June 3, 1930. DE FOREST ROE 1,761,233

BUFFER

Filed Sept. 11, 1926 2 Sheets-Sheet 1

Fig. 1.

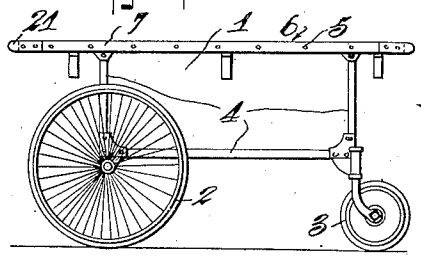


Fig. 2.

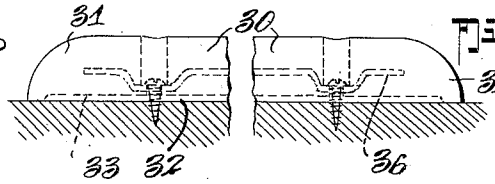


Fig. 3A

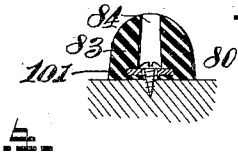


Fig. 3.

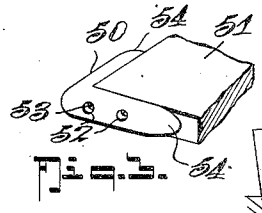


Fig. 4.

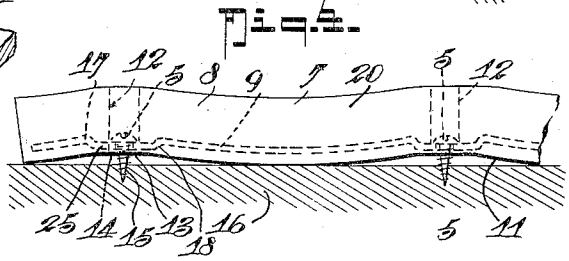


Fig. 5

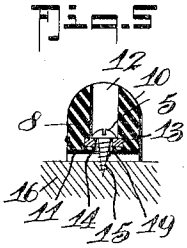


Fig. 6.

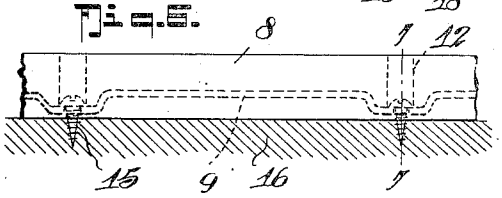
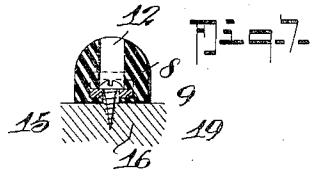


Fig. 7.



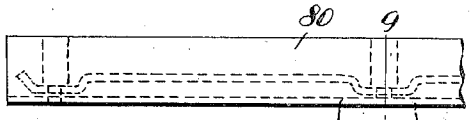


Fig. 8.

Fig. 9.

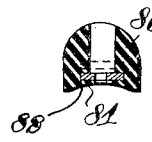


Fig. 10

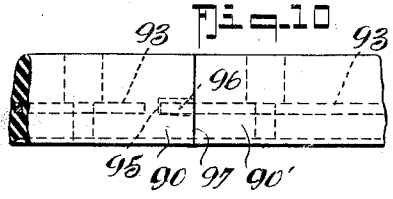


Fig. 11.

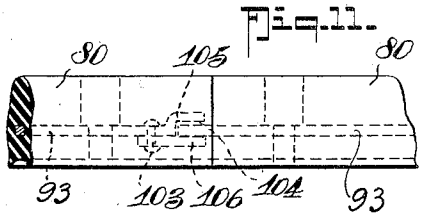


Fig. 12.

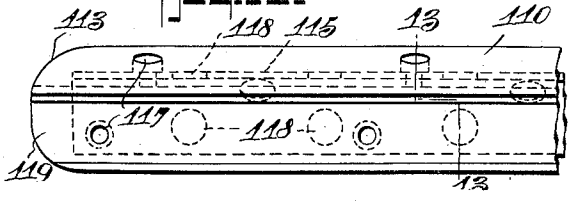


Fig. 13.



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BUFFER

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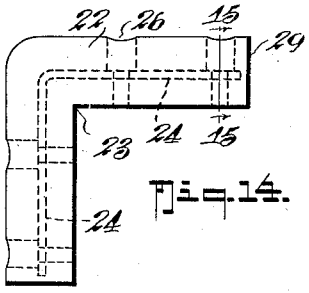


Fig. 14.



Fig. 15.

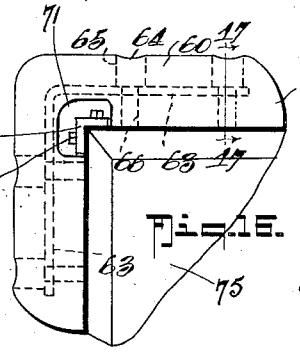


Fig. 16.

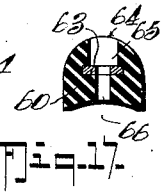


Fig. 17.

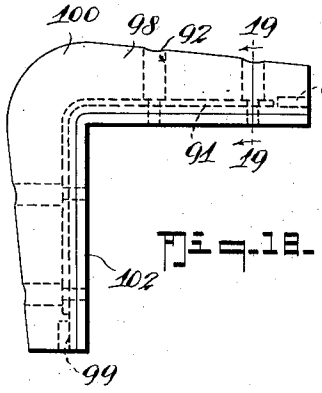


Fig. 18.

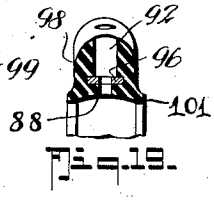


Fig. 19.

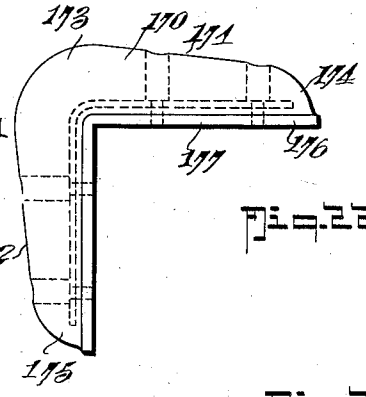


Fig. 22.

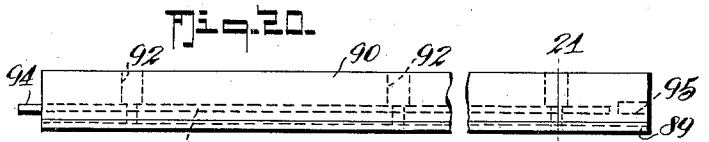


Fig. 20.

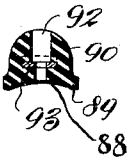


Fig. 21.

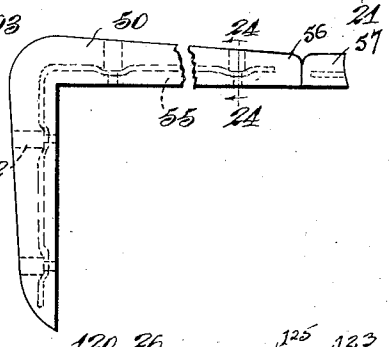


Fig. 23.

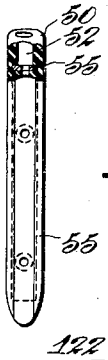


Fig. 24.

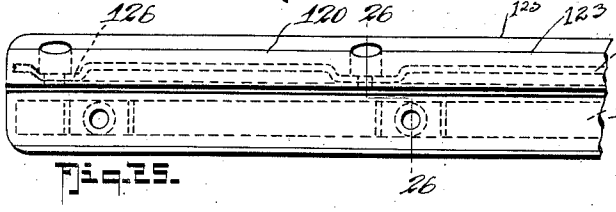


Fig. 25.

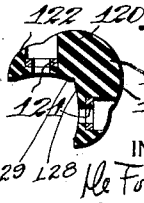


Fig. 26.

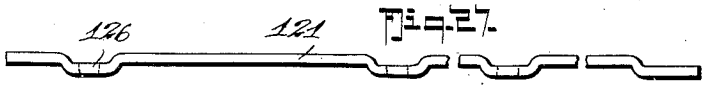


Fig. 27.

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Patented June 3, 1930 1,761,233

UNITED STATES PATENT OFFICE

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BUFFER

Application filed September 11, 1926. Serial No. 134,842.

My invention relates to an improved buffer and more particularly it relates to that type of buffer employed on portable trucks, wheeled stretchers, articles of furniture, and the like.

One of the objects of my invention resides in the provision of an improved buffer formed of rubber or rubber composition material, or the like.

Another object of my invention resides in the provision of an improved reenforcement for the buffer.

Another object of my invention resides in the manner by which my improved buffer may be secured to an article to be protected.

Another object of my invention is to protect and thereby increase the life of articles equipped with my improved buffer, and extraneous objects against which such articles may collide.

Another object of my invention resides in its adaptability to projecting corners of supporting articles as well as the sides thereof.

Another object of my invention resides in the provision of an improved buffer which is simple and durable in construction, economical to manufacture and readily attachable to a support.

Other objects of my invention and the invention itself will become apparent from reference to the accompanying drawings forming a part of this specification, wherein I have illustrated some of the embodiments of my invention.

Referring to the drawings:

Fig. 1 is a side elevational view of a wheeled stretcher embodying my invention;

Fig. 2 is a side elevational view of a fragment of an embodiment of my invention;

Fig. 3 is a perspective view of a fragment of an article embodying my invention;

Fig. 4 is a side elevational view of an embodiment of my invention placed upon a supporting article and in a position to be applied to the same;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a side elevational view of the embodiment of my invention of Fig. 4 secured to a supporting article;

Fig. 7 is a transverse sectional view on the line 7—7 of Fig. 6;

Fig. 8 is a fragmentary side elevational view of another embodiment of my invention, showing a slightly modified reinforcement;

Fig. 9 is a transverse sectional view on line 9—9 of Fig. 8;

Fig. 9A is a transverse sectional view of the embodiment of Fig. 8 illustrating the form assumed by the buffer when secured to a support;

Fig. 10 is a side elevational view of the buffer strip, an interlock joint for the same being shown in dotted lines;

Fig. 11 is a side elevational view of an embodiment similar to Fig. 10 illustrating in dotted lines a modified interlocking for the reinforcement;

Fig. 12 is a side elevational view of an embodiment of my invention adaptable for use on edges of supporting articles;

Fig. 13 is a transverse sectional view on the line 13—13 of Fig. 12;

Fig. 14 is a side elevational view of an embodiment of my invention adaptable for use on corners of supports;

Fig. 15 is a transverse sectional view taken on the line 15—15 of Fig. 14, looking in the direction of the arrows;

Fig. 16 is a side elevational view of a modification of the embodiment of my invention of Fig. 14;

Fig. 17 is a transverse sectional view of the same taken on the line 17—17 looking in the direction of the arrows;

Fig. 18 is a side elevational view of a modified corner piece of the foregoing embodiments;

Fig. 19 is a transverse sectional view of the same, looking in the direction of the arrows, a portion thereof being shown in elevation;

Fig. 20 is a side elevational view of the embodiment of my invention illustrated in Figs. 10 and 11;

Fig. 21 is a transverse sectional view taken on the line 21—21 of Fig. 20;

Fig. 22 is a side elevational view of still another form of corner piece;

Fig. 23 is a side elevational view of a modi-

fied end which may be employed in the embodiment of my invention illustrated in Fig. 3;

Fig. 24 is a transverse sectional view taken on the line 24—24 of Fig. 23, looking in the direction of the arrows;

Fig. 25 is a fragmentary side elevational view of another form of edge piece;

Fig. 26 is a transverse sectional view taken on the lines 26—26 of Fig. 25; and

Fig. 27 is a side elevational view, broken away in places, of a reinforcement element employed in some of the embodiments of my invention referred to in the foregoing description of the figures of the drawings.

As heretofore stated my improved buffer may be attached to various portable or wheeled articles, and to numerous articles of furniture, for protecting the same from damage through contact with extraneous objects and to protect such objects. For the purpose of conveying an understanding of my invention so employed reference is made to Figs. 1 and 3 of the drawings.

Referring first to Fig. 1 of the drawings, at 1, I show a wheeled stretcher of a type quite generally in use in hospitals, comprising a pair of large supporting wheels 2 and a pair of caster wheels 3, frame sections 4 and a top 6. To the peripheral edge of the top 6 is secured, preferably by screws 5, a buffer strip and a corner piece generally indicated by the reference numerals 7 and 21 and preferably being of the form illustrated in Figs. 4 and 14, respectively.

The buffer strip 7 preferably comprises a strip 8 of pliable and resilient material such as rubber, and a metallic reinforcing core 9 embedded in the material forming the strip. The buffer is preferably rounded on its outer surface at 10 and provided with a base portion 11. A plurality of spaced holes 12 are provided in the rubber and extend partly through the same from the rounded surface to the base, and in alignment with holes 13 provided in the metallic core 9; said holes 13 are of smaller diameter than the holes 12 but of equal size to a plurality of corresponding and aligned holes 14 through the base of the rubber strip. Each of the holes 12 are large enough to permit the insertion of a screw 5, as shown, so that its head will engage the metallic core 9, the shank portion 15 protruding through the holes 13 and 14 into the support 16 to secure the buffer strip to the support.

The core 9 is preferably bent at 17 and 18 at intervals throughout its length to form offset portion 25 adjacent the holes 12 and 14. A thin layer or film of rubber at 19 may be disposed between the offset core and the surface of the article supporting the buffer strip during the molding of the buffers. I also sometimes contemplate having a metal to metal contact, in such cases there will be no rubber material between the offset core and the supporting surface. The composite buffer is downwardly bowed between the screw receiving holes 12 for a purpose later to be explained.

The corner piece 21 illustrated in Figs. 14 and 15 employed in connection with the buffer strip described above preferably comprises an angular strip of material 22 formed generally like the strip 7 in transverse dimensions and comprising two arms disposed at right angles to each other and united at 23. A metallic core 24 is embedded in the rubber material, being preferably molded therein, and extends to a point close to the ends of the rubber and likewise has two angularly disposed arms, the buffer arms having abrupt ends 29 to conform to the abrupt ends of the strip 7. Preferably two holes 26 are provided in each arm, the holes of the rubber and core being aligned and adapted to receive securing screws to secure the corner piece to the support in such a way that the joint between the corner piece 21 and aligned side strips such as 7, Fig. 10 is not readily noticeable.

In applying the strip 7 to the supporting article the initial position assumed by the same after the screws 5 have been partly screwed down is best illustrated in Figs. 4 and 5. Figs. 6 and 7 illustrate the ultimate position. In the ultimate position the depressed portions of the core come so close to the surface of the article to which the buffer is secured that the tendency toward upward bowing of the intermediate portions of the buffer from contact with the surface of the article will not be appreciable.

In Fig. 2 I have illustrated one form of buffer strip 30 like the strip 7 in all respects except that in this embodiment of the invention the strip is provided with rounded ends 31, and concaved base 32 extending to points adjacent the ends thereof. In this way a space 33 is provided between the strip and the surface of a supporting article whereby any tendency of the buffer to bulge or assume an uneven surface will be prevented. The space 33 will compensate for such bowing or bulging of the buffer when it is secured to a supporting article. The core 36 is preferably a flat strip of metallic material.

Referring to Fig. 3 I have illustrated a form of my corner piece 50 attached to a support such as a table corner 51 by virtue of screws 53, or the like, insertable into the holes 52 provided for that purpose. This form of corner piece is preferably employed without buffer strips such as the strip 7, heretofore described, and is provided with rounded and tapered ends 54 for the purposes of economy of material and appearance. Figs. 23 and 24 more clearly illustrate the corner piece 50 and the manner in which the metallic core 55 is carried embedded within

the same, and disposed in close proximity to the base portion of the same. Sometimes I may form the ends of the piece 50 with more abrupt ends, that is at such times when it is desired to employ the piece 50 in connection with strips such as 57 having complementary ends.

Other embodiments comprising corner pieces are illustrated in Figs. 16 and 22. The former being indicated by the reference numeral 60, is like the corner piece 50, except that the corner piece 60 is provided with more abrupt curved ends such as at 61 and the metallic core 63 is disposed more to the center of the same. It will also be noted by reference to Fig. 14 that the reduced bore 66 of the holes 64 is of greater length with respect to the portion 65 than in the screw holes 26. I may sometimes provide a recess 71 in the angle portion of the piece 60 to provide a clearance for the angle strip 72 and bolts 73 of the corner of a table 75 as best shown in Fig. 16.

In Fig. 22 the rounded surfaces 171 and 172 of the corner piece 170 are gradually tapered downwardly from the intermediate curved portion 173, and rounded at each end as at 174 and 175. The sides of the corner piece in this form are flared outwardly at 176 adjacent the base 177 to provide supporting surface engaging widened portions.

Referring to Figs. 8, 9 and 9A I have illustrated one of the preferred embodiments of my invention which is like in many respects to the buffer strip 7, but in this form of the invention the strip 80 is provided with a concaved base at 81 so that in applying the buffer strip to a supporting surface the concaved portion will compensate for the tendency of the rubber material to become deformed or uneven after screws have been applied to secure the same permanently on the supporting surface. As best shown in Fig. 9A the concave base 81 of the buffer when applied to a supporting surface will be substantially flattened against the supporting surface after the screws have been screwed down tightly. The sides 83 of the buffer strip and the walls of the holes 84 will taper slightly inwardly towards each other.

Referring now to Figs. 18 and 20 wherein I have illustrated another embodiment of my invention in which 90 is a strip of rubber material like the buffer strip 80, Fig. 8, but in which provision is made for an interlocking joint 97 such as best shown in Fig. 10 between the buffer strip and a corner piece 98, and adjoining buffer strips when it is desired to apply a buffer to an article of a length greater than the length of a corner piece and a single buffer strip. A flared base is provided in this strip at 89 to afford a relatively large concave base portion 88. The buffer strip and corner piece 98 in this embodiment of my invention are provided with a plurality of holes 92 for fastening the same to a support and the buffer strip being provided with a flat metallic core 93 which projects beyond one end thereof at 94 and the other end of the buffer strip 90 is provided with a recess 95 for the reception of a projecting core 96 of the buffer strip 90′ for insuring a better interlocking joint between the adjoining buffer strips.

To provide for an interlocking connection between a corner piece and buffer strip the corner piece body 98 is provided with a relatively short core 91. Recesses 99 are provided in each end of the corner piece body for the reception of the projecting portions 94 of the core 93 of an adjoining buffer strip such as 90 to form an interlocking connection between the corner piece and a buffer strip. It will be noted that this form of corner piece is provided with a flanged base 101, and also that the angle portion 100 thereof is of greater thickness than its other portions in transverse dimensions to afford greater protection for the corners of supporting articles.

The corner pieces 50, 60 and 170 are adapted to be employed without the use of buffer strips, such application of these embodiments of my invention being best shown in Fig. 3. The corner pieces 22 and 98 as shown in Figs. 14 and 18 respectively may be employed in connection with buffer strips such as the buffer strip 7, or they may be employed singly when so desired.

In Fig. 11 I show a modified form of interlocking connection for the buffer strips 80 as illustrated. The core 93 is bent upwardly at 105 and a short strip 106 of similar metallic material is preferably riveted at 103 adjacent the bend in the core to provide a forked end 104. The fork is adapted to receive the projecting end 94 and provide a reinforced interlocking joint and also acts as a shield for decreasing the possibility of the end of the core cutting the rubber material of the buffer strip.

Reference is now directed to Figs. 12 and 13 wherein I have illustrated an embodiment of my invention, adaptable for use on relatively long edges of a supporting article, comprising a preferably rubber buffer strip 110 of right angle formation in transverse cross-section having tapered sides 111 towards its curved apex 112. The ends of the strip are preferably rounded at 113 towards the base 119 which base is concaved at 114. A metallic core 115 is provided and curved at 116 to conform generally to the shape of the buffer strip. The core piece is of shorter length than the buffer strip and both are provided with a plurality of holes 117 registering with each other for the reception of screws or other suitable fastening means. These holes are arranged in staggered relation to each other on the side portions of the strip and core. The sides of the core are also provided with

a series of apertures 118 adapted to decrease the weight of the same and to permit the core piece to be more freely bent into the form illustrated. The rubber or other pliable material of which the buffer strip is formed may enter these apertures when in the plastic state to provide a more durable buffer strip.

In the embodiment of my invention illustrated in Figs. 25 and 26 I have shown an angle strip piece which is somewhat similar in form to and capable of a like use as that of the embodiment of Figs. 12 and 13 and which comprises a strip of rubber material 120 formed into a substantial right angle throughout its length like the angle strip 110, Figs. 12 and 13, but in which the metallic core 121 is formed of preferably two separate pieces and in which the outer surface of the buffer strip is transversely curved on two varying degrees of curvature at 122 and 123. The center of the buffer strip is preferably thickened at 125 to better protect the article to which it is secured. The cores 121 are provided with offset portions 126 for the purpose heretofore described. In other respects the angle buffer strips 110 and 120 resemble each other.

The angle shown in Fig. 26 of the drawings, between the inner contacting surfaces 128 and 129 of the strip 120 may be disposed at 90 degrees to each other and slightly concaved. However, I sometimes contemplate make this angle of less than 90 degrees to form a better clasp for the buffer on the support. In employing the latter form I may dispense with the concaved surfaces.

I preferably form the buffer strips and corner pieces above described by first placing the metallic reinforcing bar in a mold of a configuration conforming to the size and shape of the buffer strip and corner piece which I contemplate making. Molten rubber is then poured into the mold through a suitable aperture provided in the wall thereof for that purpose and the mold is then closed and allowed to set the desired period of time until it becomes semi-solid, at which time it is vulcanized to the desired degree of pliability.

A buffer strip and corner piece constructed in the manner set forth is neat in appearance as well as being durable in construction and may be readily attached to a supporting article such as furniture, portable trucks, wheeled stretchers, door jambs and the like without materially marring the appearance of the article to which it is applied, and possesses the properties of a resilient soft armor therefor.

The buffer strip and corner piece may be adapted for use either jointly or singly. That is, I may employ a single buffer strip or a single corner piece, or I may employ a plurality of each to properly protect the supporting article depending of course upon the size of the article desired to be protected or armored.

Having thus described my invention in certain embodiments I am aware that numerous and extensive departures may be made from the embodiment herein illustrated and described but without departing from the spirit of my invention.

What I claim:

1. A buffer adapted for attachment to a projecting edge of an article of furniture or the like to be guarded thereby from contact with extraneous objects, comprising an elongated rubber strip, a metallic strip extending longitudinally interiorly thereof, said metallic strip comprising spaced offsets having portions extending approximately in longitudinal alignment with the attaching surface of the rubber strip, securing means, said securing means supported by said aligned offset portions and projecting therefrom into said article to tightly secure the buffer to said article.

2. A buffer adapted for attachment to a projecting edge of an article of furniture or the like to be guarded thereby from contact with extraneous objects, comprising an elongated rubber strip, a metallic strip extending longitudinally interiorly thereof, said metallic strip comprising spaced offsets having portions extending approximately in longitudinal alignment with the attaching surface of the rubber strip, securing means, said securing means supported by said aligned offset portions and projecting therefrom into said article to tightly secure the buffer to said article, the attaching surface of said buffer attachment normally concave in form said metallic strip being so disposed as to deform said attaching surface towards flattened form by the pressure communicated by the projection of the securing means into the article.

3. A guard strip for a projecting edge of an article of furniture or the like comprising a plurality of longitudinally aligned contiguous rubber sections, each of said sections comprising a longitudinally extending interiorly disposed metallic strip, one of said sections comprising a socket recess in its end disposed contiguous to an end of the other section, the metallic strip of the other section projecting beyond its end contiguous to the recessed end of the other section, the projecting portion disposed in said recess and means projecting from the metallic strips of both sections into the edge portion of the article to be guarded to secure the sections of guard to the article.

4. A guard strip for a projecting edge of an article of furniture or the like comprising a plurality of longitudinally aligned contiguous rubber sections, each of said sections comprising a longitudinally extending interiorly disposed metallic strip, one of said sections comprising a socket recess in its end

disposed contiguous to an end of the other section, the metallic strip of the other section projecting beyond its end contiguous to the recessed end of the other section, the projecting portion disposed in said recess and means projecting from the metallic strips of both sections into the edge portion of the article to be guarded to secure the sections of guard to the article, one of said sections being bent angularly intermediate its ends and adapted to guard a corner portion of the edge of the article.

5. A guard strip for a projecting edge of an article of furniture or the like comprising a plurality of longitudinally aligned contiguous rubber sections, each of said sections comprising a longitudinally extending interiorly disposed metallic strip, one of said sections comprising a socket recess in its end disposed contiguous to an end of the other section, the metallic strip of the other section projecting beyond its end contiguous to the recessed end of the other section, the projecting portion disposed in said recess and means projecting from the metallic strips of both sections into the edge portion of the article to be guarded to secure the sections of guard to the article, one of said sections being bent angularly intermediate its ends and adapted to guard a corner portion of the edge of the article, the attaching surface of each of said sections being transversely concave before attachment to the edge of the article.

6. A guard buffer for a surface of an article of furniture or the like, comprising a plurality of longitudinally alignable rubber strip sections, each of said sections comprising a surface adapted to be pressed into intimate engagement with the article, each of the sections adapted for attachment to the article, said sections having a longitudinally extending bore and a smooth transversely rounded exterior surface, a reenforcing core disposed within said bore, said core being apertured at intervals to admit screws, nails, and the like, adapted thereby to be projected therethrough into the article to be guarded.

7. A guard buffer for a surface of an article of furniture or the like, comprising a plurality of longitudinally alignable rubber strip sections, each of said sections comprising a surface adapted to be pressed into intimate engagement with the article, each of the sections adapted for attachment to the article, said sections having a longitudinally extending bore and a smooth transversely rounded exterior surface, a reenforcing relatively incompressible core disposed within said bore, said core being apertured at intervals to admit screws, nails, and the like, adapted thereby to be projected therethrough into the article to be guarded, at least one of said sections comprising two integrally joined angularly disposed portions, each portion adapted to be disposed on a different side of the corner edge of the article to be guarded.

8. A guard buffer for a surface of an article of furniture or the like, comprising a plurality of longitudinally alignable rubber strip sections, each of said sections comprising a surface adapted to be pressed into intimate engagement with the article, each of the sections adapted for attachment to the article, said sections having a longitudinally extending bore and a smooth transversely rounded exterior surface, a steel reenforcing core disposed within said bore, said core being apertured at intervals to admit screws, nails, and the like, adapted thereby to be projected therethrough into the article to be guarded, at least one of said sections comprising two integrally joined angularly disposed portions, each portion adapted to be disposed on a different side of the corner edge of the article to be guarded, said angled section being thickened in its junction portion.

9. A guard buffer for a surface of an article of furniture or the like comprising a rubber strip section, comprising a surface adapted to be compressed into intimate engagement with the article, said section adapted for attachment to the article and having a longitudinally extending bore and a substantially rounded exterior surface, a reenforcing core disposed within said bore, said core being apertured at intervals to admit screws, nails and the like adapted thereby to be projected therethrough into the article to be guarded.

10. A guard buffer for a surface of an article of furniture or the like comprising a rubber strip section, comprising a surface adapted to be compressed into intimate engagement with the article, said section adapted for attachment to the article and having a longitudinally extending bore and a smooth transversely rounded exterior surface, a reenforcing core disposed within said bore, said core being apertured at intervals to admit screws, nails and the like adapted thereby to be projected therethrough into the article to be guarded, said rubber strip comprising two integrally joined angularly disposed portions, each portion adapted for attachment to a different side of the corner edge of the article to be guarded.

In testimony whereof I hereunto affix my signature this 28th day of July, 1926.

DE FOREST ROE.