door and a door edge protector including means for fitting and fastening said protector on and to an edge of said door,

said door comprising front and rear sides and an edge bounding said sides and extending between the marginal portions thereof, one of said sides having a groove therein extending longitudinally along said marginal portion associated with said edge to be protected and spaced laterally from said associated edge, said groove having laterally spaced apart, longitudinally extending side walls farther from and nearer to said associated edge and an open side facing outwardly of a side of said door, and

said door edge protector comprising a longitudinally extending L-shaped strip of durable material having a leg joined along one of its edges to a longitudinally extending web, said leg lying against and engaging said associated marginal portion and substantially covering said open side of said groove therein, and said web lying against and engaging said associated edge, a flange on said leg extending into said groove along and adjacent said groove side wall farther from said associated edge, means for fitting and fastening said L-shaped strip on said door edge comprising a longitudinally extending fitting and fastening strip lying in said groove inside of and hidden by said leg of said L-shaped strip substantially covering said groove, said fitting and fastening strip engaging and acting between said groove side wall nearer to said associated edge and said flange, and urging said flange toward said groove side wall farther from said associated edge and tending to retain said flange between and in engagement with said locking strip and said groove side wall farther from said associated edge.

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